

E-Poster Session - July 9-12 - Exhibition Area

A1.01 Pain - Acute Pain

ISPR8-2578

THE USE OF PRESSURE BIO-FEEDBACK STABILIZER IN THE DIAGNOSIS AND THE THERAPY OF PATIENTS WITH NON-SPECIFIC LOW BACK PAIN.

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Introduction/Background

Aim: The assessment and the comparison of influence of four-week therapy with the use of PBU on: pain intensity, life quality, SLS, DLS and number of recurrence of health ailments among patients with non-specific pain of lower spine among people aged between 18 and 35 in 4-week and 6-month follow-up.

Material and Method

Research was conducted among group of 161 people, 100 of them suffered from non-specific lower back pain and 61 did not suffer from non-specific lower back pain, everyone was aged between 18 and 35.

Results

Statistically significant differences ($p < 0,01$) were presented between SLS and DLS in the group of people with non-specific back pain in its lumbar and spinal part and in the group of people without pain aged between 18 and 35. Both forms of therapy had positive and essential impact on statistically significant differences ($p < 0,01$) and on pain intensity in the NRS scale after a four-week therapy and in a six-month observation. Statistically significant differences ($p < 0,01$) in NRS in all groups were presented only 6 months after the treatment had been completed.

Conclusion

1. Both forms of treatment, first, with the use of Pressure Bio-Feedback Stabilizer and second, with the use of general exercises, had positive impact on pain intensity (NRS) and on life quality (SF.36v.2 and RMDQ) considering people with non-specific lower back pain in a 4-week and 6-month follow-up. The therapy with the use of Pressure Bio-Feedback Stabilizer was statistically more successful in a 6-month observation.

2. After 6 months that the 4-week treatment with the use of Pressure Bio-Feedback Stabilizer had been completed people in this group had statistically significant lower number of average pain ailments recurrence in the lumbar and spinal part of the back in comparison to the group of people treated with the use of general exercises.

Keywords

No conflict of interest

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THE EFFECTS OF CERVICAL KINESIO TAPING ON PAIN, RANGE OF MOTION, AND DISABILITY IN PATIENTS FOLLOWING THYROIDECTOMY: A RANDOMIZED CLINICAL TRIAL, PRELIMINARY RESULTS

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Introduction/Background

Thyroidectomy is a frequently performed surgical procedure and the head and neck extension during this operation facilitates surgery. Patients may experience postoperative neck pain and range of motion (ROM) limitation due to the surgical position following thyroidectomy. We aimed to investigate the short-term effects of Kinesio Taping (KT), applied to the cervical spine, on neck pain, cervical ROM, and disability in patients following thyroidectomy.

Material and Method

This was a prospective, double blind randomized controlled trial. A total of 80 patients were randomly assigned to applied either KT (Group 1, n=40) or sham taping (Group 2, n=40) using sequence of random numbers. Six patients from each group dropped out. Patients were only allowed to use paracetamol after surgery and the daily dose was recorded. Neck pain, cervical ROM, and neck disability were evaluated with VAS, inclinometer, and Neck Disability Index (NDI) questionnaire, respectively. While VAS was recorded preoperatively and 30 min, 4 hr, 12 hr, 24 hr, and 7 days after surgery, ROM and NDI was recorded preoperatively and 24 hr after surgery.

Results

The mean ages of the Group 1 and Group 2 were 51.6 and 49.2 years, respectively. There was no significant differences with respect to age, gender and educational background and body mass index. The demographic data of the two groups are presented in Table-1. The improvement in VAS values was more significant in favor of Group 1 ($p=0.032$) (Figure 1). There was no significant differences with respect to improvement of ROM values and NDI values between groups during study (Table-2). Patients in Group 1 needed less paracetamol during study than patients in Group 2 ($p=0.011$).

Estimated Marginal Means of MEASURE_1

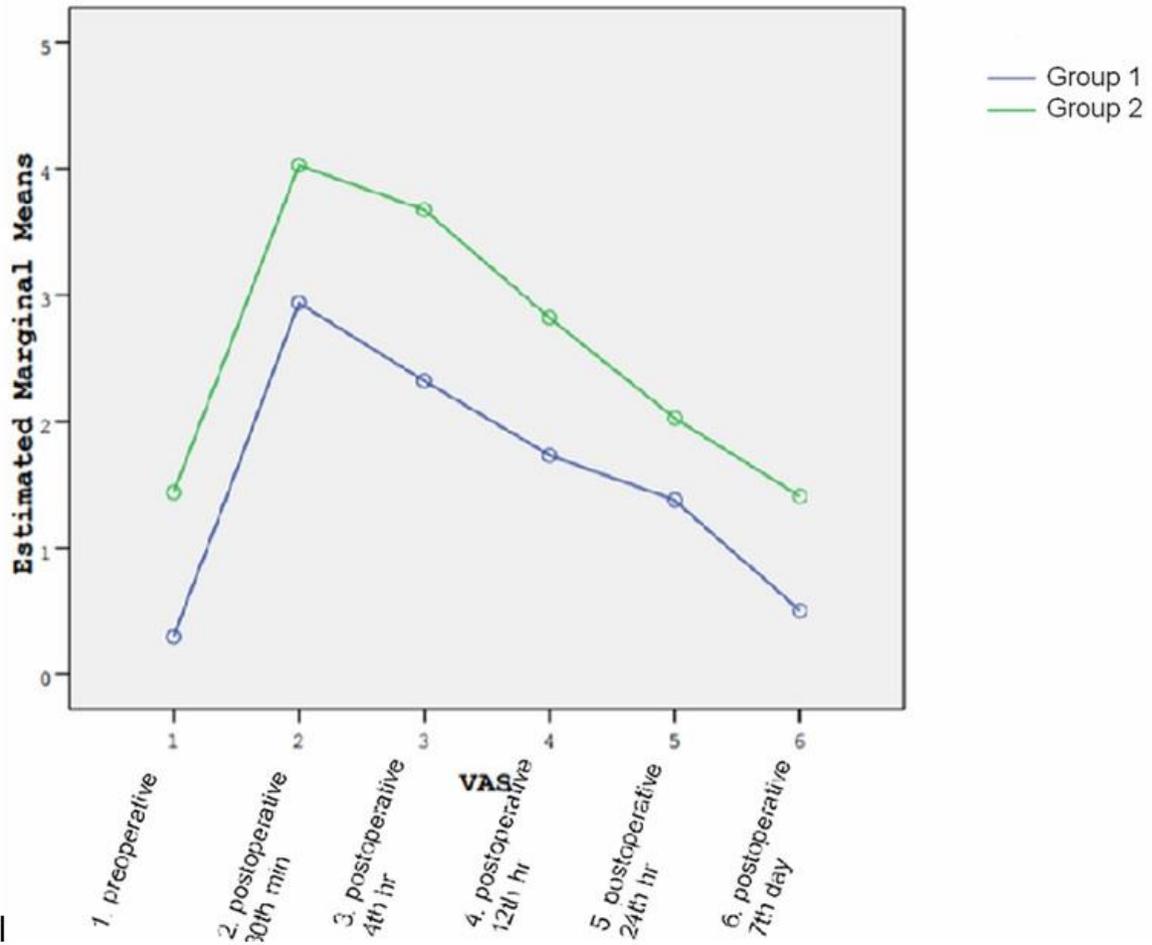


Figure 1. The change of VAS in groups during study

Table 1. Demographic data of the two groups

Variable	Group 1, n=34	Group 2, n=34	p
Age (years), <u>mean±SD</u>	51.6±14.9	49.2±16.3	NS
Gender (male, female)	10/24	7/27	NS
Educational background, n			NS
Primary school	14	10	
Secondary school	8	8	
High school	6	9	
University	6	7	
Body mass index, <u>mean±SD</u>	30.2±5.8	28.3±6	NS

NS: not significant.

Table 2. Comparison of VAS, ROM and NDI values before and after surgery.

	VAS (BS)	VAS (30th min)	VAS (4th hr)	VAS (12th hr)	VAS (24th hr)	VAS (7th day)	p ¹
Group 1	0.29±0.87	2.94±2.96	2.32±2.67	1.74±2.15	1.38±1.74	0.5±0.9	0.032
Group 2	1.44±2.06	4.03±3.05	3.68±3.01	2.82±2.09	2.03±1.94	1.41±1.98	

Percentage changes	Extension	Flexion	Right lateral flexion	Left lateral flexion	Right rotation	Left rotation
BS to AS(24th hr)						
Group 1	33.14±21.18	14.50±20.19	15.47±20.55	15.27±18.50	22.32±21.52	20.98±18.59
Group 2	26.00±24.03	17.60±16.78	13.40±22.40	15.59±22.66	19.56±20.29	20.32±20.08
p ²	0.152	0.510	0.871	0.474	0.662	0.417

Percentage changes	NDI%
BS to AS (24th hr)	
Group 1	43.08±15.35
Group 2	56.16±17.25
p ³	0.623

VAS: visual analog scale; ROM: range of motion; NDI: neck disability index

Values are mean units ± SD. BS: Before surgery, AS: After surgery (30th min, 4th hr, 12th hr, 24th hr, 7th day)

p¹: The comparison of changes from BS values to AS values between two groups. (Pillai's Trace)

p²: The comparison of percentage changes of ROM values from BS values to 24 hr AS values between two groups.

p³: The comparison of percentage changes of NDI% values from BS values to 24 hr AS values between two groups.

Conclusion

Our results revealed that cervical KT reduced postoperative neck pain and pain medication consumption. KT can be use as an alternative treatment for neck pain relieving after thyroidectomy.

Keywords

No conflict of interest

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A RANDOMISED CLINICAL INVESTIGATION INTO PLACING PAIN SPOT EXTERNALLY TO CROSSING AREA OF THE TWO CURRENTS OF INTERFERENTIAL THERAPY ON PAIN

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Introduction/Background

Interferential therapy (IFT) has been applied in a quadripolar way so that the two currents intersect in the painful area. Clinically, no clear reduction effect of pain has been confirmed with this application method of IFT. Experimentally, the highest voltage of IFT is being induced outside the intersection area of the two used currents. Thus, it is probably true that placing the painful area outside the intersection spot of the two currents would reveal a significant pain reduction.

Material and Method

A Double-Blind Placebo-Controlled Clinical Investigation. Setting: A public hospital physiotherapy department. Participants: 168 subjects with subacute low back pain. Interventions: Participants were randomly assigned to: 1- external IFT (painful spot was at 2 cm outside of the outer borders of the electrodes) 2- placebo external IFT 3- traditional IFT (painful spot was at the crossing area of the two currents) 4- placebo traditional IFT. Groups 1 and 3 received 20 min of IFT at 100 Hz and comfortable stimulation intensity. Groups 2 and 4 received sham IFT for 20 min. Main outcome measures: Before and immediately after IFT session, pain severity, pressure threshold (PPT) and distribution were assessed using visual analogue scale (VAS), algometer, and distance from pain source, respectively. Distance from the tip of middle finger to the ground during forward trunk flexion determined range of motion (ROM)

Results

Only VAS and ROM improved with all groups, $P < 0.03$ with no statistical differences between them, $P > 0.1$. Active IFTs changed all outcomes to same extent. There was a trend of better VAS reduction with active IFTs compared to placebos.

Conclusion

No therapeutic difference between external and traditional applications. The effect IFT in pain and ROM is not more than placebo. However, a trend of better pain reduction with active IFTs compared to placebos was noticed.

Keywords

interferential therapy;pain management

No conflict of interest

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INTEREST AND LIMITS OF ELECTROMYOGRAPHY IN THE DIAGNOSIS OF LOWER LIMBS RADICULOPATHIES

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Introduction/Background

Radiculopathies are a frequent cause of consultation leading to neurophysiologic exploration, namely electromyography (EMG), with a prevalence of 1,2 % to 43 % Konstantinou et Dunn, 2008. .

The main objective of our study is to analyse the indications and limits of neurophysiologic explorations in the diagnosis of root neuropathy. We analysed the results of EMG for the diagnosis of radiculopathies in comparison to anamnesic features and clinical findings.

Material and Method

We retrospectively studied the consecutive characteristics of 67 EMG studies realized from 2010 to 2015 in the laboratory of neurophysiology of Saint-Etienne University Hospital. We especially looked for root neuropathy of the lower limb involving L3, L4, L5 and/or S1.

A concordance between the proposed diagnosis and the electromyographic diagnosis was studied in a statistical study including non-parametric tests. Two levels of statistical significance were retained : $p < 0,05$ et $p < 0,01$.

Results

The EMG examination was abnormal in 73,2% of patients tested, with characteristic features of root neuropathy in 61,2%. Correlation with clinical findings was positive in 49,3% of cases. Statistical significance was reached between root neuropathy on EMG findings and clinical assessment ($p < 0,01$).

EMG sensitivity is limited for the diagnosis of root neuropathy. The clinical findings consistent with a radiculopathy does not preclude an EMG confirmation of a root neuropathy. This lack of sensitivity in our study is compatible with the findings of others. Dillingham et al draw similar conclusions in their study.

Conclusion

Our study, compatible with the findings of others and the medical literature shows that EMG is a specific tool in the diagnosis of root neuropathy but has a low sensitivity. Proper clinical

examination is the best way to draw appropriate conclusions from the EMG analysis. This was shown in studies by Camdessanché et al (2006) and Inal EE et al (2013) in upper limbs pain investigation.

Keywords

No conflict of interest

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USE OF THE NON-MEDICATION ON THE TREATMENT OF ACUTE DISCOGENIC LOW BACK PAIN

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Introduction/Background

The effect of the combination of the physiotherapy (low-frequent variable magnetic field, electrical stimulation) and of the acupuncture on the patients having acute discogenic pain low back pain was investigated.

Material and Method

110 patients aged from 20 to 50 (49 females and 61 males) having acute low back pain (osteocondrosis, osteoarthrosis, spondyloarthrosis) for 1 – 14 days were observed. The pain was examined and measured according to the visual analogue scale. The patients were divided into two groups. The first group (72 patients) received in addition acupuncture (individual points) and physiotherapeutic complex with low-frequent variable magnetic field and electrical stimulation treatment on the projection of pain. Every procedure exposure was 12 – 15 min. The complete course was 10 – 12 procedures. The second group (control, 38 patients), received only the basic medication (non-steroid anti-inflammations and anticonvulsants).

Results

The pain intensity of the patients in the first group was reduced after 10 – 12 days of treatment (65.3% patients) compared to the control group, where pain reduction after 20 – 26 days of treatment (31.6% patients); $p < 0,01$.

Conclusion

The addition of the non-medication therapy (combination of acupuncture, low-frequent variable magnetic field and electrical stimulation) to the treatment of acute discogenic pain resulted in earlier remission.

Keywords

acute discogenic pain; non-medication therapy

No conflict of interest

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OBSERVATIONAL STUDY TO EVALUATE HIGH PRESSURE INJECTION AS A POSSIBLE CAUSE OF VASCULAR PROBLEMS DOCUMENTED WITH SPINAL INJECTIONS

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Introduction/Background

Particulate steroids have for some years considered to be cause of vascular injury during spinal injections. There are various theories pertaining to the cause of injury. Objective was to observe the effect of injecting particulate steroid under high pressure on a blood vessel.

Material and Method

IRB exemption was obtained. Blood vessels from 2 chicken thighs were dissected. The external surface of blood vessels was injected with lidocaine and methyl prednisolone 40mg/ml with pressure. The injection procedure was recorded.

Results

The outer layer of the blood vessels was visibly damaged where particulate steroid was injected. There was no damage to the site where only lidocaine was injected.

Conclusion

This study shows gross visible damage to a vessel when particulate steroids were injected under high pressure. Future research will be targeted at smaller vessels and obtaining histology sections.

Keywords

vascular;injection;spine

No conflict of interest

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RETROSPECTIVE STUDY TO DETERMINE THE EFFECTIVENESS OF COMBINING PRE-PROCEDURE CLINICAL EVALUATION WITH FLUOROSCOPY BEFORE DIAGNOSTIC FACET JOINT INJECTION FOR EVALUATING THE SOURCE OF NECK PAIN

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Introduction/Background

Use of minimally invasive procedures has increased over the years. Use of fluoroscopy for diagnostic purpose before a procedure has not been well defined to increase the accuracy of the injections. Objective was to retrospectively evaluate the effectiveness of combining pre procedure clinical evaluation with fluoroscopic evaluation with diagnostic cervical facet joint injection.

Material and Method

Retrospective observational study of 15 neck pain patients of cervical facet joint injection after pre procedure clinical evaluation and fluoroscopic evaluation. Assessment was: percentage pain relief. Successful pain relief was defined as $\geq 50\%$ reduction in pain.

Results

The mean age of the entire group was 50.3 (43-58) years. The mean BMI was 29.34 (24.69-37.66). There were total of 18 injections performed on 15 patients (two were bilateral and one was 2 level). 16 of the 18 tender areas were at the facet joint under fluoroscopy evaluation and 2 were posterior to the facet joint. The cervical facet joints which were injected were C2-3 (5-including one two levels and one bilateral), C3-4 (6-including two levels), C4-5 (6-including one bilateral) and C5-6 (1). The percentages of patients experiencing successful pain relief were 82.3 % (14/17 injections-one patient had two level injection) including 5 who had 100% relief after the diagnostic injection.

Conclusion

This small trial demonstrates the overall clinical success of diagnostic cervical facet joint injection when combined with pre procedure clinical evaluation and fluoroscopy evaluation. Further research with a larger trial is needed to evaluate the efficacy of this procedure.

Keywords

spine;Neck;injection

No conflict of interest

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COMPARISON OF MONO AND COMBINED THERAPY OF TOPICAL ETOFENAMATE, AESSIN + DIETHYLAMINE SALICYLATE IN ACUTE MUSCULOSKELETAL DISORDERS

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Introduction/Background

Musculoskeletal disorders are common diseases of which the cause is usually mechanical. Anti-inflammatory agents are often used in treatment systemically and topically. Topical products do not have gastrointestinal side-effects. There are studies on soft tissue diseases which are superior to one another in some aspects regarding the placebo. We investigated the efficacy and safety of separate and combined use of etofenamate cream, Aessin + Diethylamine Salicylate gel in this study.

Material and Method

This is an open, randomised and comparative observation study. From the three groups, the first was administered etofenamate, the second was administered aessin + diethylamine salicylate, and the third group was administered the combination of these two. The pains, swellings, sensitivities and dysfunctionalities of the patients were classified according to Likert. The findings were assessed prior to and one week into the study. All three groups received the topical administration 3 times. The dosage was 1cm every time.

Results

The groups were homogenous in terms of age, gender and number of patients ($p > 0.05$). Each group contained 30 patients. Spinal involvement was prominent in the range of diseases. While the assessment parameters improved significantly throughout the group, the group receiving combined administration was superior to the others. There was no difference in terms of paracetamol usage. In terms of local side-effects, while 5 patients from the first group experienced rashes, 2 patients experienced side effects in the second and third groups. They did not cause the patient to withdraw from the treatment. Doctor and patient assessment showed that the number of good and very good patients in the third group was 20 and 19, and that it was significantly high ($p < 0.05$).

Conclusion

Non-systemic topical nonsteroids may be safely used for pains and inflammations in patients with acute musculoskeletal disorders. Combined usage of two different products may increase the efficacy and reduce the side-effects.

Keywords

No conflict of interest

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LAVAGE OF LUMBAR FACET JOINT FOR LUMBAR FACET JOINT CYST PRESENTING WITH RADICULAR SYMPTOMS A CASE REPORT.

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Introduction/Background

Lumbar facet joint cyst are usually degenerative in nature originating from lower lumbar facet joints which may compress nerves and cause radicular symptoms. There are various options of treatment including medication, physical therapy, injections, aspiration, bursting of the cyst, and surgery. A case study describing approaching the lateral extension of the lumbar facet joint cyst, bursting and lavage of lumbar facet joints cyst compressing on a nerve.

Material and Method

IRB exemption was obtained. A 70-year-old male presented with complaints of right gluteal pain radiating to lateral aspect of the leg to the ankle for 3 weeks. He was referred for physical therapy. MRI revealed spondylosis and 4 mm cyst in the right lateral recess at L5-S1 adjacent to or compressing the right S1 nerve root. NCS/ EMG revealed acute right S1 radiculopathy, chronic right L5 radiculopathy, chronic left L4/L5 radiculopathy, bilateral sensory peripheral polyneuropathy. Patient had short-term pain relief after initial right S1 transforaminal injection and attempted bursting the cyst and injection of right L5-S1 facet joint injection. Two weeks later, right L5 transforaminal injection was performed and a second needle was inserted into the right L5-S1 facet joint. On injecting the facet joint, fluid was noted to exit from the needle in the L5 foramen. After injecting lidocaine, steroids were injected into the facet joint.

Results

At last conversation about ten months after the injection, the patient did not have pain. The MRI of lumbar spine was again reviewed and on T2 axial images fluid like structure was noted lateral to the facet joint in addition to the facet joint cyst, which was confirmed by radiologist to be lateral extension of facet joint cyst.

Conclusion

This case study illustrates that one may look for lateral extension of a cyst which may be used to rupture and lavage.

Keywords

facet;cyst;injection

No conflict of interest

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THE NEEDS OF ACUTE PAIN CONTROL IN LARGE EARTHQUAKES

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Introduction/Background

After a large earthquake, medical resources were less. Many trauma patients can not get regular medical resources. Among them, post-traumatic pain patients, which is with temporary non-life-threatening, such as limb fracture, cannot get the timely medical treatment of pain control. The Object of our study is to explore the post-traumatic pain and without non-life-threatening patients' needs in earthquake.

Material and Method

The West China earthquake victims' database was used for retrospective analysis. We enrolled more than 1800 records. And the general characters, the duration between the injury and first aid, diagnosis and the pre-hospital treatment were collected in our study.

Results

The median duration of pre-hospital pain control of the middle age and young people was 6 hours. And that of children was 2h, and that of elderly was 2h. It was significant difference between the groups ($p<0.05$). The median duration of pre-hospital pain control of the upper limb fracture patients was longer than others ($p<0.05$).

Conclusion

The duration of pre-hospital pain control of the middle age and young people was longer than the rest of the population; most of them were limb fracture victims. The duration of fracture fixation is also longer than other groups. In the case of a shortage of medical resources, it is recommended to widely popularize early traumatic first-aid knowledge. For fracture patients, it is recommended to be handled early by volunteers.

Keywords

acute pain control;large earthquake;need

No conflict of interest

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FACTORS ASSOCIATED WITH PSYCHO-COGNITIVE FUNCTIONS IN PATIENTS WITH PERSISTENT PAIN AFTER SURGERY FOR FEMORAL NECK FRACTURE

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Introduction/Background

To solve problems arising from fracture of the femoral neck in elderly people, the proportion of which continues to increase in the population of Japan, we need to examine factors in patients with fractured femur necks to develop and ways to assist affected patients.

Material and Method

In this study, we examined the relationships among sex, age, fracture site, operative procedure, physique, lifestyle, psycho-cognitive functions, and types of pain in 142 patients, performed multiple regression analysis using the Mini-Mental State Examination (MMSE) and the Montgomery–Asberg Depression Rating Scale (MADRS) scores as dependent variables, and created MMSE and MADRS models.

Results

The results of analysis of the MMSE and MADRS models identified night pain and the number of family members as factors that affected mental function in a population with persistent pain for 1 week after surgery for fractured femoral neck. In addition, the number of family members was identified in multiple regression analysis models as a factor associated with psycho-cognitive functions. Pain, night pain in particular, affects psycho-cognitive functions. We speculated that emotional ups and downs were associated with the number of family members. The results showed that the patients living with family members maintained psycho-cognitive functions better than did those living alone, even when they experienced pain in their daily lives.

Conclusion

We speculated that emotional changes were associated with number of family members. Patients living with family members maintained psycho-cognitive functions better than did those living alone, even when they experienced pain in their daily lives.

Keywords

femoral neck fracture;psycho-cognitive functions;persistent pain

No conflict of interest

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ISPR8-1148

PHYSICAL MEDICINE AND REHABILITATION CHALLENGES OF ALLEVIATING SYMPTOMS OF TRIGEMINAL NEURALGIA. CASE REPORT.

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Introduction/Background

Trigeminal neuralgia is characterized by short episodes of unilateral acute unbearable pain, sudden in onset and termination, in the zone of the fifth cranial nerve branches. According to the latest data, there are surgical, pharmacological and nonpharmacological methods applied to treat trigeminal neuralgia. Rehabilitation methods, which are being applied to relieve symptoms, are: TENS, laser therapy, acupuncture, Botulinum toxin injection, ultrasound therapy.

The purpose of this trigeminal neuralgia case is to review all available rehabilitation methods in reducing the pain, to analyze our case and to offer treatment according best available evidence.

Material and Method

The patient of our case report, 39 year woman, is suffering from acute pain episodes (VAS 10 scores) and constant pain (VAS 3-4 scores), located in the two lower branches of trigeminal nerve. This case is unique because our patient is suffering not only from acute face pain, but also she gained left leg disability and gait dysfunction that was not approved by any neurological or radiological diagnostic tests. Her gait improves after pain is relieved. During acute episodes, the only effective treatment is blockage of nerve root by Pethidine and intramuscular injection of Ketoprofen. For persistent pain between acute episodes only peroral Carbamazepine is effective, however pain persists to 3-4 VAS scores. The patient was directed to Physical medicine and Rehabilitation Physician and an individual rehabilitation plan for pain reduction was made: TENS N10, polarised light and ultrasound N10.

Results

After applying these physical agents, the pain was reduced to 1-2 VAS scores for a short time.

Conclusion

Physiotherapy procedures reduce the pain, improve the patient's well-being, yet they have a short-term positive effect and the pain regresses. Further analysing of the effect of Physiotherapy procedures is necessary.

Keywords

trigeminal neuralgia;pain;physiotherapy

No conflict of interest

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THE PAIN RELIEVING EFFECT OF KINESIOTAPING ON DENTAL PAIN : A PLACEBO-CONTROLLED TRIAL

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Introduction/Background

Kinesiotaping is currently appreciated as a practical and low cost management for relieving pain, with relatively minimal adverse event. It has been proven in edema control, tissue support, joint protection, and relieving heat produced from active inflammation. Dental pain arises from various pathology in oral cavity, mostly from tooth impaction and pulpitis. Dental pain limiting patient to daily activity involving oral cavity, like chewing, swallowing, and facial mimicking. Clinical application of kinesiotaping in patient with dental pain are rarely reported despite its potential to ameliorate pain and improve function.

Material and Method

A randomized, placebo-controlled clinical trial was performed to assess the effect of kinesiotaping on reducing dental pain. The primary outcome were VAS (Visual analog scale), milligrams of analgesics taken, and numbers of mastication strokes eliciting pain (masticatory pain tolerance). These data were recorded before treatment, during treatment, and 1 day after tapes are released. Independent and paired t-tests were used for analysis.

Results

Sixteen patients randomly allocated to two groups; First group to receive kinesiotaping application (Group I) and another to receive placebo cohesive tapes (Group II). KinesioTex™ and the placebo tape with skin color were used. Both groups received acetaminophen as analgesics. Significant VAS decrease observed during and after treatment in Group I ($\Delta\text{VAS}_1 = 9,63$; $P=0,001$ and $\Delta\text{VAS}_2 = 4,88$; $P = 0,03$) and during treatment in Group II ($\Delta\text{VAS}_1 = 4,63$; $P=0,02$). No significant VAS decrease in Group II after treatment ($\Delta\text{VAS}_2 = 0,38$; $P = 0,42$). Group I also showed significant improvement in masticatory pain tolerance ($\Delta\text{NMAS}_1 = 5.88$; $P=0$ and $\Delta\text{NMAS}_2 = 3,88$; $P = 0,004$) and acetaminophen taken for both measurements.

Conclusion

This study suggests Kinesiotaping decrease VAS significantly during treatment and one day after treatment. Improve in masticatory pain tolerance would benefit patient in digestion. Kinesiotaping could be adjuvant therapy in management of dental pain

Keywords

Masticatory pain tolerance;Dental pain;Kinesiotaping

No conflict of interest

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NON-TRAUMATIC HIP PAIN DURING PREGNANCY

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Introduction/Background

The non-traumatic hip pain is a common symptom during the third trimester of pregnancy and it's usually under-diagnosed when there is an underlying disease. Thus, these women must have a correct differential diagnose of the hip pain between two different pathologies. On the one hand, transient osteoporosis (TO), unusual and unknown etiology that appears on the third trimester of pregnancy or the puerperium, it has a good prognosis towards healing, being its biggest complication a hip fracture. On the other hand, the avascular osteonecrosis (AON), is rare (40 cases), being necessary the separation with the previous diseases for having a worse prognosis than the other cases as it is resolved with an arthroplasty, since the cases of spontaneous healing are exceptional for AON.

Material and Method

Case 1: Woman. 29 years old. Bilateral atraumatic hip pain and limited motion during the third trimester of pregnancy. During birth, she notices a clicking and subsequent functional limitation in both hips. Imaging tests showed subcapital fracture on left hip and TO on right hip.

Case 2: Woman. 42 years old. Relates atraumatic pain on the left hip after giving birth a month ago, she refers functional limitation as well. On MRI, AON is showed on the left hip with a subchondral fracture.

Results

Case 1: underwent surgery with cannulated screw fixation and muscle strengthening rehabilitation resulting on a great recovery.

Case 2: therapy based on muscular strengthening exercises in discharge. On MRI, four months after, there are no signs of any injury, with healing ad integrum.

Conclusion

Our contribution as Physiatrists is to suspect a possible pathology when non-traumatic hip pain appears associated with pregnancy, being the MRI the best test to diagnose it, and later, the treatment will be conservative with physical therapy, bed rest, analgesic and prevention of weight-bearing in order to avoid future associated fractures.

Keywords

hip pain;pregnancy;avascular osteonecrosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.01 Pain - Acute Pain

ISPR8-1799

FEASIBILITY STUDY FOR THE GENERALIZATION OF EARLY MANAGEMENT OF LOW BACK PAIN IN WORK STOPPAGE AFTER A WORK-RELATED INJURY.

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Introduction/Background

A considerable proportion of work absence is attributed to low back pain (LBP), with high lost productive time and health spending, specially after a work-related injury.

The French Health Insurance try to improve the return-to-work for these patient with a early care in rehabilitation center.

The objectif of this study is to determinate if a early care three months after a work stoppage after a work-related injury improve the return to work three months after, and to determinate factors that influence the return-to-work.**Material and Method**

Five center in France taked part in this protocol, in an open prospective study. 147 LBP patients (handler) were included in 2016, three months after the work-related injury. The intervention was a multidisciplinary functional restoration program for 67 patients. The other were follow-up about the return-to-work.

The outcome was the return-to-work rate three months after the intervention.

Results

In the 52 remaining patients, 26 (50%) were at work at 3 months : 16 in full time at the same job. 9 patients were in occupational retraining. For the other 80 patients, 70 (87,5%) were at work at three months.

Active physiotherapy, TAMPA, FABQ, DALLAS, Visual Analog Scale (VAS) after the program were found to have relationships with the outcome.

LBP background and being sportif before ou after the program, were not found to have relationship with the outcome.

Conclusion

Unfortunately, we fund an adverse effect of the multidisciplinary functional restoration program from patients with low back pain in work stoppage after a work-related injury in our study.

Maybe the overmedication, or the drama caused by this program in hospitalization, must influence the situation of workers.

Surprisingly, sports practice did not show any influence on the results. Active physiotherapy should be offered to any patient in this situation to promote the return to work.

Keywords

Low Back Pain;Return-to-work;Early care

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.01 Pain - Acute Pain

ISPR8-2083

ULTRASOUND-GUIDED PIRIFORMIS INJECTION IN PATIENTS WITH PIRIFORMIS MUSCLE SYNDROME

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Introduction/Background

Piriformis muscle syndrome (PMS) is caused due to the excessive contraction of the piriformis muscle with sciatica-like symptoms. PMS is associated with paresthesias and pain in the hips, buttocks and lower part of body and its diagnosis is based on clinical grounds mostly. Common methods to treat this condition are fluoroscopic, electromyographic, magnetic resonance imaging guidance or computed tomographic while ultrasound-guided piriformis injections has several advantages compared to these prevalent and common approaches, such as well-set shape, availability, direct imaging of neurovascular structures and lack of exposing to ionizing radiation.

Material and Method

. First the injection of Methyl Prednisone was applied under guidance of a Micromaxx ultrasound machine and using a 5–10MHz, 38-mm broadband linear probe. For piriformis injection under ultrasonographic guidance, a linear ultrasound probe is positioned with its lateral side medial to the greater trochanter and its medial side lateral to the ischial tuberosity. In this position, the sciatic nerve is identified as an oval honeycombed structure with mixed echogenicity. The sciatic nerve is then followed cephalad until it courses beneath the piriformis .Ultrasound probe is directed parallel to piriformis. Needle is inserted in lateral third of piriformis .The therapeutic effect was assessed before and a month after injection *via* Visual Analogue Scale (VAS) as three groups: improvement, partial improvement, or failure depending on the degree of symptom.

Results

According to the results, 7 patients (46.6%) showed improvement, 4 (26.6%) showed partial improvement and 4 (26.6%) failed to respond to the initial treatment.

Conclusion

,Ultrasound-guided piriformis injection may be a suitable treatment strategy to reduce the symptoms in patients with Piriformis muscle syndrome

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.01 Pain - Acute Pain

ISPR8-2085

EVALUATION OF THE THERAPEUTIC EFFECT OF BOTULINUM TOXIN A ON HALLUX VALGUS DEFORMITY AND PAIN

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Introduction/Background

Hallux Valgus is a kind of Toes aberration where the Metatarsophalangeal joint that connects the big toe to the foot, leading to the inner side and a protrusion on the inner surface of toe arise. This study aimed to determine the effect of botulinum toxin A injection to reduce pain and deviation angle of the thumb in Hallux Valgus and to increase outcomes of treatment as an adjuvant therapy.

Material and Method

Randomized clinical study was performed on 18 patients at the Clinic of Physical Medicine and Rehabilitation, Isfahan University of Medical Sciences. In this study the Hallux valgus angle (HVA) between the metatarsals (IMA) and cartilage distal metatarsal angle (DMAA) and pain was assessed before and after injection

Results

Average of Hallux Valgus angle before and after Botox injections were $28/89 \pm 10/21$ and $21/56 \pm 8/22$ degrees and the angle deviation in the 6 months after treatment was significantly improved ($p < 0.001$).

Conclusion

Injection of botulinum toxin A is a suitable and acceptable method to reform the skeleton deformities and also to reduce the pain in patients with Hallux valgus

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.01 Pain - Acute Pain

ISPR8-2208

EFFECTIVENESS OF BOTULINUM TOXIN TYPE A FOR PAIN CONTROL IN CHILDREN WITH SPASTIC CEREBRAL PALSY

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Introduction/Background

A before and after prospective longitudinal study was made in 12 pediatric students with ages between two and 18 years with diagnosis of cerebral palsy, evaluating the presence of pain by using the FLACC scale; the participants had indication to receive Botulinum Toxin type A for the control of their spasticity. Another evaluation of pain was made a week and a month after the application

Material and Method

Before and after prospective longitudinal non- experimental analytical study for related samples from a cohort of children with a diagnosis of spastic cerebral palsy and the presence of pain reported by the parents, to whom the FLACC scale was applied prior to the application of botulinum toxin and after her the first week and the first month.

Results

The present study of children and adolescents diagnosed with Spastic Cerebral Palsy was performed at the Hospital de la Misericordia Foundation in the city of Bogotá, meeting 15 patients, one of whom was excluded for presenting a value of 0 on the FLACC scale and other 2 patients did not continue with the study because they did not went to the controls.

The normality test was carried out, for being a sample of less than 30 participants the Shapiro Wilk test was used, a significance for the age of 0.219 was obtained, higher than 0.05 which shows that this variable had a normal distribution.

Conclusion

Botulinum toxin type A has a significantly positive effect for pain management identified with the FLACC scale in children with spastic cerebral palsy

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.01 Pain - Acute Pain

ISPR8-2225

A 45 YEAR FEMALE PRESENTING WITH UNILATERAL PAINFUL KNEE WITH CALCIFICATION WITHIN THE LATERAL COLLATERAL LIGAMENT : A RARE CASE REPORT

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Introduction/Background

Acute calcific periartthritis(ACP) is an acute periarticular inflammation associated with juxtaarticular calcification. ACP is normally mono-articular, presenting with pain and swelling, with sometimes restricted movement. Here we report a rare case of ACP in a middle aged female.

Material and Method

A 45 year old woman presented to the Physical and Rehabilitation Medicine(PRM) OPD with acute onset of severe pain of the lateral aspect of the right knee along with swelling since 2 week. Her symptoms were sudden in onset, gradually worsened over next 48 hours and aggravated with weight bearing/walking and her gait was antalgic.

Her right knee joint had mild diffuse swelling and was slightly warm along with marked tenderness. Knee flexion and extension was associated with extreme pain and there was restriction in end range of motion.

All routine blood investigations were normal except slight raise in ESR and CRP. Ultrasonography of right knee joint showed hypoechoic free fluid along with calcification and 1 ml of chalky white, milky fluid was aspirated. Von kossa staining demonstrated calcium deposits. X-ray and MRI scan showed calcification on the lateral aspect of knee joint.

Results

On the basis of patient's history, laboratory, radiological and histo-pathological investigations we reached the final diagnosis as ACP. Initially the patient was managed with rest, NSAID, ice and heat and the patient's symptoms started to subside within 48 hours. After two weeks of treatment, during her last follow up visit, calcification had gradually absorbed and she was symptom free.

Conclusion

ACP is a rare, but self-limiting condition that normally resolves with minimal treatment within a few weeks. Radiologically, ACP demonstrates juxta-articular calcification. Therefore it can be mistaken for other conditions including gout, pseudo-gout, or systemic conditions such as hyperparathyroidism and renal failure. Since this disease is self-limiting, correct diagnosis is important to avoid unnecessary investigation and proper management.

Keywords

Acute knee pain;Self limiting;Acute calcific peri-arthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.01 Pain - Acute Pain

ISPR8-2229

TRAUMA IN FOOTBALL, CARE AND PREVENTION OF 136 CASES.

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Introduction/Background

Introduction: The practice of football is generating various pathologies. Any incident deserves a quick diagnosis to avoid any serious sequelae.

Material and Method

Objective: To evaluate these traumas, their consequences on the health and the career of the athletes. Evoke therapeutic and preventive strategies to restore the function, allow the player to resume his sporting activity as soon as possible.

Results

Results: Included 136 injuries of the male champions of the professional championship of first division and those of the national team of Gabon. Average age 25years. Midfielders: more affected by 37%, attackers: 25%; defenders: 24%, goalies: 14%. Stroke right 51%, left 31%, bilateral 18%. The most affected joints: knees 23cas, ankles 17 cases, shoulders 6cas. The affected muscles: adductors: 11cas, quadriceps: 11cas, hamstrings: 9cas, triceps sural 7cas. Diagnosis: typical clinical presentation 44%, clinical and para-clinical confrontation 29%, standard radiography 3%, scanner 1%, ultrasound 16%, magnetic resonance imaging 6% and arthroscopy 1%. Conservative treatment 93% and surgery 7%. Evolution: total recovery 77%, partial recovery 18%, stopping the sport 3%, death by trauma 2%.

Conclusion

Conclusion: The prognosis of football trauma depends on the quality of the initial intervention, the diagnostic and therapeutic approach. Respect of the deadlines of unavailability. Some footballers, have never been able to regain their level before the injury from where, the return to the competition remains the nightmare of the medical staff.

Keywords

football,;trauma,;prevention and care

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.01 Pain - Acute Pain

ISPR8-2231

MANAGEMENT OF PLANTAR FASCIITIS FOR 80 CASES

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Introduction/Background

Introduction: Plantar fasciitis is the inflammation of the fascia, a fibrous blade of the plantar region extending from the heel to the base of the toes.

Material and Method

Objective: To evaluate the long-term effectiveness of the management of this pathology by a retrospective study of patients followed for three years

Results

Results: We recorded 80 cases of plantar fasciitis, with a male predominance of 65%, unilateral 77.5% and bilateral 22.5%. Compared with the body mass index, the majority of patients affected was overweight 80% and the average value of the body mass index was 28.02 so: overweight 52.5%, moderate obesity 25%, severe obesity 2.5%, patient of normal body size 20% of impairment. The diagnosis establishes before a characteristic clinical picture 17,5%; standard radiography 15%; ultrasound 52.5%; magnetic resonance imaging 15%. The evolution was marked after 24 months of management by: total disappearance of the pain 45%, notable reduction of the pain at the analogical visual scale to 4 out of 10 in 40%, persistence of the pain greater than 6 out of 10 at 15%

Conclusion

Conclusion: The management of plantar fasciitis is intended to relieve pain and restore function. It requires the simultaneous use of conventional therapeutics. The tendency to chronicity of this pathological process disappoints the patients but also the doctors. These results illustrate the complexity of this treatment and the uncertainty of their future.

Keywords

plantar fasciitis ;,Management

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.01 Pain - Acute Pain

ISPR8-2232

MANAGEMENT OF SUPRASPINATUS TENDON INJURIES IN 82 CASES.

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Introduction/Background

Introduction: The supraspinous muscle helps the abduction of the arm, belongs to the "rotator cuff" which stabilizes the humeral head inside the joint capsule. This muscle passes between the acromion and the humeral head. The subacromial bursa reduces friction between the tendon and the acromion.

Material and Method

Method: Retrospective study of 82 cases of supra-thorny supraspinatus lesion in adult patients of both sexes. The variables studied: age, sex, activity, pain and medical imaging.

Results

Results: Included 44 men for 38 women. Average age: 50 years. Non-traumatic injuries 68.29%. Injury after 31.71% shoulder trauma. Right lesion 60.97%, Left lesion 39.03%. Professional activity: Physical work 42.69%; office work 23.17%; sports injury 13.41%. No specific activity 20.73%. Injury on the same side as the right-handed dominant arm 58.54%, left-handed 24.39%. 24.39% Clinical Positive Diagnosis, 31.71% Standard Radiography, 29.27% Ultrasound, 14.63% Magnetic Resonance Imaging. Isolated involvement of the supraspinatus tendon 73.17%. Achievement of supraspinatus associated with another lesion 26.83%. Evolution: total disappearance of pain 51%, pain reduction to less than 4 out of 10 on the visual analog scale 36%, persistence of pain to more than 6 out of 10 on the 13% visual analogue scale.

Conclusion

Conclusion: Supraspinous tendon lesions are common. Despite the satisfactory results of their management, it is important that this pain is the subject of greater attention in a functional rehabilitation environment.

Keywords

supraspinatus tendon, ;injuries,

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.01 Pain - Acute Pain

ISPR8-2354

PAIN MEASUREMENT BY THE SKIN IMPEDANCE IN CASE OF STROKE PATIENTS

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Introduction/Background

To examine whether it is possible to evaluate of the pain by the measurement of the change in the skin impedance in patients with stroke.

Material and Method

The skin impedance obtained from the electrode applied to the hand was measured, and it made comparative study of the value before and after the pain treatment. The patients with omalgia and the low back pain in paralyzed side were done the hyperthermia of hot pack and the xylocaine intramuscular injection, and visual analogue scale was compared additionally before and after treatment as sight scale.

Results

For the patients with omalgia and the low back pain, the difference was admitted in the individual value that was able to be put in the resting state, and the change was seen in response to the state of their posture.

Impedance decreased with the exacerbation of the pain, and it has increased with the improvement of the pain sensation.

The larger the improvement of the pain sensation was, the smaller increases of impedance when the low back pain was improved by the effect of the hyperthermia.**Conclusion**

The pain is a subjective phenomenon, and it is changeable. The objective evaluation is difficult because there are extremely a lot of troubles that cause the pain. The improvement of the pain and the change in the skin impedance were in the correlation. It was suggested that a quantitative evaluation of the pain sensation was possible though it was thought the change of the pain took place through the autonomic nerve system.

Keywords

pain;skin;impedance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-2510

THE EFFECTS OF MYOFASCIAL CUPPING THERAPY AND CALLIET NECK EXERCISE IN MPS-SYMPOMATIC PATIENTS

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Introduction/Background

This research study intends to use Instrument-Assisted Soft Tissue Mobilization Technique (IASTM) on individuals who are suffering from Myofascial Pain Syndrome and limited range of motion (ROM) on the neck. This discusses the implication of cupping therapy and Calliet exercise in long term effects in treating Myofascial Pain Syndrome.

Material and Method

A true experimental design was used in the study that includes an experimental group which are treated using Myofascial Cupping Therapy and Calliet exercise and a control group which are treated with Calliet exercise only. Participants in the study includes male and female with age ranging from 20-55 years old who experienced neck and shoulder pain and limited ROM. A goniometer was used to gather data for ROM. Massage oil was used as a medium together with the silicone cups for the Myofascial Cupping treatment. Twenty-four (n=24) individuals who had experienced neck and shoulder pain were assessed for the presence of MPS and limited ROM. Twelve (n=12) participants (age=32.3±10.5) served as an experimental group which received a cupping treatment and Calliet exercises and another twelve (n=12) participants (age=28.3±8.9) served as a control group which received Calliet exercises only. Both groups were evaluated and were given a therapeutic intervention once a week for 4 weeks. Measurements includes ROM and pain using Numeric Pain Rating Scale (NPS) and a one-way ANOVA was used to calculate all the gathered data.

Results

Both groups were statistically significant showing a great improvement in ROM and a decrease in pain severity. However the experimental group showed better results compared to the control group based on the gathered data and upon evaluation of the respective mean values.

Conclusion

Myofascial Cupping Therapy can be used as treatment for individuals with neck and shoulder pain and decreased ROM.

Keywords

cupping;calliet exercises;myofascial pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0146

USEFULNESS OF THE THERAPY WITH DEEP OSCILLATIONS IN THE ACUTE MECHANICAL LUMBAGO PAIN

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Introduction/Background

Objective: To evaluate the evolution of patients with acute mechanical lumbago pain with deep oscillations in relation with others treated with interferential current and cryotherapy.

Material and Method

Methods: An experimental explanatory study was completed in the period from January 2015 to July 2017 of the patients that were assisted at the Physical Medicine and Rehabilitation Office of the Clinical Research Center with the diagnosis of acute mechanical Lumbago pain, the Analogical Visual Scale, the Likert Test, and the Foral Waddel Test were applied at the beginning and at the end of the treatment. The sample was divided in 2 groups; in the study, one group received deep oscillations therapy and the other interferential current and cryotherapy, to both groups the postural hygienic measures were suggested. The data were evaluated and the significant fixed level was $p \leq 0,05$.

Results

Results: Prevalence existed in the masculine sex, with 45, 15 years old media, normal weight; the factors that developed pain were intense physical work, followed by the maintained static postures. More than 90% of they didn't have knowledge of the norms of postural hygiene. The pain level at the beginning of the treatment behaved equally in both groups, being highly significant the results when concluding the treatment in the Analogical Visual Scale and the Test of Likert. The Test of Waddell was significantly modified in both groups. Conclusions: The treatment with deep oscillations went superior to those with interferential current and cryotherapy with a beginning of the analgesia before in the study group.

Conclusion

Conclusions: The treatment with deep oscillations went superior to those with interferential current and cryotherapy with a beginning of the analgesia before in the study group.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0274

THE REHABILITATIVE ROLE OF MOTOR IMAGERY IN THE TREATMENT OF PAIN IN FIBROMYALGIA SYNDROME: PRELIMINARY RESULTS

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Introduction/Background

FM is a prototypical form of central sensitization syndrome that affects the dysregulation of mechanisms that normally govern pain sensation and should have to be treated in a multidisciplinary approach, which entails physical exercise, multimodal cognitive behavioral therapy, and pharmacological therapy. The aim of this research is to investigate whether a neurocognitive rehabilitative approach based on the use of motor imagery (MI) could be efficacy in reducing chronic pain in FM. Furthermore, as a secondary outcome, we assess the efficacy of MI on the improvement in the recognition and awareness respect pain by EEG.

Material and Method

Ten females (mean age 51 ±6,1 years) with FM were recruited and performed ten rehabilitation sessions, twice a week lasting one hour, using the motor imagery. The following evaluation scales were used at the baseline (T0), after treatment (T1) and after two months of follow-up (T2): The Fibromyalgia Impact Questionnaire (FIQ), The Visual analogue scale (VAS), The Fibromyalgia Assessment Status (FAS) and the Health Assessment Questionnaire (HAQ), the SF-12 was administered to assess the quality of life. The EEG was used to record cortical activation with respect to recognize pictures divided into "algic" and "non-algic", versus a control group of healthy women.

Results

By Mann-Whitney χ^2 test, at baseline, by EEG there is a statistically significant difference in the recognition of "algic" images compared to "non-algic" ones between the FM group and the healthy group ($P < 0,05$): this difference is not found after the rehabilitative treatment. In the FM group there is a statistically significant improvement for FIQ, FAS, VAS ($P < 0,05$) and SF-12. Follow-up data are still ongoing.

Conclusion

A neurocognitive rehabilitation approach with motor imagery improves the recognition and perception of pain in the FM patient and is efficacy in reducing pain and improving related symptoms.

Keywords

fibromyalgia;exercise;neurocognitive rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0302

PREVALENCE OF CENTRAL POST-STROKE PAIN AND ITS IMPACT ON QUALITY OF LIFE

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Introduction/Background

OBJECTIVE: This study aims to determine the prevalence of central post-stroke pain (CPSP) in a patient population with stroke as well as investigating the relationship between CPSP and patients' clinical/demographic characteristics, pain intensity, functional status and quality of life.

Material and Method

MATERIAL AND METHOD: The study included 150 patients, who had a stroke and aged 18 years and above. Demographic data of the patients, stroke duration, and etiology, localization of the cerebral lesion, affected side, ambulation status, and Brunnstrom stages were recorded. Douleur neuropathique 4 questions (DN4) were used to assess the presence of CPSP. Visual Analog Scale (VAS) was used for pain intensity, functional ambulation scale (FAS) was used for ambulation status, Barthel Index (BI) was used for functional status, and the stroke impact scale (SIS) was used for quality of life.

Results

RESULTS: The mean age of the patients was 67±11.5 years, 54.7% was male, and 45.3% was female. CPSP was evaluated in 15.3% of patients. There was no significant difference between the affected side of the body and age, gender, duration of stroke, Barthel Index scores, and ambulation status of patients according to their CPSP status ($p>0.05$). There was no statistically significant difference between SIS sub-parameter scores and presence of CPSP ($p>0.05$).

Conclusion

CONCLUSION: Poor functional status, post-stroke pain intensity, advanced age, and the presence of right hemiplegia has a negative impact on the quality of life.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0349

MUSCLE MASSAGE EXERCISE IN PATIENTS WITH MYOFACIAL PAIN DYSFUNCTION SYNDROME

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Introduction/Background

The purpose of this study is to investigate the effectiveness of muscle massage exercise in patients with masticatory muscle tenderness and factors related to the effectiveness of the therapy.

Material and Method

In 54 patients with masticatory muscle tenderness, improvement of muscle pain and trismus were examined to determine the effectiveness of the therapy. With respect to conditions of the patients, we examined gender, age, duration of symptoms, range of maximum mouth opening, difference and site of the muscle. These factors were statistically analyzed by using logistic regression analysis.

Results

Two months after the therapy, the incidence of successful resolution was 92 % (50/54). A factor related to the effectiveness of the therapy was duration of symptoms.

Conclusion

The result indicates that muscle massage exercise is an easy and highly efficient procedure in masticatory muscle tenderness cases whose duration of symptoms is in particular short.

Keywords

Muscle massage exercise;myofacial pain dysfunction syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0418

CHRONIC PAIN IN PERSONS WITH MULTIPLE SCLEROSIS

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Introduction/Background

Pain can be a significant long-term problem for a substantial proportion of persons with multiple sclerosis (pwMS). The aim of this study was to examine the course and impact of chronic pain over a span of 10-years.

Material and Method

A longitudinal, cross-sectional study assessed pwMS residing in the community at seven and ten years using validated measures: Visual Analogue Scale; Numerical Rating Scale; Chronic Pain Grade (CPG); Assessment of Quality of Life and the Carer Strain Index (CSI).

Results

Mean age of the participants (n=70) was 59.8±9 years (range: 39-74 years) and majority (70%) were female. The findings show that over 10-year period, majority report bilateral lower limb dysesthesia (40%), mixed pain (35.2%) and widespread pain (17.1%). There was a significant deterioration in quality of life (QoL) in those with more severe CPG. Almost half of the participants (44%) required care either from a private carer/family or institution. The carers (n=13) reported higher carer strain (mean CSI=5.2), with over half reporting sleep disturbance, inconvenience, physical strains, family and personal constraints. Although fear of taking medications and side effects were common barriers to treatment for pain, there was an increase in the use of pharmacological treatment and healthcare services, mainly neurologists and general practitioners over time.

Conclusion

This study demonstrates that persistent chronic pain is a significant issue over time in pwMS, with clinical and health implications, poorer QoL, and increased healthcare utilisation. Greater awareness of chronic pain in pwMS and interdisciplinary approach is required to improve long-term patient outcomes and well-being.

Keywords

Multiple sclerosis;Chronic pain;Longitudinal study

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0419

NON-PHARMACOLOGICAL INTERVENTIONS FOR CHRONIC PAIN IN MULTIPLE SCLEROSIS: A COCHRANE SYSTEMATIC REVIEW

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Introduction/Background

Chronic pain is common and significantly impacts on the lives of persons with multiple sclerosis (MS). Various types of non-pharmacological interventions are used to improve pain control in persons with MS (pwMS), however the effectiveness and safety of many modalities is still unknown. This review evaluated the effectiveness of currently used non-pharmacological interventions for chronic pain in pwMS.

Material and Method

A literature search was performed using the Cochrane MS Group Trials Register which contains Cochrane CENTRAL, Medline, EMBASE, CINAHL, LILACUS, Clinical trials.gov and World Health Organisation International Clinical Trials Registry Platform in April 2017. Manual searching in the relevant journals and screening of reference lists of studies was done. Randomised controlled trials (RCTs), cross-over studies and clinical controlled trials were included. All authors independently selected studies, extracted data and assessed the methodological quality. Pooling data for meta-analysis was not possible due to methodological/statistical heterogeneity of included studies.

Results

Overall, 12 RCTs (610 participants) which investigated different non-pharmacological interventions for the management of chronic pain in MS fulfilled the review inclusion criteria. The non-pharmacological interventions evaluated included: transcutaneous Electrical Nerve Stimulation (TENS), psychotherapy (telephone self-management, hypnosis and electroencephalogram biofeedback), transcranial random noise stimulation (tRNS), transcranial direct stimulation (tDCS), hydrotherapy (Ai Chi) and reflexology.

The findings suggest that there is 'low level' or limited evidence for the use of evaluated non-pharmacological management for chronic pain in MS. Though, there is improved changes in pain scores and secondary outcomes, these were not clinically or statistically significant for TENS for lower back pain and tRNS, hydrotherapy exercises, tDCS, reflexology and psychotherapy for overall pain. The evidence was limited for other interventions.

Conclusion

Despite the use of wide range of non-pharmacological interventions for the treatment of chronic pain in pwMS, the evidence for these interventions is still limited and/or insufficient. More robust studies are needed to justify the beneficial effect of these interventions.

Keywords

Multiple Sclerosis;Chronic pain;Systematic review

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0533

ACUTE PAIN IN THE FIBROMYALGIC PATIENT: WHAT HAPPENS IF WE USE PHYSIOTHERAPY?

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Introduction/Background

The aims of the present study are to evaluate the results of the association of the most common treatments of the acute phase with rehabilitation, in order to reduce the dependence on drugs of these patients and perhaps propose a treatment model to be used also in the disease stabilization phase.

Material and Method

Between 2016 and 2017, were drafted 12 patients with fibromyalgia syndrome in the phase of algic relapse and in standard treatment with muscle relaxants and serotonergics. All patients underwent VAS assessment, functional objective examination and screening with Euroquol and intensive treatment with Tecarterapia for 40 minutes and TENS for 20 minutes combined with relaxation and stretching exercises for 30 minutes with physical therapy, for 10 consecutive days.

Results

All patients showed a reduction in algic symptoms between the fifth and seventh session with VAS values at the end of treatment around 3.5 of average (min 2 max 4) and recovery at the Euroquol up to about 78 (max 85 min 65). During treatment, drug dosages were progressively reduced, 2 sessions suspended before the end of treatment, included in the less responsive patients.

Conclusion

The treatment with physical therapy and rehabilitation has contributed significantly in our opinion to improve the pain crisis of FM patients. The data collected confirm what is highlighted in other observations, suggesting that a specific rehabilitative treatment can be favorable in the acute patient with FM.

Keywords

fibromyalgia;rehabilitation;exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0559

STUDY OF THE LOW BACK PARAVERTEBRAL ALLODYNIA SURFACE OF CHRONIC LOW BACK PAIN PATIENTS BEFORE AND AFTER PAIN NEUROSCIENCE EDUCATION

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Introduction/Background

Thanks to advances in neuroscience, we know that pain neuroscience education(PNE) helps to reduce central sensitisation. We adapted PNE to chronic low back pain patients.

Measuring the allodynia surface is indicative of central sensitisation. We applied this method on low back pain to assess the effect of PNE.

Material and Method

Controlled and non-randomised single-blind study involving 31 adults having an average age of 43.74 years, recruited from the Regional University Hospital of Lille.

A control group (CG) followed a multidisciplinary protocol during 4 weeks. An experimental group (EG) benefited, in addition to the protocol, of one hour of PNE. They must then fulfil a questionnaire in order to prepare an individual interview of twenty minutes during the 4th week. Allodynographies were performed during the 1st and 4th week and after 3 months.

Results

The surfaces are very significantly decreased in the EG at 4 weeks while the CG shows no significant difference. After 3 months, the evolution of the surfaces is very significantly improved in both groups. On the other hand, between the allodynography performed at 4 weeks and at 3 months, the CG shows a very significant decrease of the surfaces, where the surface increases very slightly for the GE.

Conclusion

We have successfully adapted to chronic low back pain patients an allodynography technique that had already been tested in other studies.

Compared with the CG patients, the PNE provided to EG patients significantly decreased low back paravertebral allodynia surface after 4 weeks but no further improvement was observed after 3 months. Further studies are needed to understand the reasons.

Keywords

pain neuroscience education;central sensitisation;chronic low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0594

SPINAL FLUID TAPS PROVIDE TEMPORARY RELIEF IN PATIENTS WITH UNEXPLAINED WIDESPREAD PAIN AND FIBROMYALGIA

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Introduction/Background

Chronic unexplained widespread pain (WSP) and fibromyalgia (FM) are generally assumed centralized pain disorders. However, FM shows characteristics of neurological disorder. Moreover there are similarities between FM, WSP and cerebrospinal pressure dysregulation syndromes such as Idiopathic Intracranial Hypertension and Idiopathic Normal Pressure Hydrocephalus.

When intracranial pressure increases, drainage of excess CSF through the cranial and the spinal nerves increases. Increased CSF pressure inside the nerves irritates the nerve fibers and consequently causes widespread radicular pain.

We hypothesized that the neurological symptoms may be caused by CSP dysregulation and that withdrawal of spinal fluid might relieve the pain in patients suffering from FM and unexplained WSP.

Material and Method

Retrospectively, CSP measurements followed by spinal fluid taps in an attempt to relieve the pain were reviewed in 30 patients (12 males and 18 females, mean age 42.0y + 11.2y) suffering from debilitating WSP and FM.

Within the first week postpuncture, patients were asked to observe to list the most striking changes of their symptoms.

Results

The opening pressure ranged from 12 to 32 cm H₂O (mean 19.7 + 4.8 cm H₂O, median 20.0 cm H₂O).

In 21 patients (70%) spinal fluid withdrawal had a favorable effect on the pain from a few hours to 8 weeks.

Other improvements were: relief of low back pain, leg pain and/or coccygodynia; disappearance of headache; improved concentration; improved mood; improved sleep; more clear in the head;

being able to sit longer without pain; being able to walk better; no more urinary frequency; more easy to empty the bowel and/or the bladder; less pain in the jaw.

Conclusion

Exploring the issues on raised CSP may open perspectives for the diagnosis and treatment of unexplained WSP and fibromyalgia.

In patients with chronic pain, when performing a lumbar puncture for diagnostic reasons, opening pressure should be measured.

Keywords

fibromyalgia;lumbar puncture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0598

TAPENTADOL TO MANAGE CHRONIC PAIN

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Introduction/Background

Background:

Chronic pain is defined by a continuous or recurrent pain that lasts at least 12 weeks, or a pain that persists through the normal expectation of time.

Among the most commonly used drugs are opioids, of which Tapentadol is one of the most innovative, which demands from professionals a thorough review of its efficacy, benefits and adverse effects.

Aims of systematic review:

- Evaluate the benefits of applying Tapentadol in patients with chronic pain
- Compare the therapeutic effect and the adverse effects of Tapentadol with respect to other analgesics
- Intuit degree of pain reduction after the implantation of said drug

Material and Method

A search was carried out through the main medical databases, specifically Pubmed, Cochrane and Medline.

We obtained around 120 results, which were subjected to the following inclusion criteria:

- Publication in the last 4 years.
- Experimental or observational studies
- Inclusion of at least 3 key words in the title of the text.
- Do not be duplicated.

Once these criteria were applied, 7 articles were obtained and analyzed.

Results

- Tapentadol is a very useful drug for chronic nociceptive and neuropathic pain, in addition to reducing side effects of classic opioids, with better tolerability, good satisfaction and an easy progressive decrease.

-Is an ideal candidate for patients with chronic pain who have developed neuroplasticity.

-In patients with chronic moderate-severe cervical pain, is effective and well tolerated, decreasing pain and neuropathic symptoms and improving motor function of the neck.

- After 12 weeks of treatment with tapentadol in patients with chronic musculoskeletal pain, analgesic efficacy was obtained. With positive influence on the quality of life and on chronicity.

Conclusion

-Currently, chronic pain is one of the most frequent causes of consultation in rehabilitation.

-Tapentadol seems to be a good alternative for chronic pain management.

-In my opinion, there should be greater efforts in the creation and research of analgesic drugs to fight against pain.

Keywords

chronic ;pain;Tapentadol

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0599

STRAIN COUNTER-STRAIN TECHNIQUE VERSUS KINESIO TAPE IN TREATING PATIENTS WITH MYOFASCIAL NECK PAIN SYNDROME

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Introduction/Background

Myofascial pain syndrome is one of the most common complaints in clinical practice. Strain Counter Strain technique is non-invasive therapeutic modality for treatment of soft tissue disorders. Kinesio tape is now widely used in management of musculoskeletal injuries.

Material and Method

Forty five patients with myofascial neck pain syndrome assigned randomly into: strain counter-strain technique group (n=15), kinesio tape group (n=15) and control group (n=15). The strain counter-strain technique was applied for two weeks (3 sessions/ week-20 minutes per session). Kinesio tape was applied for upper Trapezius muscle for two weeks (3 days on and one day off). Pressure algometry, Visual analogue scale (VAS) and Neck disability index (NDI) were used to evaluate participants before and after the corresponding interventions. Analysis of variance test (ANOVA) was used to determine differences between groups for all measured parameters. Paired t-test was used to compare between the pre- and post-treatment values within groups.

Results

For the 45 study participants (33 women and 12 men; mean age=44.1±7 years) statistical analysis revealed that subjects in strain counter-strain technique and kinesio tape groups experienced significant increase in pressure pain threshold, decrease in neck disability scale and pain level than those in the control group in favour of strain counter-strain technique group ($p > 0.05$).

Conclusion

The results suggest that treatment with strain counter-strain technique and kinesio tape were effective however strain counter strain technique was more effective for management of myofascial neck pain syndrome.

Keywords

Strain counter strain;Kinesio tape;Myofascial pain syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0600

EFFECT OF KINESIO TAPE IN MYOFASCIAL PAIN SYNDROME RANDOMIZED CONTROL TRIAL

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Introduction/Background

Myofascial pain syndrome is one of the most common complaints in clinical practice. Kinesio tape is now widely used in management of musculoskeletal injuries

Material and Method

Thirty subjects with myofascial pain syndrome (14 males and 16 females), with age ranged from 20 to 50 years old participated in this study. They were assigned into two equal groups each one has 15 subjects: group A kinesio tape for 3 days. Group B (control group) did not receive any physical therapy modality, Patients were randomly assigned into 2 groups using the simple randomization in selection. An almost infinite number of methods can be used to generate a simple randomization sequence based on a random number from the table of numbers of patients and the take odd and even number for equal allocation. Pressure algometry, Neck disability index and Visual analogue scale were used to evaluate participants before and after application kinesio tape technique, and for patients in the control group before and after 3 days

Results

Statistical analysis revealed that there was a significant increase in pressure pain threshold, decrease in pain level and function between before and after treatment with kinesio tape group with percentages of 46%, 40%, and 52%. while there was no significant difference in the same measuring variables in the control group. Comparison between groups revealed that there was a significant difference between groups and between each groups in pressure pain threshold (PPT) and visual analogue scale (VAS) and neck disability index (NDI), P: probability < 0.05.

Conclusion

Kinesio tape technique is effective method of treatment of neck myofascial pain syndrome

Keywords

kinesiotape; Myofascial pain syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0643

ULTRASOUND-GUIDED GENICULAR NERVE BLOCK IN CHRONIC KNEE PAIN

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Introduction/Background

Chronic knee pain is the most common site of osteoarthritis. Pain associated with it is multifactorial and its management is multimodal, including minimally invasive procedures such as nerve block of geniculates.

The objective of this study is to evaluate the immediate and short-term symptomatic improvement of patients with chronic knee pain after an ultrasound-guided block of genicular nerves.

Material and Method

Twenty ultrasound-guided blocks of geniculate nerves (Ropivacaine + Methylprednisolone) were performed in patients with chronic knee pain. The efficacy of the block was evaluated through the Numerical Analgesic Scale, immediately after the procedure, after 48 hours and 1 month later. Safety was also evaluated through monitoring of side effects and the level of patient satisfaction. Statistical analysis was performed using IBM-SPSS Software version 24.0.

Results

A total of 20 patients were included (85% female) with an average age of 75 years. The median pain before the procedure was 9, immediately after it was 2, two days later it was 3 and one month later 6 (37% pain relief at the end of one month). Regarding the overall Patient Global Improvement Change Scale (PGIC) 90% reported improvement 48 hours after the procedure. 100% of patients reported being willing to repeat the procedure. No adverse effects were reported after one month.

There was a tendentially significant positive correlation ($p < 0.10$) between pain before the procedure and pain one month after the procedure and a statistically significant positive correlation ($p < 0.05$) between pain with the procedure and pain one month later. **Conclusion**

Corticoanesthetic ultrasound-guided blocks of geniculate nerves contributed to the symptomatic relief of these patients in the short term. The most *ab initio* complainants and those who complained of the greatest pain with the procedure, were the patients with lowest symptomatic relief at the end of one month.

Keywords

Gonarthrosis;Knee Pain;Genicular Nerve Block

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0658

COMPARISON OF OZONE AND LIDOCAINE INJECTION VS DRY NEEDLING IN MYOFASCIAL PAIN SYNDROME PATIENTS

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Introduction/Background

Myofascial pain syndrome (MPS) is a common musculoskeletal disorder among young adults. There are many therapeutic options including oral medications, physical agent modalities and some alternative treatments like dry needling (DN) without any drugs, ozone (OI) or lidocaine injection (LI). Our aim is to compare these last three methods in a randomized clinical trial.

Material and Method

In this single-blinded study among patients who presented at our musculoskeletal clinic, a total of 72 eligible participants were enrolled. Patients were randomly divided into three groups: first group (DN group) underwent dry needling, while the second and third groups received wet needling with ozone and lidocaine injection, respectively. All injections were repeated in three weekly sessions. Visual analog scale (VAS) for pain, neck range of motion (ROM), pain pressure threshold (PPT) and neck disability index (NDI) were the main outcome measures, applied two times: once before intervention and another at 4 weeks after the last injection.

Results

One month after injections in comparison to baseline, significant improvement was seen in pain and function for all three groups. Cervical ROM, except for dry needling group, was significantly improved in ozone and lidocaine groups (p value= 0.025 and 0.009, respectively). In comparison to DN group, both ozone and lidocaine had significantly better efficacy in PPT and NDI improvement (p value= 0.05 and 0.01, respectively); however there was no significant

difference regarding to VAS changes between three groups (p value=0.21).

	Dry Needling	Ozone	Lidocaine	Total	P value
No of cases	20	22	20	62	
Age (year)	41.6 \pm 6.8	37.6 \pm 8.8	39.4 \pm 7.7	39.4 \pm 7.9	0.27
Gender					0.80
Female	16 (80%)	16 (72.7%)	16 (80%)	48 (77.4%)	
Male	4 (20%)	6 (27.3%)	4 (20%)	14 (28.6%)	
BMI (kg/m²)	23.7 \pm 1.4	25.9 \pm 6.0	24.6 \pm 2.5	24.7 \pm 4.0	0.193
Height (cm)	162.5 \pm 3.7	164.5 \pm 7.9	164.0 \pm 8.0	163.7 \pm 5.8	0.632
Chronicity (month)	4.6 \pm 1.4	4.4 \pm 1.3	4.4 \pm 1.2	4.4 \pm 1.3	0.78
Affected side (Rt:Lt Ratio)	12:8 (1.5)	14:8 (1.75)	12:8 (1.5)	38:24 (1.58)	0.96
VAS	6.4 \pm 0.7	6.3 \pm 1.2	6.3 \pm 0.9	6.3 \pm 0.9	0.987
PPT (kg/cm²)	27.8 \pm 3.7	28.7 \pm 7.0	29.7 \pm 5.7	28.7 \pm 5.5	0.592
NDI	46.3 \pm 9.1	49.6 \pm 11.4	51.1 \pm 7.0	49.0 \pm 9.5	0.273
Rt.ROM (degree)	32.8 \pm 4.7	34.0 \pm 4.2	33.6 \pm 6.4	33.5 \pm 5.1	0.760
Lt.ROM (degree)	32.7 \pm 3.6	34.7 \pm 3.2	32.5 \pm 3.8	33.3 \pm 4.4	0.200

Table 2 VAS, PPT, NDI and ROM scores of the three groups 1 month after injection

Group	Dry Needling			Ozone			Lidocaine		
	Pre	Post	Mean Diff	Pre	Post	Mean Diff	Pre	Post	Mean Diff
Outcome (ANOVA P value)									
VAS (<i>P value=0.21</i>)	6.4±0.7	3.3±0.8	-3.1±0.8	6.3±1.2	2.5±1.5	-3.8±1.8	6.3±0.9	2.5±1.1	-3.7±1.5
PPT (<i>P value=0.05</i>)	27.8±3.7	32.9±3.8	5.1±4.1	28.7±7.0	37.2±8.5	8.5±6.1	29.7±5.7	36.8±4.6	7.8±4.3
NDI (<i>P value=0.01</i>)	46.3±9.1	40.8±7.4	-5.5±3.8	49.6±11.4	36.8±9.8	-12.8±11.1	51.1±7.0	39.9±7.9	-11.1±7.5
Rt. ROM (<i>P value=0.001</i>)	32.8±4.7	32.9±4.0	0.1±3.9	34.0±4.2	36.0±3.9	2.0±5.7	33.6±6.4	37.6±3.0	3.7±5.2
Lt. ROM (<i>P value=0.01</i>)	32.7±3.6	33.5±2.9	0.8±2.7	34.7±3.2	36.7±4.2	2.0±3.9	32.5±5.8	35.6±3.0	2.5±3.7

Conclusion

While it seems that in short term follow up all three methods of dry needling, ozone and lidocaine were effective in MPS patients, the two latter treatments were more successful, with no preference between them.

Keywords

Myofascial pain syndrome;Ozone Injection;Dry Needling

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0764

TREATMENT WITH LIDOCAINE PATCHES VERSUS LIDOCAINE INJECTIONS IN MYOFASCIAL PAIN SYNDROME IN THE SHOULDER GIRDLE MUSCLES

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Introduction/Background

The myofascial pain syndrome (MPS) in the shoulder girdle muscles is a very common musculoskeletal disorder, which is chronic and recurring, with components of mixed pain (nociceptive and neuropathic). Lidocaine patches and injections are two treatments that have been used in these patients. The aim of this study is compare the use of lidocaine patches versus lidocaine injections for MPS in the shoulder girdle muscles.

Material and Method

A comparative, prospective cross-sectional study with two parallel groups in a secondary hospital in the Bogotá city. Sample was 20 patients with MPS in the shoulder girdle muscles for more than 4 weeks and pain greater than 50mm in visual analog scale, and was evaluated at baseline and 1 month after treatment. Two groups were assigned: The patch of lidocaine (daily use for 1 week) and the injection group (single application). It was performed a statistical analysis with GraphPad software © 2016 and was used the Student t test for equal variances given the Gaussian distribution of the data.

Results

It was found a P 0.0001 when comparing the data of the EVA at the beginning and end of treatment in each of the groups individually. However when comparing the two groups against each other at the end of treatment the P value was 0.3955 as shown in the table.

Conclusion

Our study shows that both treatments separately, were effective in the treatment of MPS, and no significant difference when comparing the two treatments with each other. Patches being less invasive and therefore less complications lidocaine injections.

Keywords

Lidocaine;Shoulder;Girdle

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0836

THE RELATION BETWEEN PERSONAL RESOURCES AND QUALITY OF LIFE IN PATIENTS WITH FIBROMYALGIA

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Introduction/Background

Patients with fibromyalgia (FM) suffer from chronic widespread pain, nonrestorative sleep and varying more complaints like depressive symptoms or anxiety. We hypothesized that analogously to patients in psychotherapy FM patients have low levels of personal resources. We aimed to evaluate the reliability of the Essen Resources-Inventory (ERI), to compare resources of FM patients to other groups and to assess the association of resources to health-related quality of life.

Material and Method

In this cross-sectional study with 169 FM patients we applied the ERI scales for personal resources, the quality of life questionnaire Short-Form 36 (SF-36) and the Patient Health Questionnaire (PHQ-4). Reliability (internal consistency) of the ERI scales was assessed by Cronbach's alpha. Scores of ERI scales were compared to historic control groups. Associations between ERI scales and the SF-36 Physical Component Summary (PCS) and Mental Component Summary (MCS) were analyzed by Pearson correlation coefficients or Spearman correlation coefficients according to the scale distributions.

Results

The mean age was 50.9 (SD 10.5), 94.1% were female. FM patients compared to healthy controls showed worth scores for PHQ depression (3.05 vs. 0.95), anxiety (2.98 vs. 0.90), PCS (31.9 vs. 49.9) and MCS (39.6 vs. 47.5). Internal consistency of the Eri scales was moderate to high (Cronbach's alpha = 0.67 to 0.95). The comparison of resources of FM patients to controls is presented in table 1. All Eri scales showed significant correlations to the MCS ($p < 0.01$), but not to the PCS ($p > 0.05$). Correlation coefficients above 0.3 were found for the total ERI personal scale ($r=0.38$), openness ($r=0.39$), meaningfulness ($r=0.35$) and social competence

($r=0.32$).

Table 1: Comparison of ERI-scales of patients with fibromyalgia to historic controls from the ERI validation study.

ERI-Scales (Lowest: 0; highest: 3)	Fibromyalgia	Patients in psychotherapy	Somatic patients	Healthy controls
	mean (SD)	mean (SD)	mean (SD)	mean (SD)
Personal resources	1.78 (0.49)	1.50 (0.45)	2.07 (0.48)	2.09 (0.39)
Openness	1.75 (0.68)	1.58 (0.66)	2.07 (0.62)	2.09 (0.60)
Meaningfulness	1.72 (0.66)	1.39 (0.61)	2.08 (0.63)	2.21 (0.59)
Emotion regulation	1.80 (0.67)	1.60 (0.62)	2.19 (0.63)	2.06 (0.59)
Social competence	1.57 (0.54)	1.30 (0.50)	1.92 (0.56)	1.88 (0.46)
Closeness to nature	2.02 (0.67)	1.62 (0.82)	2.19 (0.75)	1.97 (0.83)
Internal control beliefs	1.83 (0.61)	1.48 (0.56)	2.05 (0.56)	2.19 (0.49)
Mental flexibility	1.60 (0.60)	1.38 (0.55)	1.88 (0.59)	1.92 (0.49)
Striving for autonomy	2.12 (0.58)	1.87 (0.60)	2.32 (0.61)	2.45 (0.56)

Conclusion

This study supports the reliability of the ERI in patients with FM. FM patients have lower personal resources than average somatic patients. Low levels of resources are associated with low levels of the mental component of quality of life.

Keywords

fibromyalgia;resources;quality of life

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0977

THE EFFECT OF COMPREHENSIVE NURSING INTERVENTION ON THE NEGATIVE EMOTIONS OF PATIENTS WITH NEURALGIA AFTER SPINAL CORD INJURY

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Introduction/Background

To explore the effect of comprehensive nursing intervention on the negative emotions of patients with neuralgia after spinal cord injury.

Material and Method

Using Self-rating Depression Scale (SDS) and Self-rating Anxiety Scale (SAS), questionnaire and statistical analysis were conducted for patients with neuralgia after spinal cord injury. 60 patients with anxiety and depression were randomly divided into observation group and control group, each group consisting of 30 patients. The control group received routine care in pain department, while the observation group was given comprehensive nursing intervention on the basis.

Results

SDS and SAS scores in the observation group after 4 weeks were significantly lower than those in the control group ($P < 0.05$).

Conclusion

Comprehensive nursing intervention can effectively improve the mental state of patients with neuralgia after spinal cord injury and relieve their anxiety and depression. It is worth popularizing and applying.

Keywords

comprehensive nursing intervention; Negative emotions; Neuralgia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-0978

THE EFFECT OF COMPREHENSIVE NURSING INTERVENTION ON THE NEGATIVE EMOTIONS OF PATIENTS WITH POSTHERPETIC NEURALGIA

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Introduction/Background

To explore the effect of comprehensive nursing intervention on the negative emotions of patients with postherpetic neuralgia(PTN).

Material and Method

Using Self-rating Depression Scale (SDS) and Self-rating Anxiety Scale (SAS), questionnaire and statistical analysis were conducted for patients with postherpetic neuralgia. 96 patients with anxiety and depression were randomly divided into observation group and control group, each group consisting of 48 patients. The control group received routine care in pain department, while the observation group was given comprehensive nursing intervention on the basis.

Results

SDS and SAS scores in the observation group after 4 weeks were significantly lower than those in the control group ($P<0.05$).

Conclusion

Comprehensive nursing intervention can effectively improve the mental state of patients with postherpetic neuralgia and relieve their anxiety and depression. It is worth popularizing and applying.

Keywords

comprehensive nursing intervention;postherpetic neuralgia;Negative emotions

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1107

REHABILITATION PROGRAM IMPROVES QUALITY OF LIFE IN FIBROMYALGIA PATIENTS UP TO ONE YEAR: PRELIMINARY RESULTS

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Introduction/Background

Cognitive Behaviour Therapy (CBT) and Graded Activity (GA) have a beneficial effect on the Quality of life (QoL) of patients with fibromyalgia. However the question remains how long this effect will last.

Material and Method

Patients with fibromyalgia meeting the 1990 ACR classification criteria are well informed about the problem of fibromyalgia and checked on motivation before starting the program.

They were evaluated by the SF36v2 questionnaire at the beginning (T0) of an 8 week multidisciplinary (psychologist, occupational therapist and physical therapist) rehabilitation program, at the end of the 8 week program (T1), at 6 months (T2) and 1 year (T3).

Results

So far, of the 88 patients that were included, 71 were evaluated after 8 weeks, 55 after 6 months and 30 had a final evaluation after 1 year. Dropout at 1 year is 5/35 (14%).

At 8 weeks, a substantial improvement compared to baseline was noticed in all subscales of the SF-36v2. At 6 months, the effect was slightly reduced, but both Physical Component Summary score and Mental Component Summary score were still significantly improved when compared to baseline ($p < 0.001$). At 1 year, a persistent improvement ($p < 0.001$) in Role Limitation (physical), General Health Perception, Energy and Vitality scores was observed.

Conclusion

One year after starting the rehabilitation program with CBT and GA, QoL has consistently improved. The effect was most explicit in the domain of Role Limitations (physical), General Health, Energy and Vitality and weakest in the domain of Physical Functioning.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1426

MUSIC INTERVENTIONS ASSOCIATED WITH PERSONAL HYGIENE CARE BASED ON THE GOOD PRACTICES OF NURSING AIDES IN LONG-TERM CARE FACILITIES : A CONTROLLED, RANDOMISED STUDY

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Introduction/Background

Objective: to compare changes to pain levels experienced during personal hygiene care in long-term care facilities associated with:

- a validated MUSIC CARE® music intervention using the "U" sequence;
- a period of listening to the radio,
- "music-free" conditions.

The secondary objectives concerned its impact on refusal, aggressiveness, satisfaction and the duration of hygiene care.

Material and Method

This was a controlled, "cross-over" randomised study that included institutionalised patients who did not present with any auditory deficiency and agreed to sign a consent form. The principal endpoint was a Visual Analogue Scale (VAS) completed by the patient after each session of hygiene care. Secondary endpoints concerned refusal, aggressiveness and the duration of care, which were recorded by the care team. Paired tests on the sessions were compared between the use of "MUSIC CARE®" and other interventions: "radio" and "music-free".

Results

Our sample comprised 21 patients with a mean age of 86.6 years. The pathologies diagnosed included dementia (mild to moderate) in 57% of cases and Parkinson's disease in 19% of patients. Significant differences in the reduction of pain, refusal, aggressiveness and the duration of care were observed between the three interventions, in favour of the MUSIC CARE® intervention ($p < 0.01$). A significant difference was also observed with respect to patient satisfaction.

Conclusion

Within the limitations of this study, MUSIC CARE® mainly enabled a significant reduction in the pain related to hygiene care when compared with “music-free” or “radio” care conditions. It also caused a reduction in refusals of care, violence and aggressiveness. Furthermore, a significant difference was observed concerning the duration of care, reducing the time required by 30% thanks to the use of MUSIC CARE® versus listening to the radio. MUSIC CARE® is perfectly adapted to the principal activities of nursing aides.

Keywords

music;pain;anxiety

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1429

AN INNOVATIVE DIGITAL MUSIC THERAPY APPLICATION (MUSIC CARE APP) USED IN THE MANAGEMENT OF CHRONIC PAIN

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Introduction/Background

The principal objective of this paper is to report on research work that has enabled the standardisation and evaluation of a new music therapy technique ("U" sequence) used by the Physical Medicine and Rehabilitation Service (1).

Material and Method

Following a complete review of the literature on the subject, a series of controlled and randomised studies were carried out in Physical Medicine and Rehabilitation, Neurology, Geriatric Medicine, Rheumatology and Anaesthesia-Intensive Care departments and in the Chronic Pain Treatment Centre.

Results

The effect of listening to music ("U" sequence) was evaluated in the context of different types of acute and chronic disorders of different origins: mechanical, inflammatory, fibromyalgic and neurological. Actions of a psychological and physiological nature (on haemodynamic and respiratory parameters, etc.) were thus demonstrated in favour of a "listening" relationship between caregivers and patients. These actions resulted in lower levels of pain, anxiety and depression, which enabled a significant reduction in the consumption of anxiolytics and antidepressants.

Conclusion

A review of the international literature and initial controlled and randomised studies testified to the value of using musical interventions for therapeutic purposes ("U" sequence) when managing pain that was chronic or related to care procedures (2).

(1) Guétin S, Guldner E, Gosp, et al. Effect of music intervention in the management of chronic pain: a single blind randomised, controlled trial. Clinical Journal of Pain 2012; 28:329-37

(2) Guétin S, Coudeyre E, Picot MC, et al. Effect of music therapy among hospitalized patients with chronic low back pain: a controlled, randomized trial. Ann Readapt Med Phys 2005;48:217-

Keywords

music ;pain;anxiety

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1504

THE EFFECTS OF TRANSCRANIAL DIRECT CURRENT STIMULATION COMBINED WITH AEROBIC EXERCISE ON PRESSURE PAIN THRESHOLDS AND ELECTROENCEPHALOGRAPHY IN HEALTHY CONTROL: PILOT STUDY

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Introduction/Background

Transcranial direct current stimulation (tDCS) has an analgesic effect and increases the peak alpha frequency (PAF) on electroencephalography. The analgesic effect of tDCS also appears to be greater when combined with another intervention (e.g. motor imagery), compared to tDCS alone. Aerobic exercise (AE) itself was reportedly effective for decreasing pain sensitivity. Therefore, we hypothesize that tDCS/AE would exert a larger analgesic effect than tDCS alone, or sham tDCS/AE.

Material and Method

Ten healthy adults participated in this study under three conditions: tDCS, tDCS/AE, or sham tDCS/AE. All conditions were performed over a single session. For tDCS, the anode was placed just above the left primary motor cortex and the stimulation intensity was 2 mA for 20 min. AE was carried out using an ergometer at an intensity of 50%~60% for 20min. We used a measure of pressure pain threshold (PPT) on the right middle finger to investigate the effects of interventions. PPT was measured at pre-intervention and at every 5 min and post-15 min. We recorded resting-state electroencephalography for 3 min, both before and after the intervention. PAF was defined as the frequency with the highest mean power within the alpha band. Statistical analyses included the Friedman and Wilcoxon signed rank tests, Bonferroni correction, and the level of statistical significance was set at 5 %. This study was approved by our institution's ethics committee.

Results

Significant differences were found in PPT among the three conditions at all time points. On post-hoc testing, PPT increases during tDCS/AE were earlier and higher magnitude than other two conditions. No significant differences were found in PAF.

Conclusion

The combined intervention of tDCS/AE exerted analgesic effects that manifested earlier, and at a higher magnitude, than those produced during the other two conditions. However, PAF did not significantly vary among the three conditions.

Keywords

Pain; Aerobic exercise; Transcranial direct current stimulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1531

DEVELOPMENT AND EVALUATION OF A COMMUNICATION SKILLS TRAINING FOR NURSES IN INPATIENT REHABILITATION

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Introduction/Background

The goal of this study was to develop a communication skills training for nurses that meets the specific needs in inpatient rehabilitation. Additionally, we evaluated the effect of the training on the quality of interaction.

Material and Method

During a two day in-house training nurses were trained in basic conversational skills as well as in dealing with challenging situations. In six participating rehabilitation centers 44 nurses and patients rated the quality of their admission interviews before and after training with the Conversation Rating Questionnaire (CRQ; Dibbelt et al., 2014). Scores of positively worded items were aggregated to an index of communication promotors and negatively worded items to an index of communication disturbers. Wilcoxon tests for dependent samples were performed to compare the means of indexes in the baseline (before training) and in the intervention group (after training). N=637 cases were included in the baseline and N=428 cases in the intervention group.

Results

The nurses' ratings of the communication promotors in their admission interviews tend to be higher after training, whereas the ratings of communication disturbers tend to decrease. However, none of these differences were statistically significant, neither for the entire sample nor for single rehab centers.

Conclusion

Ceiling effects might be the reason why increased ratings in the intervention group did not reach statistical significance (nurses). The nurses and patients knew that their interaction would be rated afterwards. This probably improved communication behavior in the baseline. Methods to control this "checklist-effect" will be discussed.

Keywords

Communication;Nursing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1541

THE QUALITY OF NURSE-PATIENT-INTERACTION AND REHABILITATION OUTCOMES: DO THEY RELATE?

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Introduction/Background

Many tasks of nurses in inpatient rehabilitation are communicative in nature. This study examined the relationship between patient-nurse communication quality and rehabilitation outcomes.

Material and Method

637 patients rated the quality of their admission interviews with nurses with the Conversation Rating Questionnaire (CRQ; Dibbelt et al., 2014). Additionally, patients rated their health status before rehabilitation and 6 months after discharge. Among others they rated (1) current pain frequency and pain intensity, (2) perceived ability to cope with disease, (3) mobility and (4) general health status. The means of positively worded items in the CRQ were aggregated to an index of *communication promoters*, the negatively worded items to an index of *communication disturbers*. The patient sample was split into 2 groups by the median of the promoter index: high-raters index were above the median and low-raters median below the median. As measure of effect size (improvements mediated by rehabilitation) the mean score differences before rehab and 6 months after discharge were calculated for (1) Pain frequency and pain intensity, (2) Coping with disease, (3) Mobility and (4) General health rating. Effect sizes were compared by Mann-Whitney-U-Tests for the both groups of high and low raters.

Results

These results indicate that nurses' interaction quality has an impact on long term rehabilitation results. The role of mediators such as patient characteristics (education, health literacy) will be discussed.

Conclusion

These results indicate that nurses' interaction quality has an impact on long term rehabilitation results. The role of patient characteristics (e.g. education, health literacy) will be discussed.

Keywords

communication;nursing ;pain reduction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1556

MICROCURRENT ELECTRICAL NEUROMUSCULAR STIMULATION TO IMPROVE MYOFASCIAL NECK PAIN AND STIFFNESS

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Introduction/Background

Myofascial pain syndrome can cause not only the pain, but also the muscle stiffness by the densification of excessive hyaluronic acid in muscle and fascia. The first aim of this study was to evaluate the therapeutic effects of microcurrent electrical neuromuscular stimulation on chronic myofascial pain syndrome of upper trapezius muscles and the second aim was to evaluate the viscoelastic change of myofascial trigger points and neighboring tissues with ultrasonoelastography using acoustic radiation force impulse (ARFI) imaging.

Material and Method

This study was designed as a prospective, randomized, double-blinded, placebo-controlled trial. The patients with chronic neck pain who visited the outpatient clinic voluntarily were included in this study. Total 40 minutes' microcurrent electrical therapy using a Granthe Advance (8Hz, 25 μ A, Cosmic Co., Seoul, Korea) or sham stimulation was applied on both upper trapezius muscles daily for 2 weeks, total 14 times. All MENS and control groups took the standard care including postural education, and self-exercise. All participants visited total 3 times; baseline, 2 weeks and 4 weeks follow-up. At every visit, we evaluated the usage of analgesics, existence of trigger points of upper trapezius, visual analogue scale (VAS), pressure pain threshold, neck range of motion (ROM), and viscoelasticity by shear wave velocity using ultrasonoelastography.

Results

There was no significant difference in baseline characteristics. MENS significantly improved pressure pain threshold on upper trapezius muscles ($p=0.001$). Also, MENS significantly reduced shear wave velocity ($p=0.001$) on upper trapezius muscles and patients rated pain

intensity ($p=0.024$). The detailed values were summarized in **Table 1**.

Table 1. Summary of measurements

Variable	Group	N	Evaluation time			P
			Baseline	W2	W4	
Algometer	MENS	8	60.4 (18.9)	62.6 (18.2)	68 (16.9)	0.001
	control	6	54 (4.1)	52.3 (5.7)	51.9 (5.3)	0.607
Elastography	MENS	8	3.2 (0.4)	3.0 (0.2)	2.7 (0.2)	0.001
	control	6	3.5 (0.5)	3.4 (0.7)	3.4 (0.4)	0.513
VAS	MENS	4	4.8 (1.0)	2.5 (1.3)	2.0 (0.8)	0.024
	control	3	4.7 (0.6)	3.7 (1.2)	4.0 (1.0)	0.67
ROM (flexion-extension)	MENS	4	141.9 (9.1)	118.3 (32.5)	120.8 (27.8)	0.472
	control	3	125.9 (29.3)	129.2 (18.6)	129.0 (15.9)	0.717
ROM (rotation)	MENS	4	131.5 (4.8)	127.7 (3.1)	128.3 (7.0)	0.368
	control	3	136.9 (25.4)	135.4 (19.7)	129.9 (10.8)	0.717
ROM (tilting)	MENS	4	93.9 (21.9)	79.8 (13.8)	85.3 (9.7)	0.627
	control	3	80.1 (11.2)	86.3 (6.1)	88.1 (2.6)	0.717

P values were calculated by Friedman's test. MENS = microcurrent electrical neuromuscular stimulation, VAS = visual analogue scale, ROM = range of motion.

Conclusion

Our findings demonstrate that the microcurrent electrical neuromuscular stimulation improved pressure pain threshold, pain intensity and shear wave velocity in chronic myofascial pain syndrome on upper trapezius muscles. Therefore, MENS can be a useful treatment tool for the myofascial pain syndrome.

Keywords

Microcurrent; Myofascial pain syndrome; Elastography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1568

FNIRS A NEW TOOL FOR ASSESSMENT OF CENTRAL SENSITIZATION IN FIBROMYALGIA

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Introduction/Background

Fibromyalgia (FM) is a multi-symptomatic disorder with a varying degree of widespread pain in the body. With emerging evidences pathophysiological concept shifted from peripheral damage or inflammation to central neural mechanism. Fibromyalgia is characterised by dysfunction in central pain processing, "central sensitivity". In this cross sectional study central sensitization was recorded in patients with fibromyalgia by observing cortical oxygenation in prefrontal cortex using Functional Near Infrared Spectroscopy (fNIRS).

Material and Method

fNIRS 300B (BIOPAC), a wearable continuous fNIRS system with 4 optode and 16 detectors was used to assess changes in oxy-haemoglobin concentration (μM) from Brodmann areas 9, 10, 45 and 46. Number of activation (max and 60% max signals) was compared in time series of Oxygenated Haemoglobin level with Rt foot immersed in ice cold water. For comparison of categorical variable, sex Chi-square test was used. For non-parametric data ie age and fNIRS data Mann-Whitney U test was used. Both of the test was done in SPSS Statistics 23 by IBM, Chicago, IL with a confidence interval of 95% and a significance level lower than 5%.

Results

Fifty FM patients diagnosed according to ACR 2010 fibromyalgia criteria and equal number of age and sex matched controls were enrolled in the study. There was increased oxygenation in FM compared to control in prefrontal cortex.

Conclusion

This increased oxygenation in prefrontal cortex in FM group objectively demonstrates alteration in central activity in FM group. Changes in central activity along with pain hypersensitivity in FM points towards central sensitisation. Lack of 3D digitiser restrict us to comment on localisation of activation. fNIRS can be used as tool to evaluate central sensitization.

Keywords

Fibromyalgia;Central Sensitization;fNIRS(Functional Near Infrared Spectroscopy)

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1588

NEUROPATHIC PAIN IN SPINAL CORD INJURY POPULATION IN CALI, COLOMBIA

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Introduction/Background

Neuropathic Pain (NP) following traumatic Spinal Cord Injury (SCI) is the complication that has the worst negative impact on the quality of life of people with SCI. The prevalence of NP in high-income countries is 53% and predictive factors related to its presentation have been described, such as mechanisms of SCI and others like clinical complications associated. The characteristics of NP in this population are unknown in Cali and Colombia.

Aim: To determinate differences between patients with NP following traumatic SCI and patients without NP but with traumatic SCI, in Cali, Colombia.

Material and Method

A Cross-sectional study based on clinical histories records of people suffering SCI, who attended a trauma center during 2016. Adjusted risk analyses of NP were performed using multiple logistic regressions. Risk was expressed with Odds Ratio (OR).

Results

190 patients of SCI were included, 91 (47.89%) of them had NP, age mean of 35,35±13,31 years old, mostly men (95.60%). 81.32% of the injuries were traumatic in the context of violent aggressions; follow by 14.29% car accident. The most frequent injury level was thoracic (65.93%) and ASIA (American Spinal Injury Association) classification mainly A and B (64.84%; 12.09% respectively). Clinical complications like spasticity and neurogenic bladder/bowel were presented in 49.45% and 93.41% of patients with NP. Higher probabilities of developing NP ($p < 0.05$) were found when injury mechanism was car accident (OR=8.96; IC95%=1.51-53.40), and when there were clinical complications like neurogenic bladder/bowel (OR=6.09; IC95%=1.97-18.90). This probability decreased when injury chronicity was higher than 10 years ago (OR=0.23; IC95%=0.074-0.71).

Conclusion

Prevention and treatment strategies aimed to reduce clinical complications should be prioritized. It is necessary to continue exploring factors associated to NP in this population and complications such as bladder or neurogenic bowel, besides the injury stabilization through the time.

Keywords

spinal cord injury;traumatic;neuropathic pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1645

THE EFFECT OF WHOLE BODY VIBRATION USING NEUROPHATIC PAIN SCALE (NPS) AND VISUAL ANALOG SCALE (VAS) ON THE INTENSITY OF NEUROPATHIC PAIN IN LEPROSY PATIENT

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Introduction/Background

Indonesia is one of the countries with high prevalence of leprosy in the world. WHO (2013) places Indonesia on the third rank in the world after India and Brazil. Researchers found more than 50% of patients with leprosy had neuropathic pain (Ramos et al). When left unchecked, neuropathic pain can cause physical and psychological disability due to disruption of daily activities and social participation of the patient. Currently the treatment of neuropathic pain is limited to the medicamentous such antidepressant drugs (Arco 2016). The prognosis is good, but some adverse effects remain existed for long-term use. WBV is one of the therapeutic modalities which are safe, relatively cheap and effective in use, but further exploration has yet to be done (Hong, et al., 2015). A study in diabetes mellitus type II patients with peripheral neuropathy in 2011 shows the use of WBV in reducing neuropathic pain and improve walking ability.

Material and Method

a randomized pretest-posttest control group design study was conducted in "leprosy village Jongaya" Makassar on October to November 2017. The measurement of neuropathic pain intensity was performed before and after therapy using Neuropathic Pain Scale (NPS) and VAS. Participants (n = 16) with neuropathic pain were divided into 2 groups: Group 1; who received WBV therapy three times a week for four weeks with different frequency every week and Group 2; who received WBV therapy once a week for four weeks with the same frequency every week

Results

the result shows there was a significant decrease in neuropathic pain after WBV therapy is given in both groups ($p = 0.018$) and 7 patients (75%) reportedly healed after had 4 weeks of therapy. Besides, there was no significant difference ($p > 0.05$) found among two treatment groups in decreasing neuropathic pain

Conclusion

Whole Body Vibration is effective for reducing neuropathic pain in leprosy patients.

Keywords

Leprosy; chronic pain; whole body vibration

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1667

A POLE OF COMPETENCE FOR EHLERS-DANLOS SYNDROMES

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Introduction/Background

The Ehlers-Danlos syndromes (EDS) are a heterogeneous group of heritable connective tissue disorders characterized by joints hypermobility, skin hyperextensibility and tissue fragility. The international EDS Consortium proposes a revised EDS classification (1) and a set of clinical criteria that are suggestive for the diagnosis. In France, poles of competences were created in 2017, one of which in Perpignan Hospital. We reports one year's activity of this.

Material and Method

We use the EDS Consortium classification and clinical criteria for diagnosis, possibly supplemented by a geneticist for questionable dagnosis. The confirmed diagnosis entered into treatment protocols including rehabilitation, pain treatment, psychological and socio-professional handlings.

Results

The population includes 36 subjects (29 female, 7 male) with a medium age of 36.7 years (6-73) with EDS diagnosis. 19 of them (52.8 %) were confirmed, 6 (16.6 %) refuted and 11 (30.6 %) questionable, justifying a geneticist view. Among these, 6 were confirmed, 5 refuted. Finally, 25 subjects (69.4 %) were confirmed and enter into treatment protocols, including sphincters disorders for 9 (25.0 %), 11 (30.6 %) were refuted, arising from differential diagnosis.

Conclusion

EDS have underestimated for a long time. Currently, the risk is the opposite, relating to the banality of some symptoms that can carry a diagnosis by excess, hence the importance of specific criteria (1). As to the treatment protocols, they can make use of validated drugs and technics. A work in this area (evidence based medicine) is ongoing to define these with French Health Insurance and National Authority for Health.

(1) F. Malfait et al. The 2017 International Classification of the Ehlers-Danlos syndromes. *Am J Med Genetics* (2017), 175, 1: 8-26.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1749

SEX-RELATED DEMOGRAPHIC AND SYMPTOMATOLOGIC CHARACTERISTICS OF PATIENTS WITH FIBROMYALGIA

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Introduction/Background

To assess sex-related characteristics in patients with fibromyalgia, specifically in terms of patient demographics (age, body mass index, marital status, and educational level), tender point count, symptoms (cognition, sleep disorder, fatigue, anxiety, and depression), and quality-of-life measurements.

Material and Method

We studied 668 consecutive patients (606 women) who participated in the Fibromyalgia Treatment Program at Mayo Clinic (Rochester, Minnesota) from May 2012 through November 2013. All patients completed a series of questionnaires at the initial consult, including the Patient Health Questionnaire-9 (PHQ-9), the Generalized Anxiety Disorder-7 (GAD-7), the Medical Outcomes Study Sleep Scale (MOS-Sleep Scale), the Revised Fibromyalgia Impact Questionnaire (FIQ-R), the Multidimensional Fatigue Inventory (MFI-20), the Multiple Ability Self-Report Questionnaire (MASQ), and the 36-item Short Form Health Survey (SF-36). Nonparametric Wilcoxon rank test and the χ^2 test for continuous variables and categorical variables were used to detect differences between sexes.

Results

We observed no significant sex-based differences in demographics, including age, marital status, and educational level. Likewise, no significant sex differences were seen in body mass index, mood, sleep, cognition, symptom impact, or fatigue. However, women had a significantly higher tender point count than men ($P=.001$).

Conclusion

The only sex-related difference observed in our cohort was the tender point count; the assumption of other sex-based differences in the clinical presentation of fibromyalgia was not supported in our study.

Keywords

cognition;fibromyalgia; sex

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1806

SYMPTOM CLUSTERS IN FIBROMYALGIA: CORRELATION WITH DYSAUTONOMIA

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Introduction/Background

Fibromyalgia (FM) is a disorder with varied symptoms characterized by chronic widespread pain. The pathophysiology of FM is enigmatic and dysautonomia, an imbalance between sympathetic and parasympathetic drive has been implicated in some studies. In this cross-sectional study, symptom cluster analysis of patients with FM and correlation with autonomic tone was studied.

Material and Method

Patients diagnosed with FM as per ACR 2010 criteria were included in the study. Visual Analogue Scale (VAS) and Depression Anxiety Stress Scale 21 (DASS 21) were observed. Dysautonomia can be observed by Heart Rate Variability (HRV). In this study, HRV was observed at rest, sympathetic stress (cold) and deep breathing using BioNomadix MP 150 (BIOPAC). Matlab R2016a was used for "k means" symptom cluster analysis of patients with FM. SPSS Statistics 23 (IBM, Chicago, IL) was used for statistical analysis. Mann-Whitney U test was done for comparing non-parametric HRV data in time domain and frequency domain. p value less than 5% was considered significant.

Results

Fifty patients with FM, 8 males and 42 females with mean age of 38.9 + 10.5 years, participated in the study. Two sub-groups (16;34) were observed by symptom cluster analysis. No significant difference in symptoms was observed between the two sub-groups, though the difference in mean of depression, anxiety and stress was more between the two sub-groups in comparison to WPI, SSS and VAS. In FM patients, there is a variable degree of sympathetic hyperactivity with a blunted response to stress. No significant difference in HRV was observed between the two sub-groups.

Conclusion

Two symptom clusters of FM patients were identified. There was no statistically significant difference in autonomic tone between the two groups.

Keywords

Fibromyalgia;Dysautonomia;Heart Rate Variability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1843

THE PREVALENCE OF CARPAL TUNNEL SYNDROME AMONG LONG-TERM MANUAL WHEELCHAIR USERS WITH SPINAL CORD INJURY: A CROSS-SECTIONAL STUDY

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Introduction/Background

Use of a handrim wheelchair could force the wrist into extreme excursions and encroachment of the median nerve.

Material and Method

A cross-sectional study was conducted for one year in an outpatient clinic of spinal cord injury.

Participants: Patients had traumatic injury at the first thoracic level and below, with time since injury of at least 5 years.

The prevalence of carpal tunnel syndrome by history taking, clinical examinations and motor and sensory nerve conduction studies of median nerve performed for both hands.

Results

Participants (N = 297) were all male. Mean (SD) age and duration since injury were 48 (8.5) and 23 (6.6) years, respectively. A significant difference in median duration of injury based on the severity of the syndrome ($P < 0.001$), and a significant trend in time since injury for the severity (P (one tailed) < 0.001) were seen. There was a significant difference in the median age among the groups ($P = 0.009$), and the median increased with the severity (P (one tailed) = 0.001).

Conclusion

Carpal tunnel syndrome is a common side effect of the long time use of wheelchair, and its severity is associated with duration of wheelchair use and age. Alternative methods for wheelchair propulsion should be developed to diminish the likelihood of the syndrome.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-1914

DRY NEEDLING UNDER ULTRASOUND GUIDANCE DECREASE NEUROPATHIC COMPONENT AND INCREASE LEVEL OF MOTION IN PATIENT WITH LOW BACK PAIN

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Introduction/Background

Dry needling (DN) of myofascial trigger points (MTrP) under ultrasound (US) guidance is effective method for treatment myofascial pain, and restoring postural imbalance. Crosslinks among TrPs, movement patterns in spine, pelvis and extremity and neuropathic pain in low back pain patients have not been studied. **The aim** was to evaluate efficacy of dry needling under US guidance for neuropathic pain treatment; and resoring joints motility and muscle function in spine, pelvis and lower extremity.

Material and Method

We included 23 patients, 10 males and 13 females, (aged 18-55 years) with clinically diagnosed low back pain over 3 month with neuropathic component and reduced motility in spine, pelvis and lower extremity. We conducted precise physical tests and neuromuscular ultrasound using M-mode and evaluated nerves and motion in intervetebral spaces, pelvis, intrinsic foot and leg muscles. Patients received DN of MTrP under US guidance according to approach by Bubnov [PMID:23088743]. VAS (0-10) and Leeds Assessment of Neuropathic Symptoms and Signs (LANSS) scores were measured before, immediately after, 24 hours, and 7 days after intervention.

Results

After 7 days, VAS scores showed pain improvement from 7.6 to 2.3; LANSS scores improved from 15 to 4. US demonstrated improvement nerve structure, increasing motility, contractility (muscle contracted / rested thickness) on M-mode during functional tests and walking in all levels.

Conclusion

Our preliminary data demonstrated that DN under US guidance effectively reduce myofascial pain, ameliorate symptoms of neuropathy and local hypomotility. Further research needed for development US patterns and study causation in chain spasticity-contractility- motion- neuropathic pain.

Keywords

low back pain;neuropathic pain;dry needling

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-2078

CORRELATION OF MEASURES FOR PREVENTION IN OSTEOPOROSIS

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Introduction/Background

Osteoporosis is a serious health problem. Disease characterized by high morbidity, mortality and socio-economic costs. It is a disease characterized by a reduction in bone density. Bones become porous, crutches therefore, they are subject to fractures, which occur spontaneously or with a force less than needed to break the healthy bone.

Material and Method

The data from the healthy cartons and protocols for the physical medicine and rehabilitation of the Health Center Nis were analyzed after the screening of the examination of patients of both sexes and different years for four weeks (28 days), in October 2017, on the Sonost 3000 Desintometer.

Results

A total of 212 patients were examined (between 50 and 70 years old), 114 of them (53,77%) are women and 98 of them(46,23%) are men.The normal finding of T-score 0-1 had 110 (51.89%) patients, 51 of them are women and 59 are men.Osteopenia and T-score -1-2.5 had a total of 64 (30,19%), of which 33 are women and 31 are men.Osteoporosis T-score> -2.5 was diagnosed in 38 (17,92%) individuals, in 30 of the female population and 8 of the male population.

Conclusion

To prevent the occurrence of osteoporosis and to slow down its osteoporosis, proper nutrition is needed. This provides a recommended daily intake of calcium and vitamin D and adequate physical activity according to age and healthcare possibilities of patients. Certainly, for younger patients sport activity is recommended and for older generations long walks in the nature. It is necessary to remove harmful habits (consumption of cigarettes and alcohol) and timely measurement of bone density of people at risk.Ultrasound osteodesintometry is a fast, economical method without radiation. Measurement is done on the heel bone and this measurement can be used as a screening method in the prevention of osteoporosis.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-2084

NERVE STIMULATION WITH A MINIATURE, WIRELESS STIMULATOR IN CHRONIC PERIPHERAL NEUROPATHIC PAIN

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Introduction/Background

Peripheral nerve stimulation (PNS) belongs to the least invasive neuromodulative procedures approved for the treatment of neuropathic pain. PNS requires surgical exposure of the target nerve or percutaneous implantation of a cylindrical electrode in the vicinity of the stimulated nerve. Stimulation of peripheral nerves produces paresthesia in the area innervated by this nerve and induces analgesic effect in several mechanisms: peripheral, spinal segmental and central. The aim of this review was to assess the effectiveness Peripheral nerve stimulation in Greater occipital nerve block in chronic migraine, Popliteal Nerve Block. Percutaneous Tibial Nerve Stimulation for the Treatment of Overactive Bladder

Material and Method

Neuromodulation is the process by which nervous activity is regulated by way of controlling the physiological levels of several classes of neurotransmitters. Neurostimulation devices involve the application of electrodes to the brain, the spinal cord or peripheral nerves.

Results

This has been proven a safe and effective therapeutic approach for managing chronic pain of the arms and legs, neck and back often after spine surgery, or for other neuropathic conditions. (PNS) Clears Stimwave Peripheral Nerve Stimulator (PNS) System for the relief of severe intractable chronic pain of peripheral origin

Conclusion

Occipital nerve stimulation (ONS) is a form of neuromodulation therapy neurostimulation for headache includes occipital nerve stimulation, supraorbital nerve stimulation, and infraorbital nerve stimulation. One prevalent theory is the involvement of the trigeminocervical system, which is the anatomic overlap of the trigeminal and occipital afferent systems at the level of C2 in the spinal cord. Trigeminal afferent pathways, and thus primary headache disorders, can be modulated at the C2 level by occipitally mediated afferents. The theory of neurologic stimulation therapy is that stimulation of the nerves can stimulate pelvic muscle contractions or detrusor contractions. It is thought to interrupt abnormal reflex arcs that may affect bladder dysfunction

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-2132

ASSESSING THE IMPACT OF PATIENT UNDERSTANDING ON PAIN PERCEPTION SCORING IN A COHORT OF PATIENTS ATTENDING A CHRONIC PAIN CLINIC

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Introduction/Background

Nearly 1 in 5 people report periods of moderate to severe chronic pain. The physical, psychological, social and economic impacts on the individual and society are enormous. Given these facts, it is a pressing issue which requires investment, research and attention.

As part of the Swansea University Medical School's curriculum, students decided to develop a resource that would convey some of the complexities of neuroscience and nociception and the current medical and surgical therapies.

Material and Method

In October 2015, questionnaires were handed out to all patients who attended the clinic over a period of two months. The aim of the questionnaire was to obtain from the patient cohort an understanding of:

- Beliefs surrounding pain, specifically: where pain originates from, how mood affects pain and the difference between acute and chronic pain
- Whether a resource that gave them more information about pain and its perception would be useful
- What treatment modalities they wanted more information on

Results

100 questionnaires were distributed, with 25 returned completed by December 2015. Of these, 72% said they wanted to know more about how pain is produced by the body. 56% selected a booklet, which informed the choice of format for the patient resource. Accompanying the booklet was a questionnaire asking for feedback on the resource. Patients could return this by post to the clinic, or they were given the option of an online version of the feedback form to encourage participation in the process.

Conclusion

This resource has now been distributed to patients and we are awaiting feedback.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-2221

SAFETY AND EFFECTIVENESS OF PERCUTANEOUS ELECTRICAL NERVE STIMULATION ON PAIN REDUCTION IN PATIENTS SUFFERING FROM NEUROPATHIC OR MIXED PAIN

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Introduction/Background

Pain is a harmful symptom, strongly influencing HRQoL and rehabilitative treatment and often refractory to pharmacological and non-pharmacological therapeutic strategies. In recent years, Percutaneous Electrical Nerve Stimulation (PENS) has been proved to be an effective procedure in the management of refractory neuropathic pain and some conditions of refractory mixed pain like low back pain. However, up to date, evidences in literature about the effectiveness of PENS in terms of pain reduction and HRQoL improvement in the rehabilitation field are scarce. Therefore, aim of our study was to evaluate safety and effectiveness of PENS on short-term pain reduction in patients suffering from neuropathic or mixed pain, non-responders to conventional therapies in a rehabilitative setting.

Material and Method

This retrospective study was performed on a cohort of 75 adults (25 men and 50 women), mean aged 70.05 ± 14.16 years, suffering from neuropathic or mixed pain non responsive for more than 3 months to both pharmacological and non-pharmacological therapies. From 2014 to 2017, patients were treated by subcutaneous needle-electrode insertion in the sore area and return-on-skin electrode placement, both connected to a generator (AS SUPER 4 digital by TÜV Rheinland) for a 40-minute session at alternate frequencies of 2 and 100 Hz. Pain was assessed by Numerical Rating Scale (NRS) before and immediately after the treatment.

Results

Five patients experienced self-limiting and short-term pain mainly due to subcutaneous needle placement. No complication affected the continuation of the procedure. There was a significant reduction in NRS (defined as >50%) after treatment in 70% of patients.

Conclusion

PENS has been proven to be a safe and effective procedure in the treatment of neuropathic and mixed pain in patients non-responders to both pharmacological and non-pharmacological

treatments. Its use in Physical and Rehabilitative Medicine should be encouraged and supported by other studies.

Keywords

Percutaneous Electrical Nerve Stimulation;neuropathic pain;mixed pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-2249

STATE ANXIETY IS INDEPENDENTLY ASSOCIATED WITH VISUAL ANALOG SCALE PAIN RATING IN WOMEN WITH FIBROMYALGIA

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Introduction/Background

The relationship between psychosocial factors and pain may not be the same across social-cultural contexts. The aim of this study was to examine associations among psychosocial factors and pain perception in women with Fibromyalgia (FM) from Colombia.

Material and Method

96 women with FM were recruited from an ambulatory clinic in Neiva, Colombia. They had an average age of 54 and 87.5% were from the lowest socio-economic strata (SES) in the country. Visual Analog Scale (VAS) pain rating was administered, with the State-Trait Anxiety Inventory (STAI) to measure transient anxiety; Symptom Checklist 90 Revised (SCL-90R) to measure psychopathology; and the Brief COPE to measure coping with stress.

Results

Spearman correlations indicated that increased VAS pain scores were positively associated with years of diagnosis ($\rho=0.21$, $p=0.040$), STAI-S ($\rho=0.21$, $p=0.043$), SCL-90R global severity index ($\rho=0.21$, $p=0.037$), SCL-90R positive symptom distress index ($\rho=0.26$, $p=0.012$), SCL-90R somatization ($\rho=0.28$, $p=0.006$), and SCL-90R depression ($\rho=0.26$, $p=0.009$). Higher VAS scores were associated with more active coping ($\rho=0.23$, $p=0.024$), positive reframing ($\rho=0.21$, $p=0.040$), self-distraction ($\rho=0.21$, $p=0.040$), acceptance ($\rho=0.25$, $p=0.014$), and religiosity ($\rho=0.27$, $p=0.008$). The multi-variable linear regression model showed that STAI-S was the only independent factor associated with VAS rating ($\text{Beta}=0.31$, $p=0.012$).

Conclusion

Transient emotions are more highly associated with pain perception in women with FM than more stable psychosocial factors. It is possible that those women with more state anxiety experienced more pain, or that the experience of more pain caused more anxiety. Further research is warranted, especially with under-studied populations like those with low SES.

Keywords

Fibromyalgia;Pain perception;State anxiety

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-2259

COMBINED ULTRASOUND AND NERVE STIMULATOR TECHNIQUE FOR INJECTION OF PATIENT WITH GENITOFEMORAL NEURALGIA AFTER INGUINAL HERNIA REPAIR

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Introduction/Background

Chronic postoperative inguinal pain (CPIP) is one of the major complications in patients with inguinal hernia repair. The quality of life in the patients with CPIP is very low due to inguinal pain. We report the treatment of CPIP after inguinal hernia repair using combined ultrasound and nerve stimulator technique for injection of genitofemoral nerve (GFN).

Material and Method

A 59-year-old man was diagnosed with left inguinal hernia and performed Laparoscopic hernia repair - Totally extraperitoneal on February 20, 2017. The patient developed pain from the left inguinal area to the scrotum from the beginning of March, and then underwent conservative treatment (3 cycles of ilioinguinal nerve and 1 time of GFN block with ultrasound and medication) was performed but the pain persisted. But he suffered a sustained inguinal pain. Therefore, we used nerve stimulator to increase the accuracy of the neural approach. When stimulated with nerve stimulator, scrotum contraction and stimulus of the GFN distribution were confirmed by nerve stimulator after the approach of GFN with ultrasound.

Results

This procedure yielded symptom relief. In a follow-up of five-month, he was very satisfied with the treatment because he didn't have any pain and medication. Ultrasound nerve blocks are commonly performed, but the results may not be satisfactory.

Conclusion

Nerve stimulator allows for selective nerve block and greatly enhances the technical ability to perform precise localization and injection. The use of combined ultrasound and nerve stimulator injection technique are an effective and non-invasive approach to treat CPIP.

Keywords

Ultrasound;Nerve stimulator;chronic postoperative inguinal pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-2406

CHRONIC NECK PAIN AND ITS RELATIONSHIP WITH STRESS SYMPTOMS: REGULAR PHYSICAL EXERCISE COULD BE A PROTECTIVE FACTOR?

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Introduction/Background

Mental stress is usually associated with neck pain. Physical exercise is typically recommended to deal with stress and therefore, to relieve neck pain. We studied the relationship of these common variables.

Material and Method

A national cross-sectional interview survey was carried out to the adult Peruvian population with a probabilistic sample on November 2016, through the market research institute GfK. Chronic neck pain was considered for those who referred pain in the neck, the nape and/or the upper shoulders at least once a week on average for the last 6 months. Mental stress was determined asking for eight common symptoms (headache/migraine, stomachache/heartburn, feeling tired, difficulty to sleep, irritability, nervousness, dizziness, and hands tremor – all without any reason or disease), and considered positive for those with 5 or more. Regular physical exercise was determined for those who responded making any sports activity two or more days a week on average, and the lack of it for those making it once a week or none. Odds ratio was calculated using multivariate simple logistic regression with IBM SPSS 20.

Results

A total of 1244 responded the survey. The OR between mental stress and chronic neck pain was 7.096, $p > 0.000$, adjusted for age, sex, socioeconomic status. The OR between the lack of regular physical exercise and neck pain was 0.978, $p > 0.377$. See Table.

TABLE: Risk of chronic neck pain associated with stress symptoms and lack of regular physical activity, adjusted for age, sex and socioeconomical status.

Variables	p value	OR	IC 95%	
			Inf. L.	Sup. L.
<i>With stress symptoms</i>	0.000	7.096	4.121	12.219
<i>Lack of regular physical activity</i>	0.377	0.978	0.698	1.370
<i>Age (+25 y-old)</i>	0.132	1.366	0.910	2.050
<i>Female</i>	0.282	1.188	0.868	1.626
<i>Socioeconomical status C and D/E</i>	0.233	1.357	0.822	2.243

Conclusion

The study confirms the usual belief about the strong association between chronic neck pain and mental stress but does not with the lack of regular physical exercise. We ought to consider the management of mental stress in the treatment of cervicgia, but we should not recommend any sports activity to relieve it. Future studies may determine if specific exercises, such as aerobics or stretching, would be a protective factor.

Keywords

Neck;Stress;Exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.02 Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ISPR8-2409

LOOKING AT THE SMARTPHONE SCREEN FOR A PROLONGED TIME IS ASSOCIATED WITH CHRONIC NECK PAIN, SPECIALLY IN YOUNG ADULTS

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Introduction/Background

Never has a technology been so universally accepted as the smartphone. Of concern is the potential consequences of its prolonged use. Studies have conflictive results to find an association between them and musculoskeletal disorders. Looking at the small screen of these devices would be a crucial factor for bad neck posture, and therefore we studied if that would be related to chronic neck pain.

Material and Method

A national cross-sectional interview survey was carried out to the adult Peruvian population with a probabilistic sample on February 2017, through the market research institute GfK. Chronic neck pain was considered for those who referred pain in the neck, the nape and/or the upper shoulders at least once a week on average for the last 6 months. Prolonged look at the smartphone's screen was defined for those who responded reading e-mails and news, watching photos or videos, or interacting with social networks for two or more hours a day on average. Odds ratios were calculated using multivariate simple logistic regression with IBM SPSS 20.

Results

A total of 1246 responded to the survey. The OR between chronic neck pain and prolonged look at the smartphone screen was 1.604, $p > 0.01$, and in the 18-24 yrs-old group was 3.078, $p > 0.002$. These results were adjusted for gender, socioeconomic status, mental stress and prolonged use of other computer devices (PC, laptop, tablet). See Table.

TABLE: Risk of chronic neck pain associated with prolonged exposition to smartphone screen, adjusted for age, sex, socioeconomical status, mental stress and prolonged use of other computer devices.

Variables	p value	OR	IC 95%	
			Inf. L.	Sup. L.
<i>Prolonged exposition smartphone screen</i>	0.010	1.604	1.119	2.301
• <i>18-24 yrs-old group</i>	0.002	3.078	1.503	6.306
<i>Gender (female)</i>	0.001	1.695	1.251	2.269
<i>Socioeconomical status (C and D/E)</i>	0.614	1.111	0.738	1.674
<i>Prolonged use PC/Laptop/Tablet</i>	0.568	0.865	0.526	1.422

Conclusion

We found an association between prolonged looking at the smartphone screen and chronic neck pain in the general population, being three times higher in young adults. The use of smartphones is not harmful per se, but it seems that the bad posture using them would be the critical factor. We recommend preventive health campaigns about proper posture when using these devices.

Keywords

Smartphone;Neck;Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-0034

A LITERATURE REVIEW OF COMPLEMENTARY THERAPIES OF PHANTOM LIMB PAIN

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Introduction/Background

Phantom Limb Pain (PLP) is a painful or unpleasant sensation in the distribution of the lost body part. The incidence of PLP after amputation is about 60-70%. This review is to summarize the main findings from research on the complimentary therapies of PLP.

Material and Method

Articles on PLP published in English between 1983 to 2016 were identified through a PUBMED search. Relevant clinical studies and review articles were found using the keyword-search strategy of (Phantom Limb Pain OR PLP OR Phantom Pain OR Phantom Limb) AND Complimentary Therapy. The reference lists of identified articles were checked for any additional studies that might have been missed in the original PUBMED search.

Results

The complimentary therapies of PLP has been well documented in the forms of case study, case series, Randomized Controlled Trials (RCT), and reviews. The types of complimentary therapies found from the articles include Mirror Therapy, Acupuncture, Mind-body Intervention, modalities, and others such as reflexology treatment and combination exercises, could be effective to reduce PLP in different levels and courses.

Conclusion

PLP is a complicated disease which is difficult to treat since its cause and mechanism are not so clear presently. Complimentary therapies are generally easy, less cost, effective in reducing pain and almost no adverse effects; however, the long-term effect after treatment still needs to be followed up. Thus, well-designed, long-term, controlled clinical trials evaluating the comparative efficacy of complimentary therapies for PLP are need in the future study.

Keywords

phantom limb pain;complimentary therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-2592

INTEREST OF BOTULINUM TOXIN IN THE MANAGEMENT OF THE SPASTIC UPPER LIMB OF CHILDREN WITH CEREBRAL PALSY (CP): ABOUT 24 CASES

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Introduction/Background

Evaluate the efficacy of botulinum toxin in the treatment of spastic upper limbs in paralyzed cerebral patients with residual motor skills for hand use

Material and Method

Patients were followed between May 2015 and May 2017 before and after injection of botulinum toxin for upper extremity hypertonia secondary to a central neurological lesion. All had motor activity on the extensor muscles of the wrist and fingers.

Deficiencies (range of motion, spasticity), pain, prehension and satisfaction of parents of patients were analyzed. Two to three custom goals were predefined. Injections were performed after spotting

by a neurostimulator for the purpose of functional improvement

Results

24 patients were included. The pain decreased by 3.4 points on an analog scale. Spasticity was reduced by one point on the Ashworth score. The grip was improved and the improvement focused on bimanual functions

Seventy-five percent of the functional objectives were achieved. Optimal efficacy required repeated injections with modified targets and doses

Conclusion

Effective on deficiencies, botulinum toxin also improves pain and grip, even if the injured hand remains an extra hand. The importance of antagonistic motricity is critical to functional outcomes, and assessment should include two-hand tasks. It is essential to inject the intrinsic muscles in addition to the extrinsic muscles and to use a neurostimulator for the muscles of the forearm. Comparative studies with surgery are needed to clarify the place of this treatment

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-0080

ULTRASOUND-GUIDED CERVICAL MEDIAL BRANCH BLOCK

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Introduction/Background

Cervical medial branch blocks (CMBBs) and third occipital nerve blocks (TONBs) are commonly used in the diagnosis and treatment of chronic neck pain and headaches.

Material and Method

Patients are placed in the lateral decubitus position with the head supported in a neutral position. An L14-5 MHz linear array probe and a 2.5 inch, 22- or 25-gauge block needle are commonly employed.

TON, C3, C4 medial branch. The neck is first scanned in the coronal plane along the posterior edge of the AP in order to identify the drop-off at the C2-C3 level. Further confirmation is sought by imaging the vertebral artery (cephalad and anterior). The probe is then rotated to a transverse plane, and the C2-C3 zygapophyseal joint identified, for the third occipital nerve block. From this point,

C5, C6 medial branch. C5, C6 medial branch. The base of the neck is scanned in the transverse plane and the TP of T1 identified. As the probe is moved cephalad from this point, the TP of C7 is localized, followed by the targets on the AP of C6 and C5

Needle placement after target level has been identified. Once the target has been identified in the transverse plane, pressure on the probe is reduced and the color doppler mode engaged to detect potential blood vessels in the needle path A posterolateral in-plane approach is used.

Results

The diagnostic cervical branch block for neck pain due to cervical facet joint pain has been traditionally done under fluoroscopic guidance. Its diagnostic value and technique have been well established.

Conclusion

A medial branch block is an effective form of pain management that reduces pain by disrupting damaged nerves in facet joints from transmitting signals to the brain.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-2683

THE CURING PROBLEM OF THE ISCHEMIA OF THE LOWER EXTREMITIES IN THE INOPERABLE PATIENTS THE IMPORTANCE OF THE PHYSICAL THERAPY IN CURING OF PREISCHEMIC STATES

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Introduction/Background

The appearance of ulceronecrotic changes presents the final progression stage of the artery obstruction process and of the development of the tissue ischemia.

Material and Method

131 patients with PAOD were cured and evaluated from 01.01.2017 till 31.12.2017. (56 patients with IIa stage, 43 with IIb stage, 15 with III stage and 17 with IV stage of artery insufficiency).

Balneophysical therapy complex was being applied during the treatment: thermomineral water of the indifferent temperature in IIa and IIb stages, vacusac, vasculator, electro and kinetic therapy (except in extensive ulcerations) , magnet and laser therapy..

The patients with III and IV stages of ischemia were treated with HBOT

Evaluation of the results was supervised by duplex scanning, by Doppler sonographically and by claudicational interval.

Results

By applying balneophysical treatment in the period of 21 days and by the repeated treatment, by result objectivization Doppler sonographically and by CI , in patients with IIa stage, CI was extended for more than 50% in 85% of patients, and Doppler indexes were increased for more than 0,15 in 37% of patients.

In patients with IIb stage ,CI was extended for more then 50% in 60% of patients , and Doppler indexes were increased for more then 0,15 in 25% of patients.

In patients with III stage of ischemia after applying HBOT, CI was extended for more then 50% in 35% of the patients. There wasn't significant change of Doppler index.

In patients with IV stage after applying HBOT, in 5 patients with minor ulcerations healing up of ulcerous changes was achieved, in 6 patients demarcation line was created, and 6 patients were addressed to amputation.

Conclusion

The quality of collateral flow and its well-timed development in preischemic stages has the significant influence on improving of artery perfusion, on enabling of the adequate cellular oxygenation and on preventing from artery insufficiency progression

Keywords

Physical therapy; Arterial ischemia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-0263

CRPS AND EATING DISORDERS - IS THERE A JOINT ETIOLOGY OR IS IT A UNIQUE CASE REPORT?

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Introduction/Background

Eating disorders (ED) risk factors include psychological factors, but when addressing Chronic Regional Pain Syndrome (CRPS) the psychological risk factors are only marginal. Even though psychological factors might not be as important in the initial development of CRPS as neurogenic inflammation or sympathetic nervous system function, it seems that they have a role in the maintenance and aggravation of both diagnoses.

Material and Method

In this case report, we review the case of a woman who was diagnosed with CRPS type II and ED. As far as the literature review we conducted, we didn't find any documentation to comorbidity of CRPS and ED.

Results

Ms. R., a 43 year old woman, married, and mother of two grown girls, was diagnosed with CRPS type II and AN. Ms. R.'s initial injury occurred when a plate fell on her leg. The injury was at the lateral aspect of her foot. She described her pain at this initial phase as very severe and started limping. She was referred to neurotomy surgery of her sural nerve. By the time her stitches were removed she started reporting severe pain and started walking with crutches. Not long after this, she was diagnosed with CRPS type II. From the intake at the Orthopedic Rehabilitation Clinic we learned that she also has an ED approximately the same amount of time.

Conclusion

Even though we didn't find any documentation of co morbidity of CRPS and ED, both diagnoses share alexithymia as a characteristic. Alexithymia is a set of characteristics that include difficulties identifying feelings, differentiating between them, and differentiating between them and bodily sensations, difficulties communicating feelings, lack of fantasy, and a cognitive style focused on the external environment. Understanding those two diagnoses in the context of alexithymia may throw light on the treatment of those diagnoses as separate as well as conjoint.

Keywords

CRPS;eating disorders;alexithymia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-0326

COULD THE COMPLEX REGIONAL PAIN SYNDROME (SUDECK ATROPHY), EMERGED AS A DISTAL RADIUS AT THE TYPICAL SITE FRACTURE COMPLICATION, BE PREVENTED BY PHYSICAL THERAPY ?

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Introduction/Background

the complex regional pain syndrome (CRPS)-Sudeck disease is a frequent complication of a distal radius at the typical site fracture (DRF). Aim of the study was to evaluate the conventional physical agents application alone and combined with light therapy for treatment of distal radius at the typical site fracture and to follow-up patients for the CRPS occurrence in a six months period.

Material and Method

Study comprised 52 female patients with DRF, involved after removing of the plaster and divided into two age-matched groups. Besides identical drug therapy, Group1 was treated with cryotherapy, exercises and Group2 with cryotherapy, exercises and the biopton (polarized, polychromatic, non-coherent low energy radiation) light on the wrist and dorsal side of the hand. Patients were evaluated at 0, 7 and 15 days for pain (visual numerical rating scale-VAS), range of the wrist motion-supination and pronation, and the hand fist forming capacity and followed up for 6 months. Results were analysed by computer statistic programme SPSS 20.0.

Results

Pain was significantly decreased in Group2 at 15th day of therapy. Significant improvement in supination was shown for Group2 on 7th ($p=0.019$) and 15th day of treatment ($p=0.001$) (Table 1). Both groups have shown significant improvement in VAS, supination and pronation on 15th day of therapy, as compared to baseline ($p=0.000$). The complete hand fist forming capacity was achieved in 16 (61.5%) patients in Group1 and 19 (73.1%) in Group2. In a 6 months period of follow-up, CRPS was developed in 4 patients (15.4%) from Group1.

Conclusion

biopton light therapy combined with conventional therapy has shown good pain control, significant degree of pain reduction and improvement of the wrist motion range, with no CRPS development within the 6 months period of follow-up. Further studies would be beneficial.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-0334

INTERSTITIAL CYSTITIS AND DORSO-LUMBAR SYNDROME: A CASE REPORT

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Introduction/Background

The clinical symptoms of a woman's cystitis without bacteriuria are a common motive for visits to physicians. A negative clinical exam and urological work up may point to a syndrome of the thoracolumbar junction, with pseudo-visceral projected pain, characterized by quick and easy treatment.

A syndrome of the thoracolumbar junction may indeed be revealed by projected pseudo-visceral pain, in particular urogenital, potentially misleading the diagnostic process.**Material and Method**

A 40 year-old woman, came to the clinic 11 days after the onset of pollakiuria, both night (every 2 hours) and day (every hour) with urgencies and urinary burns associated with left lumbar pain. The uro-gynecological examination was normal. The bacterial urinary examination was negative, andabdominopelvic ultrasonography was normal.

Results

Considering the combination on the left side of both a posterior lumbar mechanical pain and an anterior inguinal pain, a thoracolumbar spine examination was performed. Spine flexibility was normal, palpation of the posterior inter-apophyseal joint D12-L1 on the left was painless. The pinch-roll maneuver was negative. The diagnosis of a minor intervertebral disturbance of the thoracolumbar junction was considered. A spinal manipulation was performed the same day. Complete disappearance of urological symptomatology occurred within 3 days.

Conclusion

The existence of a pseudo-visceral pain projected from a dorso-lumbar syndrom (minor intervertebral disturbance) is a diagnosis to keep in mind when confronted with a urogenital pain syndrome in the absence of obvious local organic disorder. These pains are attributed to an irritation of the nerves arising from the dorsolumbar junction (sensory branches of the lumbosacral, iliopubic and lateral gluteal skin territories). Simple treatment (manipulation of the dorso-lumbar hinge) may clear symptoms quickly.

Keywords

thoracolumbar junction;cystitis ;minor intervertebral disturbance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1145

PERIPHERAL NERVE BLOCK (BNP) IN REHABILITATION OF COMPLEX REGIONAL PAIN SYNDROME (CRPS): ABOUT 116 CASES

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Introduction/Background

Nerve block or peripheral catheterization is a technique of choice in the treatment of intense pain, with an undeniable benefit in terms of the quality of analgesia and patient comfort. It is a technique recommended by the experts of the SFETD (Société Française d'Evaluation et de Traitement de la Douleur) and SFAR (Société Française d'Anesthésie et Réanimation), for the treatment of Complex Regional Pain Syndromes, for facilitate functional rehabilitation in case of resistance to well-managed systemic treatments.

This type of therapy can be a source of complications, during the application, related to the use for several days or to the products used. It is therefore necessary to rely on a human organization, trained in this technique. From a maximum of 10 days at the beginning of our experience at St Helier Pole (PSH, RENNES) in 2007, this duration now averages one month.

Material and Method

Here we present the results of a retrospective study of 116 patients managed at St Helier Pole in 10 years.

Results

We noted in 75% of the cases, an improvement in terms of joint mobility and functional gain. More than one third of patients returned to work after a long period of absence

Conclusion

Well-conducted prospective studies are needed to properly position BNP in the CRPS therapeutic strategy.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1278

HIGH INTENSITY LASER THERAPY EFFECT ON PLANTAR HEEL PAIN: PRELIMINARY RESULTS

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Introduction/Background

Plantar fasciitis is the main cause of foot pain in adults. The pain is worst when taking first steps after a period of rest. The aim of this study is to evaluate the changes of heel pain during and after high intensity laser therapy (HILT) for plantar fasciitis.

Material and Method

Patients who were diagnosed with unilateral plantar fasciitis were included. Patients were asked to evaluate heel pain using numerical pain rating scale (NPRS) before every procedure and one month after treatment course. Pressure algometry was performed on both affected and healthy feet before treatment, right after it and one month later. The patients underwent the BTL-6000 High Intensity Laser (mode=continuous, power=7W, dose=120J/cm², total time=7min. 8sec.) procedures 3 times per week (total of 8 procedures).

Results

There were 57 subjects (mean age 54.07±10.83 years) who participated in this study. 36 of the subjects were reevaluated after one month. The treatment was started on average 5.053±0.52 months after the pain started. According to NPRS, the pain of the first step in the morning decreased from 7.28±0.34 before treatment to 3.04±0.32 before the last procedure and kept decreasing to 1.45±0.25 after 1 month (p<0.005). According to NPRS, the pain of the first step after prolonged sitting decreased from 6.67±0.3 before treatment to 3.00±0.28 before the last procedure and kept decreasing to 1.9±0.3 after 1 month (p<0.005). The pain of the first step in the morning decreased by 1.58±0.39 (p=0.005) and the pain of the first step after prolonged sitting decreased by 1.23±0.33 (p=0.01) before 4th procedure. Mean pressure algometry value (kg) difference between feet were 3.63±3.38 before, 2.42±2.23 after and 1.15±2.19 one month after treatment (p<0.035).

Conclusion

HILT effectively reduces plantar heel pain. Clinically important and statistically significant pain reduction (NPRS improved >15% or 1 point) was achieved before 4th procedure.

Keywords

HILT;heel;pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1339

THE POSSIBILITY OF USING BIOFEEDBACK TRAINING OF ELECTROMYOGRAM IN THE REHABILITATION OF PATIENTS WITH HEADACHE

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Introduction/Background

The most common types of headaches (HA): migraine headache (MH); tension-type headache (TH); headache associated with increased of arterial tension. There were established that (TH) and (MH) are often accompanied by voltage of pericranial muscles and shoulder girdle. The aim is to estimate the effectiveness of a course of rehabilitation using biofeedback training (BFT) with electromyogram (EMG) to reduce intensity of pain, to decrease the stress, the excessive muscle activity of patients with (MH) and (TH).

Material and Method

The course of rehabilitation included 8 trainings with using the hardware and software complex "REHACOR" (Russia, Taganrog) in 12 patients (mean age - $49,5 \pm 7,4$ years), including 8 patients with (TH), 4 patients with (MH) and complaints of headache at the start of the rehabilitation course. The training methodology includes: the patient arbitrarily relaxes the muscles of shoulder girdle, and in the computer screen under influence of relaxation the visuals and sound effects are changing with simultaneous registration envelope of electromyograms (EEMG) of symmetrical zones of trapezius muscle. When patient is strained, the sound and noise was heightened, when patient is relaxed the noise disappears. To assess the intensity of the HA before and after the course of rehabilitation there was used the "Visual Analog scale (VAS)".

Results

The intensity of the HA of «Visual Analog scale» before the course of rehabilitation amounted $7.4 \% \pm 0.6\%$, after course it decreased reliably and amounted $3.6\% \pm 0.8\%$, ($p < 0.05$). In results of EMG the convergence coefficient of values (right) and (left) in the first training was 1.9%, to the 8-m training was 1.1%.

Conclusion

Using the (BFT) with (EMG) in rehabilitation of patients with HA improves the nervous regulation of functions and allows to develop the skill to relax the muscle of shoulder girdle and to reduce arbitrarily the intensity of the HA.

Keywords

headache; rehabilitation; biofeedback

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1455

COMPLEX REGIONAL PAIN SYNDROME TYPE II FOLLOWING SCIATIC NERVE INJURY TREATED BY DEXTROSE NERVE HYDRODISSECTION: A CASE REPORT

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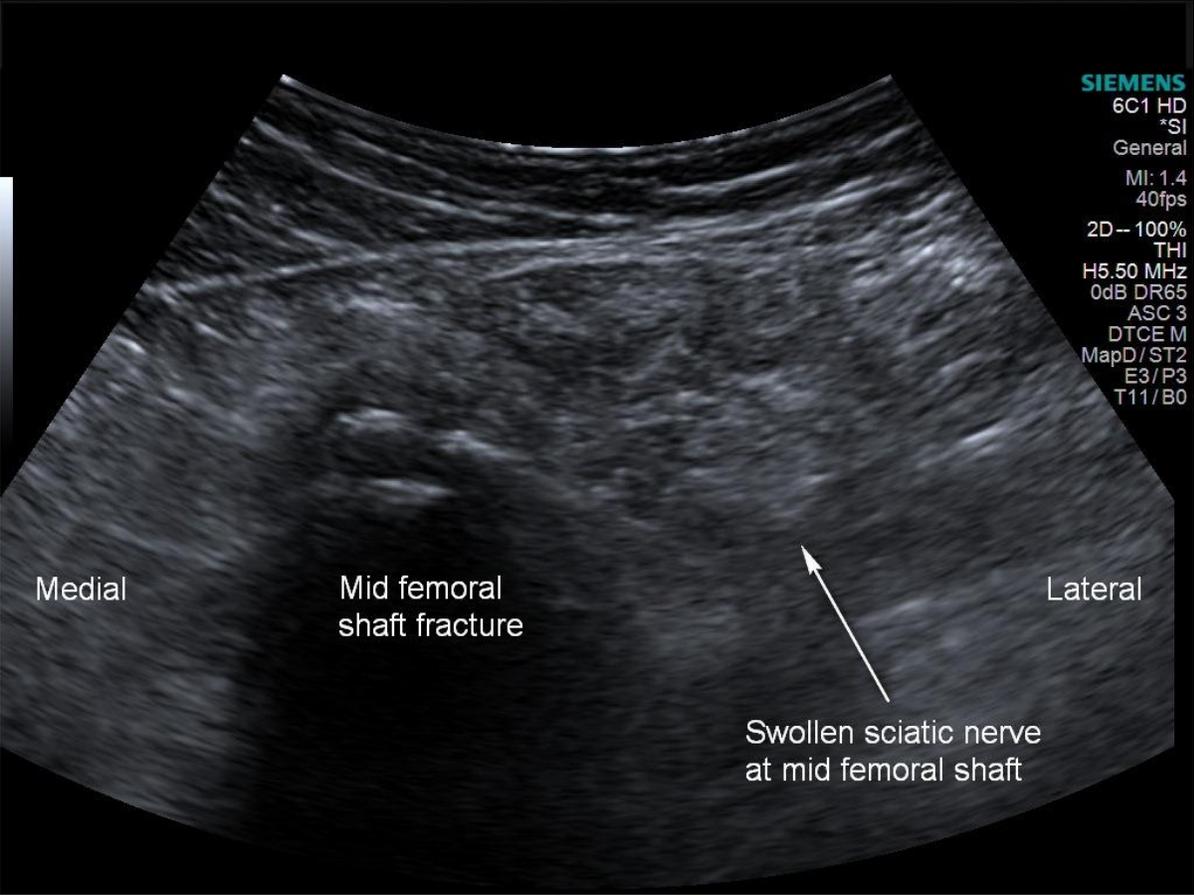
Introduction/Background

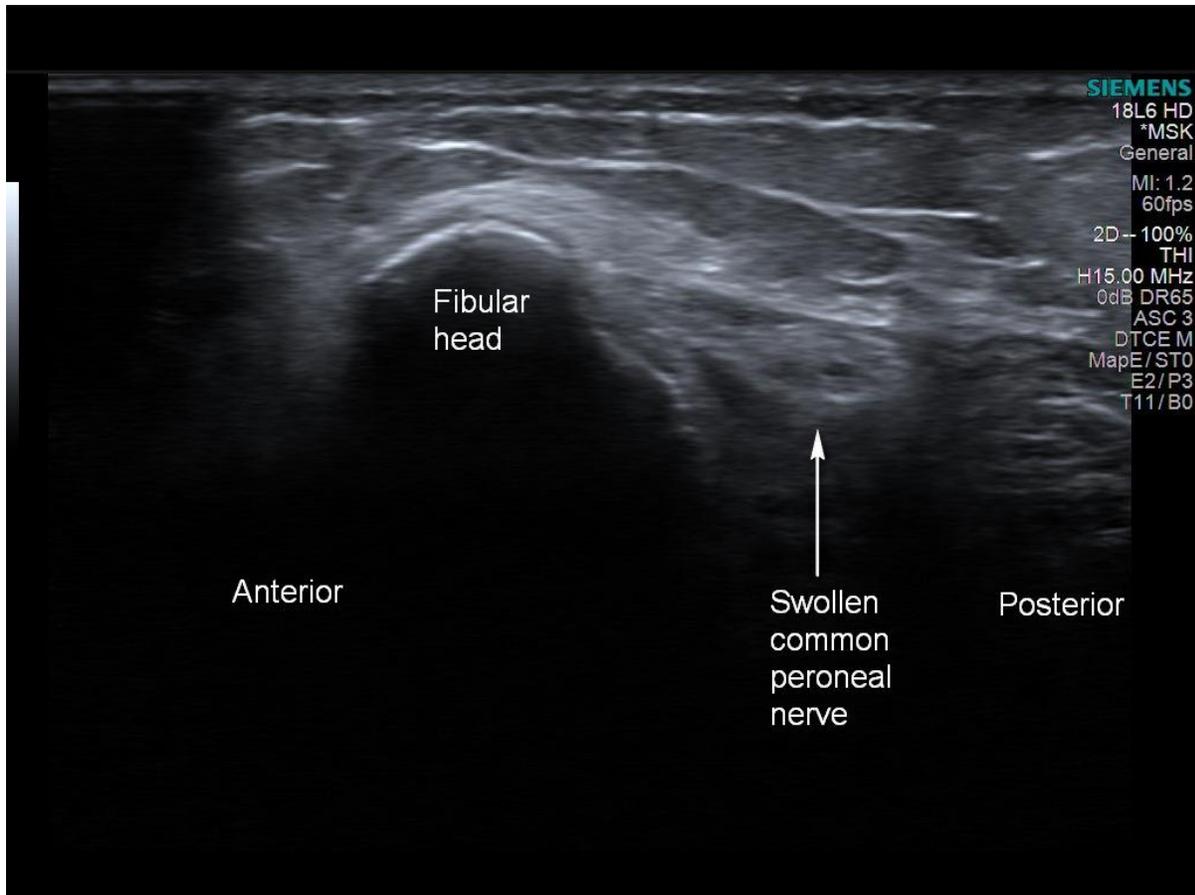
Complex regional pain syndrome (CRPS) is a well-known clinical entity, first described in the 1800s, consisting of pain, hyperalgesia, edema, and sudomotor changes either without (Type I) or with (Type II) a definable nerve injury. Here, we describe a case of CRPS Type II after sciatic nerve injury caused by a femur fracture in which the pain was treated successfully by ultrasound-guided dextrose nerve hydrodissection.

Material and Method

A 75-year-old female was referred to our rehabilitation clinic for post-operational rehabilitation program of her femoral shaft fracture. Two months earlier, she had undergone open reduction and internal fixation of the left femur mid-shaft comminuted fracture from a traffic accident. She presented with drop foot after the accident and electrophysiology exam revealed a concomitant sciatic nerve injury. Erythematous change of her skin with progressive allodynia and pain gradually developed after the accident. She did not respond to conventional treatments including medications or physical modalities. After ultrasound evaluation, swollen sciatic nerve, common peroneal nerve, superficial and deep common peroneal nerve was revealed. We then chose to do a ultrasound guided dextrose nerve hydrodissection of those nerves to relieve her symptoms.







Results

After serials of injection, improving of skin temperature, edema, trophic changes, and skin color changes were found in physical examination. Her pain and active motion of her toes and ankle significantly improved.

Conclusion

CRPS type 2 is a disabling entity causing pain and severe motor-sensory dysfunction. US-guided dextrose nerve hydrodissection may be an effective and durable treatment modality for the management of refractory pain in CRPS Type II.

Keywords

Complex Regional Pain Syndrome;Sciatic Nerve Injury;Dextrose Nerve Hydrodissection

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1515

CURRENT SITUATION AND UNMET NEEDS FOR REHABILITATION IN COMPLEX REGIONAL PAIN SYNDROME IN KOREA : A PILOT SURVEY

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Introduction/Background

Complex regional pain syndrome (CRPS) is a debilitating, painful condition in a limb, associated with sensory, motor, autonomic, skin and bone abnormalities. In CRPS, rehabilitation is important with pain treatment. However, in Korea, CRPS patients do not receive appropriate rehabilitation properly and consistently. The purpose of this study was to evaluate the degree of pain, degree of depression and quality of life in patients with complex localized pain syndrome in Korea and to evaluate the subjective rehabilitation treatment need and unmet need of patients.

Material and Method

The subjects (n=19) were recruited based on the medical records of single-center. They were assessed through structured questionnaires (BPI, WHODAS-K, EQ-5D-5L, rehabilitation need).

Results

The average BPI and WHODAS-II were 7.95 ± 0.52 and $68.39 \pm 10.21\%$ (Table 2). In the Pain, Ache, Anxiety, and Gait disturbance domains, patients were provided the desired treatment, but the satisfaction was poor. In the Fatigue, Body weight, and Memory domains, patients stated that they did not receive appropriate treatment consistently or continuously. (Table 3)

Table 1. Demographic data of CRPS patients

Characteristics	Value
Number (n=19)	
Male	10 (52.6)
Female	9 (47.4)
Age of onset of CRPS (yr)	38.10 ± 13.18
Limbs involved	
one upper limb	3 (15.8)
both upper limbs	0 (0)
one lower limb	14 (73.7)
both lower limbs	0 (0)
Both upper & lower limbs	2 (10.5)

NOTE. Values are mean ± SD or as otherwise indicated.

Table 2.

Questionnaires	Value
Brief pain inventory (BPI)	7.95 ± 0.52
WHO-DAS II dimensions (%)	
Overall	68.39 ± 10.21
Understanding and communicating	56.49 ± 22.21
Getting around	74.32 ± 24.56
Self-care	58.95 ± 25.20
Getting along with people	62.95 ± 28.75
Life activities	76.88 ± 19.29
Participation in society	80.79 ± 16.73

NOTE. Values are mean ± SD or as otherwise indicated.

Table 3. Rehabilitation needs & Unmet needs

	Value		Value
Pain		Ache	
Need	94.1%	Need	68.8%
Provided with help(therapy)	92.9%	Provided with help(therapy)	58.3%
Satisfaction	42.9%	Satisfaction	40%
Anxiety		Gait disturbance	
Need	76.5%	Need	81.3%
Provided with help(therapy)	63.6%	Provided with help(therapy)	83.3%
Satisfaction	44.4%	Satisfaction	30%
Fatigue		Body weight	
Need	75%	Need	64.7%
Provided with help(therapy)	41.7%	Provided with help(therapy)	16.7%
Satisfaction	25%	Satisfaction	100%
Memory		ADL	
Need	82.4%	Need	43.8%
Provided with help(therapy)	16.7%	Provided with help(therapy)	33.3%
Satisfaction	40%	Satisfaction	100%

Conclusion

In Korea, patients with CRPS may not get adequate rehabilitation treatment. Proper management of rehabilitation and the provision of care guidelines are needed.

Keywords

Complex Regional Pain Syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1615

DEPARTMENT OF SPORTS AND BALLET INJURY

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Introduction/Background

Patients with complex regional pain syndrome type I (CRPS I) often have body schema perception disturbances which has significant impact on patients quality of life. Mirror therapy requires minimum equipment, is relatively simple to perform and effective in various pathological conditions but its efficacy in CRPS I patients rehabilitation has not been definitely established. Study objective: to investigate the influence of mirror therapy (as an addition to the standard complex rehabilitation program) on body schema perception in CRPS I patients.

Material and Method

The study is based on the analysis of the of 6 weeks treatment results of 50 patients with CRPS I, developed as a result of the distal radius fractures (duration no longer than 3 years); all patients were enrolled in standard rehabilitation program (physical therapy, exercises, medications); in addition to standard care 30 patients consented to practice mirror therapy (study group), 20 received only standard rehabilitation program (control group). All patients underwent complex evaluation, including assessment by Bath CRPS Body Perception Disturbance Scale, before the treatment, after three days and after 6 weeks.

Results

After 6 weeks of treatment the majority (83.33 %) of patients in study group and 35% in control group demonstrated improvement in body schema perception ($p < 0,05$). The positive effect was statistically significant for the first five points of the Bath scale after 6 weeks of treatment compared to the control group.

Conclusion

Mirror therapy, included into standard rehabilitation program is effective for the body schema perception disturbances treatment in patients with CRPS I developed after fractures of the distal radius less than 3 years duration.

Keywords

Complex regional pain syndrome type I; mirror therapy; rehabilitation program

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1784

DRY NEEDLING TRIGGER POINTS IN RECTUS AND OBLIQUUS CAPITIS INFERIOR MUSCLES UNDER ULTRASOUND GUIDANCE IS EFFECTIVE FOR CHRONIC HEADACHE

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Introduction/Background

Myofascial pain is widespread, can be reliable cause of large number of headaches. Suboccipital triangle has high complexity of vascularity and innervation network with sympathetic signalling. Recently we proposed a new approach of trigger point therapy, performing precise muscle dry needling under ultrasound (US) guidance.

The aim was to evaluate efficacy of deep dry needling of myofascial trigger points (MTrPs) in suboccipital muscles (rectus and obliquus capitis inferior muscles) treat chronic headaches.

Material and Method

This study included 24 patients (15 females, average age was 38±6 years old). All patients suffered from intensive chronic persistent or recurrent one- or two-sided pain in temporal and/or occipital areas; sometimes radiation to neck, arm. The treatment approach by Bubnov [PMID:23088743] was applied that included ultrasound identification of MTrPs with following dry needling under US guidance using steel 28G needles to elicit the local twitch response (LTR). Visual analogue scale data (VAS0-10) were measured before, immediately after and 24 hours after the intervention. A decrease in pain as measured by a VAS of 50% or more one week after treatment was considered as success.

Results

Main active MTrPs were diagnosed in rectus and obliquus capitis inferior muscles, the additional (latent) MTrPs were defined and effectively needled in muscles of the ipsilateral shoulder rotator cuff. In one session 1-3 needles were inserted, 1-2 sessions applied to each patient. Retention of needles depended of muscle LTR duration. Seventeen patients showed decrease in pain as measured by a VAS of 90%, the difference was significant in this group ($p<0.01$) and pain relief outcome after one month observation; seven patient received another session after 2-3 weeks after first procedure.

Conclusion

Dry needling trigger points in suboccipital muscles under ultrasound guidance is effective to treat headaches, evoked by myofascial disorders. Further profound studies needed to establish unified Dx and Tx protocol.

Keywords

headache;myofascial trigger points;ultrasound

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1832

MANAGEMENT OF LONG-TERM COMPLEX REGIONAL PAIN SYNDROME WITH ALLODYNIA: A CASE REPORT

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Introduction/Background

Complex Regional Pain Syndrome (CRPS) is characterized by sensory, motor, sudomotor, vasomotor edema and/or trophic signs (Harden et al., 2010). Abnormal painful sensations (e.g. hyperalgesia, allodynia), and skin sensibility disorders are often the leading cause of complaints and decreased function in CRPS (Savas et al., 2009). This case report describes a successful innovative tailored rehabilitation program that was used in a patient having upper-limb CRPS with static mechanical allodynia (SMA), who initially did not respond to conventional rehabilitation alone.

Material and Method

The tailored rehabilitation program initially consisted of occupational therapy including the somatosensory rehabilitation method (SRM) and graded motor imagery (GMI). Conventional treatments (pain management, active mobilizations, strengthening and task simulation) were then added successively.

Results

Over a period of 22 months of tailored rehabilitation, this patient showed: decreased pain (Numeric pain scale; McGill pain questionnaire), resolution of SMA, reduced tactile hypoaesthesia, increased range of motion and strength, and improved functional independence (DASH; interviews).

Conclusion

A tailored rehabilitation program that takes into account the patient's symptoms, causes of these symptoms and patient's personal priorities seems promising for treating patients with upper-limb CRPS with SMA. Further studies are needed to explore how SRM and GMI should be combined to optimize their beneficial effects and to identify which patients would benefit the most.

Keywords

Complex Regional Pain Syndrome;allodynia;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1870

THE RESULTS OF SOMATOSENSORY TESTING AND REHABILITATION IN NEUROPATHIC PAIN

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Introduction/Background

Nervous system sensitization can be accompanied by both positive and negative sensory signs. The aim of this study was to explore the spectrum of sensory abnormalities in clinically diagnosed adults with neuropathic pain (NP) using a well-defined assessment protocol using quantitative somatosensory testing methods followed by Somatosensory Rehabilitation Protocol (SRP) developed by Claude Spicher.

Material and Method

A comprehensive assessment protocol of 60 subjects with NP associated with varying sensory abnormalities was conducted. The protocol involved Somato-Sensory Testing (SST) procedures and was performed by a Physiotherapist specially trained in SST methods. The subjects were assessed and diagnosed using a mix of subjective and objective measures as follows: Somatosensory Qualifiers, McGill Pain Questionnaire, DN4 Questionnaire, VAS and other specific tests for mapping the prognosis and were characterized under 4 different Neuropathic Dysfunctional Categories (NDC) followed by Somatosensory Rehabilitation Program (SRP) based on the type of NDC. Tests were repeated 1 month post rehabilitation for determining the reduction of symptoms and follow up after 3 months.

Results

Among 60 patients, 70% of the participants were male and in the age group of 30-40 years. 68% reported pain as the major symptom, 35% burning sensation, 20% tingling sensation, 15% pulling, electric shock like, parenthesis and hypersensitivity. 88% of the patients had involvement of lower extremity (LE). Posterior antebrachial cutaneous nerve was the most commonly affected nerve in the upper extremity and medial cutaneous nerve was most commonly affected in the LE. The most commonly affected regions were foot, heel and sole with burning, tingling and numbness as major symptom and elbow and ankle least affected. 45 subjects recovered completely post rehabilitation and maintained the progress during the follow-up, while 15 recovered partially.

Conclusion

SST is an effective diagnostic protocol for individuals with NP and plays a key role in the effective rehabilitation of NP.

Keywords

neuropathic pain; somatosensory testing; somatosensory rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1951

COMPLEX REGIONAL PAIN SYNDROME: NEW INSIGHT AND THERAPEUTIC APPROACH

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Introduction/Background

CRPS implies sympathetic, inflammatory, neurogenic, vascular, peripheral and central mechanisms. The pathophysiology of type 1 CRPS is complex and yet poorly understood. The relative part of each mechanism in CRPS type 1 development and resistance is not established, as their respective contribution varies amongst patients during the course of clinical evolution. A growing consensus has developed for a central participation to this pathology, even if the very nature of spatial and body representation alterations is still discussed. It has been clinically observed and repeatedly argued that CRPS implies pathological motor neglect.

Material and Method

We reviewed the available literature about central pathophysiology and new therapeutic approaches and will illustrate new perspectives with our own clinical and research practice.

Results

Even if spatial cognition explorations has given rise to a variety of inconsistent results, it is now admitted that central participation, manifested as a spatial reference frame alteration plays a central role in CRPS.

This new view blazed the trail to new therapeutic strategies targeting spatial reference frame alterations: mirror therapy, prism adaptation, rTMS.

Conclusion

Central participation to CRPS' pathophysiology is nowadays admitted. Amongst the new therapeutic strategies rising from this recent comprehension, the most promising seems to be prismatic adaptation.

Keywords

complex regional pain syndrom;spatial and body representation;prismatic adaptation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-1985

TYPE 1 UPPER LIMB COMPLEX REGIONAL PAIN SYNDROME (CRPS) IN STROKE PATIENTS: COMPARISON OF TWO PROTOCOLS OF MIRROR THERAPY WITH A MULTIPLE BASELINE DESIGN.

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Introduction/Background

CRPS is a frequent disabling condition after stroke. Among non-pharmacological interventions, mirror therapy (MT) has shown to be effective. However it remains unclear, how mirror therapy should be applied, especially regarding the type of movement to be performed during MT. The aim of this study was to determine if MT should be applied using distal or proximal movements of the upper limb in the treatment of post stroke type 1 CRPS.

Material and Method

Inclusion criteria: patients with a stroke in the past 6 months, diagnosed with type 1 CRPS according to the clinical criteria of the IASP Budapest, confirmed by scintigraphy.

Design: Single Case Experimental Design using a three phases, multiple baseline design across three subjects, with repeated measures of pain and function in baseline (without intervention), proximal movement MT, and distal movement MT, applied in a randomized order. Repeated measures: pain measured on a Visual Analogic Scale, function measured on the Frenchay Arm Test and the Abilhand scale. Intervention: precisely described MT applied for two times fifteen minutes a day, five days a week, during four weeks, using either distal or proximal joints movements.

Results

MT decreased pain in all patients, regardless of the type of MT used. Using distal movement MT following a four-weeks period of proximal movement MT did not bring additional gain. Using proximal movement MT following a four-weeks period of distal movement MT seemed to slow down pain improvement. Function improved on all patients.

Conclusion

Using MT with distal movements only, and no mobilisation of the shoulder joint, seems the best option to alleviate pain in post-stroke type 1 CRPS as it is easier to use and no less effective than the more cumbersome proximal movement MT. Better description of interventions, as done in this study, is needed for clinicians to be able to replicate finding of effective interventions.

Keywords

CRPS;Mirror therapy;stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-2007

CERVICAL MYOFASCIAL PAIN SYNDROME - IS THE ULTRASOUND-GUIDED NEEDLING APPROACH A THERAPEUTIC OPTION?

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Introduction/Background

Myofascial Pain Syndrome (MPS) is a frequent entity in clinical practice and is characterized by the presence of trigger points, limitation of joint mobility and neurological symptoms.

The main purpose of this work was to evaluate the results obtained by perform an ultrasound-guided needling of the trapezius and levator scapulae muscles with simultaneous injection of steroids and local anesthetics, in the pain intensity and interference in daily life and the subjective benefits in patients with cervical MPS.

Material and Method

Prospective longitudinal study, including patients with clinical diagnosis of unilateral or bilateral cervical MPS refractory to the conventional rehabilitation program, submitted to treatment during the year 2017. The technique included to pepper the trigger point with a fanlike manner under ultrasound guidance, using a 22G needle with simultaneous injection of 2% lidocaine and methylprednisolone acetate 40mg/ml. A sociodemographic questionnaire, the pain numerical rating scale (NRS) and the brief pain inventory (BPI) were applied prior and 1 month after the procedure. In this last evaluation, a Likert scale was also applied to evaluate the subjective benefits.

Results

Eighteen patients were included, 82% female, with a mean of 54 years (SD = 8.2). No adverse effects were recorded. There was a statistically significant and clinically relevant reduction in the score obtained in the NRS (2.9, $P < 0.001$) and in all components of the BPI, including intensity (2.6, $p < 0.001$), pain interference in general activity (1.9, $p < 0.001$) and in the affective subdimension (1.7, $p < 0.001$). 54% of the patients reported a very significant improvement with the procedure, but only 33% presented a ≤ 4 value in the NRS at 1 month reassessment.

Conclusion

The results presented in this study show the importance of ultrasound-guided needling procedures in the treatment of myofascial pain and, at least, its short-term efficacy on relieving pain, particularly in refractory cervical MPS.

Keywords

Ultrasound;needling;myofascial pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.03 Pain - Complex Regional Pain Syndromes

ISPR8-2712

COMPLEX REGIONAL PAIN SYNDROME: NEUROSTIMULATION AND REHABILITATION IN A PORTUGUESE HOSPITAL

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Introduction/Background

Complex Regional Pain Syndrome (CRPS) is a clinical and exclusion diagnosis characterized by disproportionate pain caused by a limb injury. Budapest criteria includes sensory, vasomotor, sudomotor and/or motor/trophic symptoms. Prevalence is 5,5-26/100000, higher among women and the upper limb (UL). Treatment is poorly defined, however it should be multidisciplinary, including physical, pharmacological, psychological and invasive techniques, like nerve blocks. Spinal cord stimulation (SCS) has been shown beneficial.

The aim of this paper is to describe a population of a CRPS who underwent SCS.

Material and Method

Retrospective longitudinal study of 21 patients followed by a Pain physician from Centro Hospitalar São João, diagnosed with CRPS between 2001-2015, who underwent SCS. Statistical data was accessed using IBM SPSS 22.0.

Results

The mean age of the 21 patients (100%) was 46,3(±2,5) years-old, with a 2:3 M:F ratio. UL was affected in 57,1% of them. The predominant event associated was fracture(33,3%), followed by minor trauma(28,6%), other post-surgery(23,8%) and other non-post-surgery(14,3%). This cohort took a median of 24months to attend Pain consultation and 42months to implant SCS; 42,8% of these patients enrolled on a PMR consultation - mostly the younger (40,8±7,8 vs. 50,5±12,0 years-old; p=0,049) – and the majority of them underwent surgery (77,8%). Overall, 53,8% patients with CRPS who went through surgical therapy were in PMR. PMR patients took less time (48,9±11,4 months) to implant SCS (vs. 79,6±25,1 months).

Conclusion

CRPS epidemiological data is variable, probably due to lack of standard criteria for the diagnosis. On this cohort, as described in the literature, most of the patients were female, the UL was more affected, and the main etiology was traumatic. Those in PMR implanted SCS in a

shorter period, possibly due to a more severe illness. Patient referral to PMR was predominant in the post-surgery population and on younger, perhaps as they have more active years ahead.

Keywords

Complex Regional Pain Syndrome;Rehabilitation;Spinal Cord Stimulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2527

USE OF BOTULINUM NEUROTOXIN INJECTIONS FOR MANAGEMENT OF POST SHOULDER REPLACEMENT DYSTONIA AND PAIN

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Introduction/Background

57 years old gentleman presented in pain clinic with Shoulder Dystonia secondary to his right shoulder replacement surgery. He presented with severe pain due to recurrent dislocations of his right shoulder and painful spasms. This affected his ability to use his right arm with subsequent reduction in range of movements. This also had an impact on his psychological well being as he was very fearful of dislocations that he had several times a day at times.

The concept of Peripheral lesions to neural structures resulting in dystonia is a controversial subject. But is becoming more acceptable recently. There have been case studies of patients developing dystonia following spinal surgery. We report this rare case that we have managed successfully with botulinum neurotoxin.

Material and Method

Patient reported sequence of events post shoulder replacement, review of orthopaedic notes, clinical examination in pain clinic with previous oral medications tried for this condition
Consent regarding non licenced use of Botulinum Neurotoxin for shoulder dystonia
patient's feedback after receiving botulinum Neurotoxin injections has been used to report this case study.

Results

Patient reported good benefit from Botulinum Neurotoxin injections (Botox) compared with oral Medications i.e. Baclofen, Diazepam, Tramadol and Gabapentin. Patient reported reduction in intensity of his pain and frequency of his shoulder dislocations. He has been having treatment with multiple Botulinum Neurotoxin injections in muscles around his shoulder girdle for several years. Each treatment lasts for 3-4 months.

Conclusion

Botulinum Neurotoxin is safe and effective first line treatment to prevent recurrent dislocations and painful spasms of post surgical peripheral Dystonia

Keywords

Shoulder Dystonia;Post trauma;Post shoulder replacement

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0072

TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION AND PLACEBO ANALGESIA: ARE YOUNG AND OLDER ADULTS THE SAME?

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Introduction/Background

Placebo analgesia refers to a perceived reduction in pain following the administration of a simulated or otherwise medically ineffective treatment. Previous studies have shown that many factors can influence placebo analgesia. However, few investigations have examined the effect of age on placebo analgesia, and none have done it in the context of rehabilitation interventions. The objective of this study was to compare the placebo response induced by sham transcutaneous electrical nerve stimulation (TENS) between young and older individuals, using an experimental heat-pain paradigm.

Material and Method

Twenty-two young (21-39 years) and 22 older (58-76 years) healthy adults participated in this comparative study. Experimental heat pain was evoked with a thermode (2-min stimulation at a constant, individually adjusted temperature) applied on the lumbar region. Participants were asked to evaluate the intensity of their pain using a computerized visual analog scale. Experimental pain was induced before and after an unconditioned placebo intervention (sham TENS).

Results

In young individuals, no significant pain reductions were noted, whereas in older individuals, a statistically significant pain reduction was observed after the placebo stimulation ($P < 0.01$). Between-group analysis revealed that placebo analgesia was greater in older individuals (40% pain reduction) compared to young individuals (15% reduction; $P < 0.05$).

Conclusion

Our results indicate that placebo analgesia is influenced by age, with older individuals showing higher placebo analgesia than young adults. Although these results should be confirmed in clinical pain populations, the current observations bear important consequences for the design of future placebo-controlled trials in rehabilitation and for healthcare professionals.

Keywords

placebo;pain;ageing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0074

THE IMPACT OF BENZODIAZEPINE ON ANALGESIC COSTS TO TREAT SPINAL CORD INJURY PATIENTS IN TAIWAN: A POPULATION-BASED RETROSPECTIVE COHORT STUDY

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Introduction/Background

The aim of this study was to evaluate the impact of benzodiazepine (BZD) on analgesic costs to treat spinal cord injury (SCI) patients in Taiwan.

Material and Method

The retrospective cohort study used a subset of the Taiwan National Health Insurance Research Database (NHIRD) comprising information on two million beneficiaries randomly sampled from the entire population of Taiwan. A total of 3170 patients aged 16 and above with newly diagnosed SCI were identified during a period from 2001-2010.

Results

The multivariate linear regression using average daily costs of prescription of nociceptive pain, including non-steroidal anti-inflammatory drugs (NSAIDs) and opioid analgesics for 1 year and 4 years after SCI showed increased costs in benzodiazepine (BZD) user, especially in high-dose BZD users (cumulative defined daily dose [cDDD] > 0.3) (parameter estimate = 3.79 and 1.37 respectively. P value < 0.05). The multivariate linear regression using average daily costs of prescription of neuropathic pain, including antidepressants and anti-epileptic drugs for the treatment of neuropathic pain for 1 year and 4 years after SCI showed increased costs in BZD user, especially in high-dose BZD users (parameter estimate = 5.95 and 3.85 respectively. P value < 0.05).

Conclusion

This study showed that the baseline BZD exposure may significantly increase the analgesic costs in SCI patients.

Keywords

spinal cord injury;benzodiazepine;analgesic costs

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0099

EFFECTS OF LONG TERM OPIATE USE AMONGST MINE AND MILL WORKERS IN RURAL NORTHERN ONTARIO: A CROSS SECTIONAL STUDY FROM AUGUST 2015 TO MARCH 2017

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Introduction/Background

Opioids are prescribed with the goal of returning function to patients to allow them to perform daily tasks and work. However many of those patients prescribed opioids are found to continue to be disabled and never return to work.

Research Question: Does the use of opioids in patients with low back pain increase the risk of being on long term disability?

Material and Method

This was a cross sectional study. Through use of a chart audit from the Iroquois Falls family health team patient list from 2009 to 2017, we gathered charts of mine and mill worker patients treated for low back pain through known diagnostic codes. Exclusionary criteria including female gender, sedentary jobs (managers, supervisors) was implemented. Comparison of patients relating to their disability status, opioid use and worker status and opioid performed by statistical analysis. Further analysis of the mechanism of injury and type of medication used was also gathered.

Results

Results: From the 58 charts that met criteria it was found that 30 were on disability and 28 were not. Of those disabled 22 were currently on opioids and those that were not had 5. A P value of 0.002 was found for this correlation. Of those disabled 7 required surgery, 16 had mechanical back pain and 18 had radicular pain. There was a positive correlation between high opiate use and disability.

Conclusion

Although there was a positive correlation between opioid use and disability, this was a small study and more research is needed.

Keywords

back pain;opiate;disabiity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2655

ASSESSMENT OF HEALTH RELATED QUALITY OF LIFE OF OUTDOOR PATIENTS AT PMR DEPARTMENT OF A TERTIARY CARE HOSPITAL IN BANGLADESH

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Introduction/Background

In a middle low socioeconomic status country like Bangladesh a good number of people attend the government hospital outdoors to get services at low cost. In PMR department various types of patients are treated who have different types of disability. Quality of life assessment is important in these patients to improve and planning the service delivery. This type of assessment is easier using RAND SF-36 Health survey method.

Material and Method

By using S F-36 Health Survey tool, a hospital based cross sectional study was done on the outdoor patients attending the PMR department of a tertiary hospital of Dhaka city of Bangladesh. Total numbers of patients were 190.

Aim :

The aim of this study was to detect the trends of disease among outdoor patients and to assess their quality of life

Results

Among the study population most of the patients were of different types of musculoskeletal pain (70 percent) ,20 percent were of neurological diseases, 10 percent were in miscellaneous group- including postoperative orthopedic and neurosurgical conditions, cardiac and pulmonary patients, post burn and cancer patients after surgery; head, neck and breast cancer with lymphoedema, cerebral palsy and other pediatric conditions.

Physical and mental quality of life was assessed by PCS (Physical component summary) and MCS (Mental component summary) by working out the mean average of all the physically relevant questions and emotionally relevant items. The age range of patients was 26-70 years. Acute cases were 64 percent; sub acute cases 8 percent, chronic were 28 percent. Male: female was 1.9: 1. The PCS range found was 22.49 -61.26. The MCS range was 29- 74.36.

.Conclusion

S F-36 Health Survey tool is relatively easy to be administered. In low resource country like Bangladesh with population overload, there is scope to use this tool for large number of patients

Keywords

SF-36;OUTDOOR PATIENTS

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0265

STUDY OF CARPAL TUNNEL SYNDROME IN PERIPHERAL NEUROPATHY WITH COMPARISON OF TWO METHODS: INCHING METHOD AND SECOND LUMBRICAL-INTEROSSEI TEST

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Introduction/Background

Diabetes mellitus is the most common metabolic disease. The carpal tunnel syndrome (CTS) occurs frequently in this disease. In diabetes mellitus due to effects of generalized neuropathy on peripheral nerves, the diagnosis of CTS with conventional EDX criteria (onset latency of median SNAP or distal latency of median CMAP) is challenged, so another methods such as 2nd lumbrical-interossei test is used. On the other hand Inching method is a technique in which used for diagnosis and determining the site of compression in carpal tunnel.

The purpose of the present study is to evaluate diagnostic value of the inching method and 2nd lumbrical-interossei test in patients with diabetic peripheral neuropathy and signs or symptoms of carpal tunnel syndrome.

Material and Method

Thirty hands with history of diabetes mellitus and signs and symptoms of CTS that confirmed diagnosis of peripheral neuropathy with conventional electrodiagnosis were evaluated. Then for diagnosis of CTS, sensory and motor median distal latencies were measured by nerve conduction study. In the next step inching method and second lumbrical interossei test was performed for all hands and sensitivity and specificity of two tests was calculated.

Results

Mean age of participants was 53.87 ± 11.53 years (range 26 to 70 years). 10 participants were female and 6 participants were male.

The sensitivity and specificity of inching method in this study were 95.65 and 85.71 respectively and the results for second lumbrical-interossei test 73.91 and 71.42 were calculated.

Conclusion

In this study, we showed the inching method is more sensitive and specific than second lumbrical-interossei test in diagnosis of CTS in diabetic peripheral neuropathy with sensitivity and specificity 95.65 and 85.71 respectively and also the sensitivity of inching method was greater than specificity.

Keywords

carpal tunnel syndrome;diabetic peripheral neuropathy;Electrodiagnostic inching method and second lumbrical interossei tests

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0321

REGISTRY FOR PAIN IN HOSPICE

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Introduction/Background

Hospice for the disabled is treating patients from all over Greece and hosts people whose condition is incurable. Patients remain by the end of their life which implies increased medical, nursing and pharmaceutical care. For their care 110 people are employed (doctors, physiotherapists, nurses, occupational therapists, administrative staff, technicians, etc.), providing 24 hour support. The purpose of this study was to investigate the percentage of pain and pain categories.

Material and Method

One hundred seventy five subjects (men and women) are hosted in the hospital suffering from paraplegia, quadriplegia, encephalopathies, multiple sclerosis and diseases of the central nervous system, etc. 80% of patients are bedridden. Pain categories included musculoskeletal, neuropathic, mixed type pain and pain of malignancy. All received pharmacotherapy against pain including analgetics, opioids drugs, non-steroidal anti-inflammatory drugs, anticonvulsants, tricyclic antidepressants, serotonin–norepinephrine reuptake inhibitors (SNRIs). Subjects were evaluated with visual analogue scale (VAS). Physical therapy sessions were offered to all patients and a multi-disciplinary approach was initiated after cooperation and counseling from our colleagues in Hellenic Society of Pain Management and Palliative Care (PARH.SY.A.)

Results

Fifty eight subjects are suffering from pain (33%). Pain was categorized as follows: musculoskeletal 1% and 25%, neuropathic 12.6% and 38%, mixed type 12% and 36%, pain of malignancy 0.6% and 1.72%, of total and suffering patients, respectively. VAS was significantly decreased after treatment ($p < 0.05$) after adjustment for physical therapy.

Conclusion

We found a positive response to the pharmacotherapy which suggests the importance of this intervention as a part of the multi-disciplinary approach.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0330

PHANTOM PAIN IN CONGENITAL AMPUTEES: MYTH OR REALITY?

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Introduction/Background

Until not long ago, pain was underdiagnosed in children (1). It is similar in congenital amputees (CA) and the presence of phantom pain (PP). Even though PP is common in adult amputees, its existence in CA is denied by many clinicians. But articles have corroborated that pediatric CA can develop PP (2-4). The aim is to study the presence of PP in CA who assist to our center and study its characteristics.

Material and Method

Descriptive study. Population: 10 years and older patients with diagnosis of CA or deficiency who attended our center. Instruments: Previously validated telephone survey to determine the presence and characteristics of PP (5). Variables: PP and sensation, ISPO classification, prosthesis use. Analysis: Lapsic prevalence, data was analyzed using STATA 14.

Results

77 patients were contacted, 57 of them consented to answer the telephone survey. Main age was 18.6 years (12-25), 43.9% male. 60% had longitudinal deficiency, 38% had a transversal and 2% had both. The most commonly affected extremity was the left arm. 33% reported to use prosthesis. Regarding our survey, 24.6% had phantom sensation and 7% had PP, with a lapsic prevalence of 5.3%. Analyzing the patients with pain, all of them had an upper extremity deficiency, none used a prosthesis and 1/2 had phantom sensation.

Conclusion

This is a small study, but it is an important contribution to consolidated that PP can be present in CA. Nowadays there is much more conscience on the importance to suspect, diagnose and treat pain in children, so phantom pain should not be an exception.

Keywords

phantom pain;Congenital Amputee;Deficiency

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0365

PAIN AND FUNCTIONAL DISABILITY IN PATIENTS WITH POST-POLIO SYNDROME. ALGERIAN OBSERVATIONAL STUDY FROM 2010 TO 2017

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Introduction/Background

Pain in polio, associated with new muscle weakness, fatigue, causes a suspicion of post-polio syndrome. It is muscular or articular.

.Our goal is to describe this pain, and to appreciate the handicap and its impact on everyday life.

Material and Method

A historical cohort study of 119 former polios, ranging from 2010 to 2017.

Judgment criteria: biometrics settings' measurements, pain EVA, DN4 questionnaire, measure of functional independence "MIF", scale and measurement of walking distance, Borg scale.

Statistical study: SPSS.20.0.

Results

The average age of polios 42.29 ± 9.90 ; sex ratio 1.16, average BMI 25.8 ± 4.6 ; The pain is 79%, its time of onset: 3.5 years; the pain is mixed in 22%; neuropathic pain in 16%; spinal localization is 40.6%; 44% of patients have joint pain and 15% have at least two articular and / or muscle locations. The pain is correlated with gender ($p < 0.05$), an PPS is present in 59.4%. The functional degradation before and during the onset of PPS is 4.2 points on the MIF. Obesity among older polio patients and the existence of a history of polio caught beyond 4 years old at childhood are each a risk factor for developing PPS

Conclusion

Pain in polio is almost present, consistent with American and European studies. The correlation of gender to pain corresponds to the results of the Danish study by Marita Widar.

The pain among the old polios is a sign of PPS. It has a considerable impact on everyday life. Prevention requires a healthy lifestyle and an energy saving.

Keywords

Pain and hadicap;post polio syndrome;energy saving

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0663

OSTEOARTHRITIS AND LIPODERMATOSCLEROSIS: EFFICIENCY OF NON-PHARMACOLOGIC TREATMENTS

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Introduction/Background

Lobular panniculitis lipodermatosclerosis with osteoarthritis is becoming more frequent in medical practice. LDS is lobular panniculitis which manifests in degenerative-dystrophic changes of subcutaneous fat. It is common among middle-age women with chronic venous insufficiency.

Purpose: to examine efficiency of mesotherapy and ultrasound in case of LDS with OA.

Material and Method

Among 539 patients duration of disease 11.8 ± 6.4 months was verified for 8.5% (44 women, 2 men), age 18-82 with, extra weight (32 patients). Patients were randomized into two groups 23 patients each: Group 1 received MT treatment (10 sessions) with homeopathic drugs with antioxidant, anti-inflammatory, lymph-drainage and lipolytic action and US treatment of the induration area. Group 2 was daily treated with MT with 9% Natrii Chloridum solution in comparable dose with Group 1. Control methods included general clinic examination and ultrasound elastography of indurations. Main stages of control: initial (T0), 14 days (T1), 1 month (T2) and 3 months (T3).

Results

All patients of Group 1 had positive dynamics in VAS intensity (T0 50 ± 18 mm; T1 35 ± 11 mm), reduction in diameter (T0 6 ± 2.2 mm; T1 4.5 ± 1.7 mm) and color intensity of indurations ($p < 0.002$), thickening of SCF and reduction of ESR and CRP. In 44% of cases the effect from treatment increased by T2 ($p < 0.05$). After 3 months 15 patients needed a second course of physiotherapy. In Group 2 a positive clinical effect was evident in 14 patients (60.8%) by T2 and in 19 patients (83%) by T3 ($p < 0.05$). Over the whole period of observation LDS recurred in 19 patients (41%) of Group 1. Recurrence was associated with aggregation of nodes. MT and US were tolerated well, side effects were not recorded.

Conclusion

Use of MTC with 9% Natrii Chloridum made it possible to achieve positive dynamics in patients suffering LDS with OA, Assessing the significance of said methods needs further investigation.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0690

REHABILITATION OF OROFACIAL PAIN FACES PROGRESS: OVERVIEW OF CURRENT ADVANCES IN OROFACIAL REHABILITATION

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Introduction/Background

Orofacial pain is a symptom marked by unpleasant sensation in face or/and oral cavity, it occurs unilaterally or bilaterally and related to various pathologies. Orofacial pain is frustrating for most of its patient and the recovery is relatively unsatisfying. It interferes with daily activities since its exacerbation closely associated with increase of activity intensity.¹ Corticosteroids, NSAIDs, carbamazepines, and acetaminophens regularly becomes the first line therapy for this symptom. The use of medication usually sustained for long period since ceasing medication might exacerbates the pain. This makes patient even more traumatic to taper the medication off. Adverse events that regularly reported after long use of these medications are dyspepsia and gastric ulcers².

Material and Method

Non-pharmacological approaches offer safer option for pain alleviation but large randomized control trial of these methods, to the best of our knowledge, is not yet available.³ The objective is to increase the pain threshold and to develop coping strategy in anticipating episodes of pain exacerbation.

Results

The therapeutic exercises focus in exercising the muscles in daily task pattern like chewing, swallowing, and grinning.⁴ Transcutaneous electrical stimulations (TENS) mask pain stimulation thus increase pain threshold.⁵ Recent studies have support the effectiveness of low-level laser therapy (LLLT) in treating musculoskeletal conditions, it has been proven to enhance cellular healing.⁶ Myobiofeedback exercise also has been proven in trials to be effective in treating muscular chronic pain by reeducating contraction and relaxation phase of facial muscle.⁷ Kinesiotaping is relatively simple method to relieve the pain temporarily despite its evidence based medicine is insufficient.

Conclusion

Various rehabilitation methods are available for management of Orofacial yet lack of strong evidence suggesting research on this field is still highly on demand. Collaboration with other health professionals like dentists or plastic surgeon would assist orofacial rehabilitation to emerge in clinical implementation

Keywords

orofacial pain;pain rehabilitation;temporomandibular disorder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0962

LOW-DOSE TRANSDERMAL BUPRENORPHINE PATCHES FOR BENIGN CHRONIC PAIN: A NOVEL EXPERIENCE. INDISA CLINIC, SANTIAGO, CHILE

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Introduction/Background

Objective: To describe both demographic and clinical adults patients profiles who received low-dose transdermal buprenorphine patch prescription by a Physiatrist.

Material and Method

Observational, descriptive study. Retrospective data from medical records of adults who were admitted as outpatients from December 2016 to March 2017. An Excel spreadsheet was made, and statistic (central tendency, frequency) was measured. Inclusion criteria were Presence of any painful benign locomotor system disease VAS 7 or more (Visual Analogue Scale); absence of renal and/or hepatic failure; nociceptive pain; treatment started before any rehabilitation therapy prescribed; naïve to strong opioids and patients who used to forget oral analgesic intake.

Results

Eighteen adults patients were analysed, 77% female. Mean age 67 (range 33-85 year-old). Buprenorphine average time use: 82.3 days. 50% received 5 mcg weekly, 27% 10 mcg/weekly and 23%, 20 mcg/weekly. Two cases had adverse event (localized and painful allergic rash), needing medication withdraw. Twelve patients reported pain relief more or equal to 50%, and 4 less or equal to 40%, considered clinically significant.

Conclusion

There were patients with severe benign chronic pain who would be benefit with low-dose transdermal buprenorphine patches, prior to rehabilitation therapy onset, to control nociceptive pain.

Keywords

BENIGN CHRONIC PAIN;LOW-DOSE TRANSDERMAL BUPRENORPHINE PATCHES

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0965

WATSU AS A COADYUVANT THERAPEUTIC METHOD IN BENIGN CHRONIC PAIN

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Introduction/Background

Watsu is an aquatic therapy which combines the use of heated pool with passive mobilization plus therapeutic massage Shiatsu-like, performed by the therapist and where the patient has a “no-action” state. In Chile was introduced in 2002 and performed at Indisa Clinic since 2008. **Objective:** To describe diagnosis profile and Watsu outcomes, applied it to adult patients with benign painful locomotor disease.

Material and Method

Observational descriptive study. Retrospective revision of patient’s clinical records, from patients who complete Watsu program, between May 2016, to Juny 2017. Excel spreadsheet confection and frequency measure. A numeric analogue scale for pain relief, 0 to 10. Data with pain relief, therapy satisfaction (dichotomy question) and presence of any nocturnal sleep effect were collected.

Results

A total of 29 adult patients were admitted, who had locomotor diseases as follows: Fibromyalgia 34,4%, Spine disease 31%, miscellaneous 34,4%. 93% of total declared been satisfied with therapy, el 100% had pain reduction more or equal than 70%, measured with numeric scale; however, duration of effect is unknown. A 69% of patients got better nocturnal sleep.

Conclusion

Watsu constitutes a therapeutic tool that could be useful at a Physical and Rehabilitation Medicine Service, to achieve a deep relaxation and sleep quality improvement, which it could be associate as coadjuvant in pain relief with other therapeutic modalities.

Keywords

Watsu Therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0983

PREVALENCE OF MUSCULOSKELETAL SYMPTOMS AMONG FEMALE READYMADE GARMENT WORKERS IN DHAKA CITY

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Introduction/Background

The Prime objectives of this cross- sectional descriptive study were to identify the prevalence of musculoskeletal symptoms and associated factors among female readymade garment workers in Dhaka.

Material and Method

This cross-sectional descriptive study used multistage sampling techniques to select 400 workers from four garment factories among 100 medium-size factories. Data were collected from the female workers by direct interviews and rapid upper limb assessment scale (RULA) were also used during collection of data.

Results

The response rate was 100% and all the respondents were female. Ninety-two percent (95% CI=90.0–94.0) of the workers reported musculoskeletal symptoms in at least one body region in the previous 12 weeks. The neck, shoulder and lower back were the most affected body regions. In addition, the RULA data showed that 81.2% of the workers' postures were rated as action level 3, indicating that investigation and change were required soon, and that 7.5% their postures were rated as action level 4, indicating that investigation and change were required immediately.

Conclusion

Female garment workers of Dhaka, Bangladesh reported a high prevalence of musculoskeletal symptoms in upper body regions, and their workplaces were rated as high risk ergonomically.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0986

USE OF NON-PHARMACOLOGICAL MEASURES FOR PAIN RELIEF DURING LABOUR AND ITS RELASHIONSHIP WITH LACERATIONS

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Introduction/Background

Epidural analgesia is the most efficient method for pain relief in labour and it has become very popular in modern obstetric practice. Investigators suggested that epidural analgesia increases the risk of midpelvic procedures and leads to a higher rate of operative vaginal deliveries, which contribute to increase the risk of neonatal and maternal postpartum morbidity. Furthermore, women undergoing epidural analgesia demonstrated a prolonged second stage of labour, a higher rate of episiotomy and an increased use of oxytocin.

There are several non-pharmacological analgesic methods to relieve pain during labour, that is among the transcutaneous electrical nerve stimulation (TENS). TENS is a low frequency electrotherapy technique, analgesic type, generally used in musculoskeletal pathology, but it has also come to be used as an alternative treatment during labour.

The aim of this study was to determine if TENS could increase the risk of obstetric lacerations during spontaneous vaginal delivery.

Material and Method

We conducted a randomized, double-blind, placebo-controlled trial. Participants were randomly assigned to three groups: active TENS 1, active TENS 2 and placebo TENS.

We enrolled 63 women Department of Gynaecology Service of CHUIMI of Las Palmas de Gran Canaria, Spain. The data of a visual analogue scale and a satisfaction questionnaire were also collected.

Results

A total of 63 women (21 per group) participated in the study. We obtained an improvement with clinically significant pain relief results at several stages was active TENS groups. We found an 87% of superficial vaginal tears, which would be solved by nurses and 12.7% of lacerations grade II-III. There were not differences between the groups with or without active TENS. There were no side effects.

Conclusion

Transcutaneous electrical nerve stimulation is a safe, cheap and useful treatment for pain relief during labour and it does not increase the risk of obstetric lacerations during spontaneous vaginal delivery.

Keywords

Labour;Laceration;Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0999

STUDY OVER PHONOPHORESIS WITH CAPSAICIN IN HIP OSTEOARTHRITIS.

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Introduction/Background

There are numerous methods of administering drugs to the body, both passive and active.

A recent review of the literature on phonophoresis reports that 75 % of the studies reviewed reported positive effects,

ultrasound energy with drugs like gel or cream can travel through body tissue.

Capsaicin was the active ingredient in hot chilli peppers has selection actions on unmyelinated C fibres and thinly

myelinated A primary sensory neurones.

Material and Method

We underwent an observational prospective study, to propose measurement of phonophoresis with capsaicin

on pain of the hip, in comparison with phonophoresis with ketoprofen applications.

The study included 60 patients aged 45 years and over with clinical and radiological osteoarthritis of hip in

according to ACR criterias. All the patients were included in the standard therapy program (drugs and rehabilitation)

over a period of 10 days.

Group A – 30 patients was taken phonophoresis with capsaicin and Group B – 30 patients was taken phonophoresis with

ketoprofen, both intensity was 0,6 W/cm² on the knee, 6 minutes every day.

Results

In group A patients presented a significant improvement of pain according VAS scale, on the other group B who

present an insignificant improvement of pain for the short time.

Conclusion

We can consider phonoporesis with capsaicin a significant method of therapy in hip osteoarthritis with

an important benefit towards long term pain relief for the patient.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1021

THE INHERENT ROLE OF THE MULTIDISCIPLINARY PALLIATIVE CARE TEAM ON PAIN MANAGEMENT : A CRITICAL REVIEW

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Introduction/Background

Cancer pain and palliative care (PC) are recognized as significant international health issues. Treatment of pain and rehabilitation programs in PC are challenging. Rehabilitation is the process that helps a person to reach physical, psychological, social and educational potential with physiologic, anatomic impairment, desires and life ambitions. Rehabilitation improves patients' physical function, independence and pain management to improve quality of life and patients' dignity.

Material and Method

Update on the role of rehabilitation in PC by detailed view of rehabilitation treatment methods and their evidence for application into PC conditions. Databases of Cochrane Library, Google Scholar and Pubmed were search from January 2005-December 2016.

Results

There is few evidence that rehabilitation can impact function and pain management in PC. However, experience suggests that physical modalities should be applied early to minimize the generalized deconditioning and aid in the pain management, decreasing the need for pain medications. Physical modalities can be applied by health care providers. Passive, active, and active-assisted motion exercises and gentle strengthening exercises can aid in the maintenance of strength and joint range of motion. The prescription of assistive devices, and the teaching of compensatory techniques for mobility can aid in ambulation. There is also evidence that immune function may be improved by moderate exercise.

Conclusion

A rehabilitation team has the ability to integrate physical aspects of treatment in a biopsychosocial model of pain into a comprehensive rehabilitation program for cancer patients. More research should focus on the role of rehabilitation and defining appropriate interventions.

Keywords

Palliative care;pain ;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-0950

THE EFFECT OF CHINESE NEEDLE ELECTRO ACUPUNCTURE IN CHRONIC LOW BACK PAIN

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Introduction/Background

Chinese needle electro acupuncture (EA) is complement alternative medicine pain relieving procedure for ages in chronic low back pain (CLBP). It is a fairly safe procedure. Evidence based medicine needs to add it as treatment modality in modern medicine. Various studies are recommending use of needle EA in CLBP. It is widely used these days in Japan, Korea, Asian countries, Europe and Australia as a pain intervention in CLBP. This study aims to see relief of CLBP in 24 hours and at 4 weeks of intervention.

Material and Method

This is a quasi experimental study. Patients with nonspecific CLBP of more than 3 months' duration, both genders all ages were recruited at outpatient rehabilitation department of Rehabilitation Department of Karachi Institute of Medical Sciences Malir Karachi Pakistan. 20 patients had series of needle placements using Chinese Huanqiu brand needles with 0.3x 25 mm dimensions and using WQ 6 F electronic acupunctoscope for stimulating Chinese Acupoints in back and legs using varying intensity of electric current. Numeric Rating scale (NRS) of pain was used to measure pain relief in 24 hours and at 4 weeks follow up. Statistical analysis is done using statistical package for social sciences version 25.

Results

Total no of patients (n=20) including 14 males & 6 females. Mean age is 27.8+₋ 1.8 years. Mean duration of pain is 2.9+₋ 0.5 years. The difference between pre-intervention mean NRS score (7.45) and post intervention mean NRS score immediately post intervention (3.30), at 24hrs (3.80) and at 4 weeks (3.85) is statistically significant (p-value <0.001). No side effects of the procedure were noticed in 24 hours and after 4 weeks.

Conclusion

Needle EA showed significant pain relief in CLBP patients in 24 hours and after 4 weeks.

Keywords

Electro acupuncture;Chronic Low Back Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1101

AN EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF TRANSDERMAL ANESTHETIC CREAM ON PAIN RESPONSE IN CHILDREN DURING VENIPUNCTURE IN CHILD HEALTH CARE AREAS

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Introduction/Background

Pain is a difficult concept for a child to communicate. Venipuncture is commonly seen as one of the most painful and frequent performed invasive procedures by nurses and is a major source of concern for children and their caretakers.

Objectives of the study - to assess the pain response in control group during venipuncture; to assess the effectiveness of transdermal anesthetic cream upon pain response during venipuncture in experimental group; to compare the pain response during venipuncture between experimental group and control group; to ascertain the relationship of effectiveness of transdermal anesthetic cream with the selected variables such as age, gender, size of cannula, allergic reaction to cream and previous experience to Eutectic mixture of local anesthetic (EMLA) Cream.

Material and Method

An experimental research approach with posttest only design was used to achieve the objectives of study. The sample size of 60 children were selected using consecutive sampling technique. FLACC Scale, standardized tool was selected after extensive review of literature and expert's opinion. Pilot study was conducted on 1/10 of the sample from 3 to 8 years of age. The final study was conducted in pediatric Medicine and Surgical Ward, Pediatrics Medicine and Surgical OPD of Christian Medical College and Hospital, Ludhiana, Punjab.

Results

The data analysis was done using descriptive and inferential statistics. The findings of the study revealed that maximum Children in control group had obtained highest mean pain score (8.8) followed by those in experimental group (3.7). Difference in mean pain was analyzed with 't' test.

Conclusion

The findings of the study indicate that transdermal anesthetic cream is effective in pain reduction in children undergoing venipuncture. It was found that children in the experimental group experiences less pain than children in the control group. Now it is a protocol in Christian Medical College and Hospital, Ludhiana

Keywords

Transdermal Anesthetic Cream; Venipuncture; Pain Response in Children

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1131

“WHITE FLAGS” IN CHRONIC BACK AND NECK PAIN – THE SOCIO-CULTURAL ASPECT

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Introduction/Background

Persistent chronic pain, especially back and neck pain, represent a major medical and health economic problem. In the assessment of the individual pain situation, the classification of various factors (flags) has become established and clinically proven.

Material and Method

Structural biomechanical factors are classified as “red flags”, indicating potential serious diseases which require immediate intervention. Psychological or behavioral factors are summarized as „yellow flags“. Recently it was proposed to classify psychiatric and mental illness as “orange flags”. Both conditions are important for planning adequate therapies or rehabilitation, as well as for decisions to prognoses and tailored reintegration programs. An extension of the flag model was achieved by naming personal factors at workplace as “blue flags”, and “black flags”, if there additionally, system obstacles exist, that restrict return to work.

Results

All these groups do not take into account some other important reasons for unsuccessful rehabilitation or failed reintegration. In these refractory cases, patients sometimes show a special subjective understanding of illness that cannot be treated by either psychological interventions or behavioral therapy. These include convictions that arise, for example, from cultural socialization, religious education or spiritual experience and rarely correspond to the views of “Western Medicine”. Since these individual illness conceptions are ideologically based, they should be classified in an additional group called "white flags". The advantages of categorizing socio-cultural aspects separately from the other flags are: avoidance of unnecessary treatments including surgery and prevention of iatrogenisation or litigation.

Conclusion

For medical professions it is important to recognize, that only health disabilities are taken into account for insurance compensation and not individual socio-cultural circumstances or health beliefs. In the future, the classification of "white flags" could help to assess persistent pain conditions correctly and eliminate reservations and misunderstandings with an intercultural approach.

Keywords

back and neck pain;white flags;sociocultural

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1396

MEDIUM NERVE BLOCK IN CARPAL TUNNEL SYNDROME

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Introduction/Background

The carpal tunnel syndrome (CTS) is the compressive neuropathy most common of the upper limb and with neurophysiological studies it is calculated between 15 to 20%. It is produced by compression of medium nerve in the carpal tunnel. This compression can occur due to well-identified causes, although most cases are idiopathic

Material and Method

The main purpose of this study is to describe our technique that we used to treat patients with CTS, using a nerve block technique with ultrasound guidance. Patients were treated with perineural injection of 1 mL of Triamcinolone and 2 mL of Bupivacaine. The patients were reviewed at one and two months after procedure.

An ultrasound was used with a linear transducer with high frequency of 10-15Mhz to identify the nerve in the proximal palmar fold, placing the focus at 1 cm with a depth of 2-3 cm. The medium nerve is the first elliptical tubular structure well differentiated under the flexor retinaculum. The median nerve passes just below and lateral to the tendon of palmaris longus and the best form to identify the nerve is to localize it in the forearm, between the superficial flexor and deep flexor digitorum and follow it distal to the wrist. Then ask the patient to flex the third finger to differentiate the flexor tendons from the medium nerve. The place of infiltration is performed on the ulnar side to dissect the nerve.

Results

Three months after procedure the patients presented total reduction of pain and loss of paresthesia. None patient felt pain during the needle injection and no one required a second infiltration.

Conclusion

The procedure with corticoid (neuritis) decrease the inflammation, the compressive phenomena of the nerve and the anesthetic block of the nerve conduction with the improve the symptoms. We are making an action protocol to establish the optimal treatment.

Keywords

carpal tunnel syndrome;medium nerve block;infiltration

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1459

COMPARISON AMONG PAIN MEASURES IN PEOPLE WITH CHRONIC MYOFASCIAL PAIN WITH AND WITHOUT WIDESPREAD PAIN

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Introduction/Background

Table 1. Pain Descriptives (n = 31)

Span of Pain, No. (%)	Local 23 (74)	Widespread 8 (26)		
Distribution MTrPs	≥2 active(9) ≥2 latent (4)	1 active (12) 1 latent(4)		
Location of Pain, No.	Right Upper Trapezius 20	Left Upper Trapezius 11	Bilateral Trapezii 6	Central Trapezius 2
Duration of Pain, No. (%)	< 1 Year 3 (10)	1 - 3 Years 12 (39)	4 - 7 Years 6 (19)	> 7 Years 10 (32)
Time of Day Pain Most Frequent, No. (%)	Morning 7 (23)	Evening 13 (42)	Night 4 (13)	Other 7 (23)

Table 2. Comparison between Regional and Widespread Pain groups (N = 31)
*p<0.05

	Regional	Widespread
Prevalence	23 (74%)	8 (26%)
Average Pain (Past Week) Mean±s.d.	3.28±1.58	4.81±1.81
Worst Pain (Past Week) Mean±s.d.	4.69±2.39	6.62±2.13
Minimum PPT Mean±s.d.	7.46±3.40	4.35±2.93*
More than 1 active MTrP	4/23 (17%)	5/8 (62.5%)
Windup present	13 (56%)	6 (75%)
Combined Beighton-Brighton score	4.62±2.89	8.29±3.3

The evaluation of pain in chronic musculoskeletal conditions is challenging. The relationships between patient self-reports and various operator determined (OD) measurements are still not fully understood. This study explores the relationship between commonly employed self-

reported and OD pain measures with clinical musculoskeletal findings in patients presenting with chronic myofascial pain.

Material and Method

Thirty-one participants (19 women) who met criteria for chronic myofascial pain affecting the neck region were recruited. . All underwent a standard clinical history and physical examination to identify myofascial trigger points (MTrPs). Pain measures included: Brief Pain Inventory(BPI), Widespread Pain Index (WPI), Pain Pressure Threshold (PPT), and Quantitative Sensory Testing using standardized weighted pinpricks to determine Windup Ratio (WUR). Each participant was also examined for hypermobility using a combined Beighton-Brighton score. Scores ≥ 8 indicate a high or severe level of hypermobility syndrome. Widespread pain (WSP) was assigned if the WPI ≥ 6 .

Results

: Clinical descriptive variables are presented in Table 1. Other results are summarized in Table 2. A total of 8 patients (26%) presented with WSP. Compared to those with only regional neck pain, those with WSP had higher average pain scores (BPI) ($4.81 \pm 1.81/10$ vs. $3.28 \pm 1.58/10$; $p < 0.03$), had lower minimum PPT ($4.35 \pm 2.93 \text{ lb/in}^2$ vs. $7.46 \pm 3.40 \text{ lb/in}^2$; $p < 0.03$), were slightly more likely to have windup (75% vs. 56%), were more likely to have 2+ active MTrPs (62.5% vs. 17%), and had a higher combined score for severity of hypermobility syndrome ($8.29 \pm 3.3/19$ vs. $4.62 \pm 2.89/19$; $p < 0.01$).

Conclusion

People with WSP have a higher level of average pain, worst pain, and lower PPTs. They are also more likely to be classified as hypermobile and have a high level of hypermobility. Our study results may be influenced by the small sample size.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1483

KINESIOTAPING IMPROVES FUNCTION, PAIN AND MODULATES SOMATOSENSORY PROCESSING IN A SERIES OF SUBJECTS SUFFERING FROM CERVICAL DYSTONIA.

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Introduction/Background

Pain is a prominent and disabling symptom of cervical dystonia (CD). First-line treatment is botulinum toxin (BoNT) that ensures an overall duration of benefit of about 12 weeks; yet, individual response is variable with some patients experiencing an earlier wearing off of BoNT benefit with pain relapse. Ancillary treatments to prolong the effect of BoNT are an unmet need. The study is aimed at investigating the effects of KinesioTaping (KT) on pain and abnormal posture in CD patients with wearing-off of BoNT effects.

Material and Method

We enrolled 10 patients with idiopathic CD and pain and applied KT at least 3 months after BoNT injection. KT was applied according to inhibition technique over the hyper-contracted muscles (mono-or bilaterally) and kept for 5 days. Clinical evaluation included Toronto Western Spasmodic Torticollis Rating Scales (TWSTRS) (severity, disability and pain scales) and patient's Clinical Global Impression (CGI). Somatosensory processing was evaluated by tactile temporal discrimination threshold (TDT). Each subject was assessed before and at 5 days of KT.

Results

At 5 days of KT, there was a significant improvement of TWSTRS severity scale ($p=0.008$) and pain scores (severity: $p=0.028$, duration: $p=0.043$). Moreover, TDT significantly decreased in the most affected side ($p=0.012$), as patients improved their ability to process tactile somatosensory stimuli. CD patients with tremor had more severe dystonia and showed a greater improvement after KT in term of severity (TWSTRS total score $p=0.03$), global disability ($p=0.03$) and pain disability ($p=0.025$).

Conclusion

This pilot study demonstrates that KT can reduce pain and disability in patients with CD, especially if presenting with tremor, through enhancing the effect of BoNT toxin in the interval between consecutive injections.

Keywords

KinesioTaping;Cervical Dystonia;Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1632

EFFECT OF POWER TRAINING ON WALKING ABILITIES IN CHILDREN WITH CP WITH POOR GROSS MOTOR FUNCTION

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Introduction/Background

Power training (PT) has recently been raised as a promising training modality to improve functional abilities in children with cerebral palsy (CP). Nevertheless, its effect on walking ability in CP children with poor gross motor function has never been investigated. The present study aimed to evaluate the feasibility to implement PT in an adapted school and its effect on walking abilities.

Material and Method

Eleven children with CP (6-11 years old, Gross Motor Function Classification System (GMFCS) level I-V, including 9 children with GMFCS level III-V) were included. They were trained three times a week during 12 weeks. The training session took place during the 50-minute physical activity courses and included 20 minutes of high intensity exercise (i.e. running, fast walking with appropriated technical aids, including weight bearing walker), as well as a warm up and cool down period. Heart rate was monitored during three training sessions for each participant. A kinesiologist, a physical therapist, and the sport teacher, supervised the training sessions. Self-selected comfortable and fast walking speed, gait efficiency, as evaluated with the energy expenditure index (EEI), as well as running speed were assessed before and after the training period.

Results

Ten children completed the whole training period. Participants spent 19 ± 7 min and 6 ± 7 min at an intensity superior to 40% and 60% of the heart rate reserve, respectively. The EEI was reduced after training ($p = 0.01$), resulting in a more efficient gait. Comfortable and fast walking speed also increased after training ($p < 0.05$). Greater improvements were observed in children with higher GMFCS level.

Conclusion

PT is feasible in adapted school environment with children with CP with GMFCS level III-V. These data suggested that PT increases walking capacities. More studies are needed to assess the impact of PT in children with poor walking abilities.

Keywords

cerebral palsy;power training;adapted school

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1655

IMPORTANCE OF SLEEP QUALITY IN CHRONIC PAIN

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Introduction/Background

Poor sleep is a risk factor of a range of several adverse outcomes including disabling pain conditions.

The aim of this study is to analyze the Interdisciplinary Outpatient Pain Rehabilitation Program (IOPRP) treatment outcomes of chronic back and neck pain (spinal pain) with comorbidity sleep disorders.

Material and Method

We included 513 patients, between 1/8/14 and 28/2/16, in our IOPRP. A battery of self-reported questionnaires was completed at the beginning and end of a 16-session program; follow up visits were scheduled three months and one year after discharge. The presence of chronic spinal pain and sleep disturbances were recorded. All subjects were separated into two groups, chronic spinal pain with sleep disturbances group 11.30% (n=58), and chronic spinal pain without sleep disturbances group 88.7% (n=455). Visual analogue Scale (VAS) was used to evaluate pain, Insomnia Severity Index (ISI) to evaluate sleep quality, those with ISI > 8 underwent polysomniography to confirm sleep disturbances, and Short Form Survey (SF-36) to evaluate the quality of life. Both groups were treated with the IOPRP, working under international standards (Carf accreditation). Treatment included pain medication, physical and occupational therapy, cognitive and behavioral techniques for pain, sleep and stress management.

Results

Mean age was 55.76 ± 0.44 years; 68.9% were females; IOPRP at baseline showed: Visual Analogue Scale (VAS) 5.66 ± 0.07 , poor quality of life (SF36) $41.9 (\pm 0.54)$, subclinical insomnia Insomnia Severity Index (ISI) 11.31 ± 0.26 . At the end of the program, statistically significant improvement ($p < 0.05$) was observed on VAS, SF-36 (8 domains), and ISI.

Conclusion

The IOPRP, working under international standards, shows improvement in sleep associated with better physical functioning and pain reduction.

Interventions in the interaction between pain and sleep could potentially reduce pain and increase quality of life for patients suffering chronic pain. More studies are needed for a better understanding of this relation, pain-sleep disorders.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1792

MULTILEVEL EVALUATION OF MOTION AND POSTURE PATTERNS IN LOWER EXTREMITY AND SPINE USING DYNAMIC ULTRASOUND

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Introduction/Background

Evaluation of intrinsic /extrinsic muscles posture is a crucial task for physical therapy and pain treatment. Integrative assessment of pain case in order restoring postural imbalance has not been developed. **The aim** was to evaluate feasibility of motion posture analysis using M-mode ultrasound in foot, ankle, gluteus region, pelvis and spine.

Material and Method

We included 33 patients (both sexes, aged 17-52 y.o.) with clinically diagnosed leg, back pain with reduced motility in spine, pelvis and lower extremity levels. Another 20 patients (aged 18-53 y.o.) without pain and related complains on MSK disorders were controls. We conducted precise physical tests, extensive neuromuscular ultrasound using M-mode to evaluate muscle thickness, CSA and motion in intervetebral spaces, pelvis, intrinsic /extrinsic muscles in pelvis, gluteus region, foot and ankle.

Results

We obtained sufficient quality panoramic scans on leg using convex 5-8 MHz probe in 2 approaches to evaluate structure and motion of extrinsic / intrinsic muscles during one session. Thickness measurements of peroneal portion, plantar intrinsic foot muscles on the plantar surface in two transverse positions and one longitudinal using linear probe; contractility using M-mode tested in walking were most representative data. We evaluated different patterns of decreasing motility, contractility (muscle contracted / rested thickness) on M-mode during functional tests and walking at all levels in group 1 ($p < 0.05$). We preliminary observed correlation of changes (muscle hypertrophy) in contralateral extrinsics/intrinsics muscles at same levels, due to biomechanical instability; trigger points detection corresponded to areas of hypomobility in 95% cases.

Conclusion

Extensive evaluation of motion posture in foot, ankle, and gluteus region, pelvis and spine is feasible and informative protocol. Further research needed for development US patterns, conducting comparative RCT using US, CAREN, static & dynamic balance tests, pressure analysis, etc.; and to develop educational programs).

Keywords

motion analysis ;ultrasound;lower extremity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1944

TREATMENT OF HAND PAIN AND CARPAL TUNNEL SYNDROME USING PRECISE DRY NEEDLING UNDER ULTRASOUND GUIDANCE - RELEVANCE OF SUPINATOR SYNDROME

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Introduction/Background

Myofascial pain is a widespread problem, considered as reliable cause of hand pain and carpal tunnel syndrome. Precise dry needling of muscle trigger points under ultrasound (US) guidance is proved and effective method for treatment pain in many anatomical sites.

Material and Method

We included 46 patients (32 females), average age was 37±6 years old, with symptoms of carpal tunnel syndrome (CTS) and pain in hand. The treatment approach by Bubnov [PMID:23088743] was applied that included ultrasound identification of myofascial trigger points, precise neuromuscular ultrasound; with following dry needling under US guidance using steel fine needles (28 gage) to elicit the local twitch response (LTR) effect verified on M-mode ultrasound. Visual analogue scale data (0 to 10) were measured before, immediately after and 24 hours after the intervention. A decrease in pain as measured by a VAS of 50% or more one week after treatment was considered as success.

Results

Active active trigger points were diagnosed in deep forearm muscles, mostly in supinator muscle, potentially compressing radial nerve branches (posterior interosseous nerve, PIN entrapment near arcade of Frohse). Additional needling was conducted in thenar area (flexor pollicis brevis) and small muscles in hand and forearm when necessary. In one session 1-3 needles were inserted. Retention of needles in muscles depended of accuracy of needle position in spastic area and LTR detection. All patients demonstrated decreasing pain as measured by a VAS of 90 %, the difference was significant in this group ($p<0.01$) and pain relief outcome after month observation.

Conclusion

Dry needling trigger points under ultrasound guidance is effective for treatment carpal tunnel syndrome and myofascial hand pain.

Keywords

carpal tunnel syndrome;myofascial trigger points;supinator syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-1996

BENEFIT SECONDARY TO LOCAL ANTIESPASTIC TREATMENT

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Introduction/Background

Background and Goals

Botulinum toxin was used as a local antispastic treatment in patients with stroke sequelae, trauma to the skull, spinal cord injury and corticobasal degeneration, among other pathologies. The botulinum toxin acts locally by blocking the release of acetylcholine, which results in temporary muscle paralysis. The end effect is temporary chemodenervation at the neuromuscular junction without causing any physical damage to the nerve structures. This work aims to show the secondary benefit obtained after local treatment of patients with different causes and degrees of spasticity. The objective is to show patients and the medical community in general, that botulinum toxin can be an alternative treatment of pain in patients with spasticity.

Material and Method

Method

Retrospective study of case reports (reality cohort). Data collection of 46 patients treated between 2012 and 2017 inclusive.

Modified Ashworth Scale were used to measure the degree of spasticity, modified O'Brien Scale for subjective assessment of global improvement and Visual Analogical Scale for pain assessment (VAS).

Post-application controls were performed at fifteen days, at the first month and at three months, using those scales at each medical visit.

Results

Results

Patients showed decreased spasm in at least 75% of cases, as expected.

The most interesting at the time of the corresponding controls, were the secondary benefits to the decrease in tone, such as the decrease of pain, which in the cases of omalgia, pain in hand and foot, allowed a better quality of life: decrease of analgesic taking and improvement of nocturnal sleep, and to a lesser extent improved independence in activities of daily living.

Conclusion

Conclusions

The local antispastic treatment is beneficial in decreasing the tone of the infiltrated muscles and

in a secondary way it was observed that it generates symptomatic relief of pain and improves quality of life, aspects objectivable by VAS and O'Brien scale.

Keywords

local antispastic treatment; Botulinum toxin; relief of pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2005

SURVEY OF ANALGESIC PRESCRIBING FOR PATIENTS DISCHARGED FROM AN ORTHOPAEDIC DEPARTMENT

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Introduction/Background

Postoperative pain is often a major problem for functional recovery after elective orthopaedic surgery. There is evidence that following patient discharge, moderate to severe pain is commonly reported early on and later in the postoperative period. The aim of the study was to analyze analgesic prescription habits after discharging patients who went through surgery on an orthopaedic department in a low-resource setting. The second aim was to determine if there are any disparities in the prescribed analgesics, depending on whether the operation was elective or traumatic.

Material and Method

We performed a retrospective study including all patients that underwent surgery at the Clinic for orthopaedic surgery and traumatology at the Clinical Center of Serbia, over a 6 month period. The study included 371 patients. We recorded demographic data, discharge diagnoses, types of surgery and pain medications prescribed for use at home.

Results

87.9% patients received no analgesic prescriptions at all at hospital discharge. In the group of patients who have been recommended analgesics, there were optionally prescribed analgesics for 3.5%, whilst NSAIDs were prescribed for 8.6% patients. No patients received paracetamol or opioid analgesics. There were no statistically significant differences in prescribed analgesics depending on whether the operation was elective or posttraumatic.

Conclusion

The results of this study emphasize the need for further research, education and guidelines aimed at improvement of pain management in our setting. Better access to potent analgesic drugs, organization of acute pain teams and chronic pain clinics in order to provide effective pain relief is necessary. Ensuring such combined actions could improve pain management in a low-resource setting and make certain that patients do not suffer unnecessarily from unrelieved pain.

Keywords

pain;analgesic prescribing;orthopaedic surgery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2009

IMPORTANCE OF ACUTE EXAMINATION IN PARKINSON'S DISEASE EARLY DIAGNOSIS.

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Introduction/Background

Parkinson's disease (PD) is a long-term disorder of the central nervous system that mainly affects the motor system. Often presents with back pain, among other osteoarticular limitations, and may delay diagnosis. Our goal is to highlight the importance of early diagnosis for the treatment of the disease through the accurate examination of the patient.

Material and Method

This is an observational descriptive study that was carried out with two patients (65 and 68 aged women), who were referred to the Rehabilitation Unit from Primary Care for analgesic-resistant back pain, between September 2016 and October 2017. Patients were diagnosed by spondyloarthritis and were treated with non-steroidal anti-inflammatory analgesics without any betterment. Both of them showed intense fatigue, inexpressive face, rigidity (at upper limbs level), movement disorders and walking difficulties. After filling a brief questionnaire about pain Numerical Visual Scale (NVS), depression and anxiety which included the standardized tests Beck's Depression Inventory (BDI) and Fatigue Severity Scale (FSS), they started a rehabilitation program, together with neurologist visits for a pharmacologic treatment.

Results

Both patients experienced a considerable amelioration after parallel treatments with neurological drugs and inclusion in rehabilitation exercises programs, followed by the daily exercise practice (for 6 months), with the subsequent improvement levels in BDI, FSS and a healthier lifestyle. NVS decrease from 5-7 to 2-4 pain score, BDI varied from 25-31 to 20-25 depression score, and FFSS ranged from 56-61 to 20-25 fatigue score after the treatment.

Conclusion

The importance of an accurate clinical history as well as a properly examination is pointed out herein. Early signs cannot be ignored or mislead including factors such as age and several early symptoms. The rehabilitation exercises programs seems to slow down the progress of the disease, as we could observe in less rigidity and fatigue, with the consequent delay of orthotic material use.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2270

WHAT IS THE EFFECT OF CLINICAL PILATES EXERCISES PLUS CONNECTIVE TISSUE MASSAGE ON DISEASE ACTIVITY, ANXIETY AND QUALITY OF LIFE IN INDIVIDUALS WITH FIBROMYALGIA?

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Introduction/Background

Fibromyalgia treatment is difficult. The effects of combined interventions are being investigated in recent years in order to reduce fibromyalgia symptoms and improve functioning. This study aimed to compare the effectiveness of a clinical pilates exercises (CPE) with and without connective tissue massage (CTM) on disease activity, anxiety and quality of life in individuals with fibromyalgia.

Material and Method

Fourteen individuals (13 females, 1 males; mean age=53.64±8.57 years) with fibromyalgia were included in this study. Disease activity, anxiety and quality of life were assessed using Fibromyalgia Impact Questionnaire (FIQ), Beck Anxiety Inventory (BAI) and Short Form-36 (physical and mental subscales) respectively. Participants were randomly assigned to Group I (CPE+CTM; n=7) and Group II (CPE; n=7). All interventions were applied 3 days per week for 6 weeks by the same experienced physical therapist. CPE, in which individuals activated core muscles and maintain neutral spine, were lasting 60 minutes. CTM was started from lumbosacral region and continued lower thoracic, scapular, interscapular, and cervical regions, respectively. Wilcoxon and Mann Whitney U tests were used to analyze the data.

Results

After the interventions, the difference in FIQ and physical scores of SF-36 was significant in both groups, mental scores of SF-36 showed improvement only in group II ($p < 0.05$) and there was no significant difference in BAI ($p > 0.05$). When the groups were compared, there was no significant difference ($p > 0.05$).

Conclusion

This study showed that CPE and CTM might be used to provide improvements in individuals with fibromyalgia. CPE showed more advantages than CTM and so we recommended physiotherapists to use CPE in the clinics to reduce the symptoms of fibromyalgia.

Keywords

Fibromyalgia;Pilates exercises;Connective tissue massage

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2357

THE COMPARISON OF STRENGTHENING EXERCISE EFFICACY BETWEEN TENSION HEADACHE PLUS NECK PAIN AND CERVICOGENIC HEADACHE

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Introduction/Background

Tension type headache (TTH) is the most prevalent form of adult benign headache. TTH contribute to a large burden of disability. Cervicogenic headache (CH) is a recently validated type of headache. The aim of this study is the comparison of Strengthening Exercise efficacy between tension headache and cervicogenic headache.

Material and Method

In this study we enrolled 70 untrained patients in two groups. One group (n=35) had Tension headache plus Cervicogenic headache and other group had only Cervicogenic headache. Both groups received a training program consist of Isometric Strengthening exercise of neck muscles, strengthening of deep flexors of neck and shoulder girdle muscles, 3 times per week during 8 weeks. The intensity of headache was measured at the baseline and after intervention with VAS (Visual Analog Scale).

Results

Both groups had reduction of pain intensity at the end of study but As a result, exercise program reduced significantly the intensity of pain in tension headache plus cervicogenic headache group (2.5 ± 1.3) as comparison with cervicogenic headache significantly. (0.86 ± 1.3). ($p=0.00$)

Conclusion

Exercise may be an option for the treatment of tension and cervicogenic headache. According to this study isometric Strengthening exercises of neck muscles, strengthening of deep flexors and shoulder girdle muscles exercise can reduce intensity of pain in tension headache plus cervicogenic headache superior than cervicogenic headache alone. Further high quality

research is required to determine the effectiveness of different types of exercise in different types of headache.

Keywords

Strengthening Exercise ;Tension Headache;Cervicogenic Headache

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2374

MORE THAN A SIMPLE BACK PAIN

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Introduction/Background

Parkinson's disease (PD) is a long-term disorder of the central nervous system that mainly affects the motor system. Often presents with back pain, among other osteoarticular limitations, and may delay diagnosis. Our goal is to establish the bases for a prospective study on the prevalence of back pain as a starting symptom in Parkinson's Disease.

Material and Method

This is an preliminary study that was carried out with two patients (65 and 68 aged women), who were referred to the Rehabilitation Unit from Primary Care for analgesic- resistant back pain, between September 2016 and October 2017. Patients were diagnosed by spondyloarthritis and were treated with non-steroidal anti-inflammatory analgesics without any betterment. Both of them showed intense fatigue, inexpressive face, rigidity (at upper limbs level), movement disorders and walking difficulties. After filling a brief questionnaire about pain Numerical Visual Scale (NVS), depression and anxiety which included the standardized tests Beck's Depression Inventory (BDI) and Fatigue Severity Scale (FSS), they started a rehabilitation program, together with neurologist visits for a pharmacologic treatment.

Results

Both patients were diagnosed through a correct anamnesis and clinical exploration, improving at the level of fatigue and pain after 6 months of treatment with group rehabilitation exercises, presented: NVS decrease from 5-7 to 2-4 pain score, BDI varied from 25-31 to 20-25 depression score, and FFSS ranged from 56-61 to 20-25 fatigue score after the treatment.

Conclusion

It is essential to make a correct clinical history and exploration, not letting ourselves be carried away by first diagnostic impressions in view of age and initial symptomatology, we must always bear in mind the possible differential diagnoses. The group exercise program can help with maintenance and seems to slow down the progression of both stiffness and fatigue in these patients, also delaying the need for orthotic material, as the revised literature.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2736

TRACKABLE PILL DIGITAL TECHNOLOGY IN PRM AND PAIN: HYPE OR HOPE?

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Background:

Technological advances in the domain of wearable rehabilitation medical technology holds promise to optimize delivery and efficiency of healthcare.

In no area of PRM is this more evident than in acute pain management. The combination of wearable technology with a "Digital Ingestion Tracking Program" (DITP) embedded within a pain pill may allow patients, caregivers as well as healthcare providers to track ingestion of pills through the web or a smartphone app. Monitoring of pill consumption compliance and adherence may be optimized.

Method:

This study will explore the DITP system and assess its clinical utility and applicability to rehabilitation medicine. A systematic review of the literature will be presented along with the illuminating case history of a PMR patient who's functional outcome was significantly impacted by the technology. Photos of DITP technology will be shared for didactic purposes.

Results:

While there are many advantages of DITP including fostering enhanced compliance, improved adherence, empowerment of patients; several disadvantages exist such as cost and potential privacy concerns.

Conclusions:

DITP can aide physiatrists in the daily management of pain patients by electronic verification of whether the patient has taken their prescribed pill and at what time. For patients on opioid medication, this is immensely important as compliance is a cornerstone of proper pain management. Enforcement and support of statutory safeguards can prevent improper diversion and abuse of pills. In an age of international concern over opioid abuse, DITP may offer an innovative strategy for enforcing proper use of pain medication in PRM

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Keywords

Document not received

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2739

RESEARCH ON THE SENSORY PREFERENCE STRATEGY OF BALANCE MAINTAINED

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Objective:

Explore the influence of cognitive-dual task on balance function and analyze the sensory strategy of balance maintained.

Methods:

35 young people without dysfunction were selected and randomly divided into two groups: the control group and the cognitive task group. Assessed with the Modified CTSIB balance function on Neurocom balance manager, two weeks later, Testing control group again, while to dual-task group, on the basis of the Modified CTSIB and mental arithmetic cognitive task. To ensure balance function, The mean center of gravity (COG) sway velocity in both eyes open and eyes closed condition was measured and analyzed statistically.

Results:

There were significant differences between the EC condition when standing on firm support and the comprehensive condition in the center of gravity sway velocity in the control group before and after experiment; EO condition when standing on firm support and the comprehensive condition in the center of gravity sway velocity in the dual-task group before and after experiment and the same result compared to control group after experiment, while EC conditions showed no significant difference.

Conclusion:

1)After increasing cognitive tasks, youth balance function decline.2)Various trainings on Neurocom balance manager can improve the balance function.3)Calculation tasks eased the disequilibrium state when standing on firm support with eyes closed.4)Two or more tasks when keeping balance, sensory preference strategy is used.

Keywords

balance; sensory function; cognition

Document not received

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2746

REHABILITATIVE COMPREHENSIVE INTERVENTION FOR PREVENTING FALLS IN THE ELDERLY

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With the rapid development of aging in China, most of the elderly suffer from falling. The balance ability deficit is the main reason for falling while there are many other factors, which include, muscle strength reduction, neuromuscular control deficit, proprioception and cognitive attention deficit. Falls cause serious adverse consequences and increases social and family burdens. Experts from China and abroad have developed guidelines for preventing falls in the elderly, they recommend fall intervention in sports training, medicine, vision, vitamin D, environment, education and other aspects, but the role of cognitive function is ignored. The innovative theory suggests that the cognitive factors can cause the abnormal posture and balance of the human body, supplemented by the evidence of cognitive prevention at home and abroad. The research team developed cognitive- balance dual-task training technology, targeted muscle training technology, and spatial location technology, then developed the standardized rehabilitation intervention strategies for the prevention of falls.

Keywords

fall;rehabilitation;Comprehensive Intervention

Document not received

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2747

INVESTIGATION ON THE STATUS OF COMMUNITY-BASED REHABILITATION MEDICAL RESOURCES IN SHANGHAI

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Abstract Objective

To investigate the present status of the Shanghai community-based rehabilitation and figure out developmental strategies to elevate the abilities of community-based rehabilitation.

Methods

238 communities of health care were investigated through questionnaire survey.

Results

None-independent departments of rehabilitation medicine accounts for 55.88% of all communities. And 8.82% of communities have none rehabilitation services or have very limited rehabilitation capacities. 96.14% of communities was configured with several sets of physical therapy, exercise therapy and traditional therapy equipments. There are 677 doctors and 596 therapists served in rehabilitation departments in all communities. Only 1.77% of 677 doctors has the specialty education background of rehabilitation medicine.

Conclusion

The quality and level of rehabilitation services in communities of Shanghai has been significantly improved. However lackage of rehabilitation staff still is the key factor restricting the development of community-based rehabilitation in Shanghai.

Keywords

Document not received

E-Poster Session - July 9-12 - Exhibition Area

A1.04 Pain - Miscellaneous

ISPR8-2748

ACUTE EFFECTS OF HAMSTRINGS STRETCHING ON BIOMECHANICAL PERFORMANCE OF FEMALE ATHLETES DURING CUTTING

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Objective :

The purpose of this study is to investigate the acute effects of hamstring static stretching on kinematics and kinetics and surface EMG in female athletes during cutting, then discuss its influence on the factors associated with ACL injury.

Methods:

Twelve female athletes from Shanghai University of sport completed cutting task both before no stretching and hamstrings static stretching in two days. The 3D motion data, ground reaction forces and surface EMG data were recorded and analyzed during the cutting process. Paired T-test was applied to compare the statistical difference between no stretching and hamstring static stretching.

Results & Discussion:

(1) Compared with the no stretching, there were significant increases in the range of motion of hip in sagittal plane after hamstrings static stretching($p=0.041$). Also, there were significant increases in the range of motion of knee in frontal plane($p=0.049$). After stretching, the initial-contact knee angle significantly decreased ($p=0.046$) and the peak value of ankle varus significantly decreased ($p=0.037$) comparing with no stretching. These results indicates a negative affection on motion performance

(2) Compared with no stretching, there was a significant differences in the timing of stance-phase peak vertical ground reaction force($p=0.032$), peak vertical ground reaction force occurred later after being stretched. Besides, the exterior tibia shear force (ETSF) significantly decreased after being stretched ($p=0.036$). All this reveals that hamstring static stretching may potentially decrease the risk of ACL injury during cutting.

(3) Our results determined that the aEMG of biceps femoris during the initial stage of cutting significantly decreased after hamstring static stretching ($p=0.033$). that subjects were more dependent on hip muscles during initial stage of cutting.

Conclusions:

Hamstrings stretching not only affects the motion performance of cutting, but also potentially reduces the risk of ACL injury.

Keywords

Document not received

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-0023

ATYPICAL PAINFUL MYOTONIA VARIANT OF MYOTONIA CONGENITA IN HISPANIC MALE AND HIS FAMILY: A CASE REPORT

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Introduction/Background

A 29 year old Hispanic male complained of weakness, diffuse painful muscle cramps precipitated by cold temperatures since age 15. He is unable to sleep in air-conditioning because he awakens entirely paralyzed with exception of eye movement. Although he avoids exercise, he is very muscular. His symptoms are not brought on with stress. He previously lived in a small community in Central America where there was no air-conditioning before immigrating to the United States. His father, 6 male siblings, 2 male half siblings, one aunt and her child all have similar symptoms, but two sisters do not.

Material and Method

PHYSICAL EXAM: Sensation is intact to light touch. Motor strength is 5/5 in all limbs. There is muscle hypertrophy throughout the body including paraspinal musculature. He has the appearance of "Hercules". There is positive percussion myotonia. The patient cannot open his hand or eyes after squeezing tightly for 30 seconds. Reflexes are 1+ symmetric throughout.

TESTING: Laboratory chemistries were normal including K+, Na+, TSH. Motor and sensory NCS of upper and lower limbs were normal. EMG showed diffuse myotonic discharges in bilateral APB, gastrocnemius and orbicularis oris muscles. (EMG/NCS tables and waveforms from an AANEM accredited lab will be included in poster). The patient was referred to Neuromuscular Neurology Clinic.

Results

Neuromuscular Neurology Clinic diagnosed the patient with Myotonia Congenita. The patient was started on carbamazepine XR 200 mg per day then increased to twice per day. The patient had improvement and relief from cramping. Further testing of the family is being pursued.

Conclusion

This case reports the very rare "atypical painful myotonia" variant of myotonia congenita. Myotonia congenita has been reported in European, French Canadian, Japanese, and Arabic populations, but not in Hispanic patients. The differential diagnosis, inheritance, and rehabilitation strategies in this unusual case are presented.

Keywords

myotonia;congenita;pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-0041

WHAT ARE THE GENERAL LIFE HABITS OF FIRST-GRADE STUDENTS WHO HAVE JUST STARTED A HEALTH UNIVERSITY?

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Introduction/Background

It is aimed to emphasize researches which increase awareness of students who study especially at health-related departments, revealing their general life habits.

Material and Method

All first-grade students studying at Health Faculties were included (n = 682). General life habits of them about health were questioned with a questionnaire. SPSS 16.v was used.

Results

The mean age of students was 21.07 ± 1.28 (17-26) and as their average body mass index was 22.02 ± 11.08 , 76.5% were at healthy limits (Table).

The average cigarettes of smokers were 8 ± 0.9 per day and they had these habits for 2 ± 0.7 years. 298 (43.69%) of students did not play any sports, 23.5% of them had less than 1 hour a week, 28.2% had 1-3 hours and 20.0% had more than 4 hours of sports. The most frequently played sports was fitness (79, 11.58%), (Figure 1).

The average daily walking distance of students was 1 ± 0.3 km. The mean of television watching hours was 3 ± 0.81 a day. The mean of computer using hours was 5 ± 0.52 a day. Students were choosing sitting position the most when they study at home (516, 75.65%), Figure 2. Female students most frequently chose wearing sneakers (243, 45.25%).

Conclusion

This study is important because students could primarily raise their awareness first as being in health-related departments. The rate of not playing sports of students was high. This is because the number of hours of lessons are a lot and sports alternatives at university are not sufficient. Students could be informed about the importance of sports. The majority of students were not smoking; may be once they prefer health-related departments. They may be taught in school education programs to improve negative parameters above. When they arrive in the last class, this study could be repeated to see if there has been a change in their awareness.

Keywords

university ;student;habit

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-2567

CORRELATION OF DIAPHRAGMATIC ULTRA SONOGRAPHY WITH VITAL LUNG CAPACITY

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Introduction/Background

Evaluation of diaphragm function as the important muscle for respiratory system is very crucial, more over in rehabilitation medicine field. Evaluating the diaphragmatic work usually needed expensive tools such as computed tomography, dynamic magnetic resonance imaging, and fluoroscopy. Evaluating diaphragm using ultra sonography had been proof easier to perform and less expensive, for large range of subject from healthy to critically ill patients in intensive care unit. In this study we want to evaluate if the thickness of diaphragm will correlate with the vital lung capacity.

Material and Method

This is a cross sectional study analitic. We performed evaluation of diaphragm using ultrasound in healthy adult subjects using high frequencies probe, in right anterior axillar line between intercostal 7-9. We measure the thicness of diaphragm during relax breathing and maximum inspiration in lying position. Subjects also done the spirometry evaluation. We analyzed data using spss with correlation test.

Results

We evaluate 26 healthy adult subjects, age range between 22-34 years old with mean age 28.38. Thickness of diaphragm was measure in milimeters, with the mean of thickness during maximum inspiration was 36,54mm, and the mean thickness during relax breathing was 16,12mm. Correlation between maximum inspiration thickness and vital capcity measured with pearson correlation was significant with $p = 0.014$

Conclusion

Ultra sonography of diaphragmatic work during respiration can be a usefull evaluation that easier to perform and less expensive than other methods to evaluate respiratory function. Further study is need to evaluate the use of sonography imaging of diaphragm in different cases and trough all range of ages.

Keywords

diaphragm;ultra sonography;vital capacity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-2605

BONE MINERAL DENSITY IN POSTMENOPAUSAL WOMEN

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Introduction/Background

The impacts of various factors on bone mineral density (BMD) differ across diverse population. The aim of this study was to determine the relationship between BMD in the femoral neck (FN) and lumbar spine (LS) with some common clinical, demographic, and biochemical parameters in postmenopausal women.

Material and Method

In this cross-sectional case-control study, all postmenopausal women of the Amirkola Health and Ageing Project (AHAP) who performed bone densitometry were included. BMD at FN and LS was measured by DXA method. Data regarding clinical, demographic, and biochemical characteristics were provided. OP was diagnosed by the International Society for Clinical Densitometry criteria. Pearson correlation and multivariate regression analyses with simultaneous adjustment were performed to determine relationship.

Results

Five hundred thirty-seven women with mean age of 67.9 ± 6.7 years and mean menopause duration (MD) of 15.8 ± 5.1 years were studied. MD correlated negatively with FNBMD and LS-BMD g/cm² ($r = -0.405$, $p = 0.001$ and $r = -0.217$, $p = 0.001$). Body mass index (BMI) correlated positively with FN and LS-BMD g/cm² ($r = 0.397$, $p = 0.001$ and $r = 0.311$, $p = 0.001$). The association of MD with risk of FNOP was stronger than LS-OP. Obesity and metabolic syndrome (MS) and higher serum ferritin reduced the risk of OP at both LS and FN similarly, whereas the impacts of parity, prior fracture, high level of education, and physical activity were significantly different across BMD measurement sites.

Conclusion

The results of this study indicated a significant association between OP and MD, obesity, parity, MS, history of fracture, serum ferritin, level of education, and physical activity. However, the direction and the strength of association varied across BMD measurement sites.

Keywords

Bone mineral density;Postmenopausal;Obesity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-0101

MINIMUM TECHNICAL STANDARDS AND RECOMMENDATIONS FOR TRAUMATIC BRAIN INJURY SPECIALIST REHABILITATION TEAMS IN SUDDEN-ONSET DISASTERS (FOR DISASTER REHABILITATION COMMITTEE SPECIAL SESSION)

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Introduction/Background

Sudden-onset disasters (SODs) result in increased number of survivors with complex and long-term disabling injuries, including traumatic brain injury (TBI) that warrants comprehensive specialist rehabilitation. This presentation highlights the minimum technical standards required for specialised TBI rehabilitation teams and their integration into WHO Emergency Medical Teams (EMTs) to facilitate comprehensive management of TBI survivors in disaster settings.

Material and Method

A team of medical rehabilitation physicians from the Royal Melbourne Hospital conducted a comprehensive review of literature for TBI management, based on the WHO core-guidelines for 'Minimum technical standards and recommendations for rehabilitation for EMTs'. These were endorsed by a specialist TBI expert panel in the Asia-Pacific region.

Results

Comprehensive rehabilitation programs improve functional outcomes and quality of life of TBI survivors. It is recommended that specialised TBI care teams need to be embedded into EMTs for disaster response and management for early diagnosis, management and social reintegration. This guidance documents the minimum standards for deployment of TBI specialist rehabilitation teams in the context of SODs, including: skill requirements, team configuration and profile, professional competencies for management of TBI and complications, list of required equipment and consumables, information management/dissemination.

Conclusion

TBI rehabilitation should commence from the early response phase in SODs by accredited rehabilitation professionals to minimise complications and disability. Integration of specialised TBI rehabilitation professionals into EMTs for disaster response will improve functional outcomes of survivors.

Keywords

Disaster rehabilitation;Traumatic Brain Injury;WHO Emergency Medical Teams

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-0105

DEVELOPMENT AND PRELIMINARY PSYCHOMETRICS OF THE EXERCISE THERAPY BURDEN QUESTIONNAIRE FOR PATIENTS WITH CHRONIC CONDITIONS

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Introduction/Background

Objective

Chronic diseases are the leading cause of mortality and disability worldwide. Exercise therapy has been found effective for mortality, disability and well-being in many chronic conditions. Burden of treatment may reduce patient compliance and treatment efficacy. We aimed to develop and validate a self-reporting questionnaire assessing the burden of exercise therapy for patients with chronic conditions.

Material and Method

We conducted semi-structured interviews with patients to develop items of the questionnaire. The dimensional structure of the questionnaire was assessed by principal component analysis. Construct validity of the instrument was assessed by exploring convergent validity with the Treatment Burden Questionnaire (TBQ) and divergent validity with pain, self-efficacy, treatment satisfaction and health state. Reliability was assessed with the Cronbach alpha coefficient, a test–retest method using the intraclass correlation coefficient (ICC) and Bland-Altman plotting.

Results

A preliminary list of items was developed from semi-structured interviews with 28 patients and reviewed by two expert physicians. Items obtained were reduced. Then, a sample of 163 patients was used to measure the psychometrics of the Exercise Therapy Burden Questionnaire (ETBQ), consisting of 10 items. Principal component analysis extracted one dimension. The Cronbach alpha was 0.86 [0.82-0.89]. Test–retest reliability (n=24 patients) was good, with ICC 0.93 [0.85-0.97], and Bland-Altman analysis did not reveal a systematic trend. The ETBQ showed expected convergent validity with the TBQ ($r_s=0.52$) and expected divergent validity with pain ($r_s=0.37$), self-efficacy ($r_s= -0.34$), treatment satisfaction ($r_s= -0.49$) and perceived health state ($r_s= -0.28$).

Conclusion

The ETBQ is the first questionnaire assessing exercise therapy burden in patients with chronic conditions. Its psychometric properties are promising.

Keywords

exercise therapy;burden of treatment;chronic diseases

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-0518

CAN SPINAL SCOLIOSIS BE A PREDICTOR OF REFRACTORY BENIGN PAROXYSMAL POSITIONAL VERTIGO (BPPV) IN CLINICAL PRACTICE? DIAGNOSIS AND MANAGEMENT: A CASE STUDY

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Introduction/Background

BPPV is a common cause of dizziness, usually successfully treated with canalith repositioning treatments (CRT). Refractory and intractable BPPV can present secondary to morphological abnormalities, including stenosis and obturation of canals. MRI studies have showed morphological abnormalities in the inner ear of patients with intractable BPPV. Adolescents with idiopathic scoliosis showed 1) Left horizontal semicircular canal (SCC) and left posterior SCC were significantly further from midline, 2) displacement of the horizontal SCC from the midline resulted in more vertical alignment.

Material and Method

Case Description: 67 year-old male referred to physical therapy with diagnosis of central vertigo, history of scoliosis, and intermittent vertigo with generalized dizziness. Symptoms were provoked with bed mobility, computer use, and playing tennis. Vestibular examination was unremarkable except for atypical BPPV presentation. Right dix-hallpike produced right torsional up beating nystagmus (RTUBN), more pronounced in 30 degrees of cervical flexion. Roll testing produced RTUBN in right roll, which reversed into left torsional down beating nystagmus (LTDBN) during left roll, all reproducing symptoms. Differential diagnosis included posterior versus horizontal canal involvement due to observed nystagmus and symptom provocation. Functional gait assessment (FGA) indicated impaired dynamic balance: 24/30. Dizziness handicap inventory (DHI) showed mild self-reported disability: 16/100.

Intervention: Traditional CRTs were unsuccessful. Modified CRTs for R posterior canalithiasis with patient head in 30 degrees flexion resolved BPPV.

Results

Patient was asymptomatic during BPPV testing. There was only a faint RTUBN noted in the right roll test. FGA improved to 30/30 and DHI improved to 4/100. Patient reported no symptoms with all daily activities.

Conclusion

Studies have demonstrated associated anatomical anomalies in patients with scoliosis, which may contribute to refractory/intractable BPPV. Patients with intractable/refractory BPPV may

benefit from scoliosis screening and modification of head position during treatment, as successfully noted in this case. Further studies are suggested to determine if intractable BPPV is common in patients with scoliosis.

Keywords

scoliosis;intractable BPPV;canal anomaly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-0538

THE EFFECTS OF MESH ULTRAVIOLET RADIATION IN THE TREATMENT ON CERVICAL SPONDYLOSIS OF NERVE ROOT TYPE

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Introduction/Background

To observe the effects of mesh ultraviolet radiation in the treatment on cervical spondylosis of nerve root type.

Material and Method

60 patients with radicular cervical spondylosis were randomly divided into 2 groups, each group was treated with medium frequency pulse electric stimulation, ultra-short wave and McKenzie for 2 weeks. The observation group was treated with mesh ultraviolet radiation additionally. Before and after treatment, visual analogue scoring (VAS), Japanese Orthopaedic Association Scores (JOA) and clinical assessment scale for cervicalspondylosis (CASCS) were used to evaluate the effects.

Results

After 2 weeks'treatments, the VAS score decreased, the JOA and CASCS scores increased, and the observation group was better than the control group.

Conclusion

The mesh ultraviolet radiation has a good clinical effect on the treatment of radicular cervical spondylosis.

Keywords

ultraviolet ray;the effect;cervical spondylosis of nerve root type

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-0570

REFORM AND PRACTICE OF TEACHING ASSESSMENT METHODS IN REHABILITATION MEDICINE

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Introduction/Background

With medical development, teaching of rehabilitation medicine in China has advanced by leaps and bounds. But some traditional assessment methods are out of style which seriously hinder the development of students' innovation ability. Closed-book examination mode can't meet the needs of talent cultivation. Therefore reform of the methods of assessment is of great significance.

Material and Method

1. Reform the content of teaching and strengthen appraisal target: Classroom teaching is diversified. Case teaching method, activity teaching method, discussion teaching method and game teaching method are introduced into the teaching. In the practice students are divided into three groups: physical therapy group, occupational therapy group and ward group. interest-oriented teaching is also adopted. Wards and rehabilitation halls are opened on weekends or holidays. Students are encouraged to participate in clinical practice activities and in the study of teachers' research groups.

2.Reform assessment content and strengthen guidance of teaching: In practice through classroom assessment, inter-class homework assessment, course report, interclass internship, final examination etc, teachers innovate the assessment content boldly. The teaching orientation is enhance.

3.Reform assessment methods and enhance time effectiveness: Daily performance is strengthened and test scores are weakened to build a reasonable grade: attendance accounts for 10%, internship accounts for 10%,homework accounts for 5%, class answer accounts for 5% , course report accounts for 10%, final exam accounts for 60%. Assessment pressure is divide into daily learning.

Results

Diversified assessment methods can effectively improve students' awareness and skills of rehabilitation medicine and cultivate the students' ability to analyze and solve problems.

Conclusion

In order to cultivate high-quality medical talents that meet the requirements of modern medical development, we should attach importance to the construction of assessment system and infiltrate knowledge assessment into all aspects of teaching.

Keywords

Rehabilitation; Assessment; Examination Reform

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-0705

PSYCHOMETRIC EVALUATION OF PATIENT RESPONSES TO CLINICIAN-GENERATED ITEMS ASSESSING DOMAINS RELEVANT TO REHABILITATION SERVICE NEEDS AMONG HOSPITALIZED POPULATIONS

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Introduction/Background

Objective. To assess the utility of the responses of chronically ill patients to ad hoc legacy clinician-generated medical and social questionnaires used by many institutions in assessing mood, function, symptoms, and social support.

Material and Method

Design. The study population included 8,561 unique patients who generated a total of 12,659 hospital admissions over the period of the study. Items administered from 2004 to 2014 to outpatients in a large US Midwestern medical center who were hospitalized during the study period were identified. Exploratory factor analysis yielded item-to-factor loadings that were in turn used to identify meaningful clusters. Content-matter experts independently described the attributes of the clusters and rated the relevance, coverage, and clarity of the involved items. Factor scores were established with a confirmatory factor model. Validity based on inter-factor relationships and to assigned diagnostic codes was assessed.

Results

Results. Six factors addressing depression, pulmonary symptoms, musculoskeletal pain, living situation, mobility, and activities of daily living had reliabilities of >0.64 and were retained for further analysis. Content-matter experts rated the clarity each item and their relevance to their assigned domains. Factor inter-correlations provided evidence of convergent and discriminant validity, as did weak to moderate relationships ($-.13$ to $.32$) with the related diagnostic code assignments.

Conclusion

Conclusions: A legacy PRO instrument similar to those of many healthcare systems can be utilized to aggregate and characterize the validity of items that can be used to assess the mood, function, symptoms, and social support of chronically ill patients. However, the relationships are likely to be only weak to moderate.

Keywords

Screening;Function;Psychometrics

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-0886

INTERDISCIPLINARY COLLABORATION: 30 YEARS OF EXPERIENCE IN A NEURO-ORTHOPEDIC CONSULTATION AT RAYMOND POINCARE HOSPITAL

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Introduction/Background

Raymond Poincaré hospital is a national rehabilitation center for disabled patients with orthopedic issues. Physical Medicine and Rehabilitator physicians and orthopedic surgeons have developed interdisciplinary neuro-orthopedic approach for treatment of patients, with over 30 years of experience. The framework of diagnosis and therapeutic treatment outcome decision making considers patient concerns and expectation. An initial selection consultation is performed to identify complex cases requiring interdisciplinary expertise, as approximately 60% of new patient referrals (1000 patients annually) present with a surgical indication; otherwise patients are reoriented to different departments.

Material and Method

Patients are stratified into one of four consultation services, dedicated to conditions associated with: upper limb and geriatric /lower limb /cerebral palsy /heterotopic ossification, Charcot-Marie-Tooth, and poliomyelitis.

Results

Consultations are split into 4 phases. The primary phase is performed by a single physician and is dedicated to understand what the complaint is depending on the patients' medical history. Phase 2 involves the entire interdisciplinary team, where there is time dedicated to clinical exam and an interactive discussion between doctors and patient and the best therapeutic options are debated. In the 3rd phase of consultation, the therapeutic options are presented to the patient with clear goals being established in a formal "agreement" with the patient. The 4th part of the consultation is done by one single doctor who stay with the patient to summarize, answer questions and precise the procedure. Discussion with patients is essential for identifying the unique pathological features of individual cases. The interdisciplinary team is comprised of experts in OS and PMR seniors and interns; who participate equally in the process.

Conclusion

The interaction between medico-surgical experts in this framework of consultation has developed a cooperative network of experts in PMR that spans French territory. Thus, diagnosis and consultation using this novel framework delivers ideal treatment strategies for the rehabilitation of patients.

Keywords

Interdisciplinary consultation ;neuro-orthopedic disorders

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-1029

DISASTER PREPAREDNESS IN REHABILITATION IN AN AREA AT HIGH RISK OF MEGA-EARTHQUAKES IN JAPAN

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Introduction/Background

At the Great East Japan Earthquake, more than 15,000 people perished, and another 3000 people were died of the disaster-related conditions.

Material and Method

Japan Disaster Rehabilitation Assistant Team (JRAT) was established after the earthquake by physiatrist and the allied professionals' organizations, and JRAT has been playing a pivotal role of the preparedness to decrease preventable deaths.

The main foci of the preparedness of JRAT are sustaining rehabilitation in hospitals and community, and prevention of inactivity or disuse of the suffered inhabitants. The principles of JRAT are officially authorized and not volunteer-basis.

Results

At the Kumamoto earthquakes in 2016, the JRAT started working on the next day of the first attack. A total of 2039 rehabilitation professionals worked in the area and another 895 worked for logistics in the next 10 weeks, and the manual of the disaster rehabilitation is revised. Risk of the mega-earthquake of south-east Japan has been estimated as 70% in the next 30 years. Worst scenario in Tokushima with 777,000 inhabitants close to the epicenter, is expecting 46% of the inhabitants being in the shelters, and many disaster-related deaths. The local government appointed physiatrists and allied professionals as the coordinators, and they are reviewing condition of planned refugees' shelters, and seeking collaboration with other health professionals.

Conclusion

The society which does not have comprehensive information of the disabled and rehabilitation would need to prepare for the massive natural disasters.

This is a part of ISPRM-ISCoS collaborative session: Supporting global disaster planning and response for sci in low resource settings

Keywords

spinal cord injury;disaster;preparedness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-1093

RELEVANCE OF URINE CYTO-BACTERIOLOGICAL EXAM IN A PRM WARD

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Introduction/Background

to assess the indication of urine cyto-bacteriological exam (UCB) and to improve UCB prescription's relevance in a PRM ward.

Material and Method

229 patients entered the ward from 02/01/2017 to 11/30/2017. 80 UCB were performed. A retrospective analysis of performed UCB was achieved.

Results

43 urine specimen were sterile, 31 specimen have shown positive bacteriuria and leukocyturia, 6 specimen have bacteriuria without leukocyturia. Among the 80 urine samples, 66 analysis were justified as followed. 26 samples were prescribed for suspicion of clinical UTI and/ or pyelonephritis of which 17 were biologically confirmed and 14 patients were treated (1 is infected with multiresistant germ). 4 samples were prescribed for post treatment control and 12 samples for invasive exploration of the urinary tract (urodynamic, cystoscopy). 2 samples were taken before immunosuppressive therapy, 7 for increasing spasticity and 15 for infectious assessment after lower limb surgery, 10 urine analysis were clinically irrelevant and 4 were not registered in the patient record. 17 UTI are reported in 14 patients (6%). Of these, one was detected at the entrance in the ward and 16 were nosocomial.

Conclusion

UCB is indicated according to the following recommendations for clinical practice: clinical suspicion of urinary tract infection, invasive exploration of the urinary tract, control when no clinical improvement under treatment. The recommendations concerning patients at risk: introducing immunosuppressive treatment, fever after lower limb arthroplasty are not consensual. Although our indications are mostly in agreement with the recommendations, 17% of urine samples still remain unjustified. However, they were not followed by antibiotic prescription. Unjustified UCB increases care's burden and has a cost for both wards (PRM and laboratory). Next assessment will be conducted six months after making aware of the PRM team.

Keywords

UCB;indication;PRM ward

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-1198

THE USE OF IONTOPHORESIS IN LOCALIZED HYPERHIDROSIS: A CASE REPORT

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Introduction/Background

Hyperhidrosis is medical condition characterized by abnormally increased sweating, that can deteriorate quality of life from a psychological, emotional, and social perspective. Hyperhidrosis can either be generalized, or localized to specific parts of the body.

It may be idiopathic or secondary to other diseases as Blue Rubber Bleb Nevus syndrome, dermatologic manifestations of Glomus tumor, POEMS syndrome or Goplan's syndrome. It is also important to exclude secondary causes for hyperhidrosis, as disorder of the thyroid or pituitary glands, diabetes mellitus, gout, menopause, drug abuse, between others. Clinical presentation with symmetry of excessive sweating in hyperhidrosis are most consistent with primary hyperhidrosis, caused maybe by overactivity of the sympathetic nervous system.

Material and Method

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Results

We report a case of a female with 39 years old that presented bilateral plantopalmar hyperhidrosis for more than 3 years. She was followed in dermatology consultations and it was prescribed topical treatments that didn't had any effect in the sweating complains. After 3 year, she was also directed by her family physician to our consultation. She, then, started iontophoresis up to a maximum of 10 mA with tap water during 20 minutes, after which the polarity was inverted for more 20 minutes. Initially the treatment was repeated 3 times a week, but this was reduced according to the patients complains. She is now doing maintenance treatments, once a month.

Conclusion

It is important to keep in mind that hyperhidrosis can manifest itself in more than one location, with different intensities in each of the patients, and that the response to treatments is also different from patient to patient. There is a wide range of nonsurgical and surgical treatments available for patients with focal hyperhidrosis. This case shows that tap water iontophoresis can be used as an effective and safe treatment for plantopalmar hyperhidrosis.

Keywords

Hyperhidrosis; Iontophoresis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-1215

HEALTH - RELATED QUALITY OF LIFE IN MOTOR DISABILITY AFFECTING GREEK POPULATION

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Introduction/Background

OBJECTIVE: The evaluation of health-related quality of life (HRQoL) in patients suffering from motor disability and the identification of associated factors.

Material and Method

MATERIALS AND METHODS: 142 patients with motor disability due to underlying neurological diseases (60.9% men) were examined in the outpatient department of Physical Medicine and Rehabilitation, University General Hospital "Attikon", Athens from 2015 till 2017. HRQoL was measured using SF-36 questionnaire, while for the evaluation of activities of daily living (ADL) Barthel index was used. Demographics and clinical characteristics of the patients were also recorded. Data was modeled using multiple linear regression analysis.

Results

RESULTS: The mean age of the patients was 54.7 ± 18.1 years with mean duration of disease 11.8 ± 14.1 years. 39.1% of them had suffered a stroke, 18.5% multiple sclerosis, 29.4% spinal cord injury and 13% peripheral neuropathies. The mean scores on SF-36 dimensions ranged from 23.4 (physical functioning) to 53 (role emotional). Multiple analysis revealed that more than two coexistent somatic diseases were independently associated with physical functioning ($\beta=-11.8$, $SE=4.31$), bodily pain ($\beta=-28.5$, $SE=7.7$) and general health dimensions ($\beta=-32.4$, $SE=7.9$). Furthermore, psychiatric disorders were associated with lower scores on physical functioning ($\beta=-8.9$, $SE=2.2$) and mental health ($\beta=-12.3$, $SE=5.3$). In addition, advanced age was associated with lower scores on social functioning dimension. Lower scores on bodily pain were found for patients with neuropathic pain and heterotopic ossifications. Being bedridden or wheelchair user were also independent predictors for most of the SF-36 dimensions. Patients with peripheral neuropathies had lower levels of HRQoL. Barthel index was negatively correlated with all SF-36 dimensions ($p<0.001$).

Conclusion

CONCLUSION: HRQoL was found substantially lower compared to Greek and foreign general population. The results are similar when compared to disease-specific populations of other countries. QoL was related to potentially modifiable factors that, if addressed by rehabilitation team specialists, may lead to QoL improvement.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-1306

STUDY OF DIAGNOSTIC VALUE OF ULTRASONOGRAPHY IN COMPARISON WITH ELECTRODIAGNOSIS IN RHEUMATOID ARTHRITIS PATIENTS SUFFERING CARPAL TUNNEL SYNDROME

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Introduction/Background

Increased cross-sectional area of the median nerve has been shown with Ultrasonography (US) in patients with carpal tunnel syndrome (CTS). The diagnostic value of cross sectional areas (CSA) of the median nerve in patients with rheumatoid arthritis (the group who suffers from Carpal Tunnel Syndrome and the group who do not) and a healthy group, was evaluated and compared in this study.

Material and Method

38 patients with RA were evaluated, which 17 cases had CTS clinically. 20 healthy patients compered as control group (in total 58 cases icluded in study). The CSA of median nerve at the entrance of the carpal tunnel was measured with ultrasonography. The result compared to Nerve Conduction Study (NCS).

Results

The mean cross-sectional area of median nerve in healthy people was $9.45 \pm 1.36 \text{ mm}^2$, in RA with CTS group: $11.65 \pm 1.8 \text{ mm}^2$ and non CTS RA group: $10.15 \pm 1.6 \text{ mm}^2$. Area Under the Curve (AUC) for cross-sectional area of median nerve for right hand was 0.772, with the cutoff point of 10.46 mm^2 and sensitivity of 78.5%, specificity of 67%, positive predictive value of 44% and negative predictive value of 90.62%. These findings for left hand were: AUC: 0.783, cutoff point: 10.7 mm^2 , sensitivity: 72.2%, specificity: 69.5%, PPV: 36.3% and NPV: 91.4%. The results of cross-sectional area of median nerve and NCS were significantly correlated. (Pvalue < 0.013).

Conclusion

Ultrasonographic measurement of cross-sectional area of median nerve is a sensitive test for detecting CTS and can be noticed more as a possible alternative way of CTS screening. The CSA of median nerve in patients with RA and CTS was significantly higher in comparison with patients with RA and no CTS. The CSA of median nerve in RA patients without CTS, was similar to healthy individuals.

Keywords

Carpal tunnel syndrome ;Rheumatoid arthritis;Ultrasonography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-1359

HEMOPHILIC ARTHROPATHY IMPACT AND MEDICAL CARE IN A PMR SERVICE, BLIDA, A 6 YEAR RECOVERY

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Introduction/Background

Untreated haemophilic haemarthrosis is the cause of joint destruction and a major educational and functional handicap. The therapeutic strategy is based on the prevention and well-managed treatment of haemarthroses.

Material and Method

Prospective observational study of 44 hemophiliacs, from 2011-2017. The evaluation is done before and after the treatment of hemarthrosis by: EVA pain, Gilbert and Petterson clinical score; radiological classification of Harnold Hildgarthner; hemophilia handicap score. The medical care is done after the supplementation in hemophilic factors, by the chemical synoviorthèse (hexatrione), and a training with the self-reeducation.

Results

Mean age 22.43 years, Standard deviation 13.42, 38 have hemophilia A and 6 have hemophilia B, 43% have or had an average level of schooling, 75% of whom have dropped out of school. 30% have a similar case in the family; 3 have HBS+ serology; 20% have a school handicap score of 3; 39% have a mobility handicap score of 3; EVA-Pain is 80 to 100 mm at the time of hemarthrosis, 46% have a Gilbert score, any joint between 16-18 and 25% have a Harnold score of 3. 17 are on prophylaxis; 20 received synoviorthesis, of which 60% received it at the knee. The improvement is significant in terms of pain, clinical and disability hemophilia after synoviorthesis at 3 weeks.

Conclusion

Haemophilic arthropathy in our series, remains relatively in late management, from which the need for an early management. The means of prophylaxis by synoviorthesis, remains the most effective.

Preventing hemophilic hemorrhagic accidents has become an evidence, synoviorthesis remains an effective preventive measure.

Keywords

HEMOPHILIC ARTHROPATHY;handicap;re-education and synoviorthesis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-1646

PATIENT PERSPECTIVES ON IMPROVING PERSON-CENTRED REHABILITATION: IMPLEMENTATION AND EVALUATION OF A REHABILITATION SPECIFIC PATIENT EXPERIENCE SURVEY; FACILITATORS AND BARRIERS

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Introduction/Background

Routinely patients receive surveys sent by the hospital on the care that they experienced and any comments they would like to make; however these comments may be very broad.

This project is patient-centred rehabilitation study, which study the implementation and evaluation of a rehabilitation specific patient experience survey using the Modified Client-Centred Rehabilitation Questionnaire (CCRQ).

Furthermore; a further follow up single phone call to the participants to ask them to name the most important four (4) facilitators and four (4) barriers from their for person-centred rehabilitation.

The aim of this study is to better characterise and determine barriers and facilitators to patient-centred experiences in inpatient rehabilitation, from a patient's perspective

Material and Method

Study design: Cross-sectional telephone survey

Settings: Inpatient rehabilitation unit, Royal Melbourne Hospital

Participants: 100 consecutive admitted patients over six months.

Procedure: After an informed consent was obtained, participants will be provided with the background of the survey at the start of the phone call, once the background has been provided, and then they were required to answer two questions on how we could improve their person-centred experience.

Results

Participants were predominantly female (52%), mean age 68 ± 13 years. Almost one-half (43%) had neurological conditions and 41% musculoskeletal problems.

Elderly patients were generally grateful and reluctant to provide negative comments, however younger were more particular about their dislikes forthcoming with their comments.

Elder patients keen on interaction and socialising more; however younger group do treasure their privacy.

A few patients were disappointed by the lack of culturally appropriate dietary preparation, and room temperature control units.

The availability of free wireless internet was big bonus for younger patients

Conclusion

This short specific Questions and Answers survey has identified facilitators and barriers, which would essentially assist the rehabilitation multidisciplinary staff in delivering better and most needed patient-centred care

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-1902

INNOVATIVE TECHNOLOGIES FOR CAREGIVERS: PRELIMINARY FINDINGS

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Introduction/Background

More than eight million Canadian caregivers provide 75% of the assistance needed for individuals of all ages with varying disabilities to remain living in the community. Being a caregiver can have psychological, health, professional, and financial consequences. Finding ways to reduce caregiver burden is critical. The objectives of this study are to identify: (1) aspects of caregiving that caregivers find most challenging and the areas in which they provide care, and (2) caregivers' preferences and priorities for the development of innovative solutions within these areas of care.

Material and Method

Present or past caregivers of older adults were recruited across Canada. As part of a larger study using a mixed-method design, the Caregiver Assistive Technology Outcomes Measure (CATOM) was administered to measure the perceived impact of assistive technology on caregivers' burden. Semi-structured interviews followed to explore caregivers' challenges and needs.

Results

Sixty caregivers between the ages of 30 and 82 years old (63 ± 9 years) have been recruited. Results show that caregivers provide more assistance with instrumental activities of daily living but the most challenging are basic activities of daily living and mobility activities, namely toileting, washing and transfers. Assistive technologies are frequently used. Three categories of innovative solutions have been identified: devices (e.g., smart cane), programs (e.g., better accessed respite programs), and revised policies (e.g., changes to building codes).

Conclusion

Preliminary findings emphasize the need to support caregivers with the provision of assistance with basic activities of daily living. Potential innovative technological solutions, programs, and policies have been identified and are currently being presented to caregivers to validate them before further development.

Keywords

Technology;Caregivers;Aging

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-1916

EFFECTIVENESS OF ABDOMINAL EXERCISE FOR NARROWING DIASTASIS RECTUS ABDOMINIS IN WOMEN: SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

Diastasis rectus abdominis (DRA) is defined as abnormal separation of the rectus abdominis muscles (Venes et al., 2005), causing dysfunction in the linea alba by increasing the width and losing the integrity. Although it could be treated by abdominoplasty, this review aimed to clarify whether non-surgical treatment is effective in reducing the inter-recti distance (IRD) in women with DRA.

Material and Method

MEDLINE, EMBASE, the Cochrane Library, PEDro, CINAHL, and Web of Science were systematically searched by two independent reviewers for studies published from earliest till 31st January 2018 with search terms relating to the condition (DRA) and intervention (conservative treatment). The same reviewers also independently assessed the methodological quality by using the Down and Black checklist for both randomized and non-randomized studies. Meta-analysis using either a fixed effects model or a random effects model was conducted to calculate mean difference (MD) and 95% confidence intervals (CI) where appropriate.

Results

Of eight methodologically fine to good studies that were eligible for inclusion, three reported the effect of certain period of exercise, mainly targeted abdominal strengthening during the perinatal period, on reducing the IRD, and five reported the immediate effect of curl-up and isolated transverse abdominis (Tr.A) activation on the IRD. The results of meta-analysis showed that both regular abdominal exercise and a single curl-up significantly narrowed the IRD (MD=-8.97; 95%CI=-14.59, -3.34; $I^2=91%$ and MD=3.68; 95%CI=2.67, 4.69; $I^2=0%$, respectively), while a single isolated activation of Tr.A slightly increased the IRD.

Conclusion

This review indicated that the IRD in women with DRA is narrowed by exercising the superficial abdominal muscles. However, since the function of linea alba, such as transferring the force through the trunk, might be improved by stretching or tensing it up rather than only reducing the width (Lee et al., 2016), the results of this review need to be treated with consideration.

Keywords

Diastasis rectus abdominis; Abdominal exercise; Systematic review

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-1964

DYSPHAGIA LIMIT AS DETECTION TEST OF SWALLOWING DISORDER

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Introduction/Background

In the context of ICF, swallowing is defined as the function of passing food and beverages through oral cavity, pharynx, esophagus and stomach at a proper timing and rate. Dysphagia makes reference to a swallowing disorder

Swallowing function's evaluation includes quick screening tools to detect dysphagia, a focused physical examination and instrumental tests where necessary.

Objective: To establish the usefulness of dysphagia limit EMG test in a cohort with swallowing disorders

Material and Method

32 healthy individuals and 32 patients with some degree of swallowing disorder detected by EAT 10 self administered questionnaire using colombian spanish validated and translated version.

As quantitative and non invasive method a dysphagia limit test was used in order to evaluate swallowing function through Surface EMG with electrodes located in submental muscles complex and cricothyroid space

Progressively increasing water volumes were administered at 5, 10, 15, 20 y 25 ml respectively. All subjects were instructed to drink the total volume in a single swallow. The number of swallows and swallowing burst required to drink the total amount of water administered were established.

Dysphagia limit test results were compared between groups. Correlation between EAT 10 and dysphagia limit test was established. Diagnostic accuracy of dysphagia limit test was calculated

Results

We found dysphagia limit test has a good diagnostic accuracy to detect swallowing disorder (table 1). Significant correlation between EAT 10 score and dysphagia limit test EMG was established ($p < 0,0001$, $r = 0.8$).

Conclusion

Dysphagia limit test is a tool with good diagnostic performance in order to detect swallowing disorder.

Keywords

DYSPHAGIA LIMIT ;Eating Assessment Tool 10 ;dysphagia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-2011

REHABILITATION OF INGROWING TOENAILS PRIOR TO AND SUBSEQUENTLY TO THE TREATMENT BY ARKADA'S METHOD SOLELY AND IN COMBINATION WITH THE EXCISION OF NAIL SULCUS

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Introduction/Background

Ingrowing toenails are frequent disorders which both decrease patients' quality of life and influence on their biomechanical factors like posture and gait. There are some methods of treatment, however in many cases they are not completely effective because of the shortage of appropriate preparation prior to the treatment and the rehabilitation process after it.

Material and Method

Patients undergo treatment by non-invasive Arkada's Method which consists in the reconstruction of damaged nail plate. Usually the Method is effective, however some patients require more complex treatment in combination with Arkada's Method: this is the excision of nail sulcus. All the patients are properly prepared e.g. using special preparation to make nail plate and nail folds flexible. Subsequently to the treatment, all the patients are recommended to follow the rehabilitation process e.g. regular medical and podological follow-up, the posture and gait analysis performed by medical professionals (physicians, physiotherapists, podologists) and connected with insole examination, self-sufficient dressing.

Results

Patients who treated in this way achieve the good effects: they stop suffering from pain, start walking right and come back to their professional duties.

Conclusion

The treatment of ingrowing toenails should always be comprehensive and must not finish when the procedure exclusively is done: the rehabilitation process subsequently to the procedure is as important as all former stages, enabling the patients to come to normal daily activities.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-2168

LOOKING AT HOSPITALIZED PERSONS THROUGHOUT THE PRISM OF THE HANDICAP

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Introduction/Background

To describe the disability status of non-selected hospitalized persons.

Material and Method

We conducted a cross-sectional survey to assess activity limitations of every persons older than 18 years old hospitalized in a regional university hospital covering all medical fields. Evaluators rated on a scale from 0 to 4), 22 selected items of the International Classification of Functioning, covering the 6 following domains: learning and applying knowledge, general tasks and demands, communication, mobility, self-care, interpersonal interactions and relationships. Univariate and multivariate analyses were performed to analyze the prevalence, severity and profile of the handicap in terms of socio-demographic characteristics and care pathways.

Results

Among 1572 eligible persons, 1267 (81%) were surveyed (mean age 62.7 ± 20.4 years; 655 male [51.7%]). Overall, 82% showed at least one activity limitation. For 52%, disability was severe or total for at least one ICF item. Prevalence of disabilities was higher for mobility (75%) and self-care domains (63%). Disability was strongly related to age: age older than 80 years versus 18 to 44 years (OR=12.8; $p < 0.01$). Disability was associated with hospitalization in rehabilitation units (96%; OR=4.3; $p < 0.01$). Severe disability was associated with hospitalization in critical care units (OR=6.7; $p < 0.001$) and psychiatry units (OR=5.3; $p < 0.001$).

Conclusion

Handicap was common in hospitalized persons, involving all 6 tested ICF activity domains, particularly mobility and self-care. This study alerts care givers, hospital administrators, and in general people influencing health policies about the need to plan actions to reduce activity limitations of hospitalized persons, whatever the cause of the hospitalization.

Keywords

Disability;ICF;Handicap

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-2373

CLINICAL EVOLUTION OF CERVICARTHROSIS PATIENTS TREATED BY CALIBRATED CERVICAL TRACTION. ABOUT 35 CASES FOLLOWED AT UNIVERSITY CLINICS OF KINSHASA (UCK)

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Introduction/Background

To evaluate the efficiency of calibrated cervical traction devices and to develop a management protocol and a referential table determining the play loads during cervical traction in cervicarthrosis in developing countries where electronic traction devices are lacking.

Material and Method

A case study conducted at university clinics of Kinshasa, during the period from January 2011 to October 2016. 35 patients, male and female, were treated by calibrated cervical traction devices, the force varying between 10 and 18 kg, proportionally to the body weight, during 2 to 15 minutes following the tolerance of patients.

Results

For 35 patients, including (34,3%) men and (65.7%) women, a sex ratio of 1.9 predominantly female. The age ranges from 30 to 80 years and the highest frequency of cervicarthrosis is between 61 and 65 years, or (20%). The clinic was dominated by cervical pain (80%), irradiated pain (37%). Other signs (blurred vision, headache, vertigo) were poorly represented. For radiographic signs, cervical lordosis was reduced in (91%) of cases, followed by intervertebral nip (68%), canal stenosis (62%) and osteophytosis (20%) of cases. Osteoarthritis myelopathy: (2%). At the end of treatment with calibrated cervical traction, (97%) of patients had no felt neck pain, (67%) had no upper limb irradiation pain and (97.3 %) no stiffness of the neck. According to the body weight, a useful traction load varying between 6 and 18 kg was applied during cervical traction, for a number of sessions, between 1 and 15 sessions and duration of 1 to 15 minutes.

Conclusion

Calibrated cervical traction has been shown to be effective in the management of common cervical arthritis. This result allowed to develop a protocol for the management of common cervicalgia, as well as a referential table of payloads adapted to the weight of the patients for a safe and effective cervical traction.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-2411

ASSOCIATION BETWEEN FLOATING TOE AND TOE GRIP STRENGTH IN TANZANIA

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Introduction/Background

In Japan there are many foot injuries (e.g. Hallux valgus, flat foot or hammer toe), and now floating toe is received attention as a possible cause of toe dysfunction. It is reported that the floating toe is related to the falling. Person with a floating toe is weaker in toe grip strength than one with normal feet in Japan. Toe grip strength has also attracted attention as an important clinical indicator, because it is related to foot structure and toe deformities. It is not clear whether floating toe that is being investigated in Japan is similar overseas, especially in Africa. The aim of this study is to investigate the association between floating toe and toe grip strength in Tanzania.

Material and Method

A total of 64 Tanzanian people participated in this study. Floating toe was evaluated by footprint and toe grip strength was measured by a toe grip dynamometer. All 128 feet were classified into a floating toe group or a normal toe group according to visual evaluation of the footprint images. Intergroup difference in toe grip strength were analyzed using unpaired t-test and logistic regression analysis adjusted for age, gender, and BMI. We got approval from the National Institute for Medical Research.

Results

There were 91 feet (71.1%) in the floating toe group. Mean toe grip strength of the feet with floating toe was significantly lower than that of normal feet ($p=0.023$, normal toe group : $16.74\pm 7.09\text{kg}$, floating toe group : $13.87\pm 6.04\text{kg}$) In addition, lower toe grip strength was associated with floating toe on logistic regression analysis after adjustment (odds ratio : 1.11, 95% confidence interval : 1.01-1.25)

Conclusion

This study revealed that lower toe grip strength was significantly associated with floating toe not only in Japan but also in Tanzania.

Keywords

floating toe; toe grip strength; African

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-2435

PREDICTORS OF DISABILITY OUTCOME AFTER MAJOR TRAUMA

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Introduction/Background

Many people survive major trauma, often with complex consequences of their injuries. However, data on outcomes is lacking. This paper aims to evaluate disability and functional outcomes after major trauma at 12-months post-injury.

Material and Method

A one-year prospective cohort study of major trauma survivors, recruited from two major trauma centres in New Zealand. In- and exclusion criteria are in table 1. Baseline variables included demographics, Injury Severity Score, diagnosis, cause of injury, length of hospital stay (LOS). 12-months post-injury participants completed the Extended Glasgow Outcomes Scale (GOS-E), the Short Form 12 (SF12), the EQ5D, Pain Numeric Rating Scale (NRS), World Health Organization Disability Assessment Schedule 2.0 (WHODAS), questions regarding productivity status. Ordinal step-wise regression was performed to investigate the impact of baseline variables on GOS-E outcome. Ethical approval was received from the Health and Disability Ethics Committee of New Zealand.

Table 1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
a) Injury Severity Score \geq 12	a) unable to speak / understand English sufficiently to complete assessments
b) aged \geq 18	b) deceased
c) admitted to Auckland District Health Board (DHB) or Counties <u>Manukau</u> DHB following their trauma	c) acquired major trauma due to drowning, poisoning, hanging (where only asphyxia occurs without other physical injury), or burns (i.e. where burns were a major component requiring admission to a burns unit)
d) sustained their injury between 15th June 2015 and 14th December 2015	
e) living permanently in New Zealand	

Results

121 people took part (response rate 58%), the majority having received injuries through road traffic accidents (33%) or falls (24%); 58% sustained neurological injuries. 69% were in paid employment pre-injury, 41% at 12 months.

36% reported experiencing moderate to severe pain within the last 24 hours at 12-months post-injury. Ongoing disability was significant as measured with the GOSE (15% severe and 32% moderate disability) and WHODAS (23%). Many had ongoing problems with mobility (33%), usual activities (39%), pain (52%) and anxiety (34%) (EQ5D).

Ethnicity (p=0.003), LOS (p=0.002), education (p=0.056) and comorbidity (p=0.051) were significant predictors of GOS-E outcome (table 2).

Table 2 GOS-E predictor variables

Variable	Groups	Odds ratio with 95% CI
Ethnicity	Māori*	1
	Asian	0.12 (0.005, 1.14)
	NZ European	0.19 (0.05, 0.67)
	Pacifica	3.36 (0.49, 25.04)
	Other	0.28 (0.04, 1.43)
Secondary Education	No*	1
	Yes	0.32 (0.10, 1.03)
Comorbidity	No*	1
	Yes	2.60 (0.99, 7.08)
Length of hospital stay		1.04 (1.01, 1.07)

* Reference group for analysis

Conclusion

A significant proportion of major trauma survivors experience ongoing disability a year later. Some of the significant predictors suggest health outcomes are poorer for disadvantaged groups, who should be better supported by rehabilitation services.

Keywords

Major trauma;Disability;Pain

Conflict of interest

Disclosure statement:

The study received funding from the Accident Compensation Corporation of New Zealand. The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the funder.

E-Poster Session - July 9-12 - Exhibition Area

A10 Miscellaneous

ISPR8-2500

COMPARISON OF PARTICIPATION AND HEALTH-RELATED QUALITY OF LIFE BETWEEN PERSONS WITH NEUROLOGICAL AND RHEUMATIC DISEASES

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Introduction/Background

Both neurological and rheumatic diseases constitute significant causes of disability. Participation (defined as involvement in a life situation) and health-related quality of life (HrQoL) are considered important outcomes in physical and rehabilitation medicine. Documentation of participation and HrQoL in various disabling conditions would guide rehabilitation professionals while planning their treatment interventions. The aim of this study is to determine and compare the participation and HrQoL of people with neurological versus rheumatic diseases.

Material and Method

90 patients with neurological disorders (44% stroke, 23% spinal cord injury, 20% Parkinson's) and 89 patients with rheumatic diseases (49% osteoarthritis, 33% rheumatoid arthritis, 18% ankylosing spondylitis) who were in the follow-up at the Department of Physical Medicine & Rehabilitation of a university hospital were included. Participation was assessed by Impact on Participation and Autonomy Questionnaire (IPAQ), HrQoL by Nottingham Health Profile (NHP) and activities of daily living by Modified Barthel Index (MBI).

Results

Mean age was 58.1 in neurological patients (61% male) and 61.5 in rheumatic patients (19% male). Mean disease duration was 40.3 months in neurological group while it was 170.6 in the rheumatic group.

MBI score was significantly lower in neurological group ($p=0.0001$) showing more dependence in activities of daily living. Comparison of IPAQ revealed that neurologic patients experienced more participation restriction than rheumatic patients regarding autonomy indoors ($p<0.0001$), family role ($p=0.023$), autonomy outdoors ($p=0.001$), and work and education ($p=0.05$) while social life was similar. Rheumatic group reported more distress in pain ($p<0.0001$) and sleep ($p=0.009$) domains of NHP, whereas neurologic group was worse in physical mobility ($p=0.012$). Fatigue, social isolation and emotional reactions domains did not differ.

Conclusion

Although neurological diseases had great impact on physical activities and participation of patients, their social and emotional aspects of health status were similar with patients having rheumatic diseases. Furthermore, rheumatic diseases led to more pain and sleep problems.

Keywords

Participation; Health-related Quality of Life

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-2670

RELATION BETWEEN FRAX INDEX AND ACPA SERUM LEVEL IN PREMENOPAUSAL RHEUMATOID ARTHRITIS PATIENTS

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Introduction/Background

Rheumatoid arthritis (RA) is the most common form of inflammatory arthritis in adults and is characterized by synovial inflammation and hyperplasia, autoantibody production: rheumatoid factor (RF) and anti-citrullinated protein antibody (ACPA), cartilage and bone destruction, and systemic features, including cardiovascular, pulmonary, psychological, and skeletal disorders. FRAX (Fracture Risk Assessment Tool) is a computer-based algorithm developed by the World Health Organization (WHO) Collaborating Centre for metabolic bone diseases and first released in 2008. The outputs of FRAX are the 10-year probability of a major osteoporotic fracture (hip, spine, humerus or wrist fracture) and the 10-year probability of hip fracture.

Material and Method

The study included 25 premenopausal RA patients and 20 healthy subjects. The serum ACPA level was assessed by ELISA technique, RF using Rose waaler test in IU/ml was measured as well. BMD in (g/cm²) has been measured for all subjects enrolled in the study by a Lunar Prodigy Advanced DEXA scanner system and were carried out by the same technician. FRAX index was calculated for all members in both groups by using online FRAX calculator. Femoral neck BMD was added to enhance fracture risk prediction.

Results

The range of ACPA in the patients group ranged between 11.40 – 525.0 U/ml. 80 % of our patients were ACPA positive. While RF range was from 8.30 to 648.0 IU/ml. Strong statistically significant difference between both groups was found where FRAX index was significantly higher in patients group compared to control group as regards major osteoporotic and hip fractures ($p < 0.001$). Serum ACPA and RF level showed insignificant correlation with FRAX index in premenopausal RA patients.

Conclusion

FRAX index was found to be high in RA patients but it was not correlated to ACPA nor RF serum level.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-0185

EFFECTIVENESS OF COMBINED USE OF CRYOTHERAPY AND NEUROMUSCULAR ELECTROSTIMULATION IN RHEUMATOID ARTHRITIS

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Introduction/Background

Non-pharmacological methods have an important role in the complex treatment of rheumatoid arthritis. The combination of cryotherapy and neuromuscular electrostimulation (NMES) is one of the new non-pharmacological methodic that reduces pain and local inflammation.

Material and Method

The study group comprised 69 RA patients, 52.4 ±17.6 years, 88.4% women with moderate activity (DAS28 3.48 ±1.17) who received standard therapy: methotrexate or leflunamide, glucocorticoids <10 mg prednisolone (43.5%), NSAIDs. The criterion for inclusion was the presence of pain and a decrease in muscle strength in the hand. Three groups were randomly assigned to 23 patients who received 10 daily procedures: group 1 NMES on the posterior surface of the forearm muscles, with cooling (t -10 ° C), group 2 NMES on the posterior surface of the forearm muscles, with false cooling t + 10 ° C), group 3 only cryotherapy with cooling (t - 10 ° C), NMES was switched off. Evaluation of the results was conducted after 28 days.

Results

In group 1, there was a greater improvement in comparison with groups 2 and 3. DAS28 decreased from 3.51 ±1.31 to 3.11 ±1.07, from 3.44 ± 1.24 to 3.34 ±1.12 and from 3.45 ± 1.24 to 3.31 ±1.24 (p <0.05). Severity of pain (100 mm VAS) decreased by 15.01 ±5.21, 6.4 ±5.45 and 8.12 ±5.01 mm (p <0.05). The increase of compression force of the most affected hand > 50% was noted in 53.0%, 18.2% and 25.6% of patients (p <0.05). In 5 patients from group 1 who had symptoms of the carpal canal, a significant decrease in numbness of the fingers was noted. Serious side effects were not noted.

Conclusion

Cryotherapy and NMES can reduce pain and improve function in RA. The combined use of cryotherapy with NMES provides more pronounced effect and is well tolerated.

Keywords

cryotherapy;neuromuscular electrostimulation;rheumatoid arthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-0270

SECONDARY FUNCTIONAL BENEFITS OF ANTI-IL-6 THERAPY IN RHEUMATOID ARTHRITIS: OUR EXPERIENCE IN A PMR SERVICE

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Introduction/Background

The articular deformities in the RA are at the origin of a real motor handicap. Often we receive patients with irreversible deformities. The objective is to prevent these deformations by a global and early therapeutic strategy associating: biotherapy, apparatus, education and rehabilitation.

Material and Method

Prospective observational study of 23 patients with active RA, treated with Anti IL6 over a period of 4 years (2012-2016). The recruitment is done according to EULAR recommendations, in multidisciplinary. The evaluation of the treatment is on D0 and S192 according to: MOS SF36; HAQ; measuring the grip force on the dynamometer; 6mn test and 10m walk test; DAS28-CRP; patient satisfaction, response to treatment according to EULAR criteria; Observance (equipment, self-rehabilitation) and synovial echo-doppler.

Results

The average age is 50.3 ± 11.09 years; 3 men and 20 women. BMI: 27.1. The average seniority of the PR is at 12.1 years. 5 patients required prior antituberculous prophylaxis (QTF +).

The average gains observed were significant: on the morning rustling; on the strength of the right hand: on the test of 6mn: on the test of 10 meters: on the quality of life in%; patient satisfaction; on the HAQ; on the SF36 MOS scale. According to the EULAR response we got the following results: 12 good and 9 average and 2 bad.

Conclusion

Anti-IL 6 in RA, associated with PMR therapy, leads to good results in the prevention of deformities and disability avoidance.

The management of RA, associated with Anti-IL6 in PMR has proved its superiority in preserving function and quality of life.

Keywords

PMR;RA AND PREVENTION;BIOTHRAPY AND QUALITY OF LIFE

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-0523

EARLY INTRA-ARTICULAR CORTICOSTEROID INJECTION IMPROVES PAIN AND FUNCTION IN ADHESIVE CAPSULITIS OF SHOULDER

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Introduction/Background

Intra-articular corticosteroid injection (IACI) is a commonly used therapy for adhesive capsulitis, but not enough studies exist on the optimal timing of the injection.

Material and Method

The object of the study is to determine whether IACI has better outcomes in patients with earlier stage than later stage. Visual analog scale, Shoulder Pain and Disability Index, and passive range of motion (flexion, abduction, external rotation, and internal rotation and extension) were evaluated at pretreatment, month 1 and 12 after the first injection.

Results

Medical records of 661 patients were reviewed. 246 had pain that improved after conservative treatment. IACI was recommended to the rest of the patients (415) with pain of VAS ≥ 6 ; 40 refused and 375 accepted the recommendation. Of the 375 who accepted, 36 were not included in the 12-month follow-up; 17 did not attend the follow-up, 8 were treated at other clinics, and 11 could not be reached. Finally, 339 patients completed the follow-up at month 1 (short-term effects) and 12 (long-term) after injection. The result of the multiple regressions, which considered the main and the interaction effect of confounding variables, showed that the differences of all outcomes in both short-term effect at month 1 and long-term effect at month 12 are greater when the duration of pain prior to injection is shorter. Among the confounders, the injection number in the difference of internal rotation and extension between month 0 and 12 (IRE $\Delta(0-12)$) was statistically significant. IRE $\Delta(0-12)$ was also greater when the pain duration was shorter, though the decrease in IRE $\Delta(0-12)$ differed depending on the number of injections.

Conclusion

This 1-year follow-up retrospective study reveals that an early IACI shows greater improvement in pain and function than late IACI. If pain persists despite non-invasive and conservative treatments, an early injection may be considered to shorten its natural history.

Keywords

adhesive capsulitis;shoulder pain;frozen shoulder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-0610

DEMOGRAPHIC AND CLINICAL FEATURES OF PATIENTS WITH ANKYLOSING SPONDYLITIS USING BIOLOGICAL AGENTS: ASSOCIATION WITH DISEASE ACTIVITY

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Introduction/Background

The aim of this study was to evaluate the demographic and clinical features of the patients with Ankylosing Spondylitis (AS) using biological agents and to investigate the relationship between the disease activity and these features.

Material and Method

A hundred patients were included in this study. Demographic characteristics of participants were recorded. Severity of pain (rest and activity) by Visual Analogue Scale (VAS), disease activity by Bath Ankylosing Spondylitis Disease Activity Index (BASDAI), functional status by Bath Ankylosing Spondylitis Functional Index (BASFI), quality of life by Ankylosing Spondylitis Quality of Life questionnaire (ASQoL), and satisfaction with the respondent's life by Satisfaction With Life Scale (SWLS) were evaluated in patients with AS. Chest expansion and lumbar mobility measurements were performed.

Results

Patients were aged between 19 and 69 years, with a mean age of 42.00 ± 11.00 years. The mean duration of disease was 7.33 ± 6.23 (1-30) years, the duration of use of biologic agents was 44.96 ± 34.43 (3-144) months. Of the patients, 59% were male, 82% were married, and 41% had high disease activity (BASDAI ≥ 4). Because of inadequate response, % 21 of patients had switch from first biological agent to other. BASDAI was positive correlated with pain VAS, BASFI, and ASQoL scores ($p < 0.001$), whereas BASDAI was negative correlated with chest expansion and lumbar mobility measurements, and SWLS scores ($p < 0.05$). There were no statistically significant correlations between BASDAI scores and age, duration of disease and, duration of use of biological agents ($p > 0.05$).

Conclusion

In this study, female to male ratio was 0.6. About half of the patients had high disease activity. Strong relationships were found between the disease activity and severity of pain, functional status, quality of life, and satisfaction with life. However, no significant relations were detected between the disease activity and duration of disease, duration of use of biological agents, and age.

Keywords

ankylosing spondylitis;disease activity;biological agents

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1125

TRENDS IN MUSCULOSKELETAL SURGERY AND POSTOPERATIVE REHABILITATION IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Introduction/Background

Trend in the use of methotrexate (MTX) and biological disease-modifying anti-rheumatic drugs (DMARDs) has led to decrease the number of musculoskeletal surgery in patients with rheumatoid arthritis (RA). We investigated the changes in incidence of surgery and prescription of postoperative rehabilitation.

Material and Method

Retrospective study was performed using medical records in Shimane University Hospital from 2002 to 2016. The number of surgery, prescription of postoperative rehabilitation, duration of hospital stay, and status of pharmacological treatment were studied in 152 patients. Linear regression analysis and Bonferroni / Dunn test were used for statistical analysis for the time trends in the incidence of surgeries.

Results

There was a decreasing trend in the incidence of surgery, especially in the surgery of lower extremities ($p=0.08$). On the other hand, there was an increasing trend in the incidence of spinal surgery and operations in upper extremities. Hospitalization days became shorter ($p<0.01$) and the incidence of postoperative rehabilitation decreased, especially for occupational therapy (OT). The proportion of patients receiving MTX and DMARDs significantly increased from 33.3% and 0% in 2002 to 63.2% and 52.6% in 2016, respectively.

Conclusion

The incidence of surgery of lower extremities decreased, however, the number of surgery in upper extremities increased among the patients with improved ADL and QOL owing to the use of effective drugs. Decreasing prescription of OT might bring a negative influence to individualized joint protection education in patients with RA.

Keywords

Rheumatoid arthritis;Surgery;Postoperative rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1374

FROZEN SHOULDER AND HYDRODILATION, THE BEST EARLY CHOICE TREATMENT

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Introduction/Background

To show the effectiveness of glenohumeral hydrodilatation as an initial treatment in frozen shoulder.

Material and Method

We present you a pre-post study, in patients with frozen shoulder treated by ultrasound-guided suprascapular block and glenohumeral hydrodilatation from May to November 2017.

After identifying the clinical diagnosis and signing the informed consent, ultrasound-guided suprascapular block and hydrodilatation was performed with 30 mL of saline, followed by home exercises or supervised in the physiotherapy room according to the gain in degrees of joint range in flexion and abduction after the technique.

We compared pain intensity using the EVA scale, and functional status by the Quick-Dash scale before and after treatment (4 months after the intervention).

With a statistical analysis using the SPSS 23 we identified pre-post differences through the Wilcoxon signed rank test for qualitative variables, and the Student's T test in quantitative variables, establishing the 95% confidence interval.

Results

28 patients were treated, 12 men and 16 women, with an average age of 54.8 years +/- 7. There were no adverse effects or incidents after performing the interventionism.

We immediately appreciate a mean gain in flexion and abduction of 40.7° +/- 12.2. The average reduction of pain in the EVA scale was 5.8 (+/- 1.3) points, however the most important improvement in the functional situation with an average mean decrease of 50.8 (+/- 9.9) points in the Quick-Dash scale at 4 months, both results being statistically significant (p <0.001).

Conclusion

Given the early and fast results, efficacy and low cost, hydrodilatation could be considered as one of the main options of initial conservative treatment in patients with frozen shoulder.

Keywords

FROZEN SHOULDER; GLENOHUMERAL HİDRODİLATATİON; SUPRAESCAPULAR NERV
ULTRASOUND-GUIDED BLOCK

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1416

THE STUDY ON USERS' HEALTH REHABILITATION TRAINING RECOGNITION BASED ON INTELLIGENT SENSING TECHNOLOGY

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Introduction/Background

In recent years, a variety of smart mobile devices and related sensors are applied to individual sports activities and provide personalized rehabilitation training and guidance, which will become a useful complement to modern medical means. Researchers mainly focus on motion sensor-based recognition technologies. However, in fact, when measuring human motion, the existence of measurement error is undoubtedly the main reason leading to unsatisfactory results of the analysis, inadequate feedbacks of guidance, and poor rehabilitation effects.

Material and Method

In view of the problems existing in the process of sports rehabilitation training and guidance, this paper first summarizes various mobile devices and sensors that are widely used in current academic research results, compares their applicability, advantages and disadvantages respectively, proposes a new method of recognition and analysis which combines laser vision sensor and pressure sensors to establish individual motor function.

Results

Experimental analysis shows that this scheme not only provides more accurate and scientific data collection than existing schemes but also can provide diversified and personalized user requirements like privacy protection so as to effectively implement the diversified privacy protection rehabilitation training program under the network environment.

Conclusion

Besides, the scheme can achieve the goal of effectively removing pains and restoring physical functions, which provides scientific guidance and basis for the development of the rehabilitation medical industry and the modern sports industry.

Keywords

Intelligent Sensing Equipment;Rehabilitation;Sports

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1638

EXPLORING THE RELATIONSHIP BETWEEN DISEASE ACTIVITY AND DISABILITY IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Introduction/Background

Rheumatoid Arthritis (RA) may lead to limitations of physical activities and restrictions in participation. These limitations are considered as disability. In previous studies, there is no clear consensus on the relationship between disease activity and disability in the patients with RA.

The aim of the study is to analyze the relationship between disease activity and disability in patients with RA.

Material and Method

A hundred patients (86 women, 14 men, mean age=49.93±11.38 years) were included in this study who had RA diagnosis. Average duration of disease was 8.29±7.30 year. Disease activity of patients was evaluated by use of DAS28. Disability was assessed by Disabilities of the Arm, Shoulder And Hand (DASH), Michigan Hand Outcomes Questionnaire (MHQS), Duruöz Hand Index (DEI) and Arthritis Impact Measurement Scales 2 (AIMS2). The presence of relationship between disease activity and these scales was evaluated by Pearson's correlation analysis.

Results

There was low to moderate correlation between DAS28 scores with all outcome measures (DASH; $r=0.643$, DEI; $r=0.575$, MHQS total score and subscales; $r= -0.399$ to $r= -0.696$, AIMS2 subscales; $r= 0.220$ to $r= 0.638$).

Conclusion

The findings indicate that disease activity in patients with RA lead to disability. Disease activity is a consistent determinant of disability.

Keywords

Rheumatoid Arthritis;disease activity ;disability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1649

EFFECT OF RHEUMATOID ARTHRITIS ON UPPER EXTREMITY FUNCTION: A KINEMATICAL PERSPECTIVE

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Introduction/Background

The majority of patients with rheumatoid arthritis (RA) experience upper limb impairment which causes considerable disability. This study was carried out to investigate the effect of RA on mobility of the upper extremity during jar opening function by 3-D motion analysis and to compare with healthy subjects.

Material and Method

Twelve patients who had been diagnosed as RA according to the American College of Rheumatology criteria (age 45.17±10.1 years) and 12 healthy (age 22.50±1.98 years) right dominant females were included in the study. A motion analysis system using surface markers has been used to digitize the 3D kinematics of the upper extremity joints in the function to open the jar on the table. The jar opening function is divided into 2 phases; Phase 1. The time between the start command and the start of opening the jar lid, Phase 2. The time between opening the jar lid and opening the lid. The differences in the measures between the RA and control groups were examined with independent sample t test.

Results

The total duration of phase 2 and phase was significantly greater in the patient group than in the healthy group ($p < 0.05$). In all phases, shoulder-to-table distance was less in the patient group ($p < 0.05$). In addition, the elbow angle at the start of opening the jar lid was significantly lower in the patient group ($p < 0.05$). Throughout the entire function; Upper arm abduction-adduction angle, elbow ulnar and radial deviation angle in the frontal plane; flexion-extension angle in the sagittal plane of the hand, and vertical angular rotation angles in the upper arm, forearm and hand anatomic axis systems were significantly lower ($p < 0.05$).

Conclusion

The study demonstrated that RA restricts the motion of the upper extremity joints during the function to open the jar and prolongs the completion time of the function.

Keywords

Rheumatoid Arthritis;Kinematics;Disability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1752

QUALITY OF LIFE IN TUNISIAN PATIENTS WITH RHEUMATOID ARTHRITIS

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Introduction/Background

The objective of this study was to evaluate quality of life in patients with rheumatoid arthritis (RA) and study its associated factors.

Material and Method

Patients, with a confirmed diagnosis of Rheumatoid Arthritis followed at the Rheumatology department and the Physical Medicine and Rehabilitation department, were included in a cross-sectional descriptive study.

Epidemiological, clinical, laboratory and functional characteristics were taken. Quality of life was assessed using the Rheumatoid arthritis quality of life (RAQoL), sleep quality (Pittsburgh Sleep Quality Index PSQI), fatigue with the Visual Analogic Scale of Fatigue (VAS-F) and the multidimensional fatigue inventory (MFI-20), functional capacity (Health Assessment Questionnaire HAQ), anxiety and depression (Hospital anxiety and depression scale HAD), and sexual function (Female Sexual Function Index (FSFI) and Sexual Health Inventory for Men (SHIM)).

Results

One hundred patients were included, predominately female, with an average age of 55.88 ± 10.5 years. The disease was moderately active in 55% of cases ($3.2 < DAS28 < 5.1$).

The mean RAQoL total score was 19.78 ± 8.25 . More than 53% of our patients had a RAQoL score > 20 .

Quality of life was positively correlated with joint deformities, the activity index of RA, higher sedimentation rate, the presence of radiological signs of joint destruction, functional capacity, fatigue, anxious and depressive disorders and some items of the PSQI questionnaire: subjective sleep quality, sleep latency, habitual sleep efficiency and sleep disturbances. There was also a positive association between RAQoL and both unemployed patients and inefficient therapeutic education.

The RAQoL was negatively correlated with all items of the FSFI questionnaire except for pain.

However, there was no correlation between the RAQoL and male sexual dysfunction.

Conclusion

This study shows that RA may disturb the patient's quality of life. More needs to be done and achieving better results will depend on measuring the impact of the disease in routine practice.

Keywords

Quality of life ;rheumatoid arthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1768

SLEEP QUALITY IN TUNISIAN RHEUMATOID ARTHRITIS PATIENTS

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Introduction/Background

The aim of this study was to assess sleep quality in patients with rheumatoid arthritis (RA) and study its associated factors.

Material and Method

A cross-sectional descriptive study was conducted on patients, with a confirmed diagnosis of Rheumatoid Arthritis followed at the Rheumatology department and the Physical Medicine and Rehabilitation department of the University Hospital of Monastir.

The variables analyzed were Sociodemographic, clinical, laboratory and functional characteristics with sleep quality assessment by the use of the Pittsburgh Sleep Quality Index (PSQI), functional capacities by the Health Assessment Questionnaire (HAQ), anxiety and depression by the Hospital anxiety and depression scale (HAD).

Results

Our population consisted on one hundred patients with a mean age of 55.88 ± 10.5 years (25 to 84 years). The majority was female (85 F/15 M). The disease was moderately active in 55% of cases ($3.2 < DAS28 < 5.1$).

PSQI global scores were higher than 5 in 65% of our patients. The most common abnormalities reported were sleep efficiency lower than 85% in 75% cases, and insomnia in 65% cases. Daytime dysfunction was reported in 2% of our patients.

There was a significant positive correlation between the items of the PSQI and the activity index of this disease, higher sedimentation rate, functional capacities and anxious and depressive disorders.

However there was no correlation between sleep quality and Sociodemographic and radiological parameters.

Conclusion

A high prevalence of abnormal sleep quality in RA patient populations was observed. Its associated factors are multiple. A review of sleep hygiene and optimization of rheumatologic disease control may prove beneficial in terms of sleep health.

Keywords

Sleep quality ;rheumatoid arthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1847

EFFICACY OF THE THERMAL WATER THERAPY RICH IN RADON, IN THE TREATMENT OF FIBROMYALGIA

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Introduction/Background

Fibromyalgia is characterized by deep pain, tenderness and stiffness of muscles, areas around tendon insertions and adjacent soft tissues. It is a frequent and complicated disorder affecting as much as about 2 % of the population. The real cause of fibromyalgia is still not sufficiently known – the illness is often not recognized early enough. In diagnosis it is important to exclude all other comorbidities and overlapping symptoms of other diseases.

Klinikum Bad Gastein is an orthopedics and rheumatology rehabilitation centre, which uses thermal water rich in radon (²²²Rn – radioactive gaseous element) for treating patients.

Generally, it has been shown that such water – among other benefits – has a very beneficial and healing effect on muscles, tendons and joints.

Material and Method

At Klinikum Bad Gastein each patient receives individual care by interdisciplinary teams of specialists, thus applying multidisciplinary treatment. In parallel the following treatments are used: physiotherapy (ergotherapy, hydrotherapy in pools, fangotherapy and a paraffin treatments), bathing in radon-rich thermal water, psychotherapy and also dietary support and education are provided, including a series of short lectures on pain treatment, improving health habits, proper nutrition and the choice of recreational activities.

Results

For a small sample of 7 female patients with diagnosed fibromyalgia, for which bathing in thermal waters was the main therapy, the treatment results were analyzed and statistically processed. Pain relief after the treatment was identified in the range of 33 % to 50 %, and in patients who, apart from fibromyalgia, also suffer from depression, the pain was relieved for about 20 %.

Conclusion

In spite of a small number of the patients in our modest research, multidisciplinary treatment of Fibromyalgia combined with thermal radon-rich water shows satisfying results.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1866

STEINBROCKER SCORE AND THE HEALTH ASSESSMENT QUESTIONNAIRE FOR RHEUMATOID ARTHRITIS FUNCTIONAL EVALUATION (90 CASES)

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Introduction/Background

Despite recent therapeutic advances (improved patient selection, new drugs, « treat to target » concept), rheumatoid arthritis (RA) continues to induce significant disabilities and mortality. Our objective is evaluating the functional status and its determinants in RA patients.

Material and Method

This is a monocentric, cross-sectional study of 90 RA patients according to the ACR 1987 and/or EULAR 2010 conducted at the Rheumatology Department, in Tunisia, between november 2016 and april 2017. The functional evaluation was based on Steinbrocker functional score and Tunisian Health Assessment Questionnaire (HAQ).

Results

The mean age of patients was 52 years \pm 10 [27-78]. Females accounted for 89%. The mean disease duration was 121 months \pm 86 months [1-333]. In 60% of patients, the globular sedimentation rate and/or C reactive protein were elevated. The mean DAS28 was 4.57 \pm 1.44 [0.97-7.26]. In more than half of the patients, RA was moderately active. RA remission was noted in 10 % of cases.

The mean HAQ was 1.22 \pm 0.73 [0-2.88]. Thirty per cent of the patients had low handicap, 41% moderate handicap and 29% severe handicap. There was no disability in 11% of cases. The most important scores (most difficult tasks) were found for items 3 (eating) and 5 (holding) with means at 2.40 and 2.35 respectively. Mean Steinbrocker score was 2.14 \pm 0.75. Low handicap was noted in 20% of cases, moderate handicap in 47% and severe handicap in 34% of cases. HAQ was statistically associated to DAS 28 (p<0.041), advanced age (p<0.025), hand deformity (p<0.003), RA duration over 5 years (p<0,031). Logistic regression noted that HAQ determinants were RA disease activity and duration over 10 years.

Conclusion

Nowadays, RA still results in moderate functional handicap in almost half of the cases. Those tasks requiring precise hand movements (eating / holding) are most affected. This could impair patients' professional and social activity.

Keywords

Health Assessment Questionnaire ;rheumatoid arthritis ;Steinbrocker Score

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1893

COMPARAISON OF RHEUMATOID ARTHRITIS CLINICAL ASPECTS OVER 15 YEARS INTERVAL

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Introduction/Background

Recent advances in pathogenesis, early diagnosis and management of rheumatoid arthritis (RA) suggest that its clinical aspects have changed over the last two decades. Our goal is to compare the clinical parameters in two groups of RA patients at an interval of 15 years.

Material and Method

This is a monocentric comparative cross-sectional study conducted at the Rheumatology Department, on two different groups of patients with RA according to EULAR 2010. Group 1 (G1) is composed of 45 consecutive patients followed in 2001-2002, and group 2 (G2) is made up of 90 consecutive patients, followed in 2016 - 2017.

Results

Groups comparison, between G1 and G2 respectively, revealed no statistical differences in age (mean age 51 years \pm 14 [27-89] versus 52 years \pm 10 [27-78] for G2), gender (sex ratio 0.15 versus 0.10), RA disease duration (103 months \pm 93 [3-324] versus 121 months \pm 86 [1-333]), age at diagnosis (41 years \pm 18 [12-72] vs 42 years \pm 12 [11-71]). However, diagnosis delay decreased significantly (74 months \pm 84 [2-300] vs 42 months \pm 40 [1-230], (p<0.037)). For disease activity symptoms, there was no statistical difference between the two groups, notably in morning stiffness duration (100 \pm 70 minutes [0-300] vs 84 min \pm 71 [0-240]) and sleep disturbance (night awakening) (69% vs 63%). Extra-articular manifestations were noted in 62% of G1 and 86% in G2, especially the sicca syndrome. Streinbrocker functional score was 2.78 \pm 2.3 for G1 and 2.14 \pm 0.75 for G2 (p<0.128). The rheumatoid factors were positive in 67% of cases for G1 and 72% for G2. Methotrexate was prescribed in 42% of cases in G1 and 100% in G2 and biologics in only 15% of cases in G2.

Conclusion

At present RA diagnosis is early but diagnosis delay remains long. The functional status is better and extra-articular manifestations are more known and better evaluated. The treatment has been improved, based essentially on methotrexate.

Keywords

Rheumatoid arthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1945

INTERFASCIAL PECTORAL SYNDROME AS A CAUSE OF SHOULDER PAIN

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Introduction/Background

Shoulder pain is one of the most frequent reasons for consultation among the middle-aged and elderly population. It is the most mobile joint of the body but also the most unstable, in close relationship with the neck, scapular waist and thorax, structures that sometimes make a correct diagnosis difficult.

Material and Method

We present the case of a 45-year-old male patient, in the bakery profession, who presented right shoulder pain of 3 years of evolution, previously assessed by his orthopedic surgeon, being infiltrated 3 times at supraspinatus level without clinical improvement. As a complementary test, an ultrasound report is provided: subscapular tendon calcification, this being the reason for consultation.

However, on examination, selective pain on palpation in the pectoralis major and on ultrasonography a discrete pectoral interfascial inflammation (in a region more medially anatomically than the aforementioned calcification) attracts attention.

Given that the calcification did not generate conflict with the coracoacromial ligament in dynamic maneuvers to mobilization, it was decided to treat the pectoral by interfascial infiltration with depot corticosteroid and local anesthetic, as well as home kinesitherapeutic enhancement of the area.

Results

After 2 months the patient is asymptomatic except for occasional discomfort that is related to overexertion due to his profession.

Conclusion

From this case it is clear that it is as important as having a diagnostic image to attend to the clinic, a good anamnesis and physical examination. Repetitive acts at work led to a chronic pectoralis major contracture with consequent selective pain in this area.

Increasingly we find ourselves treating images, with which we lose the principle of good medical practice, a basic exercise that should be that of a good specialist.

Keywords

SHOULDER PAIN;PECTORALIS FASCIA;ULTRASOUND

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-1960

CORRELATIONS AMONG DISEASE ACTIVITY, FUNCTIONAL STATUS, QUALITY OF LIFE AND CLINICAL AND ULTRASONOGRAPHIC ENTHESITIS ASSESSMENT IN PATIENTS WITH SPONDYLOARTHRITIS

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Introduction/Background

Enthesitis is regarded as the primary lesion in all spondyloarthritis (SpA) subtypes. The aim of the study is to determine the relationship between disease activity, functionality, quality of life and enthesitis assessment in patients with SpA

Material and Method

90 patients with diagnosis of SpA according to 2009 ASAS criteria were recruited to the study. In the clinical evaluation, BASDAI, ASDAS, BASFI, ASQoL, SF-12 scales were applied. Enthesitis assessments were done clinically by MASES and SPARCC. Bilaterally distal triceps tendon was evaluated clinically. Ultrasonographic enthesitis was evaluated by a 10 years-experienced, blinded sonographer according to MASEI.

Results

The mean age was 37,5 and 57 of cases were male. The median scores of BASDAI, ASDAS-CRP, ASDAS-ESR, BASFI, ASQoL, MCS and PCS were 3,9, 3,5, 2,6, 2,5, 7, 44,1 and 41,7, respectively. The median scores of both MASES and SPARCC were 2. The median score of MASEI was 16. Clinical enthesitis scores correlated with disease activity scores, functional status and quality of life measure. No correlation was found between the MASEI and clinical enthesitis score, BASDAI, quality of life measure. There was also correlation between MASEI and ASDAS-CRP, BASFI.

Conclusion

Although clinical enthesitis scores correlated with clinical parameters, but not with biochemical markers and sonographic score. Sonographic score was not correlated with disease activity measure except ASDAS-CRP. The result attributed to clinical scales that were less sensitive. Due to the requirement of scales that depend on more objective methods in evaluation of disease activity, **ASDAS-CRP** could be preferred compared to other present scales. US confirms its validity and reliability in the assessment of enthesal involvement in patients with SpA. This study propose also that **sonographic detection** of enthesopathy should be incorporated into the clinical protocol for evaluating patients with SpA in routine clinical practice.

Keywords

spondyloarthritis;enthesitis;ultrasonography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-2250

DISEASE ACTIVITY IN RHEUMATOID ARTHRITIS: ROLE OF PSYCHOLOGICAL FACTORS AND COPING IN A COLOMBIAN SAMPLE

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Introduction/Background

The relationship between psychosocial factors and Rheumatoid Arthritis (RA) disease activity may not be the same across social-cultural contexts. The aim of this study was to examine these relationships in a Colombian sample.

Material and Method

103 RA patients were recruited from outpatient centers in Neiva, Colombia. They were 85.5% women with an average age of 54 years and 85.0% in the bottommost socio-economic strata (SES) in country. The Zung Self-rating Depression Scale, Brief COPE, Short Form-36 [SF-36; Health-Related Quality of Life (HRQOL) measure], and Quality of Life-RA (QOL-RA) were administered. Disease Activity Scale 28 (DAS28) total scores were obtained and then dichotomized into severe (DAS28>5.1) vs. moderate or less disease activity.

Results

47 patients (45.5%) comprised the severe DAS group. Socio-demographic characteristics were not associated with DAS scores. The severe group was more likely to use disease modifying anti-rheumatic drugs (DMARDs) ($p<0.01$), had higher Zung scores ($p<0.05$), and had lower scores on six SF-36 sub-scales (p 's <0.05) and the QOL-RA ($p<0.01$). They were less likely to use venting and acceptance as coping strategies (p 's <0.05). Venting was associated with a 74% reduction in odds of being in the severe DAS28 group [OR=0.26(0.07-0.97), $p<0.05$], controlling for use of DMARDs, depressive symptoms, acceptance coping, and HRQOL.

Conclusion

Increased depressive symptoms, less acceptance coping, and lower HRQOL were associated with increased RA disease severity. Venting was found to be protective in this Colombian sample and the only factor independently associated with disease activity. These findings are biologically plausible and deserve further study.

Keywords

Disease Activity;Quality of Life;Psychological Factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-2312

INVESTIGATION OF THE RELATIONSHIP BETWEEN DEMOGRAPHIC AND CHARACTERISTIC FEATURES AND DISEASE ACTIVITY IN INDIVIDUALS WITH ANKYLOSING SPONDYLITIS

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Introduction/Background

Ankylosing Spondylitis (AS) is a degenerative inflammatory disease that may affect the ligaments and joints of the entire spine, including the sacroiliac joints. This study was planned to investigate the relationship between demographic and characteristic features and disease activity in individuals with AS.

Material and Method

The study included 63 individuals (38 women, 25 men; mean age of 39.11±10.89 years) who were diagnosed with AS according to Modified New York Criteria. Demographic (gender, body mass index (BMI)) and characteristics (exercise habit, smoking, morning stiffness, enthesitis, root joint involvement, ocular involvement) of individuals were recorded. Disease activity was calculated using BASDAI. After calculation, participants were divided into 2 groups, active and remission periods. Pearson chi-square test was used to analyze the data.

Results

When the data were analyzed, it was found that there was a significant relationship between disease activity with female gender($p=0.000$), morning stiffness($p=0.002$), enthesitis($p=0.001$), root joint involvement ($p=0.000$) and ocular involvement($p=0.042$); but the relation between disease activity with BMI($p=0.309$), exercise habit($p=0.530$) and smoking($p=0.755$) was not significant. In terms of demographic and disease-related characteristics of the difference, it was seen that in active period, morning stiffness was 8.92 times, ocular involvement was 0.30 times, enthesitis was 0.15 times, female gender was 0.12 times and root joint involvement was 0.11 times more risky respectively. The intercostal muscle attachments, achilles and plantar fascia were determined to be the most affected areas and percentages for enthesitis were 36.5%, 33.3% and 30.2% respectively.

Conclusion

During active period of AS, morning stiffness, enthesitis and ocular involvement were found to be at high risk. The activity of the disease is an important criterion in terms of evaluation and treatment. Therefore, factors such as morning stiffness, enthesitis and ocular involvement can be taken into consideration.

Keywords

Ankilosing Spondilits;Disaese activity;Morning stiffness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-2381

PREDICTIVE FACTORS OF MUSCULOSKELETAL DISORDERS AT A GROUP OF CASHIERS IN LEBANON: ABOUT 100 EMPLOYEES

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Introduction/Background

Our study aims to evaluate the risk factors for the occurrence of musculoskeletal disorders (MSDs) in a group of cashiers in Lebanon, to establish a correlation between these MSDs and factors related to the professional practice and personal data of cashiers

Material and Method

Descriptive prospective study. Target population: cashiers in 7 different supermarkets in various neighborhoods of Beirut. Data collection is done using a grid with demographic data, logistics data, data concerning the cashier profession and data on MSDs. Statistical study: Analysis of data on SPSS software v 10. Descriptive and univariate study using the Chi2 test. A $p < 0.05$ is considered significant.

Results

Descriptive study .100 cashiers. Female predominance 52%. Mean age: 26 ± 6.5 [18-50]. Weight gain in the last 12 months 62%. Smokers 57%. Sports and leisure activities 55%. Full time work 43%. Seniority at work 4 years [1 - 8]. Number of hours of work per day 7 hours [5-10], Number of days of work per week 6 days [5-7] .Stress at work 90%. MSDs last month: tingling 78%; pain 74% (shoulders 73.5%, neck 61% and lumbar spine 51%) Stop work: 61% MSDs during the last 12 months: 90%; Work stoppage 47%, Medical consultation 25%, Physiotherapy 7%

Univariate analysis (Risk factors of MSDs): Our results showed a significant correlation with age ($p = 0.0191$), length of time at work ($p = 0.0018$), length of sitting ($p = 0.002$), pauses ($p = 0.0016$), tingling ($p = 0.00053$) and full-time work ($p = 0.003$).

Conclusion

Musculoskeletal pathologies are common among cashiers in Lebanon, in relation to the vicious postures at work, the repetition of movements, the material of poorly adapted work. It will be interesting to introduce the notion of ergonomics in companies

Keywords

cashiers;musculoskeletal disorders;, predictive factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.01 Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ISPR8-2408

ITEMS COMPARISON OF QUESTIONNAIRES, SCALES AND CLINICAL OUTCOMES USED IN ANKYLOSING SPONDYLITIS BASED ON THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH: A SYSTEMATIC REVIEW

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Introduction/Background

To identify questionnaires and scales used measuring Ankylosing Spondylitis (AS) patients' functions, disability and health as well as determining whether these instruments can be matched to the International Classification of Functioning, Disability and Health (ICF) framework. Therefore comparing the results with available ICF Core Set for AS.

Material and Method

We searched PubMed in English from January 2001 to December 2016 using the search term: Ankylosing Spondylitis. Among all searched literatures, AS specific questionnaires and scales were identified and classified. Based on the ICF framework, each item of all included instruments was extracted and interpreted into ICF categories.

Results

A total of 15 questionnaires, involving reviewed 295 articles, were identified. A total of 112 items were analyzed and a total of 148 concepts covered these rest 99 items, left 13 items not being linked to ICF concepts. 69 linked to body function, 21 to body structure, 50 to activities and participation and 8 to environment factors. In the body function component, most questionnaires covered sensation of pain, mobility of joint functions and muscle stiffness as well as movement. In the activities and participation component, most questionnaires covered body position changing and maintaining, lifting and carrying objects as well as carrying out daily routine. We recommend the Assessments in Ankylosing Spondylitis Working Group 5/6 improvement criteria (ASAS5/6) and Ankylosing Spondylitis Quality of Life Questionnaire (ASQoL) for well-balanced and comprehensive distribution of four ICF contribution.

Conclusion

The research may help choose the proper questionnaire in clinical and research setting on the framework of ICF with comprehensive functioning assessment.

Keywords

Ankylosing Spondylitis;International Classification of Functioning, Disability and Health (ICF)

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0020

RELATIONSHIP BETWEEN SPONDYLOLISTHESIS AND EARLY PREGNANCY: A CROSS SECTIONAL STUDY IN IRANIAN WOMEN

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Introduction/Background

Spondylolisthesis is a common skeletal disorder which is rather prevalent among human beings occurring at various areas of spinal column with higher prevalence particularly in lumbar area. There are several risk factors contributing to occurrence of spondylolisthesis especially in the lumbar area including multiple pregnancies, early age pregnancy, etc. The objective of the present study is investigating the pregnancy history of women afflicted with spondylolisthesis and probing the relationship of these factors with spondylolisthesis.

Material and Method

Women with low back pain, afflicted with spondylolisthesis diagnosed based on the medical scanning were included in the study. The exclusion criteria comprised affliction with acute diseases, rheumatologic diseases such as rheumatoid arthritis, and history of direct trauma to their backs. The patients were then examined and the related questionnaires were filled for them. The results were analyzed using SPSS 20.0.

Results

113 women with mean age of 53.79 (SD: 10.79) were investigated. 74.3 % of the patients had a history of pregnancy prior to 20 years of age. The spondylolisthesis most commonly occurred in L4-L5 intervertebral area (49.6 %). With regard to the grade frequency, the most frequent grade is grade 1 (82.3%).

Conclusion

Early age and multiple pregnancies are considered important risk factors increasing the likelihood of developing spondylolisthesis. Provision of appropriate education about time for first pregnancy and number of pregnancy, training and raising public awareness can help reduce this risk factor.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0054

SPORTS AND PHYSICAL ACTIVITIES OF PATIENTS WITH MEDIAL COMPARTMENT KNEE OSTEOARTHRITIS AFTER HIGH TIBIAL OSTEOTOMY

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Introduction/Background

The purpose of this study was to compare the changes and resumption of sports and physical activities (SPA) between older and younger patients after opening wedge high tibial osteotomy (OWHTO).

Material and Method

One hundred and one patients (120 knees) with medial compartment knee osteoarthritis were investigated. The 53 patients aged >65 years were defined as the O group and the 48 patients aged <64 years were defined as the Y group. The ratios of SPA cases, time points at which SPA was started after surgery, frequencies of SPA, and Lysholm scores were compared between the two groups. The level of significance was set at $p < 0.05$.

Results

The preoperative and postoperative ratios of SPA cases were 28.3% and 26.4% in the O group, respectively ($p = 0.82$). The corresponding ratios were 20.8% and 41.6% in the Y group, respectively ($p = 0.027$). The mean time points for starting SPA after surgery were 12.3 ± 7.5 months in the O group and 11.2 ± 11.0 months in the Y group ($p = 0.18$). The mean frequencies of SPA after surgery were 4.04 ± 2.15 days/week in the O group and 2.7 ± 1.99 days/week in the Y group ($p = 0.021$). The mean postoperative Lysholm scores were 89.5 ± 5.4 in the O group and 88.8 ± 4.9 in the Y group ($p = 0.61$).

Conclusion

The postoperative ratio of SPA cases showed a significant increase compared with the preoperative ratio in the Y group only. However, older patients performed SPA more often than younger patients postoperatively. Both older and younger patients required a relatively long time to resume or start SPA.

Keywords

high tibial osteotomy; medial compartment knee osteoarthritis; sports and physical activities

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2599

CONSERVATIVE TREATMENT OF HIP OSTEOARTHRITIS WITH BOTULINUM TOXIN TYPE

A

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Introduction/Background

Osteoarthritis (OA) is a multi-causal articular disease characterized by destruction of the articular cartilage, subchondral bone and inflammation of the synovium caused by mechanical stress and local low-grade inflammation. Intramuscular Botulinum Neurotoxin Type-A (BoNT-A) produces temporal, well-delimited and reversible flaccid muscular palsy that can be strategically applied to decrease mechanical stress between the femoral head and acetabulum. The aim of this study was to evaluate the effect on pain, function and stiffness perceived by patients and measure changes in flexion, internal and external rotation after the application of intramuscular BoNT-A.

Material and Method

In this clinical, experimental and longitudinal trial a total of 35 patients (45 hips) were included. All patients had hip OA grade II-IV according to Kellgren and Lawrence radiographic classification. The therapeutic approach consisted in abobotulinum toxin type A (500U) diluted in 1 mL of saline solution. Application of the treatment was performed using 27 G x 1 ½" needles following the scheme: 350 U in iliac muscle, 175 U in adductor brevis and 175 U in adductor longus muscles. Clinical symptoms were evaluated using Western Ontario and McMaster Universities OA Index (WOMAC) and Visual Analog Scale (VAS). Joint motility was evaluated with goniometry before therapy and 90 days after treatment. All patients signed informed consent. Wilcoxon signed-rank test was used to compare change in clinical scores between days 0 and 90.

Results

A significant decrease in referred pain ($p < 0.0001$) and stiffness ($p < 0.002$) was observed. Additionally, increase in perceived function was found after treatment ($p < 0.001$). Goniometry showed improvement in joint flexion, internal and external rotation ($p < 0.0001$). No Side effects

were reported during this study.

Table 1. Demographic data.	
Age, years: mean(SD) n=35 <i>Range</i>	62.57 (10.79) 42 - 84
Gender: female/male, <i>n</i>	31/4
BMI, kg/m ² : <i>mean (SD)</i> <i>Range</i>	29.14 (3.61) 21.43 - 35.7
Bilateral/unilateral OA: <i>n</i>	10/25
Kellgren-Lawrence: n=45 Grade II Grade III Grade IV	 12 (26.7%) 18 (40%) 15 (33.3%)
SD: standard deviation. The mean and standard deviation of the demographic variables are shown. The first section considers a n = 35 patients. Kellgren and Lawrence radiological scale score includes a total of 45 hips (ten patients with bilateral affection).	

Table 2. Clinical and physical evaluation. Values on day 0 and 90, n = 45.			
Rating scale	Day 0	Day 90	Wilcoxon: Z (value of p)
EVA, <i>median (p25 - p75)</i>	8 (7 - 9)	4 (2 - 6.5)	- 5.533 (p<0.0001)* ^a
<i>WOMAC, median, (p25 - p75)</i>			
WOMAC pain	11 (8 - 15)	6 (5 - 10)	- 3.93 (p<0.0001)* ^a
WOMAC stiffness	4 (3 - 5)	3 (1.5 - 4)	- 3.072 (p<0.002)* ^a
WOMAC function	35 (20 - 45)	20 (12 - 34)	- 3.4 (p<0.001)* ^a
WOMAC total	53.5 (32 - 64)	30 (16,75 - 46,75)	-3.625 (p<0.0001)* ^a
<i>Goniometry in degrees, median (p25 - p75)</i>			
Flexion	100° (92.5 - 120)	120°(110 - 135)	- 5.48 (p<0.0001)* ^b
Internal rotation	25° (20 - 30)	40° (25 - 45)	- 4.88 (p<0.0001)* ^b
External rotation	30° (20 - 30)	35° (30 - 42.5)	- 4.699 (p<0.0001)* ^b
The values of median and percentiles 25 and 75 are shown in all the variables as well as the values of the signed rank test of Wilcoxon, showing the value of Z as well as the value of p (2 tails). * = statistically significant difference, the value of p is indicated in each case. a = value of Z based on the positive ranges. It shows a decrease in the observations of day 90 compared to those of day 0. b = value of Z based on the negative ranges. It shows an increase in the observations of day 90 in comparison with those of day 0.			

Conclusion

In this study, we found that BoNT-A therapy provides a safe conservative option to treat symptoms and physical constrain caused by hip OA.

Keywords

Botulinum toxin;Chronic pain;Osteoarthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2604

EPIDEMIOLOGY AND CLINICAL CHARACTERISTICS OF PATIENTS WITH KNEE ARTHROPLASTY IN A REHABILITATION DEPARTMENT

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Introduction/Background

Knee replacement surgery is to replace the native joint. Its main indication is osteoarthritis. This procedure will restore joint mobility and ensure a painless support to resume physical activity in the best conditions. The rehabilitation has an important place in the management of these replacements.

his work aims to determine the clinical and epidemiological characteristics of patients treated in Physical Medicine and Rehabilitation Department following a total knee replacement.

Material and Method

This is a retrospective study conducted in the Department of Physical and Rehabilitation Medicine in Sahloul Hospital TUNISIA among patients hospitalized for total knee replacement over a period of 4 years. Data were collected from medical folders.

Results

32 patients (4% of patients hospitalized during this period) with an average age of 68.3 years, were included in the study. The majority was female (81.3%). All patients were exclusively addressed by the orthopedic department after an hospitalization average of 5 days. 61.5% of patients moved with walker on admission in rehabilitation with an average of Functional Independence Measure (FIM) of 102, visual analogue scale (VAS) pain was 6/10, an average flexion of 60° and an extension deficit of 10° were found. Patellar shock was present in 93% of cases. The quadriceps strength was rated at 3 in 75% of cases. The average hospital stay in our unit was 13.5 days with at the output an average flexion of 90° and an extension deficit of 5°. At the end of hospitalization, 34.8% of patients walked with two canes, 21.7% used one cane, 21.7% were able to walk and the rest were still using a walker. The average FIM score at the output was 114, the VAS pain was 4/10.

Conclusion

The knee replacement is major surgery. The place of rehabilitation in their management is indisputable for improving the functional prognosis of patients.

Keywords

osteoarthritis;epidemiology;knee replacement

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2656

CLINICAL EFFECTS OF LOW-LEVEL LASER THERAPY AND HIGH-INTENSITY LASER THERAPY IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Introduction/Background

Low-level laser therapy (LLLT) and high-intensity laser therapy (HILT) are the safe and non-invasive methods utilized for treatment of knee osteoarthritis (KOA). The aim of this study was to compare the effects of high-intensity laser therapy (HILT) and low-level laser therapy (LLLT) on pain and functional improvement in patients with KOA.

Material and Method

30 patients, diagnosed with KOA according to American College of Rheumatology criteria, stage 1-3 (modified Kellgren-Lawrence classification) on a frontal knee radiography were randomly assigned into two groups and treated with HILT (wavelength 1064 nm, 125 J/cm²) in group 1, and LLLT (wavelength 830 nm, 6 J/cm²) in group 2, respectively. The outcomes measured were pain level measured by visual analog scale (VAS) and knee function measured by Lequesne index (LI). SPSS software version 17 was used for statistical analysis. The level of statistical significance was set as $P < 0.05$.

Results

After the treatment a statistically significant decrease of pain on VAS and LI was observed for both variants of laser therapy. This improvement was significantly higher for LLLT compared with HILT for pain on VAS.

Conclusion

Results showed that LLLT was more effective than HILT for improvement of pain in KOA.

Keywords

LASER THERAPY;OSTEOARTHRITIS

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2666

MANAGEMENT OF ARTHROPLASTY COMPLICATIONS IN A REHABILITATION SERVICE

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Introduction/Background

Mechanical complications or prosthesis infections may occur during the evolution of total knee prosthesis. Infections are the most serious complications. Mechanical complications include loosening, prosthetic instability and stiffness.

The aim of our study is to identify complications requiring surgical revision of total knee and difficulties in their management in Rehabilitation Department.

Material and Method

This is a retrospective study conducted in the Department of Physical and Rehabilitation Medicine in Sahloul Hospital TUNISIA among patients who underwent surgical revision following a complication of a total knee prosthesis over a period of 4 years.

Results

Ten patients (23,8% of patients hospitalized after arthroplasty) benefited from a surgical revision. They all were female with an average age of 56.8 years. The surgical revision was indicated for persistent joint stiffness in 5 cases (50%) after a mean period of 1603 days, for septic loosening in 3 cases (30%) after a mean period of 972 days and hematoma in 2 cases (20%) after a mean period of 47 days. At the admission, an average flexion of 50° and an extension deficit of 5° were found; the quadriceps strength was equal to 2 in 3 cases (30%) and 3 in 7 cases (70%); five (50%) patients used a walker and the others used two canes. The average of Functional Independence Measure (FIM) score was 106. The average hospital stay was 12.8 days. At the end of hospitalization, an average flexion of 70° and an extension deficit of 5° were found, 2 patients were able to walk by themselves, 3 patients used one cane, 3 patients used two canes and the other 2 were still using a walker, the average of FIM score was 113.6.

Conclusion

Joint stiffness is the most common cause of surgical revision after arthroplasty. Early and organized rehabilitation is needed to accelerate the recovery of motion and improve patient autonomy.

Keywords

arthroplasty complications;knee;surgical revision

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2669

EFFICACY OF ULTRASOUND-GUIDED EXTRACORPOREAL SHOCKWAVE THERAPY FOR SHOULDER CALCIFYING TENDINOPATHY - A PROSPECTIVE STUDY

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Introduction/Background

Extracorporeal shockwave therapy (ESWT) is a non-invasive treatment that has been shown to have good outcomes in shoulder rotator cuff calcifying tendinopathy. Thus, a prospective study was developed to evaluate the efficacy of ultrasound-guided ESWT in this pathology.

Material and Method

Adults with shoulder calcifying tendinopathy underwent 3 sessions of focal ESWT under ultrasound guidance (900-1300 pulses/session), separated by two weeks. An evaluation using x-ray and ultrasound imaging was made. Pain and functionality were evaluated before treatment, at 3 and 6 months of follow-up, using VAS-scale and American Shoulder and Elbow Surgeons Standardized Shoulder Assessment Form (ASES) and Modified-University of California at Los Angeles Shoulder Rating Score (modified-UCLA).

Results

Nine patients were included in the study. Statistical analysis showed an improvement in pain at 3 and 6 months (VAS=7.1->3.9->2.9). There was also an increase of functionality reflected by the ASES-score at 3 and 6 months (11.7->16.3-17.3). According to UCLA-score, there was also an improvement at 3 and 6 months (17.3->24.6->26.9). It was also observed an improvement in flexion and abduction of the shoulder (flexion 144°->156°, abduction 110°->137°). According to the initial x-ray evaluation, 44% of the patients had at least one calcification. At 6 months follow-up 75% of these patients had a smaller or no calcification on x-ray. All of the patients had at least one rotator cuff tendon calcification apparent on the initial ultrasound. In the follow-up evaluation at 6 months, 89% had a reduction in the size or number of calcifications.

Conclusion

Ultrasound-guided focal ESWT of shoulder cuff calcifying tendinopathy seems to be effective, with significant decrease in pain, improvement in functionality and improved joint ROM. These results are reflected in the reduction of size and number of rotator cuff tendon calcifications.

Keywords

shoulder pain;extracorporeal shockwave therapy;tendinopathy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2678

DO OBESE PATIENTS WITH PRIMARY KNEE OSTEOARTHRITIS BENEFIT FROM A SINGLE BOUT OF MODERATE INTENSITY AEROBIC EXERCISE? A PILOT STUDY AMONG EGYPTIAN SEDENTARY COHORT

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Introduction/Background

Obesity and osteoarthritis are often concomitant. Both are accompanied by oxidative stress and stimulated inflammatory response. Exercise is considered a substantial treatment in rehabilitation of both conditions. Yet most of literature reported the benefits of regular exercising, while there is paucity about the effects of single low to moderate exercise session. Hence, this study aimed to investigate the possible potential effects of a single bout of moderate exercise in obese middle-aged individuals with KOA.

Material and Method

Thirty four obese OA untrained patients and 15 age and sex matched healthy controls were enrolled in this study. OA patients were assigned to single session of low to moderate exercise on treadmill while controls remained unexercised. Perceived pain, glutathione reductase (GR) activity, IL-6, CRP, fasting blood glucose and lipid profile were assessed at baseline, after exercise and 24h after. Meanwhile, WOMAC score determined at baseline and after 24h.

Results

Pain and WOMAC score had been improved 24 h post-exercise. GR activity increased after exercise but declined the next day though remained higher than baseline. Blood glucose levels decreased after exercise while blood lipids were unaffected by exercise. Inflammatory markers remained unchanged following exercise session.

Conclusion

Moderate aerobic exercise is beneficial for obese knee OA patients. Even a single bout of mild to moderate exercise can improve pain and enhance antioxidant activity in obese individuals with knee OA.

Keywords

Osteoarthritis;Obesity;single aerobic exercise session

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2691

COMPARING THE EFFECT OF OVER-THE-DOOR HOME TRACTION UNIT AND AIR NECK TRACTION DEVICE ON NECK PAIN, RANGE OF MOTION AND DISABILITY LEVEL IN CERVICAL SPONDYLOSIS

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Introduction/Background

Spondylosis is common in cervical region due to the high mobility of this area. Despite the clinical popularity of traction for patients with neck pain, there is no agreement on the amount of effectiveness among different methods of providing traction. Present study was conducted to compare the efficacy of traction by Air neck traction device and Over-the-door home traction unit on pain, disability level and cervical range of motion in patients with spondylosis.

Material and Method

Twenty-six patients with neck pain aroused by spondylosis were randomly assigned into two groups of Air neck traction device and Over-the-door home traction unit. Patients in both groups received hot pack, transcutaneous electrical nerve stimulation, ultrasound and exercise therapy as their usual physical therapy care. Patients in the first group also benefited from the sustained traction via Air neck traction device and patients in the second had traction via Over-the-door home traction unit. Patients were treated for 10 sessions. Pain, disability level and the cervical range of motion in the all directions were evaluated in beginning of the first session and at the end of the last session.

Results

The results showed significant decrease in levels of pain and disability and increasing cervical range of motion in all directions in both groups ($P < 0.05$). The rate of disability reduction in the patients received Air neck traction device was significantly higher than Over-the-door home traction group ($P = 0.02$). There was no significant difference between two groups at the end of last session in terms of neck pain and range of motion in all directions ($P > 0.05$).

Conclusion

Although traction via Over-the-door home traction unit along with physical therapies causes significant reduction in neck pain intensity and disability level and increase of cervical range of motion in patients with spondylosis; Using the Air neck traction device can increase the rate of improvement.

Keywords

Spondylosis; Neck pain; Traction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0158

EFFECTIVENESS OF THERAPEUTIC ULTRASOUND ON CLINICAL PARAMETERS AND ULTRASONOGRAPHIC CARTILAGE THICKNESS IN KNEE OSTEOARTHRITIS: A DOUBLE-BLIND TRIAL

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Introduction/Background

Osteoarthritis (OA) is the most common joint disorder, and knee OA is one of the leading causes of disability with an increasing trend. Ultrasound (US) is a technique that can be applied for both imaging-diagnostic and therapeutic purposes in knee OA. In this double blind-controlled randomized study, we utilized clinical parameters and ultrasonographic cartilage thickness measurement to assess the effectiveness of therapeutic US in knee OA.

Material and Method

Thirty-three patients (mean age 54.8±14.5) were randomized to receive either continuous US (n 15) or sham US (n 18) as a placebo. Continuous ultrasonic waves with 1MHZ frequency and 1 watt/cm² power were applied for 5 minutes for 10 sessions. Primary outcome was pain on movement assessed by visual analog scale (VAS). Secondary outcomes were WOMAC scores and measurements of distal femoral cartilage thickness by imaging US.

Results

Both groups showed reduced knee pain on movement following intervention. The VAS measurements improved significantly both in the treatment and the placebo group patients ($p<0.05$ and $p<0.05$). WOMAC scores improved statistically significant in all domains (pain, stiffness, physical function and total score) in the treatment group ($p<0.05$). All domains of WOMAC score showed statically significant change when compared with placebo group ($p<0.05$). There was no change in the distal femoral cartilage thickness measurements in both groups after intervention.

Conclusion

The study revealed that US is safe and effective treatment modality in pain relief and improvement of function in patients with knee OA. However, we did not find any positive effects of US on cartilage repair.

Keywords

Knee, Osteoarthritis, Ultrasound,

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0197

ABSTRACT NEED TO BE EDITED - PERIARTICULAR DEXTROSE PROLOTHERAPY INSTEAD OF INTRA-ARTICULAR INJECTION FOR PAIN AND FUNCTIONAL IMPROVEMENT IN KNEE OSTEOARTHRITIS

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Introduction/Background

Background: Osteoarthritis (OA) is a degenerative disease that can lead to painful and dysfunctional joints. Prolotherapy involves using injections to produce functional restoration of the soft tissues of the joint. Intra-articular injections are controversial because of the introduction of needles into the articular capsule.

Objectives: To compare the effect of periarticular versus intra-articular prolotherapy on pain and disability in patients with knee OA.

Study design: Randomized double-blind controlled clinical trial. Setting: Single center, university hospital (Imam Hossein Hospital, Tehran, Iran).

Material and Method

Background: Osteoarthritis (OA) is a degenerative disease that can lead to painful and dysfunctional joints. Prolotherapy involves using injections to produce functional restoration of the soft tissues of the joint. Intra-articular injections are controversial because of the introduction of needles into the articular capsule. Objectives: To compare the effect of periarticular versus intra-articular prolotherapy on pain and disability in patients with knee OA. Study design: Randomized double-blind controlled clinical trial. Setting: Single center, university hospital (Imam Hossein Hospital, Tehran, Iran).

Results

The visual analog scale score was significantly lower in the periarticular compared with the intra-articular group at the 2-, 3-, 4-, and 5-month visits, but not at 1 month. Morning stiffness and difficulty in rising from sitting were improved in both groups and were not significantly different in the peri- and intra-articular groups. Pain, joint locking, and limitation scores were all improved in both groups. Difficulty in walking on flat surfaces or climbing stairs, and sitting and standing pain, were all improved in both groups from 1 to 5 months after treatment.

Conclusion

Periarticular prolotherapy has comparable effects on pain and disability due to knee OA to intra-articular injections, while avoiding risks of complications.

Keywords

prolotherapy;osteoarthritis;acupuncture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0248

INTRA-ARTICULAR STEROIDS VERSUS HYALURONIC ACID KNEE ARTHRITIS

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Introduction/Background

The main objective of the study is to assess the efficacy of intra-articular (IA) injections of hyaluronic acid (HA), compared to corticoids in patients with osteoarthritis of knee in both the long-term follow up , and wether there is a difference.

Material and Method

Randomized study, from Mars 2015 until June 2016, compared two groups of patients with knee osteoarthritis; 1rst group : injected by corticoids (only 1 injection / knee / month , n,=14), controlled by group (3 injections / knee of HA, n=18). Evaluated by : pain intensity ; Visual Analog Scale (VAS), Lequesne Algofunctional Index, and quality of life. The follow-up time was 12 months.

Results

After 12 months of follow-up, both treatment groups showed improvement in knee function , the corticoids group showing a gratter improvement compared to HA group ; in pain relief, in overall Lequesne Algofunctional Index, and quality of life

Conclusion

The IA injection of corticoids was better to improve the symptomatology in the long-term, corticods provided pain relief and quality of life in patients with knee OA, compared with IA of hyaluronic acid. However, IA hyaluronic acid is a good alternative the delay the surgery.

Keywords

Corticosteroids;Hyaluronic acid;Knee arthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0289

ABSTRACT NEED TO BE EDITED - ACUPUNCTURE IN PAINFUL KNEE OSTEOARTHRITIS . COMPARATIVE STUDY

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Introduction/Background

Knee Osteoarthritis (KOA) is a chronic and degenerative disease, the main cause of disability in elderly adults. It leads to changes at the level of the PNS (Peripheral Nervous System) and CNS (Central Nervous System), as well as abnormal sensitization, hyperalgesia and allodynia. Metameric level associated therapies to treat knee pain have shown to reduce local sensitization hence leading to a decrease in pain and a consequent improvement in quality of life.

Material and Method

Prospective study. Randomized . Patients attending outpatient IREP (*Instituto de rehabilitacion psicofisica*) clinics with at least 3 months' pain due to KOA (Kellgren 2 -4).

Inclusion Criteria

Painful KOA. X-Ray signs of osteoarthritis (Kellgren 2-4), more than 3 months with pain, VAS \geq 5.

Exclusion Criteria

History of knee surgery, rheumatoid disease (collagenopathy), metabolic or neurological diseases, neoplastic disease.

Scales

Western Ontario University Index (WOMAC). Visual analog scale (EVA) .

All patients completed standardized questionnaires at the beginning of treatment; after 6 weeks; and after 12 weeks. A treatment period of 12 weeks, with 1 session per week, was used in the studies.

The study compared 3 groups of KOA patients:

Group 1: Received classical acupuncture treatment + dry needling segmental acupuncture (L4/L5/S1)

Group 2: Received acupuncture + Lidocaine using Fischer technique (L4/L5/S1)

Group 3: Received classical acupuncture treatment (knee acupoints, 4LI, 20 TM)

Results

Total number of patients: 30

Age: 67,1 (55-87 y/o)

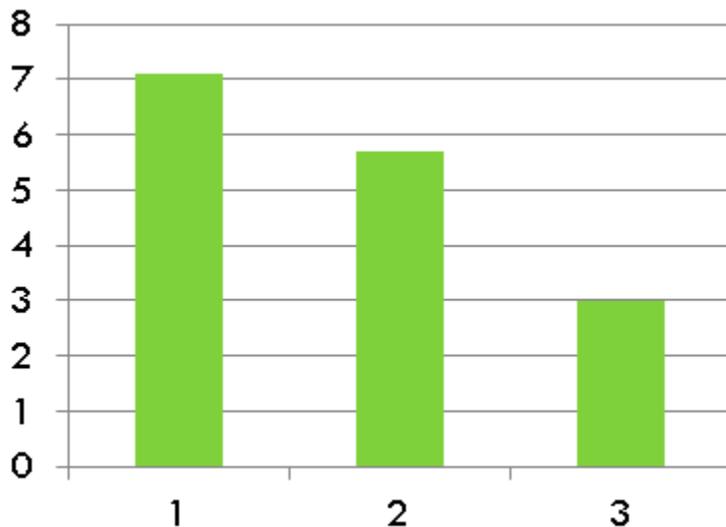
80% female, 20% male.

Group 1: VAS before treatment: 7-9/Womac: 45-52. VAS after treatment:3-5/ Womac 10-15

Group 2: VAS before treatment: 7-9/ Womac: 40-48. VAS after treatment: 4-6/ Womac: 15-22

Group 3: VAS before treatment:8-9 / Womac: 50-60. VAS after treatment: 5-6/ Womac: 17-25

The decrease rate (WOMAC scale) after treatment was greater in group 1 than in group 2; greater in group 1 than in group 3 ($p = 0.003292$). The decrease in the VAS scale was greater in group 1 than in group 2. ($p = 0.033 < 0.05$)



Conclusion

The results regarding functional improvement and VAS are similar to other investigations. The importance of adding a segmental approach to the traditional Acupuncture treatment (TCA). There is no significant difference between dry needling and lidocaine use regarding metameric points.

Keywords

osteoarthritis, knee , treatment;acupuncture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0412

EFFECT OF AQUATIC EXERCISE ON FLEXIBILITY AND FUNCTION OF PERSONS WITH KNEE OSTEOARTHRITIS

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Introduction/Background

Osteoarthritis of the knee is a chronic joint disease which causes pain, stiffness, swelling, joint instability and muscle weakness, all of which can lead to impaired physical function.

Therapeutic exercise is recommended in numerous guidelines as a non pharmacologic treatment for knee osteoarthritis. Aquatic exercise is considered one of the most important management options.

The aim of this study was to evaluate the effect of aquatic exercise on flexibility and function of persons with knee osteoarthritis.

Material and Method

Prospective study on patients with knee osteoarthritis who went through a program of aquatic exercise three sessions a week for eight weeks. Outcome measures were collected at baseline and at the end of the program including range of motion (ROM), maximum distance walked, two subscales of WOMAC index stiffness and physical function and Lequesne index.

Results

Thirty patients were evaluated. The mean age of our population was 50.6 years old. Most of our patients were women, with a sex ratio of 0.57. The mean Body mass index (BMI) was 28.8 kg/m².

At baseline, the results reported that mean of ROM was 133°, maximum distance walked was limited in 9 cases. WOMAC stiffness and function scores were respectively 4.3 and 11.2 and mean Lequesne index was 9.8 with severe to extremely severe handicap in 25 cases.

At follow-up, we observed an improvement in each parameter: ROM increased by 2%, maximum distance walked improved in 3 cases. WOMAC stiffness and function scores decreased respectively by 50% and 46%. Lequesne index declined by 31% with severe to extremely severe handicap in 11 cases.

Conclusion

This study indicates beneficial effects of aquatic exercise in adults with knee osteoarthritis by improving joint flexibility and function due to the properties of water.

Keywords

AQUATIC EXERCISE ;FUNCTION;KNEE OSTEOARTHRITIS

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0432

EARLY OSTEOARTHRITIS: DEFINITION, DIAGNOSIS, AND MANAGEMENT. A SYSTEMATIC REVIEW.

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Introduction/Background

Osteoarthritis (OA) is the major cause of joint pain and impaired mobility resulting in a marked reduction of quality of life. It would be of crucial importance to have a clear definition of early OA (EOA) in order to adopt proper preventive measures that might result in better long-term quality of life of affected patients and reduce or delay the need of joint replacement interventions, with the related implications in terms of economic impact on healthcare services. Aim of this systematic review (SR) was to define the state of the art on definition, diagnosis, and management of EOA.

Material and Method

We carried out an updated systematic review on both PubMed and Embase databases searching for all the studies and researches published in literature (up to the 31st December 2015) which were addressing the issues of EOA definition, diagnosis, and management. The systematic SR has been carried out following the 5 steps summarized by Khan and colleagues in 2003.

Results

Our SR found out 211 and 447 articles, when searching on PubMed and Embase database, respectively. Among the 132 papers who met our inclusion criteria, only 1 article explicitly addressed the issue of EOA definition, but it was only an expert opinion, while all the other researches were focused on diagnosis or management of EOA. EOA has been defined with regards to the younger age of osteoarthritis onset and radiological damage (grade I-II of the Kellgren and Lawrence classification).

Conclusion

EOA has been defined with regards to the age of the patient and the precocity of radiologically measureable damages. A clearer classification of EOA based on characteristics and symptoms

of affected patients, should be delivered by scientific community in order to better identify subjects who might benefit from innovative therapeutic approaches.

Keywords

early osteoarthritis;systematic review;osteoarthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0449

A FUNCTIONAL RESTORATION PROGRAM (FRP) IN CHRONICAL LOW BACK PAIN IS EFFICIENT BOTH IN LABOURERS AND IN SEDENTARY WORKERS

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Introduction/Background

Work conditions increase the prevalence of chronically low back pain (CLBP) in labourers (LW) as well as in sedentary workers (SW). Previous studies showed that functional restoration program (FRP) improved the condition of patients with CLBP. Here we evaluated the differential value of FRP in LW and SW groups, with respect to spinal and abdominal muscle functions, functional capacity and autonomy, and professional reintegration.

Material and Method

Between 2012 and 2015, 89 patients (aged 18 to 65) with CLBP, included in the FRP, completed the program. There were 45 LW and 44 SW.

Judgment criteria were physical (Sorensen test, for spinal muscles, and Shirado-Ito test, for abdominal muscles), functional (Quebec score), and socio-professional (number of sick leave days in 6 months), before and after completing the FRP

Results

Both groups, LW and SW, improved their functional capacities (Quebec score : 29.194 after, vs 40.622 before the program, $p=0.0022$, in LW ; 26.33 % after the FRP, vs 37.6 % before the program, $p=0.0008$, in SW), and the number of sick leave days dramatically decreased after the FRP (19.23 days after, vs 58.08 days before, $p=0.0121$, in LW ; mean 0.41 days after vs 26.53 days before, $p=0.0018$, in SW). Sorensen test improved in both groups (119.18 after vs 76.65 before, $p=0.0192$, in LW ; 119.10 after FRP vs 65.08 before, $p=0.0011$, in SW). Shirado-Ito Test also improved: 340.13 vs 91.81, in LW and 128.73 vs 65.08, $p=0.0338$, in SW

Conclusion

FRP improved the condition of patients with CLBP in all analysed criteria, both in LW and in SW. However the repartition of improvement between LW and SW was different, particularly in physical criteria (LW improved more their abdominal muscles, and SW improved more their spinal muscles). These results suggest that isokinetic studies are needed to specifically adapt the FRP to the work conditions...

Keywords

chronical low back pain ;Functional Restoration Program ;Isokinetic studies

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0455

COMBINED THERAPY IN OSTEOARTHRITIS OF THE KNEE, DOUBLE BLIND RANDOMIZED CLINICAL TRIAL

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Introduction/Background

Osteoarthritis is the most common joint disease during which knee joints are affected more than the other joints. Various drugs are used to treat osteoarthritis that each with advantages and disadvantages. The purpose of this study was to compare the efficacy of single and combination of acetaminophen, naproxen and omega-3 with a special focus on knee osteoarthritis.

Material and Method

In a randomized clinical trial, 156 patients with moderate osteoarthritis, in 6 groups of 26 persons with acetaminophen, naproxen, acetaminophen + naproxen, acetaminophen + omega-3, naproxen + omega-3, acetaminophen + naproxen + omega-3 therapy. With acetaminophen 1000 mg was used every 8 hours, naproxen 500 mg every 12 hours and omega-3 1000 mg every 8 hours for 6 weeks. Twelve patients missed the study. Before the start of the treatment and at the end of treatment, we evaluated the results of the treatments using Visual Analogue Scale (VAS) and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).

Results

Patients pain, physical function, joint stiffness and WOMAC ranking in all treatment groups significantly decreased after the treatment. WOMAC ranking after the treatment between groups was significantly different and triple -drug therapy yielded better results than one- drug therapy.

Conclusion

The least cost of treatment is attributed to acetaminophen and the highest cost of treatment is attributed to acetaminophen+ naproxen+omega-3. The best results of therapies of knee osteoarthritis was attributed to naproxen+omega-3.

The study showed that adding omega-3 will increase the efficacy, reduce joint stiffness and reduce severity of the side effects of these drugs. The efficacy of omega-3 may be due to anti-inflammatory effect through competitive inhibition of the arachidonic pathway.

Keywords

Knee Osteoarthritis; Omega -3; Joint Stiffness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0509

THE EFFICACY OF ELECTROMYOGRAPHIC BIOFEEDBACK ON PAIN, FUNCTION AND MAXIMAL THICKNESS OF VASTUS MEDIALIS OBLIQUE MUSCLE IN PATIENTS WITH KNEE OA; A RANDOMIZED CLINICAL TRIAL

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Introduction/Background

The aim of this survey is to study the effect of adding EMG biofeedback to isometric exercise on pain, function, thickness of the vastus medialis oblique muscle and maximal electrical activity of this muscle in isometric contraction, in patients with knee OA.

Material and Method

In this clinical trial, 46 patients, with diagnosis of knee OA, were recruited and assigned to two groups of case (23 patients), with EMG biofeedback associated exercise, and control (23 patients), with sham biofeedback associated exercise. Data were gathered via VAS score, the Persian version of WOMAC and Lequesne questionnaires, Ultrasonography of VMO muscle and surface electromyography of this muscle at baseline and at the end of the study. Variables compared before and after exercise program in each group and between the two groups.

Results

At the end of the study, there were no significant differences between the two groups regarding measured variables. Only the VAS score was significantly less in case group. Although all assessed parameters, except for VMO muscle thickness, were found to be improved significantly in each group, the amount of changes were not significantly different between the two groups except for the VAS score. VMO muscle thickness didn't change significantly after exercise therapy in either of the groups.

Conclusion

Isometric exercises accompanied by EMGBF and the same exercises with sham biofeedback for 2 months both lead to significant improvements in pain, and function of patients with knee

OA. Real EMG biofeedback was not superior to sham biofeedback in any of the measured variables except for VAS score.

Keywords

Knee osteoarthritis; Isometric quadriceps exercise; EMG biofeedback

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0529

WHAT ARE THE EHLERS-DANLOS ?

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Introduction/Background

What are Eds? Genetic diseases with 13 types identified. The SEDh requires a clinical diagnosis. Appropriate care: the role of physical medicine and rehabilitation is primordial. Often confused with fibromyalgia, the SEDh must be diagnosed on New York criteria.

International Classification : hypermobile Ehlers-Danlos (hEDS) and the spectrum of joint hypermobility.

Objectives To give you the latest international information concerning the hEDS, with the physical and rehabilitation medicine management, which is important for the patient's daily life. Inform you by updating very clearly on what is a hEDS. The setting of the diagnosis with criteria updated last March 15, the mandatory criteria and inform you of the new differential diagnosis: the JHS.

Material and Method

Material / Patients and methods It is an international consortium of more than 90 global specialists that has published these diagnostic changes on EDS' and have redefined the hEDS with the implementation of the JHS. This publication replaces Villafranchiens. The numbering of SED types is replaced. (ex: Type III = hEDS)

Results

Results The hEDS is no longer defined on major and minor criteria, but on mandatory criteria. A re-evaluated Beighton score. A JHS is imperative for the pose of said diagnosis. The hEDS remains a genetic disease which differentiates it from the JHS. Discussion -

Conclusion

The hEDS remains a genetic disease which differentiates it from the JHS. Discussion -
Conclusion The hEDS is an orphan genetic disease that remains in rare diseases and is part of the 3rd PNMR3 plan

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0580

THE EFFECTIVENESS OF POSTOPERATIVE HYBRID PHYSIOTHERAPY ON HIP OSTEOARTHRITIS

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Introduction/Background

The reduced physical function and pain experienced by patients with lower limb osteoarthritis prior to surgery can prevent progress in functional training during the early postoperative period. We devised a hybrid physiotherapy regime using an antigravity treadmill and a low-frequency therapeutic device, and we assessed its effectiveness in patients with hip osteoarthritis after surgery.

Material and Method

The study population consisted of 22 patients who underwent hip replacement arthroplasty to treat their osteoarthritis at Hiroshima University Hospital. The patients were randomized to the conventional physiotherapy group (conventional group: 11 patients) or the hybrid physiotherapy group (hybrid group: 11 patients). The conventional group mainly performed lower limb joint range-of-motion training, weight-load muscle strengthening training, and gait training, while the hybrid group performed this same training, as well as gait training on an antigravity treadmill and muscle strengthening training using the low-frequency therapeutic device. The patients started daily physiotherapy from postoperative day 1, and their physical function was evaluated preoperatively and in postoperative week 2.

Results

Evaluation of postoperative physical function yielded the following results in the conventional group and hybrid group, respectively: a) knee extension force 13.2 ± 3.5 kgf vs. 18.6 ± 6.5 kgf; b) 10-meter gait test 19.7 ± 7.9 sec vs. 12.6 ± 3.8 sec; c) timed up-and-go (TUG) test 20.9 ± 7.0 sec vs. 15.0 ± 5.5 sec; and d) six-minute distance (6MD) 197.6 ± 55.4 m vs. 279.8 ± 91.9 m.

Conclusion

The hybrid physiotherapy regime enables patients to start muscle strength training and gait/endurance training immediately after surgery, and patients in the hybrid group showed greater postoperative lower limb muscle strength and better gait function than their counterparts in the conventional group. In conclusion, the present findings suggest that the proposed hybrid physiotherapy regime after hip replacement arthroplasty can improve the physical function of patients in the acute phase postoperatively.

Keywords

hybrid physiotherapy; osteoarthritis; acute phase rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0584

EFFECTIVENESS OF HOME BASED EXERCISE IN THE EARLY STAGE AFTER TOTAL HIP ARTHROPLASTY

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Introduction/Background

In order to safely progress patients back to their desired activity level after total hip arthroplasty (THA), there is a need to develop rehabilitation strategies to expedite and promote the recovery during the acute postoperative period. The purpose of this study is to investigate the effects of home-based exercise in the early stage on the mid-term functional recovery after THA.

Material and Method

Patients who underwent THA were randomized to an exercise group (n=16) or a control group (n=16). In exercise group, home-based in the early stage exercise was performed between 4 weeks and 8 weeks after THA. Intervention programs were home-based resistance training using elastic band, consisted of hip abduction and leg rising in supine position, knee extension in dangle sitting, hip external rotation in side lying. Outcome measures were hip pain, hip range of motion, muscle strength of lower extremity and Timed up and go (TUG) test. These parameters were assessed at 4 weeks, 8 weeks and 6 months postoperatively.

Results

There was no difference between the two groups in age, gender, body mass index and pre-intervention physical functions. The results of the two-way ANOVA showed a significant group x time interaction effect for the hip abductor strength (P=0.047) and TUG-test (P=0.013). The hip abductor strength after intervention trended to be greater for the exercise group than for the control group (P=0.071). At 6 months after THA, the hip abductor strength in the exercise group was greater than that in the control group. Furthermore, the TUG test at 6 months postoperatively showed significantly better results in the exercise group than in the control group.

Conclusion

The results of the present study demonstrated that the home-based exercise in the early stage after THA was an effective intervention, especially in improving the mid-term hip abductor strength and walking ability.

Keywords

Total hip arthroplasty;Physical function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0602

INFLUENCE OF KNEE JOINT KINEMATICS AND EXTERNAL MOMENTS ON JOINT LOAD DURING THE STANCE PHASES IN SEVERE KNEE OSTEOARTHRITIS

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Introduction/Background

The dynamic medial knee load in knee osteoarthritis is represented by the external knee adduction moment and varus thrust in the frontal plane during the stance phase. However, walking analyses performed to identify medial knee osteoarthritis show abnormalities in not only the frontal plane, but also the moment and movement in the sagittal plane. This study aimed to investigate the influence of moment on joint load during the stance phases, and to investigate the relationship between moment and movement.

Material and Method

The study participants comprised 15 individuals (23 knees) with knee osteoarthritis rated as 3 or more on the Kellgren-Lawrence scale. For the walking analysis, kinematics and kinetics data were obtained at 200 Hz using an eight-camera motion analysis system. Ground reaction force data were recorded at 200 Hz using a floor-mounted force plate. A paired t-test was performed to compare the difference between frontal and sagittal plane moments. Pearson's product-moment correlation coefficient was used to confirm the relationship between the external moments and the knee joint movement during stance phase.

Results

The first peak of external knee adduction moment showed an average of 0.42 ± 0.19 Nm/kg. The average external knee extension moment showed was 0.26 ± 0.22 Nm/kg, which was significantly smaller than the first peak of external knee adduction moment ($p = 0.01$). The first peak of external knee adduction moment was mildly positively correlated with maximum knee varus angle during the early stance phase ($r = 0.47$). The external knee extension moment was strongly positively correlated with the flexion angle of the early stance phase ($r = 0.83$).

Conclusion

The external knee moment and the joint movement must be combined in an effective rehabilitation approach to strength the muscles, particularly the quadriceps, to decrease the load on the medial compartment of knee joint.

Keywords

Severe knee osteoarthritis;External knee moment;Knee joint angle

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0621

RISK OF KNEE OSTEOARTHRITIS IN PATIENTS USING N-ACETYLCYSTEINE (NAC): A NATIONWIDE POPULATION-BASED COHORT STUDY

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Introduction/Background

Knee osteoarthritis (OA) is known as a progressive degenerative disorder, but recent evidence suggests that inflammatory mediators contribute to cartilage degradation. N-acetylcysteine (NAC) is an antioxidant that can directly scavenge reactive oxygen species. According to basic studies, NAC had an apparent effect on reducing the synthesis of proinflammatory and structural mediators by synovial cells. In contrast, chondrocyte in osteoarthritic cartilage was found significantly lower intracellular p53 expression. NAC was also reported to decrease p53 expression through reduction of oxidative DNA damage. Due to lacking clinical trials, we conducted this study to determine the relationship between NAC use and risk of knee OA.

Material and Method

We designed a retrospective cohort study using the Taiwan's Longitudinal Health Insurance Database from 2000 to 2013. Patients receiving oral form N-acetylcysteine over 28 days within one year after first prescription were defined as case group, whereas those without N-acetylcysteine use were considered as candidates of control group. We adopted a 1:10 propensity score matching by age, sex, index year and comorbidities to consist the control group. Patients with previous history of knee operation (total knee replacement and anterior cruciate ligament reconstruction), bed-ridden status, and less than 20 years old were excluded. The primary outcome was a new diagnosis of knee OA during follow-up period.

Results

Our study samples consist of 7726 using NAC subject and 77260 non-used NAC subject. People with NAC use have significantly higher incidence of osteoarthritis (adjusted HR: 1.39, $p < .0001$)(Figure). In addition, analyses stratified by age group and sex, all subgroups showed significantly higher incidence of osteoarthritis ($p < .0001$) in NAC users(Table)

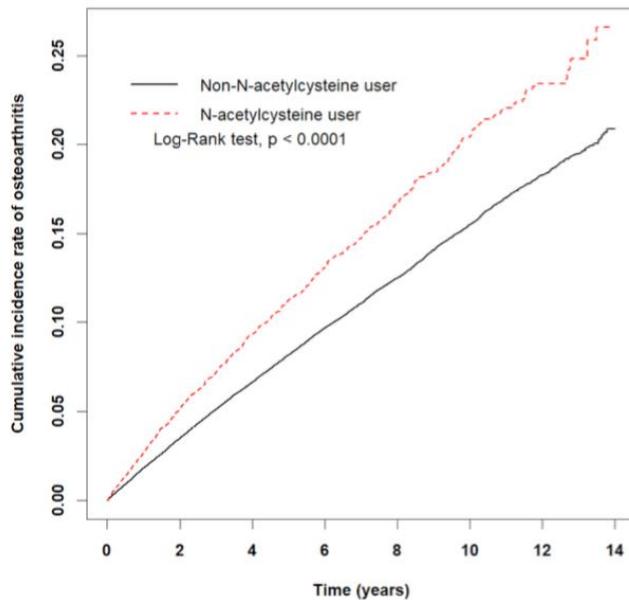


Figure. The estimated cumulative incidence of osteoarthritis of knees between the accepted and non-accepted N-acetylcysteine drug used cohort by Kaplan-Meier analysis. (Log-rank test, $p < .0001$)

Table . Cox model with hazard ratios and 95% confidence intervals of osteoarthritis of knees associated with N-acetylcysteine used.

Variable	Osteoarthritis of knees no. (n=9456)	Crude*			Adjusted†		
		HR	(95%CI)	p-value	HR	(95%CI)	p-value
N-acetylcysteine used							
No	8443	1.00	reference		1.00	reference	
Yes	1013	1.37	(1.28-1.46)	<.0001	1.39	(1.3-1.49)	<.0001
Comorbidities (ref=non-)							
Stroke	1680	1.95	(1.85-2.06)	<.0001	1.21	(1.15-1.28)	<.0001
Rheumatoid arthritis	240	2.02	(1.78-2.3)	<.0001	1.57	(1.38-1.79)	<.0001
Diabetes mellitus	2489	1.74	(1.66-1.82)	<.0001	1.18	(1.13-1.24)	<.0001
Hypertension	5610	2.38	(2.29-2.48)	<.0001	1.65	(1.58-1.73)	<.0001
Gout	1587	1.65	(1.56-1.74)	<.0001	1.42	(1.34-1.5)	<.0001
COPD	2335	1.22	(1.16-1.28)	<.0001	1.26	(1.2-1.32)	<.0001

Crude HR* represented relative hazard ratio; Adjusted HR† represented adjusted hazard ratio: mutually adjusted for N-acetylcysteine used, age, gender and baseline comorbidities (as like tables) in Cox proportional hazard regression.

Conclusion

Patients who take oral N-acetylcysteine more than 28 days per year have higher risk of developing knee osteoarthritis.

Keywords

Osteoarthritis; Acetylcysteine; Knee

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0642

ULTRASOUND-GUIDED RADIOFREQUENCY OF THE GENICULAR NERVES - A NEW APPROACH TO TREATMENT OF KNEE OSTEOARTHRITIS RELATED PAIN

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Introduction/Background

Radiofrequency of geniculate nerves has emerged as a complement to the more conservative measures already in use aiming to ease the pain and further increases autonomy of the patients with symptomatic gonarthrosis. This work aims to review the literature regarding radiofrequency of geniculate nerves guided by ultrasound in these patients.

Material and Method

During December 2017 we searched Pubmed for randomized controlled trials, cohort studies and case reports. Bibliographies of included data were also revised for additional studies published. The selection procedure was not systematic. Keywords included "Pulsed Radiofrequency Treatment", "Osteoarthritis", "Knee Pain".

Results

The geniculate nerves are adjacent to the periosteum innervating the joint capsule as well as the intra and extra-articular ligaments. Usually, the nerves submitted to radiofrequency are the supero-medial, supero-lateral and the inferior-medial, being generally very close to vascular structures.

In general, there are two types of currents, continuous and the pulsed (the most commonly used in the knees). The use of this procedure is based on discontinuation of nociceptive knee afferents. There seem to be genuine biological effects on cell morphology, synaptic transmission, and pain signalling.

Ultrasonography has an excellent efficacy rate of accurate needle application with good visualization of soft tissues, which allows avoiding lesion of vascular or nerve structures.

Anesthesia blocks may be previously performed, and responses above 80% in pain relief usually predict a good response to radiofrequency.

Symptomatic relief seems to be maintained for at least 6 months, but more studies are needed to better understand its long-term efficacy.

Conclusion

Radiofrequency of geniculate nerves is a technique with few documented side effects, which promotes symptomatic relief of patients with gonarthrosis. Therefore, it is a reasonable option to take into account in the treatment of patients with symptomatic gonarthrosis who, for whatever reason, will not undergo surgery or await for it.

Keywords

Pulsed Radiofrequency Treatment;Osteoarthritis;Knee Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0669

INTRA-ARTICULAR BTA INJECTION EFFICACY AND SAFETY IN KNEE OSTEOARTHRITIS

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Introduction/Background

Botulinum toxin-A (BTA) injection has been recently proposed for knee OA patients to reduce pain and disability. In this study we evaluate BTA injection efficacy and safety among non-advance knee OA participants in a before-after trial.

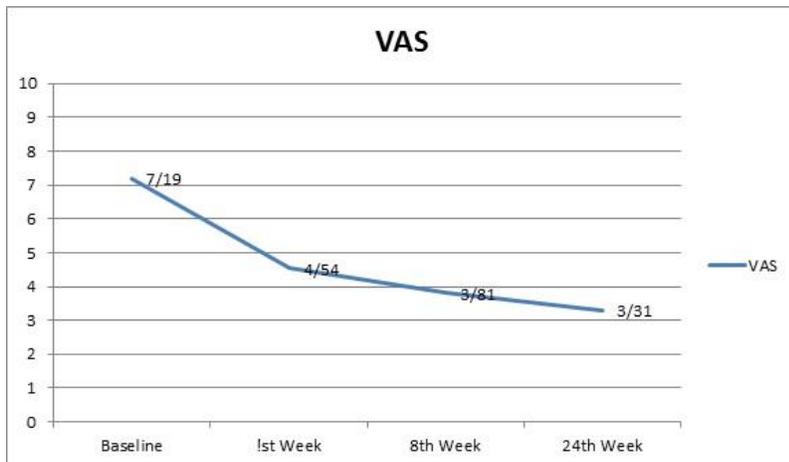
Material and Method

This trial was conducted on knee OA patients presented to our PM&R clinic. Thirty participants aged 40-75 years who had radiographic KLS grades of II and III were included. Single intra-articular injection of half of a 500IU vial BTA was applied for all participants. Patients were prospectively evaluated at baseline and then at 8 and 24 weeks after injection using the visual analog scale (VAS) for pain and Western Ontario & McMaster Universities Osteoarthritis Index (WOMAC) in three subscales: pain, stiffness and function.

Results

Both main outcome measures of this trial (VAS and WOMAC) significantly improved after 24 weeks follow up. About twothird of final VAS improvement was achieved in the first week after injection (from 7.2 to 4.5, MD%=36%, p value= 0.008); then at 8 and 24 weeks post injection VAS reached 3.8 and 3.3, respectively. Almost 81% & 77% of patients had more than 30% decline in their baseline VAS at 8th and 24th week visits, respectively. Also a similar pattern was observed for WOMAC index of sixth month (from 56.7 to 31.0, Mean Difference=-25.7 [MD%=45%], p value= 0.005), with more remarkable changes in function subscale (MD% = 46%). In this study no major adverse events were noted.

Measure	Before	After	Mean Diff (SD)	P value
WOMAC	10.62 (3.31)	6.00 (1.78)	4.62 (2.35)	0.000
<i>Pain</i>				
WOMAC	5.08 (1.41)	2.85 (1.19)	2.23 (0.90)	0.000
<i>Stiffness</i>				
WOMAC	41.08 (9.52)	22.15 (4.83)	18.92 (7.88)	0.000
<i>Function</i>				
WOMAC	56.77 (13.03)	31.00 (6.96)	25.7 (10.22)	0.000
<i>Total</i>				



Conclusion

BTA showed promising effects in improving knee pain, ROM and functional status. Therefore this single session method could be considered as an alternative to other intra articular injections in knee OA patients who did not response to preliminary conservative treatments. Further data is necessary to assess long-term effects and cost-benefit analysis of BTA against other similar choices.

Keywords

Intra articular injection;Knee Osteoarthritis;Botulinum toxin

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0678

INTRARTICULAR OZONE INJECTION EFFICACY IN KNEE OSTEOARTHRITIS: A SYSTEMATIC REVIEW WITH META-ANALYSIS

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Introduction/Background

The main aim of this review was to discuss the literature on ozone intra-articular injection in knee osteoarthritis (OA) patients and to synthesize the available evidence as a meta-analysis.

Material and Method

A systematic review of Pubmed, Google scholar and Cochrane Central Register of Controlled Trials was performed to identify all English-language RCTs that evaluated the efficacy of ozone intra-articular injection versus a control injection for knee OA patients. A Random effect model was used to compare efficacies among trials based on Visual Analogue Scale (VAS) for pain and Western Ontario and McMaster Universities Arthritis Index (WOMAC) questionnaire.

Results

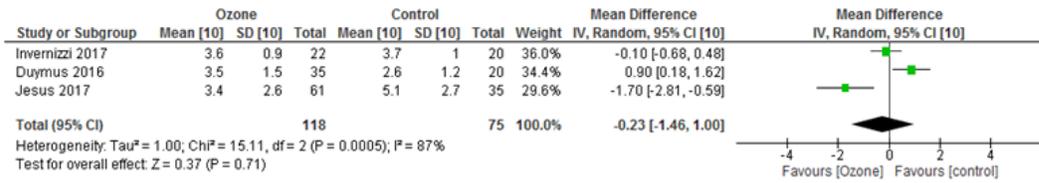
From 231 records screened, only 26 one had relevant topics. Among them only five studies satisfied our inclusion criteria. A total of 428 patients were included which 53% of them (n=225) in the treatment group and 47% in the control [HA, hypertonic dextrose and air injection] group (n=203). The mean age of ozone groups was 64.5 years compared with 64.4 years for control group. Females were the majority in both treatment and control group (80% and 77% respectively). All studies had at least 2 months followup. In almost all of them 3-4 weekly rounds of ozone injection were performed, with concentration of 15-30 ug/cc.

Author-Year	Country (Setting)	Age Mean (SD)	Gender F:M % (No)	Severity Grade (KLS) Grades % (No)	Body Mass Index (SD)	Injection Protocol (Ozone)	Control Group	Follow up	Outcome Measure
Hashemi M, 2015	Iran -Anesthesiol	59.1 (±12.3)	57:43 % (n=23/17)	I & II (Not Reported)	31.2±1.1	3×Weekly (7 cc, 15µg/ml)	3×Dextrose 12.5% 10 days intervals	3 months	-VAS -WOMAC
		57.3 (±15.1)	65:35 % (n=26/14)						
Duyms TM, 2016	Turkey -Ortho/PMR	59.4 (±5.7)	88:12 % (n=31/4)	II:III = 66:34 % (n=23/12)	27.6±4.4	4×Weekly (15cc, 30 µg/ml)	1× HA, stat	1-3-6-12 months	-WOMAC -VAS
		60.3 (±9.1)	97:3 % (n=33/1)	II:III = 62:38 % (n=24/10)	28.4±3.6				
Jesus C, 2017	Brazil -Geriatrics	70.5 (±7.2)	91:9 % (n=56/5)	II & III (Not Reported)	Not Reported	8×Weekly (10cc, 20 µg/ml)	8×Air injection, weekly	1-2-4 months	-VAS -Leguesne Index
		69.5 (±7.6)	85:5 % (n=30/5)						
Invernizzi M, 2017	Italy -PMR	70.3 (±6.5)	73:27 % (n=16/6)	II:III = 68:32 % (n=15/7)	27.1±1.9	4×Weekly (10cc, 20 µg/ml)	4×HA, weekly	1-2-3-8 weeks	-VAS -Oxford knee questionnaire (OKQ)
		70.7 (±5.4)	65:35 % (n=13/7)	II:III = 70:30 % (n=14/6)	26.8±1.7				
Raeesadat SA, 2017	Iran -PMR	58.1 (±6.4)	75:25 % (50/17)	II:III = 56:44 % (n=37/30)	26.6±1.9	3×Weekly (10 cc, 30µg/ml)	3× HA, weekly	6 months	-WOMAC -VAS
		61.1 (±6.2)	77:23% (56/18)	II:III = 55:45 % (n=40/34)	28.5±1.6				
Total (n=408)		64.52	80:20 % (173/42)						
		64.47	77:23% (150/43)						

Table 1. Baseline characteristics of included studies

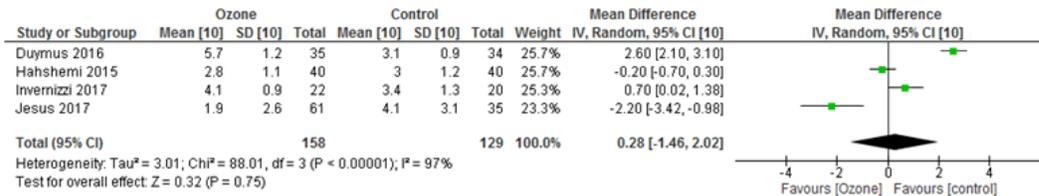
Figure 1. Comparison of VAS between ozone and control groups [at 1 month (a), 2-3 months (b) and 4-6 months (c) follow up]

a) at 1 month f/u



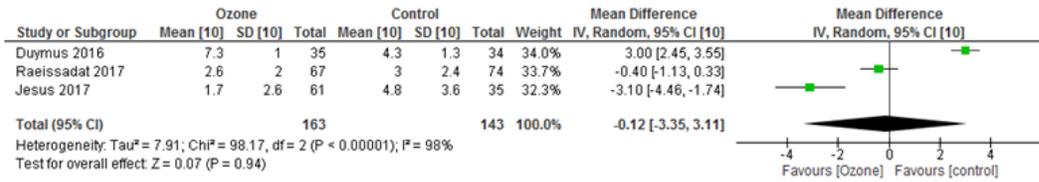
Results after sensitivity analysis performed for removing data of Jesus et al.: MD=0.38 [-0.60, 1.35], I²=78%, P value=0.45

b) at 2-3 months f/u



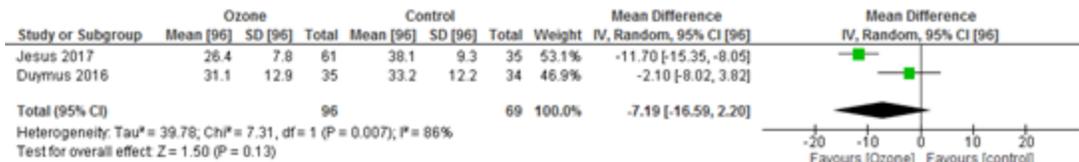
Results after sensitivity analysis performed for removing data of Jesus et al.: MD=1.04 [-0.74, 2.81], I²=97%, P value=0.25

c) at 4-6 months f/u



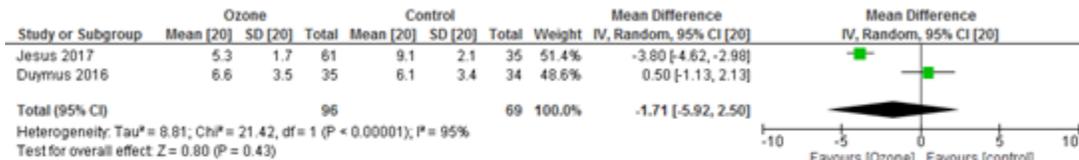
Results after sensitivity analysis performed for removing data of Jesus et al.: MD=1.31 [-2.02, 4.64], I²=98%, P value=0.44

a) WOMAC_{total} in 1-2 months f/u



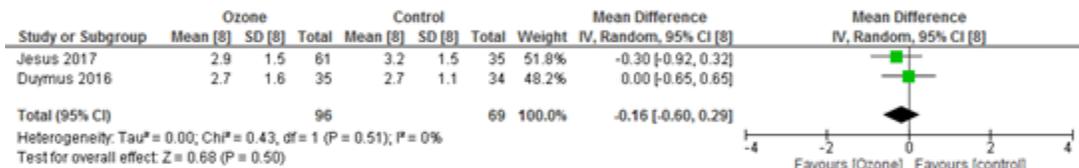
Results after sensitivity analysis performed for removing data of Jesus et al.: MD = -2.10 [-8.02, 3.82], I² = NA, P value = 0.49

b) WOMAC_{pain} in 1-2 months f/u



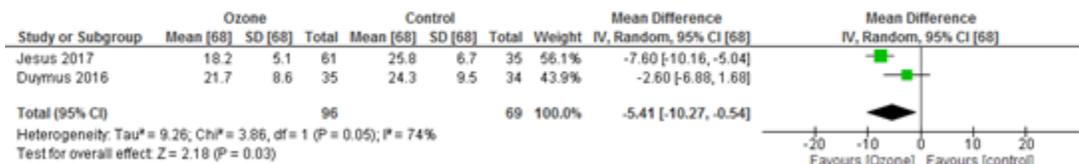
Results after sensitivity analysis performed for removing data of Jesus et al.: MD = 0.5 [-1.13, 2.13], I² = NA, P value = 0.55

c) WOMAC_{joint stiffness} in 1-2 months f/u



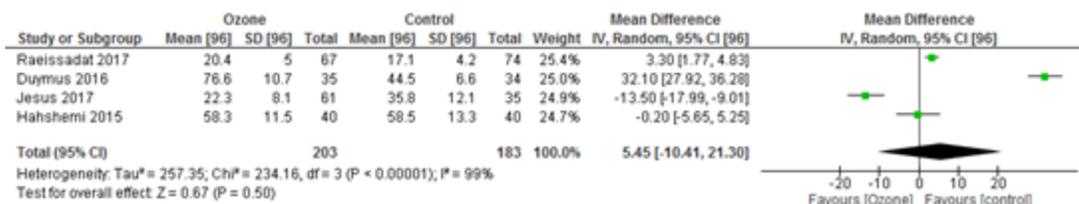
Results after sensitivity analysis performed for removing data of Jesus et al.: MD = 0.0 [-0.65, 0.65], I² = NA, P value = 1.0

d) WOMAC_{function} in 1-2 months f/u



Results after sensitivity analysis performed for removing data of Jesus et al.: MD = -2.60 [-6.88, 1.68], I² = NA, P value = 0.23

a) WOMAC_{total} in 3-6 months f/u



Results after sensitivity analysis performed for removing data of Jesus et al.: MD = -11.74 [-7.08, 30.55], I² = 99%, P value = 0.22

Conclusion

Intra-articular ozone in comparison to HA or hypertonic dextrose injections, may have quietly equal effects in the treatment of mild to moderate knee OA patients throughout short term period; However by 3-6 months after injection, this therapeutic effect would be disappeared, more earlier than other control injections.

Keywords

Knee Osteoarthritis;Intra articular ozone injection;systematic review with meta-analysis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0719

THE EFFECT OF THE HYBRID ASSISTIVE LIMB (HAL) TRAINING AFTER TOTAL KNEE ARTHROPLASTY

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Introduction/Background

The hybrid assistive limb (HAL, CYBERDYNE) is a wearable robot that provides assistance to a patient while they are walking, standing, and performing leg movements based on the intended movement of the wearer. Therefore, we assessed the effect of robot-assisted training on the walking of patients after total knee arthroplasty (TKA) for osteoarthritis.

Material and Method

Ten patients received HAL training (mean age: 74.1 ± 5.7 years; height: 150.4 ± 6.5 cm; weight: 61.2 ± 8.9 kg). Eleven patients received conventional rehabilitation (mean age: 78.0 ± 8.0 years; height: 151.2 ± 10.1 cm; weight: 58.8 ± 10.0 kg). HAL training were performed one week after TKA, 20 minutes on a session, during four weeks period, twelve times in total. Gait speed, step length, range of motion and muscle strength were measured.

Results

The gait speed and step length of preferred speed in the HAL group were greater than that in the conventional group at 4 and 8 weeks ($p < 0.05$). The gait speed and step length with maximum effort in the HAL group were greater than that in the conventional group at 2 and 4 weeks ($p < 0.05$). The extension lag in the HAL group were smaller than that in the conventional group at 2 weeks ($p < 0.05$). The muscle strength of knee extension in the HAL group were greater than that in the conventional group at 8 weeks ($p < 0.05$).

Conclusion

HAL training after TKA can improve the walking ability compared with conventional rehabilitation up to 8 weeks after TKA.

Keywords

hybrid assistive limb;total knee arthroplasty

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0728

MILWAUKEE SHOULDER SYNDROME, A RARE FORM OF DESTRUCTIVE SHOULDER ARTHROPATHY: CASE REPORT

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Introduction/Background

The Milwaukee Shoulder Syndrome (MSS) is a destructive arthropathy that affects elderly women (over 60 years old), unilaterally (95%) or bilaterally (60%) and with predominance of the dominant side. It is associated with the deposit of Pyrophosphate Basic Calcium (PBC) crystals in 100% of cases (Pyrophosphate calcium crystals in 50%) in soft tissues that leads to increased of synovial fluid, rotator cuff tears and joint collapse consequently. Clinically it manifests with pain, swelling and rapid destruction of the glenohumeral joint, leading to significant disability. Some cases can be complicated by septic arthritis. The management is mainly through drugs (NSAIDs, acetaminophen, opioids) and painful shoulder physiotherapy aimed to reducing pain and recovering passive and active mobility of the shoulder that allows its functionality. Tidal irrigation combined with local infiltration of corticosteroids may produced pain and range of movement (ROM) improvement in the short-medium term. Some may end up in joint replacement surgery to restore shoulder function.

Material and Method

We present the case of a 86-year-old woman who consulted for pain, inflammation and functional limitation non-traumatic of the right shoulder for weeks of evolution. Physical examination includes swelling, deformity with humeral head prominence and limitation of active and passive ROM with pain.

Results

Radiological Imaging tests show anterior impaction of the humeral head in the glenoid, AC dislocation and multiple fractures in the scapula. Arthrocentesis: the analysis shows an inflammatory fluid and PBC crystals are detected. These findings, along with the radiological tests, are compatible with MSS.

Conclusion

The MSS is a rare entity of cuff tear arthropathy with few cases published in the literature since it was first described by Dr. Robert Adams in 1875. Its clinical and radiological images alongside with the findings of joint crystals are diagnostic. Management is fundamentally conservative, since surgery (Reversed Total Shoulder Arthroplasty) provides few favorable results.

Keywords

Milwaukee Shoulder Syndrome;Pyrophosphate basic calcium crystals;Degenerative shoulder arthropathy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0765

ISCHIOFEMORAL IMPINGEMENT SYNDROME IN TWO FEMALE TEENS

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Introduction/Background

Hip pain is a common cause of medical consultation, which is usually difficult to diagnose because of its diverse etiology. Ischiofemoral impingement syndrome is a cause of hip pain potentially underestimated, and it is defined by pain related to a decrease of the space between the ischial tuberosity and the lesser trochanter of the femur, with abnormal morphology and intensity of quadratus femoris in magnetic resonance imaging.

Material and Method

We present two cases of ischiofemoral impingement in two female teens who play sports regularly without traumatic or surgical history, with clinical evolution of approximately 2 years of hip pain radiating to the thigh in one case. Presenting exacerbation with physical activity and improved with rest. Also, was found in both cases pain with adduction and external rotation movements of the hip and signs of joint hypermobility.

Results

The hip MRI study showed quadratus femoris muscle edema with narrowing of the ischiofemoral space. The distance of ischiofemoral space and quadratus femoris space were narrow. The findings were compatible with ischiofemoral impingement syndrome in both patients, as it is shown in Figs 1 and 2.

Conclusion

In one case, rest and stretching exercise was satisfactory, while in the other case the symptoms have persisted despite conservative treatment and CT guided blocking using corticosteroids and anesthetics, and it was considered the need to perform a surgical procedure with resection of the lesser trochanter.

These cases show this entity as a possible cause of hip pain, which can accurately diagnose with MRI and clinical findings, and treat promptly.

Keywords

ISCHIOFEMORAL;IMPINGEMENT;FEMALE

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0831

EFFICACY OF HIGH POWER LASER THERAPY IN OSTEOARTHRITIS KNEE PATIENT

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Introduction/Background

Knee osteoarthritis is one of the most common musculoskeletal problems that cause pain. Previous studies showed effect of low level laser therapy in various pain conditions; however, it has limitation of energy and depth of penetration. Therefore, this study aim to assess the efficacy of high power laser therapy (HPLT) for pain relief and functional outcome in patients with knee osteoarthritis.

Material and Method

42 patients with diagnosis of primary OA knee, age 50-88 years, Kellgren-Lawrence classification (KL) 2-4 and pain score greater than 4 on a 0-10 scale. All patients were treated at out-patient Rehabilitation Medicine Department. They were randomly allocated into 2 groups. The treatment group received HPLT (energy density 22.39 J/cm², accumulated dose 5,625 joule/course) and the control group received sham laser (10 sessions, 2-3 sessions/week in both groups). Both groups were advised to exercise and lifestyle modification as conventional treatment. Pain (assessed by VAS pain scale) and functional outcome (assessed by Thai version of the modified WOMAC scales) were evaluated before and after treatment.

Results

42 patients participated in this study with mean age(SD) of 65.5(8.8) years, KL 2, 3 and 4 were 14, 17 and 11 respectively. At the end of the study, VAS and modified WOMAC scale showed significantly decreased in both groups. The decrement of VAS [median difference of VAS (interquartile range)] of the treatment and the control groups were 4.2(3.0,4.9) and 1.5(0.3,3.9); the decrement of modified WOMAC [mean difference of modified WOMAC(SD)] of the treatment and the control groups were 64.8(31.6) and 41.5(35.0) respectively. Both median difference of VAS and mean difference of modified WOMAC of the treatment group were significantly decreased more than the control group.

Conclusion

High power laser therapy was effectively decreased pain and improved functional outcome in knee osteoarthritis patients more than sham laser plus conventional treatment.

Keywords

high power laser therapy;knee osteoarthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0847

COMPARISON OF KNEE JOINT ADDUCTION MOMENT TO FEMALE ON BARE FOOT AND HIGH HEELS

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Introduction/Background

Millions of women wear high heels during their activities, i.e work, social activities, nonetheless there are only a few of them know the shear load effect on wearing high heels to foot joints. The use of high heels mediates changing of ground reaction force, external knee adduction moment (KAM), muscle activity and posture implication.

Material and Method

This study was pre-experimental within active healthy female, permanent residence in surabaya indonesia which recruited and eligible for inclusion criteria and was treated as consecutive sampling. The 14 subjects recruited walk bare foot and also high heels shoes (3 and 7 cm) on gait trajectory using CMAX gait analysis software.

Results

Mean of knee joint adduction moment on bare foot $13,21 \pm 4,90$, for 3 cm high heels $15, 12 \pm 5,25$, for 7 cm high heels were $18,20 \pm 7,36$. Knee joint adduction moment were higher on high heels than bare foot.

Conclusion

there was difference of knee joint adduction moment on bare foot, 3 cm high heels, also 7 cm high heels

Keywords

high heels, bare foot, knee joint adduction moment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0864

KNEE- ANKLE-FOOT ORTHOSES FOR TREATING POSTERIOR KNEE PAIN RESULTING FROM GENU RECURVATUM: EFFICIENCY, PATIENTS' TOLERANCE AND SATISFACTION

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Introduction/Background

The aim of this study was to assess the efficiency of Knee-Ankle-Foot-Orthoses (KAFOs) for treating painful genu recurvatum (GR) and to determine the users' tolerance and satisfaction.

Material and Method

Population: patients included in this study were found to have a GR at the physical examination during the stance phase, which was confirmed by a medical doctor. 27 patients with 31 KAFOs were included.

The main outcome was the score obtained on the verbal numerical rating scale (VNRS) before and at least three months after a KAFO was fitted and the score obtained on the verbal numerical pain rating scale (VRS). Secondary outcomes were rated with the QUEST (Quebec user evaluation of satisfaction with assistive technology).

Results

After the KAFO was fitted, the median VNRS pain score decreased from 85/100 to 25/100 ($p \leq 0.001$) and the description of the pain on the VRS decreased from "extreme" to "mild" ($p \leq 0.001$). The QUEST gave a total score of 4.0.

Conclusion

Treating a painful GR with a KAFO reduced the pain efficiently whatever the patients' diagnosis, and high patients' satisfaction scores were obtained.

Keywords

genu recurvatum;pain;Knee Ankle Foot Orthosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0866

CORRELATION BETWEEN QUALITY OF LIFE OF THE PATIENTS WITH KNEE OSTEOARTHRITIS AFTER ARTHROPLASTY AND EARLY REHABILITATION WITH CLINICAL PARAMETERS BEFORE ARTHROPLASTY

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Introduction/Background

Total knee arthroplasty has been shown to be an effective procedure in improving of quality of life of the patients with knee osteoarthritis and disability. Clinical assessment of patients before knee arthroplasty could predict quality of life of these patients after arthroplasty and rehabilitation.

The aim of this study was to establish correlation between quality of life of the patients with severe knee osteoarthritis 6 weeks after knee arthroplasty and early rehabilitation with clinical parameters (age, BMI, waist circumferences, physical function, pain and stiffness) before arthroplasty.

Material and Method

Prospective research includes 96 patients (average age 67.5 ± 9.2 years, range of 45-78 years) that underwent total knee arthroplasty. Early program of kinezitherapy and occupational therapy was performed. Instrument used for assessment of the quality of life, physical function, pain and stiffness is modified version of Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). All patients completed the questionnaires preoperatively and 6 weeks postoperatively. Pearson test of correlation was used to analyze numerical data.

Results

Quality of life of the patients with knee osteoarthritis 6 weeks after arthroplasty shows significant correlation with physical function ($r=0.547$, $p<0.00$), pain ($r=0.281$, $p<0.01$) and waist circumferences ($r=0.208$, $p<0.05$) preoperatively.

Conclusion

Results of our research show that physical function, pain and waist circumferences of the patients with knee osteoarthritis before arthroplasty influences on the level of the quality of life

after total knee arthroplasty. These findings can be important for creating the program of preoperative rehabilitation and for assessment of indications for arthroplasty.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0875

TREATMENT OF KNEE OSTEOARTHRITIS – IS MICROCURRENT THERAPY AN OPTION?

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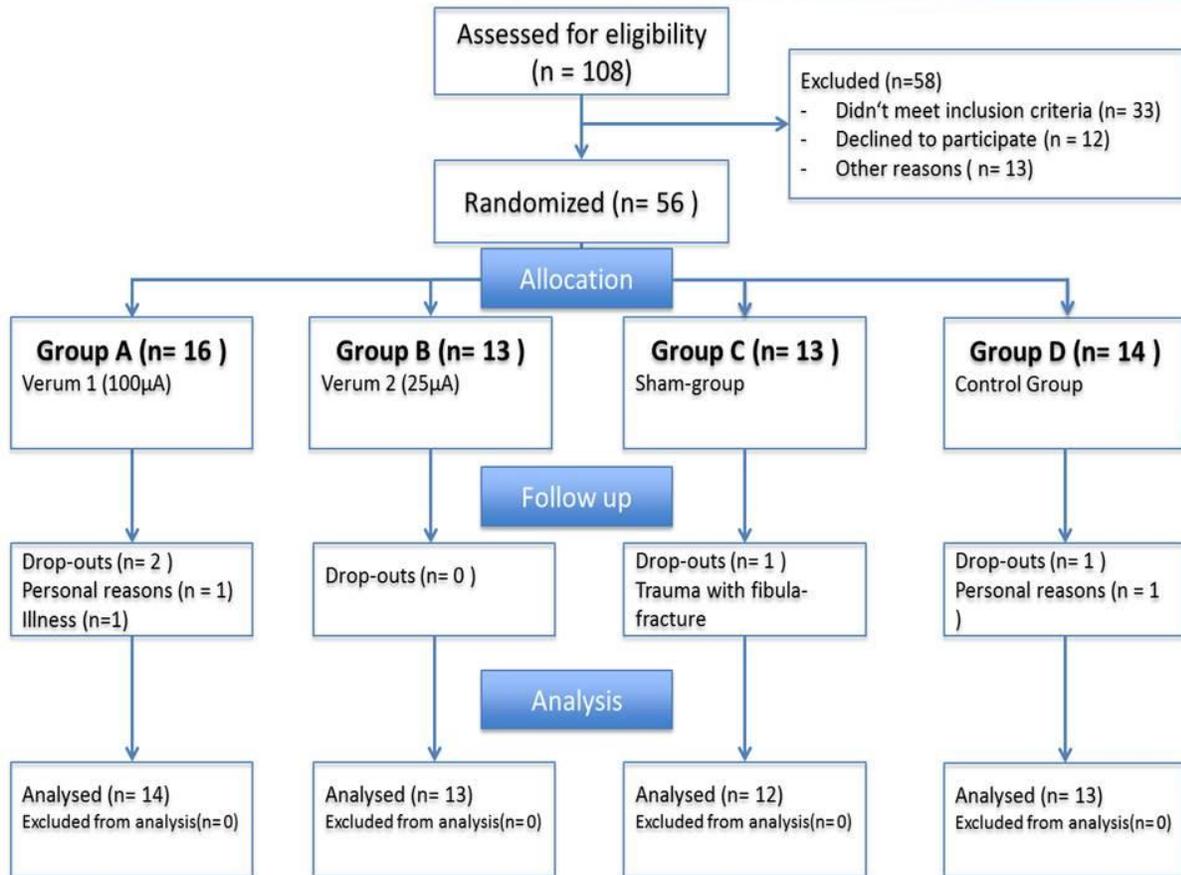
Introduction/Background

In contrast to interferential electrotherapy in the treatment of knee osteoarthritis (OA), little is known about the effects of microcurrent therapy (MCT). MCT uses very low currents and is not perceptible by the patients. The aim of this study was to explore effects of MCT.

Material and Method

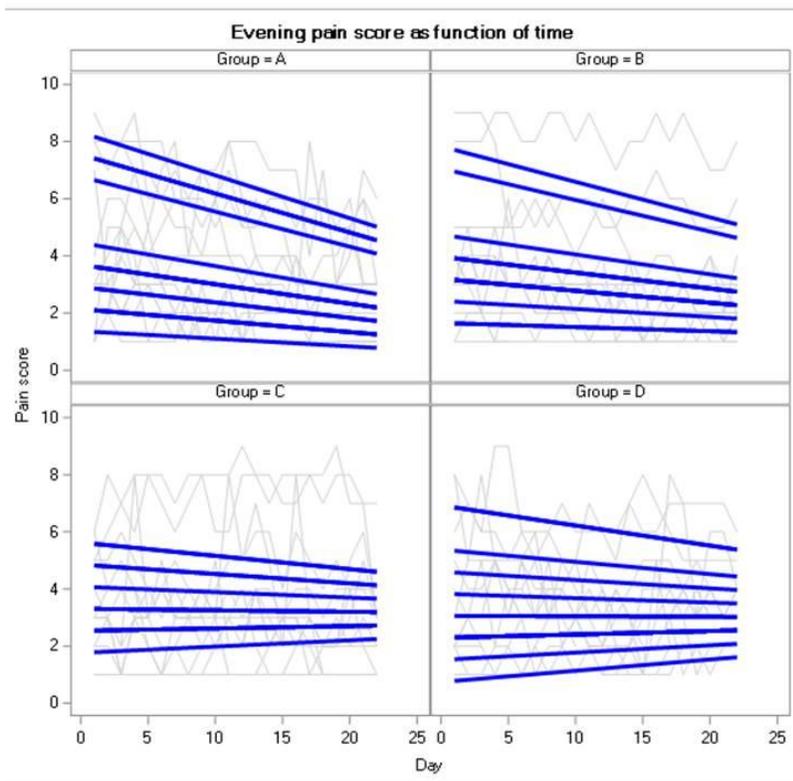
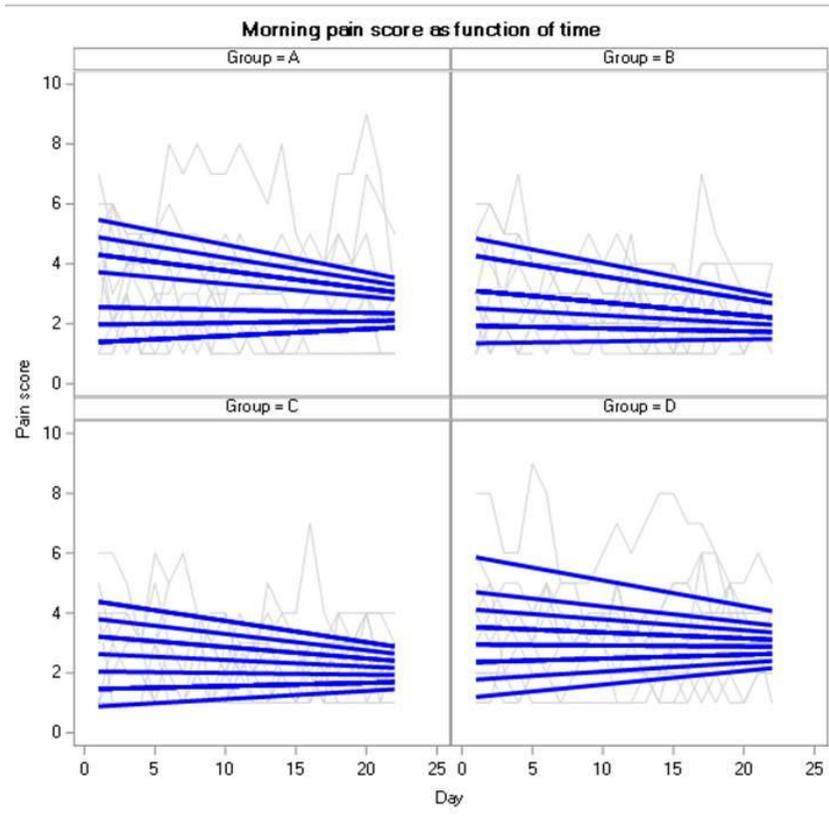
This double-blinded randomized controlled trial (registered at clinicaltrials.gov; NCT02975154) had four arms: MCT with 100 μ A (Group A), MCT with 25 μ A (Group B), sham-treatment (Group C) and a control Group D. Inclusion criteria: Radiological confirmed knee OA, pain \geq 3 (Numeric Rating Scale), no metal implants. Patients in A, B and C had 10 treatments (30 min., 3 times a week). Primary outcome: Longitudinal pain intensity of daily measured pain (morning and evening). Secondary outcome: Knee osteoarthritis outcome score (KOOS), SF-36-Questionnaire, 6-min-walking-test (6MWT), Get-up-and-go-Test (GUG). Changes in the pain intensity (NRS) across the treatment period (day 1-22) were statistically

compared by mixed effect models with random intercepts.



Results

52 patients (Age 72 ± 7 years; 37 female) completed the study (fig.1). Group comparisons for morning pain showed borderline non-significant improvements for A vs. D ($p=0.057$) but significant improvements for Group B vs. D ($p=0.001$). No significant improvements for A vs. C ($p=0.711$) or B vs. C ($p=0.088$) in morning pain. In terms of evening pain significant improvements were found for A vs. D ($p < 0.001$), A vs. C ($p < 0.001$), B vs D ($p < 0.003$) and B vs. C ($p = 0.007$). Kruskal-Wallis-Tests showed no significant group differences in the secondary outcomes.



Conclusion

This explorative study suggests that MCT can improve evening pain more than sham treatment. A confirmative study is recommended.

Keywords

knee osteoarthritis;microcurrent therapy;electrotherapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0902

ASSOCIATION TIBIAL CORONAL ALIGNMENT OF TOTAL KNEE ARTHROPLASTY WITH PATIENT SATISFACTION:USING 3D MATCHING EVALUATION METHOD

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Introduction/Background

The aim of this study was to evaluate tibial coronal alignment using 3D-reconstructed CTs and to assess the relationship of total knee arthroplasty (TKA) alignment and clinical outcome.

Material and Method

Total 62 knees of 53 consecutive patients who underwent primary TKA were included. For assessment of TKA component position, we used 3D matching evaluation method. For these, preoperative planning with 3D templates were has been done. And we performed CT photography of the whole lower limbs after surgery similar to preoperation and tibial component setting was located after surgery using evaluation software made in LEXI Company and evaluated it. For knee patient-reported outcome scoring the Japanese Knee Osteoarthritis Measure (JKOM) was used at 6month and 1 and 2 years postoperatively. And patients were asked to grade their level of satisfaction for each question (ie, very dissatisfied, dissatisfied, neutral, satisfied, or very satisfied). The patients were divided into two groups: neutral alignment group (n=49:preoperative alignment \pm 2°), and outlier group(n=13:preoperative alignment $>$ 2°). We compared these two groups for JKOM, level of satisfaction and we investigated correlations between alignment variables and JKOM.

Results

There was significant difference in the number of patients who answered satisfied or very satisfied between the two groups (85.7% in neutral alignment group vs. 53.8% in the outlier group, $p<0.05$). And there was significant difference in JKOM score between the two groups (23.9 \pm 19.3 in neutral alignment group vs. 38.5 \pm 24.0 in the outlier group, $p<0.05$). Pearson correlation coefficient (P-value) between tibial coronal alignment and JKOM was significant($r=0.3325$, $p=0.0083$).

Conclusion

Significantly inferior outcome was detected in the group of tibial alignment-outliers.

Keywords

knee;arthroplasty;patients satisfaction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0903

BECOMING ALGO-FUNCTIONAL AFTER A THOROUGH KNEE- PROTHESIS: ABOUT 36 CASES

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Introduction/Background

Arthroplasty of the knee is one of the major surgical successes of orthopedics. Together with post-surgical reeducation it helps alleviate pain and improve the mobility of the knee as well as the quality of life of an elderly person.

The aim of our study is to figure out the future of short-term algo-functioning in patients with a thorough knee prosthesis

Our paper is a retrospective study of the case of 36 patients admitted between 2016 / 2017 in the Department of Physical Medicine and Functional Reeducation at Sahloul Hospital after a thorough knee prosthesis. The assessment of pain was made by means of 'EVA'; it's functioning by 'Lequesne index', and by gauging functional independence

Results

This study dealt with 23 women and 13 men, with an average age of 70.3 years. Six of them had double prosthesis. Besides, 9 of these patients suffered from diabetes; 5 from HTA (hypertension). The average of EVA at admission was 6.5 with an "Lesquesne index" at 21 (15 -26) and an MIF at 82 (73 - 92). The average stay at hospital was between 14.7 days (10 - 28). 5 patients had sharp pain accompanied with stiffness related to painful complex locoregional syndrome.

Functional gain was noticed in 21 patients with a "Lesquesne index" at 21 (10 -15) and an MIF at 102 (90 -109). The woman patient who underwent a surgical operation on her shrinking lumbar canal was in a stable condition accounted for by muscular weakness caused by neurological pain.

Conclusion

A well-done arthroplasty allows the re-autonomization of patients. Taking a good care of an elderly person, with an intensive functional reeducation, together with a precocious verticalisation, help reduce the incidents of slippery risks and improve the life quality of these patients.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-0934

COMPARE THE EFFECT OF TWO DIFFERENT BODY POSITIONS DURING WHOLE BODY VIBRATION TRAINING IN THE EARLY PHASE REHABILITATION AFTER TOTAL KNEE ARTHROPLASTY.

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Introduction/Background

End-stage knee joint Osteoarthritis is commonly treated with total knee arthroplasty (TKA). However, patients with TKA still have deficits in postural control, and knee performances after a period of rehabilitation. Whole-body vibration (WBV) training has beneficial effects for improving muscle strength, balance, proprioception, and pain. Besides, the neuromuscular response depends on different model parameters and the body position on the vibration platform. The aim of this study was compare the effect of two different postures during vibration training in the early phase after TKA.

Material and Method

According to fall risk score, all TKA patients who after surgery six weeks would be separated into two groups, standing group or sitting group. All subjects would receive WBV training with different postures for 3 times a week for 3 weeks, and also receive pre and post outcome measures included the isometric muscle strength of knee, postural control ability and fall risk test, range of joint motion, ambulation ability, and Chinese Version of Knee injury and Osteoarthritis Outcome Score (KOOS).

Results

The subjects of the two groups were assessed outcome measures before and after intervention. In standing group, the changes of the measures were all significantly different. In sitting group, the changes were significantly different only in fall risk score, active range of knee joint motion, six-minute walk test, and some subscales in KOOS_ symptoms, function in daily living, knee related quality of life.

Conclusion

WBV training can improve postural control ability and functional performances after TKA. Besides, the training effect of WBV with standing posture are better than with sitting posture. In clinical, to patients who are weaker or painful after TKA, they can receive WBV training with sitting posture to reduce knee pain or stiffness, and increase willingness to use their affected limbs during the early phase, and also promote further rehabilitation training in the future.

Keywords

Rehabilitation;Whole body vibration;Total knee arthroplasty

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1009

EFFECT OF KINESIO TAPING ON IMMEDIATE REHABILITATION PROGRAM FOR KNEE MEDIAL COMPARTMENT OSTEOARTHRITIS

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Introduction/Background

The basics of the Kinesio Taping (KT) in Korea and Japan, the properties of the tape are its structural flexibility and elasticity which has suggested to enhance afferent input through skin receptors during movement. The aim of this study is to evaluate the role of KT in the immediate rehabilitation management of knee medial compartment Osteoarthritis (OA) through application of Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).

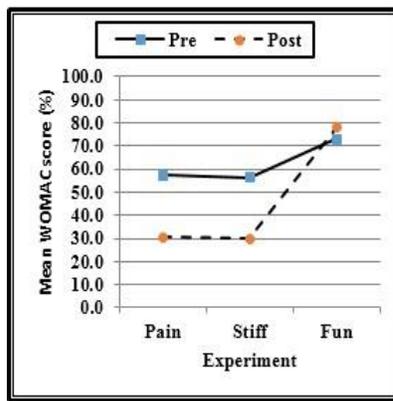
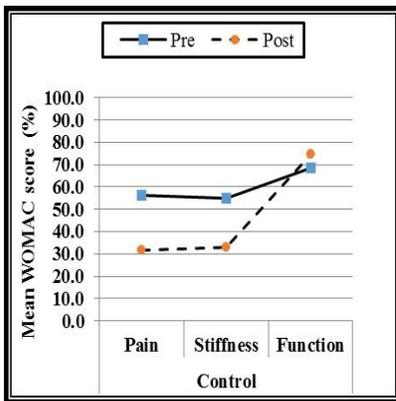
Material and Method

120 patients (mean & SD age 55.16 & 7.05 years, body mass 31.23 & 7.20 Kg/m), 80 females and 40 males diagnosed as candidates of chronic stage medial compartment knee OA regardless the etiology participated in this randomized controlled clinical trial. They had been referred to the Medical City teaching Hospital in Baghdad, Iraq from Oct. 2016 till June 2017. The study sample was divided to two groups, Control group (60 patients) treated by traditional physical therapy rehabilitation program, the other 60 patients (Experimental group) were treated similarly plus KT Application. WOMAC scale was used to evaluate both groups before and after treatment and the responses were scored accordingly and the mean value of the whole group on each scale were calculated and analyzed by using t- test.



Results

There was significant ($P < 0.05$) decrease in pain and stiffness sub-scales, and significant ($P < 0.05$) increase in physical function sub-scales of experimental group compared to control group.



Conclusion

Applying pressure and stretching the skin can stimulate the cutaneous mechanoreceptors which would be enhanced by KT, and it might also play a role in joint movement and position, detected by joint mechanoreceptors. In this way the problem of pain, stiffness and reduced functional activity will not be a concern when introducing KT procedure to immediate rehabilitation program for knee medial compartment OA.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1152

THE EFFECTS OF VIRTUAL REALITY ON THE REHABILITATION OF PATIENTS WITH KNEE OA: A RANDOMIZED CONTROLLED CLINICAL TRIAL

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Introduction/Background

- Knee OA is one of the most prevalent orthopedic diseases in the elderly population, with a degenerative and progressive character that affects the articular cartilage, limiting the articular range of motion (ROM) due to rigidity and causing important functional restrictions. Virtual Reality (VR) is one of the instruments that can help in the rehabilitation process of patients, motivating them and enabling more assertive movements and exercises.

Material and Method

- Ninety patients (65 women and 25 men) between 50 and 70 years old, with a medical diagnosis of OA in at least one knee participated in the study. After completing the WOMAC and Lequesne questionnaires, they were evaluated for pain and muscular strength. The volunteers signed the Consent Term and were then randomly divided, using opaque, sealed envelopes, into 3 groups: Control group - performed a conventional physiotherapy program with aerobic and muscle strengthening exercises; Experimental group 1 (Wii) - in addition to the conventional program used Nintendo's Wii Fit games; Experimental group 2 (Kinect) - complemented the conventional treatment with the Xbox Kinect video game system.

Results

- It was observed that, in general, the three study groups demonstrated statistically significant improvement ($p < 0.05$) in relation to pain and muscular strength. The groups with inclusion of the VR resources only presented better results than the control group in the function dimension of the WOMAC questionnaire.

Conclusion

- The methodological conditions used in the study suggest that Virtual Reality as an additional instrument in rehabilitation programs for patients with knee OA was better than the control group only in the function dimension of the WOMAC questionnaire.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1171

EFFICACY OF ISOKINETIC DYNAMOMETRY IN CON-TREX MJ TO DETERMINE MUSCLE DEFICIENCIES IN PATIENTS WITH FEMOROACETABULAR ENTRAPMENT

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Introduction/Background

Femoroacetabular impingement (AFA), also known as femoroacetabular impingement or femoroacetabular impingement, is a clinical-radiological syndrome characterized by a space conflict derived from an anomalous contact between the femoral head and the acetabulum. It is an entity described in the last decade, relatively frequent, little recognized coxalgia among the young and middle-aged population and often derives early in coxarthrosis

Material and Method

A descriptive and cross-sectional study was conducted in patients with femoro-acetabular shock treated in the orthopedics clinic of the Julio Díaz Hospital, in the period from June 2017 to December 2017, the sample consisted of 27 patients, using the technique probabilistic sampling by succession. The evaluation was in Con-Trex Isokinetic MJ equipment, CPM mode, With / With 60 ° / sec., 5 repetitions for Flexo movements, Extension, Abduction, Adduction, Internal and External Rotation of the hip and bilaterally.

Results

Results: Age 40-59 years predominated with 63.0%. The average age of the sample was 46.2 ± 13.1 years, the youngest patient included in the sample was 18 years old and the longest was 74 years old. Regarding sex, the female was the most frequent, with 63.0%. In terms of applied force, given in Par [Nm] the Flexion has less force than the Extension and bilaterally the right, as soon as the ADD is greater than the ABD and within them, the left is of less force and with respect to the rotation, the external is less than the internal, of them the right is of less strength. Correspondence of strength levels with clinical symptoms is determined

Conclusion

The isokinetic dynamometry in Con-Trex MJ is effective to determine muscular deficiencies in patients with femoro-acetabular shock.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1176

MESENCHYMAL STROMAL CELLS FOR MUSCULOSKELETAL APPLICATIONS: A REVIEW

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Introduction/Background

The potential regeneration of damaged tissue with stem cells is a promising new treatment in orthopedics and rehabilitation fields. Musculoskeletal injuries are a common health problem in all age groups. The incidence of articular cartilage damage is increasing due to raised life expectancy and enhancement of sports practice. Cell-based therapies with mesenchymal stromal cells (MSC), an adult type of stem cells, have received considerable interest during recent years. The aim of this study was to review the literature on current musculoskeletal applications of MSC, focusing on quality considerations to be taken into account before applying stem cells.

Material and Method

We conducted a literature search in Pubmed including most existing studies related to stem cells and its use in orthopedics. We included fifteen both qualitative and quantitative studies published in english in the last 5 years.

Results

Among all stem cells types, MSC are mostly used in orthopedic disorders because of its self-renewal, ease of retrieval and multipotency, which could differentiate into cells of mesodermal lineages and other embryonic lineages, including adipocytes, osteocytes, chondrocytes, etc. However, MSC do not have an infinite self-renewal mechanism such as hematopoietic cells.

Cellular therapy with MSC can be done with non-culture expanded MSC, obtained directly from adipose tissue and bone marrow, or with culture expanded MSC involving cell growth and cell expansion in a clinical laboratory setting. The biggest differences are the number of MSC included, nature cells condition (non-culture expanded MSC are autologous whereas culture expanded MSC are considered a pharmaceutical product) and the coexistence of other stromal vascular fraction cells. A study (N=1114) shows arthritis clinical improvement. There is evidence of MSC's potential to regenerate cartilage.

Conclusion

The application of MSC in humans for selected orthopedic disorders is a safe treatment with a great clinical potential. A sample for quality control is strongly recommended before their application.

Keywords

Stem cells;mesenchymal stromal cell;regenerative medicine

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1204

DEGENERATIVE PAINFUL SHOULDER IN THE ELDERLY: DIRECT HEALTHCARE COST IN A PMR DEPARTMENT

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Introduction/Background

Degenerative painful shoulder is a common complaint in primary health care as well as in Physical Medicine and Rehabilitation (PMR). Its burden may be consequent.

The aim of the current study was to identify related healthcare costs of degenerative painful shoulder in elderly patients followed in a PMR department.

Material and Method

Records of 156 elderly patients followed for degenerative painful shoulder over a ten year period were investigated retrospectively. Direct medical costs including medical consultations, additional tests, treatment (local and general), and rehabilitation were calculated as well as direct non-medical costs (transportation). Costs were expressed in Tunisian dinars (TND) and American dollars.

Results

The mean follow up duration was 1.22 years \pm 0.8 years. The average number of medical consultations was 7.87 (SD 3.41) with a median cost of 162.5 Tunisian dinars (TND) (\$66.7). The median cost of rehabilitation sessions (prescribed in 96.7% of cases) was 540 TND (\$221.86) and this of general (Analgesics, NSAIDs and gastric protection) and local treatment was 27.627 TND (\$11.35). Radiological and biological investigations median costs were 57 TND (\$23.42) and 3.253 TD (\$1.34) respectively. The cost of transportation was 7.267 TND (\$2.99). The median total medical direct cost was 780.855 TND (\$320.82). The total direct medical and non-medical cost per patient and per year of degenerative painful shoulder in elderly patients was 781.984 TND (\$321.28).

Conclusion

Taking into consideration the socioeconomic level of Tunisian patients in public health structures and low retirement wages, it seems that degenerative shoulder pain in the elderly was responsible for a substantial burden. Economic evaluations assess both the costs and consequences of healthcare interventions, their results will help decision makers in reducing healthcare costs.

Keywords

elderly;Shoulder pain;healthcare cost

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1212

THE PROCEDURAL LEARNING ABILITY OF PATIENTS WITH PARKINSON'S DISEASE AND THEIR REHABILITATION OUTCOME.

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Introduction/Background

Though rehabilitation contains a factor of motor re-learning, the relevance between the rehabilitation outcome and the ability of motor learning remains unclear. The striatum is involved in learning motor sequences, and motor learning in Parkinson's disease (PD) patients could be affected. We evaluated the procedural learning ability of Parkinson's disease patients with a 2×8 button-press task and examined the correlation with their clinical improvements before and after 8 weeks inpatient rehabilitation program with the Unified Parkinson's Disease Rating Scale (UPDRS).

Material and Method

Nineteen PD patients with mild to moderate disease severity (Hoehn and Yahr stage 1-3) who were 50 to 75 years of age and 13 age-matched healthy controls were recruited. All of them showed more than 25 score of Mini-Mental State Examination (MMSE) and did not have other complications which could affect on their motor function. The procedural learning ability was examined with the 2 × 8 button-press task twice, which was developed by Hikosaka. Participants tried task A at first, and one month later, they did task A again. Patients were also evaluated neuropsychological condition following the diagnostic criteria for mild cognitive impairment in PD delineated by Movement Disorder society.

Results

Six patients performed the button-press task as well as healthy controls and their UPDRS part 3 score was significantly improved compared with other patients ($p < 0.05$). Among neuropsychological tests, visual reproduction task in Wecheler Memory Scale-Revised correlated with the clinical outcome.

Conclusion

The present study shows the 2×8 button-press task could be used to evaluate the procedural learning ability and predict the rehabilitation outcome.

Keywords

motor learning; Parkinson's disease; rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1277

THE USE OF ULTRASOUND IMAGING IN TOTAL KNEE ARTHROPLASTY AFTER INPATIENT REHABILITATION

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Introduction/Background

Osteoarthritis (OA) is a degenerative joint disease leading to severe pain and disability. Ultrasonic measurement of the rectus femoris is a novel, proxy measure for muscle strength. The aim of the study was to assess the usefulness of ultrasound examination of the (RF) muscle in the assessment of the effects of rehabilitation in patients after total knee arthroplasty (TKA) subjected to inpatient rehabilitation.

Material and Method

We studied 30 patients in 6 months after TKA (median age = 62 y.o.) over the 3 weeks course of inpatient rehabilitation. The ultrasound of RF was taken twice in the day 0 beginning of rehabilitation and in the day 20 US image, quantitative parameters were recorded for anterior–posterior diameter (AP diam); lateral–lateral diameter (LL diam); and cross-sectional area (CSA) (computed from the perimetral contour of the muscle section). We also measured twice change in 6-Minute Walk Test (6MWT).

Results

Our results concerning muscular changes over the course revealed that AP diameter increased progressively in RF from day 0 to day 20 (ANOVA $p < 0.05$), RF muscle mass also changes in all patients. The LL diameter did not show a significant progressive increase. It was accompanied by an increase in 6MWT > 35,5 m at 3 weeks after rehabilitation.

Conclusion

Ultrasound evaluation of skeletal muscles is inexpensive, noninvasive diagnostic methods. Ultrasonographic examination of RF muscle seems to be a promising method in the assessment of patient possibilities (muscle potential) in the planning of rehabilitation program. Further studies with are needed to confirm our preliminary results.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1314

GONARTHROSIS IN THE ELDERLY; WHICH FUNCTIONAL IMPACT?

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Introduction/Background

Knee osteoarthritis is a disabling condition causing pain and decrease in mobility leading to functional limitation. Consequences are more severe when they occur in the elderly. The aim of our work was to evaluate the functional impact of knee osteoarthritis in the elderly.

Material and Method

A Cross-sectional, descriptive study was conducted between June 2017 and december 2017. Patients aged 65 years or older with knee osteoarthritis were included. Sociodemographic and clinical data were collected. The functional status assessment was performed by the Functional Independence Measure (FIM), LEQUESNE Genou Algo-Functional Index (I.LEQUESNE), and the Western Ontario Index and McMaster Universities Knee(I.WOMAC).

Results

50 patients were included. The average age was 71.7 years, with a sex ratio of 0.44. Knee osteoarthritis had been evolving for an average period for 8.5 years. Knee examination was painful or limited in almost all patients. Evaluation of the functional impact objectified an average MIF at 119.6 with alteration of domains related to personal care, mobility transfer and locomotion. The I. lequesne average knee was 13.18 attesting for a major disability. The difficulty section was the most impaired with an average of 5.28. Womac index showed an alteration of the three sections with an average of 49.18.

Conclusion

Knee osteoarthritis has adverse consequences in terms of functional repercussions and disability through pain and the stiffness that it generates particularly in the elderly. An adapted multidisciplinary approach aims to improve the function and adapt the different therapeutic alternatives according to the age and the stage of knee osteoarthritis.

Keywords

gonarthrosis;elderly;functional impact

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1330

PREDICTIVE FACTORS OF IMPAIRED QUALITY OF LIFE IN ELDERLY WITH POLYOSTEOARTHRITIS

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Introduction/Background

Osteoarthritis is a leading cause of impaired quality of life and disability especially in the elderly who are most at risk of becoming dependent and socially isolated. The aim of this study was to evaluate the quality of life in elderly polyosteoarthritis patients in Tunisia and to detect the main factors associated with the alteration of their quality of life in order to optimize therapeutic management.

Material and Method

A cross-sectional, descriptive study was conducted between January and June 2017. Patients aged 65 years or older with polyosteoarthritis according to the criteria of Lawrence JS and having accepted to participate in the study were included. The quality of life assessment was performed by the Short Form Survey-36 (SF-36) and a specific questionnaire for lower limb osteoarthritis (Lower Limb Osteoarthritis and Quality of Life (AMIQUAL)).

Results

Fifty patients were included in the study. The mean age was 71.94 ± 0.8 with a sex ratio of 0.42. The evaluation of the quality of life of patients by the SF-36 showed an alteration of the different items of physical and mental health predominant on the domains of physical limitation (4,5 +/- 2,22), general health (33.81 +/- 1.61) and emotional limitation (35.33 +/- 6.76). The evaluation of the quality of life of the patients by the AMIQUAL showed an alteration of the different items predominating on the domains of the social activity (36,67 / 100) and the physical activity (47,31 / 100). Factors associated with poor quality of life were: female gender, age of onset of the osteoarthritis, spinal involvement, lack of functional rehabilitation, and co-morbidities ($p < 0.05$).

Conclusion

Polyosteoarthritis is associated with an impairment of the quality of life in the elderly. The factors associated with this deterioration must be taken into consideration in the patient management program taking into account the sociocultural particularities of the patients.

Keywords

polyosteoarthritis;quality of life

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1348

IMPROVEMENT IN JOINT INSTABILITY REDUCES INFLAMMATORY PAIN OF EARLY KNEE OSTEOARTHRITIS

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Introduction/Background

In osteoarthritis of the knee, recognition of pain pathophysiology and effective exercise therapy is an important issue for establishing effective treatment methods. Both animals and humans, the increase in mechanical stress due to joint instability induces joint deformity and pain. Improvement in joint instability may be effective in reducing joint deformity and pain. The purpose of this study is to understand a part of the pain mechanisms in the knee OA and to prove the pain relief effect by improving joint instability.

Material and Method

45 Wistar male rats, aged 11 weeks, were divided into three groups, ACL transection (ACLT) group, controlled abnormal movement (CAM) group and sham group (each group n=5). At 4 weeks and 8 weeks after surgery, immunofluorescence staining of substance P, calcitonin gene-related peptide in spinal dorsal root ganglia (DRG) and safranin O staining of knee joint were performed. Furthermore, pain behavior evaluation was performed every week after surgery.

Results

By immunofluorescent staining, the number of positive cells per DRG area of calcitonin gene-related peptide was significantly larger at 8 weeks than 4 weeks. Both the ACLT group and the CAM group showed significantly higher scores of cartilage damage than the sham group at 4 and 8 weeks. Pain behavior evaluation was significantly lower in the CAM group than in the other two groups.

Conclusion

From the results of immunofluorescent staining, it was suggested that inflammatory pain mainly appears until 8 weeks postoperatively. Therefore, it was inferred that this model may be early OA, which is the main symptom of intraarticular inflammation. We considered that inflammatory pain was not involved in lowering 50% paw withdrawal threshold of early knee OA. Intervention to improve joint instability from an early stage contributes to the reduction of inflammatory pain in early knee OA.

Keywords

osteoarthritis;pain;instability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1355

PAINS THAT SEEM WHAT THEY ARE NOT: PAINFUL SHOULDER

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Introduction/Background

The painful shoulder is a common problem with musculoskeletal origin that causes disability on patients. Imaging tests can help us to establish the diagnosis, but the history and physical examination are essential to find the source of the problem. The success of the treatment depends on the correct identification of the anatomic-functional problem and the mechanical, inflammatory or infectious origin.

Material and Method

A 79-year-old woman who comes to rehabilitation due to left shoulder pain for a year, with no traumatic background. The woman indicates that she has inflammation and redness, partial improvement taking non-steroidal anti-inflammatory drugs (NSAIDs). Physical examination shows inflammation of the left shoulder with redness and local heat. Impossibility of active mobilization and, on a passive level, hard joint crunches as well as significant pain. She provides ultrasound that shows subacromial-subdeltoid bursitis in an extension of 14x50mm. Suspecting of chronic septic arthritis, simple radiography, magnetic resonance (MR), analytical and leukocyte scintigraphy are requested. The laboratory test showed CRP0.27, procalcitonin<0.5, and the radiography showed severe signs of glenohumeral and acromioclavicular osteoarthritis. MR confirms bursitis and complete rupture of the rotator cuff. The scintigraphy shows pathological hyper-uptake with a pattern compatible with the infectious process.

Results

The woman hospitalized on traumatology service for shoulder arthroscopy, opening and cleaning the spill. The culture was negative, and the empirical antibiotic therapy started during hospitalization was suspended. The patient progressed satisfactorily after surgery, with conventional analgesia and home physiotherapy exercises. The final diagnosis is osteoarthritis of the shoulder, complete rupture of the cuff and bursitis.

Conclusion

The causes of shoulder pain can be multiple. In our case, the clinic and scintigraphy made us suspect septic arthritis, so arthroscopy plays a double role: diagnostic and therapeutic. Pain relief was achieved and the quality of life of the patient improved. The definitive treatment would be an inverted shoulder prosthesis.

Keywords

shoulder;painful shoulder ;arthroscopy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1410

FUNCTIONAL OUTCOME AND ITS PREDICTORS AFTER A REHABILITATION PROGRAM FOR TOTAL KNEE ARTHROPLASTY

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Introduction/Background

As the average age of population increases, an exponential ingrowth in the number of primary total knee arthroplasty (TKA) is expected, as well as in their economic burden. Therefore, the aim of this study is to evaluate the functional outcome after a rehabilitation program for TKA, as well as its predictor variables.

Material and Method

Longitudinal prospective study, including patients with moderate-to-severe osteoarthritis submitted to TKA. The patients were evaluated at 3 different times: before surgery, 2 days and 3 months after the surgery. All the patients were included in a progressive rehabilitation protocol that included 15 sessions of physiotherapy. The primary outcome was the change from baseline to 3 months in the mean score on four Knee Injury and Osteoarthritis Outcome Score subscales, covering pain, symptoms, activities of daily living, and quality of life (KOOS₄). Additionally, we assess the change in pain intensity at the numerical pain rating scale (NPRS) and the satisfaction with the procedure and rehabilitation in a Likert scale. Several sociodemographic variables and the Hospital Anxiety and Depression Scale (HADS) were evaluated before the surgery.

Results

36 patients were included, 61% female, with a mean age of 75 years. All the KOOS₄' subscales significantly improve at 3-months reevaluation ($p < 0.001$). Severe pain persisted in 17% patients and it was associated with presence of anxiety as well as pain in another anatomical sites before the surgery. The improve in KOOS scales was independent of sex, age, body mass index or intensity of pain before or after the surgery. 42% patients were very satisfied with the procedure at 3-months.

Conclusion

TKA allied with a well-structured rehabilitation protocol significantly improves the functional status in patients with knee advanced osteoarthritis.

Keywords

Knee Replacement Arthroplasty;Rehabilitation;Activities of Daily Living

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1436

GENICULAR NERVE RADIOFREQUENCY ABLATION IN CHRONIC KNEE OSTEOARTHRITIS: LITERATURE REVISION

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Introduction/Background

Osteoarthritis (OA) of the knee is one of the most common chronic diseases actuality and, with the increase in the average life expectancy, its prevalence and its incidence tend to increase. Several alternatives that aim at symptom control or with regenerative potential to reverse knee OA have been used, however, often failing to achieve satisfactory results.

Material and Method

Search in the electronic database Pubmed (limits: date of publication - last 10 years), using as keywords: "chronic knee osteoarthritis pain", "radiofrequency ablation" and "genicular nerves".

Results

In total, 20 articles were included in this review. Reviewing available information demonstrates that, in a large number of patients, a significant relief of pain occurs in assessments performed in the first three and six months after the intervention.

Conclusion

With regard to pain control in knee OA, this therapeutic approach is undoubtedly a valid alternative, establishing itself as a bridge between the various minimally invasive treatments and knee arthroplasty. In the various studies, an interesting percentage of patients manifested positively with the results obtained. Radiofrequency ablation of the genicular nerves is an interesting alternative to surgery for these patients suffering from chronic knee pain. Further prospective studies in this area are needed to better understand the effects of radiofrequency ablation of geniculate nerves and evaluate their efficacy.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1446

TREATMENT OF CHRONIC OSTEOARTHROTIC HIP PAIN: COMPARISON OF NEUROLYSIS OF THE OBTURATOR NERVE WITH PHENOL AND LIDOCAINE BLOCKADE

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Introduction/Background

Background: Hip osteoarthritis is a degenerative disease of the synovial joints, manifested clinically by pain and compromised joint amplitude. The treatment is basically symptomatic. When the clinical treatment fails, the surgical approach with hip arthroplasty may be indicated. In patients without conditions for surgery, the blocking of the obturator nerve can be tried. A longer duration of blockade can be achieved by using drugs capable of damaging nerve axons. With the use of lidocaine or phenol we can cause neurolysis over a period of time.

Material and Method

Methods: Study with a series of patients with hip OA, resistant to conservative treatment, randomized in two groups and submitted to the application of phenol (group 1) or lidocaine 1% (group 2) in the obturator nerve. They were evaluated in terms of pain intensity via the visual analogue scale (VAS), pressure dolorimetry, and quality of life by WOMAC questionnaire. The quantitative variables were evaluated with the mean and standard deviation, while the categorical variables evaluated the percentages. The ANOVA test was used for repeated measurements. The level of significance is 0.05.

Results

Results: A total of 44 patients were included, of which 50% were men and the mean age was 54.58 ± 15.67 years. VAS and dolorimetry improvement was equivalent in both groups (BLPhenol 8,7 x PT: 6; $p = 0.0003$; BLLido 9x PT: 5,8; $p = 0,0004$), and WOMAC (BLphenol: 81,3 x PT: 69; BLLido 85,8 x PT 74,6), but weren't significant difference between the groups (table1).

Conclusion

Conclusion: The blockade of the obturator nerve with lidocaine or phenolization are efficient in the treatment of chronic pain in the hip OA, however there is no significant difference between the procedures.

Keywords

hip osteoarthritis;phenol;lidocaine

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1450

COMPARISON OF EARLY FUNCTIONAL RECOVERY AFTER TOTAL HIP ARTHROPLASTY USING A DIRECT ANTERIOR OR POSTEROLATERAL APPROACH BY OCCUPATIONAL THERAPY BASED ON RECONSTRUCTING LIFE THEORY

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Introduction/Background

Total hip arthroplasty (THA) remains one of the most successful orthopedic procedures and can effectively relieve pain and restore function in patients with end-stage osteoarthritis of the hip and femoral head necrosis. Controversy exists as to whether early functional outcomes differ after total hip arthroplasty performed using the direct anterior approach (DAA) or the posterolateral approach (PLA). The purpose of this study is to observe the function recovery by Occupational Therapy (OT) based on “reconstructing life theory” in the DAA or PLA.

Material and Method

One hundred fifty-nine patients were enrolled in this study and were divided into a DAA group (n=84) and PLA group (n=75) based on surgical approach. The 2 groups were all take OT based on “Reconstructing life theory”. Items for evaluation included hospital day, visual analog scale (VAS), blood loss, modify Barthel index, Harris, and preoperative and postoperative outcomes were recorded.

Results

When compared with the PLA, the DAA had a shorter hospital stay (5.26 vs 6.91 days, $P < 0.001$), lower self-reported pain based on VAS score and less blood loss. The DAA was associated with better functional recovery at 3 months based on the Harris hip score and activity of daily living at 3 months based on the modify Barthel index score.

Conclusion

We have applied the occupational therapy in the patients after THA based on reconstructing life theory, and we found functional advantages in early recovery after the DAA compared with the PLA, especially in the reconstruction of life.

Keywords

Total Hip Arthroplasty; Occupational Therapy; Early Functional Recovery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1453

ULTRASOUND GUIDED INTRA-ARTICULAR HYALURONATE VISCOSUPPLEMENTATION IN PATIENTS WITH SEVERE KNEE OSTEOARTHRITIS: A PILOT STUDY

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Introduction/Background

Osteoarthritis is estimated to affect around 12% of the adults in Brazil, and more than one third of those are aged 65 years or more. The effectiveness of the viscosupplementation concerning analgesia and functional improvement is well established in the literature, as far as mild to moderate degrees of the disease are considered we reasoned that hyaluronic acid (HA) injection under US guidance would yield better results as regards the outcome. The aims of this study was to evaluate the efficacy of ultrasound-guided HA viscosupplementation for advanced knee osteoarthritis.

Material and Method

Design: Case of Series

Setting: A tertiary care hospital

Patients: Forty-eight patients (59 knees) suffering from severe osteoarthritis. Inclusion criteria were: over 18 years of age, visual analogic scale for pain (VAS) over 4 and pain duration over 3 months. Exclusion criteria were: serious psychiatric comorbidity, allergy to lidocaine and previous knee surgery. Forty patients completed the study.

Intervention: Ultrasound-guided intra-articular knee injections of HA were performed on three consecutive weeks.

Main outcome measures: Before injection and on the 1st, 2nd, 3rd, 6th and 12th months after intervention, patients were assessed by VAS or simple numeric scale (SNS) for pain and also by the Western Ontario and McMaster Universities Arthritis Index (WOMAC) for functionality.

Conflicts of Interest: No Disclosure **Results**

Hyaluronic acid application resulted in immediate pain reduction of VAS/SNS ($p < 0.001$) and WOMAC ($p < 0.001$) pain scores. Although pain levels had a slight steady increase, compared to before the intervention, this reduction remained statistically significant over the 12-month follow-up ($p < 0.001$). Similarly, rigidity ($p < 0.001$) and functional limitation ($p < 0.001$) scores decreased significantly immediately after the application. Differences between WOMAC rigidity ($p = 0.002$) and functional difficulty ($p = 0.034$) scores before intervention and at the last evaluation also remained statistically significant.

Conclusion

Ultrasound-guided viscosupplementation with hyaluronic acid may be an efficient non-surgical alternative for pain reduction and functional improvement in patients with severe knee osteoarthritis.

Keywords

hyaluronic acid;Osteoarthritis;ultrasound-guided

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1461

THE EFFECT OF ELASTIC TAPING VS SHAM TAPING AND CONTROL GROUP ON QUADRICEPS STRENGTH AND KNEE FUNCTIONAL DISABILITY INDEX IN KNEE OSTEOARTHRITIS PATIENTS WITH OBESITY

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Introduction/Background

Knee Osteoarthritis (OA) is strongly associated with obesity and the most common cause of pain and weakness of the quadriceps groups and functional disability. Taping application has been shown to reduce pain and provide mechanical support affecting functional activities. The aim of this study is to investigate the efficacy of elastic taping in reducing pain and disability, improving quadriceps strength and to investigate the improvement of knee structures with Musculoskeletal (MSK) Ultrasonography (USG) examination.

Material and Method

35 Patients with knee OA at Obesity Clinic of Medical Rehabilitation Cipto Mangunkusumo Hospital in January 2018 were randomized with single-blind controlled trial, divided into elastic taping, sham and control group. We used Leukotape® K BSN Strips. Knee-strengthening, aerobic and balance exercises were given for 3 weeks. Outcomes measured included pain (VAS), quadriceps strength and knee functional disability index assessed using hand held dynamometer, Timed Up and Go test (TUG), Lequesne Index and MSK USG serial pre and post intervention.

Results

Subjects in elastic taping group showed significant difference with median of VAS 4.5 (2-8) on the right and 4(3-8) on the left knee ($p=0.002^w$); the quadriceps strength, the mean was 5.62 ± 1.87 on the right and 5.78 ± 1.88 on the left knee ($p<0.001$); the Lequesne Index, the mean was 3.29 ± 2.02 ($p<0.001$); and for TUG, the median was 0.85(0.23-9.27) with ($p=0.002^w$) between pre and post intervention. In between groups analysis, taping has shown significant improvement in VAS and quadriceps strength, while no statistically significant difference of TUG and Lequesne index but improved better than sham and control group. There is a significant differences in improvement USG (thickening of MCL) with $p=0,003^w$ (right knee), $p=0,008^w$ (left knee).

Conclusion

This study found that elastic taping show a greater reduction of pain, increased quadriceps strength and better improvement in the functional activities. MSK USG is preferable for evaluating of abnormality structures in knee OA.

Keywords

obesity;elastic taping ; quadriceps strength

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1486

THE EFFECT OF ULTRA-EARLY SYSTEMATIC REHABILITATION ON PERIOPERATIVE BLOOD LOSS AND EARLY FUNCTIONAL OUTCOME OF TOTAL KNEE ARTHROPLASTY

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Introduction/Background

The impact of ultra-early systematic rehabilitation on perioperative blood loss has rarely been reported. The purpose of this study is to investigate the effect of ultra-early systematic rehabilitation on total blood loss and early functional outcomes in patients undergoing total knee arthroplasty and evaluate the safety and efficacy of ultra-early systematic rehabilitation in the TKA.

Material and Method

120 TKA patients were randomly divided into a treatment group (n=60) and control group (n=60). the treatment group was given the routine postoperative treatment and ultra-early systematic rehabilitation (preoperative rehabilitation and education, postoperative systematic rehabilitation therapy, hourly rehabilitation management and so on).The control group was received only routine postoperative treatment. The total blood loss (TBL), external blood loss (EBL), hidden blood loss (HBL), knee swelling, range of motion (ROM), pain and average length of stay (ALOS) were compared between the two groups from 1st to 3rd days after the operation and the day of discharge.

Results

There was no significant difference in TBL, EBL and HBL between the two groups ($P>0.05$). On the 1st to 3rd day and the day after discharge, the ROM in the treatment group were significantly better than those in the control group ($P<0.01$). At the day after discharge, the improvement of movement pain in the treatment group was significantly better than that in the control group ($P<0.05$). There was no significant difference in knee swelling between the two groups ($P>0.05$). The ALOS after surgery was (4.93 ± 1.23) days in the treatment group was significantly less than control group (7.43 ± 1.29) days ($P<0.01$).

Conclusion

Ultra-early systematic rehabilitation did not increase perioperative blood loss, pain, and swelling during primary total knee arthroplasty, but the ROM was increased, the movement pain was decreased and the ALOS after surgery was shortened, which accelerated recovery of TKA.

Keywords

ultra-early systematic rehabilitation; perioperative blood loss; total knee arthroplasty

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1496

INTEREST OF A RESPIRATORY REHABILITATION PROGRAM IN THE MANAGEMENT OF CHRONIC NECK PAIN

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Introduction/Background

Other than musculoskeletal deficits, patients with chronic neck pain can show respiratory dysfunctions as there is a link between thoracic and cervical spine motion. The aim of the study was to investigate the effect of respiratory rehabilitation on chronic neck pain.

Material and Method

It was a randomized simple-blind comparative study concerning fourteen patients with chronic neck pain. The patients were divided into two groups.

Group A received a routine physiotherapy exercises. Group B received conventional rehabilitation plus respiratory exercises based on a breathing retraining protocol (BRT). The BRT aims to manage respiratory dysfunctions by progressive steps of breathing practice in different positions.

The evaluated parameters were neck pain, clinical respiratory parameters (chest wall expansion and hyperventilation (Nijmegen questionnaire), functional dysfunction (Neck Disability Index (NDI)) and psychological state (HAD). **Results**

We showed an amelioration of the different cervical parameters: neck pain, NDI and HAD that was pronounced in the group B. Concerning the respiratory parameters, the results were more significant for the group B.

Conclusion

Breathing rehabilitation can be an effective and feasible therapy to manage chronic neck pain.

Keywords

chronic neck pain;hyperventilation;respiratory exercices

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1528

CHANGES IN PHYSICAL FUNCTION AND ISOKINETIC MUSCULAR STRENGTH OF QUADRICEPS AND HAMSTRINGS THREE MONTHS AFTER A RAPID RECOVERY TOTAL KNEE ARTHROPLASTY

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Introduction/Background

The Osteoarthritis Research Society International recommends evaluating physical function in gonarthrosic patients after a total knee arthroplasty using tests such as timed up and go(TUG) and six-minute walking test(6MWT).In 1991,Berman et al found that strength was not fully recovered until two years after surgery.

Our aim was to demonstrate the results in physical function and isokinetic muscular strength of gonarthrosis patients prior to undergoing surgery and three months after a Total Knee Arthroplasty(TKA).

Material and Method

Prospective study(September2016–December2017) of patients with gonarthrosis awaiting a total knee arthroplasty surgery.

Variables recorded:Gender,age,dominant hand,operated side,body mass index (BMI), walking aids.

Measured outcomes before surgery and three months afterwards: visual analogue scale(VAS) at rest and active,TUG,6MWT and mean peak torque(PT) of isokinetic strength of quadriceps and hamstrings between the TKA side and the unaffected knee at 60°/sec.

Data analysis of means and percentages.Means compared using t-student and non-parametric tests.Statistical significance was set at $p < 0.05$.

Results

44patients,36.4% male. Mean age 67.8 ± 6.5 .Mean BMI 30.3 ± 6.7 . 63.6% of the individuals used walking aids before surgery and 84.1% did not use them after surgery.The results obtained on VAS and physical function prior to surgery and three months after the intervention were:

	Pre-surgery	3month	P-value
VASrest	3.7 ± 3.0	1.2 ± 1.9	0.000
VASactivity	7.2 ± 1.5	2.9 ± 2.6	0.000

TUG(seconds)	11.0±4.4	7.9±2.3	0.000
WT6M(metres)	326.2±106.8	366.0±102.5	0.000

A decrease of strength in the affected quadriceps and a significant decrease of strength in the affected hamstrings were observed. However the strength of the unaffected quadriceps increased slightly and the unaffected hamstrings strength did not vary.

	Pre-surgery	3month	P-value
Affected quadriceps PT	54.4±32.2	46.1±18.4	0.060
Affected hamstrings PT	28.0±15.2	22.8±10.9	0.012
Unaffected quadriceps PT	63.6±32.26	66.9±33.2	0.362
Unaffected hamstrings PT	31.3±18.9	30.4±2.7	0.594

Conclusion

Three months after a TKA surgery, even though there was a descent in muscular strength in the affected limb, our patients experienced an improvement in physical function possibly due to pain decrease.

Keywords

osteoarthritis;isokinetic;rapid recovery

No conflict of interest

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A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1582

ASSOCIATIONS BETWEEN EARLY POSTOPERATIVE PAIN OUTCOME MEASURES AND LATE FUNCTIONAL OUTCOMES IN PATIENTS AFTER KNEE ARTHROPLASTY

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Introduction/Background

Early rehabilitation, return to daily life activities and function are the ultimate goals of perioperative care. It is unclear which pain-related patient-reported outcome measures (PROM) mirror treatment effects, or are related to early and late functional outcomes.

Material and Method

We examined associations between two approaches of pain management (scheduled vs 'on demand') and PROMs on post-operative days one and five (POD1, 5) with function on POD5 and 3 months after surgery in patients undergoing Total Knee Arthroplasty (TKA) in a single center.

Results

On POD1, patients in the scheduled treatment group reported reduced severity of worst pain, less interference of pain with activities in-bed and sleep, and a higher proportion got out of bed. Furthermore, tests of function, extension and flexion ranges, Barthel index and 6 minutes walking test on POD5, and the Knee Injury and Osteoarthritis Outcome Score (KOOS) 3 months later were better in the scheduled treatment compared to the 'on demand' treatment group. PROMs of perceived pain relief at POD1 and worst pain, time in severe pain, interference with activities in bed and with sleep, and participation in treatment decisions on POD5 were significantly associated with KOOS 3 months later.

Conclusion

Our study demonstrates that insufficient pain management immediately after TKA has substantial impact not only on PROMs in the early days after surgery but also on important physical function up to 3 months later. Pain related PROMs assessed at POD1 and especially at POD5 are associated with functional recovery up to 3 months.

Keywords

No conflict of interest

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A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1586

TREATMENT EFFECT OF SONO-GUIDED SUPRAPATELLAR BURSA EFFUSION ASPIRATION ON KNEE OSTEOARTHRITIS

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Introduction/Background

Knee osteoarthritis (OA) affects a large portion of the elderly population. It is caused by degeneration of knee joint and leads to variety of symptoms including pain, stiffness, and swelling or even increases joint effusion. These may result in decreasing of muscle strength, hamstring-quadriceps co-contraction, abnormal gait patterns, and leads to poor quality of life. However, no cure exists to date. Various interventions have been used to relieve symptoms and reduce fluid accumulation, but the evidence of these interventions is still considered few.

Material and Method

The purpose of this study is to investigate the short term and long term effect of echo-guided aspiration of suprapatellar effusion. In this study, patients with OA knee and suprapatellar effusion are diagnosed via X-rays with Kellgren-Lawrence grading scale and sonography respectively. Scale 1~2 is suggested mild to moderate knee degenerative osteoarthritis. Sixteen patient were recruited in this study and randomized into two groups. The first group received oral form NSAID only and the second group received oral form NSAID with sono-guided suprapatellar bursa effusion aspiration. The patient was put on Cybex Humac Norm with surface EMG attached to quadriceps and hamstring to calculate muscle activation ratios in different angles before receiving treatment and 1, 4 weeks after treatment.

Results

No significant improvement was noted at the first week after treatment. But at 4 weeks after treatment, the second group who received oral form NSAID with sono-guided suprapatellar bursa effusion aspiration showed a significant different comparing to the first group in EMG ration at flexion 60 degrees, 120 degrees and 180 degrees.

Conclusion

The result shows us that combining oral form NSAID with sono-guided suprapatellar bursa effusion aspiration could correct the co-contraction between quadriceps and hamstring.

Keywords

Knee OA ;Soon-guided aspiration ;Hamstring-quadriceps co-contraction

No conflict of interest

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A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1614

THE EFFECTS OF TRACTION THERAPY ON PAIN, CLINICAL, FUNCTIONAL STATUS AND QUALITY OF LIFE IN PATIENTS WITH SUBACUTE LOMBER DISC HERNIA.

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Introduction/Background

The aim of this study is to investigate the effects of traction therapy on pain, clinical, functional status and quality of life in patients with subacute lumbar disc hernia.

Material and Method

260 patients (mean age=53.04±14.59 years) were diagnosed with subacute lumbar disc hernia according to the Macnab Classification enrolled to this study. The participants were randomly divided into 3 groups: First group was taken Hotpack (HP), TENS (Transcutaneous Electrical Nerve Stimulation), Ultrasound (US), second group was taken HP, TENS, US, Traction and the third group was given just home exercise programme without any treatment. Participants in the HP TENS, US group and in the HP, TENS, US traction group were treated 5 days per week for 4 weeks under the supervision of a physical therapist.

After recording the subject's age, height and weight, the body mass index (BMI) was calculated. Sociodemographic characteristics of patients were recorded. All assessments were done before and after the treatments. Pain and functional status of patients were evaluated with The Oswestry Disability and The Roland Morris Disability Questionnaire.

Results

There were no significant differences between the groups ($p > 0.05$;) except for pain score ($p < 0.05$). Comparing within groups showed improvements in all parameters after treatment ($p < 0.05$). Although there was a significant difference between group 1 and group 3, group 2 and group 3 in pain scores ($p < 0.05$), there was no significant difference for other outcome measures.

Conclusion

In conclusion, both HP, TENS and US applied patients, as well as the intermittent lumbar traction group, significantly reduced pain and functional impairment. As observed in previous studies, it was concluded that the group to which the intermittent lumbar traction was applied was not different from the other group. However, studies conducted with advanced evaluation

methods or different methods of applying traction will shed light on our efforts to fully understand the role of traction in treatment.

Keywords

Lomber Disc Hernia

No conflict of interest

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A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1629

REGENERATIVE APPROACH TO POST-TRAUMATIC KNEE OSTEOARTHRITIS TREATMENT

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Introduction/Background

Osteoarthritis(OA) is the most common form of arthritis & trauma is one of the major risk factors for OA development in young age.The natural repair potential of cartilage tissue is low,so use of known regenerative stimulus such as platelets derived products is promising for rehabilitation.

Material and Method

The study enrolled 62 patients with diagnosed post-traumatic knee OA(radiological stage I-II,according to Kellgren-Lawrence scale)aged 18-44 years,12-60 months after trauma.Patients with severe comorbidities,systemic disorders,after knee surgery,other joint diseases were excluded.Enrolled patients(33 women(53.2%) & 29 men(46.8%),mean age 37±4.4 years)were divided into 2 groups.Gr.1 included 32 patients who consented to receive standard OA treatment(NSAIDs, physiotherapy, exercises) & intra-articular injections of PAP(3 injections at intervals of 3-5 days)(total plasma volume - 12-15 ml/course,average platelet count-(1280-1320±22.1×10⁹);Gr.2 included 30 patients who received only standard OA treatment.Both groups were comparable in patients age,gender,type of knee trauma,initial level of pain(VAS score in Gr.1-(55.8±0.6)mm,Gr.2-(55.3±0.5)mm, p>0.05) & WOMAC index(Gr.1-(47.7±1.2),Gr.2-(46.9±1.1),p>0.05).All patients had been examined & evaluated at the first visit and after 1, 6 & 12 months after course of treatment.

Results

At 1st month after treatment course patients of both groups demonstrated similar results in pain and function improvement(general index in Gr.1 was(accordingly (21.3±1.41) & Gr.2 (22.3±1.13); p>0.05). To the contrary, at the next scheduled evaluations general WOMAC index in Gr.1 was significantly lower than in Gr.2 (20.9±1.31) and (39.1±0.98) at 6th month & (18.2±1.23) & (37.4±1.85) at month 12; p<0.05). In general during the study patients in Gr.1 demonstrated better results of treatment than patients in Gr.2, mostly because of pain & stiffness improvement, less frequent OA exacerbations & need in NSAID use. There were no adverse reactions due to PAP use during the study.

Conclusion

Use of PAP in complex treatment of the post-traumatic knee OA demonstrated promising results in young patients and need further investigations.

Keywords

osteoarthritis;platelet autologous plasma ;WOMAC

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1636

EFFECTS OF INTRA-ARTICULAR PLATELET RICH PLASMA THERAPY IN PATIENTS WITH KNEE OSTEOARTHRITIS, ON PAIN RELIEF

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Introduction/Background

Knee osteoarthritis (OA) is one of the commonest types of arthritis affecting quality of life and functional status. Among biological therapies, platelet rich plasma (PRP) therapy is increasingly getting popular to improve clinical outcome in knee OA. A solid evidence for its efficacy is yet to be established. In this study we tried to find out the effect of PRP on pain improvement in knee OA patients and evaluate the impact of gender, body mass index (BMI), and severity of knee OA on pain reduction

Material and Method

The study was conducted at the outdoor physiatry clinic of Combined Military Hospital, Abbottabad, Pakistan from Jan to July 2016. We included 25 osteoarthritis patients with knee pain of minimum four months duration and radiographic findings of grade-1→ 3 OA changes according to Kellgren-Lawrence scale. Patients with systemic or local infection, rheumatoid arthritis, uncontrolled diabetes mellitus and coagulopathies were excluded. The severity of pain was measured on numerical rating scale (NRS) at two and six weeks. Three Injections of PRP were given in knees at an interval of 2 weeks each. The findings were recorded and analysed using SPSS version 17. Paired sample t-test was used to assess differences between pain scores at baseline and at six weeks after injection. Analysis of variance (ANOVA) was carried out to evaluate influence of gender, BMI, and severity of knee OA. A p-value < 0.05 was considered statistically significant.

Results

There was a significant reduction ($p < 0.001$) in pain on NRS at 6-weeks post treatment (6.84 ± 1.38) as compared to base line (3.2 ± 1.83). The reduction of pain was significant in both males and females, in all grades of Kellgren-Lawrence scale, and in over weight and obese individuals

Conclusion

PRP significantly improves pain in patients knee OA.

Table showing between pain scores at baseline and at six weeks after injection of Platelet Rich Plasma among different levels of variables

Variables		NRS* Base line	NRS at 6 weeks	P-Value
		Mean ± SD	Mean ± SD	
Gender	Male	6.5 ± 1.38	2.92 ± 1.98	<0.001
	Female	7.15 ± 1.34	3.46 ± 1.71	<0.001
Kellgren-Lawrence scale Grades	Grade-1	5 ± 0.71	1.4 ± 1.14	0.011
	Grade-2	6.8 ± 1.23	3.1 ± 2.02	<0.001
	Grade-3	7.8 ± 0.63	4.2 ± 1.13	<0.001
Body Mass Index	Normal weight	6.25 ± 1.5	3 ± 2.7	0.08
	Over weight	6.67 ± 1.5	2.67 ± 1.6	<0.001
	Obese	7.33 ± 1.12	4 ± 1.66	<0.001

*NRS: Numeric Rating Scale

Keywords

knee osteoarthritis;platelet rich plasma therapy;pain

No conflict of interest

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A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1726

THE APPLICATION OF MUSCULOSKELETAL ULTRASOUND IMAGING TECHNIQUE IN EVALUATION AND INTERVENTIONAL THERAPY OF SHOULDER PAIN: A RETROSPECTIVE ANALYSIS

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Introduction/Background

To retrospectively analyze the application of musculoskeletal ultrasound imaging technique in rehabilitation clinic of shoulder pain.

Material and Method

The general information and clinical information of outpatients who received musculoskeletal ultrasound guided injection of glucocorticoid to the shoulder were collected between April 1st, 2017 to September 30th, 2017, including gender, age, disease course, musculoskeletal ultrasound imaging diagnosis, musculoskeletal ultrasound imaging guided injection protocols, pain and functional profile before and after injection evaluated through Shoulder Pain and Disability Index (SPADI).

Results

102 patients receiving injection were included. Among them, 55 were female (53.9%) , 82 were patients aged from 40 to 69 years old (80.4%) , 59 were patients suffered shoulder pain for more than 3 months (57.84%) . Compared with chronic shoulder pain patients, the incidence of single subacromial bursa injection was higher in acute shoulder pain patients ($P < 0.05$). 71 patients (75 affected shoulders) were evaluated and followed up before and after injection. The scores of shoulder pain index and shoulder disability index decreased significantly at 1 week (shoulder pain index: (28(16,40) vs 52(36,64); shoulder disability index: 16(13,29) vs 26(19,49), $P < 0.0083$), 1 month (shoulder pain index: 16(6,22) vs 28(16,40); shoulder disability index: 11(6,19) vs 16(13,29), $P < 0.0083$) and 3 months (shoulder pain index: 8(4,18) vs 16(6,22); shoulder disability index: 5(1,10) vs 11(6,19), $P < 0.0083$) after injection comparing with that before injection.

Conclusion

Middle-old-aged patients were the main population who received injection therapy in rehabilitation clinic. Shoulder bursa and the tendon sheath of long head of biceps brachii were common injection sites. The incidence of single subacromial bursa injection was higher in acute shoulder pain patients than that in chronic shoulder pain patients. Ultrasound guided corticosteroid injection for the treatment of shoulder pain is accurate, effective and stable.

Keywords

Shoulder pain;Musculoskeletal ultrasound;Injection

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1736

A RETROSPECTIVE STUDY ON ULTRASOUND-GUIDED SUPRAPATELLAR BURSAL INJECTION OF GLUCOCORTICOID WITH SODIUM HYALURONATE IN TREATMENT OF KNEE OSTEOARTHRITIS

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Introduction/Background

To explore the effect of ultrasound-guided suprapatellar bursal injection of glucocorticoid with sodium hyaluronate in treatment of knee osteoarthritis and accuracy rate of injection.

Material and Method

From January, 2017 to July, 2017 outpatients with knee osteoarthritis in our department were treated with ultrasound-guided suprapatellar bursal injection of glucocorticoid (1mg, single injection) with sodium hyaluronate (2.5ml, weekly injection, for 5 consecutive weeks). Visual analogue scale (VAS), The Western Ontario and McMaster University composite index (WOMCA) and Lysholm score were used to compare knee pain and motor function of patients before and after injection. Accuracy rate of ultrasound-guided suprapatellar bursal injection was analyzed and any possible adverse reactions were recorded.

Results

41 affected knees were treated with ultrasound-guided suprapatellar bursal injection and accuracy rate of injection was 100%. Compared with VAS score before injection, it decreased significantly 1 week after injection (4(3,5) vs 8(6,8.5), $P<0.0083$), and continued to fall at 1 month after injection (3(2,4) vs 4(3,5), $P<0.0083$); 3 months after injection, VAS score was still lower than that before injection (3(2,4) vs 8(6,8.5), $P<0.0083$). In addition, WOMAC score decreased (15.3±10.2 vs 37.4±17.8, $P<0.0167$) significantly and Lysholm score increased (73.5±14.5 vs 47.6±16.3, $P<0.0167$) significantly at 1 month after injection; follow up to 3 months after injection, the differences were still statistically significant compared with that before injection (WOMAC score: 16.4±10.3 vs 37.4±17.8, $P<0.0167$; Lysholm score: 71.9±16.5 vs 47.6±16.3, $P<0.0167$). No adverse reaction was observed in any patient.

Conclusion

Glucocorticoid with sodium hyaluronate in treatment of knee osteoarthritis can alleviate knee pain and improve motor function remarkably. Ultrasound-guided suprapatellar bursal injection help to locate accurately, reduce possible damages caused by blind injection and has no adverse reaction.

Keywords

Knee Osteoarthritis; Ultrasonography; Injection

Conflict of interest

Disclosure statement:

This work was supported by the Natural Science Foundation of China (grant No. 81201508). We did not lead to any conflict of interests regarding the publication of this manuscript. There is no any other possible conflict of interest in the manuscript.

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A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1739

EPIDEMIOLOGICAL PROFILE OF KNEE OSTEOARTHRITIS IN A REHABILITATION DEPARTMENT

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Introduction/Background

The main objective of this study is to evaluate the clinical and epidemiological profile in patients with knee osteoarthritis (KO) in Physical Medicine and Rehabilitation department.

Material and Method

It is a descriptive retrospective study including 104 patients with KO. Demographic, clinical and therapeutic modalities were evaluated.

Results

Our study included 78 women and 26 men. The mean age was 58.8 years and the most frequent reason for consultation was pain. A history of knee trauma and knee surgery was respectively present in 9.6% and 4.8% of cases. The mean duration of symptoms was 37.2 months and the average of VAS pain was 5.12. Patellar shock was present in 34 patients and 31 patients were obese. The deformities in varus and valgus were present only in 19.2% of knee OA. In 43.3% of cases, osteoarthritis touched the internal tibiofemoral compartment. Therapeutically, the average number of functional rehabilitation sessions was 17.46. Mesotherapy was performed in 9.6% of cases, viscosupplementation in 11.5% of cases and infiltration with corticosteroids in 14.4% of cases. All patients had used at least one therapeutic drug before consulting in physical medicine. An improvement of the symptomatology was observed after 2.77 months with average gain of 2.4 points on the VAS pain.

Conclusion

KO is a common condition and is a real public health problem. It combines pain and functional incapacity which are the main reasons for consultation. Its treatment combines non pharmacologic and pharmacologic measures. It must be adapted depending on the symptoms but also to age and patient health state.

Keywords

rehabilitation;knee osteoarthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1785

PARAMETERS AFFECTING PAIN, PHYSICAL FUNCTION AND RADIOLOGY IN PATIENTS WITH HIP OSTEOARTHRITIS: A PRELIMINARY REPORT OF A MULTICENTER LONGITUDINAL STUDY

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Introduction/Background

The aim of this multicentric study is to investigate the characteristics of patients with hip osteoarthritis (HOA) and to assess the relationship of clinical and functional features with radiographic parameters in a Turkish population.

Material and Method

A total of 220 subjects with HOA who participated in a multicenter national cohort study were enrolled in this study. Demographic characteristics, as well as duration of pain, pain severity, night pain, Timed Up and Go (TUG) test score were recorded. The self-reported pain and physical function were assessed using the Western Ontario McMaster Universities (WOMAC) Osteoarthritis Index. The X-rays of the hips were assessed by the Kellgren-Lawrence (KL) method. Relationships between parameters were analyzed with bivariate analysis. Analysis of covariance was used to create a model for pain, physical function, and other disease-related parameters. Variables showing a statistically significant correlation were included into ANOVA.

Results

The mean age of the patients was 62.1±12.2 years. WOMAC-pain was significantly correlated with female sex, pain severity, night pain, symptom duration, KL score, and TUG test score ($p<0.05$). WOMAC-physical function showed a significant correlation with pain severity, night pain, KL score, and TUG test score ($p<0.05$). KL score was significantly correlated with the presence of scoliosis, leg length discrepancy, and TUG test score ($p<0.05$). Factors most strongly affecting WOMAC-pain and function were overall pain severity, night pain severity ($p<0.05$). Factors most strongly affecting KL radiographic grade were TUG test score, leg length discrepancy, and scoliosis ($p<0.05$).

Conclusion

In case of disability; overall and night pain severity are significant predictors of pain and function. High TUG test score, scoliosis and leg length discrepancy are better predictors of a high radiographic grade. Since HOA is a multifactorial process, several factors might affect pain, function, and radiographic features. Therefore, clinicians should consider all these factors in patients with HOA.

Keywords

Hip osteoarthritis ;Pain;Physical function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1836

FROZEN SHOULDER, ACUPUNCTURE, PHYSIOTHERAPY

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Introduction/Background

Background: Adhesive capsulitis is a common disease that causes pain and reduced range of motion, but vague on the shoulder. Most patients with adhesive capsulitis will improve with nonsurgical treatment. Acetaminophen and nonsteroidal anti-inflammatory drugs for pain relief in patients without contraindication are first-line options. Acupuncture considered being safe and effective in reducing pain. The aim of this study was to Investigation of the effectiveness of acupuncture in the treatment of frozen shoulder.

Material and Method

Materials and Methods: Indicators measured in the study was included the involved joint pain, range of motion and quality of life. Patients, first at baseline, one and a half months later (end of session) and then 3 months after the examination information about each individual entered in the questionnaires were pre-determined and data were analyzed by SPSS 17 software.

Results

Results: In this clinical trial study total 40 patients with frozen shoulder (20 interference with the acupuncture and 20 people control) study that patients average age 55/54. Age maximum 71 years and minimum 44 years. Acupuncture in the treatment of frozen shoulder with the results achieved in the general case acupuncture may improve shoulder motion in patients. VAS index at three months after treatment compared with the control group had a greater improvement.

Conclusion

Conclusion: In the case of acupuncture and ultimately improve the overall look of all the movement of flexion and adduction of the shoulder, but the movement has been further improved, VAS index at three months after treatment compared with the control group had a greater improvement and finally, we perform acupuncture as a way to improve shoulder motion in patients with frozen shoulder offered.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1906

A RANDOMIZED CONTROLLED TRIAL OF PHYSICAL ACTIVITY ON BALANCE AND QUALITY OF LIFE AMONG ELDERLY WOMEN

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Introduction/Background

Balance disorder is often a cause of falls and fractures in elderly people. Improvements in balance self-efficacy in women have been reported after group-based exercise programs in the form of resistance training, weight-bearing exercises, tai chi, and task oriented training programs. The aim of this study was to evaluate the effects of the exercises on the static and dynamic balance and quality of life in elderly women.

Material and Method

The study design was a randomized controlled clinical trial. The subjects comprised 58 elderly women, aged 65 or more, with balance disorder who had been referred to the geriatric outpatient unit for rehabilitation. Subjects were assigned randomly to one of the two treatment groups: an exercise, interventional group (n=28), and a non-exercise, control group (n=30). Specific balance strategy training, included stretching, strength training and aerobics was performed 60 min per day, thrice a week. Changes in balance (Berg Balance Scale, BBS) and quality of life (WHOQOL-OLD) were compared between the two groups. Both groups were assessed at baseline and after six and 12 months. Statistical significance was established at the $p < 0.05$ level.

Results

After 12 months, in our study subjects in intervention group we have identified significant improvement in balance and quality of life (Mann-Whitney's U test).

Conclusion

Despite the small sample size, these results support the benefits of exercise in the clinical management of subjects with balance disorder, but need to be confirmed in a larger sample. Future research is needed to determine if these exercise programs reduce falls in the elderly women.

Keywords

Physical activity;Balance;elderly women

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1936

MORPHO-STATIC CHARACTERISTICS OF FEET IN PATIENTS WITH FEMORO-TIBIAL OSTEOARTHRITIS

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Introduction/Background

Foot structure is a factor contributing to the development of musculoskeletal disorders of lower limbs. A thorough knowledge of its structure is required to better understand the potential importance of foot characteristics in patients with knee osteoarthritis.

Material and Method

It is a cross-sectional analytical study conducted on knee osteoarthritis subjects in the PMR department of Sahloul hospital, Tunisia during the period from January to April 2017.

Results

We included 32 adults with knee osteoarthritis, all women, with an average age of 55 (43-62 years old). Symptoms have appeared for an average of 7 years. Obesity was found in 75% of patients. Gonalgia was bilateral in 53% of cases. According to Kellgren and Lawrence's radiographic classification for knee osteoarthritis, 31.3% of patients had stage 1 osteoarthritis, 40.6% stage 2 osteoarthritis and 28.1% stage 3 osteoarthritis. Associated metatarsalgia was found in 40.6%.of cases. Calluses and horns were objectified in 42.4% and 15.2% of cases, respectively. Callosities were objectified in 63.6% of patients. 28.1% of patients had a flat internal arch. The most common deformities were toenails (78.5%), hallux valgus (57.6%) and toe overlaps (57.6%).

Conclusion

The examination of patients with knee osteoarthritis must include an assessment of the morpho-static disorders of the feet in order to label them and limit their progression by care of epidermal disorders in areas of high pressure and by the prescription of plantar orthotics.

Keywords

knee osteoarthritis;foot

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1938

FUNCTIONAL CHARACTERISTICS IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Introduction/Background

Knee Osteoarthritis (OA) is the most prevalent chronic rheumatic disease, and is the leading cause of pain and disability in most countries worldwide. The aim of our study is to evaluate the physical and functional characteristics of a population of Tunisian patients with knee OA and how this disease affects their physical and functional status.

Material and Method

This is a prospective study including patients with knee OA referred to the department of Physical Medicine and Rehabilitation of Mahdia (Tunisia) from January 2016 to March 2017. Physical knee function was evaluated in all patients using the Arabic version of WOMAC and Lequesne index.

Results

Ninety three patients diagnosed with knee OA were enrolled in this study. Five men (5,4%) and 88 female (94,6%). The mean age was 58 years old. Forty seven percent of our patients had radiographic severity grade 3 OA on the Kellgren and Lawrence (KL) scale.

Body mass index (BMI) in the study population varied from 19.53 kg/m² to 45.79 kg/m², with a mean of 31.06 kg/m² and 57% of our patients were obese (BMI≥30 kg/m²).

The mean Lequesne index was 11.77 (range 1 – 21,5) and 64.5% of our patients had severe handicap (Lequesne >8). The mean WOMAC pain score was 9.83 (range 1 – 17), mean WOMAC stiffness score was 3,95 (range 0 – 9) and mean WOMAC function score was (6 – 59).

Our study showed a statistically significant correlation between age and Lequesne index ($p=0,017$; $r=0,247$). BMI was also correlated to Lequesne index ($p=0,03$; $r=0,225$) and WOMAC function score ($p=0,001$; $r=0,33$).

There was no significant relationship between radiographic severity grade and functional activity.

Conclusion

Physical function in patients with OA is restricted as a result of excess weight, so preventive measures and patient education can help Tunisian patients to prevent the development of OA and to reduce its' symptoms.

Keywords

knee osteoarthritis ;function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1961

COMPARISON OF INTRAARTICULAR INJECTIONS OF BOTULINUM NEUROTOXIN VERSUS HYALURONIC ACID TO ALLEVIATE PAIN IN KNEE ARTHRITIS: A RANDOMIZED CONTROLLED TRIAL PROTOCOL

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Introduction/Background

Knee osteoarthritis is estimated to affect between 4% and 10% of the world population. Current treatments include intraarticular hyaluronate aiming at decreasing pain and postpone surgery. However, the effectiveness of intraarticular hyaluronate has been questioned. Botulinum Neurotoxin (BoNT) has demonstrated analgesic properties and may represent an effective alternative in knee arthritis. Two studies have compared BoNT respectively versus placebo and versus corticosteroids and found significant decreases in pain only in the BoNT groups. The aim of this study is to show that intraarticular injection of BoNT-A decreases pain more than intraarticular hyaluronate in knee osteoarthritis.

Material and Method

Prospective, monocentric, randomized, double-blind, controlled study, with 6-month follow-up. Inclusion criteria: patients with unilateral painful knee arthritis, of any aetiology, without joint effusion, a Kellgren grade > II and a pain score on Western Ontario McMaster Universities Arthritis Index (WOMAC) > 5. Exclusion criteria: recent knee injuries, any instable chronic condition, neuromuscular disease or contra-indication to intraarticular injections. Intervention : One intraarticular injection of either hyaluronate (SynviscOne®) 6ml, or BoNT-A (Botox®) 200 UI. Patients will be assessed on WOMAC, Timed Up-and-go Test, muscular strength and trophicity of quadriceps and hamstrings, concomitant analgesic drug use and quality of life (Short Form-36 score) immediately before the injection, at 1 month, 3 months and 6 months post-injection. Information on treatment security and tolerance will be collected at the same time points. Further, a phone call seven days after the injection will assess pain decrease on the WOMAC subscale. The primary outcome measure will be pain score on WOMAC at 3 months. The number of patients to include to show superiority of BoNT-A is 50 patients. The study started on 4th May 2017.

Results

At the moment 7 patients completed 6 months of follow-up.

Conclusion

Final results are expected for 2019. More research on alternative treatment of knee osteoarthritis is needed.

Keywords

Botulinum;Neurotoxin;Osteoarthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1989

TREATMENT OF MYOFASCIAL PAIN IN PATIENTS SCHEDULED FOR HIP REPLACEMENT

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Introduction/Background

Hip osteoarthritis is clinically manifested by pain and impairment of the articular range of this joint, which results in a number of limitations to the activities of daily living and locomotion. In addition to joint pain, it is usual to observe a muscle pain component represented by myofascial pain in these patients. Due to the long lines for total hip arthroplasty in the Brazilian public system, many patients need palliative measures to control these symptoms. Objective: This study aimed to evaluate the efficacy of myofascial pain component treatment through inactivation of trigger points compared to conservative treatment.

Material and Method

A cross-over design clinical trial was performed in which patients with moderate to severe hip osteoarthritis on the Kellgren-Lawrence scale, with indication of total hip arthroplasty, were randomized to start the study with physical therapy) or with trigger point locks (PG) with 1% lidocaine for 4 weeks each, for a total of 8 weeks. At the beginning and at the end of each treatment period, the subjects were evaluated for visual analogue scale (VAS), pressure pain threshold (DOL), and the Harris Hip Score (HHS) questionnaire.

Results

27 patients (59.3% men, age 48.7 ± 16.1 years) underwent treatment. The average variation of the EVA indicated improvement at the end of the PG and worsened at the end of the FT ($PG = -1.4 \pm 1.0$ x $FT = 0.5 \pm 1.0$, $p < 0.001$) and the same was observed for DOL ($PG = 2.0 \pm 1.9$ x $FT = -1.0 \pm 0.8$, $p < 0.001$) and for HHS quality of life the magnitude of improvement was higher at the end of PG treatment ($PG = 5.6 \pm 2.0$ x $FT = 0.5 \pm 0.1$, $p < 0.05$).

Conclusion

Treatment of the myofascial component improves pain and quality of life in patients awaiting hip arthroplasty.

Keywords

Hip osteoarthritis ;Hip Replacement;Myofascial Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-1997

IMPACT OF UPPER LIMB OSTEOARTHRITIS ON THE QUALITY OF LIFE OF THE ELDERLY

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Introduction/Background

Despite the considerable weight of its functional and socio-economic consequences, few Tunisian studies have been interested in profiling osteoarthritis of the upper limb, according to age, and evaluating their impact on functional and QOL plans.

Material and Method

-sectional study, conducted between June 2017 and December 2017. Patients aged 65 years and older with osteoarthritis of the upper limb (shoulder and / or hand) were included. The quality of life has been evaluated by the Short-Form F-36.

Results

27 patients were recruited. The average age was 63.66 years old. A female predominance was noted with a sex ratio of 0.25. The most common comorbidities were hypertension (50%), type 2 diabetes (37%) and osteoporosis (22.2%). The shoulder was the most affected location (74%), followed by the hand (40.72%). The association omarthrosis and digital osteoarthritis was noted in 18.5%. Osteoarthritis was significantly more common on the right upper limb (42%). Evaluation of the quality of life objectified an alteration of the different items of SF-36 especially the domains of the physical limitation, general health and the social functioning.

Conclusion

osteoarthritis of the upper limb has adverse consequences in terms of disability, quality of life for the patient and cost to society.

Keywords

upper limb osteoarthritis ;quality of life;elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2001

IMPACT OF THE OSTEOARTHRITIS OF THE LOWER LIMBS ON THE QUALITY OF LIFE OF THE ELDERLY

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Introduction/Background

osteoarthritis of the lower limbs is the most common joint location. Since quality of life is a multidimensional concept that is complexly influenced by physical health, it can be impaired in patients with lower extremity osteoarthritis through functional limitation and pain.

The objective of this study was to assess quality of life in elderly patients with lower extremity osteoarthritis.

Material and Method

cross-sectional study conducted between June 2017 and December 2017. Patients aged 65 years or older with osteoarthritis of the lower limb (hip and / or knee) were included. Quality of life (QDS) was assessed by the SF-36 questionnaire and AMIQUAL specific for lower limb osteoarthritis

Results

50 patients were included. The average age was 71.7 years. The sex ratio was 0.44. The knee was the most common joint location. The knee osteoarthritis was bilateral in 91.18%. Four patients (8.16%) had hip osteoarthritis associated with knee osteoarthritis. The evaluation of the quality of life showed an alteration of the areas of physical limitation, general health and emotional limitation of the SF-36. The evaluation of the quality of life of patients by AMIQUAL showed an alteration of the different items predominating in the domains of social activity (36/100) and physical activity (48/100). The quality of life was more impaired in women.

Conclusion

Osteoarthritis is a common disease that has important consequences in terms of disability, quality of life for the patient and cost to society.

Keywords

lower limbs Osteoarthritis;quality of life;elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2023

PLACE OF ISOCINETIC IN THE REEDUCATION OF CHRONIC LOMBALGIA: ABOUT A CASE (FIRST EXPERIENCE OF THE MARRAKECH MPR SERVICE)

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Introduction/Background

Isocinetic is an essential method for assessing muscle strength and a valuable aid to rehabilitation. It makes it possible to establish adapted and personalized programs according to the needs of each one. Muscle reinforcement is very important during chronic low back pain because in case of weakness and muscle imbalance, the articular disks and ligaments are put in tension; It then follows a prolonged overload of these vertebral structures causing chronic pain.

Material and Method

The aim of this presentation is to clarify the interest of a balance and isocinetic rehabilitation in the management of chronic low back pain. We report the case of a 55-year-old patient with no previous medical history of surgery who has lumbosciatic pain that has been evolving for 15 years and has become disabling. Clinical examination revealed lumbar hyperlordosis, lumbar spinal stiffness and S1 sciatica. We performed isokinetic evaluation and isocinetic muscle reinforcement

Results

Marked deficit on the extensor muscles and slight on the flexors. Inversion of flexor / extensor ratio > 1. Isocinetic rehabilitation has improved isocinetic parameters.

Conclusion

Isocinetic is of great interest in pathologies and rehabilitation of the spine, particularly in low back pain.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2127

IMPLICATION OF UNLOADER BRACES IN GUIDELINE RECOMMENDED KNEE OA MANAGEMENT- AN EXPERT CONSENSUS

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Introduction/Background

The goal of the expert consensus recommendation was to provide a tool which helps medical professionals to select the right patient and to provide a guidance for when and how to use an unloader brace for different patient types

Material and Method

27 physicians developed recommendations to achieve the best possible treatment outcome for the the younger knee osteoarthritis (OA) patient, the active & demanding knee OA patient and the older knee OA patient. Questionnaires on were used to prepare F2F meeting where the experts agreed patient group specific treatment recommendations, which have been consented thereafter in two Delphi rounds.

Results

In order to provide specific recommendations three different patients groups have been defined: The younger knee OA patient, the active and demanding knee OA patient and the older knee OA patient. Experts concluded on detailed recommendations for these groups Candidates who will most likely benefit from an Unloader brace can be identified by the Unloader brace test.

Conclusion

The expert consensus approach was utilized to translate knee OA treatment recommendations and guidelines from international societies down to the patient´s needs in daily orthopedic and sports medicine practice. By dividing the patients in three different groups patient specific treatment recommendations have been established based on the existing clinical evidence and can be applied in daily practice. An expert consensus can be useful in order to support medical professionals in daily practice as they can offer a more practical patient centric treatment recommendation regarding the use of an Unloader Brace within knee OA management.

Keywords

knee osteoarthritis;oa management;expert consensus

Conflict of interest

Disclosure statement:

Axel Schulz is working alongside his orthopedic & sportsmedicine office as Medical Director for Össur bv.

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A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2159

THE INFLUENCE OF POSTURAL REALIGNMENT IN THE TREATMENT OF CRANIOMANDIBULAR DYSFUNCTION: A CASE REPORT

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Introduction/Background

The temporomandibular joint (TMJ) is an element of the stomatognathic system consists of several internal and external structures, capable of performing complex movements, if there is an imbalance of these structures can take what we call craniomandibular dysfunction (DCM). The DCM is associated with a set of joint and muscle conditions in the craniomandibular region, the correct and early diagnosis making it necessary to prevent damage to stomatognathic functions. In addition, the masticatory muscles are closely related to the body posture through neuromuscular connections. The body posture is defined as a balanced arrangement of body structures, each segment has its center of gravity. The posture can be evaluated by software (SAPO) which is a free computer program accessed over the Internet. Therefore the aim of this work was to improve posture and relieve the DCM symptoms.

Material and Method

This is a case report in a patient with diagnosis of DCM. A physical therapy evaluation and computerized postural evaluation through the Postural assessment software (PAS/SAPO) in orthostatic position being photographed four views was held: anterior, posterior, right side and left side. It was marked 42 points, being used Styrofoam beads 10mm, fixed with adhesive tape. The patient was submitted to 10 sessions of postural realignment therapy (PRT), 2 times a week, 45 minutes each session.

Results

In the evaluation we observed that the patient had 26 points with postural changes and after treatment with PRT that number dropped to 19 obtaining an improvement of 31.03% in the points assessed.

Conclusion

We observed an improvement in DCM and posture after treatment with RP. In conclusion, the DCM has correlation with postural change, and that after the PRT was an improvement of DCM symptoms and posture.

Keywords

Cranio-mandibular dysfunction; Stomatognathic system ; Posture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2184

CORRELATION BETWEEN PATTERN AND SEVERITY OF THE PAIN AND FUNCTIONAL DISABILITY IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Introduction/Background

***Background:**The main symptom in Osteoarthritis is pain. It has many potential sources in and around the joint. Once the source or sources of pain are accurately identified, a treatment plan can be formulated.

***Aim:**This study was carried out to determine the pain patterns of patients with knee OA and its correlations with pain severity and functional disability.

Material and Method

a cross-sectional study carried out on One hundred patients with primary knee OA .The severity of pain was assessed by VAS and WOMAC knee pain scale. The functional disability of OA was assessed also by WOMAC OA index. Knee pain pattern and location was assessed by Knee Pain Map diagram.

Results

The mean total WOMAC score was 46.29 ± 13.03 . The most difficult function to perform was heavy domestic duties with a mean of 3.26 ± 0.85 (severe to extreme 3-4), followed by going upstairs with a mean of 3.03 ± 0.70 (severe to extreme 3-4) and then going down stairs, getting in and out of a car, and shopping with a mean of 2.6 ± 0.92 , 2.54 ± 0.83 , and 2.43 ± 1.01 respectively (moderate to severe 2-3). the right knee pain map of the studied patients showed that The most common site of pain was localized at patella (41%), followed by medial joint pain (16%), and then diffuse knee pain (14%). the left knee pain map of the studied patients showed that The most common site of pain was localized at patella (25%), followed by diffuse knee pain (20%) and then localized inferior medial (6%) and medial region (6%).There was significantly higher frequency of patients with severe to extreme pain in localized group than in regional group (73% versus 60%, respectively) with nearly twice risk of severe to extreme pain (OR=1.8, p=0.05).

Conclusion

- Knee pain, stiffness, and duration of disease may affect the level of disability in the patients with knee OA.

Keywords

OA OSTEOARTHRITIS;VAS VISUAL ANALOGUE SCALE

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2207

BONE MARROW LESION IN ADVANCED OSTEOARTHRITIS OF THE KNEES. CORRELATION STUDY BETWEEN HISTOPATHOLOGICAL FINDINGS AND STRUCTURAL DAMAGE.

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Introduction/Background

Loss of hyaline articular cartilage is a central pathologic event in osteoarthritis, but the pathogenesis of cartilage loss is poorly understood. Bone marrow lesion(BML) is indicated by focally increased signal in the marrow on fat-suppressed T2- weighted images.

PURPOSE:To correlate histopathology of a bone marrow lesion (BML) pattern with severity and structural damage in osteoarthritic knees.

Material and Method

Twenty consecutive patients (age range, 59–66 years; mean, 65 years) referred for total knee replacements were examined with sagittal short inversion time inversion-recovery (STIR) and T1- and T2-weighted MRI one week prior to surgery before surgery. Different structural abnormalities on MRI were compared with those on histologic maps.

Results

The histopathology of BML in cases of OA revealed that (6) biopsies of cases showing bone marrow fibrosis (30%), (4) of them grade1 (20%) and (2) of them grade2(10%).

(18) biopsies showing cyst (90%), (9) biopsies showing abnormal trabeculae (45%), (2) of them with grade1 (10%), (4) of them grade2 (20%) and (3) of them grade3 (15%).

(5) Biopsies showing lymphocyte (25%), (40%) of them had++CD3, while (60%) of them had ++CD20.

(5) Biopsies showing fatty marrow (25%), (9) biopsies showing haemosidrotic marrow (45%), (6) biopsies showing blood vessels (30%), (5) of them with grade 2 (25%) and (1) with grade 3 (5%).

The MRI findings of OA patients had been revealed that there was (6) patients with BML of grade 1 (30%) (10) patients of grade 2 (50%) and (4) patients of grade 3 (20%) .

Conclusion

- BML has a strong correlation with radiographic severity measurements of osteoarthritis of the knee and pain.
- In patients with knee osteoarthritis, BML in bone underneath cartilage markedly increase risk for structural progression in the knee.

- Hyperemia and hematopoietic marrow were possible reasons for appearance of BML as high signalintensity on STIR images.
- BMLs are a cornerstone in progression of osteoarthritis.

Keywords

BONE MARROW LESION (BML)

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2290

EFFECTS OF KELLGREN-LAWRENCE GRADING ON PAIN, FUNCTION, MUSCLE STRENGTH, POSTURAL STABILITY FOR PRIMARY KNEE OSTEOARTHRITIS

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Introduction/Background

The aim of this study is to determine the effects of Kellgren-Lawrence (K/L) grading on pain, function, muscle strength, postural stability for primary knee osteoarthritis (OA).

Material and Method

In this study, total 110 patients with primary knee OA diagnosis according to American College of Rheumatology criteria were evaluated. Patients were divided according to K/L grade (grade II and III). Outcome measures were applied as visual analog scale (VAS), Lequesne, WOMAC OA scores, postural stability testing, and isokinetic quadriceps muscle testing. These variables were compared between two groups.

Balance parameters and risk of fall by using the static posturography with Tetrax® Interactive Balance System for both of participants. Isokinetic measurements were evaluated with Biodex System 3 Pro isokinetic dynamometer (Biodex Medical Systems, Shirley, New York, USA).

Results

The mean age of the patients in the study was 57,12±8,34 and 62,38±8,23 years according to K/L grade II and III, respectively. Age, gender, body mass index and duration of symptoms were similar between groups ($p>0.05$). Statistically, there were no significance on fall risk, postural stability and isokinetic measurements measurements ($p>0.05$). Also, there were no significance different on pain, stiffness subgroup of WOMAC OA score between groups ($p>0.05$). Total score and other subgroups of WOMAC were different between groups ($p<0,05$).

Conclusion

K/L grading is not related with quadriceps isokinetic measurement, fall risk and stability scores. But this grading system seems to be correlated with activities of daily living.

Keywords

primary knee osteoarthritis;isokinetic muscle testing;postural stability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2308

KNEE OSTEOARTHRITIS PAIN TREATMENT: ACCUPUNTURE VS ULTRASOUND GUIDED GENICULAR NERVE BLOCK

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Introduction/Background

This study was to compare the efficacy of accupuncture and ultrasound guided genicular nerve block in treating knee osteoarthritis pain.

Material and Method

Twenty patients with knee osteoarthritis pain were submitted for pain treatment. Patients were randomly allocated into two groups (n=10). Ten of them got accupuncture treatment and the other ten got ultrasound guided genicular nerve block. VAS and time-up-and-go-test were evaluated.

Results

The mean of VAS improvement in the accupuncture group was 3,70 with standard deviation 0,67; was lesser than the ones of ultrasound guided genicular nerve block group (mean 4,10 and standard deviation 0,31). There is no significant differences in VAS improvement between the accupuncture group and ultrasound guided genicular nerve block group, with p value = 0,091 (p value>0,05).

The mean of Time-Up-and-Go-Test improvement in the accupuncture group was 0,90 with standard deviation 0,59; was greater than the ones of ultrasound guided genicular nerve block group (mean 0,83 and standard deviation 0,31). There's no significant differences in Time-Up-and-Go-Test improvement between the accupuncture group and ultrasound guided genicular nerve block group, with p value = 0, 0,880 (p value>0,05).

Conclusion

Both accupuncture and ultrasound guided nerve block can be used to treat knee osteoarthritis pain. No significant differences in improvement of pain and Time-Up-and-Go-Test as result of each accupuncture and ultrasound guided nerve block for knee osteoarthritis.

Keywords

Knee osteoarthritis;accupuncture;ultrasound guided genicular nerve block

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2344

TIME WEARING ORTHOSIS IN THE MANAGEMENT OF CHRONIC LOW BACK PAIN : PRELIMINARY STUDY OF THE IMPACT ON THE ISOKINETIC PARAMETERS.

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Introduction/Background

There is no strong consensus on the modalities about the duration of time wearing thoraco-lombo-sacral-orthosis in chronic low back pain.

To evaluate the influence of orthotic wear time on the isokinetic parameters of low back muscles.

We choose a temperature monitoring device and present a preliminary study of 7 patients.

Material and Method

Patients included in this study were treated in the Department of Physical Medicine and Rehabilitation of the Desgenettes Army Training Hospital.

Observance was assessed using an ELITECH[®] RC-4 data logger.

Each device is attached to the posterior part of the TLSO, protected by a box inaccessible to the patient and the external sensor is buried at the level of the waist and directly in contact with the patient.

Each patient realized an isokinetic evaluation at start and at the end of wearing the orthosis.

Results

For each patient, we calculate the average time wearing orthosis per day, and we study the correlation with the evolution of the isokinetic parameters of the spinal musculature.

The first results show that there is no significantly decrease of the isokinetic parameters in concentric test, we confirm that the use of the rigid orthosis increases the eccentric peak torque of the spinal extensor which can explain the efficiency in addition to the analgesic effect.

Conclusion

A precise and reliable measurement of the wearing time of TLSO is essential for the study of the impact on the isokinetic parameters in chronic low back pain.

The device for recording the temperature at the orthosis is therefore simple, reliable and reproducible.

Keywords

Time Wearing Orthosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2454

WHAT IS THE LONG TERM EFFECT OF LATERAL WEDGED INSOLES ON KNEE OSTEOARTHRITIS PAIN AND PROGRESSION?

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Introduction/Background

Several studies have tried to prove the bio-mechanical effects of lateral wedges, but the long-term effect of them on the progression of osteoarthritis remains unknown. The aim of this systematic review was to investigate the effect of lateral wedge on pain and progression of OA in long term follow up.

Material and Method

Studies were sought from the SCOPUS, PUB MED, SCIENCE DIRECT, MEDLINE and GOOGLE SCHOLAR from 2000 to 2015. We only chose randomized controlled trials (RCTs) articles with at least 6 months follow up. Of 121 relevant articles screened, 8 met the predefined inclusion Criteria.

Results

Four studies indicated there were significant pain reduction over 12 month follow up. Also they reported reduction in the rate of knee cartilage loss to lower than 3% per year in lateral wedged insole group. 3 other articles failed to demonstrate a long term effect of lateral wedge on pain. One study indicated adding subtalar strapping to lateral wedged insoles had better effects on reduction of pain and progression of knee OA in long term follow up.

Conclusion

Overall, this article suggested that based on included studies, long term effect of lateral wedging is unclear.

Keywords

Lateral wedged insole; medial knee osteoarthritis; long term effect

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2462

A HOSPITAL BASED COMPARATIVE INTERVENTIONAL STUDY OF THE EFFECT OF CUSTOM MADE SPLINT IN FIRST CARPOMETACARPAL JOINT OSTEOARTHRITIS

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Introduction/Background

Hand osteoarthritis is a common condition which has a significant impact on the patient with regard to pain, disability and limitations in activities of daily living. It particularly affects the base of the thumb (1st carpometacarpal joint).

This study evaluates the effectiveness of custom-made short dynamic carpometacarpal joint splints on pain, function, grip strength and key pinch in patients with first carpometacarpal joint osteoarthritis (grade 2nd and 3rd) in comparison to conventional treatment.

Material and Method

This hospital based comparative type of interventional study was done in the department of Physical and Rehabilitation Medicine at SMS Medical College , Jaipur, India from April 2015 to November 2016. After screening for eligibility criteria 67 patients with 1st CMC OA were included in the trial , of which 35 patients were assigned to the intervention group (custom made short dynamic CMC joint splint and standard medical treatment) and 32 to the control group (standard medical care only). All patients were examined at baseline, one month and finally at 2 months on basis of VAS score, DASH score , grip strength and pinch strength.

Results

There was statistically significant reduction in tenderness of 1st CMC joint and positivity of Grind test at first follow up of 1 month in the splint group in comparison with non-splint group. Mean change in VAS score, DASH score, grip strength and pinch score were significantly more in splint group than non-splint group, from baseline to 1st follow up at 1 month ,1st follow up to 2nd follow up at 2 months, and baseline to 2nd follow up.

Conclusion

The splint group shows significant improvement in all outcome measures (pain, grip and pinch strength) at all follow ups when compared to non-splint group. The result supports the view that rehabilitation intervention using short dynamic custom made splint can significantly benefit individuals with early osteoarthritis.

Keywords

carpometacarpal joint osteoarthritis; custom made splint ; Hand osteoarthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.02 Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ISPR8-2477

LEG EXERCISE APPARATUS (LEX) FOR VENOUS THROMBOEMBOLISM PROPHYLAXIS IS FEASIBLE FOR PATIENTS WHO UNDERWENT TOTAL JOINT ARTHROPLASTY OF THE LOWER EXTREMITIES

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Introduction/Background

Venous thromboembolism (VTE) is a serious complication following arthroplasty of the lower extremities. Although early ambulation and active leg exercise have been recommended, postoperative patients with surgical pain face difficulty in moving their legs. Therefore, we developed a novel leg exercise apparatus (LEX) to facilitate active leg movement, during the early postoperative period. LEX is a portable apparatus that allows patients to actively move their legs while in the supine position. LEX enables dorsiflexion, plantar flexion, a combined movement of eversion and inversion of ankle, and multi-joint movement of leg.

Material and Method

Twenty subjects (age: 38-80y, 4 men, 16 women) who underwent total joint arthroplasty of their lower extremities were enrolled in this study. The exercise using LEX was set for 5 minutes, at 30 cycles/min. On postoperative days 1 to 7, the exercise was performed four times a day. Clinical assessments included vital sign measurement before and after LEX exercise, venous ultrasonography and blood tests performed seven days after surgery, and occurrence of adverse events.

Results

Among the 20 subjects, 16 completed the exercise regime of 7 days, while 4 dropped out. The subjects who dropped out had undergone total hip arthroplasty. Of them, 3 had refused to undergo the LEX protocol before exercise. No severe adverse events occurred during the study. There were no severe changes in vital signs. There was no occurrence of deep vein thrombosis (DVT) in the lower extremities in the postoperative week 1. Average preoperative D-dimer was 0.85 (0.4-2.2), whereas the corresponding value in postoperative week 1 was 7.93 (2.0-13.8).

Conclusion

No postoperative DVT was observed after this LEX protocol, and there were no severe adverse events. This protocol for VTE prophylaxis may be safe and feasible for patients who underwent joint arthroplasty of the lower extremities.

Keywords

venous thromboembolism prophylaxis; Leg Exercise Apparatus; total joint arthroplasty of the lower extremities

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-2573

FRAGILITY FRACTURES IN END STAGE RENAL DISEASE: A BROAD SPECTRUM DISORDER CASE REPORT

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Introduction/Background

Fractures among patients with chronic kidney disease (CKD) represent a debilitating injury that could be associated with excess morbidity, prolonged rehabilitation, long-term pain, and even mortality. According to the literature, a middle age patient who is on dialysis has a 100-fold higher risk of having a fracture compared with peers in general population. Moreover, the peculiar pathogenesis of bone disorders and fractures in CKD patients can further make their management more challenging.

The aim of this work is to present a case of fragility fracture in a patient with end stage renal disease illustrating the characteristic nature of chronic kidney disease mineral bone disease (CKD-MBD)

Material and Method

A 33 -year - old male CKD patient on hemodialysis for >10 years presented with generalized bone aches of 2 years duration and painful swelling in the lower third of the left thigh of 3 months duration

1) At presentation: clinical evaluation, laboratory investigation: including CBC, blood chemistry, PTH, and 25 OH vitamin D, and radiological assessment: plain X-ray of the left femur and DXA.

2) Follow up after 3 months: clinical and laboratory investigations

Results

Biochemical markers of bone turn over revealed elevated ALP (641 U/L), low serum Ca level, elevated PTH (127 pg/ml) with low 25-OH Vitamin -D. Plain radiograph revealed a fracture in lower third femur as well as a transverse translucent band "losser zone" in upper third tibia. DXA showed significantly low BMD especially at distal end radius (Z score= -6.3). Three months later, there was a reduction in the level of both, ALP as well as PTH.

Conclusion

CKD-MBD is a broad spectrum disorder in which the patient can transition from one histologic form to another either by natural biologic means or induced by medical treatment. The special nature of CKD-MBD needs further attention to prevent fractures in these disabled persons.

Keywords

Fracture; Chronic kidney disease-mineral and bone disorder; Bone

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-2682

CORRELATION BETWEEN SERUM LEVEL OF INTERLEUKIN-17 AND FRAX INDEX IN PREMENOPAUSAL RHEUMATOID ARTHRITIS PATIENTS

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Introduction/Background

Rheumatoid arthritis (RA) is the most common form of inflammatory arthritis in adults and is characterized by chronic, progressive, systemic inflammation. It is well accepted that patients with RA are at an increased risk of osteoporosis (OP) and osteoporotic fractures (OFs). Interleukin-17 (IL-17) is a cytokine that expressed in inflammatory and autoimmune diseases and expected to play an important role in the pathogenesis of RA and OP. Fracture Risk Assessment Tool (FRAX) is a computer-based algorithm developed by the World Health Organization (WHO) Collaborating Centre for metabolic bone diseases and first released in 2008. The outputs of FRAX are the 10-year probability of a major osteoporotic fracture and the 10-year probability of hip fracture. Studies to better assess risk factors of OFs in patients with RA and to define subgroups of patients in need of treatment to prevent this complication are increasingly important.

Material and Method

This study included 25 premenopausal RA patients and 20 healthy subjects. Serum IL-17 level was assessed by using ELISA technique, bone mineral density (BMD) measurements by using DEXA scan and FRAX index was calculated by using online FRAX calculator (Femoral neck BMD was used to enhance fracture risk prediction).

Results

Serum IL-17 mean level among RA patients was (5.99 ± 1.22 pg/ml) and it is significantly higher than healthy control (3.73 ± 2.15 pg/ml, $P < 0.001$). Serum IL-17 levels showed a positive significant correlation with the FRAX index scores in RA patients.

Conclusion

Serum IL-17 is increased among premenopausal RA patients and it is correlated with FRAX index scores which raises the possibility that IL-17 is implicated in the pathogenesis of OP in RA.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-0524

PATTERN OF BONE MINERAL DENSITY AMONG ELDERLY HOUSEWIVES, ANALYSIS OF LIMITED DATA FROM A LABORATORY.

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Introduction/Background

Background: Bone mineral densities of post-menopausal women are usually low. Aged women in Bangladesh mostly remain in the house and get less exposure to sunlight. Their average diet does not contain adequate calcium and vitamin D mostly at low resource outset. This small laboratory data based survey was done to see the pattern of bone mineral density among elderly women at urban setting in Bangladesh.

Material and Method

Methods: Bone mineral densities of 857 female patients of age older than 50 years were collected from a reputed private laboratory in Dhaka, a densely populated congested city. Personal history or lifestyles of the patients were not included. Only T-scores were collected from database of the laboratory. T- Scores of spines and neck of femurs were recorded from all patients. Vitamin D was not measured. Collected data were analyzed to see the pattern of bone mineral density among the study population.

Results

Results: Mean age of the patients was 65.12 ± 7.56 years. Maximum age of the participant was 95 years. However, mean T-score for AP spine is -2.55 ± 1.41 . Minimum T-score for AP spine is -6.8 and maximum T-score for AP spine is 1.8. Mean T-score for hip (total right) is -1.58 ± 1.24 . Minimum T-score for Hip (total right) is -7.4 and maximum T-score for Hip (total right) is 4.9. On the other hand mean T-score for hip (total left) is -1.4 ± 1.18 . Minimum T-score for Hip (total left) is -4.7 and maximum T-score for Hip (total left) is 5.1.

Conclusion

Conclusion: T score of most women were significantly low fulfilling the WHO criteria of osteoporosis. Urban congested lifestyles of post-menopausal women, lack of exposure to sunlight and nutritional deficiencies of calcium and vitamin D are common cause of decreased bone mineral density. Larger study with more variables can better delineate the prevalence of osteoporosis and fracture risk.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-0653

THE COMPARISON OF QUALITY OF LIFE, PATIENT SATISFACTION AND COMPLIANCE IN PARENTERALLY TREATED PATIENTS WITH POSTMENOPAUSAL OSTEOPOROSIS

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Introduction/Background

Osteoporosis and fractures due to osteoporosis cause significant morbidity and mortality. It has been shown that patients are more compliant with parenteral forms of medication. In this study we aimed to evaluate parenterally treated patients' satisfaction, compliance and quality of life (QoL).

Material and Method

A hundred thirteen patients with postmenopausal osteoporosis using denosumab-DEN (40), intravenous zoledronic acid-ZA (41) and ibandronic acid-IA (32) for at least 1 year were enrolled. Secondary osteoporosis, metabolic bone disease, bone metastasis, hypogonadism were defined as exclusion criteria. The demographic data, bone mineral density T scores and clinical risk factors were recorded. For QoL evaluation qualeffo-41 was applied. A 3-item questionnaire was used to evaluate the satisfaction with the medication, route and frequency of administration.

Results

Demographic data and clinical characteristics were similar ($p > 0,05$). There were no significant difference in any subdomain of qualeffo-41 or total score. Most of the patients (90%) who have used DEN were satisfied with drug. However, big percent of the patients using ZA (48.8%) and IA (53.1%) were hesitant. When we evaluate the satisfaction with the route of administration 90% of DEN group was satisfied. For ZA and IA it was 46.3 and 53.1. For the frequency of administration it was 87.5, 68.3 and 43.7 for DEN, ZA, IA respectively.

Conclusion

Regardless of the medication, QoL is affected. No medication has any superiority to the others in terms of QoL. Patients' satisfaction is affected by both the route and frequency of administration. They are more satisfied with 6 months or 1 year intake period and with the subcutaneous form. Most of the patients in DEN group have emphasized that subcutaneous

administration is fast and less invasive, like immunization. In these 3 treatment options, DEN is a step ahead in terms of patients' satisfaction.

Keywords

Osteoporosis;Quality of Life;Patient Satisfaction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-0790

PREVALENCE OF RISK FACTORS AND VALUES OF MINERAL BONE DENSITY IN PATIENTS WITH OSTEOPOROSIS WITH AND WITHOUT FRACTURES

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Introduction/Background

Osteoporosis is a serious metabolic bone disease with characteristic and irreversible bone loss, impaired bone microarchitecture beams with consequent increase in fracture risk. There are many risk factors that contribute to osteoporosis: heredity, sex, age, early menopause, previous fractures, malnutrition, alcohol, smoking, physical inactivity, other diseases, drugs. The aim of this study is to determine the prevalence of risk factors, as well as the values of bone mineral density in patients with osteoporotic vertebral and non-vertebral fractures compared to patients with primary osteoporosis without fracture.

Material and Method

The study included 24 women (average age 62.3 ± 6.5) with osteoporosis and fractures and 24 women (average age 62.5 ± 6.7) with osteoporosis without fractures verified. Determining the value of bone mineral density (BMD) at the lumbar spine (L1-L4) and proximal femur was performed by DXA at the Lunar densitometer expressed in g/cm^2 .

Results

The most common risk factor in the group of patients osteoporotic fractures was an early menopause in 10 (41.7%) patients, then the existence of fractures in the family in 6 (25.0%) patients. In the group of patients with osteoporosis without fracture is largest number of physically inactive 8 patients (33.3%). Our results indicate a significantly lower total BMD in patients with vertebral (12 patients) as compared to patients with vertebral fractures (hip -5, wrist -6, other- 5 patients) ($p < 0.05$). Our study showed a statistically significantly lower BMD at the femur neck in patients with osteoporotic fractures of the spine in relation to non-vertebral fractures ($p < 0.01$).

Conclusion

Due to the significant prevalence of risk factors that lead to osteoporosis the most important in the prevention of osteoporosis and its complications in detection of risk factors that lead to osteoporosis and increased fracture risk and adequate and timely therapy with patient education on the prevention of falls.

Keywords

osteoporosis;fractures;risk factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-0833

JUVENIL OSTEOPOROSIS WITH AARSKOG SYNDROME: A CASE REPORT

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Introduction/Background

Aarskog syndrome also known as Aarskog-Scott Syndrome, Facio-digito-genital Syndrome or Faciogenital Dysplasia is a rare(1). X-linked disorder predominantly affecting males, characterized by facial, skeletal and genital anomalies(2,3). On the other hand, defects of bone metabolism have tendency to osteoporosis, this is a case report of a 23 years old male with pathological fracture of tibia and juvenil osteoporosis.

Material and Method

Twenty-three years old male patient visited our center complaining with rehabilitation after shaft fracture of tibia. The patient had a tibial fracture three weeks ago and treated by splint. His facial appearance was striking with abnormally large nose and ptosis of upper eyelids, hypertrophied and everted lower lip . The patient was 1.17 meter tall and weighted 32 kilograms and his vital signs were within the normal range. The bone mineral density of patient was measured and T-score of femoral neck density was -3.8, lumber spine was -3 and significantly osteoporotic in lateral lumber graphy.

Results

25-hydroxi-Vitamin-D of patient was 9.2 and after 50000 IU D3 throughout 6 weeks, weekly alendronate therapy administered.

Conclusion

The relation of osteoporosis and Aarskog syndrome hasn't identify clearly but possible cause of its, a genetical defect of bone formation or hypogonadism. When we search literature, there isn't published case about relationship with Aarskog Syndrome and osteoporosis. Because of its, this case report gain importance.

Keywords

Aarskog Syndrome;Osteoporosis;Treatment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-0885

BLOCKING NEUROMUSCULAR JUNCTIONS TO IMPAIR MUSCLE OVERACTIVITY ENHANCES NEUROLOGICAL HETEROTOPIC OSSIFICATIONS (NHO) DEVELOPMENT IN A MOUSE MODEL OF SPINAL CORD INJURY.

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Introduction/Background

To ascertain a role for muscle spasticity in the development of NHO, by blocking neuromuscular signalling using botulinum toxin during spinal cord injury-induced NHO formation in a murine model.

Material and Method

Spinal Cord Injury (SCI) was performed on 5-6-week-old C57BL/6 mice. To promote NHO development, cardiotoxin (CDTX) dose injections were administered at the time of the surgery to the right and left hamstring muscles. Botulinum toxin A (BTA) injections were administered at the site of NHO formation in the right hamstrings to block neuromuscular signalling, and mock equivalent volume of PBS was injected in the contralateral site 4 days prior to SCI, and weekly for 3 weeks. Twenty-one days post SCI, quantitative assessment of NHO volume and density within each hamstrings muscle were performed using Micro-computed tomography scan.

Results

μ CTscan analysis revealed the development of NHO in 100% of mice in both hamstrings. NHO volume average was 1.6 mm³ (\pm 1.0) in the left hamstrings injected with PBS in contrast to 3.3 mm³ (\pm 1.4) in the right hamstrings with BTA. This doubling of NHO volume in BTA-treated hamstrings was statistically significant (Wilcoxon matched-pairs signed rank test, $p = 0.013$). Furthermore, NHO were more compact in muscles injected with BTA with a density of 1244.6 mg/cc (\pm 10.4) and was significantly denser compared to NHO in the PBS-treated contralateral side density of 1231.2 mg/cc (\pm 20.1) (Wilcoxon matched-pairs signed rank test, $p = 0.027$).

Conclusion

In our murine model of SCI-induced NHO, we demonstrated a doubling of the NHO volume, and increased density burden when treated locally with BTA. These results demonstrate that local administration of BTA exacerbates NHO development leading to an overall increase in bone formation. The outcome suggests that in contrast to risk spasticity, resulting from defective neuromuscular signalling, may be an inhibitor of local NHO development.

Keywords

Heterotopic Ossification; Botulinum Toxin type A; Spinal Cord Injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-1025

OSTEOPOROSIS - A REALITY IN SPINAL CORD INJURY

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Introduction/Background

Osteoporosis is a worldwide public health issue and despite being frequent, is still a neglected entity in patients with spinal cord injury (SCI). Although the pathophysiology is not wholly clear, several factors appear to have an influence on bone mass in SCI individuals. The level, severity and age at injury are important predictive factors that should be considered in individuals with SCI.

Material and Method

The authors conducted a systematic review of the pharmacological and non-pharmacological treatment of osteoporosis in patients with SCI, underlining the importance of conducting a multimodal rehabilitation program. Databases of Cochrane Library, Google Scholar and Pubmed were search from January 2006-December 2017.

Results

There are no clear guidelines regarding bone density monitoring, prevention, and treatment of osteoporosis in patients with SCI. The treatment of osteoporosis relies on the adoption and promotion of healthy lifestyles. Several drugs are used in the treatment of osteoporosis in patients with SCI such as vitamin D analogs, calcium combinations and bisphosphonates. Recent studies also point to denosumab as a promising molecule in the treatment of osteoporosis in SCI. Physical activity should be promoted in these patients, such as rowing or other wheelchair-adapted sports, in order to enhance osteogenesis. Studies advocate the use of electrostimulation and functional electrical stimulation, training with cycle ergometry, training of orthostatism/progressive verticalization, vibratory platforms and assisted walking training. The results of ultrasound treatment have been disappointing.

Conclusion

Osteoporosis is an important complication in SCI. Early diagnosis and appropriate treatment is essential, taking into account the high risk of fracture and its complications. Physical and rehabilitation medicine plays a fundamental role in the prevention and treatment of osteoporosis in SCI, thus promoting the well-being of patients and improving their quality of life.

Keywords

Osteoporosis;Spinal cord injury ;Pharmacological and non-pharmacological treatment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-1038

EFFECTIVITY OF RADIAL SHOCKWAVE THERAPY FOR THE TREATMENT OF ASTRAGALUS PSEUDARTHROSIS

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Introduction/Background

With this case study, we want to make known the effectivity of extracorporeal radial shockwave therapy on bone healing failure; for this particular case the astragalus pseudarthrosis is a failure of this bone's healing from fracture, in other words, the non-union of fracture lines by the alteration in any of the phases of bone healing. This is a case study of a patient with astragalus pseudarthrosis and the response to treatment with radial shockwave therapy.

Material and Method

Patient 27 years, with a hindfoot fracture, required surgical treatment with external fixator plus osteosynthesis of the right talus. Currently pain in the ankle and scintigraphy suggestive of pseudoarthrosis of the talus. In May 2015 with radiography that reported a lack of consolidation of the talus fracture

Results

Treatment with shock waves in August 2015; scheme: cycle of 5 sessions of shock waves at the level of the right talus, each session with 2500 strokes at a frequency of 14 / sec, with an increase in intensity from 2.0 bar to 2.5 bar, with improvement of pain by 70% (analogous visual scale of 4/10) and improvement in the mobility arcs (dorsiflexion 30 ° plantiflexion -20 °). 5 more sessions of shock waves, currently a decrease in pain by 80% (visual scale analogous 3/10), improvement in the mobility arcs (dorsiflexion 50 ° plantiflexion to neutral).

Conclusion

Pseudoarthrosis is a complication of short bone fractures that are difficult to manage, but which in recent years is within the indications for handling extracorporeal shock waves, for the case that occurs after the intervention with radial shock waves. extracorporeal recovery and remodeling of the talus fracture, in addition to pain reduction, recovery of mobility arcs and improvement of patient functionality.

Keywords

pseudoarthrosis;astragalus;shock wave

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-1162

ASSESSMENT OF ASSOCIATION OF SMOKING WITH BONE MINERAL DENSITY (BMD) AND FRAGILITY FRACTURES IN A COHORT OF PAKISTANI MALES AND POSTMENOPAUSAL FEMALES

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Introduction/Background

The study aimed to determine the association between smoking, bone mineral density (BMD), and fragility fractures in a cohort of Pakistani males aged > 50 years and postmenopausal females.

Material and Method

This was a cross-sectional survey carried out at Armed Forces Institute of Rehabilitation Medicine (AFIRM), Rawalpindi from Jan 2010 to Jan 2011. Through non-probability purposive sampling, we included male patients of age > 50 years and postmenopausal women. All subjects were submitted to dual energy X-Ray absorptiometry at lumbar spine (L2 > L4) and at both femoral by Hologic Discovery-A machine. The lowest BMD was noted and expressed in the form of T-score. Using SPSS V 20, descriptive statistics were calculated for the various variables. Independent samples t-test was used to determine the significance of difference between mean T-score in between smokers and non-smokers. Association between smoking and the risk of fracture was carried out using Fisher exact test. A p-value < 0.05 was considered significant.

Results

Out of a total of 328 patients, 142 (43.3%) were male (mean age 64 ± 8 , range: 50 - 82 years) and 186 (56.7%) were female (mean age 61 ± 8 , range: 43 - 92 years). Sixteen (8.6%) females and 52 (36.6%) males were smokers. In males, the mean T-score was -1.6 ± 1.3 in non-smokers and -1.9 ± 1.2 in smokers ($p=0.17$). Two of the non-smokers and nine of the smokers had a fracture. ($p=0.002$). In females, the mean T-score was -2.9 ± 1.9 in smokers and -2.3 ± 1.4 in non-smokers ($p=0.23$). Twelve of the non-smokers and 15 smokers had a fracture. ($p<0.001$)

Conclusion

Smoking was significantly associated with increased percentage of fragility fractures but not with a reduction in BMD in our sample of postmenopausal women and men of age > 50 years.

Keywords

fragility fractures;bone mineral density;smoking

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-1397

DEGREE OF FUNCTIONAL CAPACITY, BONE MINERAL DENSITY AND PHOSPHOCALCIC METABOLISM ALTERATIONS IN PAEDIATRIC PATIENTS WITH REDUCED MOBILITY

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Introduction/Background

Mobility is essential for adequate bone mineralisation. Neuromuscular diseases can cause pathological fractures, bone pain, and a decrease in bone mineral density (BMD). Establish the association between BMD, phosphocalcic metabolism parameters, and degree of functional capacity.

Material and Method

Observational, cross-sectional and prospective study in children under 18 with reduced mobility. The selection is performed by consecutive, non-randomised sampling. Variables analysed: age, gender, functional capacity according to the Functional Mobility Scale (FMS), which evaluates the ability to walk in 3 distances (5 metres, 50 metres and 500 metres) from 0 to 6, BMD (L2-L4) by DXA expressed in Z-scores according to bone age and gender, calcium, phosphorus, parathormone, 25-hydroxy-vitamin D3, alkaline phosphatase and osteocalcin in blood and calcium/ creatinine ratio, tubular reabsorption of phosphorus and cross-linked N-terminal telopeptides of type I collagen in urine (NTX-I). Alkaline phosphatase, osteocalcin and NTX-I values are expressed in standard deviations according to reference values for age/gender. The results are analysed with the SPSS programme.

Results

36 patients (53% children), average age of 8.6 +/- 4.7 years. Mean FMS value was 5.3 out of 18 (36% obtained a value of 0). Mean BMD was -1.99 +/- 1.7, average alkaline phosphatase was -2.64 +/- 1.08 SD, mean osteocalcin was -2.15 +/- 1.39 SD, and mean NTX-I was +3 +/- 1.72 SD. A significant association was observed between BMD and the FMS for the 5-metre distance ($p = 0.017$) and for the total score ($p = 0.029$), and between parathormone and the FMS at 5 ($p = 0.041$), 50 ($p = 0.033$) and 500 metres ($p = 0.046$).

Conclusion

There is a decrease in BMD and in bone neoformation markers such as alkaline phosphatase and osteocalcin in our population, and elevation of bone resorption markers such as NTX-I. Patients with a lower degree of mobility have a lower BMD.

Keywords

Osteoporosis;Paediatrics;Reduced mobility

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-1616

ARE CALCANEAL QUANTITATIVE ULTRASOUND VARIABLES BETTER THAN RADIAL BONE MINERAL DENSITY IN IDENTIFYING WOMEN WITH OSTEOPOROSIS?

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Introduction/Background

In certain circumstances when axial bone mineral density (BMD) cannot be measured using dual-energy X-ray absorptiometry (DXA), DXA BMD of the one-third radius (33% radius) can be used for the diagnosis of osteoporosis. Calcaneal quantitative ultrasound (cQUS) variables may also be used for assessing osteoporosis. The aim of this study was to test the hypothesis that cQUS variables may be better than one-third radius (33% radius) BMD for the identification of axial osteoporosis in women.

Material and Method

209 women aged between 21 and 85 years whose posteroanterior spine, hip, and 33%radius DXA BMD measurements as well as cQUS variables were measured were included in this study. WHO criteria were employed for defining osteoporosis in postmenopausal women and premenopausal women with Z-scores of ≤ -2.0 were considered as having osteoporosis in axial regions. We used receiver operating characteristic (ROC) analysis to evaluate lumbar spine or hip osteoporosis discriminative performance of radius DXA BMD and cQUS parameters.

Results

While 33% radius BMD and its T-score revealed greater areas under ROC curves (AUCs) (0.760 and 0.759) than those of the cQUS variables [0.707 for quantitative ultrasound index (QUI), 0.705 for QUI T-score, 0.682 for broadband ultrasound attenuation (BUA), 0.718 for speed of sound (SOS), and 0.706 for estimated heel BMD (eBMD)] for identifying lumbar spine osteoporosis, the AUC values for all cQUS variables (0.816 for QUI, 0.815 for QUI T-score, 0.829 for BUA, 0.791 for SOS, and 0.813 for eBMD) in the discrimination of femoral neck osteoporosis were greater than those of 33% radius DXA BMD and its T-score (0.779 and 0.783).

Conclusion

The results of this study confirmed our hypothesis for femoral neck osteoporosis, but not for lumbar spine osteoporosis. Our results have implications that cQUS can be used for the prediction of femoral neck osteoporosis in women whose hip DXA BMD cannot be measured.

Keywords

Osteoporosis;Calcaneal quantitative ultrasound ;Bone mineral density

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-1723

MULTIDIMENSIONAL EVALUATION IN SIBLINGS AFFECTED BY LATE ONSET POMPE DISEASE

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Introduction/Background

Late Onset Pompe Disease (LOPD) is an autosomal recessive neuromuscular disorder. Among the other symptoms patients are characterized by a reduction of bone mineral density (BMD) and muscle strength. Moreover there seems to be a cognitive involvement which hasn't been well described yet. Therefore, the aim of this study was to assess bone, muscle, and cognitive impairments in all the members of a family affected by LOPD.

Material and Method

We included siblings with same genotype (p.R40X/p.N882fs) affected by LOPD. These patients underwent an experimental evaluation protocol in order to evaluate: BMD, using the Dual-energy X-ray Absorptiometry (DXA); muscle strength, by Hand Grip Strength Test (HGS); level of independence, using the Functional Independence Measure (FIM); cognitive functions, using Trial Making Test A (TMT-A) and B (TMT-B) and the Stroop Color Test.

Results

Of 10 siblings with a diagnosis of LOPD, 7 (3 males and 4 females, mean aged 53.71 ± 6.05 years) had the same genotype (p.R40X/p.N882fs). Of these 7 patients, 4 (57.14%) had low BMD values (2 osteoporotic and 2 osteopenic) and hypovitaminosis D (<30 ng/ml); two reported previous vertebral fragility fractures. The mean HGS was: 21.17 ± 0.76 kg in males and 14.50 ± 4.58 kg females. The mean FIM was 119.33 ± 2.31 in males and 121.00 ± 2.45 for females. Furthermore, in the neuropsychological evaluation, we found a mild attentional and executive deficit with a global cognitive framework within the normal ranges.

Conclusion

In this study we found low BMD values in more than half of the examined cases, a reduction of muscle strength and a mild attentional and executive deficit. These results testify the necessity of a multidimensional assessment to better investigate all the characteristics of these patients.

Keywords

Pompe disease;musculo-skeletal health;neuropsychological assessment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-1801

TRoublesome Heterotopic Ossification. Does the Etiology Have an Impact on Joint Location and Surgical Complications?

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Introduction/Background

Heterotopic ossification (HO) is a frequent complication after damage to the central nervous system (CNS), with an estimated prevalence of up to 76%. The primary site of HO is the hip joint (60,9%). The only effective treatment of troublesome HO is surgery. The main purpose of this study was to identify the relationship between the location of troublesome hip HO treated by surgery and the etiology of the cerebral damage. The secondary aim was to identify risk factor of sepsis and recurrences after the surgery.

Material and Method

We retrospectively analyzed data from an anonymous prospective survey of patients undergoing surgery for troublesome HO from 1993 to 2016 (417 patients, 609 surgeries).

Results

The sites of HO on the hip joint were associated with its etiology ($p < 0,01$): for brain damaged patients, the hip HO was most frequently anterior and internal with a rate of 40,0% whereas it was anterior for patients with spinal cord injury (SCI), with a rate of 54,4%. The main side effect after surgery of troublesome HO was sepsis, with a rate of revision surgery of 8,2%. SCI patients were more affected (18,3%) than traumatically brain injured patients (TBI) (4,4%) or stroke patients (8,7%). Sepsis seemed to occur most frequently on hip surgeries, but no statistically significant relationship was found. The rate of recurrence was 2,8% for the whole population. It occurred most frequently after TBI (3,6%) rather than after stroke (1,9%) or SCI (1,5%).

Conclusion

The sites of hip HO, their recurrences and sepsis were associated with its etiology. The patients with SCI will develop most frequently anterior hip HO, with a risk of sepsis that is more frequent than in the other etiologies.

Keywords

heterotopic ossification;traumatic brain injury;spinal cord injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-1941

ATYPICAL FEMORAL FRACTURE AND BISPHOSPHONATES: A RELATIONSHIP?

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Introduction/Background

Osteoporosis is a chronic disease that demands a long-term treatment. The risk of a fracture due to osteoporosis is higher in woman than in men. The treatment with bisphosphonates reduces significantly the risk of fracture. Despite that, some studies suggest that could exist a relationship between the use of bisphosphonates and a higher risk of non-osteoporotic fractures.

Material and Method

Description of a clinical case of a patient with an atypical fracture initially observed in the emergency room.

Results

A 84 year old man was admitted in the emergency room with a bump in the left haunch and unable to walk after the impact of the leg in the floor when getting up from bed. With previous medical history of an hypertension, depression and osteoporosis. This patient has been on treatment for about 18 years now with bisphosphonates. In the X ray and CT scan was possible to identify an atypical fracture of the left femur. After was submitted to surgery and started the rehabilitation program while in the hospital. Discharge after 15 days and indication to stop the intake of bisphosphonates.

Conclusion

The medical literature still has not demonstrated and unequivocal relationship between the higher risk of atypical fractures and the use of bisphosphonates. Despite that, health professionals should be sensitized for this theme and the need to offer alternative therapeutics.

Keywords

osteoporosis;bisphosphonates;fractures

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-2013

SECONDARY PREVENTION OF OSTEOPOROTIC FRACTURES IN REHABILITATION CONSULTATION. PERSISTENCE WITH OSTEOPOROSIS THERAPY

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Introduction/Background

Persistence with osteoporosis therapy is vital for fracture prevention.

We aimed to determine the persistence to osteoporosis pharmacotherapy after osteoporotic fracture.

Material and Method

A descriptive retrospective study was conducted of patients treated in a rehabilitation consultation from March 2014 to December 2017. The pharmacy dispensaries of the treatment prescribed in a Rehabilitation consultation were evaluated monthly, according to recommendations of SEIOM (Spanish Society of Bone Research) and patient preferences. Persistence was defined as continuation of treatment without a >30-day gap in prescription refills.

Results

- 52 patients (76,92% women). The mean age was 69 years (SD 9,12 years). Derivatives from Traumatology (52,2%), Primary Care and Rheumatology (13% respectively). The most frequent reason for consultation was fracture (52,2%). 39,1% of patients had secondary osteoporosis and 47,8% had previous fracture. 30,4% had previously received pharmacological treatment of osteoporosis.

- Pharmacological treatment were prescribed: oral bisphosphonates 39,1%, teriparatide 39,1%, denosumab 21,8%. As a complementary treatment: 43,5% were prescribed cholecalciferol and 30,4% cholecalciferol + calcium. In 30,4% of the patients it was necessary to change medication mainly due to side effects or difficulty in administering the drug.

- The average treatment time was 29,78 months (SD 14,44). 75,62% persisted with osteoporosis pharmacotherapy regimen and 65,62% with complementary treatment. Treatment with teriparatide presented the highest persistence rate (95,87%). Of 21 patients prescribed oral bisphosphonates: 72,37% persisted with treatment; and of 12 patients prescribed denosumab: 68,81% persisted with treatment.

Conclusion

Persistence among patients attending a our rehabilitation consultation was higher than that reported in the literature. This could be due to the fact that it includes patients with the intention of secondary prevention, sensitized with the complications of osteoporotic fractures and with outpatient follow-up.

Keywords

Persistence;Osteoporosis treatment;Secondary prevention

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-2017

BILATERAL AVASCULAR NECROSIS OF FEMORAL HEAD AFTER A SHORT PERIOD OF CORTICOSTEROID THERAPY- A CASE REPORT

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Introduction/Background

Avascular necrosis (AVN) is the cellular death of bone components due to interruption of the blood supply. Bone structures collapse, resulting in pain, loss of joint function and long-term joint damage. AVN of the femoral head is a rare complication related to short-term glucocorticoid treatment and traditionally has been associated with high doses and/or prolonged therapy. The pathogenesis of glucocorticoid-induced AVN is not fully understood but fat hypertrophy, fat emboli and intravascular coagulation may cause lack of blood supply to the bone. AVN causes significant disability in the most productive years of life and is one of the common causes of hip arthroplasty in young individuals.

Material and Method

-

Results

CASE REPORT

A 45-year-old male, bricklayer, with a history of moderate alcohol consumption was admitted to our hospital with dyspnea and productive cough. On admission he had fever, tachycardia and leukocytosis. He was transferred to the ICU with ARDS and sepsis associated to community-acquired pneumonia. The patient was ventilated for 10 days and received a 2 day-course of systemic corticosteroids in combination with antibiotic treatment. During hospitalization, he presented thrombocytopenia and leukopenia and was treated with methylprednisolone for three weeks. Eight months later, he started to complain of bilateral groin pain, that worsen during gait and internal rotation. The patient was independent in activities of daily living but unable to work. Initial hip X-ray was normal but MRI showed AVN of both femoral heads. He underwent left total hip arthroplasty and is currently on rehabilitation treatment in order to recover for contralateral hip arthroplasty.

Conclusion

This case highlights the importance of AVN suspicion and recognition of risk factors, such as alcohol abuse and glucocorticoid therapy. Our report and literature have demonstrated that AVN may develop over a short period of treatment with glucocorticoids and in less than 1 year after administration.

Keywords

avascular necrosis of femoral head;osteonecrosis;glucocorticoids

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-2305

DECREASED RISK OF OSTEOPOROSIS AMONG SUBURB-DWELLING ELDERLY CHINESE INDIVIDUALS LIVING ALONE: A 3-YEAR COHORT STUDY

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Introduction/Background

Osteoporosis leads to increased bone fragility and risk of fracture, inevitably augmenting morbidity and mortality in patients. Single-person households has been associated with various social and health problems. However, few studies have explored the risk of osteoporosis among people living alone. The objective of this study was to determine the risk of osteoporosis among individuals living alone over a 3-year period in an elderly Chinese suburban population.

Material and Method

This study was conducted on 217 Chinese suburb-dwelling participants aged ≥ 60 years, for whom detailed information regarding sociodemographics, behavioral characteristics, and medical conditions had been documented. Osteoporosis was identified by measuring the calcaneal using a quantitative ultrasound and a T score of less than -2.5.

Results

At baseline, 386 (64.1%) of the initial 603 participants had osteoporosis (male 62.3%, female 60.0%). The prevalence of osteoporosis was 54.4% after 3 year (male 51.3%, female 57.1%). After multivariate adjustments, it was found that single-person households is associated with less incidence of osteoporosis (adjusted OR 0.05, 95% CI 0.016-0.178, $p < 0.001$), male (adjusted OR 0.04, 95% CI 0.006-0.257, $p = 0.001$), female (adjusted OR 0.05, 95% CI 0.008-0.282, $p = 0.001$).

Conclusion

We found osteoporosis incidence decreased among suburb-dwelling elderly Chinese individuals living alone.

Keywords

Osteoporosis; Living alone; Suburb-Dwelling

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-2333

AN UNUSUAL CASE OF PYCNODYSTOSIS WITH CHIARI I MALFORMATION CAUSING SYMPTOMATIC HYDROMYELIA AND HYDROBULBIA.

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Introduction/Background

Pycnodysostosis is a rare lysosomal disease of the bone caused by a cathepsin K gene mutation leading to osteopetrosis, craniofacial malformations and low impact fractures (Gelb, 1996).

Chiari I malformation is characterized by a descent of the cerebellar tonsils of five millimetres or more below the foramen magnum (Strahle, 2011) and can be associated with hydromyelia or hydrobulbia. Pycnodysostosis has not clearly been identified as a predisposing factor, though three cases have been (Arman, 2014; Pangrazio 2014; Quezado, 2011). None described hydrobulbia or associated sleep disordered breathing (SDB).

Both the cranial malformations and hydrobulbia predispose to SDB; 49% of children with Chiari I have SDB, most of which are the obstructive type (Amin, 2015).

Material and Method

A 16 year old male with pycnodysostosis, who presented many of the classical physical attributes, multiple fragility fractures with delayed healing and SDB, was examined in outpatient clinic for increasingly painful paresthesias in his neck and left arm.

Results

On examination left brachioradialis and bicipital reflexes were absent. Sensation to pin prick and light touch was subjectively decreased over his entire left arm. Electrodiagnostics were normal, suggestive that an upper motor neuron cause for his symptoms.

A neuraxial MRI showed a Chiari I malformation with hydrobulbia and hydromyelia extending from the medulla oblongata to T6. There was a posterior tilt of the odontoid and narrowing the craniocervical junction. He is awaiting decompression surgery.

Conclusion

This is the fourth case of pycnodysostosis associated with Chiari I malformation described in the literature. An association between pycnodysostosis and Chiari I malformations may exist, or

given the high prevalence of Chiari I malformations, they may be unrelated. Further cases are necessary to establish a relationship. If this association proves to be strong, patients with pycnodysostosis presenting SDB would benefit from a MRI study in their work-up.

Keywords

pycnodysostosis;Chiari I malformation;sleep disordered breathing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-2431

THE EFFECTIVENESS OF ACUPUNCTURE FOR OSTEOPOROSIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

To summarise the existing evidence and evaluate the efficacy of acupuncture as a clinical treatment for osteoporosis.

Material and Method

Six English and four Chinese databases were searched from their inception to April 2017. Randomized controlled trials were included, in which warm acupuncture, needling or electroacupuncture were compared with sole Western medicine with osteoporosis. All the data were assessed and extracted by two authors independently. The bias risk assessment recommended by the Cochrane collaboration's tool was used to assess the quality of the selected studies. This meta-analysis was conducted by using Revman 5.3. Pooled analyses were calculated by standardized mean difference (SMD) and 95% confidence interval (CI). Heterogeneity was assessed by I² test.

Results

35 studies involving 3014 patients were located. Meta-analysis showed that warm acupuncture could increase the bone mineral density of lumbar (SMD: 0.93 95% CI=0.65, 1.21 P<0.00001) and femur (MD: 0.11 95% CI=0.05, 0.16 P=0.0002), the level of serum calcium (MD: 0.18 95% CI=0.13, 0.24 P<0.00001) and estradiol (SMD: 0.65 95% CI=0.32, 0.98 P=0.0001), relieve pain (MD: -1.64 95% CI=2.69, -0.59 P=0.002), decrease the level of serum alkaline phosphatase (MD: -7.8 95% CI=14.17, -0.84 P=0.03) compared with sole Western medicine. Electroacupuncture could relieve pain (MD: -1.32 95% CI=2.15, -0.48 P=0.002), increase the level of serum calcium (MD: -0.12 95% CI=-0.16, -0.09 P<0.00001) and decrease the level of serum alkaline phosphatase (MD: -3.63 95% CI=6.60, -0.66 P=0.02) compared with sole Western medicine. Needling could relieve pain (MD: -2.27 95% CI=3.11, -1.43 P<0.00001) compared with sole Western medicine.

Conclusion

This present systematic review indicated that acupuncture could be an effective therapy for treating osteoporosis. Warm acupuncture seemed to be more effective than electroacupuncture and needling for osteoporosis in comparison to sole western medicine.

Keywords

Osteoporosis;Acupuncture;Systematic Review and meta-analysis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.03 Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

ISPR8-2503

FOUR YEARS OSTEOPOROTIC HIP FRACTURE INCIDENCE, AT THE EMERGENCY UNIT OF A TERTIARY CARE HOSPITAL IN SOUTHERN SPAIN

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Introduction/Background

When making an indication of preventive or therapeutic intervention in osteoporotic disease (OP), it is important to know the real risk of fracture of a region, to determine the threshold from which an indication would be cost-beneficial.

Our aim was to assess the **incidence** of hospitalized acute patients with osteoporotic hip fracture (OHF) in our hospital area.

Material and Method

This is a **retrospective and descriptive study**. **Incident cases of OHF in patients older than 50 years** were collected from our Emergency Service, consecutively, between 1 January 2014 and 31 December 2017. We calculated Gross Incident Rates (GIR) considering the medium reference population of 461.078 people / year, as the Andalusian Health Service reports provide. We also used the patient's own clinical history and discharge reports from our centralized computer system "DIRAYA". The fracture should be due to an OP cause (that produced spontaneously or due to minor trauma, discarding cases where there was another medical cause that justified it).

Results

A total of 2857 OHF were recorded. Patients mean age was 82 years and Women OHF represented almost 72%. Descriptive statistics and GIR are shown in **[table1]**. The absolute number of OHF increased significantly from 2014 to 2017 ($p < 0,000$), apart from 2015. In the univariate analysis, age was significantly related ($p < 0.000$), to GIR, whose peak was recorded in the group of ≥ 79 years. People older than 75 were almost 83% of the total attended by OHF. The increase in the mean age was not significant for the period analyzed ($p = 0.09$). Distribution by sex, was not affected by the OHF increase ($p = 0.339$), maintaining a proportion of nearly 3 to 1.

[table1]

*medium reference population of 461.078 people / year

Parameter	2014	2015	2016	2017
Osteoporotic Hip Fracture (No. cases)	623	575	818	841
Age in years (<i>M±SD</i>)	81,8±8,9	81,9±9,6	81,9±9,5	82,8±8,9
Sex distribution- No. OHF (male/female)	170 / 453	165 / 410	210 /608	228/613
*GIR (n° of OHF per 100000 inhabitants year)	142,05	124,7	177,41	182,39

Conclusion

The incidence of OHF is very high and set to increase dramatically . Effective models of care are required .

Keywords

fracture;Osteoporotic;Aging

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2536

A COMPOUND STRATEGY OF ULTRASOUND-GUIDED INTERVENTION FOR SHOULDER IMPINGEMENT SYNDROME: A CASE SERIES

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Introduction/Background

Shoulder impingement syndrome (SIS) is one of the most common causes of pain and loss of function in shoulder. Multi-pathology spectrum ranging from subacromial bursitis to rotator cuff tendinopathy would lead to SIS.[1, 2] There has been a debate about the effectiveness of conservative treatments and subacromial corticosteroid injection (SCI) for shoulder pain.[3-5] Though the mechanism is unclear, a potential therapeutic effect of dextrose injection on neuropathic pain has been proposed.[6] This study assessed the clinical outcome of ultrasound-guided SCI followed by peri-deltoid and subcutaneous hydrodissection with dextrose 5% in water (D5W).

Material and Method

Subjects having SIS unresponsive to >2 months conservative treatment (excluding previous surgical or injection interventions) would be selected and receive SCI (methylprednisolone acetate 40 mg with lidocaine 1%, each volume 1 ml) followed by D5W injected into peri-deltoid and subcutaneous spaces (total volume 10ml). Outcomes were assessed with visual analog scale (VAS, 0-100mm) for pain with overhead activities, Shoulder Pain and Disability Index (SPADI) score, and active range of motion (AROM) of the shoulder at baseline, 15 minutes, 2 weeks, and 2 months post-treatment.

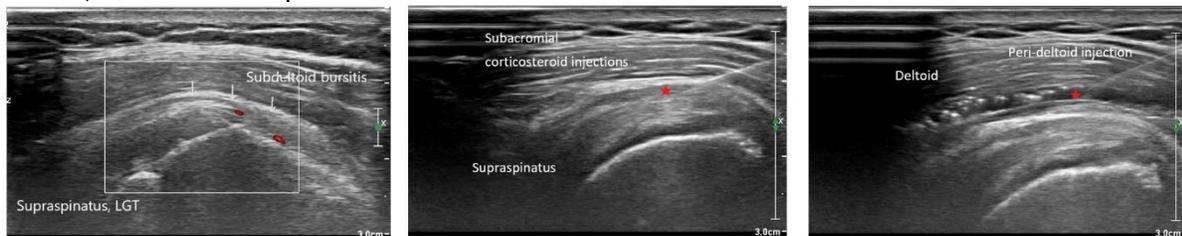


Figure 1.

Subacromial corticosteroid injection and peri-deltoid injection with with dextrose 5% in water.

LGT, longitudinal view; white arrows: subdeltoid bursitis; red stars: tip of needle.

Results

18 adults (8 males, 10 females, mean (SD) age 46 (17.3) were recruited and no complications from treatment were noted. Significant improvements in VAS score, SPADI scores (pain,

disability, and total scores), shoulder AROM of flexion, abduction, and internal rotation were observed at all follow-up time points when compared to baseline. However, there was no significant improvement in shoulder AROM of extension, and external rotation.

Table 1. Changes of outcome measurements after injection therapy				
Variable	Pre-treatment	Post-treatment		
	baseline	15 minutes	2 weeks	8 weeks
VAS for pain (mm)	64(16)	26(13)*	28(12)*	25(14)*
SPADI				
Pain	33.4(7.2)	12.5(5.8)*	13.1(5.4)*	12.9(6.6)*
Disability	42.4(6.4)	33.2(4.9)*	25.3(4.3)*	23.7(4.5)*
Total	73.7(11.9)	36.8(9.9)*	33.6(8.1)*	33.6(8.1)*
AROM (°)				
Flexion	155.7(15.7)	167.3(12.8)*	171.3(16.8)*	166.9(14.5)*
Extension	47.1(9.3)	50.3(7.9)	49.4(8.3)	50.2(6.9)
Abduction	84.3(10.4)	112.4(15.8)*	133.6(14.2)*	137.6(16.5)*
Internal rotation	42.1(15.2)	47.3(13.6)*	48.2(14.1)*	47.6(11.6)*
External rotation	84.8(17.5)	85.1(15.1)	86.3(12.1)	86.5(14.7)

VAS, visual analog scale; SPADI, shoulder pain and disability index; AROM, active range of motion
 Values are expressed as mean(± SD)
 *Statistically significant (P < 0.05)

Conclusion

A single session of compound injection combined corticosteroid and dextrose prolotherapy appears to be a safe and effective method for treating shoulder impingement. Basic science and clinical studies of long term effect and measuring more functional outcomes are warranted.

Keywords

subacromial impingement syndrome;ultrasound-guided intervention;compound injection therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0102

UPPER LIMB NEURODYNAMIC DYSFUNCTION IN CERVICAL PAIN PATIENTS WITH AND WITHOUT REFERRED CERVICAL SYMPTOMS: A COMPARATIVE STUDY

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Introduction/Background

Neck pain with neck related arm symptoms is more common than neck pain alone and has a significant association with disability. Neck related arm symptoms can be the result of mechanosensitive neural structures including the nerve roots or the peripheral nervous system. Neurodynamic tests identified as an effective tool to determine the extent to which the mechanosensitivity of a nerve has affected its sensitivity to movement.

The aim of this study is to establish neural mechanosensitivity of the brachial plexus in patients with neck pain without related arm symptoms in order to provide evidence based clinical rationale for the use of neurodynamic testing in these patients.

Material and Method

A quantitative comparative design was used with prospective cross sectional sampling. Participants that met the inclusion criteria were divided into 3 groups, namely the neck pain (NP) group, the neck and neck related arm pain group (NAP) and controls with no neck / arm symptoms (NNP). The ULNT 1 was used as a measure for neural mechanosensitivity, and an electro-goniometer was used to measure elbow ROM. The ULNT 1 was performed on both upper limbs of the participants, and 2 readings of elbow ROM taken for each upper limb.

Results

The total number of participants was 97. Demographics across all three groups were similar. Elbow ROM was significantly reduced in neck pain and neck and arm pain groups. Both the NP and NAP groups demonstrated statistically significant differences in mean ROM when compared to the NNP group

Conclusion

The major finding of this study was that the neck pain group demonstrated a statistically significant reduced elbow extension during the ULNT1 at onset and tolerance indicating a

positive ULNT1. The findings of this study indicate the possibility of asymptomatic mechanosensitivity in patients with neck pain without arm related symptoms

Keywords

neurodynamics;neck pain;neck related arm pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2647

EFFECTIVENESS OF LOW LEVEL LASER THERAPY ON ADULT PATIENTS WITH LATERAL EPICONDYLITIS – A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Background; Lateral Epicondylitis (LE) is the most common syndrome in the elbow joint, described as an inflammation of the common extensor muscles. Many studies reported that low-level laser therapy may decrease pain and inflammation, but limited data have evaluated the effect of LLLT on hand grip strength in patients with LE.

Objectives; This study aimed to investigate the effects of low-level laser therapy on pain severity and handgrip strength in patients with lateral epicondylitis.

Material and Method

Study design: Thirty adult patients with lateral epicondylitis aged 20-40 years. They were randomly classified into two groups, fifteen in each group; low-level laser therapy (LLLT) and traditional physiotherapy program (TPT) groups. The LLLT group received a program of low-level laser therapy with bracing application and traditional physiotherapy group received deep friction massage and ultrasonic therapy with bracing application. Pain severity using visual analogue scale (VAS) and hand grip strength were evaluated at the beginning of the intervention, at the fourth week, and at the end of the study after eight weeks of the intervention.

Results

Results: Baseline characteristics showed nonsignificant differences in VAS and hand grip strength between the two groups at the beginning of the study. The findings of this study showed significant decreases in pain severity in the two groups. The hand grip strength of the affected hand had improved significantly and increased only in the low-level laser therapy group at the end of the study with $p < 0.05$ after the 8-week intervention.

Conclusion

Conclusion: This study results showed that low-level laser therapy has beneficial effects on hand grip strength and pain severity more than traditional physiotherapy program in 8-week intervention.

Keywords

Lateral epicondylitis;Low-level laser therapy;Traditional physiotherapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0200

ABSTRACT NEED TO BE EDITED - EVALUATION OF FUNCTIONAL DISCOMFORT IN THE THORACIC OUTLET SYNDROME (TOS): A SELF-QUESTIONNAIRE

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Title : Evaluation of Functional Discomfort in the Thoracic outlet syndrome (TOS): A Self-Questionnaire.

Background and aims:

The compression of vascular and nerve structures for the upper limbs is the origin of TOS. If the clinical forms are variable (arterial, venous, neurological form), the functional discomfort in the activities of the daily life can be serious. Global scales (EN, DASH, CBSQ) can be used to evaluate the functional impact, but this evaluation is nonspecific. A specific scale was built and used during the rehabilitative treatment carried out in Lille. The purpose of this study is to evaluate its validity.

Methods : A self-questionnaire was constructed. 16 items were evaluated in 4 categories: impossible, major discomfort, moderate discomfort, without difficulty. An overall score is calculated. An evaluation is carried out parallel by a numerical scale. The self-questionnaire is completed on day 1, day 2 and the last day (LD). Between May 2015 and July 2017, 37 subjects were evaluated.

Results: There is excellent intra observer reproducibility (correlation coefficient = 0.92464). There is a significant improvement between D1 and LD (mean difference = -6.4594595, $p < 0.0001$). The correlation between the EN and the total score is good at D1 (correlation coefficient at 0.66796, $p < 0.0001$) and at LD (correlation coefficient at 0.67313, $p < 0.0001$) and mean at D2 (correlation coefficient at 0.53485; $p = 0.0008$). There is an improvement in all items studied between D1 and LD, although the difference is significant for only 9 items.

Table 1 : Main results. PWMD = Patients Without Missing Data

	Results	p
Intra observer reproducibility	= 0.92464 (PWMD = 0.93943)	
Correlation : EN and total score D1	0.66796 (PWMD = 0.73858)	< 0.0001 (<0.0001)
Correlation : EN and total score D2	0.53485 (PWMD =0.64701)	0.0008 (0.0003)
Correlation : EN and total score LD	0.67313 (PWMD =0.66882)	<0.0001 (0.0005)
Difference total score D1-LD	-6.4594595 (PWMD =-4)	<0.0001 (<0.0001)

Table 2 : item evolution

Item	Results		Results
Lift a shopping bag	-0.1714286 p=0.2131		Sweep -0.1944444 p=0.0923
Push a shopping cart	-0.2 p=0.1191		Iron -0.25 p=0.0386
Lift a load	-0.25 p=0.0636		Clean the windows -0.4722222 p<0.0001
Peel vegetables	-2.777778 p=0.0296		To comb your hair -0.4054054 p=0.0041
Cut a roast	-0.2 p=0.1460		To wash -0.1621622 p=0.1094
Carry a full pan	-0.5 p=0.0002		To work -0.2258065 p=0.0313
Reach a height rack	-0.4571429 p=0.0041		To drive -0.1081081 p=0.4545
Screw or unscrew	-0.5294118 p=0.0002		To have a good night -0.7567568 p<0.0001

conclusion:The questionnaire is a fast, simple way of assessing and focusing on activities of daily living. The excellent reproducibility intra observer, the good correlation with the EN and the evolution of most of the studied items attest that it is a suitable way to evaluate the functional discomfort in the TOS.

Keywords

Thoracic outlet syndrome;self-questionnaire;functional evaluation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0261

EFFECTS OF HYPERTONIC DEXTROSE INJECTION ON CHRONIC SUPRASPINATUS TENDINOPATHY: A PILOT STUDY OF RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Rotator cuff lesions are common causes of shoulder pain. Although patients with symptoms caused by chronic rotator cuff tendinopathy can be treated using conservative treatments, some of them may still experience refractory symptoms. Hypertonic dextrose prolotherapy (DPT) may be another treatment choice for these refractory symptoms. However, conventional prolotherapy injection is complicated with multiple injection sites. Thus, we considered it necessary to design a rigorous trial to specifically evaluate the effectiveness of DPT injection for the supraspinatus tendon, which is mostly involved in rotator cuff tendinopathy.

Material and Method

This double blind, randomized, controlled study will recruit patients with chronic shoulder pain diagnosed as chronic supraspinatus tendinopathy. We recruit 20 participants, with a total of 10 participants in each treatment arm. The hypertonic DPT group will receive 5 mL of 20% glucose water prolotherapy injection, and the control group will receive normal saline by using the same injection protocol as that used for the study group. Demographic data will be recorded at baseline. Visual analog scale, Shoulder Pain and Disability Index, range of motion, ultrasound will be recorded at baseline, after intervention (week 2, and week 6). Descriptive statistics will be calculated for feasibility outcomes, and measures of clinical effectiveness will be explored using repeated measures analysis of variance.

Results

Prolotherapy injection group presented improved of VAS, SPADI, and range of motion after 2 weeks of injection with comparing baseline. However, the effect was not maintained to 6 weeks after injection. There was no difference of histogram changes before and after prolotherapy injection. With comparing control group, improved VAS and SPADI was better among study group at 2 weeks after injection but no difference at 6 weeks after injection.

Conclusion

Our pilot study demonstrated that hypertonic dextrose prolotherapy injection can improve pain and function of chronic rotator cuff tendinosis patients in short term period.

Keywords

Chronic supraspinatus tendinosis;Prolotherapy;Ultrasound

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0280

MUSCULOSKELETAL PAIN SYMPTOMS IN BAGPIPERS: A PILOT STUDY

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Introduction/Background

Musicians have musculoskeletal pain and overuse syndromes related to their instrument. Great Highland bagpipers (GHB) also have pain related to use, but this has not been well documented because of their relatively rare instrument. Historically, bagpipers were used to direct troops on the battlefield. Bagpipers or their instruments were shot to prevent the ability to do this. Bagpipers are required to suspend part of the instrument on their shoulder, squeeze a bag under the same arm, and blow a wind instrument simultaneously. The literature shows only one previous study that documented the most common musculoskeletal complaint was of the left arm and low back, but did not study pain scales.

Material and Method

An institutional review board approved, prospective, anonymous survey was sent to adult bagpipers that play in a GHB band. This pilot study was conducted to determine if they experience musculoskeletal pain or not. A larger scale international survey is planned since this pilot data is positive. Demographic data, pain location, severity (verbal numerical scale - VNS), duration, and McGill pain questionnaire were collected. Descriptive statistics computer program was applied.

Results

Ten surveys were collected in this pilot study. Ninety percent of bagpipers reported pain related to playing the instrument (SE 0.1). The most severe pain was the ipsilateral (bagside) cheek (3.3/10), followed by ipsilateral shoulder, ipsilateral forearm, and contralateral cheek (2.4/10) on VNS. The average pain duration lasted 3.3 hours (+/- 2.3 SE) after playing the instrument. Pain was most commonly described as "aching" or "sore" on McGill questionnaire.

Conclusion

This pilot data supports bagpipers experience musculoskeletal pain related to playing their instrument. Future studies underway will conduct this survey internationally. This will be followed by detailed history, physical exam to determine exact sources of pain. It is hoped this research will help Physiatrists understand and treat musculoskeletal pain in bagpipers.

Keywords

musculoskeletal;pain;bagpipes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0314

EVALUATION OF SUPRASCAPULAR NERVE BLOCK AND INTRAARTICULAR STEROID INJECTION AS A TREATMENT MODALITY IN PATIENTS WITH PERIARTHROSIS SHOULDER

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Introduction/Background

Periarthritis shoulder (PA) characterized by gradual onset of pain with restriction of active and passive shoulder range of motion is one of the commonest musculoskeletal conditions of upper limb. Treatment options include rest, NSAID, active and passive mobilization, physical modalities, hydro-dilatation, manipulation under anaesthesia, arthroscopic capsular release, intraarticular injections and regional nerve blocks.

Material and Method

90 patients of periarthritis shoulder were enrolled in the study and randomly allocated into two groups. Group A received methyl prednisolone 80 mg intraarticular injection and Group B received suprascapular nerve block of 0.5% bupivacaine and methyl prednisolone. Each patient was assessed before intervention, at 1, 4 and 12 weeks after intervention. 0-10 Numeric Pain Intensity Scale, Active and passive range of motion, Quick Disability of Arm, Shoulder and Hand (DASH) score and Shoulder Pain and Disability Index (SPADI) were used for assessment.

Results

Group A showed statistically significant improvement ($p < 0.05$) in pain, ROM and functional index on follow up at 1, 4 and 12 weeks whereas, group B showed improvement ($p < 0.05$) in all parameters except passive flexion and external rotation on first follow up. However, this difference disappeared at subsequent follow ups. Comparison between the groups revealed a better outcome in Group A, in terms of Numerical Pain Intensity Scale Scores, SPADI Score, passive extension, active and passive internal and external rotations at 1, 4 and 12 weeks. Both the groups were comparable in terms of qDASH, active and passive abduction, flexion and active extension at first week with Group A showing subsequent improvement.

Conclusion

Both intrarticular steroid injection and suprascapular nerve block showed improvement in patients with periarthritis shoulder, but intrarticular steroid injection was found to be more efficacious as compared to suprascapular nerve block.

Keywords

Periarthritis Shoulder;Suprascapular Nerve Block

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0361

HOME EXERCISES FOR ADHESIVE CAPSULITIS OF THE SHOULDER: A SYSTEMATIC REVIEW

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Introduction/Background

Home Exercises (HE) were used in adjunction to supervised physiotherapy to address musculoskeletal disorders such as low back pain, knee osteoarthritis and shoulder disorders. No systematic reviews or specific recommendations regarding HE in Adhesive Capsulitis (AC) are available. The aim of our study was to review systematically studies that evaluated the contribution of HE in AC patients.

Material and Method

An electronic search of PubMed, Cochrane Registry of Randomized Controlled Trials, MEDLINE, CINAHL, PEDro and SPORTDiscus using the terms “shoulder” or “Frozen shoulder” or “Adhesive capsulitis” paired with “Home exercises,” “Home Program” and “Self Exercises” was performed. We included studies evaluating HE alone or as a component of a rehabilitation program. HE were defined as exercises performed by the patient himself after being taught by a health care professional and can be done at home or in the local of intervention. Independent reviewers used a standardised form to extract data regarding study characteristics, participant characteristics, interventions, settings and outcome data/results. The risk of bias of the collected studies was assessed using The PEDro scale.

Results

Ten articles were retained: 4 high quality (PEDro score 6-10), 3 fair quality (PEDro score 4-5) and one poor quality (PEDro score ≤ 3). Described HE commonly comprised active-assisted range of motion without standardized rhythm. The type, the frequency and the duration of exercises were heterogeneous and poorly defined in some studies and patient compliance was not precised. HE were at least as effective as supervised physical therapy. It seemed that corticosteroid injection added effectiveness to HE but not to Manipulation.

Conclusion

HE should be considered in the rehabilitation program of AC patients. Randomized studies with sufficient samples and compliance assessment are needed to assess the true value of HE in AC patients.

Keywords

Adesive capsulitis;Shoulder;Home exercises

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0396

SHOULDER ADHESIVE CAPSULITIS: THE CONTRIBUTION OF ULTRASOUND GUIDED CAPSULAR DISTENSION

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Introduction/Background

Adhesive capsulitis (AC) is a clinical entity characterized by a loss of motion and a decrease of the joint volume capacity. Capsular distension (CD) has been shown to improve pain and function in patients with AC. There is no consensus concerning how CD should be performed or what volume should be injected. But, it has been suggested that ultrasound-guided CD are more accurate and effective than blind ones.

The present study aimed to evaluate the effectiveness of ultrasound guided capsular distension followed by physiotherapy in the treatment of frozen shoulder/adhesive capsulitis

Material and Method

48 patients were diagnosed with stage II to III frozen shoulder. Outcome measures included Shortened Disabilities of the Arm, Shoulder and Hand (QuickDASH), pain score using visual analog scale (VAS) and range of motion. Data were collected at baseline, as well as at 6 weeks, 12 weeks and 6 months.

Results

All patients significantly improved in shoulder symptoms on the QuickDASH scores. VAS and range of shoulder motion showed significant improvement at all time points.

Conclusion

The results of this study demonstrate that ultrasound guided capsular distension with physiotherapy is clinically effective for patients with frozen shoulder II to III.

Keywords

Frozen shoulder;ultrasound;capsular distension

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0531

ULTRASOUND-GUIDED PERCUTANEOUS CARPAL TUNNEL RELEASE WITH HOOK BLADE

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Introduction/Background

Carpal tunnel syndrome is the most common cause of upper limb entrapment neuropathy. Transverse carpal ligament release is a definitive treatment for advanced stage of disease. The evidence to support ultrasonographic guidance of this procedure with hook blade is scarce. This study aim to evaluate the results of ultrasound-guided percutaneous carpal tunnel release (USG-PCTR) with hook blade on median nerve anatomical and physiological improvement, symptom relief, functional recovery, complications and satisfaction.

Material and Method

Single center of rehabilitation medicine division, prospective cohort study of consecutive patients who were diagnosed moderate to severe degree carpal tunnel syndrome which electrodiagnostic confirmation for at least 6 months, and were unresponsive to conservative treatment. Patients with rheumatoid arthritis, previous carpal tunnel release, pregnancy, bleeding risks and space occupying lesion were excluded. The procedure was an USG-PCTR with hook blade. Outcome measures at 3 and 6 months post-surgery included; BCTQ, median nerve CSA at distal wrist crease, proximal and distal carpal tunnel, median nerve conduction studies (DSL, DML and CAMP amplitude) and complications

Results

Nineteen wrists from 16 patients who received US-guided percutaneous carpal tunnel release with hook blade were included in the analysis. All outcome measurements were significant improved at 3 and 6 months follow-up. Mean subject satisfaction scores was 9.68. Only 5 patient (26.31%) had a transient paresthesia and no severe complication were observed.

Conclusion

USG-PCTR with hook blade was an effective treatment for moderate to severe degree idiopathic CTS, in terms of median nerve anatomy and physiology, patient's symptom and function with high level of satisfaction and no major complications.

Keywords

Ultrasound-guided;carpal tunnel release;percutaneous

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0532

ULTRASOUND-GUIDED, PERCUTANEOUS, NEEDLE TECHNIQUE, A1-PULLEY RELEASE FOR TRIGGER FINGER

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Introduction/Background

Trigger finger is a common cause of hand pain and disability and an A1-pulley dividing, percutaneous release is a definitive treatment for advanced stage disease. High-resolution, musculoskeletal ultrasonography provides clear visualization of the A1-pulley and flexor tendon, however, the evidence to support ultrasonographic guidance of this procedure is scarce. This study aim to evaluate the results of ultrasound (US)-guided, percutaneous, needle technique, annular, A1-pulley release for trigger finger (TF); specifically identifying whether this minimally-invasive procedure had low complication rates and enables early functional recovery.

Material and Method

Single center, prospective cohort study of consecutive patients who were > 20 years of age, had grade II TF or higher for at least 4 months, and were unresponsive to conservative treatment. Patients with chronic connective tissue disease, rheumatoid arthritis, previous TF surgery, pregnancy, or bleeding risks were excluded. The procedure was an US-guided percutaneous A1 pulley release using needle technique. Outcome measures at 1 week post-surgery included; recovery time, pain level and duration, use of analgesic medications, time to normal activity of affected TF, and subject satisfaction for cosmesis and overall results. Surgical complications were monitored for 6 months.

Results

Thirty-nine fingers from 33 patients who received US-guided, percutaneous, A1-pulley release using needle technique were included in the analysis. Mean operative time was 6.17 (SD=1.70) minutes. Median post-operative pain duration, use of analgesic medications, and recovery time to normal activity were 1.0 (IQR=0-2), 0.5 day (IQR=0.5-1), and 2 days (IQR=1-2), respectively. Mean subject satisfaction scores for wound appearance and overall treatment were 9.87 and 9.61, respectively. Only one patient had an incomplete release and no severe complication were observed.

Conclusion

US-guided, percutaneous, A1-pulley release with needle technique was an effective treatment for TF, with high levels of overall satisfaction and no significant complications.

Keywords

Ultrasound-guided;A1 pulley release;percutaneous

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0581

NOTALGIA PARESTHETICA:CASE REPORT

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Introduction/Background

Notalgia Paresthetica(NP) is a sensorial neuropathy of midback skin which is characterised by burning pain,itching and/or numbness in the scapular region.Hyperpigmented patch may be seen with NP.

Material and Method

Figure 1:Patient with Notalgia Paresthetica in thoracoscapular region.

Results

A-36-year -old woman with right sided severe mid-back pain for 1 month was referred to our clinic.A hyperpigmented pruritic skin lesion in thoracoscapular region was detected which was diagnosed as NP.

Conclusion

We report this case as an unusual cause of mid back pain.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0593

SONOGRAPHIC EVALUATION OF LASER THERAPY EFFICACY IN TREATMENT OF DUPUYTREN'S CONTRACURE : A CASE REPORT DIAA SHEHAB1 , ,RENU AMBARDAR2 ,MUHAMMAD DUGHBAJ3

A. Renu

Introduction/Background

A 65 year old woman is seen in PMR clinic for management of Dupuytren's contracture of the right hand as it affects her hand function. She has type 2 diabetes mellitus, hypertension and ischemic heart disease with no history of trauma, fracture or infection.

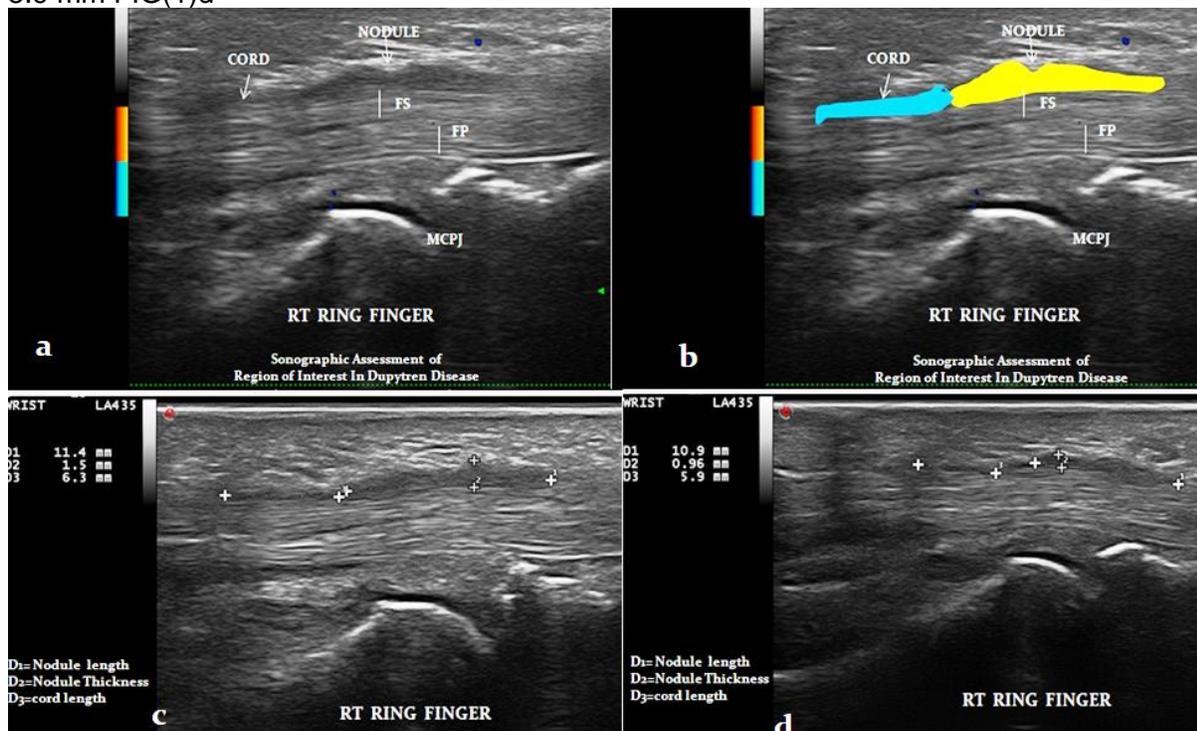
Clinical examination of the right hand showed thickening of the palmar fascia of the fourth finger, with palpable tender nodule at MCPJ with incomplete hand fist and incomplete ring finger extension. Pain score using visual analogue scale (VAS), Michigan Hand Outcome Questionnaire (MHQ) was recorded. **Material and Method**

After a diagnostic ultrasound patient received a total of 6 sittings of LLT for the right hand, two sittings per week. **Ultrasound examination** of region of interest at 1 cm proximal and 1 cm distal to the MCPJ of right ring finger showed a hypoechoic nodule measuring 11.4 mm in length and 1.5 mm in thickness and a hypoechoic cord measuring 6.3 mm in length. FIG(1)c

Results

She started to show improvement in VAS score from 8/10 to 4/10 and MHQ score. Ultrasound evaluation after finishing Low laser treatment at week 6 showed sonographic improvement in nodule and cord measurements, nodule length 10.9 mm and thickness 0.96 mm and cord length

5.9 mm FIG(1)d



Conclusion

To our knowledge it is the first study that combined the effect of LLT in improving pain, hand function combining clinical and US images evidence. Ultrasonography is safe and easy and can be of value in diagnosis and monitoring outcome of rehabilitation interventions for the treatment of Dupuytren disease

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0601

ULTRASONOGRAPHIC MEASUREMENTS OF AXILLARY RECESS CAPSULE THICKNESS IN UNILATERAL FROZEN SHOULDER: STUDY OF CORRELATION WITH MR IMAGING MEASUREMENTS

*D.H. Kim*¹

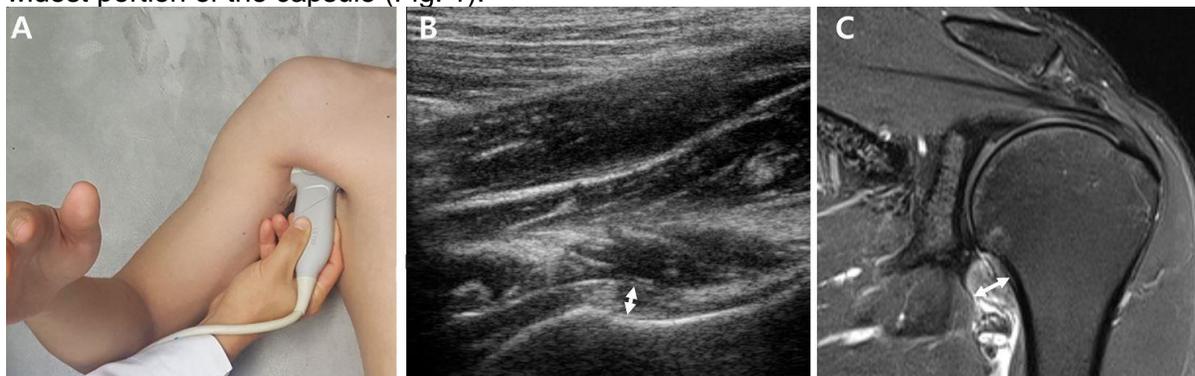
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Introduction/Background

The aims of this study were to compare the ultrasonographic (US) thickness of the affected axillary recess capsule (ARC) with that of the unaffected ARC in patients with frozen shoulder (FS), to analyze whether the US measurements of the ARC thickness are correlated with those using MR imaging (MRI), and to assess whether the US thickness of the ARC is correlated with the patterns of range of motion limitation.

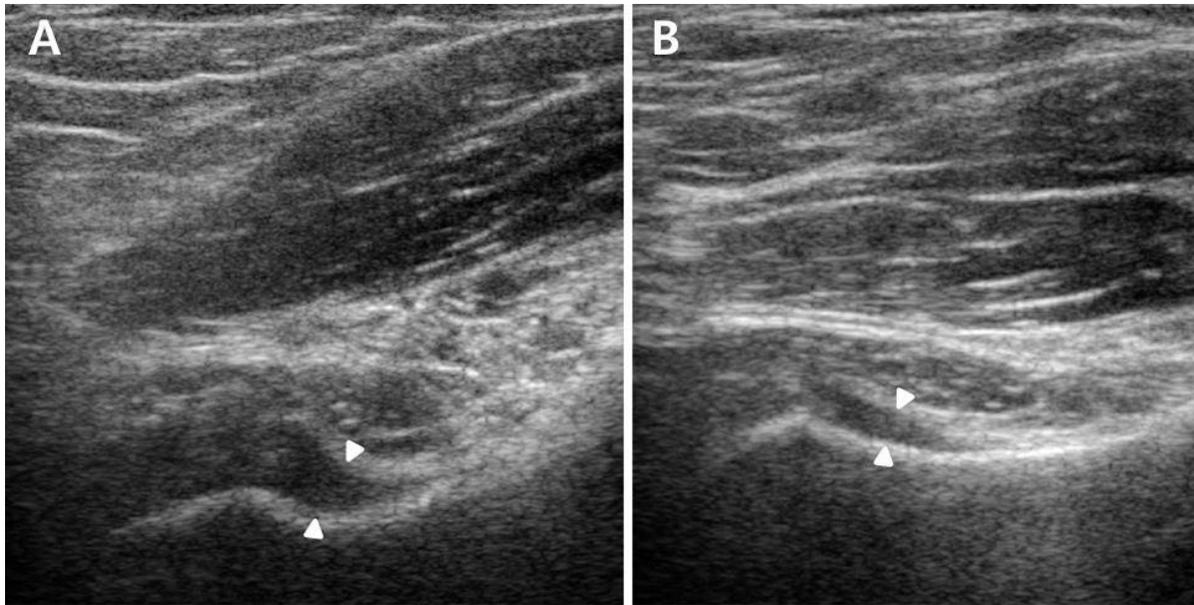
Material and Method

Forty-four patients with clinically diagnosed unilateral frozen shoulder and MRI evaluation performed US measurement of ARC. The US measurement of the ARC thickness was performed with the patients in a supine position with their shoulder abducted by 40 degrees. The ARC thickness was also measured by MRI on oblique coronal images by another physician blind to US measurements. With both US and MRI, ARC thickness was determined at the widest portion of the capsule (Fig. 1).



Results

The US thickness of ARC was significantly higher in the affected shoulder (4.4 ± 1.1 mm) than in the unaffected one (2.2 ± 0.5 mm) ($p < .001$) (Fig. 2).



The US thickness of the ARC in the affected shoulder was correlated with that measured by MRI (8.9 ± 1.9 mm) ($p < .001$, $r = .83$). The ARC thickness, whether measured by US or MRI, was not significantly related with the limitation of movement in specific directions.

Conclusion

US can demonstrate the difference in ARC thickness between the affected and unaffected shoulders in patients with unilateral FS. The ARC thickness measured by US is correlated with that measured by MRI.

Keywords

Frozen shoulder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0651

RELIABILITY AND VALIDITY OF THE MODIFIED RANGE-OF-MOTION ASSESSMENT FOR FROZEN SHOULDER WITH A SMARTPHONE

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Introduction/Background

Frozen shoulder (FS) is a common disease which may cause restricted shoulder range of motion (ROM). Recently, studies have indicated that the smartphone goniometer apps could be reliable tools for shoulder ROM assessment. Nevertheless, patients with FS couldn't use most of these apps in normal measurement position due to shoulder capsular pattern. Hence, if we can design a new method in modified position to measure ROM with smartphones, it will be a helpful assessment for them. The purpose of this study was to investigate the reliability and validity of the smartphone goniometer app to measure shoulder ROM in modified position for healthy subjects.

Material and Method

Ten healthy subjects (5 male, 5 female; age=26.6±3.6 y/o) were recruited. Two physical therapists utilized the universal goniometer (UG) and ASUS Zenfone 4 smartphone with an accelerometer-based goniometer app to conduct various active shoulder ROM (flexion, abduction, external rotation (ER) and internal rotation (IR) at 0° abduction). The smartphone was stabilized at the hand with an armband to reduce measurement errors. All measurements were taken for 3 times (2 measurements on the first day and 1 on the next day). Intraclass correlation coefficients (ICC) and Pearson's correlation coefficients (PCC) were used for statistical analysis. Significance level was set as $\alpha < 0.05$.

Results

Both the UG and smartphone demonstrated high within-day and between-day reliability (ICC > 0.800, $p < 0.001$) except the flexion for which the ICC values was 0.622 ($p = 0.023$, first day) and 0.787 ($p = 0.002$, second day). The validity between the UG and the smartphone showed significant correlation (PCC > 0.800, $p < 0.001$) among all shoulder motions.

Conclusion

The smartphone goniometer app has good reliability and validity for shoulder ROM assessment in modified position which indicates that the method is feasible to evaluate the restricted ROM for patients with FS.

Keywords

smartphone;frozen shoulder;assessment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0769

THE MIOFASCIAL COMPONENT OF THE PAIN IN THE PAINFUL SHOULDER OF THE HEMIPLEGIC PATIENT

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Introduction/Background

Hemiplegic painful shoulder syndrome occurs very frequently and jeopardizes functionality and quality of life. Its treatment depends on a multidisciplinary approach; therefore it is desirable to identify measures that increase treatment effectiveness. Myofascial pain syndrome is defined by the identification of trigger points that reproduce the pain complaint and can be found in spastic patients.

Material and Method

Spastic hemiplegic patients following stroke in a rehabilitation program at Ribeirão Preto Medical School of the University of São Paulo were evaluated for the intensity and characteristics of the pain, shoulder goniometry and the presence of TPs. Patients underwent TP blockade by intramuscular infiltration of 1% lidocaine. Patients who were in a multiprofessional rehabilitation program were instructed to keep the treatment and the others received guidelines to initiate it. The evaluations were performed at 0, 1, and 3 weeks and after 4 months.

Results

21 patients (13 men, age = 67.8 ± 10.2 years, right hemiparesis: 11) participated in the study, and there was pain reduction at baseline until the week one (VAS $7.6 \pm 2.7 \times 5.8 \pm 3.6$, $p < 0.05$) and until week three (VAS $7.6 \pm 2.7 \times 5.2 \pm 3.5$, $p < 0.05$), but not at the end of four months (VAS $7.6 \pm 2.7 \times 6.6 \pm 2.9$, $p = 0.11$); in passive goniometry there was gain for abduction at the end of the first and third weeks, but not in 4 months and not on active abduction. No other significant change was found.

Conclusion

It was possible to confirm that these blocks attenuated the HPSS, since there was improvement of the average values over 3 weeks after the procedure, but less effective at the end of 4 months. However, when analyzing individual cases, some patients progressed to complete abolition of pain or very low values in VAS throughout the observation period.

Keywords

Hemiplegic painful shoulder syndrome ;TP blockade with lidocaine;Miofascial pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0780

RELATIONSHIP BETWEEN FORWARD HEAD POSTURE AND SCAPULAR DYSKINESIS IN PATIENTS WITH CHRONIC NECK PAIN

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Introduction/Background

Forward head posture (FHP) can negatively affect the quality of life, especially as it causes chronic neck pain. Scapular dyskinesia is a musculoskeletal system disorder that has evolved over the last years and appears after shoulder pathologies and scapulohumeral rhythm disturbances. Because of the affected muscle groups are similar in both diseases, we aimed to investigate the relationship between these two musculoskeletal disorders in our study.

Material and Method

180 patients with chronic neck pain were included in the study. These patients were divided into two groups according to the measured craniovertebral angle (CVA). Patients with CVA<44 included in the FHP group and patients with CVA>44 included in non-FHP group. Demographic characteristics of these patients were questioned. Craniovertebral angles, head's tilt angle, and forward shoulder angle were measured. Scapular dyskinesia test and lateral scapular slide test (LSST) were performed to investigate the presence of scapular dyskinesia. Cervical range of motion, acromion distance, pectoralis minor length, and scapular isometric squeeze test results were measured and recorded.

Results

According to the scapular dyskinesia test, 25 patients were diagnosed with scapular dyskinesia. There was a statistically significant relationship between the existence of FHP and scapular dyskinesia. Scapular dyskinesia was diagnosed in 45 of the patients using LSST. There was no significant relationship between FHP and LSST. There was a significant relationship between LSST and scapular dyskinesia test. No significant relationship was found between head's tilt angle and CVA.

Conclusion

We found a significant relationship between presence of FHP and scapular dyskinesia. We think that scapular movements should also be taken into account when evaluating FHP. In treatment of FHP patients, scapular movement disorders should be evaluated. We believe that neck pain, disability and drug use can be decreased by including scapular stabilization exercises in the routine exercise program in the forward head posture treatment.

Keywords

Chronic neck pain;Forward head posture;Scapular dyskinesis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0804

SHEAR WAVE SONOLASTOGRAPHY OF SUPRASPINATUS MUSCLE IN PATIENTS WITH ROTATOR CUFF TEAR

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Introduction/Background

To investigate the elastic properties of the supraspinatus (SSP) muscle in patients with rotator cuff tear (RCT) by using shear wave sonoelastography (SWS) and comparing the stiffness of SSP muscle according to severity of RCT

Material and Method

Seventy six patients (43 males, 33 females; mean age 64.4±9.2 year) with one hundred and fifty two shoulders (85 symptomatic, 67 asymptomatic) were recruited. Severity of RCT, fatty infiltration and echogenicity of SSP muscle, and SSP muscle atrophy were assessed on B-mode ultrasound (US). Shear wave velocity (SWV) was measured twice in proximal and distal upper trapezius and SSP muscles at suprascapular fossa on longitudinal SWS using acoustic radiation force impulse imaging.

Results

In the 85 symptomatic/67 asymptomatic shoulders, US revealed 1/37 shoulders with normal supraspinatus tendon (group 1), 16/16 shoulders with tendinopathy (group 2), 41/2 shoulders with partial-thickness tear (group 3), and 27/12 shoulders with full thickness tear (4/4 small and 8/2 medium (group 4), 4/3 large and 11/3 massive (group 5)). The SWV of SSP muscle in groups 1, 2, 3, 4, and 5 were 2.88 ± 0.25 m/s, 2.79 ± 0.27 m/s, 2.64 ± 0.21 m/s, 2.34 ± 0.14 m/s, and 2.12 ± 0.17 m/s, respectively. SWV in SSP muscle was negatively correlated with the severity of RCT ($r = -0.809$), fatty infiltration grade of SSP muscle ($r = -0.677$), echogenicity grade of SSP muscle ($r = -0.637$), Warner grade ($r = -0.671$), and Goutallier stage ($r = -0.672$, $p < .05$).

Conclusion

The SWS demonstrated a difference of elastic properties of SSP muscle according to the severity of RCT and was correlated with fatty infiltration, echogenicity, and atrophy of SSP muscle, and the severity of RCT. Therefore, SWS can be used as an imaging method to provide insight into the biomechanics and pathophysiology of supraspinatus muscles in patients with RCT.

Keywords

Rotator cuff tear;Supraspinatus muscle;Sonoelastography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0816

THE EFFECTIVENESS OF KINESIO TAPING ON PAIN, RANGE OF MOTION AND DISABILITY IN PATIENTS WITH CHRONIC NECK PAIN: A RANDOMIZED CONTROLLED STUDY

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Introduction/Background

Chronic neck pain is a major public health problem in most communities. The aim of this study was to investigate the effectiveness of kinesio taping on pain, cervical range of motion and disability in patients with chronic neck pain.

Material and Method

Forty four subjects (age range: 30-55; mean age: 40.7±7.3 yrs; 32 females, 12 males) were randomly divided into two groups (study group: 22, control group: 22). Conventional physiotherapy methods including active (exercise) and passive (hotpack, therapeutic ultrasound and TENS) treatment were applied to all subjects for 15 sessions (5 days a week). Additionally, in the study group kinesio taping was performed at the end of each session. Pain intensity (Visual Analogue Scale), pressure pain threshold (digital algometer), cervical range of motion (CROM device) and disability (Neck Disability Index) were evaluated before treatment, on the second day of treatment and after treatment.

Results

There was no significant difference between the groups for demographic data (age, height, weight, BMI) and any outcome at baseline ($p>0.05$). When the intra-group comparison is examined, in the study group second day outcomes for pain intensity, range of motion and disability were higher than the pre-treatment assessment ($p <0.05$). There was no significant improvement in any of the parameters in the control group on the 2nd day outcomes when compared to the pre-treatment ($p>0.05$). In both groups, there were significant improvements in all parameters after treatment than the pre-treatment ($p<0.05$). In study group, pressure pain threshold and disability level were found to be better than control group according to the post-treatment outcomes ($p <0.05$).

Conclusion

The results of this study have shown that kinesio taping in addition to conventional physiotherapy provides additional benefits in chronic neck pain.

Keywords

Neck Pain;Kinesio Taping;Disability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0919

EFFECTS OF REAL-TIME POSTURAL BIOFEEDBACK ON SPINAL POSTURE, MUSCLE ACTIVITY, AND PAIN IN ADULTS WITH NECK PAIN

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Introduction/Background

Neck pain is a common complaint among office workers who hold a static posture during prolonged computer work. The aim of this study was to investigate the effect of a wearable real-time postural biofeedback device on spinal posture, muscle activity, and pain in adults with neck pain

Material and Method

21 adults who had chronic or recurrent nonspecific neck pain for more than 3 months and whose pain was induced or aggravated by prolonged computer work were enrolled in this study. Three-dimensional spinal posture, muscle activity (cervical erector spinae, upper trapezius, and thoracic erector spinae), and self-reported neck and shoulder pain were measured before and after computer typing tasks, with and without biofeedback.

Results

Compared with the non-biofeedback condition, the biofeedback condition significantly decreased neck flexion, upper cervical, and lower thoracic angles and lowered the activity of the cervical erector spinae. Self-reported neck pain was not influenced by the application of biofeedback, but significantly increased over the 1-hour typing task.

Conclusion

The application of biofeedback improves sitting posture and reduces muscular demand in adults with nonspecific neck pain during computer work. Future studies should examine the long-term effects of wearable real-time postural biofeedback devices for prevention and management of neck pain.

Keywords

Wearable electronic devices; Posture; Neck pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0920

ULTRASONOGRAPHIC GUIDED SUBACROMIAL SODIUM HYALURONATE INJECTION FOR ROTATOR CUFF DISEASE

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Introduction/Background

Rotator cuff disease is a common cause of shoulder pain. There are studies about the effectiveness of sodium hyaluronate injection on shoulder and knee pain, but few studies demonstrating the efficacy of sodium hyaluronate ultrasonography guided injection for rotator cuff disease. This study evaluates effectiveness of ultrasonography guided subacromial sodium hyaluronate injection in patients with impingement syndrome without rotator cuff complete tear.

Material and Method

This prospective, double-blind, placebo controlled clinical trial study was performed among 40 patients with subacromial impingement syndrome without complete tear of rotator cuff. Patients randomly injected ultrasonography guided in 2 groups: Case group by 20 mg of sodium hyaluronate and control group by 0.9% normal saline. Both groups received 3 weekly injections. The pain score (100 mm visual analogue score [VAS]) was evaluated before first injection and one week after each injection. The constant score was evaluated before first and 12 week after last injection. Data was analyzed statistically by Independent *t*-test.

Results

In both groups mean VAS has decreased, but more significantly in case group ($P < 0.001$). Mean constant score was significantly higher in case group 12 weeks after last injection ($P < 0.001$). The constant score improved 12 weeks after the last injection in both groups with a significantly better result in case group ($P < 0.001$).

Conclusion

Subacromial injections of sodium hyaluronate are effective in treating rotator cuff disease without complete tears.

Keywords

Rotator cuff;Ultrasonography;Injection

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0929

THE SHOULDER DISORDER SCREENING FOR WHEELCHAIR MARATHON RUNNERS.

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Introduction/Background

Wheelchair marathon is one of the most stressing sports to shoulders of runners. But the frequency and degree of shoulder disorders are unknown.

Material and Method

87 wheel chair runners (83 male, 4 female) competing in the Oita International Wheelchair Marathon were examined. They were taken medical history, physical examinations, and performed ultrasonography.

Results

Mean age was 47.8 years old, mean height was 165.3cm and mean body weight was 58.5kg. Runners had experienced wheelchair marathon for mean 15.7 years. 44 runners had shoulder pain (20 persons were only right side pain, 9 persons were only left side and 15 persons were bilateral side). 69 shoulders had tenderness. 30 shoulders had abnormal findings by B mode ultrasound examination. 17 shoulders had abnormal findings by ultrasonography but have normal physical examinations. 76 shoulders had tenderness but had normal echo findings.

Conclusion

Many wheelchair marathon runners have shoulder disorders. Physical examination and ultrasound examination are useful for screening for the shoulder disorder of wheelchair marathon runners.

Keywords

wheel chair marathon;shoulder disorder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1082

THE EFFECT OF ADDING ECCENTRIC EXERCISES TO CONVENTIONAL PHYSICAL THERAPY FOR PATIENTS WITH ROTATOR CUFF TENDINOPATHY

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Introduction/Background

To evaluate the effectiveness of adding an eccentric training of the rotator cuff to conventional physical therapy in patients with subacromial pain syndrome involving rotator cuff tendinopathy.

Material and Method

Fifty-nine patients with rotator cuff tendinopathy, diagnosed by an physiatrist, were included and randomly allocated into an experimental group (EG) or a control group (CG). The experimental group (n=31, mean age=57.4+13.4 years) received an eccentric training plus a conventional physical therapy, including modalities, scapular stabilization exercises and stretching, while the control group (n=28, Mean age=63.1+10.0 years) received a conventional physical therapy only. Patients in both groups received treatments twice a week for 3 months. Primary outcomes were shoulder pain (a 0-100mm visual analog scale; VAS) and function measured with the Disabilities of the Arm, Shoulder and Hand (DASH) score. Secondary outcome measures were isometric strength of abduction at 90° of scapular abduction (hand-held dynamometer) and shoulder range of motion(forward elevation, external rotation, and internal rotation). All measurements were taken at baseline and after treatment.

Results

After treatment, both groups showed a significant decrease in VAS scores (EG:-16.4 mm, $P=0.003$ and CG:-21.9 mm, $P<0.001$) and a significant decrease in DASH score (EG:-8.8 points, $P=0.01$ and CG:-7.5 points, $P=0.002$). Both groups also had a significant increase in isometric muscle strength (EG: 1.9 pounds, $P<0.001$ and CG: 1.8 pounds, $P=0.002$). No statistically significant differences were found between the groups for any of the evaluated outcome measures.

Conclusion

It was shown that both groups had significantly increased isometric strength, decreased pain and better function after 3 months of treatment. Conventional physical therapy with or without eccentric training is effective in treating patients with rotator cuff tendinopathy .

Keywords

rotator cuff tendinopathy;eccentric training;physical therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1096

EFFECTS OF CERVICAL STABILIZATION/STRENGTHENING EXERCISES IN VIOLINISTS WITH CHRONIC NON-SPECIFIC NECK PAIN

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Introduction/Background

Violinists frequently assume an asymmetrical neck posture and activate their superficial neck flexor muscles to stabilize the violin for prolonged playing. It is unclear whether this augmented activation of superficial neck flexors may influence the effects of stabilization exercises for violinists with neck pain. The aim of this study was to investigate the effect of cervical stabilization/strengthening exercises on pain intensity, function, sensorimotor function, and upper body posture in violin players with chronic non-specific neck pain.

Material and Method

The one-group pretest-posttest design with a double pretest was used. Violin players with chronic non-specific neck pain were recruited from students of a university symphony orchestra. Pain intensity (numeric rating scale), function (neck disability index), sensorimotor function (craniocervical flexion test, cervical muscle endurance tests, cervical range of motion tests, and cervical reposition error tests), and upper body posture were assessed at three time points (week 0, 4, and 10). After the completion of two pretests, participants followed instructional videos and performed cervical stabilization/strengthening exercises, 20 minutes a day, 3 days a week for 6 weeks.

Results

Twenty-four participants were initially enrolled, and 20 completed all testing sessions. Participants reported moderate neck pain and no disability at week 0. The outcome measures of pain intensity, function, and sensorimotor function showed statistically significant improvement during the intervention period (week 4 vs. week 10). Meanwhile, these outcome measures remained relatively unchanged during the baseline period (week 0 vs. week 4). For the outcome measure of upper body posture, only the craniovertebral angle relative to the horizontal plane significantly increased during the intervention period.

Conclusion

Six-week video based cervical stabilization/strengthening exercises resulted in clinically meaningful and beneficial effects. A randomized controlled study with a larger sample is

suggested to further investigate the effects of cervical stabilization/strengthening exercises in violin players with more severe neck pain.

Keywords

Neck pain;Musician;Exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1154

SAFETY AND EFFICACY OF POLYDEOXYRIBONUCLEOTIDE INJECTIONS VERSUS PROLOTHERAPY FOR PATIENTS WITH ELBOW EPICONDYLITIS IN A RANDOMIZED DOUBLE-BLIND ACTIVE-CONTROLLED TRIAL

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Introduction/Background

Our aim was to evaluate the efficacy of polydeoxynucleotide (PDRN) injections compared to standardized prolotherapy for patients with lateral epicondylitis (LE).

Material and Method

In this randomized, double-blind, active-controlled trial, eligible patients with LE received intra-tendinous injections (1 ml of PDRN or hypertonic dextrose [15%]) under ultrasound (US) guidance at weeks 0, 2 and 4. Primary outcome was Visual Analogue Scale (VAS) for elbow pain. Secondary outcomes were pain-free grip strength (PFGS), pressure pain threshold (PPT), isokinetic wrist extensor strength (IWES), patient-rated tennis elbow evaluation (PRTEE), EQ-5D-5L and US characteristics of the LE. All outcomes and adverse events were assessed at weeks 0, 6 and 12.

Results

The final analysis included 38 patients (PDRN injection, n = 19; prolotherapy, n = 19) (Figure 1) (Table 1). Significant improvements from baseline to 12 weeks were observed in VAS for elbow pain in both groups (53.6 ± 19.1 mm, $p < 0.001$ in PDRN; 50.6 ± 16.8 mm, $p < 0.001$ in prolotherapy) (Figure 2). While the between-group difference in VAS was not significant ($p = 0.605$). Significant pre-versus-post improvements were observed within each group for the secondary outcomes other than US characteristics ($p < 0.001$, $p = 0.001$, and 0.003 , respectively). Of these outcomes, PFGS, PPT, and IWES exhibited increase of up to 90 % (ratio = affected side/unaffected side \times 100) in both groups. However, all secondary outcomes showed non-significant between-group differences. There were no serious adverse events that resulted in drop-outs.

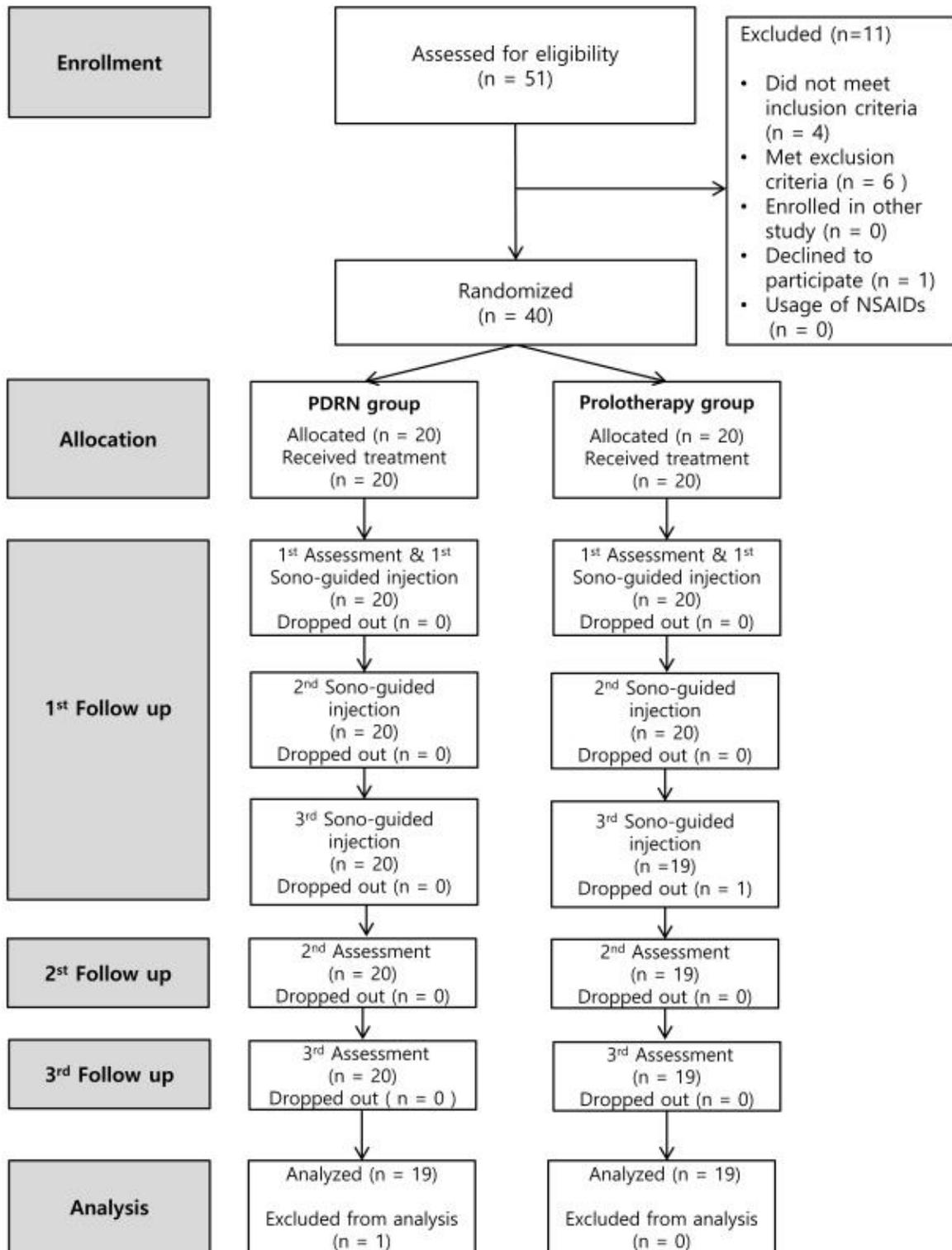


Table 2. Baseline characteristics

	PDRN injection (n = 19)	Prolotherapy (n = 19)	P
Age, yr	51.9 ± 7.3	46.4 ± 7.1	0.024*
Women, (%)	9 (47.4)	10 (52.6)	0.746
Duration of symptom†, mo	9.5 ± 6.3 (5-12)	8.3 ± 5.4 (4-12)	0.435
Location of pain, right, (%)	10 (52.6)	8 (42.1)	0.516
Dominant elbow affected, (%)	10 (52.6)	11 (57.9)	0.744
Primary outcome measure			
VASREW	77.5 ± 11.7	71.8 ± 11.8	0.148
Secondary outcome measure			
Pain-free grip strength ratio‡, %	63.2 ± 24.2	67.2 ± 19.2	0.570
Pressure pain threshold ratio‡, %	46.3 ± 15.5	48.2 ± 15.2	0.700
IWES ratio‡, %	52.5 ± 27.9	52.7 ± 27.4	0.985
PRTEE	57.1 ± 13.2	52.9 ± 17.0	0.403
EQ-5D-5L	10.9 ± 2.7	9.4 ± 2.8	0.104
Tendinosis of CEO†, grade	2.2 ± 0.9 (1.0-3.0)	1.8 ± 0.7 (1.0-2.0)	0.172
Tendon thickness, mm	54.0 ± 9.5	54.8 ± 6.0	0.759

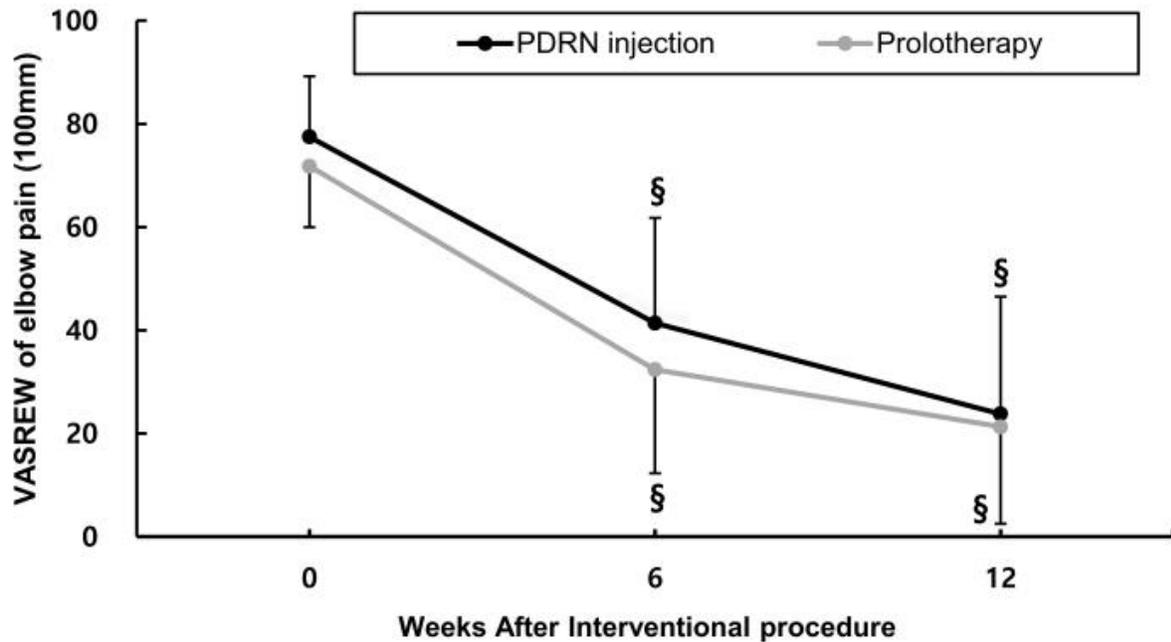
Values are the mean ± SD (or interquartile range) or number (%). VASREW = Visual Analog

Scale with Resisted active Extension of the Wrist in radial deviation; IWES = Isokinetic

Wrist Extensor Strength; PRTEE = Patient-Rated Tennis Elbow Evaluation; CEO = Common

Extensor Origin. *Significance of <0.05 from between-group comparison by student's t test

(†Mann-Whitney test) or chi-square test, ‡Ratio; affected side / unaffected side x 100



	wks	PDRN injection		Prolotherapy			
			*P		*P	†P	‡P
VASREW	0	77.5 ± 11.7		71.8 ± 11.8			
	6	41.4 ± 20.4 (36.1 ± 16.9)	< 0.001§	32.4 ± 20.1 (39.5 ± 18.6)	< 0.001§	0.562	0.577
	12	23.8 ± 22.7 (53.6 ± 19.1)	< 0.001§	21.3 ± 18.8 (50.6 ± 16.8)	< 0.001§	0.605	0.364

Conclusion

PDRN injections and prolotherapy used as standardized interventions can be safe and effective treatments improving for LE-related pain and function.

Keywords

Lateral epicondylitis; polydeoxyribonucleotide; prolotherapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1167

EPIDEMIOLOGY AND MANAGEMENT OF ELDERLY PATIENTS WITH DEGENERATIVE PAINFUL SHOULDER IN A PHYSICAL MEDICINE AND REHABILITATION DEPARTMENT

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Introduction/Background

The aim of the current study was to investigate the epidemiological profile of elderly patients treated for degenerative painful shoulder and to describe their management in a Physical Medicine and Rehabilitation department (PMR).

Material and Method

A retrospective study of the records of 156 elderly patients treated for degenerative painful shoulder was conducted over a ten year period (January 2004 -January 2014). Epidemiological and clinical parameters were studied.

Results

The patients' average age was 70.8 years \pm 5.08 years. Shoulder disorders were more common in women (75%) than in men (25%). Sixty eight patients (43.5%) were diabetics. Almost half of the studied population (46.8%) was referred from rheumatology department. The most frequent pathologies were subacromial impingement (56.4%), adhesive capsulitis (27.5%) and rotator cuff tendinopathy (10.8%). Diabetes, female gender and a history of manual profession were significantly associated with these diagnosis. Rehabilitation sessions were prescribed in 96.7% of cases with an average of 34 sessions per patient. Analgesics and NSAIDs were prescribed respectively in 51% and 35% of cases. Corticosteroids injections were performed in 48% of cases. Furthermore, capsular distension was indicated in 18 patients suffering from frozen shoulder (11.5%).

Conclusion

As for the general population, subacromial impingement, adhesive capsulitis and rotator cuff tendinopathy are the most common causes of degenerative painful shoulder in elderly patients. Although the functional demand of this population is lower than that of the active one, the management of shoulder pain remains sometimes challenging because of some specific medical conditions of the elderly. Further detailed assessment of the extent of disability caused by shoulder pain in the elderly is needed.

Keywords

elderly;shoulder pain;epidemiology

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1213

MUSCULOSKELETAL DISORDERS IN PHYSIOTHERAPISTS OF A UNIVERSITY HOSPITAL CENTER

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Introduction/Background

The objective of the current study was to determine the prevalence of musculoskeletal disorders (MSDs) in physiotherapists and to look for predictive factors of their early onset.

Material and Method

A cross-sectional descriptive study was conducted on March 2017 including thirty physiotherapists of a university hospital center. A self-questionnaire was administered to the participants assessing their epidemiological profile, the MSDs they suffered from, and their level of information on MSDs as well as their level of exposure to these disorders.

Results

The mean age of the participants was 39.4 years \pm 8.7 years. The sex ratio H/F was 0.57. The mean professional practice duration was 10.9 years \pm 7.11 years. The prevalence of MSDs was 93.3%, these disorders were localized in the lumbar spine (73.3%), cervical spine (30%), shoulder (40%), elbow and wrist (23.3%), hand (13.3%) and lower limb (13.3%). Respondents rated their level of exposure to MSDs as high and their level of information on these disorders as medium. MSDs had an early onset (\leq 2 years) in younger physiotherapists with higher levels of stress ($p < 0.05$). However, no predictive factor for early onset of MSDs was found in the studied sample.

The presence of MSDs was correlated to age ($r = 0.538$, $p = 0.002$), to professional practice duration ($r = 0.889$, $p < 0.001$) and to the level of stress experienced by the physiotherapist. It seems that the higher this level was, the more likely the physiotherapist would experience MSDs earlier in his career ($r = -0.397$, $p = 0.03$).

Conclusion

Although difficult, the prevention of MSDs is of considerable benefit. The initial training of physiotherapists must include information on occupational risks and adaptation strategies as well as ergonomics of workstations and stress management.

Keywords

Musculoskeletal disorders;physiotherapist;stress

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1226

A PILOT RANDOMIZED CONTROLLED STUDY OF COMPARATIVE EFFECTIVENESS OF KINESIOLOGY TAPING, SHAM TAPING OR EXERCISES ONLY IN TREATMENT OF LATERAL EPICONDYLITIS

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Introduction/Background

Lateral Epicondylitis (LE) is a common musculoskeletal condition presenting with pain due to overuse of common extensor tendon. It is treated with many different methods. The aim of this study is to compare efficacy of kinesiology taping (KT) and sham taping in addition to exercise or exercises only in the treatment of LE.

Material and Method

Thirty patients, aged 25-68 years, with clinically diagnosed LE less than 12 weeks were randomized into three groups; KT (n=10), sham taping (n=10) and control (exercises only) (n=10) groups. All groups received home exercise program including strengthening and stretching exercises. In KT and sham taping groups, tapings were performed and changed every 3-4 days for two weeks. Visual analog scale (VAS), grip strength, The Disabilities of the Arm, Shoulder and Hand (QuickDash) and The Patient-Rated Tennis Elbow Evaluation (PRTEE) scales were used for assessments before and after treatment. The immediate effect was assessed by VAS and grip strength immediately after both tapings.

Results

Among the KT, sham and control groups, there were statistically significant differences regarding the changes in VAS at activities of daily living (ADL) (-2.5, 0, 0 ; p=0.02) and PRTEE (-26.25, 0.5, 1.25; p=0.006). Post-hoc analyses revealed that VAS at ADL and PRTEE (p<0.01) showed significantly greater improvement in the KT group than sham taping and control groups. VAS at ADL (p=0.007), painless and maximum grip strength (p=0.03; p=0.04), QuickDash (p=0.03) and total PRTEE (p=0.004) scores were significantly lower after treatment compared to baseline in the KT group. Grip strength immediately increased after taping in the KT group (p=0.02). Neither sham taping group nor control group showed improvement in any of the outcome measures after treatment.

Conclusion

Kinesiology taping in addition to exercise is more effective than sham taping and exercises only for improving pain at ADL and arm disability due to LE.

Keywords

kinesiology taping;lateral epicondylitis;treatment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1256

INTERSECTION SYNDROME : A CASE REPORT

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Introduction/Background

Intersection syndrome describes an inflammatory condition occurring at crossing point between the first and second dorsal compartment muscles. It is repetitive motion injury that affects patients who overuse their wrist.

Material and Method

A 34 year old, right hand dominant male presented to OPD with severe pain, swelling, crepitus on lateral aspect of forearm 2 inches proximal to snuff box since 2 months. Ultrasonographic exploration revealed presence of fluid collection around tendon sheaths of first and second extensor compartment muscles at their intersection. A clinical diagnosis of intersection syndrome was made and 2 weeks course of rest and NSAID (diclofenac) was advised. After 2 weeks there was no relief. Under USG guidance 0.5 ml (20 mg) of methylprednisolone along with 0.5 ml of 2% Lignocaine was injected.

Results

After 2 weeks of intervention there was resolution of pain, swelling, crepitus and patient resumed his work.

Conclusion

Intersection syndrome is a specific painful disorder of the forearm that is commonly misdiagnosed. High level of suspicion and careful examination is warranted to avoid misdiagnosis which may lead to prolonged morbidity.

Keywords

Intersection Syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1267

TRIPLE LESION: A RARE TRIO OF DIFFERENT LESIONS PRESENTING SIMULTANEOUSLY

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Introduction/Background

In clinical settings when we come across a confirmed diagnosis, we have a tendency to ignore any other associated lesion. We report an interesting case workup of a triple lesion in which patient had three different problems in the same anatomical location with similar/overlapping symptoms and clinical presentations.

Material and Method

43 years old patient referred for management of shoulder pain and weakness. The patient had one month history of lifting heavy weight on shoulder resulting in severe pain weakness and restriction of movement of right shoulder. On examination he had restricted active movements of his shoulder but unrestricted painful passive movements. Painful arc was positive. His Xray shoulder was normal. His musculoskeletal ultrasound revealed partial tear of right supraspinatous tendon. Patient was recommended anti inflammatory drugs, physiotherapy along with rest. On two weeks followup he complained of weakness in right shoulder as well as radiating pain from the neck to the arm. Re examination revealed wasting of right deltoid and a positive Spurling sign on right. Sensory impairment on the upper lateral right shoulder. His nerve conduction studies showed Axillary nerve injury on the right. MRI of his cervical spine showed Posterolateral disc bulge at CV4-5 with foraminal stenosis and nerve root impingement and anterior osteophyte at CV5-6. So the patient had three lesions at the same temporal distribution including a supraspinatous tear, an axillary nerve injury and a disc herniation at CV4-5 causing root impingement. The patient was recommended conservative treatment through multi disciplinary consultation and physical modalities, analgesia, pregablin, TENS and electrical muscle stimulation to the deltoid along with advice for neck and shoulder care and exercises.

Results

Pain and weakness gradually improved.

Conclusion

More than one lesions must be kept in mind in all diagnostic and clinical workups for early diagnosis and better management of patients.

Keywords

triple lesion;brachialgia;nerve injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1319

HIGH ENERGY PIEZOELECTRIC SHOCK WAVES WITH ULTRASOUND SUPPORT IN CALCIFIC SUPRASPINOUS TENDINOSIS

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Introduction/Background

Evaluate the effectiveness of high energy piezoelectric focal shock wave treatment (SWT) by ultrasound support in calcific supraspinous tendinosis (CSET).

Material and Method

Descriptive and retrospective inferential statistics study, from January 2016 to October 2017, of 53 patients with CSET. Three sessions (one for week) of SWT (Generator PiezoWave F10 G4) by ultrasound support. Weekly follow-up, at 3, 6 and 12 months.

keys: pain (VAS), Functional outcomes (Quick DASH) and satisfaction degree (Roles and Maudsley scale).

Results

Mean age was 53.6 years.

Median Intensity (0.351) mJ / mm². Median frequencies of 8 Hz. Median depth of focus 15 mm. 2000 pulses per session.

Statistically significant improvement was observed of VAS between 1st and 3rd session (p <0.000), 1st session and VAS at 3 months (p <0.000), 1st session and 6 months (p <0.032) and 1st session and 12 months (p <0.048).)

The VAS at 3 months improved in 77.6%; 80% at 6 months; 75.4% at 12 months.

The Roles and Maudsley Scale was positive at 3, 6 and 12 months.

No statistically significant improvement in shoulder functionality at 3, 6 and 12 months,.

Conclusion

According to the results, high-energy piezoelectric SWT by ultrasound support of the CSET reduces pain and improves functionality in a short-term, still at 3, 6 and 12 months, with a positive satisfaction degree.

Keywords

1. high energy piezoelectric focal shock wave;2. calcific supraspinous tendinosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1346

THE SONOGRAPHIC RELATIONSHIP BETWEEN CROSS-SECTIONAL AREAS OF THE MEDIAN NERVE AND CARPAL TUNNEL AS A DIAGNOSTIC TOOL FOR CARPAL TUNNEL SYNDROME. A LITERATURE REVIEW.

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Introduction/Background

Carpal tunnel syndrome (CTS) is the most common entrapment neuropathy, being responsible for up to 90% of the total entrapment neuropathies. The electroneuromyography (ENMG) is the golden standard for confirming the diagnosis and assessing the severity. Ultrasound(US) is a less invasive method but not yet a truly alternative. Many authors use the median nerve cross-sectional area (CSA) for CTS diagnosis or calculating the flattening ratio. Comparing the nerve CSA with the tunnel CSA could be interesting, correlating the content (the median nerve and finger flexor tendons) and the continent (the carpal tunnel itself).

The goal of this article was to perform a literature review accessing the usefulness of this US parameter.

Material and Method

We conduct a bibliographic research using Pubmed and Google Scholar databases. Search items included combinations of “carpal tunnel” and “sonography” or “ultrasound”. Additional studies were identified by searching bibliographies of relevant articles.

We identified a parameter called the “nerve/tunnel index” that compares the CSA of the nerve and the carpal tunnel.

We performed a new Pubmed and Google Scholar search for this parameter.

Results

The search resulted in 10 articles. We excluded those who didn't focused on these parameters. We used 3 articles, all of them in English and published since the year 2012.

Conclusion

Although studies using proximal and distal nerve/tunnel indexes are scarce, they could be useful sonographic parameters for diagnosing carpal tunnel syndrome and they are not influenced by either sex or body indices. However, we should however consider that:

- 1) A limited number of studies use these parameters
- 2) Nerve/tunnel indexes have a limited value in patients with flexor tenosynovitis or benign tumors
- 3) There are technical difficulties measuring the carpal tunnel CSA
- 4) No relationship was found between the proximal and distal nerve/tunnel indexes and the severity and electrodiagnostic results.

Further studies are needed to assess the true value of these parameters.

Keywords

carpal tunnel;sonography;ultrasound

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1385

ARE PSYCHOLOGICAL FACTORS ASSOCIATED WITH THE 4 COMPONENTS OF THE CONSTANT-MURLEY SCORE?

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Introduction/Background

The Constant-Murley score (CMS), one of the most popular clinician-rated measurement tool for shoulder patients, has 4 components: 2 subjective (pain and activity) and 2 observational (mobility / strength). Some studies suggest that patient-related psychological factors may also influence the scoring. The purpose of this study was to measure which components may be related with psychological factors.

Material and Method

Inclusion criteria were patients with chronic shoulder pain (> 3 months) treated in rehabilitation from 01.05.2012 to 30.08.2017. Exclusion criteria were other upper limb injuries, upper limb neuropathies, and inability to complete the questionnaires. At entry, the CMS was performed by trained physiotherapists, and the following questionnaires were completed by patients: Brief Pain Inventory (BPI), Hospital Anxiety and Depression (HADs), Pain Catastrophizing Scale (PCS), Tampa Scale of Kinesiophobia (TSK), and Disability of Arm-Shoulder-Hand (DASH). Correlations between the 4 components of CMS and the questionnaires were measured with the Pearson coefficient (weak correlation: 0.20-0.40, moderate: 0.41-0.60, strong: ≥ 0.61).

Results

735 patients were included (mean age (sd): 47 (11) years ; men: 85%; rotator cuff lesions: 72%). Median duration of symptoms was 14 months (IQR 9-22). The pain component of the CMS was correlated with disability (DASH: -0.43) and pain (BPI: -0.56), but also with psychological factors: anxiety, depression (HADs: -0.28 and -0.32, respectively), catastrophizing (PCS: -0.45), and kinesiophobia (TSK: -0.25). The activity component was correlated with disability (-0.42) and pain (-0.29). Mobility and strength were only correlated with DASH (-0.40 and -0.33, respectively).

Conclusion

A clinician-rated measurement tool should be independent of patient-related psychological factors, which may limit its validity. This study suggests that the pain component of the CMS should be measured separately to the others in order to reduce the risk of measurement bias.

Keywords

Constant Murley score;shoulder pain;psychological factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1394

BILATERAL POSTERIOR FRACTURE-DISLOCATION OF THE SHOULDER AFTER EPILEPTIC SEIZURES: A CASE REPORT

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Introduction/Background

Bilateral posterior fracture-dislocation of the shoulder is a very rare injury accounting for less than 2% of all shoulder dislocations and can be caused by epileptic seizures, trauma, electrocution or electroconvulsive therapy.

Material and Method

We report a case of bilateral posterior dislocation of the shoulders with right upper end of the humerus following epileptic seizures.

Results

A 46-year-old man was admitted to the department of neurology for disability of both upper limbs after an episode of generalized tonic-clonic seizure which had lasted for several minutes. Following seizure episode, he complained of inability to move his both upper limbs associated with intense pain. Clinical examination revealed severely restricted and painful with the slightest movement of the shoulders. Computing tomography of the shoulders confirmed fractures of the upper end of the humerus with posterior dislocation. He was treated with Neer modification of the McLaughlin Procedure.

Conclusion

: Bilateral posterior fracture-dislocation of shoulders is a very rare complication of epileptic seizures. A late diagnosis makes complex surgery burdened with complications and risk of developing shoulder instability.

Keywords

Bilateral posterior fracture dislocation;shoulders;Generalized seizures

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1402

INTRA-ARTICULAR DISTENSION WITHOUT ARTHROGRAPHY FOR ADHESIVE CAPSULITIS

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Introduction/Background

Adhesive capsulitis is a clinical entity characterized by spontaneous onset of shoulder pain accompanied a loss of motion and a decrease of the joint volume capacity. The distension of the shoulder joint has proven to be an efficient percutaneous treatment, and various techniques have been proposed. The objective of the study is to determine the effectiveness and safety of the technique “repeated intra articular distension without arthrography” combined with an intensive program of rehabilitation in patients with adhesive capsulitis.

Material and Method

A prospective controlled study. Fifteen patients with adhesive capsulitis were included. Intervention consisted of three intra articular distension with saline, xylocaine and corticosteroid, given at one week intervals. The same technique was combined with an intensive program of rehabilitation associated. the evaluation parameters used were Hospital Anxiety and Depression Scale (HADS), visual analog scale (VAS) pain score, a shoulder-specific disability measure by DASH score and range of active and passive motion (anterior elevation, lateral elevation and external rotation). Patients were evaluated before intra articular distension. The outcome measures were assessed at 1,2,3, and 4 weeks after last capsular distension.

Results

Study population comprised fifteen patients with a mean age of 54,8±8,6 underwent capsular distension. All patients reported significant improvement during the study in terms of the pain score, anterior elevation and lateral elevation after the first distension. External rotation, the DASH score and HADS improved after three capsular distension. One month after last capsular distension, this gain persisted in all functional parameters and in psychological profile. Results did not differ by etiology of capsulitis. No severe complications occurred as a result of the capsular distension.

Conclusion

Our results show that three capsular distension and intensive program of physiotherapy have a beneficial effect. This combination has a useful role in the early management of adhesive capsulitis.

Keywords

Adhesive capsulitis;Shoulder;Intra articular distention

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1411

EFFECTIVENESS OF GROUP SHOULDER THERAPY: OUR EXPERIENCE

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Introduction/Background

Painful shoulder is one of the most common diseases in the Rehabilitation doctor's appointments, being the third in frequency in musculoskeletal pathology. According to the bibliography its incidence is 0.9-2.5%. This means 1.2% and 12% of medical and Rehabilitation consultations, respectively. Approximately 50% of patients continue with pain at 18 months after starting symptomatology. There is scant evidence of the efficacy using conventional treatments. A program of therapeutic exercises is the only treatment with scientific evidence in short and long term, both for the improvement of pain and functional limitation.

Material and Method

Descriptive observational study before-after. Rotator cuff diseases as well as subacromial syndrome were included. A program of 1 hour per week for 8 weeks of controlled exercises was carried out. To this, it was added 1 hour of occupational therapy with anatomical teaching, ergonomic measures and adaptations.

Results

Our sample includes 140 patients. The primordial sex is feminine with a frequency of 71%. The most frequent profession is housewife (36%), followed by retirees (12%) and administrative staff (11%). There was a significant improvement in the value of the Constant scale ($t = -8.658$, $p < 0.001$) between before ($=50.02$) and after ($=60.61$) means of the shoulder group therapy. This improvement was maintained 6 months after implementing exercises ($t = -3.569$, $p < 0.001$). Regarding the EVA, there was also a significant betterment ($Z = -5.663$, $p < 0.001$) comparing pre and post treatment values and this result was maintained at 6 months ($Z = 3.256$, $p < 0.001$).

Conclusion

Group shoulder therapy improves the painful symptomatology as well as the function in the tendinopathies of the rotator cuff and the subacromial syndrome. This improvement is maintained in long term. Population education improves the adherence to the treatment.

Keywords

Shoulder;Group therapy;Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1694

THE ANALYSIS OF EPIDEMIOLOGIC CHARACTERISTICS AND IMAGING FEATURES OF SHOULDER PAIN BASED ON MUSCULOSKELETAL ULTRASOUND IMAGING

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Introduction/Background

To investigate the epidemiologic characteristics and imaging features of shoulder pain in rehabilitation clinic based on musculoskeletal ultrasound imaging.

Material and Method

From June 1, 2016 to November 30, 2017, all consecutively enrolled outpatients with shoulder pain underwent ultrasound imaging of the affected shoulder, and their clinical information were collected for Cross-sectional Analysis.

Results

266 patients were included. Among them, 26.7% were young patients (younger than 45 years old), 41.3% were middle aged patients (45 years old to 59 years old) and 32.0% were old patients (older than 59 years old). The incidence of supraspinatus tendinopathy and subacromial bursitis were 55.9% and 55.2% respectively, followed by acromioclavicular joint degeneration and tendinitis of the long head of biceps. The incidence of subacromial bursitis in the old patient group was the highest, followed by the middle aged patient group (the middle aged patient group vs the old patient group: 57.5% vs 73.5%, $P < 0.0167$) and the young patient group (the young patient group vs the middle aged patient group: 29.7% vs 57.5%, $P < 0.0167$), respectively. Compared with the young patient group, the incidence of acromioclavicular joint degeneration were higher in the middle aged patient group and old patient group (the middle aged patient group vs the young patient group: 41.7% vs 8.1%, $P < 0.0167$; the old patient group vs the young patient group: 53.1% vs 8.1%, $P < 0.0167$).

Conclusion

Musculoskeletal ultrasonic imaging is helpful for diagnosis of shoulder pain, and making individual diagnosis and treatment plan based on the characteristics of musculoskeletal ultrasonic imaging deserves to be popularized in clinical application.

Keywords

shoulder pain; Musculoskeletal ultrasound;Epidemiology

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1758

EFFECTIVENESS OF MYOFASCIAL RELEASE TECHNIQUES IN THE TREATMENT OF MYOFASCIAL TRIGGER POINTS ASSOCIATED WITH CHRONIC NECK PAIN

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Introduction/Background

Myofascial pain syndrome associated with active myofascial trigger points (MTrP) is a common diagnosis in patients presenting with symptoms of chronic neck pain. Standard rehabilitation methods are necessary but insufficient mainly for recurrence. The objective of our study was to evaluate the effectiveness of treatment of MTrP in chronic neck pain.

Material and Method

We recruited 20 patients with chronic neck pain randomly divided into 2 groups A (10 patients) and B (10 patients). Patients in group A benefited from a first protocol associating myofascial release (MFR) techniques to a conventional rehabilitation program. Patients in group B benefited from a conventional rehabilitation program alone. Management was spread over a period of 3 months. The evaluation parameters were pain intensity (VAS) and irradiation, cervical spinal mobility, muscle strength, muscle tension assessed by the Nilson scale, and function (NDI and Bournemouth questionnaire).

Results

We found a significant decrease in neck pain intensity and radiation that was greater in group A. We also noted an improvement in all areas of cervical mobility, muscle strength and tension in the group A. This resulted in a functional improvement, attested by the NDI and Bournemouth questionnaires.

Conclusion

Myofascial release involves the application of a low load, long duration stretch to the myofascial complex, intended to restore optimal length, decrease pain, and improve function. It may be effective in the treatment of patients with active myofascial trigger points.

Keywords

myofascial release;myofascial trigger points;neck pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1771

ELECTROACUPUNCTURE IN THE TREATMENT OF PAINFUL HEMIPLEGIC SHOULDER – CASE REPORT

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Introduction/Background

Painful hemiplegic shoulder is a frequent complication (prevalence of 47-72%), causing functional disability and suffering in patients with stroke. It has several causes, namely adhesive capsulitis, soft tissue injury, myofascial pain syndrome, subluxation and spasticity, among others. Spasticity leads to pain, by limiting joint range of motion and leading to incorrect joint positioning. To optimize pain management, a rehabilitation program including prevention, physical therapy, occupational therapy, treatment of spasticity and analgesia, whether pharmacological or other techniques, such as electroacupuncture, should be undertaken. The aim of this study was to evaluate the effect of electroacupuncture on pain in a case of spastic hemiparesis.

Material and Method

55-year-old female, with left thalamic-capsular haemorrhagic stroke, spastic right hemiparesis with brachial predominance; pain in the shoulder, elbow, wrist and right hand, interfering with sleep quality and physiotherapy treatments. The evaluation protocol included anamnesis and examination, with pain, joint amplitudes and tonus evaluation in the affected upper limb, using the numerical rating scale of pain (NRS), goniometry and Ashworth modified scale. An electroacupuncture protocol was developed and performed, and a new evaluation was performed after finishing treatments.

Results

After 2 sessions of electroacupuncture a complete relief of shoulder and elbow pain at rest was verified (initial NRS 10 / final NRS 0). There was also improvement of sleep quality. Non-painful passive mobilization of the shoulder improved significantly, from 20° of flexion and abduction to 90° of flexion and 70° of abduction at the end of treatments, respectively, allowing a better participation in physiotherapy and daily life activities. There were no changes in muscular tonus.

Conclusion

Electroacupuncture seems to be a good therapeutic technique with considerable potential in the rehabilitation of painful hemiplegic shoulder, and its association with a rehabilitation program may be of value. More work need to be made with larger samples to prove the benefits of electroacupuncture.

Keywords

electroacupuncture; Painful hemiplegic shoulder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1917

THE EFFECT OF STRENGTHENING DEEP CERVICAL FLEXOR MUSCLES IN PATIENTS WITH CHRONIC NECK PAIN

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Introduction/Background

The chronic neck pain is one of the major public health problems, which has a great impact on people's lives.

The purpose of this study was to assess the effect of deep cervical flexor (DCF) muscles strengthening in patients with chronic neck pain.

Material and Method

We conducted a prospective, comparative 3-months study including 10 patients with chronic neck pain. Patients were divided into 2 groups. Patient in group A underwent a conventional rehabilitation program and those in group B underwent a conventional rehabilitation associated with a strengthening protocol of DCF muscles. Patients underwent three times a week 60-minute session for a period of 12 weeks. Assessments were performed before and after intervention. It had been about pain with the Visual Analog Scale (VAS), physical function and disability with Neck and Disability Index (NDI), endurance with crano-cervical test and posture with the crano-cervical angle.

Results

At the end of the protocol, patients in the group B had a greater significant decrease in cervical pain. The improvement in muscle strength and crano-cervical angle was also more important in the group B. As a result, there was a functional improvement, attested by the NDI.

Conclusion

The strengthening of DCF muscles reduces pain, improves strength, posture and function in patients with chronic neck pain.

Keywords

chronic neck pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1927

HEALTH ASSESSMENT QUESTIONNAIRE FOR CERVICOBRACHIAL NEURALGIA IN PERSONAL STAFF (83 CASES)

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Introduction/Background

Cervicobrachial neuralgia (CBN) is frequent in out patient clinic as well in general medicine as in rheumatology. Even though cervical disc degeneration and osteophytosis constitute the most frequent etiology of such a trouble. Few data highlight their impact on the functional capacity and quality of life in personal staff. Our goal is to evaluate the functional and psychological impact and determine the associated factors.

Material and Method

This is a monocentric, cross-sectional study during 5 months (July-November 2017), conducted on 83 officials of the CHU Taher Sfar of Mahdia presenting cervicalgia. We determined for each the Visual Analog Scale of Pain Intensity (VASPI) and the Health Assessment Questionnaire (HAQ).

Results

The average age is 37 years old +/- 10.4 [23; 57]. Men represent 49% of the sample. Thirty-one of the patients were doctors, 56% were nurses, 6% were technicians and the rest were medical secretaries. The median duration of symptom progression is 4 months [1; 15]. The average VASPI is 3.8 ± 1.36 [0-8]. Sixty-two percent of the patients were not satisfied at work. Ninety-two percent of patients had university education. The majority (92.8%) had an average socio-economic level. Thirty-seven percent had CBN which was in descending order as follows: 23% of cases had C6 CBN and C7 CBN, 19% had CBN C5 and 10% had C8 CBN. The mean HAQ was 0.92 ± 0.56 [0, 1.75]. The most important scores (most difficult tasks) were found for items 5 (holding) and 4 (hygiene) with means at 1.013 ± 0.71 [0, 2] and 1.155 ± 0.77 [0, 3] respectively. High HAQ was statistically related to a low level of study, assignment (surgical specialties).

Conclusion

Neck pain is strongly associated with personal staff that is why a preventive strategy is needed.

Keywords

cervicobrachial neuralgia ;personal staff ;Health Assessment Questionnaire

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1930

CERVICO-BRACHIAL NEURALGIA IN THE REHABILITATION DEPARTMENT

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Introduction/Background

Cervico-Brachial Neuralgia (CBN) is a relatively common pathology in current practice. It has significant medical and socio-economic costs and a negative impact on patients' quality of life. The objective of our study is to assess the epidemiological, clinical, radiologic and therapeutic aspects of common CBN in a rehabilitation department.

Material and Method

This is a prospective study including patients with CBN referred to the department of Physical Medicine and Rehabilitation of Mahdia (Tunisia) from January 2017 to June 2017.

The evaluation parameters were: pain with the Visual Analog Scale (VAS), physical function and disability with Neck and Disability Index (NDI) and the psychological profile with the Hospital Anxiety and Depression Scale (HAD).

Results

Sixty patients were enrolled in this study; 8 men (13.3%) and 52 women (86.7%). The mean age was 47.7 ± 13 years old and the mean duration of the symptomatology was 3.5 ± 2 years.

In most of the cases, CBN was unilateral (56.7%) and C6 root was concerned (30%). On physical examination, we found limited and painful spinal motion mobility in 50% of the cases associated with contracture of the neck muscles in 83.3%

The mean VAS pain was 6.2 cm. The functional and psychological repercussions of the CBN were important. Indeed the mean NDI score was 25.6 ± 8 reflecting severe incapacity and 35 patients (58.3%) had HAD depression or anxiety scale greater than 11.

The radiographs of the cervical spine showed osteoarthritis, pinching discs or osteophytes in 88.3 % of the cases.

Therapeutic management included medical treatment based on analgesics, muscle relaxants and non-steroidal anti-inflammatory drugs in 93.3%, associated with a well-adapted functional rehabilitation program in all patients.

Conclusion

CBN has a significant functional and psychological impact, requiring a multidisciplinary care. Physical treatment is an integral part of its management allowing patients to manage their lives better.

Keywords

rehabilitation;cervico-brachial neuralgia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1942

THE MANAGEMENT OF LATERAL EPICONDYLITIS IN A REHABILITATION DEPARTMENT

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Introduction/Background

Lateral epicondylitis is a common source of elbow pain. It typically affects the dominant upper extremity and is associated with repetitive and forceful activity. Conservative treatment is effective in the majority of patients with lateral epicondylitis. However, the course leading to recovery can be prolonged (6-12 months). The aim of our study is to evaluate the epidemiological, clinical and therapeutic profile of patients followed in the Physical Medicine and Rehabilitation department, for lateral epicondylitis .

Material and Method

This was a retrospective study during 5 years (2012-2017) about patients referred to our Physical Medicine and Rehabilitation department for lateral epicondylitis. The sociodemographic characteristics, clinical profile and therapeutic modalities were assessed for each patient.

Results

Fifty patients were included with a female predominance (72%). The mean age was 44.82 years. Half of our patients were active and the majority (60%) performed office-type work. The right upper limb was the most affected in 78% of the cases. Symptom duration was 14.66 months. The mean visual analogic scale (VAS) was 5.5 . Epicondylitis was clinically diagnosed in all the patients. The X-Ray exam was realized for 8 patients and ultrasound exam for 6 patients. No MRI exam was realized. All the patients received analgesic treatment, 84% non-steroidal anti-inflammatory drugs (NSAIDs) and only 8 patients received corticosteroid injection. Physical therapy sessions were prescribed for all the patients. Total improvement was noticed in 42% of the cases, 46% reported a transient improvement and 12% evolved towards chronicity.

Conclusion

Lateral epicondylitis is a frequent complaint among musculoskeletal disorders affecting the upper extremities. Its management in Physical Medicine is based on medical treatment and functional rehabilitation used alone or in combinations. But no single option seems to be clearly superior.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1965

A PERSONALIZED SELF-MANAGEMENT AND INTENSIVE SPA THERAPY INTERVENTION FOR MUSCULOSKELETAL DISORDERS OF THE UPPER EXTREMITIES CONTRIBUTES TO REDUCE DISABILITY: A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Musculoskeletal disorders (MSDs) constitute a major occupational health problem in the working population. MSDs manifest as localized pain or functional difficulty in one or more anatomical areas, such as the cervical spine, shoulder, elbow, hand, and wrist. Although physical exercise is widely recommended, few studies with a good level of evidence have enabled us to base a complete, well-constructed intervention on exercise that can be offered as secondary prevention in these disorders.

Material and Method

A prospective, multicenter, comparative, randomized study using Zelen's design. This study falls under active prevention of MSDs of the upper extremities. Participants are workers aged between 18 and 65 years, with any type of job or workstation, with or without a history of sick leave. The primary aim is to show the superiority at 3 months of a combination of spa therapy, exercise, and self-management workshops for 6 days over self-management workshops in terms of employee functional capacity in personal and professional daily life (QUICK DASH scale).

Results

We included 148 patients, 73 assigned to the intervention group and 75 to the control group. At 3 months, the total score of functional disability assessed by QUICK DASH decreased in both groups. This reduction was higher in the intervention group (-10.04 ± 15.83) versus control group (-5.57 ± 13.45). We noticed a non-significant decrease for QUICK DASH total score ($p=0.10$). However, the field specifically assessing disabilities in physical activities; QUICK DASH sport; had significantly decreased in the intervention group (-14.58 ± 21.49) versus control group (-6.72 ± 19.04) ($p=0.02$).

Conclusion

The originality of this intervention lies, in its short, intensive format, which is compatible with remaining in work; and in its multidisciplinary approach. This trial demonstrates the benefits of a short course of spa therapy combined with a personalized self-management program on the functional capacity in their daily life.

Keywords

Exercise;Musculoskeletal disorders;Spa therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2190

THE IMPORTANCE OF NIGHT PAIN FOR THE EFFECTIVENESS OF THEURAPOTIC ULTRASOUND IN THE SUBACROMIAL IMPINGEMENT SYNDROME: A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

The aim of this study is to assess the importance of night pain for the effectiveness of theurapotic ultrasound in treating Subacromial Impingement Syndrome (SIS).

Material and Method

In this double-blind, placebo- controlled study, patients with SIS accompanying with night pain were evaluated. A total of 57 patients were included in this study. The cases were divided as A and B groups randomly. Group A, received standart conservative treatment and additional ultrasound or placebo ultrasound randomly while having night pain. On the other hand, group B, received cold application and same standart conservative treatment. When the night pain subsided, ultrasound or placebo ultrasound were given randomly. The cases were evaluated with visual analouge scale, shoulder disability index and Constant Murley functional assesment scale during follow ups.

Results

In group A, statistically meaningful improvement in resting, movement and night pain, disability and functionality were detected. However there were no statistically important difference between cases receiving ultrasound or placebo ultrasound. There were statistically important improvement in resting and movement pain, disability and fuctionality of group B cases. But with ceasing the cold application and starting either of ultrasound or placebo ultrasound, some increase in night pain was seen. There were no statistically important difference between ultrasound and placebo ultrasound.

Conclusion

As a result, standart conservative treatment in the management of SIS is very effective. We noticed that, adding ultrasond or placebo ultrasound to this standart conservative treatment in SIS patients with or without night pain make no additional benefit. Addition of cold therapy to standart conservative treatment is very effective. It is seen that starting ultrasound treatment immediately after night pain is not appropriate and waiting a while after night pain subsides is

more convenient. When considering the potential effect on tendon healing, ultrasound treatment may be given later for shoulder rehabilitation in stretching and strengthening phase.

Keywords

Subacromial Impingement Syndrome; Night Pain; Therapeutic Ultrasound

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2243

A NEW IPHONE APPLICATION FOR THE MEASUREMENT OF ACTIVE CRANIOCERVICAL RANGE OF MOTION IN PATIENTS WITH NON-SPECIFIC NECK PAIN: A RELIABILITY AND VALIDITY STUDY

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Introduction/Background

Measurement of cervical spine range of motion (ROM) is often considered to be an essential component of cervical spine physiotherapy assessment. This study aimed to investigate the reliability and validity of an iPhone application (app) (Goniometer Pro) for measuring active craniocervical ROM (ACCROM) in patients with nonspecific neck pain.

Material and Method

A cross-sectional study was conducted at the musculoskeletal biomechanics laboratory located at Iran University of Medical Sciences. Forty non-specific neck pain patients participated in this study. The outcome measure was the ACCROM, including flexion, extension, lateral flexion, and rotation. Following the recruitment process, ACCROM was measured using a universal goniometer (UG) and iPhone 7 app. Two blinded examiners each used the UG and iPhone to measure ACCROM in the following sequences: flexion, extension, lateral flexion, and rotation. The second (2 hours later) and third (48 hours later) sessions were carried out in the same manner as the first session. Intraclass correlation coefficient (ICC) models were used to determine the intra-rater and inter-rater reliability. The Pearson correlation coefficients were used to establish concurrent validity of the iPhone app. Minimum detectable change at the 95% confidence level (MDC95) was also computed.

Results

Good intra-rater and inter-rater reliability was demonstrated for the goniometer with ICC values of ≥ 0.66 and ≥ 0.70 and the iPhone app with ICC values of ≥ 0.62 and ≥ 0.65 , respectively. The MDC95 ranged from 2.21° to 12.50° for the intra-rater analysis and from 3.40° to 12.61° for the inter-rater analysis. The concurrent validity between the two instruments was high, with r values of ≥ 0.63 . The magnitude of the differences between the UG and iPhone app values (effect sizes) was small, with Cohen d values of ≤ 0.17 .

Conclusion

The iPhone app possesses good reliability and high validity. It seems that this app can be used for measuring ACCROM.

Keywords

Cervical vertebrae;Range of motion;Smartphone

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2356

CLINICAL, ELECTROMYOGRAPHIC AND SONOGRAPHIC PARAMETERS TO FOLLOW-UP PATIENTS WITH CARPAL TUNNEL SYNDROME TREATED WITH CORTICOSTEROIDS INFILTRATIONS.

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Introduction/Background

Carpal tunnel syndrome (CTS), the most common entrapment neuropathy, is a combination of signs and symptoms due to compression of the median nerve at the wrist. The electroneuromyography (ENMG) is the gold standard for confirming diagnosis and assessing the severity. Ultrasound (US) is a less invasive method but not yet a truly alternative. Many authors use the median nerve cross-sectional area (CSA) for diagnosis, or calculating the flattening ratio. Other parameters have been studied, but not used for diagnosis or follow-up.

The goal of this article was to observe clinical, electromyographic and particularly sonographic changes in patients treated with corticosteroids infiltrations.

Material and Method

We analyzed pre-infiltration parameters - signs and symptoms, Boston Scales, ENMG and sonographic variables: the median nerve CSA and carpal tunnel CSA at 2 different points of the wrist, the median nerve CSA at the forearm, the flattening ratio, the retinacular bowing, the flexor retinaculum thickness, the Nerve/Tunnel indexes, and anatomic variations - and compared them with 3-week and 6-week follow-up after corticosteroids infiltration.

Results

We interviewed 48 patients in our clinical practice but only 22 wanted to participate and matched our criteria - 10 were included for infiltration and 12 for surgical evaluation. We currently have finished 6. Our results will be displayed with a series of graphics, showing:

- Clinical improvement after treatment
- Minimum improvement of ENMG variables
- Decrease of US variables, not only the median nerve CSA: the retinacular bowing, the flexor retinaculum thickness and the Nerve/Tunnel indexes
- Unchanged sonographic variables: median nerve CSA at the forearm

Conclusion

- There is a clear improvement of symptomatology and functional parameters with corticosteroids infiltrations, even in severe CTS cases
- As the nerve CSA, many other US parameters may be useful for follow-up patients with CTS

Keywords

Carpal;sonography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2464

COMPARISON OF KINESIOTAPING, TRIGGER POINT INJECTION, AND NEURAL THERAPY IN THE TREATMENT OF ACUTE MYOFASCIAL PAIN SYNDROME: A RANDOMIZED CONTROLLED STUDY, PRELIMINARY RESULTS

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Introduction/Background

Myofascial pain syndrome (MPS) is a regional painful soft tissue disorder, characterized by trigger points and taut bands in the muscles. An effective pain relief treatment can stop the vicious cycle of pain and spasm, and also avoid chronicity and disability in acute MPS. In this study we aimed to compare the effectiveness of kinesiотaping, trigger point injection, and neural therapy on pain and disability in acute MPS.

Material and Method

This is a prospective randomized controlled study. Sixty-five patients (54 female/ 11 male, the mean age 45.6 ± 16.1 years) admitted to four physical medicine and rehabilitation outpatient clinics diagnosed as acute MPS were included in the study. Patients were allocated into three groups. Group 1 (n =22, 18 female) were treated with kinesiотaping, group 2 (n=23, 19 female) received local trigger point injection with (lidocain of % 0.5), group 3 (n =20, 17 female) received neural therapy (lidocain of % 0.5). Patients were assessed by means of pain, number of trigger points (NTP), pressure pain threshold and neck disability. Pain severity was measured by visual analog scale (VAS, 0-10 cm). The neck pain disability index (NPDI) was used for assessing neck disability. Pressure pain threshold was measured by using an algometer. Measurements were taken before and after treatment 3 and 7 days. Side effects were recorded. This study includes descriptive statistics since it contains preliminary data.

Results

All groups were similar with respect to age, sex and disease duration. There were improvements on pain, NTP, pressure pain threshold, and disability in all groups at the end of treatments at 3 and 7 days. No side effects were observed in all groups.

Conclusion

The preliminary results of this study show that all these three treatment methods seem to be effective on pain relief, NTP, pressure pain threshold, and disability in acute MPS.

Keywords

Myofascial Pain Syndrome; Treatment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.04 Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2466

ULTRASOUND GUIDED SUPRA SCAPULAR NERVE BLOCK IN POST STROKE SHOULDER PAIN

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Introduction/Background

Shoulder pain is a distressing complication of hemiplegia and is reported as one of the most common medical complications of stroke. The prevalence of shoulder pain following stroke has varied range from 34% to 84%. Hemiplegic shoulder pain is associated with reduction in functional use of the arm, interference with rehabilitation and limitation to patient access to developing technological upper-extremity rehabilitation techniques.

Material and Method

Patients with Clinical and Radiological diagnosis of stroke were included with pain with a Numeric Rating Score (NRS) of more than or equal to 4/10. Patients with any fracture in and around shoulder, allergy to injectable agents (Depo Medrol, lignocaine and Bupivacaine) were not included in the study.

All patients were given ultrasound guided suprascapular nerve block with a mixture of 2 ml of 2% lignocaine, 2 ml of 0.25% bupivacaine and 2 ml of methylprednisolone acetate. The ranges of motion, pain on NRS were primary outcome measures and quality of life on SF8 was secondary outcome measure.

Results

30 patients with Post Stroke Shoulder Pain were recruited in the study. Ischemic type (65%) of stroke was commoner than hemorrhagic (35%). Male: Female ratio was 1.8:1. Post stroke duration ranged from 2 months to 24 months (mean- 9.6 months), motor recovery on Brainstorms staging was stage I(10), II(6), III(4), IV(5) and V(5). 19/30(65%) had shoulder subluxation. On an average, NRS reduced to 1/10 immediately; 2/10 at 4 weeks and remained 3/10 after 6 months of procedure. Improvement in Range of Motion was significant; 90% at 4 weeks and 85% at 6 months after the procedure. Similarly, significant improvement was seen in quality of life.

Conclusion

Suprascapular nerve block has a potential role in Post stroke shoulder pain and needs a proper randomized control trial for establishing its efficacy.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2545

THE INFLUENCE OF FOOT ORTHOSES ON FOOT MOBILITY MAGNITUDE AND ARCH HEIGHT INDEX IN ADULTS WITH FLEXIBLE FLAT FEET

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Introduction/Background

Flexible flat foot is described as a reduction in the height of the medial longitudinal arch and may occur from Abnormal foot pronation. A foot orthosis is thought to modify and control excessive pronation and improve arch height. the aim of this study is compare the immediate effect of three types of orthoses on foot mobility and the arch height index in subjects with flexible flat feet.

Material and Method

The dorsal arch height, midfoot width, foot mobility and arch height index were assessed in 20 participants with flexible flat feet (mean age = 23.2 ± 3 years) for three different foot orthosis conditions: soft, semi-rigid and rigid University of California Biomechanics Laboratory (UCBL).

Results

Maximum midfoot width at 90% with arch mobility in the coronal plane was shown in the semi-rigid orthosis condition. The semi-rigid orthosis resulted in the highest mean foot mobility in 90% of weight bearing, and the rigid orthosis (UCBL) had the lowest mean foot mobility. The soft orthosis resulted in foot mobility between that of the rigid and the semi-rigid orthosis. UCBL orthosis showed the highest arch height index, and the semi-rigid orthosis showed the lowest mean arch height index.

Conclusion

Due to its rigid structure and long medial–lateral walls, the UCBL orthosis appears to limit foot mobility.

Therefore, it is necessary to make an orthosis that facilitates foot mobility in the normal range of the foot arch.

Future studies should address the dynamic mobility of the foot with using various types of foot orthoses.

Keywords

foot mobility magnitude;arch high index;foot orthoses

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0230

AUTOLOGOUS BLOOD-DERIVED PRODUCTS COMPARED TO CORTICOSTEROIDS FOR TREATMENT OF PLANTAR FASCIOPATHY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

This review article evaluated the efficacy of autologous blood-derived products (ABPs), including autologous blood (AB) and platelet-rich plasma (PRP), in reducing pain and improving function compared with corticosteroids (CS) for plantar fasciopathy (PF) patients.

Material and Method

Literature comparing ABP and CS to treat PF up to August 2017 was systematically reviewed. The visual analogue scale score or American Orthopaedic Foot and Ankle Society (AOFAS) hindfoot score was evaluated at 1.5, 3, and 6 months' follow-up. A subgroup analysis concerning PRP preparation techniques and study designs was performed. Twelve randomized controlled trials (RCTs) and three quasi-experimental studies with 680 patients were included.

Results

CS reduced pain more than AB within 1.5 months and 3 months, but the effect disappeared at 6 months. PRP reduced pain more effectively at 6 months post-injection than CS. However, there was no significant difference in AOFAS scores between PRP and CS injections at all time points. In the subgroup analysis, pain was significantly reduced due to self-prepared PRP, one-step separation, and RCT-designed studies at 6 months.

Conclusion

The results of this meta-analysis will provide evidence-based information for making treatment decisions for patients with PF.

Keywords

plantar fasciopathy; Platelet rich plasma; Corticosteroids

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0403

COMPARISONS OF BRACING AND PATELLA TAPING ON KNEE THREE-DIMENSIONAL KINEMATICS OF WOMEN WITH PATELLOFEMORAL PAIN SYNDROME IN STANCE PHASE OF RUNNING

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Introduction/Background

Patellofemoral pain syndrome is one of the most common knee injuries that accounted for between 25-40% of all knee problems presenting to sports medicine centers. Two treatment methods of bracing and taping are recommended in these patients that their effectiveness is unclear. The aim of this study was to evaluate the efficacy of the two treatment methods on knee three-dimensional kinematics in patients with PFPS during stance phase of running.

Material and Method

Fourteen patients with PFPS in range of 20-40 ages were participated in this study. Three-dimensional angles at the knee during stance phase of running were recorded by motion analysis cameras (Fig.1) in three conditions, namely; without intervention, bracing (Fig.2) and taping (Fig.3) conditions.

Figuer1

Figuer2

Figuer3

Results

Results of this study showed that knee valgus angle in PFPS patients was decreased significantly with brace when compared to without intervention during running. Patella taping did not show significant differences on knee joint kinematics as compared to other conditions ($p>0.5$).

Conclusion

Using patellofemoral brace during running can cause change more than patella taping in knee kinematics. Our finding shows that reduction of knee abduction angle by using brace could decrease perceived pain in women with PFPS during stance phase of running.

Keywords

PFPS;Knee kinematics;bracing & taping

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0434

ANTERIOR KNEE PAIN AND ITS INTRINSIC RISK FACTORS AMONG RUNNERS IN POOR RESOURCED PERI-URBAN COMMUNITIES

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Introduction/Background

Anterior knee pain (AKP) is the most common overuse injury experienced by runners and is prevalent among females, adolescents and young adults. Several modifiable intrinsic risk factors have been suggested to contribute to AKP. The objective was to determine the prevalence and modifiable intrinsic risk factors for AKP among runners in poor resourced peri-urban communities in Ekurhuleni, South Africa.

Material and Method

A cross-sectional study design was used. Population comprised of 347 runners from six developing running clubs. Convenient sampling method was used, and 183 participants were sampled using a Raosoft statistical tool. Participants were aged between 13 and 55-year-old with no history of degenerative and traumatic injuries. Standardized questionnaire was used to determine AKP prevalence and 12 physical tests were used to screen for modifiable intrinsic risk factors. Ethical clearance, permission from club managers and consent from participants were obtained. Data were collected over four months and SPSS was used to obtain descriptive (frequencies) and inferential (logistic regression) statistics.

Results

Anterior knee pain accounted for 40%. Males (57.9%) and youth (57.9%) with 3-5 years of running experience (31.1%) dominated. The AKP was significantly associated with age ($c^2=6.484$, $p=0.039$) and running experience ($c^2=8.389$, $p=0.036$). The following modifiable intrinsic risk factors were found to have contributed significantly to AKP: tight hamstrings ($p=0.051$, OR=1.021); tight iliotibial band ($p=0.046$, OR=1.122); weak quadriceps ($p=0.040$, OR=0.154), weak hip control muscle ($p=0.004$, OR=1.131) and patellar tilt abnormalities ($p=0.015$, OR=1.332).

Conclusion

Anterior knee pain is prevalent and modifiable intrinsic risk factors exist amongst runners. Routine approach to AKP should include consideration of modifiable risk factors. A transdisciplinary approach should be considered to compensate for the lack of resources in low socioeconomic communities.

Keywords

Anterior knee pain; Intrinsic risk factors; Runners

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0435

THE IMPACT OF ANTERIOR KNEE PAIN ON THE QUALITY OF LIFE AMONG RUNNERS IN POOR RESOURCED PERI-URBAN COMMUNITIES

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Introduction/Background

Anterior knee pain (AKP) is the most common injury among runners and has a negative impact on the quality of life (QOL) of many athletes. The objective was to determine the impact of anterior knee pain on the QOL among runners in poor resourced peri-urban communities in Ekurhuleni, South Africa.

Material and Method

A cross-sectional study design was used. A population of 73 runners with AKP were all included to participated in this study. Participants included runners aged 13 to 55 year-old with no history of degenerative and traumatic knee injuries. The standardised SF-36 questionnaire was used to collect data. Ethical clearance, permission from club managers and consent from participants were obtained. Data were collected over six weeks and analysed using SPSS. Descriptive statistics included the calculation of frequencies, means, standard deviations and ranges. Inferential statistics included Spearman's rank correlation coefficient calculation.

Results

The lowest QOL scores were found among the following SF-36 scales: role functioning/physical (62), role functioning/emotional (59), energy/fatigue (59), emotional well-being (68) and pain scales (63). Males, youth and runners with least experience in running presented with the lowest scores. Significant correlation was found between the following variables: role functioning/physical and experience ($p = .030$, $r = -.221$), role functioning/emotional and gender ($p = .017$, $r = -.247$) and race ($p = .012$, $r = -.265$), general health and experience ($p = .021$; $r = .239$), energy/fatigue and race ($p = .012$; $r = .264$), emotional well-being and age ($p = .020$; $r = .241$), general health and gender ($p = .013$; $r = .456$), social functioning and age ($p = .010$; $r = .271$) and energy/fatigue and experience ($p = .001$; $r = -.371$).

Conclusion

Multidimensional rehabilitation programme is recommended to improve the QOL among runners with AKP. This study will provide valuable knowledge that will assist clinicians in their development of rehabilitation programmes for AKP.

Keywords

Anterior knee pain;Quality of life;runners

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0644

PIRIFORMIS SYNDROME - THREE DIFFERENT TYPES OF TREATMENTS

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Introduction/Background

Piriform syndrome (PS) is an uncommon cause of sciatica, resulting from compression of the sciatic nerve by the Piriformis muscle.

This work highlights the importance of PMR in the treatment of it and the diversity of therapeutic modalities that are available to this specialty.

Material and Method

Three clinical cases of patients with Piriformis Syndrome and three different approaches will be explained.

Results

Case 1: A 39-year-old woman with chronic right gluteal pain which worsened in the sitting position or with prolonged periods of orthostatism that performed multiple sessions of physiotherapy without symptomatic relief. After an evaluation by the PMR and performance of EMG compatible with PS, she performed 5 sessions of electroacupuncture with symptomatic relief after 3 weeks.

Case 2: A 60-year-old woman followed in PMR after left TKA, started a sciatic pain with irradiation to the right lower limb with about 1 month of evolution, which worsened in the sitting position and experienced relief with left lateral decubitus. Her physical examination was compatible with PS. An infiltration of 100U of botulinum toxin was performed in 2 motor points of the piriformis with symptomatic relief about 7 days after.

Case 3: A 62-year-old woman with sciatic pain that worsened in the sitting position with several years of evolution. It was revealed a possible right PS on EMG. Ultrasound-guided corticosteroid infiltration of the piriformis was performed and 3 months later she referred 50% pain relief.

Conclusion

PS can be approached in many ways from the more conservative treatments, such as physiotherapy, to the surgery. However, between these two extremes, minimally invasive

approaches such as electroacupuncture, corticoanesthetic infiltration and botulinum toxin application begin to emerge with good outcomes. More studies are needed to determine which treatments is the most effective.

Keywords

Piriformis Syndrome;Electroacupuncture;Infiltration

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0665

THE EFFECTIVENESS OF EXERCISE THERAPY BASED ON SAHRMANN APPROACH IN PATIENTS WITH PATELLA-FEMORAL PAIN SYNDROME

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Introduction/Background

Rotational impairment of the knee and hip muscles weakness has been proposed as one of the risk factors of PFPS. The effects of correction of these impairments have not been studied up to now. The aim of this study was to compare the effects of conventional physiotherapy and exercise therapy based on Sahrman approach in patients with PFPS.

Material and Method

In this RCT, 30 patients with PFPS (aged 20-50) were participated. The participants were divided into two groups: traditional physiotherapy group and Sahrman group. In both groups, interventions were applied for 6 weeks. Patients in traditional physiotherapy group only received TENS, hot packs, ultrasound, and knee exercise therapy. But in Sahrman group, additionally, posterior X taping, hip muscle strengthening and functional training was used. Quality of life (KOOS questionnaires), pain (VAS) and position sense of the knee were measured.

Results

Pain severity, KOOS scale and position sense of the knee significantly improved in both groups. In traditional physiotherapy group, mean pain score was decreased of 7.23mm to 11.5mm, mean score of KOOS questionnaire from 95.93 to 73.26 and the average error of knee position of 57.1 to 2.28. In Sahrman group, mean pain score was decreased from 59.93 mm to 40.2 mm, mean score of KOOS questionnaire from 95.73 to 71.4 and the average error of knee position of 6.18 to 2.99 degree.

Conclusion

Essentially, using of Sahrman approach including “posterior X taping on thigh, strengthening of hip abductor, extensor and lateral rotators muscles”, compared to conventional physiotherapy, was not result in more effective improvement in patients with PFPS.

Keywords

Patellofemoral pain syndrome;Sahrman approach;physiotherapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-0931

THE EFFECTIVENESS OF STEROID INJECTION IN TREATMENT OF PLANTAR FASCIITIS: A SYSTEMATIC REVIEW AND META-ANALYSIS OF CONTROLLED-RANDOMIZED TRIALS

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Introduction/Background

Plantar fasciitis is very troublesome in clinical fields. Although steroid injection has been a widely used treatment option in musculoskeletal disorders, there have been arguments about the effectiveness in plantar fasciitis. This study is to determine the effectiveness of steroid injection in the treatment of plantar fasciitis.

Material and Method

Meta-Analysis was conducted using searching engines such as Google Scholar, PubMed, CINAHL, Embase and manual searching which were searched to December 2017. The following key search terms were used; plantar fasciopathy fasciitis in google scholar, "fasciitis, plantar"[Mesh] with two filter options "Randomized Controlled Trial" and "human" in PubMed, plantar fasciopathy fasciitis in CINAHL, plantar AND fasciopathy AND ('fasciitis' OR 'fasciitis'/exp OR fasciitis) in Embase. Two articles were also found using manual searching. Total 35 articles were found and duplicates were removed. Two reviewers reviewed and selected the articles which has randomized controlled design and eligible data. Four articles were determined to be relevant, meeting inclusion and exclusion criteria.

Results

We found that the overall standardized mean differences of pain outcome between steroid injection and other treatments or sham was -0.57(95% confidence interval, -0.83 to -.0.30), with low heterogeneity ($P = 0.52$, $I^2 = 0\%$) at 1 month, but -0.33(95% confidence interval, -0.76 to 0.10, $P = 0.13$, $I^2 = 50\%$) at 3 month. It suggested evidence of the effectiveness of short-term steroid injection, compared with autologous blood injection or other conservative treatment, but limited evidence of long-term effectiveness and functional improvement.

Conclusion

Although steroid injection in treating plantar fasciitis has been arguing, there is evidence of the effectiveness of steroid injection in relieving pain for 1 month. But further study is needed to determine long-term effectiveness of steroid injection.

Keywords

plantar fasciitis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1264

EVALUATION OF PAIN IN PATIENTS WITH TROCHANTERIC BURSITIS SUBMITTED TO INFILTRATION TREATMENT WITH HIALURONIC ACID COMPARED TO INFILTRATION TREATMENT WITH CORTICOSTEROID AND LIDOCAINE

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Introduction/Background

Trochanteric bursitis is a painful inflammation of femur great trochanter bursa. Patients generally complain of lateral hip pain. The classic physical finding is tenderness over the greater trochanter, which reproduces the presenting symptoms. The diagnosis is clinical but computed tomography (CT) scanning can also be used to exclude underlying diseases. Ultrasound and magnetic resonance imaging (MRI) can show the trochanteric bursa inflammation when present. Treatment include physical therapy, adjunctive measures such as rest and criotherapy, nonsteroidal anti-inflammatory drugs (NSAIDs), injections of corticosteroids and anesthetics, and topical anesthetic patches. There are new studies with injections of hyaluronic acid in the treatment of bursitis.

Material and Method

This is a case series study in which 14 patients and 19 bursas with trochanteric bursitis were treated with infiltration of hyaluronic acid or corticosteroid and lidocaine injections. Seven patients were treated with hyaluronic injections and seven patients were treated with corticosteroid and lidocaine injections. The pain evaluation was measured using the verbal numeric scale. The pain was measured and registered before the infiltration treatment, soon after the injection, 1 month and 3 months after. After the data collection, a descriptive statistical analysis was performed using the t-paired test for continuous variables. Statistical significance was considered as $p < 0.05$.

Results

The pain intensity evaluated by the verbal numeric scale showed an improvement of 100% in patients submitted to hyaluronic acid injections compared to a 85,8% in the group treated with corticosteroid injections. The pain improve faster in the group that was submitted with hyaluronic acid. Do to the small sample of patients in each group statistical significance could not be analysed between the groups.

Conclusion

We conclude that hyaluronic injections are effective in the treatment of trochanteric bursitis.

Keywords

hip bursitis;viscosupplementation;corticosteroid

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1271

HIP MUSCLES STRENGTH DEFICIT IN INDIVIDUALS WITH PATELLOFEMORAL PAIN SYNDROME: A SYSTEMATIC LITERATURE REVIEW

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Introduction/Background

Patellofemoral pain syndrome (PFPS) is one of the most common chronic knee diseases, affecting around 25% of active adolescents and young adults with knee injuries.

Different authors hypothesized that the deficit of hip muscle strength may increase femoral movement during functional activities and contribute to the development of PFPS. Indeed, the weakness of the abductors and external rotators can cause excessive adduction and internal rotation, respectively, which may contribute to the stress of the patellar femoral joint.

The present systematic review aims to explore whether reflect if hip muscle strength deficits are normally present in patellofemoral pain syndrome (PFPS). **Material and Method**

A systematic review of the literature indexed in the databases Medline (using PubMed), ScienceDirect, EBSCO host and PEDro. To achieve study purpose, only Randomized Clinical Trials (RCT) were included, with publishing dates ranging from 2005 to 2017, appropriate sample size and in line with the standards of the *Dephi List*.

Results

Ten articles involving a total of 408 patients were included. The average methodological classification was 7,2 (scale 0-10). Hip muscles strength was evaluated in all the searched articles. The studies included confirm that individuals with PFPS have strength deficit in abduction, extension and external rotation of hip muscles compared with the healthy controls group and the unaffected side. On the other hand, hip adductors and internal rotator muscles strength deficit was not so evident or frequent.

Conclusion

Understanding the deficits and pathophysiology associated with PFPS is essential to determine the best approach to treatment. Despite the amount of research on this field, the lack of homogeneity of the protocols (reflected by studies with different age groups, degrees of disease

severity of the individuals or assessment methodologies) might be a challenge when addressing this disease.

Keywords

Patellofemoral Pain Syndrome;Systematic Literature Review;Hip muscles strength

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1140

AVASCULAR NECROSIS OF THE HIP IN A PATIENT WITH EVANS SYNDROME-CASE REPORT

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Introduction/Background

Evans syndrome is a rare syndrome associated with the presence of autoimmune hemolytic anemia. It is one of the rare presenting features of autoimmune disorders, especially in systemic lupus erythematosus (SLE). This case report was made to show the contribution of physiotherapy methods for hip avascular necrosis in a patient with Evans syndrome.

Material and Method

In 2017, a 34-year-old female applied to university hospital for complaining of hip pain. The patient's history included SLE, Evans syndrome diagnosed in 2009. The patient underwent core decompression and grafting due to aseptic necrosis of the right femur in 2015. However, the development of degenerative arthritis continued. Doctors did not recommend total hip arthroplasty because patient was too young for surgery. Patient received 20 sessions physical therapy. Physiotherapy program (ambulation- personal exercises) was performed for 4 weeks (5 days/week) by physiotherapist. First measurements were taken for hip by universal goniometer. Pain intensity was measured with Visual Analog Scale (VAS) and physical functional disability with Western Ontario and McMaster Universities Arthritis Index (WOMAC) was assessed. In addition, Nottingham Health Profile (NHP) and Beck Depression Scale (BDS) were administered.

Results

Before the treatment hip range of motion were taken (70° flexion- 25° abduction.) After the treatment, hip range of motion increased (112° flexion- 35° abduction). Before the treatment, scores were VAS-activity =7, WOMAC=114.29, NHP=136.87 and BDS=15. After the treatment this scores decreased (VAS-activity =3, WOMAC =51.04, NHP=60.2 and BDS=9). At the end of 4 weeks, patient climbed the stairs without pain.

Conclusion

Physiotherapy program can be used as a preventive and supportive treatment for patients who are young for prosthesis intervention and have systemic problems such as Evans syndrome.

Keywords

Evans Syndrome;Necrosis;Exercise Therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1728

BOTULINUM TOXIN TREATMENT OF ENDOMETRIOSIS-ASSOCIATED CHRONIC PELVIC PAIN

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Introduction/Background

Pelvic pain often persists despite optimal surgical/hormonal management in women with endometriosis and may be associated with pelvic floor spasm. This study assesses the effectiveness of onabotulinumtoxinA injection into pelvic floor muscles in women with endometriosis-associated chronic pelvic pain (endo-CPP) measured as changes in pain, muscle spasm, disability, and pain medication.

Material and Method

Women in an ongoing placebo-controlled trial of onabotulinumtoxinA for endo-CPP were offered open toxin injection any time 1-month to 1-year following masked, randomized study injection. Under conscious sedation and with topical anesthetic, 100units onabotulinumtoxinA (25units/cc) was injected transvaginally into areas of pelvic floor muscle spasm under EMG guidance. Spasm was assessed by pelvic exam. Pain, disability, and pain medication use were assessed by visual analog scale (VAS), validated questionnaires (Oswestry Disability Questionnaire), and patient diaries, pre- and post-injection.

Results

Of 28 women in the trial, 13 requested open toxin injection and were followed for >4 months post-injection. At injection, 11/13 had spasm in at least 4 of 6 assessed pelvic muscles and intense pain (median VAS: 5/10; range: 2-7). At least 1-month post-injection, spasm was absent/less widespread (≤ 3 muscles) in all ($p=0.0005$; Figures 1, 2). Eleven of 13 rated their pain as absent/mild (median VAS: 2; range: 0-5; $p<0.0001$); 7/13 used less medication. Disability decreased in 6/8 women with at least moderate disability pre-injection ($p=0.03$; Figure 2). Between 5-11 months post-injection, 7/13 reported return of pain and requested additional injection. Adverse events were mild and transient.

Figure 1: Disability, pain, and spasm over time for women with minimal pre-injection disability
 Time from open-label onabotulinumtoxinA injection

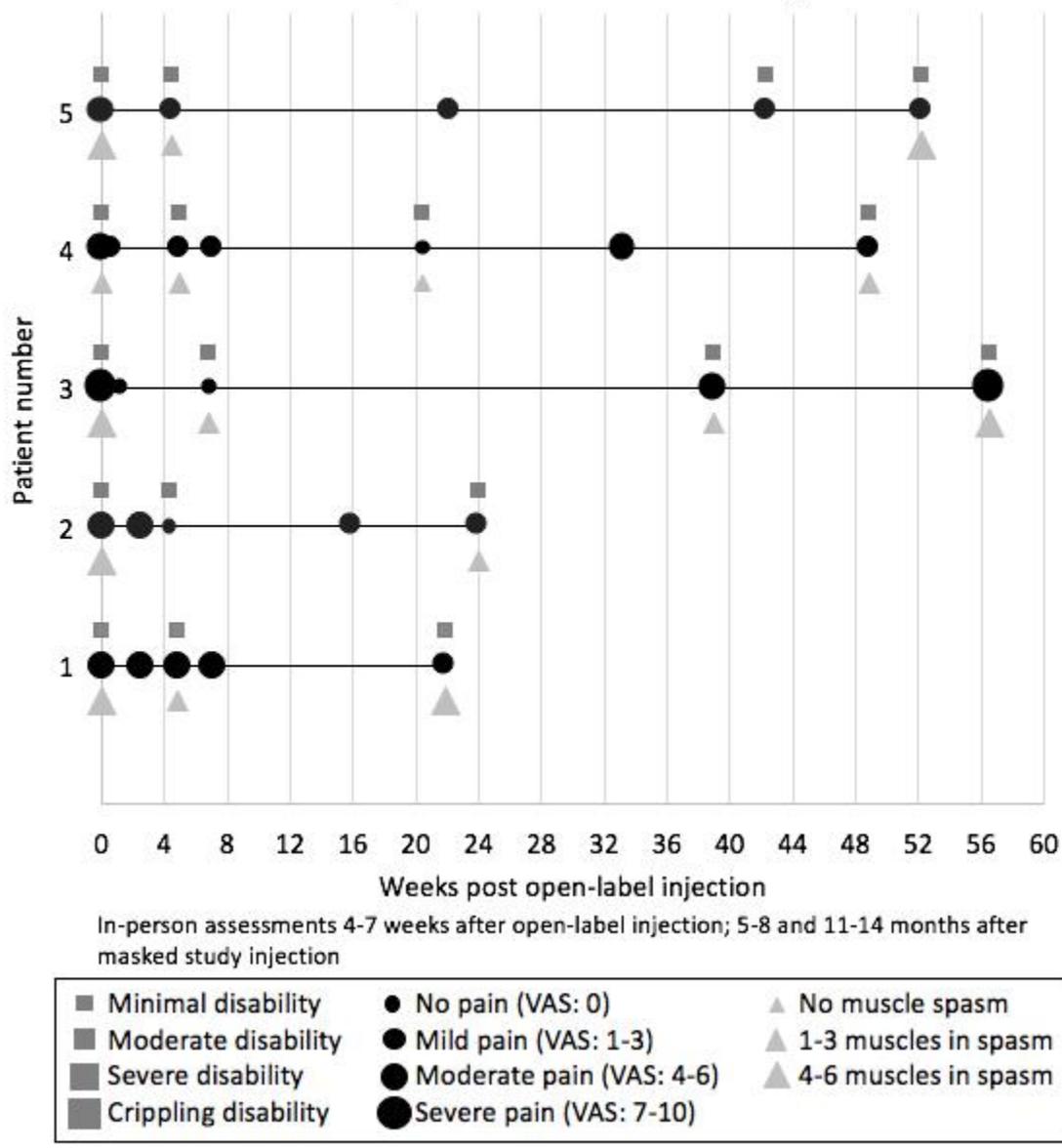
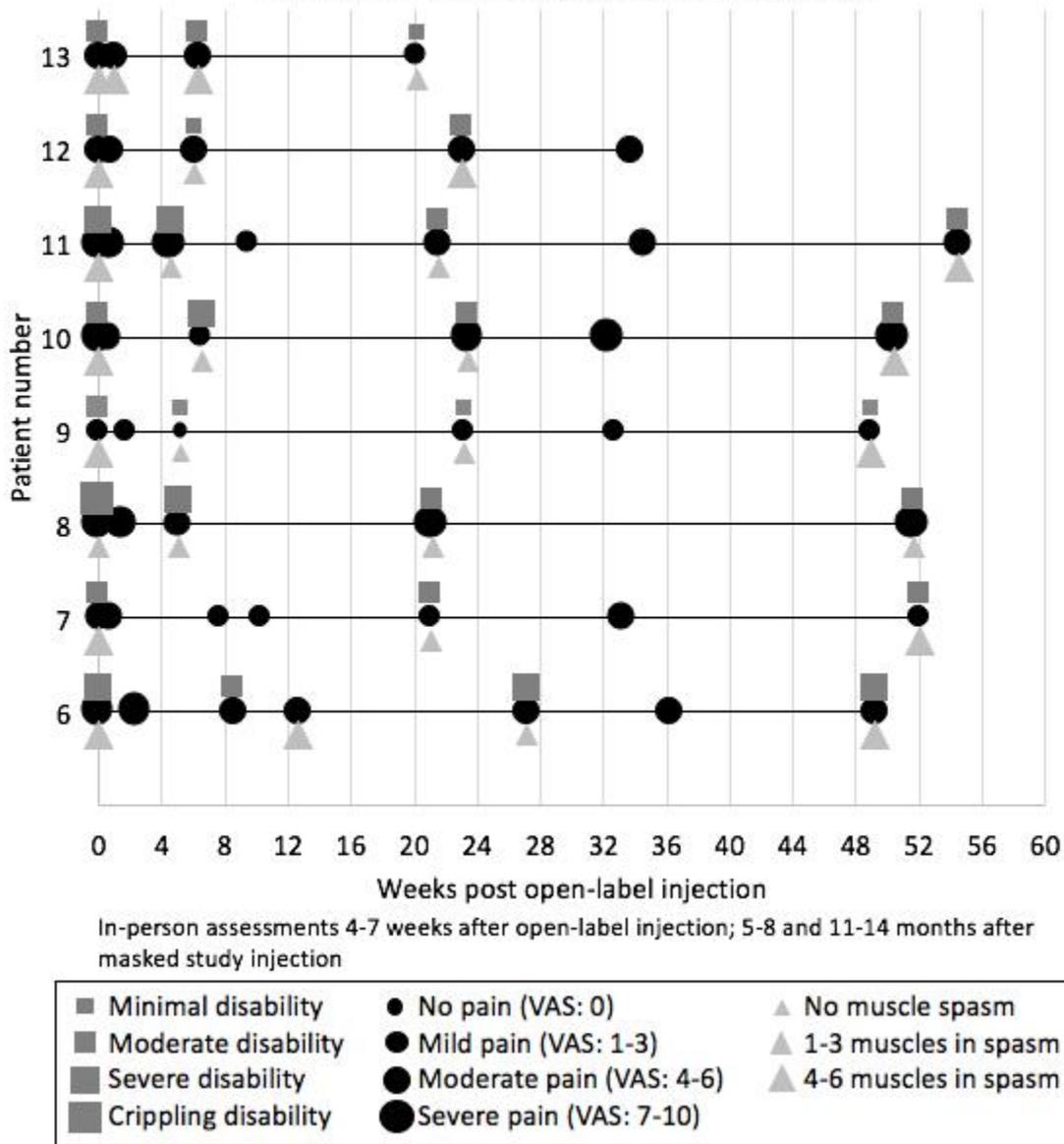


Figure 2: Disability, pain, and spasm for women with at least moderate pre-injection disability
Time from open-label onabotulinumtoxinA injection



Conclusion

Pelvic floor spasm appears to be a major contributor to pain in some women with endo-CPP. In this open study, injection of onabotulinumtoxinA reduced pain, spasm, and disability for up to 11 months. Utility of botulinum toxin for endo-CPP merits evaluation in controlled trials.

Keywords

botulinum toxin; endometriosis; chronic pelvic pain

Conflict of interest

Disclosure statement:

Toxin and funds for study monitoring are provided by Allergan through a clinical trials agreement with the National Institutes of Health.

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1783

WIDESPREAD MYOFASCIAL DYSFUNCTION AND SPINAL SENSITIZATION IN WOMEN WITH ENDOMETRIOSIS-ASSOCIATED CHRONIC PELVIC PAIN

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Introduction/Background

Despite optimal surgical/hormonal treatment, some women with endometriosis continue to have chronic pelvic pain (endo-CPP). Co-morbid non-pelvic pain, myofascial dysfunction, and sensitization have rarely been reported in this population. We systematically assessed the presence and distribution of pain, myofascial dysfunction, and spinal sensitization in women with endo-CPP.

Material and Method

Women (18-50 years) with endo-CPP after optimized surgical/hormonal treatment were evaluated. Participants underwent gynecologic examination of pelvic floor muscles to identify tenderness/spasm. Neuromusculoskeletal examination included assessment of paraspinal tactile allodynia (Von Frey monofilament) and hyperalgesia (Wartenburg pinwheel). Myofascial trigger points (MTrPs) were identified in 13 regions bilaterally. Pressure-pain thresholds (PPTs) were measured over interspinous ligaments and MTrPs.

Results

Twenty-eight women with endo-CPP for a median of 12 years (range 1-20) were evaluated. All had pelvic floor muscle spasm on gyn examination. All endorsed the pelvic floor as a major focus of pain, which was described as focal in 19/28. All women had widespread myofascial dysfunction with MTrPs in more than two-thirds of assessed regions. Low PPTs (<9lb/in²) were found over interspinous ligaments in 24(86%) women. Widespread spinal segmental sensitization (allodynia and hyperalgesia) was present in 15(53%) subjects. Thoracic sensitization was present in 19(68%) women and lumbosacral sensitization related to the pelvic region in 17(61%). While cervical sensitization was detected in only 2(7%), 22(79%) reported recurrent, severe headaches and 14(50%) experienced orofacial pain.

Conclusion

Women with endo-CPP can have myofascial dysfunction beyond the pelvic focus of pain, demonstrated by widespread diffuse and regional allodynia, hyperalgesia, MTrPs, and lowered PPTs, likely reflecting central sensitization. Sensitization may be initiated and maintained by pelvic floor spasm and may account for pain persisting after resection of endometriosis lesions and despite continued use of hormonal treatment. These diffuse and focal myofascial and central nervous system manifestations warrant consideration in management of pain in this population.

Keywords

central sensitization;endometriosis;chronic pelvic pain

Conflict of interest

Disclosure statement:

Toxin and funds for study monitoring are provided by Allergan through a clinical trials agreement with the National Institutes of Health.

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1812

LOWER BACK PAIN IN PEOPLE WITH PATELLOFEMORAL PAIN SYNDROME

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Introduction/Background

Knee pain and low back pain (LBP) are serious general health challenges and important causes of physical impairment and disability. Although the prevalence of knee pain and LBP is high, little information is available on their association. the objective is to evaluate the incidence and predictive factors of LBP in people with patellofemoral pain syndrome (PFPS).

Material and Method

A prospective observationned study was conducted at Physical Medicine and Rehabilitation Department, university hospital Monastir, Tunisia from 2012 to 2017. Patients complaining of PFPS were included for a follow up period of tow years at least.

Results

Of the 141 patients with PFPS, 8 were not included for history of low back pain, and 6 were lost to follow-up. Study population comprised 127 patients (89 (70%) females) with a mean age 32.2 ± 10.9 years. 13 (10,2%) cases of LBP were noticed with a mean delay of 6 months from the onset of PFPS. The annual incidence of LBP was 8,6%. Visual Analog Scale (VSA) disability was significantly associated to LBP ($p = 0.01$). The other clinical parameters were not significantly associated.

Conclusion

Incidence of LBP in people with PFPS is higher than in the general population. Perceived disability is associated to the onset of LBP in the population.

Keywords

Patellofemoral pain syndrome ;Low back pain;Predictive factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-1894

QUADRICEPS MUSCLE ATROPHY AND VASTUS MEDIALIS OBLIQUUS ATROPHY IN PATELLOFEMORAL PAIN SYNDROME

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Introduction/Background

Quadriceps atrophy and in particular atrophy of the vastus medialis obliquus (VMO) muscle have been frequently related with patellofemoral pain syndrome (PFPS). The aim of this study was to investigate whether total quadriceps atrophy and VMO atrophy are present in the affected limb of individuals with patellofemoral pain.

Material and Method

This case-control study included five patients with one-sided PFPS. We measured the size of the total quadriceps and one part of it (VMO) in both legs. VMO size (length and width) was measured with ultrasound scanning at the level of the upper edge of the patella. Total quadriceps size was measured as girth with a cloth tape (all parts of the muscle) on several levels (upper edge of the patella, on the 5 cm and on the 10 cm of the upper edge of the patella). Measures of unaffected leg served as control. Statistical analysis: T test.

Results

Three men and 2 women were included, age 19 – 48, average 36.6. VMO size of the symptomatic leg, measured with ultrasound, was not significantly smaller than in the unaffected leg $p = 0.14$. Total quadriceps size measured as girth was significantly smaller in the affected leg than in the control leg, $p = 0.002$.

Conclusion

Total quadriceps muscle atrophy was shown to be present in patients with PFPS when analyzed by girth measures. In our sample of patients with PFPS, selective atrophy of the VMO was not identified by ultrasound measures. Simple measures, like measuring girth with a cloth tape, could be clinically useful assessment criterion of PFPS severity.

Keywords

patella-femoral pain syndrome; muscle atrophy; measures

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2116

ANALYZE THE EFFECTS OF BOTULINUM TOXIN INFILTRATION IN THE SHORTENING OF THE AQUILES-CALCANEAL-PLANTAR SYSTEM AS A TREATMENT FOR PLANTAR FASCITIS.

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Introduction/Background

The aquiles-calcaneal-plantar system shortening (ACPSS) is a frequent cause of ankle/foot pain. Pain can be located in the Achilles tendon or in the calcaneal insertion of the Plantar Fascia (PF), is the most frequent cause of chronic heel pain. Diagnosis is clinical given by heel pain that may vary in location, although calcaneus anteromedial region is the most common point. At physical examination it's important to evaluate the ankle range of motion. Silverskiold test informs about the relationship between the origin of the shortening if it's the gastrocnemius muscle or the soleus.

Material and Method

Prospective study, from December 2016-December 2017, were selected 41 patients but 56 infiltrated legs, with PF resistant to conservative treatment, who had performed 2 or more of this treatments, without improvement: analgesics, insoles, physiotherapy and corticosteroids infiltration. All had clinical criteria for ACPSS. Patients were infiltrated in the gastrocnemius intern muscle with 100-150IU of botulinum toxin, associated with triceps sural eccentric stretching 3/day, from the 4th day postinfiltration. Visual analog scale for pain (VAS) and the Foot Function Index- Spanish version (FFI) were evaluated. Patients were reviewed after 1, 4 and 6 months.

Results

The results were analyzed through the SPSS program;66%(27 patients) were women between 40-60 years of age;73%(30 patients) had received more than 3 treatments at the beginning of the study; 46%(19 patients) showed a treatment adherence of 2-3 times a day. Initial VAS was 7, one month later was 5 and 6 months after infiltration was 4. FFI scale one month after infiltration was 38% and sixth month was 28%; 78%(32 patients) recommended the treatment.

Conclusion

Infiltration with botulinum toxin, allow to improve the length of the posterior compartment in patients with ACPSS as well as decrease in VAS, and the improvement in the functionality and limitation of the activities according to the FFI scale.

Keywords

PLANTAR FASCITIS;BOYULINUM TOXIN;INFILTRATION

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2180

SCIATIC NEURITIS CAUSED BY STRAIN OF ADDUCTOR BREVIS MUSCLE

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Introduction/Background

Sciatic nerve is the longest single nerve in the body, derived from lumbosacral plexus. Most common cause of sciatic neuropathy is trauma, including hip dislocation and fracture. Besides, compression due to prolonged bed rest, ischemic nerve infarction, and hematoma are also common causes of sciatic nerve lesion. Unlike the previously well-known cause of sciatic neuropathy, it was secondarily induced by adductor brevis muscle strain diagnosed by MRI in this case report. This is the first report which shows muscle strain can be a cause of sciatic neuritis.

Material and Method

A 50-year-old female patient who had been swimming for 10 years as hobby, mainly free style and breaststroke, visited the emergency room with pain and tingling sense on the posterolateral side of the right thigh. Symptoms began 2 to 3 months before her first visit to the emergency room and abruptly worsened a week earlier. She was admitted to rehabilitation department for further evaluation and pain control.

Results

Simple radiography and lumbar spine MRI showed no specific findings, but hip MRI showed sprain of the right adductor brevis muscle and edema around the right sciatic nerve, which was compatible with secondary focal sciatic neuritis. Electrodiagnostic study showed no abnormal findings. Physical modalities such as hot pack, ultrasound, transcutaneous electrical nerve stimulation, and Interferential current therapy on right buttock area and pain control with gabapentin, NSAID, acetaminophen and opioid improved symptom.

Conclusion

This is the first case report that shows adductor brevis muscle sprain may cause sciatic neuritis. There have been a few case reports which revealed that piriformis bursitis and muscle tear can be cause of sciatic neuropathy, but this case had only focal muscle strain beside the sciatic nerve and it was accounted for the cause of radiating pain.

Keywords

adductor brevis muscle;strain;sciatic neuritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2204

EFFICIENCY OF ISOKINETIC EXERCISE ON PAIN IN PATELLOFEMORAL SYNDROME : EXPERIENCE OF PRM DEPARTMENT OF MOHAMMED VI UNIVERSITY HOSPITAL - MARRAKECH

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Introduction/Background

Patellofemoral pain syndrome (PPS) is a very common cause of anterior knee pain often encountered in young individuals due to repetitive flexion stress and poor patellar kinetics. In the absence of degenerative lesions or bad patella centering, the problem is frequently attributed to a strength imbalance between knee flexors and extensors muscles.

Isokinetic training has become an increasingly popular modality in rehabilitation, particularly effective in dynamic muscle strengthening for PPS.

The aim of our study is to show our experience in management of PPS and to determine the effect of an isokinetic exercise program on pain scores in patients with this syndrome.

Material and Method

A total of 10 patients with the complaint of anterior knee pain were recruited. PPS was assessed clinically and concentric testing was conducted at two speeds (60 and 180 d/s). Parameters measured were: torque peak and work produced by the effector muscles (quadriceps and hamstrings) and force ratio (flexors/extensors). Deficient force or work was defined as > 10% deficit compared with the healthy side or in presence of abnormal ratios. Force curves were analyzed and morphological anomalies were found for 100% of the patients.

Trainings were performed on the HUMAC NORM Isokinetic dynamometer at 240, 180, 120, 90 angular velocity, concentric mode, twice a week for 10 weeks. Visual analogue scale was used before and after the treatment to determine the degree of knee pain.

Results

The results are still ongoing since some of the patients have not yet completed the twenty sessions treatment.

Conclusion

Unbalanced knee muscles strength ratios are found universally with patellofemoral disorders. Using precise isokinetic dynamometers to train these muscles must be considered to correct the imbalance and ease the pain. This is the first experience of its kind in our university hospital, we intend making the sample of patients grow in the future.

Keywords

Patellofemoral pain syndrome ;isokinetic training;anterior knee pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2324

THE EFFICACY OF AUTOLOGOUS BLOOD-DERIVED PRODUCTS FOR CHRONIC ACHILLES TENDINOPATHY : A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

Achilles tendinopathy is a common disease among athletes, and there have been many high-level studies investigating autologous blood-derived products (including platelet-rich plasma and whole blood). This systematic review aimed to assess the efficacy of autologous blood-derived products for chronic Achilles tendinopathy.

Material and Method

This review article followed PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Studies were comprehensively searched from electronic online databases (i.e., Pubmed, Embase, Cochrane controlled trials register and the Cochrane databases). We reviewed literature up to January 2018. Randomized controlled trials (RCTs) assessing the efficacy were included. The VISA-A (Victorian Institute of Sports Assessment-Achilles) score was evaluated at short and long-term follow-up. A subgroup analysis concerning PRP preparation techniques and study designs was performed.

Results

A total of five randomized controlled trials with 223 patients were included in this meta-analysis. Three studies reported short-term follow-up results and four studies reported long-term follow-up. The autologous blood-derived products can significantly reduce pain and improve functional recovery when compared with the condition before treatment. The pooled effect size of improved VISA-A score was 0.284 (95% CI: -0.044 to 0.611) at short-term follow-up and 0.246 (95% CI: -0.434 to 0.925) at long-term follow-up. There were no significant differences between autologous blood-derived products and placebo group in VISA-A score.

Conclusion

For patients with chronic Achilles tendinopathy, the review revealed that autologous blood-derived products reduced pain and improved functional activity after treatment. However, there seems no significant difference between autologous blood-derived products and placebo group.

Keywords

autologous blood-derived products; Achilles tendinopathy; platelet-rich plasma

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2380

THE ROLE OF REHABILITATION IN THE MANAGEMENT OF THE FABELLA SYNDROME

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Introduction/Background

The Fabella is a sesamoid bone present on the posterior articular face of the lateral femoral condyle, included in the gastrocnemius muscle. Its frequency varies between 20% - 87%. The estimated length is 4-22 mm with an average diameter of 10 mm. It's generally asymptomatic, however it can cause posterolateral knee pain, which increases with joint's extension or external pressure, characterizing the "Fabella Syndrome". Neuropathy of the common peroneal nerve is also described. X-Ray can reveal the position of the fabella and MRI can exclude other causes of pain. The first-line treatment involves steroids injections in maximum pain area, restriction of activities for up to 6 months, manual therapy. In refractory cases, surgical treatment can be considered.

Material and Method

A 48 years old woman presented a 2 years history of right posterolateral knee pain, which increased when going down and up stairs. Physical exam revealed increasing pain by pressing the fabella and MRI showed the presence of a Fabella in the posterolateral region of the knee. After six months of conservative treatment, fabellectomy was finally executed, presenting 12 hours later, knee pain, right foot dorsal flexion deficit, hypoesthesia and paresthesias on the lateral side of the leg. Surgical revision showed a large bruise around common peroneal nerve, which was drained. Electromyography confirmed the clinical suspicion of neuropraxia of the nerve.

Results

Conservative treatment was indicated with active and passive ROM exercises, use of ankle foot orthosis and drugs for neuropathic pain, with good results at 5 months follow-up, achieving improvement of sensory and motor deficit.

Conclusion

The Fabella is a frequent finding that rarely produce a painful symptomatology. In this case, after failure of a conservative treatment, an uncommon complication was observed when performing the fabellectomy. The role of rehabilitation is essential both in the first-line treatment and in resolving possible surgical complications.

Keywords

Fabella Syndrome;Fabella

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.05 Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISPR8-2492

PRP INJECTION AFTER ESWT TREATMENT FOR BILATERAL HAGLUND'S DEFORMITY:REPORT OF ONE CASE

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Introduction/Background

Haglund's deformity is a painful swelling of the hindfoot with mechanical origin. It is usually diagnosed by a combination of clinical and radiological assessments. Different treatment strategies can be used. In these text we report a case of bilateral Haglund's deformity which was treated with PRP injection after ESWT therapy.

Material and Method

Case report:

A 35-year-old male presented bilateral heel pain followed by the appearance of a swelling at the posterior heel. On physical examination his ankle's ROM were limited and painful. Palpation of calcaneus and retrocalcaneal bursa were painful too. Plain radiographs showed the existence of a conflict between the achilles tendon and the posterior superior angle of the calcaneus. MRI results found to be compatible with bilateral Haglund's deformity. He treated with resting, ice application at 4-6 hours intervals, elevation, aessin diethylaminesalicylate gel application 4 times a day, ibuprofen 1600 mg/day for 2 weeks with padding and strapping. No improvement has been observed at control assesment and we suggested ESWT therapy. Total 10 session of ESWT treatment has been applied. After these treatments, the patient underwent PRP injection to the posterior superior edge of the calcaneus with ultrasound guiding. Injection was made at 2 week intervals totally for 3 times.

Results

The outcome was favorable with regression of pain and resumption of daily activities after 6 weeks from the last injection.

Conclusion

Haglund's deformity is one of the causes of posterior heel pain causing a handicap in life and sports. Its management must be well studied. PRP injection after ESWT can be an alternative treatment method.

Keywords

PRP;ESWT;Haglund's deformity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0015

THE EFFECT OF NEEDLE TIP POSITION ON LUMBAR TRANSFORAMINAL EPIDURAL STEROID INJECTION USING NERVE STIMULATOR

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Introduction/Background

To determine the effect of needle tip positions on short-term effect of transforaminal epidural steroid injection (TFESI) using nerve stimulator (NS) for lumbar radiculopathy.

Material and Method

45 patients who received TFESI using NS were retrospectively reviewed. The TFESI was conducted under fluoroscopic guide. The goal of positioning was to allow a needle tract toward injection site such as "safe triangle". We used the NS to optimize the position of needle tip. The needle tip was repositioned to achieve minimal current output (0.2 mV) when the patients had paresthesias within dermatomal areas. The needle tip positions were assessed by dividing the intervertebral foramen into 4 quadrants in the anterior-posterior view (Fig. 1). The grade of nerve root compression on MRI in 45 patients was evaluated (Fig. 2). The outcome measurement (OM) was evaluated before pre-injection and after 2 weeks.

Results

91 TFESIs were conducted in the 45 patients. The position of needle tip was 68, 19 and 4 cases in the quadrant 1, 2 and 3 respectively. The mean score of OM reduced significantly in the quadrant 1 and 2, but not in the quadrant 3 after 2 weeks. There were no significant differences in the mean score of OM according to the grade of nerve root compression.

Conclusion

As the neural structures lie medially in the foramen, it is believed that a medially placed needle such as quadrant 2 has a higher likelihood of causing neurological complication. Bogduk proposed the ideal needle tip position by defining a "safe triangle" like quadrant 1. Our study showed that there was a similar effect in the quadrant 2 just the same in the quadrant 1. We conclude that the NS to guide TFESI in addition to fluoroscopy can be a useful therapeutic tool in the patient with radicular symptoms.

Keywords

needle tip position;nerve stimulator;transforaminal epidural steroid injection

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0043

DENTISTS' NECK, LOW BACK, AND WRIST PAIN SEVERITY DIFFERENCES RELATED TO SEX

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Introduction/Background

In literature, women have pain more than men. The aim of this study was to determine if there is difference of dentists' pain severity on their neck, low back, and wrists related to their sex.

Material and Method

With the mean age of 32.46 ± 9.22 (24-62) years, 54 (26 women, 28 men) dentists working at different divisions of a university hospital were included in this study. Pain severity of their neck, low back, and wrists was assessed on visual analogue scale (0-10) and also asked if it was low, medium or severe. SPSS 11.0 was used for calculating pain severity means and frequencies related to sex.

Results

The mean of active working years of women being a dentist was 8.30 ± 7.00 (1-16) and that of men was 10.52 ± 8.2 (2-39). Neck, low back, and wrist pain severity frequencies related to sex

were shown at Table.

Table. Neck, low back, and wrist pain severity frequencies related to sex

Body area	Pain severity											
	Low		Medium		Severe							
	Women	Men	Women	Men	Women	Men						
	n	%	n	%	n	%	n	%				
Neck	3	11.5	4	14.3	7	26.9	4	14.3	-	-	-	-
Low back	8	30.8	11	39.3	7	26.9	4	14.3	-	-	1	3.6
Wrist	2	7.7	1	3.6	4	15.4	1	3.6	-	-	2	7.7
		n=13		n=15		n=18		n=9		n=0		n=3

Neck, low back, and wrist pain duration of women were respectively; 1.11 ± 2.25 (0-10), 2.57 ± 4.49 (0-15), and 0.73 ± 1.53 (0-5) years. Those of men were 0.96 ± 3.59 (0-19), 2.46 ± 4.36 (0-16), and 0.30 ± 1.16 (0-6) years. Pain severity of women on these body areas were respectively; 1.46 ± 2.33 (0-7), 2.30 ± 2.20 (0-8), and 1.19 ± 2.13 (0-7); Those of men were 1.03 ± 1.93 (0-7), 1.75 ± 2.27 (0-8), and 0.42 ± 1.50 (0-7).

Conclusion

There was no difference of pain severity and frequency between women and men dentists. Therefore pain severity and its frequency may differ related to occupation. So this study could be applied for workers having other occupations.

Keywords

dentist;pain;sex

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0046

CERVICAL MANIPULATION AND DRY NEEDLING IN PATIENTS WITH CERVICOGENIC HEADACHE

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Introduction/Background

Cervicogenic headache is one type of headache that characterized by pain in one side of head and neck. However, pharmacological management has not been successful enough to treat this type of headache. Cervical manipulation and dry needling of trigger points are among the suggested methods for treating the cervicogenic headaches.

The purpose of this study was to determine the effectiveness of a combined method of manipulation plus dry needling of trigger points in the management of cervicogenic headache.

Material and Method

55 women aged between 17 to 70 years suffered from chronic cervicogenic headache were included. The patients were visited by an expert neurologist, and then they were referred to a physiatrist.

An expert physiatrist did cervical manipulation in six sessions with 1 week interval between each session. Dry needling was done in muscle's trigger points in 6 to 10 sessions.

Results

The mean (SD) age was 48.5 (13.6) years. The mean (SD) headache severity based on visual analog scale (VAS) and mean (SD) duration of each headache attack were 7.3 (2.1) and 5.7 (3.6) hours per day, respectively. In addition, mean (SD) number of headache days was 13.5 (6.2) per month.

After 8 weeks of starting intervention, the patients experienced headache with less duration and less frequency. Mean duration of headache per day and per months, and mean VAS score significantly decreased, (p value<0.05).

Conclusion

According our results, it seems that non pharmacologic treatments including cervical manipulation and dry needling of trigger points can be helpful in management of cervicogenic headache.

Keywords

cervicogenic headache;manipulation;neck pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2623

CLOMIPRAMINE CONTRIBUTION IN THE TREATMENT OF CHRONIC LOW BACK PAIN

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Introduction/Background

Chronic low back pain is a frequent reason for consultation with a limited therapeutic choice. The aim of our work is to determine the effect of clomipramine on chronic low back pain.

Material and Method

This is a prospective study conducted in the Department of Physical and Rehabilitation Medicine in Sahloul Hospital TUNISIA among patients hospitalized for chronic low back pain for more than two years unimproved by NSAIDs, analgesics and rehabilitation over a period. All patients were hospitalized for 10 days and received clomipramine by slow intravenous infusion with progressively increasing doses: 25mg 1st day, 50mg 2nd day, 75mg 3rd day until the 10th day relayed to the output orally by doubling doses (150 mg) until the 90th day. The evaluation of our results was performed on Day 0; D4; D10; D90 by visual analogue scale (VAS), Schöber index, the finger-floor distance and the Functional Independence Measure (FIM).

Results

We collected 22 patients. The average age of our patients was 46 years, ranging from 20 to 60 years. There was a male predominance (13/9). The average pain duration was 6 years. On admission, the majority of patients had a VAS > 8/10. VAS values began to decline since the 4th day to stabilize from the 10th day until the end of the cure (VAS = 4/10). There was no improvement in spinal mobility or significant changes in functional capacity (Functional Independence Measure (FIM)). 62% of patients experienced adverse effects (dry mouth ++).

Conclusion

Clomipramine, in addition to its antidepressant effect, has a central analgesic action that has become widely used in the treatment of chronic low back pain resistant to conventional analgesics.

Keywords

clomipramine;Chronic low back pain;VAS

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0119

CORRELATION BETWEEN LUMBOSACRAL CANAL STENOSIS AND MORTON NEUROMA

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Introduction/Background

Morton neuroma and spinal canal stenosis are two main reasons of referral of patients to rehabilitation clinics that seems have different mechanisms of occurrence. With early diagnosis and management of concomitant problems with canal stenosis, patients can achieve more quality of life and function. So, we designed this study for evaluation of possible correlation between these entities.

Material and Method

We evaluated 30 patients with lumbosacral spinal canal stenosis who were referred to rehabilitation clinics of our university. We examined their feet for possible Morton neuroma and evaluate their daily functions by using *Oswestry Low Back Pain Disability Questionnaire*.

Results

The results showed high prevalence of Morton neuroma among patients with spinal canal stenosis (86.7%). Such patients with concomitant Morton neuroma, showed low functional score with assessing of questionnaire. Numbers of Morton neuroma have positive correlation coefficient with worsening of their functions (0.59).

Conclusion

It has been suggested that physicians should exam patients with lumbosacral spinal canal stenosis for detection of concomitant Morton neuroma.

Keywords

spinal canal stenosis;Morton neuroma;oswestry questionnaire

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2640

CHARACTERISTICS OF THE RIGID SPINE SYNDROME DUE TO SEPNI-MYOPATHY. A LONG-TERM FOLLOW-UP SERIES OF 21 PATIENTS.

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Introduction/Background

SEPNI-1 related myopathy is a recessive autosomal disorder caused by *SEPNI* gene mutations. Patients present homogeneous clinical features, in particular a striking cervico-axial hypotonia and a weakness associated with poor head control. A progressive spinal stiffness and severe restrictive respiratory insufficiency with diaphragmatic failure is observed in the course of the first or second decade. They are described as a “rigid spine syndrome” (RSMD1). The aim of this study was to describe the course of the spinal deformity and the clinical and respiratory complications.

Material and Method

We reviewed retrospectively the medical charts of 21 patients with mutations in the *SEPNI* gene. Genetic, clinical, radiological (X-rays) and respiratory studies (spirometry) were reviewed and analyzed.

Results

Mean age at last follow-up was 23 years (4 – 55). All patients except one, showed poor weight and height for their age, with a mean body mass index of 13,3 kg/m² (8 – 25). Mechanical ventilation was required in 19 patients (age range 4-15), usually only nocturnally, but in three cases a tracheostomy was performed. Four patients lost walking at a mean age of 28 (12-44). Clinical and radiological examinations were available for 15. Cervical spine stiffness was present in 65% of patients (mean chin-sternum distance in maximal cervical flexion of 7 cm). Scoliosis was observed in 12 (7 spinal translation; 6 pelvic obliquity). Clinically, a thoracic lordosis was observed in 87% of patients, and X-ray showed a flat thoracic spine. Management

of the spinal deformity was focused mainly in axial stretching and antilordotic bracing. Two cases developed a severe progressive scoliosis before puberty. Spinal surgery was performed in 15 patients.

Conclusion

SEPN1-related myopathy should be suspected in children developing a characteristic stiff and lordotic thoracic spinal deformity associated with a cervical rigidity. Due to constant respiratory complications, these patients require specialized multidisciplinary management.

Keywords

Ridig Spine Syndrom;SEPN1-related myopathy ;Thoracic lordosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2658

COMPARISON OF SPATIOTEMPORAL CHARACTERISTICS WITH EYES OPEN AND CLOSED SITUATIONS IN PATIENTS WITH CERVICAL DISC HERNIATION AND HEALTHY CONTROLS

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Introduction/Background

The aim of the study is to determine the spatiotemporal characteristics in patients with cervical disc herniation during six minutes gait with eyes open and closed.

Material and Method

15 patients between the ages 25 and 65 (mean age: 47.8 ± 7.13 , BMI: 28.5 ± 7.03) with Cervical Disc Herniation (CDH) and 5 healthy control (HC) were participated to the study. The patients had thoracic outlet syndrome, whiplash injury, positional vertigo, Meniere's Disease, other neurological diseases and had any spine surgery were excluded from the study. All patients were asked to walk six minutes on treadmill with their preferred speed for getting used to treadmill surface. The OptoGait photoelectric cells system (OptoGait, Microgate S.r.l, Italy, 2010) were used to gain gait spatiotemporal characteristics. After the patients ready for walking on treadmill, gait parameters were recorded while patients were walking during eyes open and closed, respectively. Wilcoxon signed ranks test was distributed for statistical analyses.

Results

There was no statistical difference between CDH and HC in terms of step length, stance phase, swing phase, single support, double support, load response and cadence in both eyes open and closed gait analyses ($p > 0.05$). In favor of CDC, cadence increased during eyes closed as to eyes open situation ($p > 0.05$).

Conclusion

Although, the study has small participants, no additional negative effect has detected in patients with CDC apart from HC on gait parameters in both eyes open and closed situation. For future studies, more participants were included to the study to make precise comments and treadmill versus normal surfaces could be used to minimize the measurement errors.

Keywords

gait; cervical disc herniation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0163

RELATIONSHIP BETWEEN PHYSICAL ACTIVITY LEVEL AND CLINICAL CHARACTERISTICS WITH THE PRESENCE OF SACROILIAC JOINT DYSFUNCTION (SIJD) IN PEOPLE WITH LOW BACK PAIN

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Introduction/Background

SIJD explains 15-30% of idiopathic low back pain (LBP) cases, but there is no evidence about the characteristics of LBP population with SIJD diagnosis. The aim of the study was to establish the relationship between physical activity level and clinical characteristics with the presence of SIJD in people with LBP.

Material and Method

136 subjects were evaluated (54 with SIJD and 82 without SIJD), with 29 ± 12 years old and BMI 23.4 ± 3 Kg/m². Pain evolution time, presence of spine pathologies, use of medications, previous treatments and sedentary time were evaluated. Pain was evaluated with the visual analog scale at rest, at palpation on SIJ and at movement (during lifting of a load). Functionality was assessed with Oswestry Disability Index and physical activity level with two self-perceived questions. Data were evaluated for normality and homogeneity and Student's t-test was used to determine the difference between groups.

Results

Differences in pain at palpation > 3 cm ($p \leq 0.007$) and at movement > 2 cm ($p \leq 0.001$) on SIJ in the SIJD population were identified.

Conclusion

Pain at palpation on SIJ in the SIJD group is a sign of sacroiliac pain known as Fortin's sign. Increase of pain at movement in the SIJD group could be related to lack of stability on the SIJ and alteration of loads transfer in presence of SIJD. These findings highlight the importance of emphasizing the stabilizing musculature of SIJ during the rehabilitation of SIJD.

Keywords

Sacroiliac pain; Physical activity; low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0164

ASSOCIATION BETWEEN MUSCLE FUNCTION AND POPULATION'S CHARACTERISTICS WITH THE PRESENCE OF SACROILIAC JOINT DYSFUNCTION (SIJD).

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Introduction/Background

SIJD can explain about 15-30% cases of idiopathic low back pain (LBP). The aim of the study was to evaluate associations between electrical activity and strength of Latissimus Dorsi (DA), Gluteus Maximus (GM) and Biceps Femoris (BF) muscles according to characteristics of SIJD population.

Material and Method

One hundred and thirty-six people of both genders with LBP, 54 with SIJD and 82 without SIJD, of 29±12 years old, BMI 23.4±3 Kg/m² were evaluated. Sociodemographic, anthropometric and physical activity (PA) variables were obtained through self-fulfilling forms. The RMS amplitude and latency were evaluated with surface electromyography (EMG) during lifting of a load from ground level and the muscle strength through manual dynamometry. To evaluate possible associations, a Log binomial simple and multiple regression was performed, following Greenland recommendations.

Results

There is a negative association for people over 30 years (RP: 0.45) and of male gender (RP: 0.43); positive association for moderate (PR: 1.31) and vigorous (PR: 2.13) physical activity level and latency of right LD (PR: 1.53) when performing the activity with the left lower limb.

Conclusion

Being male and over 30 years old are protective factors for the manifestation of SIJD while practicing moderate-vigorous PA and a delay in the activation of LD, are positively associated with the manifestation of SIJD. The late reaction of the LD could alter the synchronism with the GM, compromising the closing force on the SIJ and forces transfer between the trunk and the lumbopelvic spine, perpetuating symptoms in the SIJD population.

Keywords

sacroiliac dysfunction; Latissimus Dorsi ;Muscle function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0210

CERVICAL MYELOPATHY IN PHYSICAL AND REHABILITATION MEDICINE

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Introduction/Background

We proposed to study the epidemiological and clinical features of hospitalized patients in the Department of Physical and Rehabilitation Medicine for Cervical myelopathy.

Material and Method

This is a retrospective study conducted in the Department of Physical and Rehabilitation Medicine in Sahloul Hospital TUNISIA among patients hospitalized for Cervical myelopathy over a period of five years.

Results

We collected 21 patients: 18 men and 3 women (sex ratio = 6). The mean age was 55.7 ± 11.4 years (35-73 years). Nine patients were workers, 5 were retired and 4 were unemployed. Five patients were hypertensive and 2 had an ulcer. 66% of patients were addressed by a neurosurgical unit and 23% by an orthopedic department. 38% of cases consulted for heaviness of the lower limbs and 23% for cervicobrachial neuralgia. The mean delay prior consultation was 5.2 years. In 38% of cases, the diagnosis of cervical myelopathy was made following a trauma. 38% of patients were tetraplegic. 33% had spasticity predominately in the triceps sural (57%). 61.9% had bladder and sphincter disorders (urinary retention in 7 patients). We used the intermittent catheterization in 5 patients. At the initial assessment of functional independence by the Functional Independence Measure (FIM), we found an average of 79.8 ± 29.7 (46-126). The outcome was favorable in 80% of cases with an average FIM of 96 at the end of the hospitalization.

Conclusion

Cervical myelopathy is the most frequent myelopathy. It is a leading cause of functional disability in the elderly. It results from the impact of an abnormally narrowed spinal canal on the cervical spinal cord. It causes diagnostic problems in its standard forms because it can simulate a neurological disease, therapeutic and prognostic problems because it is often seen in elderly and frail subject.

Keywords

Cervical myelopathy; physical and rehabilitation medicine; Epidemiology and clinical features

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0252

THE EFFICACY OF NEURAL THERAPY IN LOW BACK PAIN REFLECTED FROM PELVIC ORGANS

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Introduction/Background

Low back pain is at the first rank among musculoskeletal disorders. Non-specific low back pain account for the vast majority of cases (85%), whereas a minority of cases (10-20 %) have a specific pathoanatomic diagnosis. One of the causes of low back pain is referred pain which may not remove by the traditional methods used for the treatment of low back pain. Neural therapy, an injection technique, is a treatment system for chronic pain and illness. Neural therapy can provide relief of pain, increased in mobility and the restitution of functions, if other treatment methods fail to treat the pain. The aim of this article is to accentuate that the source of chronic low back pain which resistant to medical and physical therapy may also arise from pelvic organs, and to emphasize the efficacy of neural therapy as an supportive treatment in these cases.

Material and Method

Ten patients (6 female, 4 male), not be achieved an adequate recovery with chronic low back pain treated by medical and physical therapy, were collected. All patients treated by neural therapy (with 0.4% lidocain solution) including local-segmental treatment from T10 to S4 in the lumbosacral region, 5M injection, pelvic plexus injection, i.v. injection (2 ml) (also intradermal injection to cesarean section scar in some cases).

Figure 1. The interspiral intradermal injection (local-segmental treatment from T10 to S4 in the lumbosacral region)



Figure 3. The pelvic plexus injection



Table 1. Patients characteristics

Variables	n=10
Age (year)	51.70±17.88
Sex	
Female	6 (60%)
Male	4 (40%)
Duration of symptoms (year)	8.50±9.54

Figure 2. The SM injection



Figure 4. The intradermal injection to cesarean section scar



Table 2. VAS scores of the patients

VAS	
Initial mean level before injection	8.5±0.85
1 after the injection	0.40±0.51 ^{ab}
3 after the injection	0.40±0.51 ^{bc}

All values are expressed as mean ± SD, number and percentage. *P < .05, significant difference

^{ab}p < 0.01 comparison of initial mean level before injection and VAS in 1 and 3 months after the injection

^{bc}p = 1 comparison of VAS in 1 and 3 months after the injection

Results

VAS in 1 and 3 months after the injection statistically significantly decreased when compared to the initial mean level of VAS (8.5±0.85, 0.40±0.51 and 0.40±0.51, respectively; p < 0.01).

Conclusion

Low back pain is common in the general population and the mechanical causes are preliminary. Although most patients respond to treatments, there is no underlying cause in some patients. In such cases, the referred pain from the pelvic organs should be considered, and in addition to the traditional treatment methods, neural therapy for these areas may be considered as an alternative treatment.

Keywords

Low back pain; Neural therapy; Referred pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0277

THE FIBROLIPOMA OF CAUDA EQUINA; A CASE REPORT

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Introduction/Background

Fibrolipoma is a variant kind of lipoma; which is consisting of fat cells separated by connective tissue septas. It can be develop in the different parts of the body such as oral cavity, parotid gland, esophagus, subcutaneous tissue, larynx, trachea, pharynx, colon, spermatic cord . The cauda equina is a rare localization for fibrolipomas. In this study, we aimed to present clinical and radiological properties of a case with the diagnosis of fibrolipoma of cauda equina.

Material and Method

A 54-years-old patient was admitted to our department with low back pain. Her medical history revealed that the pain had started two months ago and radiated to the dorsal and lateral part of the left lower extremity. The pain was aggravated by walking and relieved by rest. Visual Analog Score(VAS) of low back pain was 90 mm. On physical examination; the movements of the low back were painful . It was detected hypoesthesia on the left L4, L5, S1 and S2 dermatomes. Muscle strength was normal. Patellar tendon and achilles tendon reflexes were also negative bilaterally.

Results

Magnetic resonance imaging (MRI) revealed L4-L5 disc protrusion accompanied compression of left L5 nerve root and the fibrolipoma which is localized into the cauda equina fibers at the level of L4,L5 and S1. After the conservative treatment including anti-inflammatory medical therapy ; VAS pain score was decreased from 90 mm to 20 mm. The patient was also referred to neurosurgery department.

Conclusion

The fibrolipoma of cauda equina is an unusual clinical disorder. Especially neurological examination can be useful to distinguish this clinical entity from other pathologies. Radiological evaluation should be used for the confirmation of the diagnose.

Keywords

fibrolipoma;cauda equina;low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0279

ABDOMINAL CURL-UP WITH ELASTIC BAND PREVENTS INADEQUATE ACTIVATION OF SUPERFICIAL CERVICAL FLEXORS

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Introduction/Background

The abdominal curl-up is often recommended as part of a rehabilitation program. The curl-up exercise may, however, activate the superficial cervical flexors, such as the sternocleidomastoid (SCM), which can induce neck pain. The purpose of this study was to assess the effectiveness of using an elastic band to decrease SCM activity while maintaining abdominal muscle activity during the curl-up.

Material and Method

Twenty-two healthy male subjects participated. All subjects performed a traditional curl-up exercise, a curl-up with neck flexion restriction, and a curl-up with an elastic band. Surface electromyography signals were recorded from the sternocleidomastoid, rectus abdominis, and external oblique muscles during the exercises.

Results

The curl-up technique with an elastic band showed a significantly lower root mean square (RMS) value of SCM activity compared with the traditional curl-up ($p < 0.000$) and the curl-up with neck flexion restriction ($p < 0.021$). There were no significant differences in the RMS values of RA or EO activity between the three techniques (RA; $p = 0.294$, EO; $p = 0.097$).

Conclusion

The results of this study suggest that the curl-up technique with an elastic band can reduce SCM activation while maintaining activation of the abdominal muscles in healthy subjects compared with the traditional curl-up or the curl-up with neck flexion restriction.

Keywords

Abdominal Muscles; Exercise Therapy; Electromyography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0332

MESOTHERAPY VERSUS PHYSIOTHERAPY IN CHRONIC LOW-BACK PAIN TREATMENT

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Introduction/Background

The main objective of this study is to assess the effects of mesotherapy in chronic low-back pain treatment, in comparison with physiotherapy.

Material and Method

Prospective and randomized study, from March 2016 until December 2017, compared 2 groups of patients with chronic low-back pain, the 1st group; treated by mesotherapy; during six weeks (1 injection/week, n=23), versus physiotherapy including infrared and ultrasound 10 sessions (3 sessions/week, n=11). The time of follow-up was 3 months. Evaluated by: Pain intensity: Visual Analogue Scale (VAS), neurological signs, quality of sleep, recourse to surgery, and return to quotidian's activities.

Results

After 3 months of follow-up, we note a greater effects of mesotherapy treatment, but the results were statistically no significant; in pain relief ($p=0,716$), in quality of sleep ($p=0,068$), and in return to quotidian's activities ($p=0,131$). However, we avoided the surgery in the two groups, for all the cases.

Conclusion

Mesotherapy is a good alternative in chronic low-back pain treatment, in this study, their effects were approximately similar to physiotherapy ; associating infrared and ultrasound.

Keywords

Mesotherapy;Physiotherapy;Low-back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0376

OBSERVATION OF THE EFFECT OF SCALP ELECTRICAL STIMULATION ON ACUTE LOW BACK PAIN

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Introduction/Background

To explore the therapeutic effect of scalp electrical stimulation on pain.

Material and Method

A total of 60 outpatients were randomly divided into scalp stimulation group and electrotherapy group. First, we used the Taylor-Hanghton method to locate the central sulcus accurately, and translate the 0.75cm in front and back of the central groove. It was determined as the stimulation area of the motor area and the stimulation line of sensory area respectively, and it was used as the stimulation point of acupuncture at the intersection point with the nasal occipital line. A 6805I electroacupuncture instrument produced by Shantou Medical Device Factory was used with dense wave frequency of 30Hz. The patient was tolerated for 20 minutes. During the treatment, the patient was instructed to perform lumbar activities in the sitting position. The control group using computer intermediate frequency treatment, electrodes placed on the pain, stimulate the strength to comfort patients as of the end of treatment, the treatment time of 20min, 10min with McGill Pain Questionnaire for pain evaluation survey.

Results

There was no significant difference in the scores of PRI, PPI and VAS before treatment in the 2 groups. ($P > 0.05$). After treatment, the scores of PRI, PPI and VAS in 60 patients with pain improved significantly before and after scalp electrical stimulation and electrotherapy, and the difference in the group was statistically significant ($p < 0.01$); compared with scalp electrical stimulation group and electrotherapy group PRI, PPI and VAS score difference was statistically significant ($p < 0.01$).

Conclusion

Scalp electrical stimulation is a safe and effective method for pain treatment. It can relieve pain, improve function, quality of life and patient satisfaction, and reduce the use of non-steroidal anti-inflammatory drugs.

Keywords

low back pain, acupuncture, scalp electrical stimulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0405

COMPARISON OF QUALITY OF LIFE IN LOW BACK PAIN PATIENTS AND HEALTHY SUBJECTS BY USING WHOQOL-BREF

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Introduction/Background

Low back pain and consequence disability is one of the most prevalence musculoskeletal disorders that human being ever had involved. Quality of life is a multidimensional concept and is beyond absolute physical health. In this study, we compared QOL between low back pain patients and healthy people using WHOQOL-BREF which is a generic and overall instrument.

Material and Method

This descriptive-analytic study was carried out on 256 low back pain patients and healthy people in Shahid Beheshti Hospital, Babol. They filled out the questionnaires personally and the scores of different domains in two groups were compared. WHOQOL-BREF has four domains of physical health, psychological health, social relations and environment health. The range of scores in each of these domains is from 4–20. The two questions are about the general quality of life and general health. Overall, a higher score indicates better quality of life.

Results

The participants' age range was from 18 to 63 with the mean \pm SD of 36.63 ± 10.99 . The scores of these four domains and general quality of life and general health of WHOQOL-BREF were lower in low back pain patients. These differences were statistically significant in physical health and environmental health.

Conclusion

Lower QOL in low back pain patients necessitates doing some interventions such as education and rehabilitation in this group. This indicates the importance of more attention to these patients to plan future treatments in order to reinforce these domains.

Keywords

Low back pain;Quality of life;WHOQOL-BREF

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0410

A CONCISE REHABILITATION PROTOCOL FOR SUB-ACUTE AND CHRONIC NON-SPECIFIC NECK PAIN

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Introduction/Background

There is increasing evidence in support of multidisciplinary approaches for management of chronic neck pain. Although presence of different team members is one of the strengths of these approaches, it can limit the access to these treatments. The main objective of this study is designing and investigating the efficacy of a concise rehabilitation program.

Material and Method

Thirty-nine patients with sub-acute and chronic non-specific neck pain underwent an 8-week rehabilitation program. Baseline and 8 weeks' follow-up data regarding neck pain (visual analog scale, neck disability index and quality of life) were compared using paired T test.

Results

After eight weeks of study, pain and disability significantly decreased: -3.8 of 10 (95% CI: -4.6 to -3.0) (p-value <0.001) for pain and -18.4 of 100 (95% CI: -23.7 to -13.2) (p-value <0.001) for disability. Also, all SF-36 domain scales improved significantly.

Conclusion

By using this concise rehabilitation approach, pain, disability, and quality of life improved significantly in patients with sub-acute and chronic non-specific neck pain.

Keywords

Neck pain;Disability;Quality of life

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0411

COMPARISON OF THE CROSS SECTIONAL AREA OF LONGUS COLLI MUSCLE BETWEEN PATIENTS WITH CERVICAL RADICULAR PAIN AND HEALTHY CONTROLS

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Introduction/Background

Previous studies have shown atrophy of paravertebral lumbar muscles in patients with lumbar radicular pain, and proposed rehabilitative approaches based on these findings. However, changes of cervical paravertebral muscles in patients with cervical radicular pain are still unknown. The aim of this study was to compare the cross sectional area (CSA) of longus colli muscle (LCM) in patients with cervical radicular pain and healthy controls via ultrasound measurement.

Material and Method

Twenty patients with more than 4 weeks of cervical radicular pain and 20 healthy matched (for body mass index, age, and gender) control subjects. The CSA of LCM at the level of C5-C6 was measured by ultrasound with the subject in a supine position. Also, Neck Disability Index (NDI), and visual analogue scale (VAS) were reported by patients. Independent sample t-test was used for investigation of differences in cross sectional area and other variables between both groups.

Results

Twenty patients with cervical radicular pain with mean (SD) age of 42.4(7) years and 20 healthy matched controls with mean (SD) age of 40.7 (7) years participated in the study. Patients with cervical radicular pain showed smaller CSA of LCM bilaterally compared with controls (mean (SD) difference: 0.37(0.15)) (P value<.001). Within patients group, there were no significant differences between CSA of LCM in the involved and non-involved sides.

Conclusion

This is the first study which showed that patients with cervical radicular pain had smaller bilateral CSA of LCM in comparison with healthy controls via ultrasound assessment. It is also not clear whether atrophy of longus colli muscle in patients with cervical radicular pain is a consequence or a cause of it. Reduction in the stability of neck due to atrophy of LCM could

make the cervical spine region susceptible to more injuries which might be prevented by functional and strengthening exercises.

Keywords

cervical radicular pain;longus colli muscle;ultrasound measurement

No conflict of interest

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ISPR8-0413

RETURN TO WORK AFTER TWO YEARS OF FUNCTIONAL RESTORATION PROGRAM FOR LOW BACK PAIN

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Introduction/Background

Chronic low back pain is a cause of sick leave and absenteeism. The positive effect of functional restoration program in return to work has been shown at short term in many studies

Evaluate the impact on return to work and sick leave in patients with chronic low back pain after two years of a restoration program

Material and Method

Prospective study on patients with low back pain. The duration of the work stoppage was evaluated before and after a restoration program during two months. The patients were summoned after two years for a third evaluation.

Results

Thirty patients graduated from the program. Initially, 24 were on sick leave (80%) for an average of 30 days (from 0 to 170 days). In the end of the program only 4 (13.3%) were still on sick leave for an average of 5 days (from 0 to 15 days). This significant improvement ($p=0,001$) decreased 2 years later ($p=0.08$) and became insignificant. We found 19 patients (63.3%) on leave sick for an average of 27 days.

Conclusion

The functional restoration program for low back pain reduced sick leave at short term. After two years the results decreased but remain better than the initial ones.

Keywords

BACK PAIN;FUNCTIONAL RESTORATION ;WORK STOPPING

No conflict of interest

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ISPR8-0424

THE EFFECT OF POSITIVE CHANGES DURING INTRAOPERATIVE MONITORING ON THE FUNCTIONAL IMPROVEMENT IN PATIENTS WITH CERVICAL COMPRESSIVE MYELOPATHY

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Introduction/Background

Cervical compressive myelopathy (CCM) is a progressive, degenerative spine disease and the most common cause of spinal cord dysfunction in older individuals. Current clinical guidelines for spinal surgery strongly recommend multimodal intraoperative monitoring (IOM) during spinal surgery as a reliable and valid diagnostic adjunct to assess spinal cord integrity. The aim of this study was to evaluate the effect of positive changes during IOM on the functional status in patients with CCM.

Material and Method

Patients who underwent spinal surgery with IOM due to CCM were enrolled. During the surgery, patients underwent IOM using motor evoked potential (MEP) and somatosensory evoked potential (SEP). MEP and SEP were checked before and immediately after decompression. A shortened latency greater than 10 % or an increase in amplitude greater than 50% was regarded as a 'positive change'. Subjects were divided according to the presence of positive changes. Motor scores of American Spinal Injury Association (ASIA) impairment scale and Korean version of modified Barthel index (K-MBI) were evaluated before and after operation.

Results

Twenty-nine patients underwent spinal surgery due to CCM. Among these patients, 11 showed positive changes in MEP during IOM. When the two groups were compared, improvement rate in the ASIA motor score and K-MBI were significantly higher in patients with positive changes than in patients without positive changes at 1 month after surgery. The duration of hospital stay was significantly shortened in the 'positive change' group. Regardless of positive change, nearly all patients suffered from neuropathic pain after operation.

Conclusion

Positive changes in MEP during IOM may affect better functional improvement 1 month after operation and early discharge without significant complications in CCM patients. However they do not affect the neuropathic pain. Thus, tailored, proper management is needed to achieve maximal functional recovery in each patient after cervical spinal decompression surgery.

Keywords

Cervical Myelopathy; Intraoperative monitoring; Functional improvement

No conflict of interest

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ISPR8-0478

ACTIVE DISCOPATHY: IMPACT OF A REHABILITATION PROGRAM ON DISABILITY.

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Introduction/Background

Active discopathy (AD) is responsible of chronic low back pain. Conservative treatment is still debated. Few studies focused on the rehabilitation program efficacy in AD. The aim of this study was to evaluate the impact of a chronic low back pain rehabilitation program (CLBPRP) on disability, pain level, and return to professional activity in this population.

Material and Method

Files of all patients included in our CLBPRP had been screened. CLBPRP is followed for 4 weeks, with 7 hours of physical activities a day. Quebec scale and pain level self-evaluation were done at the beginning (M0) and the end (M1) of the stage. Data of the AD suffering patients (ADP) had been collected and they have been contacted by phone to fill a survey.

Results

Quebec scale was a significantly decreased from 49.8/100 at M0 to 37.1/100 \pm 14.7 at M1. Twenty patients had been evaluated by survey, with a mean follow up of 29.5 months \pm 19.3. The Quebec scale total score was 48.2 \pm 13.2 at M0, 36.7 \pm 15.8 at M1, and 37.0 \pm 18.6 at Mx. There was significant difference between M0 and M1 ($p=0.0004$) and between M0 and Mx ($p=0.007$). Concerning the lumbar pain, there was no difference between M0 and M1(16), M1 and Mx, M0 and Mx in the sample.

Conclusion

Inclusion of patients in classical low back pain rehabilitation programs is still debated. Our study seems to confirm the interest of physical activities and active rehabilitation in this pathology. It is showing a significative effect on the disability due to chronic low back pain and impact of the pain in the daily living. There is no clear effect on the pain level and it should not be an objective of the stage.

Keywords

Modic 1;rehabilitation program;active discopathy

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0501

MUSCLE PHYSICAL CONDITION ANALYSIS OF INDIVIDUALS WITH CHRONIC LOW BACK PAIN

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Introduction/Background

Chronic Low back pain (CLBP) is a common clinical disease, and most individuals require long-term treatment. This research analyzes the muscle physical condition characteristics of individuals with CLBP in order to provide reference for rehabilitation and prevention of chronic low back pain patients.

Material and Method

64 subjects with CLBP (age: 35.2±1.5, 34 males and 30 females, body weight: 66.5±3.7kg) were recruited as N group (experimental group), while 29 health subjects (age: 39.2±1.8, 16 males and 13 females, body weight: 64.8±3.2kg) were recruited as Y group (control group). Recorded the degree of pain (VAS, Visual Analogue Scale/Score) questionnaire, and then used the Thomas Test (Hip Flexor Test) to test the flexibility of iliopsoas, hamstring and tensor fascia lata, meanwhile, use Myoton-3 myometer to quantify muscle tone of lumbar paravertebral muscles, hamstring and tensor fascia lata. Analysis the differences between groups, and the CLBP ones with different degree of pain (according to the VAS).

Results

1) Muscle flexibility of iliopsoas and hamstring of Y group were significant higher than N group, and N group shows bilateral imbalance ($p < 0.05$); 2) Muscle tone of all three muscles of Y group was significantly lower than N group, also the N group shows significantly bilateral imbalance ($p < 0.05$); 3) In N group, according to VAS, the muscle physical condition of mild ones (VAS 0-3) were significantly better than moderate ones (VAS 4-7) ($P < 0.05$).

Conclusion

1) Muscles relevant to core stability (iliopsoas, hamstring, lumbar paravertebral muscles and tensor fascia lata) can influence the position of pelvis. The significant decline of muscle physical condition, including muscle flexibility and muscle tone, as well as the bilateral imbalance is related to CLBP; 2) And the more pain of CLBP, the poorer of the muscle physical condition; 3) When treat CLBP individuals, consideration of physical condition of these muscles and relaxation of tight muscles is highly recommended.

Keywords

chronic low back pain;muscle physical condition;muscle flexibility

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0512

RESPONDERS TO GLUCOCORTICOID OR CONTRAST INTRADISCAL INJECTIONS AMONG CHRONIC LOW BACK PAIN PATIENTS WITH AN ACTIVE DISC DISEASE: A SECONDARY ANALYSIS OF THE PREDID TRIAL

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Introduction/Background

Non-specific low back pain is first cause of years lived with disability. An active disc disease is present in up to 58% of patients with low back pain. We aimed to describe patients with chronic low back pain and an active disc disease who respond and those who do not respond to intradiscal glucocorticoid or to intradiscal contrast.

Material and Method

We conducted a secondary analysis of the PREDID study, a randomized trial of 135 patients with chronic low back pain and an active disc disease. Overall, 61 participants received an intradiscal injection of glucocorticoid (25 mg prednisolone acetate) during discography and 60 received discography alone. Fourteen participants did not receive the allocated treatment and were not included in this secondary analysis. The primary outcome was the description of clinical, demographical, psychological and social characteristics of responders and non-responders to intradiscal glucocorticoid and to intradiscal contrast at 1 month, as defined in the primary trial. Independent variables associated to clinical response were assessed by logistic regression.

Results

Participants who responded to intradiscal corticosteroid injection were more often highly educated (18/34 [52.9%] vs 6/26 [23.1%], respectively), whereas participants who did not respond were more often on sick leave (14/27 [51.9%] vs 5/34 [14.7%]). The independent variable most strongly associated with the absence of therapeutic response to intradiscal glucocorticoid was sick leave (OR = 33.8, 95% CI = 2.4 to 472.2). Similar results were observed with response to intradiscal contrast injection but the magnitude of differences was lower.

Conclusion

Patients with chronic low back pain and an active disc disease who respond to an intradiscal injection of corticosteroids or contrast have a social profile different from those who do not respond.

Registration. ClinicalTrials.gov number NCT00804531 (First received: December 8, 2008. Last updated: June 23, 2016).

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Keywords

Low back pain;Intradiscal therapy;Active disc disease

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0514

PELVIC PARAMETERS IN PATIENTS WITH CHRONIC LOW BACK PAIN AND AN ACTIVE DISC DISEASE: A CASE-CONTROL STUDY

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Introduction/Background

Active disc disease is characterized by inflammatory-like low back pain (LBP) and the presence of Modic 1 changes on MRI. Its prevalence ranges from 19% to 50 % in patients with non-specific chronic LBP. Pelvic parameters are important determinants of shear and compressive forces applied to the lumbar intervertebral disc. The association between an active disc disease and abnormal pelvic parameters has not been addressed yet. We aimed to compare pelvic parameters between chronic LBP patients with an active disc disease (Modic 1) and those without (Modic 0).

Material and Method

We used a convenient sample from patients prospectively and consecutively recruited in a previous single center case-control pilot study. Cases were defined as chronic LBP male patients with an active disc disease on MRI and controls as patients without. Pelvic parameters, namely sacral slope, pelvic tilt and pelvic incidence, were assessed in an independent and standardized manner by two trained investigators using EOS system imaging performed at inclusion.

Results

Overall, 35 cLBP patients (13 cases and 22 controls) fulfilled inclusion criteria and had an EOS imaging available. Median age was 42 (35-51.5) years and median LBP duration 50 (33.5-104) months. Pelvic parameters did not differ between the 2 groups: absolute mean (95% IC) difference between Modic 0 and Modic 1 was -7.2° (-15.5;1.0) for pelvic incidence, -3.7° (-8.7;1.3) for pelvic tilt and -3.3 (-8.9;2.3) for sacral slope.

Conclusion

Pelvic parameters in patients with chronic LBP and an active disc disease do not differ from those in patients without.

Keywords

Pelvic parameters; Full spine EOS imaging; Active disc disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0597

THE EFFECTS OF STABILIZATION EXERCISE ON LOW BACK PAIN AND PELVIC GIRDLE PAIN IN PREGNANT WOMEN

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Introduction/Background

Pain in the lumbar or sacroiliac region during pregnancy is common. However, it should not be considered a normal part of pregnancy. There are non-invasive approaches to treatment to effectively manage symptoms not only during pregnancy but also postpartum. A systematic review was performed to examine the effects of stabilization exercises on low back and pelvic girdle pain in pregnant women.

Material and Method

A database search of EBSCO (CINAHL, HealthSource, MEDLINE, and PsycINFO) was conducted from September 2017 to January 2018. Our search terms included "pregnancy", "pregnan*", "stab* exercis*", "back pain", "pelvic pain", and "pelvic floor". The studies were reviewed for content to determine if they met the inclusion and exclusion criteria. Articles were then examined for quality on a hierarchy of evidence scale and the PEDro Scale by four researchers.

Results

Twenty three articles were included in the systematic review. Most concluded that stabilization exercises had a positive effect on low back and pelvic girdle pain in pregnant women. A few articles found no significant reduction in pain. The discrepancies may be due to differences in protocol such as administering a home exercise program, frequency of exercises, weeks of gestation, and direct supervision exercises. These factors may influence the effectiveness of stabilization exercise in this population.

Conclusion

The effects of stabilization exercise vary based on type of pain, type of exercise, location of pain and timing of intervention. Overall, the use of stabilization exercises is beneficial in reducing low back and pelvic girdle pain in pregnant women. Further, rehabilitation during pregnancy may prevent future episodes of low back and pelvic girdle pain in subsequent pregnancies.

Keywords

Pregnancy;Low back/ pelvic girdle pain;Stabilization exercise

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-0626

DIFFERENCES OF NATURE OF DISEASE, SOCIOECONOMIC AND PSYCHOLOGICAL FACTORS IN CHRONIC LOW BACK PAIN PATIENTS BETWEEN THAILAND AND GERMANY

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Introduction/Background

Objectives: To study the differences of nature of disease, socioeconomic status and psychological factors in chronic low back pain (LBP) patients between Thailand and Germany.

Material and Method

Study design: Cross Sectional Analytic study

Setting: Out Patient Clinic, Department of Rehabilitation Medicine, King Chulalongkorn Memorial Hospital, Thailand and Department of Orthopedics & PM&R, Großhadern Hospital, Germany

Subjects: 100 Thai and 100 German patients with chronic LBP more than 6 months

Methods: The data from both hospitals were collected before chronic LBP patients received treatment. The data consisted of 4 domains; demographic data, socioeconomic status, nature of disease i.e. Numerical Rating Scale (NRS), Pain Disability Index (PDI), etc. and psychological factors (Center for Epidemiologic Studies Depression Scale: CES-D). The data was analyzed by using statistic program.

Results

Mean age of both Thai and German was 47.7 ± 11.7 years old. Majority were female, married, white collar and has LBP duration for more than 3 years. Comparison between Thai and German, the average and maximal NRS were not significantly different. However, German patients had significantly higher than Thai patients in PDI (median 26 and 10, respectively, $P = 0.00$) and CES-D total scores (median 17 and 4, respectively, $P = 0.00$).

Conclusion

Despite the non-significant difference in LBP severity, there were the differences among Thai and German patients. German patients had more depressive symptom and pain related impairment than Thai patients.

Keywords

chronic low back pain ;Thailand;Germany

No conflict of interest

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THE NEUROMUSCULAR ELECTRICAL STIMULATION EFFICACY IN THE CONTRACTION OF THE LUMBAR MULTIFIDUS MUSCLE IN INDIVIDUALS WITH CHRONIC NONSPECIFIC LOW BACK PAIN

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Introduction/Background

The objective is to determine the efficacy of neuromuscular electrical stimulation in the contraction of the lumbar multifidus (LMF) muscle in individuals with chronic nonspecific low back pain

Material and Method

An observational study with blinded examiner was conducted, following approval by the institutional review board, a total of 22 patients were recruited from a Rehabilitation Department, between March and July 2015.

The patient group included 11 individuals of both genders with mean age of 18-60 years presenting chronic nonspecific lower back pain and pain level ≥ 4 points, as measured using the Visual Analog Scale (VAS), with over three months, no irradiation to lower limbs. In addition to the 11 individuals with low back pain, a control group of 11 healthy participants with no history of low back pain in the past year was added

The assessment was performed by carrying out image capture using an ultrasound imaging device, of the width and thickness of the lumbar multifidus muscles at three different timepoints. At the first timepoint, an image of the patient at rest was taken. At the second timepoint, an image of the patient was acquired while neuromuscular electrical stimulation was applied. At the third timepoint, the image was captured with the combination of neuromuscular electrical stimulation together with voluntary contraction of the lumbar multifidus muscle.

Results

No significant difference was found between the two groups. The results revealed a significant difference in both the width and height of the multifidus muscle under different conditions of electrical stimulation ($p < 0.001$)

Conclusion

Neuromuscular electrical stimulation proved effective in the recruitment of the lumbar multifidus muscles.

Keywords

low back pain;electrical stimulation

No conflict of interest

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LONG-LASTING EFFECTS OF A FOUR-WEEK MULTI-DISCIPLINARY FUNCTIONAL REHABILITATION PROGRAM IN PATIENTS WITH CHRONIC LOW BACK PAIN

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Introduction/Background

We aimed to evaluate the long-lasting effects of a multidisciplinary functional rehabilitation program on work readiness, disability, kinesiophobia, pain, depressive and anxious moods as well as physical and mental quality of life in patients with chronic low back pain.

Material and Method

201 patients (57% male) aged 41.01 (9.5) participated in a four-week multidisciplinary functional rehabilitation program, including physical and occupational therapy, as well as medical and psychological group counselling. Assessment was performed at treatment admission and discharge, and at 6 (n=106) and 18 months (n=96) follow-up. Assessment included the Oswestry Disability Index (ODI), Tampa Scale for Kinesiophobia (TSK), Core Outcome Measure Index (COMI), Hospital Anxiety and Depression Scale (HADS) and the Short-Form Health Survey (MOS SF-12) for quality of life. Multiple mixed models were used to assess significant change for each outcome measure.

Results

Initially 11% of the patients were working fulltime and 13% part-time. At 6 months follow-up 55% and at 18 months 72% of the patients were working. The COMI pain, function, symptom-specific well-being, generic quality of life and disability scores significantly decreased. Likewise, the ODI and TSK scores significantly decreased. Physical SF-12 quality of life significantly improved throughout the study. HADS Depression scores remained below the clinically significant threshold (<8) throughout the study. Contrary to HADS anxiety scores, which dropped at treatment end below threshold, however increased again at 6 months follow-up. Likewise, mental quality of life improved at the end of treatment, however this improvement did not last during follow-up.

Conclusion

The multidisciplinary program was associated with an increase in readiness for work in the majority of patients, long-lasting reduction in disability, kinesiophobia, pain and enhancement of

physical quality of life. In contrast, psychological benefits are limited to short-time benefits on anxiety and mental quality of life and would possibly need specific after-treatment care to persist.

Keywords

multidisciplinary back pain management;chronic back pain

No conflict of interest

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ISPR8-0750

THE INFLUENCE FACTORS OF PREGANANCY LOW BACK PAIN AND THE RESEARCH DEVELOPMENT FOR ITS TREATMENT

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Introduction/Background

According statistics, there are nearly 18 million newborns in China 2016. This means nearly 18 million pregnant women in China annually, and the number will increase as the country's second-child policy was liberalized. Pregnancy Low Back Pain(PLBP) is a high incidence of skeletal muscle disorder in pregnancy and even postpartum.

Material and Method

By referring to Chinese and English databases such as CNKI, Wanfang Database and PUBMED, and the input key words and search the corresponding literature. In order to offer inference for clinical treatment of pregnancy LBP.

Results

Studies have shown that the incidence of PLBP is as high as 50% to 80% in pregnant women. According to the Nottingham health scale, both the quality of life and the index of physical activity were significantly lower than those of pregnant women without LBP. the current situation of the treatment of PBLP in China is not good, most cases uses negative way.

Conclusion

LBP during pregnancy occurs mostly in late pregnancy, and more than a third of women in the postnatal still have the corresponding symptoms, its reason is unclear, but it happened under the influence of many factors, including pregnancy weight/body weight index, history of pregnancy LBP or waist injury history, physical labor intensity during pregnancy, regular physical exercise and mental on state prophase of pregnancies, and so on. Common physical therapy methods include health education, exercise therapy, manipulation therapy, protective gear, physical cause, and combination of the above methods. At present in the study published by core stability related exercise therapy effect is supported by a lot of evidence, at the same time manipulation treatment such as joint mobilization for limited joint mobility of pregnant women have better curative effect. The remaining physical therapy techniques have been reported to be effective, but the supporting research data is insufficient.

Keywords

low back pain during pregnancy;impact factor;treatment

No conflict of interest

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ISPR8-0839

THE RELATIONSHIP BETWEEN BODY AWARENESS AND LOW BACK AND NECK PAIN

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Introduction/Background

Body awareness includes an attentional focus on and awareness of internal body sensations. It is defined as the ability to recognize subtle body indications, previous researches suggests that it may be useful in the management of chronic diseases such as chronic low back pain. Therefore the aim of the present study is to investigate the relationship between body awareness and low back and neck pain.

Material and Method

The study was conducted 211 healthy students mean aged 20.12±1.59 years at Physiotherapy and Rehabilitation Department in Afyon Kocatepe University. Pain intensity was determined by Visual Analogue Scale (VAS). The Oswestry Disability Index (ODI) was used to assess the low back pain affects the activities of daily living The neck pain affects the activities of daily living was evaluated by The Neck Disability Index (NDS). The Body Awareness Questionnaire (BAQ) was used to evaluate body awareness status. Also the participants asked about doing any sports.

Results

The participants who have low back pain was 122 (82 women, 40 men) and neck pain was 121 (85 women, 36 men). Also the participants engaged in sports were 58. According to the present study there was no correlation between body awareness and VAS scores of low back pain, ODI scores, VAS scores of neck pain and NDI scores ($p>0.05$). Also the correlation between body awareness and sex and doing sports wasn't significant statistically.

Conclusion

Body awareness has no effect on low back and neck pain. More research is needed on how body awareness effects on other chronic diseases that cause pain.

Keywords

Low Back Pain; Neck Pain

No conflict of interest

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ISPR8-0841

BELIEFS AND ATTITUDES OF LOW BACK PAIN OF PHYSIOTHERAPY STUDENTS REGARDING TO ACADEMIC DEGREE IN AFYON KOCATEPE UNIVERSITY

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Introduction/Background

Low back pain (LBP) is an important problem throughout the world with the highest prevalence and direct and indirect costs representing an important financial burden. The beliefs and attitudes of physiotherapists and physiotherapy students influence the outcome of low back pain treatment. Physiotherapists have two important attitudes about low back pain. Firstly, biomedical/biomechanical model of the pain based upon the notion that try and identify and then treat the specific structures or neuromuscular impairments thought to be the cause of the problem and the source of the pain. Secondly, biopsychosocial, in which pain does not have to be a sign of tissue damage and can be influenced by social and psychological factors. The aim of the present study was to compare the beliefs and attitudes of LBP of physiotherapy students regarding to academic degree.

Material and Method

The study included 2-years associate degree and 4-years undergraduate degree of physiotherapy students of Afyon Kocatepe University in Turkey. Turkish version of the Pain Attitudes and Beliefs Scale for Physiotherapists is practised in all participants.

Results

153 participants completed the survey. According to the present study there were no differences between academic degrees of the physiotherapy students regarding biomedical and biopsychosocial scores ($p > 0.05$). The fourth grade students of undergraduate degree's biomedical scores are higher than the first grade students, but similarly, the differences weren't significant ($p = 0.057$).

Conclusion

As a conclusion, we believe that the participants have similar belief and attitudes about low back pain due to the same university and educational system enhanced this.

Keywords

Physiotherapy;Low Back Pain

No conflict of interest

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ISPR8-0891

COMPARISON BETWEEN THE EFFECT OF LUMBOPELVIC BELT AND HOME BASED PELVIC STABILIZING EXERCISE ON PREGNANT WOMEN WITH PELVIC GIRDLE PAIN; A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Pelvic girdle pain is a common complaint of pregnant women. There are limited data on comparison between the effectiveness of stabilizing exercises and lumbopelvic belt on the treatment of these patients. The objective of this study was to compare the effect of lumbopelvic belt plus information, home based pelvic girdle stabilizing exercises plus information and information alone on pain intensity, functional status and quality of life of pregnant women with pelvic girdle pain.

Material and Method

In this randomized clinical trial pregnant women with pelvic girdle pain (n=105) were randomly allocated to three groups; Control group (n=35) that received general information, exercise group (n=31) that in addition to general information were asked to perform specific pelvic stabilizing exercises at home and belt group (n=31) that received non-rigid lumbopelvic belt and the information. The primary outcome variables were pain intensity and functional status of the participants which were measured using visual analogue scale and Oswestry Disability Index (ODI) respectively. Quality of life of participants was measured using WHOQOL-BREF questionnaire. All measurements were performed at baseline, 3 and 6 weeks after the study conduction

Results

The pain intensity of patients in belt group in comparison to other groups was decreased significantly at both 3 and 6 weeks follow-ups. The mean score of ODI of patients in belt group was also improved more than exercise and control groups significantly.

Conclusion

On base of our results, it can be found that in short term lumbopelvic belt and information in treatment of pregnant women with pelvic girdle pain is superior to exercise plus information or information alone

Keywords

Multiple Sclerosis;Resistance Training;Muscle Strength

No conflict of interest

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CAUDAL EPIDURAL STEROID INJECTION IN LUMBOSACRAL SCIATICA: TUNISIAN STUDY

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Introduction/Background

Lumbar epidural steroid injections have been used as part of the conservative management of sciatica due to disc herniation for more than 50 years. The lumbar epidural space is accessible either by caudal, inter-laminar, or transforaminal routes. According to medical literature, caudal epidural injection has numerous advantages.

Aim: To assess the efficacy of caudal epidural steroid injections in patients of lumbosacral sciatica

Material and Method

A prospective study was conducted in rehabilitation Department in university hospital center Sahloul, Sousse, Tunisia. Evaluation of participants was realized at baseline, after one week of injection and 4 weeks. Pain on a Visual Analog Scale (VAS), Straight leg test (SLR), Schober test and arabic version of Oswestry disability index were assessed as outcome measures.

Results

Seventy-one patients were included in our study (40 women and 31 men) with an average age of 46.3 years. All patients had X-ray and MRI of Lumbo-sacral spine. lumbar caudal approach used landmark method combined with loss of resistance technique, without fluoroscopic guidance. None of the patients experienced Clinically significant side effect, such as dural penetration. A significant improvement of pain was noticed. initial mean lumbar VAS 3.5/10 passed to 1.8/10 at 1 month after injection. Mean Schober's test increased from 32.5 cm to 4.1 cm after 4 weeks. Most patients had one injection (75%) and 6.3 % had 3 repetitive injections with a mean interval of 11 days.

Conclusion

Hence, we can conclude that caudal epidural steroid injections can be an important component of management of painful lumbosacral sciatica. This route of injection has many advantages such as a lower risk of dural or subarachnoid penetration and a greater ease of execution.

Keywords

Epidural injection;Caudal;Steroids

No conflict of interest

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OUTCOME AFTER CONSERVATIVE TREATMENT OF LUMBAR DISC HERNIATION AND FEAR AVOIDANCE BELIEFS

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Introduction/Background

Purpose: To evaluate if fear avoidance beliefs (tendency to avoid any physical activity that results or has the potential to result in pain) correlate with long- term outcome of conservative treatment of patients with lumbar disc herniation.

Material and Method

Material and Methods: a group of 110 patients (36 women and 74 men) with lumbar disc herniation treated conservatively was analyzed. Conservative treatment included NSAID, ultrasound, massage, hydrotherapy, currents, electromagnetic fields, heat, traction, exercise, and education. Treatment protocol was made for any patient individually depend of subjective symptoms and clinical findings.

Follow-up evaluation was 1 to 3 years (mean 23 months) after the last treatment session. For assessment Japanese Orthopedic Association (JOA) score and Fear Avoidance Beliefs Questionnaire (FABQ) were used. For statistical analyzes correlation coefficient, Spearman Rank Correlation and Wilcoxin Matched Pairs Test were used.

Results

Results: At discharge and at control assessment patients were significantly better, with significantly decreased subjective symptoms, better clinical findings and decreased restrictions in activity of daily living than on admission ($p < 0.0001$). There were moderate negative correlation between long-term outcome of conservatively treated patients with lumbar disc herniation and FABQ score ($r = - 0.42$). It shows that patients who had less fear of pain during physical activity and work had better long-term outcome and they assessed their own condition as excellent or better ($R = 0.42$).

Conclusion

Conclusion: There are moderate negative correlation between fear avoidance beliefs and long-term outcome of conservative treatment of patients with lumbar disc herniation.

Keywords

lumbar disc herniation

No conflict of interest

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ISPR8-0942

CHRONIC LOW BACK PAIN EFFECTS IN QUALITY OF LIFE OF THE PATIENTS

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Introduction/Background

Chronic low back pain causes functional impairment and can affect quality of life. The objective of this study is to describe the impact of chronic pain on the quality of life of patients with low back pain and to describe the psychobehavioural state of chronic low back pain patients.

Material and Method

A cross sectional study was carried out in the Department of Physical Medicine and Rehabilitation of the University Hospital of Anosiala Ambohidratrimo. The intensity of the pain was evaluated by the visual analog scale. SF-36 (Short Form-36) was used to assess patients' quality of life. The Pearson correlation coefficient was used in the evaluation of the existence of correlation.

Results

A decline of quality of life was been found. A positive correlation was found between pain and functional disability before and after treatment ($r = 0.487$ $p = 0.005$, 0.492 $p = 0.005$). Negatives correlations were observed between pain and physical function limitations ($r = -0.359$, $p = 0.047$; $r = -0.385$, $p = 0.033$) before and after pain management.

Conclusion

Chronic low back pain has a detrimental effect on the quality of life of patients.

Keywords

No conflict of interest

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SCOLIOSIS AND BACK PAIN . WE NEED TO LOOK FOR THE CAUSE

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Introduction/Background

Pain and functional limitation of the spine are not part of the clinical aspects of idiopathic scoliosis. The association of scoliosis and spondylolisthesis is documented in the literature. Three types of associations are described: idiopathic scoliosis and, scoliosis secondary to rotation caused by spondylolisthesis and scoliosis as an analgesic position to sciatic irritation

The aim of this report is to present a clinical case of idiopathic scoliosis in concurrence with specific spinal pain due to spondylolisthesis

Material and Method

A 14 years old girl, followed-up for idiopathic scoliosis with right curvature from D5 to D12 measuring 22°, without rotation, Risser I, in treatment with orthopedic brace. The initial exploration: centered plumb line, Adam's test: 10° right dorsal with inclinometer.

In clinical review the patient refers pain in the buttock .Clinical examen highlights pain on lumbar spinous processes and painful limitation to spine flexion, without radicular signs. The exploration of the deformity provides as a novelty, deviation of the plumb to the right of 1.5 cm line from the gluteal cleft. New spine radiographs and Nuclear Magnetic Resonance (IRM) are requested. Radiographs: right scoliotic curve from D5 to L1 measuring 40°, rotation grade 2, Risser III. IRM and spondylolisthesis: right thoracolumbar scoliosis and grade IV anterolistesis of L5-S1.

The patient undergoes surgery by arthrodesis



Results

One year after surgery: the patient is without pain, Adam's test 6° , plumb line is centered, Risser IV and right scoliotic curve from D5 to D12 measuring 23° .



Conclusion

In scoliosis associated with back pain or rachialgia, it is important to do a correct exploration and research to rule out specific cause of pain, different than scoliosis.

Keywords

SPONDYLOLISTHESIS;SCOLIOSIS;BACK PAIN

No conflict of interest

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ISPR8-1010

THE IMPACT OF REHABILITATION ON THE PAIN INTENSITY LEVEL IN PATIENTS WITH FAILED BACK SURGERY SYNDROME (FBSS)

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Introduction/Background

Back disorders are very common phenomena in modern society. One of the methods of spinal pain treatment is performing surgery. Unfortunately, this method is not one hundred percent effective. Some patients show no improvement after surgery, the pain persists and even increases. In these cases, it is reasonable to use the term Failed Back Surgery Syndrome (FBSS), i.e. back pain syndrome after unsuccessful spine surgery.

The aim of the study is to assess the impact of rehabilitation on the pain intensity level in patients with FBSS.

Material and Method

The study was conducted in a group of 38 patients aged from 32 to 87 (mean age 61 years), including 20 women and 18 men. All patients were operated for spinal pain syndrome. Afterwards, they underwent rehabilitation because of persisting pain after the surgery. For the pain assessment was used The Visual-Analogue Scale and The Laitinen Modified Questionnaire Indicators of Pain. The results were statistically analysed.

Results

The study shows the high efficacy of specialized rehabilitation in patients with FBSS.

Conclusion

The rehabilitation in patients with FBSS has a significant analgesic effect. Rehabilitation should be a gold standard in patients with FBSS

Keywords

rehabilitation;back pain;FBSS

No conflict of interest

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ISPR8-1015

THE ASSESSMENT OF THE IMPACT OF REHABILITATION ON THE PAIN INTENSITY LEVEL IN PATIENTS WITH HERNIATED NUCLEUS PULPOSUS OF THE INTERVERTEBRAL DISC

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Introduction/Background

Back pain may be caused by many factors. In many cases it is difficult to unambiguously determine a cause of the pathology, which can involve various structures in the spine. In this paper we will discuss the symptoms associated with degenerative changes of the intervertebral disc, which involve, among others, its bulging, dislocation and pressure on surrounding structures. These problems require an adequate clinical and imaging diagnostics in order to implement an appropriate treatment. In the first place, it should be based on the conservative methods (such as: pharmacotherapy, rehabilitation and lifestyle changes). Only in the absence of improvement it is recommended to consider a surgical treatment. The aim of the study is to assess the impact of rehabilitation on the pain intensity level in patients with herniated nucleus pulposus of intervertebral disc.

Material and Method

The study was performed in 46 patients (age range: 19-85), including 26 women and 20 men. On the basis of imaging, all patients showed a presence of slipped disc with disc herniation. The patients were treated conservatively. For pain assessment was used the The Laitinen Modified Questionnaire Indicators of Pain and The Visual-Analogue Scale. The results were statistically analyzed.

Results

The results clearly demonstrate the analgesic efficacy of specialized rehabilitation in the spinal pain syndrome in discopathy with a spinal disc herniation of an intervertebral disc.

Conclusion

The rehabilitation of patients with a back pain due to the presence of herniated nucleus pulposus has a significant analgesic effect. In the case of a presence of the herniated nucleus pulposus, the rehabilitation should be considered in a first place. If no improvement, a possible surgery should be considered. An important element of a conservative treatment is an effective rehabilitation, which is of vital economic importance, because a therapy including surgery usually requires subsequent rehabilitation and is much more expensive.

Keywords

discopathy;spinal disc herniation;rehabilitation

No conflict of interest

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ISPR8-1078

EFFECTS OF INFRARED RADIATION ON THE PATIENTS WITH CHRONIC LOW BACK PAIN AND ABSORPTION OF RADIATION (GHZ RANGE) ON LOW BACK REGION.

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Introduction/Background

Chronic low back pain (CLBP) is very common in clinical physiatry. To find out the effectiveness of Infrared Radiation on CLBP and absorption of radiation on low back region the present study was conducted.

Material and Method

The study was done in two phases. In the first phase, a randomized clinical trial and in phase two, a simulation study was conducted.

Results

In phase one, out of 266 patients, 43.6 % were male and 56 % were female with the mean age of 46.30 ± 8.75 years. Group-A was treated with NSAID + Activities of daily living (ADL) + SWD, Group-B with NSAID + ADL + IRR and Group-C treated with NSAID +ADL. We found all modalities are effective ($p = 0.001$). But more improvement was found in SWD and IRR receiving groups ($P= 0.001$ table-1). SWD has some better effect than IRR but IRR is also effective to reduce CLBP.

In phase two, radiation was applied on human phantom of lower back region up to 25 mm thickness with GHZ range. Radiation was applied from low frequency to high frequency and return loss was measured. It was found that when radiation with 99.899994 GHz to 100.1 GHz (~100 GHz) was applied the return loss was -26.901541 dB to -26.42996dB. This indicates that maximum absorption of radiation (~100%) and absorption rate increases with frequency.

Conclusion

It can be concluded that IRR can be used effectively to improve CLBP because absorption of radiation occurs (~100%) with GHZ range and absorption rate increases with frequency. IRR, as it is handy and low costly instrument, can be used to reduce disability of the patient suffering from CLBP at home.

Keywords

No conflict of interest

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ISPR8-1161

RELATIONSHIP BETWEEN ABNORMAL POSTURE OF THE PATIENTS WITH ACUTE LOWER BACK PAIN AND MORPHOLOGIC DAMAGE OF FUNCTIONAL UNIT OF THE LUMBAR REGION ASSESSED BY MRI

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Introduction/Background

There are many publications connecting lower back pain and abnormal posture, yet establishing this relationship based upon pathoanatomical substrate within the lower back functional unit analyzed by MRI is much less documented. The aim of this study was to analyze a relationship between abnormal posture and various degrees of morphologic damage of lower back functional unit.

Material and Method

It was a retrospective study of 25 consecutive patients (14 males, aged 21-73 years and 11 females aged 18-56 years) referred to our department between 2015 and 2017 for the management of acute lower back pain. All patients underwent posture analysis and MRI of lower back spine. Statistical analysis: The Fisher exact test.

Results

Abnormal posture was found in all subjects: 17 sway back posture and 8 patients flat back posture. Subjects with the sway back posture abnormality were shown by MRI to have the following lesions: a bulging disc in 2 (11.7%), disc protrusion in 4 (23.4%), disc extrusion in 10 (58.8%) patients whereas 1 (5.8%) patient had disc sequestration. Flat back posture abnormality patients displayed disc protrusion in 2 (25%) subjects, disc extrusion in 5 (62.5%) and disc sequestration in 1 (12.5%) subject. All patients with the sway back posture had lesions on the facet joints, whereas the changes were noted in 5 (62.5%) subjects with the flat back posture, the Fisher exact test statistical value is 0.02, the result is significant at $p < 0.05$.

Conclusion

All patients with acute lower back pain had abnormal posture and morphologic disk damage analyzed by MRI. But, patients with the sway back posture abnormality had more significantly frequent morphologic damage of whole spine function units (which includes facet joints) and suffer from more advanced morphologic damage as well.

Keywords

back pain;posture;MRI

No conflict of interest

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REHABILITATION APPROACH TO SCHEUERMANN'S KYPHOSIS – A REVIEW OF THE LITERATURE

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Introduction/Background

Scheuermann's disease is the most common cause of hyperkyphosis during adolescence. There is substantial debate on optimal treatment. It is primarily non-operative; severe cases may require surgery. Despite the wide prescription of physical therapy (PT) and braces, they lack scientific validation. We purpose to summarize the current knowledge and controversies concerning the rehabilitation (conservative) management of this condition in adolescence.

Material and Method

A literature-based review of Spanish and English language medical publications on MEDLINE.

Results

Available studies are retrospective, uncontrolled, with different criteria. PT does not affect kyphosis progression. A postural improvement exercise program is recommended for symptomatic patients with short, non-progressing flexible curves. Bracing impacts patients' self-esteem and common daily activities. The clinician cannot estimate whether bracing will improve the deformity, prevent progression, or lead to failure in any given patient. In skeletally immature adolescents with kyphosis > 60°, a brace program of at least 20 hours per day should be considered; it is largely regarded as being efficacious. The type of brace is generally prescribed based on the apex position in relation to T7. Modest overall long-term correction of the pre-brace deformity can be expected. Favorable outcome predictors comprise increased kyphosis' flexibility, kyphosis < 65°, initial correction > 15° in a brace, and a minimum of one year of remaining growth. Pain relieving results have not been published. The treatment should be individualized and adjusted to each patient needs and surrounding context. Periodical clinical and x-ray follow-up until skeletal maturity is mandatory.

Conclusion

Future research focusing on the risk of progression of kyphotic curves, especially those between 70°-90°, is needed to guide treating physicians with regard to Scheuermann's disease conservative approach. The non-operative tools are mainly in the Physical and Rehabilitation Medicine scope. However, most publications in this area have been made by Spinal Surgeons.

Keywords

Scheuermann kyphosis;physical therapy;bracing

No conflict of interest

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ISPR8-1206

INTEGRATION OF MOBILE HEALTH APPS AND WEB-BASED INTERVENTIONS IN THE SELF-MANAGEMENT OF LOW BACK PAIN: A SYSTEMATIC REVIEW

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Introduction/Background

Low back pain (LBP) is a highly prevalence public health related problem with a substantial impact on the individual's disability and daily functioning. The aim of this study is to provide an overview of the available evidence and to determine if the included studies follow a well-structured and homogenous design that allow an effective assessment of the impact of mobile health apps and web-based interventions in the self-management of LBP.

Material and Method

Electronic databases were searched from 2007 to 2017. The search strategy included the use of MESH terms and free-text terms, combining 3 concepts: low back pain, mobile applications and self-care. Randomized control trials (RCTs) and RCT protocols using mobile health apps or web-based interventions as part of the treatment for patients with LBP were included.

Results

A total of 17 articles concerning 14 different studies met the inclusion criteria. Nine completed RCTs included a total of 1659 participants. The majority of the participants were females and reported educational levels as partial college or higher. A wide range of outcome measures were used, although none of the studies reported on health care utilization. There was a significant variation in the reported results, even though some studies indicated improvement in certain outcomes favouring the intervention group. Three studies delivered the content through an app, accessible from multiple devices. Interactive elements were reported in every study.

Conclusion

The included studies did not follow a homogenous design, reporting numerous outcomes and heterogenous data. Therefore, it was not possible to establish a clear idea of its true impact. The protocols for future trials seem to evaluate more homogenous outcomes and are likely to provide future useful data. Apps and web-based interventions may be the solution to overcome current barriers and increase access to a quality, safe and cost-effective rehabilitation for LBP.

Keywords

Low Back Pain; Mobile Health Apps

No conflict of interest

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JUVENILE IDIOPATHIC SCOLIOSIS, THE COBB ANGLE AND SURGERY: AN INEVITABLE TRIO? – A CASE REPORT

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Introduction/Background

Juvenile idiopathic scoliosis (JIS) refers to scoliosis occurring between the ages of 4-10 and represents 10-15% of all idiopathic scoliosis. The growth potential rises the risk of curve progression and subsequent surgery. Curves that reach 30° tend to worsen without treatment. The general indication for surgery is a curve size > 50°. This case report aims to alert the clinicians to the value of looking beyond the Cobb angle when approaching JIS.

Material and Method

We present a case of JIS with a Cobb angle > 50° treated with bracing, evaluated in Physical and Rehabilitation Medicine outpatient.

Results

A 6-year-old girl with asymptomatic JIS and a structured 56° right thoracic curvature and Risser 0/5 was referenced to our department by the Spinal Surgeon to delay surgery. Clinically, she presented a 30 mm right thoracic hump in the Adams test and hypokyphosis. Brace treatment was started with a thoraco-lumbo-sacral-orthosis Boston, 23 hours per day. After 3 months and 1 year of treatment, the in-brace x-rays revealed a reduction of Cobb angle to 23° and to 20° respectively, and Risser 0/5. Currently, at 3-year follow-up, she has a 36° curve on out-of-brace x-ray and a 10mm hump on physical examination. The Orthotist technician care was crucial (she needed 3 braces and several adjustments). She maintains treatment with noteworthy compliance and continues asymptomatic.

Conclusion

Growth restriction and complications associated with spinal fusion make conservative treatment a frequent first option. Reports on the success of bracing in JIS range between 13-81%. Clinical experience, multidisciplinary approach (Physiatrist, Physiotherapist, Orthotist technician, Spinal surgeon) and compliance to bracing play a significant role. This case highlights the enduring importance of questioning ourselves if we are properly managing scoliosis in early ages. JIS natural history is not always the same; besides the growth potential and Cobb angle, we should consider other factors.

Keywords

Juvenile idiopathic scoliosis; Cobb angle; bracing

No conflict of interest

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EVALUATING THE WALKING PERIMETER IN PATIENTS WITH SPINAL STENOSIS. A COMPARISON BETWEEN CLINICAL INTERVIEW AND STANDARDIZED WALK TEST AT COMFORTABLE SPEED.

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Introduction/Background

Gait dysfunctions are common in patients with spinal stenosis. In fact, these patients may present intermittent radicular claudication, which result in a decreased walking perimeter. Thus in these patients, the walking perimeter reveals the impact of the disease on quality of life and accounts for the therapeutic decision, notably surgical. Usually, in clinical practice, walking perimeter is assessed by a medical interview. Some authors highlight the error of subjective verbal quantification. Therefore, the main objective was to quantify the difference between the walking perimeter determined using either a medical interview or a walk test at comfortable speed. The secondary objective was to correlate functional tests with walking perimeter.

Material and Method

In this monocentric study, each patient was asked to verbally estimate his walking perimeter during a preoperative consultation. Walking perimeter was then evaluated using a walking test at comfortable speed in which the patient walked a maximal distance. Functional muscular tests (Sorensen and Shirado) were also performed.

Results

Twenty patients have been included (age: 68.9±8.6 years, BMI: 28.7±3.5 kg.m⁻²). During medical interview, patients reported a significantly lower average walking perimeter than during walk test (317±178m and 442±99m respectively; p<0.05). Among functional tests (Shirado: 84.2±51.0s; Sorensen: 75.4±39.1s), only Shirado test was correlated with walking perimeter assessed by walk test (Shirado: r=0.48; p=0.03) whereas no correlation was found for walking perimeter assessed by medical interview.

Conclusion

Our study confirms previous results showing that subjective walking perimeter estimation is not a valid outcome. Patients with spinal stenosis underestimated their actual walking perimeter during the preoperative consultation. Thus comfortable walk test should be used in clinical practice to quantify the walking perimeter in patients with spinal stenosis, and more broadly,

because it seems correlated to functional capacities of patients. The underlying reasons explaining the difference observed need to be explored.

Keywords

spinal stenosis;walking perimeter;walk test

No conflict of interest

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THE EFFICIENCY IN THE TREATMENT OF CHRONIC LOW BACK PAIN USING CORTICOSTEROID AND LIDOCAINE INFILTRATION GUIDED BY RADIOSCOPY

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Introduction/Background

Lumbar facet joint arthritis is responsible for 15–45% of all cases of chronic low back pain and can be better characterized as regional pain, that gets worse with lower back rotation, extension, and physical exertion. One option for the treatment of facet syndrome is corticosteroid infiltration, which aims the pain relief by blocking the sensitive innervation of the lumbar facet joint. This study has the objective of evaluating the efficiency of the facet block using corticosteroid and lidocaine infiltration guided by radiology.

Material and Method

This was a prospective series of case study in which 26 patients with chronic low back pain caused by facet joint arthritis were treated with corticosteroid (methylprednisolone acetate) and lidocaine infiltration guided by radiology.

The pain and functional evaluations after the infiltration included: (a) pain, by Visual Analogic Scale; (b) axial movement amplitudes measuring axial spine extension angle in degrees, and distance between the hand and the ground in centimeters; (c) functional status, with the Roland-Morris questionnaire which has a Brazilian validated version. The evaluations were registered before the infiltration, 1 month, 3 months and 6 months after the procedure. After the data collection, a descriptive statistical analysis was performed using the t-paired test for continuous variables. Statistical significance was considered as $p < 0.05$.

Results

Pain intensity showed a decrease of 42,3% 6 months after the treatment ($p < 0,05$). Axial movement amplitudes, both extension and flexion, showed about 20% improvement ($p > 0,05$). Functionality improved 28% after 6 months ($p < 0,05$).

None of the patients showed any complication or side effects of the administered medications.

Conclusion

Lumbar facet block using corticosteroid and lidocaine is an effective and safe option of treatment for chronic lumbar pain, with functional improvement and pain relief within 6 months after the procedure.

Keywords

low back pain;zygapophyseal joint;corticosteroid

No conflict of interest

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ISPR8-1260

EFFECTS OF ADHERENCE TO HOME EXERCISE PROGRAM ON PAIN AND FUNCTIONAL DISABILITY IN PATIENTS WITH CHRONIC LOW BACK PAIN: PRELIMINARY RESULTS

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Introduction/Background

Exercise is a well-documented effective treatment modality in selected low back conditions and for these effects to be permanent patients should adhere to their given home programs and suggestions. There are several studies reporting the effects of home programs but the degree of adherence and how the adherence effects the outcomes is not studied sufficiently. Therefore, the purpose of the present study was to investigate the adherence of the patients and the effects of adherence on pain and functional outcomes in patients with chronic low back pain.

Material and Method

20 patients (7 male, 13 female) who had low back pain complaints more than 12 weeks were participated in the study. Patients were treated in outpatient clinic for 15 sessions and discharged with a personalized home exercise program. Patient's pain levels (visual analogue scale – VAS) and functional status (Oswestry Disability Index – ODI) were evaluated at the beginning of treatment, at discharge and at the control visit 3 weeks within discharge and adherence to home exercise program (Exercise Adherence Rating Scale – EARS) were evaluated at the control visit 3 weeks within discharge.

Results

Mean age of the patients was 42.80±11.65 years. Pretreatment, discharge and 3 weeks control results of VAS were 6.32 ± 2.03, 5.49±2.04, 4.14±2.45 and ODI were 17.55±7.02, 14.60±6.09, 4.14±2.45 respectively. Mean EARS score at 3 weeks control was 39.10 ± 9.58. EARS scores revealed that 75 % of the patients did not adhere well with their programs. There was no significant relation between EARS and VAS scores ($p>0.05$). EARS and ODI scores was significantly correlated ($r=-0.480$, $p=0.03$).

Conclusion

Although these are the preliminary results on insufficient number of patients, our results suggest that patients with good adherence had better functional outcomes. As healthcare providers and researchers, we must focus on finding better strategies to increase patient adherence.

Keywords

Low back pain;Adherence;Home exercises

Conflict of interest

Disclosure statement:

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SPIRAL MUSCLE CHAIN TRAINING TREATMENT OF DISC HERNIATION AND SCOLIOSIS BY SPIRALLY STABILIZED MUSCULAR CORSET

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Introduction/Background

We consider the cause of disc herniation and scoliosis to be peripheral muscle dysbalances manifested by instability within muscle chains. The muscle chains are divided into spiral systems stabilizing dynamic and static postures.

Material and Method

Spiral muscle chains encircle the body surface. Activity of spiral muscle chains of trapezius muscle TR and latissimus dorsi muscle LD starts with the movement of the shoulder blade and with arms back and forth that move vertebral processi spinosi. The contraction of the spiral chains continues to the opposite side of mm. rotatores, levatores costarum, followed by externus and internus abdominis muscles, gluteus maximus muscle, fascia lata, m. tibialis anterior. The TR and LD spirals retract the waist circumference and create upward force in the body – **TRACTION OF THE SPINE**. Extending the spine compensates the scoliotic curve – we can achieve lateral and rotational compensation of scoliotic curve as well as result of spiral chain contraction during specific therapeutic motions. The spiral activity reciprocally suppresses the activity of vertical muscle chains (ES - erector spinae, IP iliopsoas) as those would make traction impossible.

Results

The muscle chains activity can be trained individually or in groups. We check the activity of the muscle chains during the exercise and capture them in the photograph, sensorics guidance and the electromyography. We control the results by RTG and MRI.

Conclusion

We demonstrate individual examples because treatment always requires an individual approach.

Keywords

scoliosis;disc-herniation;muscles

No conflict of interest

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IMPACT OF NON-SPECIFIC CHRONIC LOW BACK PAIN IN PARTICIPATION

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Introduction/Background

Chronic low back pain [CLBP] affects a large number of people from different ages and has very diverse implications on patients' quality of life.

The main objective of this study was to assess the impact of CLBP on the degree of disability in performing daily tasks and on participation.

Material and Method

The sample consisted of 40 patients with CLBP. The inclusion criteria were: CLBP as the main complaint persisting for at least 12 months; age between 18 and 70 years old; not having pathologies that impair movement, such as neurological, traumatic or musculo-skeletal; and ability to read and write in Portuguese.

The Visual Analog Scale for Pain was used to measure pain intensity, the Roland Morris Disability Questionnaire was applied to assess the degree of disability and the Activity Profile and Participation related to Mobility questionnaire was performed to evaluate the activity and participation profile of the patients.

Nonparametric statistics were used to analyze and associate the results.

Results

The main results showed a significant correlation between pain grade, disability, and participation.

Conclusion

This study demonstrates that CLBP affects the magnitude of disability and has a negative impact on participation.

Keywords

Chronic Low Back Pain;Participation

No conflict of interest

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ISPR8-1354

LANGER MESOMELIC DYSPLASIA

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Introduction/Background

Langer mesomelic dysplasia or Leri-Weill dyschondrosteosis is a rare form of dwarfism characterized by short stature, shortening of limbs being more marked in legs than in forearms, hypoplasia of the ulna and fibula, and usually, normal intelligence. There may also be mandible hypoplasia and Madelung's deformity.

In most cases it is produced by mutations and deletions in the SHOX gene, located in the sex chromosomes. The clinical manifestations in heterozygotes are variable in intensity, sometimes unnoticed, preventing genetic counseling. It is possible to perform the prenatal diagnosis by ultrasound at the beginning of the second trimester of pregnancy, and confirming by molecular genetic study.

There are few cases published in the literature, in many cases related to consanguinity.

Material and Method

We present a clinical case of a patient with Langer mesomelic dysplasia and scoliosis.

Results

Woman of 13 years and 8 months who goes for scoliosis evaluation.

Personal history: Langer mesomelic dysplasia and bilateral sensorineural hearing loss.

Reached menarche a year and a half ago. Belongs to the gypsy ethnic group.

Family background: Parents with consanguinity. Parents of height 153 and 160 cm. Abortion of fetus affected by Langer mesomelic dysplasia.

Physical examination: Size 118.5 cm, minimal mandibular hypoplasia, severe shortening of all four limbs with Madelung deformity in the forearms. Normal hands and feet. Right thoracic and left lumbar scoliosis.

X-ray upper limbs: Deformity of Madelung.

Teleradiography of lower limbs: Bilateral fibular hypoplasia.

Teleradiography column: Right dorsal scoliosis of 28° and lumbar left of 37° with rotation grade 3. Risser 4-5.

Conclusion

Langer mesomelic dysplasia is a rare form of dwarfism. It is characterized by shortening of limbs and hypoplasia of the ulna and fibula. Although the presence of scoliosis in the Langer

mesomelic dysplasia is not described, for the few cases published in the literature, we can not rule out its association.

Keywords

DWARFISM, SCOLIOSIS, CONSANGUINITY.

No conflict of interest

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ISPR8-1361

VERTEBRAL OSTEOMYELITIS AND DISCITIS: A CASE SERIES

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Introduction/Background

Vertebral osteomyelitis and discitis presents with insidious onset back or neck pain which is progressive over several days or weeks. While back and neck pain is common among adults of all ages, vertebral osteomyelitis and discitis occur infrequently and represent a diagnostic and therapeutic challenge.

Material and Method

Representative cases of bacterial and fungal infections of lumbar and cervical spine will be presented to illustrate key aspects of early diagnosis and treatment as well as prevention of sequela.

Results

Hematogenous spread of microbial agents, typically bacteria and less commonly fungi, is considered to be the most common cause of vertebral osteomyelitis and discitis. There is no direct blood supply to the intervertebral disc, and bone marrow of the vertebra have abundant blood flow, initial seeding is thought to be in the vertebra. Often, the primary origin of hematogenous spread cannot be identified. Back and neck pain caused by vertebral osteomyelitis and discitis may initially respond to conservative treatment and this may delay appropriate diagnostic studies and treatment.

There can be bone destruction in two adjacent vertebral bodies and their intervertebral disc even when diagnosis is made promptly and appropriate treatment is initiated without delay. Hence, there may be persistent back or neck pain despite appropriate and effective antimicrobial treatment. Supportive care with physical therapy, appropriate bracing, patient education regarding prevention of secondary injuries with close physiatry follow up and pain management during and after treatment of the infection is essential.

Conclusion

A series of representative cases with advanced imaging studies along with a review of the literature will be presented. Key features of back and neck pain syndromes with underlying spinal infection, diagnostic methods including laboratory and imaging studies and necessity of

multidisciplinary approach to diagnosis and treatment of vertebral osteomyelitis and disc infection will be discussed and key role of physiatry will be highlighted.

Keywords

discitis;vertebral osteomyelitis;back pain

No conflict of interest

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OSWESTRY DISABILITY INDEX AS EVALUATION TOOL IN PATIENTS WITH ONE LEVEL LUMBAR MICRODISCECTOMY - THREE MONTHS FOLLOW UP

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Introduction/Background

Almost 80% of people, at least once in life, has back pain with or without leg pain. Lumbar disc herniation is in 95% of cases cause of lumbar radiculopathy. In about 10% of these patients there are indications for surgical treatment.

Purpose: Determine the effect of one level discectomy, and rehabilitation, on activities of daily living through Oswestry Disability Index (ODI).

Material and Method

Prospective clinical study included 50 patients with lumbar microdiscectomy, operated in Clinic for Neurosurgery. We used ODI, witch the patients filled before, one month and three months after operation. All patients were included in early rehabilitation treatment of the algorithm of Clinic for PMR Clinical Center of Serbia. All 50 patients were in rehabilitation in stationar institution specializes in rehabilitation, duration of 21 days,one month after operation.

Results

24 (48%) patients were women, and 26 (52%) were male. Average were 41,4 years old. Average ODI were 54,2% before, 28,9% one month, and 16,3% (minimum disability), three months after operation and secondary rehabilitation. There is statistically significant difference between data collected in preoperative period and on first checkup, and also between data collected on first and second checkup. 82%patients had improvement on last checkup compared to preoperative condition. In 8% patients ODI remained unchanged at the last measurement in relation to the preoperative, while in 10% noted deterioration and increase in ODI of the last measurement in relation to the preoperative condition.

Conclusion

ODI showed good recovery of patients after lumbar microdiscectomy in first three months. The main benefit of operation was the reduction of pain in most patients. Welldone surgical

treatment, and timely measures of early and secondary rehabilitation lead to improvement in patients after lumbar microdiscectomy three months follow up which is shown by ODI, the “gold standard” of low back functional outcome tools.

Keywords

LUMBAR MICRODISCECTOMY;OSWESTRY DISABILITY INDEX ;EVALUATION TOOL

No conflict of interest

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ISPR8-1420

ELECTRICAL TWITCH-OBTAINING INTRAMUSCULAR STIMULATION (ETOIMS) AND NEEDLE ELECTRICAL INTRAMUSCULAR STIMULATION (NEIMS): CLINICAL OUTCOMES ON LOWER BACK MYOFASCIAL PAIN SYNDROME

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Introduction/Background

To compare the effects of Needle Electrical Intramuscular Stimulation (NEIMS) with Electrical Twitch-Obtaining Intramuscular Stimulation (ETOIMS) in treating lower back myofascial pain syndrome.

Material and Method

Seventy patients with low back myofascial pain syndrome completed the study. They were randomly allocated into 2 groups. Outcome measures include Visual Analog Scale (VAS), pressure pain threshold (PPT) and Oswestry Disability Index (ODI) of lower back pain (LBP). Data were collected for comparison between both groups. The Mann-Whitney U-test was used for comparison of differences between independent group means.

Results

Significantly better results noted post-treatment results for ETOIMS group compared to NEIMS in pain level at rest immediately after treatment and overtime ($p < 0.001$, $p = 0.005$ respectively), pain during regular activity ($p = 0.003$), pain during vigorous activity ($p = 0.001$). There was also an increase in PPT immediate post-ETOIMS ($p = 0.037$) and overtime ($p = 0.022$). No significant differences noted for ODI ($P = 0.0749$).

Conclusion

ETOIMS is significantly more effective than NEIMS in VAS and PPT but not significant better in ODI for low back myofascial pain syndrome patients.

Keywords

Myofascial pain syndrome; Needle Electrical Intramuscular Stimulation; Electrical Twitch-Obtaining Intramuscular Stimulation

No conflict of interest

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ISPR8-1439

EFFICACY OF ULTRASOUND-GUIDED INJECTIONS OF INCOBOTULINUMTOXINA IN THE MANAGEMENT OF PIRIFORMIS MUSCLE SYNDROME

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Introduction/Background

Piriformis muscle syndrome is a painful disorder characterized by buttock and hip pain usually due to sciatic nerve compression. Some previous works have studied the efficacy and safety of botulinum toxin in the management of piriformis muscle syndrome. Our objectives are analyze the efficacy of ultrasound-guided injections of incobotulinumtoxinA (Xeomin®) in the reduction of pain in piriformis muscle syndrome, and study if there are differences in the efficacy related with the dilution volume.

Material and Method

A retrospective cohort including patients admitted to Rehabilitation Department from January 1st 2015 to June 30th 2016 was analyzed. 58 patients who fulfilled the required criteria were registered. In all the included patients, Visual Analogical Scale (VAS) was measured before performing a ultrasound-guided injection of 100 Units of incobotulinumtoxinA in piriformis muscle, and 6 weeks after the injection. All the injections were performed by the same investigator. All the injections were performed using volume dilutions of 50 U/mL (n=18), 20 U/mL (n=19) or 10 U/mL (n=21).

Results

After performing Kolmogorov-Smirnov test, we checked that the data did not follow a normal distribution so a non-parametric test (Wilcoxon signed-rank test) was used. There was a statistically significant reduction of pain 6 weeks after incobotulinumtoxinA injection ($Z_W = -6.649$, $p < 0.01$). All dilutions showed statistically significant reduction of pain: (10 U/mL: $Z_W = -4.027$, $p < 0.01$; 20 U/mL: $Z_W = -3.837$, $p < 0.01$; 50 U/mL: $Z_W = -3.753$, $p < 0.01$).

Conclusion

IncobotulinumtoxinA seems to be an useful therapy in the management of piriformis muscle syndrome. There is no differences in the efficacy related with the volume of dilution.

Keywords

piriformis muscle;incobotulinumtoxinA;pain

Conflict of interest

Disclosure statement:

C. Cordero-García received research grant support and served as a consultant for Merz. M. M. García-Delgado has no potential conflict of interest to disclose. No funds were received for conducting this trial.

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ISPR8-1489

MRI-BASED MORPHOLOGICAL PARAMETERS TO QUANTIFY LUMBAR DISC DEGENERATION

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Introduction/Background

When an intervertebral disc degenerates, structural deterioration occurs in a wide range of anatomical components within and adjacent to the disc, being clearly represented in cross-sectional imaging. To suggest reliable and valid MRI-based morphologic parameters to quantify lumbar disc degeneration, the reliabilities of 6 parameters were analyzed to choose those with high reliability. The selected parameters were further tested to determine validity by correlating with disc height, which is regarded as a hallmark of structural integrity of the intervertebral disc.

Material and Method

85 patients over 60 years old who underwent MRI of the lumbar spine for mild low back pain were included. Two reviewers independently assessed the degree of degeneration and assigned one of the 4 ordinal scores from 0 to 3 in the following 6 parameters at 6 spinal segments: T2-signal intensity (T2-SI), disc extension beyond interspace (DEBIT), annular fissure, Modic changes, endplate integrity, and osteophytes. Inter-observer and intra-observer agreements were assessed using Cohen's kappa statistic. For those parameters with high reliability, relationships with disc height were examined by calculating Pearson's correlation coefficients.

Results

While intra-observer agreements were excellent for all parameters (weighted kappa range 0.801-0.875), the inter-observer agreements were substantial to excellent for T2-SI, DEBIT, Modic changes, and endplate integrity (weighted kappa range 0.629-0.874), moderate for osteophytes (weighted kappa 0.573), and only fair for annular fissure (weighted kappa 0.29). Modic changes ($r=-0.497$, $p<0.01$), endplate integrity ($r=-0.359$, $p=0.01$), and osteophytes ($r=-0.448$, $p<0.01$) showed strong relationships with disc height whereas T2-SI ($r=0.149$, $p=0.175$) and DEBIT ($r=-0.208$, $p=0.057$) did insignificant correlations.

Conclusion

To quantify lumbar disc degeneration using MRI, Modic changes, endplate integrity, osteophytes, T2-SI, and DEBIT could be used as reliable parameters. However, different

weights might be applied to each parameter because validities to represent degeneration varied.

Keywords

Lumbar disc degeneration;MRI;Morphological parameters

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-1500

ISOTONIC VERSUS ISOMETRIC EXERCISES ON CORE MUSCLE IN PATIENTS WITH LOW BACK PAIN

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Introduction/Background

To observe the effects of isotonic and isometric exercises with conservative therapy on core muscle in patients with low back pain.

Material and Method

Twenty participants, 10 male and 10 female aged between 30 and 50 years suffering from low back pain were taken. Sample was divided into two groups, group A isometric exercises and group B isotonic exercises, both the group received conservative therapy of transcutaneous electrical neuromuscular stimulation and hot pack. Outcomes measure visual analog scale(VAS) and Modified Oswestry disability index (MODI) were used the pre-treatment and at the end of 4 weeks.

Results

There was no significant differences for the demographic data between the groups. Both group were comparable in term of age, height, weight, and BMI. Intergroup analysis of VAS score was done using Mann-Whitney test. Pre interventional analysis showed no significant differences between group A and group B ($p=0.6469$) and also post- intervention analysis showed no significant difference between group A and group B ($p=0.3525$). Analysis of MODI score was done using Mann-Whitney test, there was significant difference between group A (Mean=9.90, SD= 5.87) and group B (Mean=19.39, SD=7.27) in their post-test measurements ($p=0.002$). Experiment of results showed isotonic and isometric exercises were effective in all measured variables (pain intensity and functional disability) in treatment of patients with low back pain.

Conclusion

There was no difference between the use isotonic and isometric in decrease pain intensity, but there was significant differences in improvement functional disability where isometric exercises allow a greater improvement in functional disability than isotonic in low back pain.

Keywords

isotonic exercises; isometric exercises; low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

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MUSCLES ENDURANCE IN CHILDREN WITH LOW BACK PAIN

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Introduction/Background

Introduction

Low back pain (LBP) in children has been related to a serious problem for longtime. Recent studies have shown that no specific LBP in such age is as important as in adulthood and prevalence could reach 50%. Despite this high prevalence, it seems to be neglected by the child, family and doctors. Such a high rate, leads us to insist on meticulous clinical evaluation. Evaluation needs to include the measurement of trunk muscle strength and endurance.

Our goals were to determine the prevalence of low back pain in children and adolescents, describe the characteristics of spine muscles endurance in children with LBP and showing the interest of muscles evaluation.

Material and Method

We conducted an analytical cross-sectional study about 444 students, 201 boys and 243 girls, with average age of 14.95 years. We conducted an analytical cross-sectional study about 444 students, 201 boys and 243 girls, with average age of 14.95 years. Evaluation includes anthropometric assessment, extensibility of sub pelvic muscles and the endurance of back muscles and quadriceps with spine examination.

Results

The prevalence was 22.3%, 95% CI [18.2 to 26.2]. This prevalence increases with age with a marked female predominance. Muscles endurance was lower in the LBP group ($p < 0,001$ Sorensen test). More weakness was identified in extensors muscles with high signification (shirado/ Sorensen $p < 0,001$).

Conclusion

Low back pain in children and adolescents is a common symptom, multifactorial, which is responsible of limitations of school and leisure activities. Trunk Muscles weakness may be a

consequence or a cause of pain. Surely, it leads to chronic pain. The study of muscles endurance is necessary for diagnosis, rehabilitation and survey.

Keywords

Low Back Pain;muscles endurance;children

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-1560

LOWER BACK PAIN AND SELF-PERCEIVED FUNCTIONAL DISABILITY AMONG HOSPITAL NURSES IN TAIWAN

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Introduction/Background

Among nursing practitioners, lower back pain is the most common work-related musculoskeletal disorder. Lower back pain is associated with increased work absenteeism, decreased quality of life, and poorer quality of patient care. Moreover, back-related problems are among the most frequently cited reasons for nurses to quit the nursing profession. In this present study, we aim to identify the magnitude and predictive factors of occupational lower back disability.

Material and Method

This study involved a cross-sectional survey of 217 hospital female nurses. The self-administered questionnaire was distributed from January 1, 2007 to March 31, 2007 to all full-time registered nurses employed by Keelung Hospital. The questionnaire collected self-reported information including demographic and work-related characteristics, current or previous history of lower back pain, characteristics of back pain, and disability caused by back pain. The Institutional Review Board of Keelung Hospital approved this study.

Results

The point prevalence of back pain among hospital nurses was 43.78%, and of which, 79.5% was minimally disabled, 19.3% was moderately disabled and 1.1% was severely disabled, based on the Oswestry Low Back Pain Disability Questionnaire. The results of Roland Morris Disability Questionnaire showed a mean disability score of 4.28 (± 4.11) out of 24 points. The degree of disability did not correlate with pain score, age, duration of the current pain episode, or years at work.

Conclusion

Back pain is common among hospital nurses in Taiwan. However, it is important to note that most of the hospital nurses who had lower back pain at the time of completing the self-administered questionnaires had low-degree disability. The degree of disability does not associate with pain score, age, duration of the current pain episode or years at work.

Keywords

Low back pain;Nurse;Disability

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

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THE EFFECTIVENESS OF MATRIX RHYTHM THERAPY IN PATIENTS WITH CHRONIC LOW BACK PAIN

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Introduction/Background

In the literature, there is a very few studies showing the efficacy of Matrix Rhythm Therapy in patients with chronic low back pain is rather low. Our study was planned to determine the effect of Matrix Rhythm Therapy on level of disability, quality of life and pain in chronic low back pain.

Material and Method

A total of 32 participants (18 female, 14 male) with a mean age of 36.41 ± 8.91 years were randomly divided into two groups (Study Group and Control Group). Each participant was treated with ten sessions a combined physiotherapy program (hot pack, TENS, therapeutic ultrasound, home exercise and patient education program). Additionally, study group received six sessions of Matrix Rhythm Therapy. Pain (McGill Pain Questionnaire), Level of disability (Oswestry Disability Index) and quality of life (Short Form-36) were measured at baseline and after the treatment programme.

Results

In the study group, there was a statistically significant decrease in all sub- parameters relating pain severity, disability level and Short Form-36 sub-parameters except Short Form-36 "Emotional Function" sub-parameter after the treatment ($p \leq 0.05$). In the control group, there was a statistically significant decrease in other sub- parameters relating pain severity except the "Lightest Pain" sub-parameter, the disability level, and Short Form-36 "Vitality" and "Pain" sub-parameters ($p \leq 0.05$). When the groups were compared, there was no significant difference between the study group and the control group except the Short Form-36 "General Health" sub-parameter ($p > 0.05$).

Conclusion

As a result, it was determined that both combined physiotherapy program and Matrix Rhythm Therapy applied together with combined physiotherapy program have a positive effect on pain, disability level and quality of life in patients with chronic low back pain.

Keywords

Chronic back pain;Matrix Rhythm Therapy;Combined physiotherapy.

No conflict of interest

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ISPR8-1658

FOOT-DROP AFTER DIABETIC LUMBOSACRAL RADICULOPLEXOPATHY. CASE REPORT.

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Introduction/Background

Diabetic lumbosacral radiculoplexopathy (DLR) is a peripheral diabetic neuropathy. Usually occurs in poorly controlled type 2 diabetes mellitus (DM2). Predominates in men over 60 years old. Exact etiopathogenesis is unknown. It's characterized by acute or subacute onset of asymmetrical lower limb (LL) neuropathic pain, occasionally also of the lower back, of nocturnal exacerbation, with absence of the knee reflex and sometimes mild sensory symptoms. Pain is followed by weakness and muscle atrophy affecting commonly the proximal thigh muscles over weeks to months. It may be accompanied or preceded by significant weight loss. Later in the course of the illness, pain and weakness may spread to distal leg segments and to the contralateral extremity. Most patients gradually recover function spontaneously, but recovery can be incomplete

Material and Method

We present the case of a 72 year old man, DM2, with left LL weakness, difficulty to walk and climb stairs of months of evolution. One year ago, he presented a lumbosciatica with irradiation and hypoesthesia through the anterolateral aspect of the thigh that was treated with analgesics, gabapentin, spinal kinesitherapy and LL strengthening; after that pain and hypoesthesia disappeared and distal lower left limb weakness progressively appeared. At physical examination we found left quadriceps atrophy, psoas, quadriceps and hamstring muscular balance was 4/5 and anterior tibial muscle 2/5 (foot drop) following Daniels scale, absence of patellar reflex and no sensory alterations were found. Electromyography showed signs of subacute denervation in left root territories L4-5-S1. Magnetic resonance didn't show compressive polyradiculopathy. Last 4 years glycemias were above 200 mg/dl. We prescribed LL strengthening and gait reeducation with a foot-up.

Results

Strength improved in LL and acquired a more functional gait with foot-up.

Conclusion

DLR has to be included in the radiculopathy differential diagnosis in diabetic patients. Follow-up must be done in order to identify possible progressions.

Keywords

Diabetic;asymmetrical;lumbosciatica

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-1659

OBSERVATION OF THE EFFECT OF DORSAL ABDOMINAL MUSCLE STRENGTH TRAINING ON LUMBAR DISC HERNIATION

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Introduction/Background

To explore the role of dorsal abdominal muscle strength training in the rehabilitation of lumbar disk herniation and the prevention of recurrence.

Material and Method

61 patients with lumbar disk hernia were randomly divided into 2 groups, 31 in the observation group and 30 in the control group. All of them were treated with medium frequency pulse, ultrashort wave and traditional Chinese medicine massage. The observation group was trained with the dorsal abdominal muscle strength training additionally. Both groups were treated for 3 weeks and followed up for half a year. JOA and VAS scale were used to evaluate two groups of patients before and after treatment.

Results

After 3 weeks of treatment and half of a year's follow-up, the score of JOA was increased and the VAS score decreased both in the observation group and the control group. The observation group were better than the control group ($P < 0.05$). The recurrence rate of the observation group was significantly lower than that in the control group.

Conclusion

Muscle strength training has good effect on the treatment of lumbar disc herniation and the prevention of recurrence.

Keywords

Lumbar disc herniation; Strength training

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-1670

ASSESSMENT OF NECK PAIN IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Introduction/Background

Supplementary respiratory muscles such as upper part of the trapezium and scalenes are used extensively in order to facilitate ventilation in Chronic Obstructive Pulmonary Disease (COPD). These situations cause pain restricting by the upper body mobility and neck movements. This study was planned to investigate the presence of neck pain in individuals with COPD.

Material and Method

In this study, 30 patients (W: 5 / M: 25) were evaluated with COPD. The severity of pain was determined according to Visual analog scale (VAS). Spirometric measurements were used to determine the respiratory parameters. Neck Disability Index were used to for severity of neck disability level.

Results

Mean age of patients was 69.93 ± 9.46 years. Mean of pain intensity was $2,35 \pm 2,77$ and pain duration $46,47 \pm 123,64$ weeks. The mean FEV1% of all patients was 58.96 ± 19.15 , FVC% was 72.73 ± 25.78 and FEV1 / FVC ratio was 64.43 ± 21.18 . There was a positive correlation between pain intensity and FEV1 and FVC ($r = 0.368$, $p = 0.046$), ($r = 0.382$, $p = 0.037$). There was a positive mean moderate correlation between duration of pain and smoking and alcohol use ($r = 0,652$, $p = 0,005$ / $r = 0,655$, $p = 0,004$). The mean of Neck Disability Index was 26.65 ± 19.70 . All patients have a mild disability level. We did not find a significant correlation between Neck Disability Index and spirometric parameters.

Conclusion

Individuals with COPD have neck pain. When these patients rehabilitate, musculoskeletal problems, such as neck pain should be considered.

Keywords

neck pain, chronic obstructive pulmonary disease, neck disability level

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-1702

BACK PAIN IN ADOLESCENTS WITH SPINAL DEFORMITIES

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Introduction/Background

Back pain prevalence ranges from 7 to 58% of subjects aged between 13 and 15, equally distributed in males and females. Back pain is thought to be associated with spinal deformities but no studies investigated the prevalence of back pain in different spinal deformities like, spondylolisthesis, scheuermann disease, hyperkyphosis, scoliosis. AIM: To document the prevalence of back pain, in all its forms in a large population of adolescents with spine deformities and to investigate the association of back pain and different spine pathologies.

Material and Method

All the patients visited in 2010-2015 were asked for pain at first clinical evaluation by a single expert physician. PAINGroup and NOPAINGroup were formed. Pain description was then classified into 4 subtypes (localized or generalized, limiting or occasional). Inclusion criteria: age between 10 and 18, spine deformity diagnosis, Exclusion criteria: secondary deformities and other associated pathologies. Descriptive statistics. T-test to check the difference in the two groups considered for SRS-22 score, age and BMI. Chi-2 test to check the association between the presence of pain and diagnosis and pain subtypes; sports activities and previous treatment with brace.

Results

702 included patients (males n=468), mean age 13.3+-1.92. Subjects' diagnosis: adolescent idiopathic scoliosis (n=387;55.1%), sagittal unbalance (idiopathic) (n=134; 19.1%) Scheuermann deformities (n=67;9.55%); all other diagnosis (n=114; 16.2%). In AIS 32% referred pain, 55% in sagittal unbalanced patients and 52% in Scheuermann disease. Only Scheuermann disease predispose to pain (chi2= 10.2 Fisher exact test = 0.002), Sagittal unbalance is slightly associated to pain with chi2 = 3.65 Fisher exact test = 0.05.. BMI, Age, sports and brace were not associated with SRS-22.

Conclusion

This is the first study investigating the epidemiology of different type of back pain in a large adolescents population with spinal deformities, Scheuermann deformity resulted associated to pain.

Keywords

scoliosis ;back pain ;adolescent

No conflict of interest

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ISPR8-1746

END-GROWTH RESULTS OF A PERSONALISED CONSERVATIVE APPROACH IN 1938 HIGH RISK ADOLESCENTS WITH IDIOPATHIC SCOLIOSIS: PROSPECTIVE OBSERVATIONAL MULTICENTRE STUDY

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Introduction/Background

End of growth RCTs showed the efficacy of bracing and Physiotherapeutic Scoliosis Specific Exercises (PSSE). Current Guidelines propose PCA according to the step-by-step theory: invasivity increases with treatment intensity, from observation to PSSE to soft, rigid and very rigid bracing. This requires to set individualised outcomes and propose the less invasive treatment according to the outcome

Material and Method

Inclusion criteria: AIS, 11-45°, Risser 0-2, age 10-16, first consultation, no previous bracing. End of observation: Risser 3, medical prescription. Groups were defined according to the main end outcome (SRS-SOSORT Consensus): Low Degree (LD) (<31° at start) remain <30°; High Degree (HD) (>30° at start) remain <50°. Treatment: PCA including observation, PSSE (SEAS school), soft (SpineCor), hard (Sibilla) and very rigid (Sforzesco) braces. Classical statistics and propensity scores have been applied

Results

We excluded 207 (10.7%) drop-outs and 274 (14.1%) still in therapy. Treatment intensity increased with Cobb degrees, as well as rate of improvement (from 13.6% to 56.1% - $P < 0.05$). Rate of progression was higher in the less intensively treated very low degree curves (11-20°) ($P < 0.05$), while did not change significantly in those above 20° (between 12.9 and 15.9%). Rate of patients <30° were 69.3% at start and 78.3% at the end ($P < 0.05$); patients >50° at the end were 1.6%.

Conclusion

Defining different outcomes according to PCA allows to perform less aggressive treatments for LD, and concentrating the efforts in HD. Failure rates can be low in both groups. Progression is not the best outcome for all patients and type of treatments.

Keywords

scoliosis ;brace

No conflict of interest

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ISPR8-1759

LUMBAR SPINAL STENOSIS IN ADULT ACHONDROPLASIA. AN ANALYSIS OF INTERVERTEBRAL DISK ALTERATIONS

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Introduction/Background

Lumbar spinal stenosis is a major contributor to disability in adults with achondroplasia. It arises from congenital dysplasia and acquired degenerative changes. The aim of the study was to characterize degenerative changes of the intervertebral disk in adult achondroplasia patients with lumbar spinal stenosis and to identify factors associated with the process.

Material and Method

The study was a case series of adult achondroplasia patients. Clinical parameters were recorded. Radiographs were used to analyze spino-pelvic parameters. MRI of the lumbar spine was used to measure antero-posterior diameter of the canal and disk degeneration using the Pfirrmann grading system. Comparisons were done using the Kruskal-Wallis test and correlations using the Spearman coefficient.

Results

Eighteen patients were included: age 37 ± 17 , female 12, size 127 ± 7 cm, weight 57 ± 13 kg. All had symptoms due to lumbar spinal stenosis. Antero-posterior diameters of the spinal canal differed according to level ($P < 0.05$). Lower values were observed at T12-L1, L1-L2 and L2-L3 levels. The lumbar spinal stenosis was maximal at L2-L3 (9.9 ± 1.8 mm). Degrees of disk degeneration also differed according to level ($P < 0.05$). Higher degrees of degeneration were observed at L1-L2, L2-L3 and L3-L4 levels. Most advanced degenerative changes were observed at L2-L3 (2.9 ± 1.4). Correlation analysis between disk degeneration and spino-pelvic parameters found a significant relationship with thoraco-lumbar kyphosis at L2-L3 level (0.55). Correlation analysis between antero-posterior diameter of the spinal canal and the spino-pelvic parameters found a significant relationship with lumbar lordosis at T12-L1 (0.66) and L2-L3 (0.89) levels, and with thoraco-lumbar kyphosis at L1-L2 level (-0.55).

Conclusion

Spinal stenosis and disk degeneration mainly involve the upper part of the lumbar spine in adult achondroplasia patients. Thoraco-lumbar kyphosis and lumbar lordosis are related with these

processes. The findings may be of importance in rehabilitation and in early prevention of spinal stenosis in the course of achondroplasia.

Keywords

adult achondroplasia;lumbar spinal stenosis;disk degeneration

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-1793

PHYSICAL FITNESS AND CHRONIC LOW BACK PAIN: A CASE-CONTROL STUDY INCLUDING 517 INDIVIDUALS

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Introduction/Background

Deconditioning syndrome in chronic low back pain is admitted. However, profil of physical fitness, on the basis of energy expenditure, is controversial. The goal of the study was to assess physical fitness in chronic low back pain patients using markers of energy expenditure.

Material and Method

This was a case-control study. Patients with chronic low back pain and healthy age- and sex-matched controls underwent bicycle exercise test, up to muscle exhaustion. Recorded energy variables were: duration of exercise in seconds, maximal power (P max) in watts, percentage of age-predicted maximum heart rate (HR max) and metabolic equivalents (MET). Pain intensity using the 0-100-VAS, pain duration and functional limitation using the Quebec scale were also assessed in chronic low back pain patients. Relationship between energy variables and clinical parameters was investigated using the Spearman correlation coefficient. Results of both groups were compared using the Student t test.

Results

192 chronic low back pain patients (age 44±8, ratio M/F 106/86, pain intensity 47±19, pain duration 51±57 months, Quebec 39±16) and 325 healthy controls (44±8, ratio M/F 199/126) were included. Duration of exercise (-0.23), P max (-0.21), and MET (-0.29) were related with the Quebec score in chronic low back pain patients (p<0.05). There was no other relationship between energy variables and clinical parameters. Energy variables were not different in both groups as they were globally considered. However, chronic low back pain patients with highest functional limitation (the fourth quartile of the Quebec scores) had lower duration of exercise (349±134 vs 431±189), lower P max (129±39 vs 147±49), and lower MET (7±2 vs 8±2) than healthy controls (p<0.05).

Conclusion

Physical fitness was not altered in the entire chronic low back pain population. However, physical fitness appeared to be decreased in chronic low back pain patients with highest functional limitation.

Keywords

chronic low back pain;physical fitness

No conflict of interest

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ISPR8-1860

COMPARATIVE STUDY OF MORPHOSTATIC FOOT DISORDERS BETWEEN A LOW BACK PAIN POPULATION AND A HEALTHY POPULATION

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Introduction/Background

Chronic low back pain is one of the most common musculoskeletal disorders. The association between low back pain and plantar static disorders was always mentioned in the studies but an analytical and comparative study with healthy subjects is needed to confirm this hypothesis.

Material and Method

It is a cross-sectional analytical study conducted in the PMR department of Sahloul hospital, Tunisia during the period from January to March 2017. Patients with symptomatic low back pain or complicated neurological disorders, patients with Pelvic statics related to chronic inflammatory rheumatism, and patients with unequal lower limb length were not included in this study. We recruited 35 low back pain patients and 35 asymptomatic patients matched by age, gender and body mass index.

Results

Talalgia was more frequent in the low back pain population with a significant difference ($P < 0.001$). Regarding the foot posture index we found that the low back pain population had more pronation deformations with a flat foot type and a greater calcaneo-tummy angle than healthy subjects ($p < 0.001$).

Conclusion

Morphostatic examination of the foot is still necessary in any lumbar pain patient. Our study confirms that the pronated flat foot is the most common foot type associated with low back pain. But Are these disorders a cause or a consequence of low back pain? Further studies are necessary to establish a cause and relationship effect.

Keywords

back pain;foot

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-1863

MANAGEMENT OF TUBERCULOSIS SPONDYLITIS IN A PMR DEPARTMENT

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Introduction/Background

Nowadays tuberculous spondylitis, also known as Pott disease, is a rare clinical condition but can cause severe vertebral and neurological sequelae that can be prevented with an early correct diagnosis.

Material and Method

We conducted a retrospective study including 12 records of hospitalized patients in the physical medicine and rehabilitation department in Sahloul Hospital, Sousse during the period from 2010 to 2017. The diagnosis was based on the presence of MRI and / or microbiological arguments.

Results

The average age of our patients was 46 years [23-82 years], with a female predominance (8 women).

The most common symptom was back pain reported in 10 patients while cough, fever, night sweats and weight loss were less frequently reported. At admission, a neurologic deficit was present in 9 cases. The thoracic segment was the most frequent spinal segment affected (in 7 cases), followed by lumbar spine (in 2 cases). For bacteriological diagnosis of tuberculosis, positive cultures were reported in only 7 of patients. Microbiological and histological diagnosis was obtained by surgery biopsy in 3 cases. Antituberculous treatment was initiated as soon as the diagnosis was confirmed for all patients, with 2 months of HRZE followed by 9 to 12 months of HR. Surgery was realised, with a median delay of 1month, to patients that presented neurological deficits caused by spinal cord compression (in 4 cases), spinal deformity with instability (in one case), severe or progressive kyphosis (in one case) and large paraspinal abscesses (in 2 cases).

Conclusion

Tuberculosis involvement of the spine has the potential to cause serious morbidity, including permanent neurologic deficits and severe deformities. Medical treatment or combined medical and surgical strategies can control the disease in most patients.

Keywords

spondylitis;tuberculosis;back pain

No conflict of interest

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ISPR8-1889

REHABILITATION CARE OF PATIENTS WITH SPONDYLITIS : A TUNISIAN EXPERIENCE

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Introduction/Background

Infections of the spinal cord and surrounding structures can damage neurologic structures. The aim of this study is to share our clinic experience about spinal infection rehabilitation.

Material and Method

We conducted a retrospective study including 26 records of hospitalized patients in the PMR department in Sahloul Hospital, Sousse during the period from 2010 to 2017. The diagnosis was based on the presence of MRI and / or microbiological arguments.

Results

The average age of our patients was 57,11years [23-82 years], with a sex ratio of 0.85.

The most common symptom was back pain reported in 20 cases. At examination, 25 of patients presented motor disorders. The rehabilitation treatment was realized in a delay varying between 6 and 200 days with a median of 58 days. The majority of patients were hospitalized with a stage ASIA C (9 cases). The complications observed in 20 patients were dominated by neuropathic pain (16 cases), spasticity (10 cases), pressure sores (6 cases), urinary infections (4 cases) and deep venous thrombosis (one case). Neuropathic pain intensity was evaluated by the DN4 score with an average of 6/10. If spasticity increased functional limitation, patients with diffuse spasticity (10 cases) used oral antispastic medications. Botulinum toxin was used one time to treat focal spasticity. The majority of patients had significant functional changes from rehabilitation admission to discharge. At the beginning the MIF score ranged from 44 to 125 with an average of 75.2. After rehabilitation care, the MIF score ranged from 54 to 125 with an average of 96.4. Psychological status was also evaluated using the HAD scale. In our study, 41% of patients had depressive symptomatology.

Conclusion

The whole medical team must handle the rehabilitation of patients with spinal infection and they should identify the assessment and rehabilitation program as early as possible.

Keywords

spondylitis;rehabilitation;patients

No conflict of interest

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ISPR8-1905

NEUROLOGICAL COMPLICATIONS OF SPONDYLITIS : A RETROSPECTIVE STUDY OF 26 PATIENTS.

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Introduction/Background

Spondylitis is an uncommon but serious infection of the disco vertebral junction with frequent involvement of neural structures including the spinal cord. This study was undertaken to determine most frequent neurological complications of septic spondylitis.

Material and Method

We conducted a retrospective study including 26 records of hospitalized patients in the PMR department in Sahloul Hospital, Sousse during the period from 2010 to 2017. The diagnosis was based on the presence of MRI and / or microbiological arguments.

Results

The average age of our patients was 57,11years [23-82 years], with a sex ratio of 0.85. The chief of complaint was walking disorders (in 20 of cases), spinal pain (in 15 of cases), and sphincter control problems (in 10 of cases). On examination , 23 patients presented motor disorders. Sensitive disorders were found in 14 of patients and sphincter control problems objectified in the neuroperineal examination in 10 of cases. The thoracic segment was the most frequent spinal segment affected (in 9 cases), followed by lumbar spine (in 5 cases). In our study, there were 12 cases of tuberculous spondylodiscitis, 6 of Brucella spondylitis and 8 cases of pyogenic spondylitis.

Surgery was realised, with a median delay of 1month, in patients that presented neurological deficits caused by spinal cord compression (in 4 cases), spinal deformity with instability (in one case), severe or progressive kyphosis (in one case) and large paraspinal abscesses (in 3 cases). The lumbar segment was the most associated with neurological complications (in 4 cases) and the most incriminated germ was Koch bacillus (in 8 cases). The neurological deficits occurred on average on the eighth day of antibiotic therapy.

Conclusion

The disease course is chronic and the lack of specific symptoms often delays diagnosis. This is responsible of its potentially high morbidity and mortality.

Keywords

neurological complications;spondylitis;back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1912

THE EFFECTIVENESS OF PHYSICAL THERAPY FOR PATIENTS WITH LUMBAR SPINAL STENOSIS

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Introduction/Background

The lumbar spinal stenosis(LSS) is a narrowing of the spinal canal, it may be constitutional and/or acquired. Rehabilitation has a major role in the management, medical treatment and surgery of LSS. The aim of this study was to evaluate the short-term results of rehabilitation in LSS.

Material and Method

It was a prospective study carried out on patients referred to the Physical Medicine and Rehabilitation department of Mahdia between July and December 2016 for radiologically-confirmed LSS. All patients had received a medical treatment associated with a rehabilitation program during 2 months, with pre- and post-treatment evaluation. Leg and back pain intensity at rest and while walking were measured with the visual analogical scale (VAS). The functional disability was determined using The Quebec Back Pain Disability Scale. The treatment satisfaction was measured using a Lickert verbal scale.

Results

Thirty-two patients were included (21 women and 11 men), with a mean age of 57 years. Radiculalgia was the most common symptoms (78%) with a limitation of the walking distance in 72.7% of cases. The VAS score for pain at rest was 60.7 and while walking was 81.2.

The physical examination revealed a postural syndrome in 75% of the cases, a spinal syndrome in 54% of the cases and a radicular syndrome in 46% of the cases. The mean Quebec Back Pain Disability Scale score was 68.

After treatment, there was significant improvement in the VAS and Quebec scores. Seventy-five percent of patients were satisfied or very satisfied with this treatment.

Conclusion

The management of LSS is multidisciplinary based on the association of medical and physical treatment while surgery is rarely indicated.

Keywords

lumbar spinal stenosis;physical therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1915

THE ASSOCIATION OF MODIC-1 CHANGES, PARASPINAL MUSCLE ATROPHY, PAIN AND FUNCTION IN PATIENTS WITH LUMBAR DISC HERNIATION

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Introduction/Background

Modic-1 changes is a radiographic finding of inflammatory changes in the bone marrow adjacent to the vertebral body endplate. Prior investigation demonstrates that patients with Modic-1 changes have less improvement in low back pain (LBP) after discectomy. Atrophy and fatty infiltration of the paraspinal muscles are often observed in LBP patients, and correlate with poor physical performance. Our aim is to investigate the relationship between Modic-1 changes, LBP, functional disability, and lumbar paraspinal muscle changes in patients with symptomatic disc herniations.

Material and Method

This study is a cross-sectional, case-control study at a tertiary spine center. Lumbar multifidi and erector spinae (ES) muscles atrophy and fatty infiltration were assessed on axial MRI.

Results

Nine consecutive patients with Modic-1 changes and 12 without Modic-1 changes, all of whom who were scheduled to have discectomy for symptomatic disc herniation, were enrolled. The groups with and without Modic-1 changes were similar in age ($p=0.118$). Participants with Modic-1 changes had a higher percentage of atrophy in the multifidi compared to those without Modic-1 changes ($p<0.002$). In participants with Modic-1 changes, greater fatty infiltration in the multifidi and ES muscles was associated with higher Visual Analogue Pain Scale (VAS) scores (multifidi $r=0.733$ $p=0.025$; ES $r=0.846$, $p=0.004$) and Oswestry Disability Index (ODI) scores (multifidi $r=0.773$; $p=0.015$). This relationship did not exist in participants without Modic-1 changes.

Conclusion

In this cohort of patients with symptomatic lumbar disc herniations, an association between Modic-1 changes, greater atrophy and fatty infiltration in the lumbar multifidi and ES muscles, as well as higher pain and functional disability scores was observed. These data suggest the need for a larger longitudinal study in order to determine if a causal relationship exists between

Modic-1 changes, lumbar paraspinal muscles changes, and the influence of these factors on the magnitude of LBP and functional disability in patients with these findings.

Keywords

paraspinal muscle;disc herniation;modic-1 changes

No conflict of interest

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ISPR8-1932

MODIC-1 DEGENERATIVE DISC DISEASE IS ASSOCIATED WITH INCREASED FATTY INFILTRATION AND ATROPHY OF THE LUMBAR PARASPINAL MUSCLES OVER TIME

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Introduction/Background

Atrophy and fatty infiltration of the paraspinal muscles are consistently observed in patients with low back pain (LBP), which correlate with functional disability. We aimed to (1) characterize changes in lumbar paraspinal muscle volume and fatty infiltration over time in patients with LBP and Modic-1 degenerative disc disease (DDD) and (2) compare such muscle changes at levels of Modic-1 DDD with levels lacking Modic 1 changes.

Material and Method

This is a cross-sectional cohort study at a single urban, academic, tertiary spine center. Changes in lumbar paraspinal muscle volume and fatty infiltration were assessed within each individual by comparing baseline and follow-up MRIs. The volumes of the multifidi, erector spinae(ES), and psoas muscles were measured on T1-weighted axial MRI.

Results

Nine patients with LBP who presented to our center with a prior baseline lumbar MRI that showed Modic-I DDD and underwent a repeat MRI at least one year after baseline MRI were included. Nine patients (median±interquartile range [IQR] age: 43±21 years; seven females) were included. The median time between MRIs was 17 months(IQR ±11). The total volume of the multifidi and psoas muscles from L1 to sacrum decreased significantly from baseline to follow-up MRI($p<0.023$). At the level(s) of Modic-I DDD, the percentage of fatty infiltration in the multifidi and psoas muscles was significantly higher compared to levels without Modic-I DDD ($p<0.040$).

Conclusion

Our data suggest that Modic-1 DDD is associated with adjacent paraspinal muscle atrophy and fatty infiltration in LBP patients. A larger study is warranted with a comparison group that lacks the radiographic finding of Modic-1 DDD, as well as longitudinal assessment of physical function in relation to paraspinal muscle changes. Further investigation is needed to determine the ability of targeted physical therapy to prevent paraspinal muscle changes in patients with Modic-1 DDD and to assess the effect on LBP symptoms and physical function.

Keywords

degenerative disc disease;paraspinal muscles

No conflict of interest

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ISPR8-1984

THE INFLUENCE OF COCCYGEAL MOBILITY ON GANGLION IMPAR BLOCK TREATMENT RESULTS IN CHRONIC COCCYGDYNIA

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Introduction/Background

Chronic coccygodinia is a difficultly diagnosed and treated disorder characterized by intractable pain in the coccygeal region. A ganglion of impar block can be applied for the patients who do not respond to conservative treatments. A more detailed pathoanatomy of coccydynia helps to identify patients who may benefit from the planned treatments. The aim of this study was to research the role of coccygeal mobility in patients with chronic coccygodinia who underwent ganglion impar block on treatment success.

Material and Method

We retrospectively examined data from patients with chronic coccygodinia who had not respond to conservative treatment and once were performed fluoroscopy-guided transsacrococcygeal ganglion impar block. The patients, whose standard and dynamic lateral coccyx radiographies were evaluated and classified considering coccygeal mobility. Before and after the intervention (1 hour, 4, 12 and 24 weeks), pain scores were evaluated with numeric rating scale (NRS). Significant pain relief was accepted as a reduction in the NRS score of 50% or more.

Results

Of 37 patients included in the study, 14 had normal coccyx mobility (Normal Group, 40.64±13.14 years), while the remaining 23 patients had immobile coccyx (Immobile Group, 45.39±13.5 years). NRS scores were significantly decreased in both groups on each time follow up. Before and after the intervention, there was no significant difference in NRS scores between two groups. Significant pain relief respectively was achieved in 42.9% and 61.9% of patients of normal and immobile group at the last follow-up examination ($p>0.05$).

Conclusion

Transsacroccocygeal ganglion impar block can be considered a safe and alternative treatment approach with reduced pain scores in conservative management-resistant chronic coccygodinia. Normal and immobile coccyx in patients with chronic coccygodinia seems to be two different coccyx mobility patterns that do not affect the success of this treatment.

Keywords

Coccygodynia;Dynamic Coccyx X-Ray films;Ganglion Impar Block

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2021

IDENTIFICATION OF LIFE-ALTERING ADVERSE EVENTS IN PUBLICATION RELATED TO FLUOROSCOPICALLY-GUIDED LUMBAR EPIDURAL STEROID INJECTIONS FROM 2002 TO CURRENT: A LITERATURE REVIEW

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Introduction/Background

Fluoroscopically-guided lumbar epidural steroid injections (ESI) have proven to be an effective nonsurgical treatment option for painful spinal conditions. There are increasing concerns about the safety of ESI amid its increased utilization and popularity since the early 2000s. Previous studies on adverse events did not differentiate more serious complications from those that are likely to self-resolve. We define "Life-Altering Adverse Events" (LAE) as those complications resulting in persistent functional impairment. These LAEs have been limited to case reports and their true incidence is unknown. For the purposes of patient education and safety, this study was conducted to identify and analyze LAEs related to lumbar ESI in recent publications.

Material and Method

Review of the literature was conducted using the electronic database PubMed in addition to a manual review of bibliographies of known primary and review articles. We limited the results to non-duplicating studies of fluoroscopically-guided lumbar ESI from 2002 to current. 51 publications were included and reviewed.

Results

Since 2002, a total of 31 cases of LAEs have been published. Sixteen (51.6%) were related to direct neurological injury with spinal cord infarct as the predominating cause. Nine (29.0%) severe infectious complications (discitis, abscess, osteomyelitis, meningitis) were reported. Six (19.4%) cases involving vascular insults secondary to epidural hematoma, arteriovenous fistula, retinal hemorrhage and stroke were documented. Although, the true incidence is impossible to determine, of the 41,466 cases reviewed in this time-frame, the approximate incidence is equal to 0.07%.

Conclusion

When considering the large number of procedures performed annually, this review finds that a patient's risk of experiencing a LAE when undergoing a properly performed lumbar ESI is extremely rare. When the appropriate safety measures are taken, such as risk stratification and adherence to the current evidence based guidelines, risk to the patient should be further minimized.

Keywords

lumbar epidural steroid injection;serious complications;safety

No conflict of interest

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ISPR8-2070

THERAPEUTIC EDUCATION IN CHRONIC BACK PAIN

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Introduction/Background

Back pain is a frequent reason for consultation in our practice and we decided to set up a therapeutic education program to complete our care plan. We initiated this program in 2017, with the authorization of Regional Health Agency.

Material and Method

The inclusion in the program results from the decision of a multidisciplinary meeting including a PRM doctor, a rheumatologist, a neurosurgeon, a pain specialist and a labor doctor. It's an alternative to others classical care used in back pain treatment. A preliminary medical consultation permits to make an educational diagnosis before the program. Another medical consultation permits to evaluate the results of this program. We study the first year activity.

Results

43 patients (23 male, 20 female) with a medium age of 48.5 years (24-72) were included in the program. They represent 67.4 % of the cases discussed in the multidisciplinary meeting during the same time (132). The pain assessed by visual analogic scale decreased after the program: 5 (4-8) vs 8 (6-10). The pain medication also decreases in 11 patients (25.6 %). 40 patients (93,1 %) were satisfied (26, 60.5 %) or very satisfied (14, 32.6 %). Only 3 patients were unsatisfied (6.9 %), 0 very unsatisfied. 34 patients (79.1 %) were in working age and only 12 (35.3 %) of them are working before the program. 5 others patients were back in the workplace after the program, giving a total of 17 patients (50 %).

Conclusion

The therapeutic education is an interesting alternative to others treatment of chronic back pain. It takes into account physical, psychological and socio-professional sizes of the chronic back pain. It's a part of larger program including medications, rehabilitation and others non-drug treatments, interventional radiology and surgery. A strengthened monitoring of these patients is necessary to complete the action of this therapeutic education program.

Keywords

therapeutic education;chronic back pain

No conflict of interest

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ISPR8-2071

THE RELATION BETWEEN PAIN INTENSITY AND DEPRESSION IN PATIENTS WITH CHRONIC LOW BACK PAIN

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Introduction/Background

Background and aims: The impact of chronic pain on psychological symptoms such as depression, anxiety, sleep disturbance and quality of life has been the subject of interest of many researchers. However, the relationship between the intensity and duration of pain and depression is still unclear. The aim of this study was to examine the relationship between the intensity and duration of pain and depression in patients with chronic low back pain.

Material and Method

Methods: In this cross-sectional study 25 patients with low back pain were treated at the Clinic for Rehabilitation Dr M. Zotovic in Belgrade. For evaluation of pain intensity, depression and neuropathic component of pain Visual Analog Scale (VAS), Beck Depression Inventory (BDI) and DN4 questionnaire (DN4 Questionnaire) was used. Statistical hypotheses were tested at the 0.05 level of statistical significance.

Results

Results: The average age of the respondent was 58.7 ± 11.3 . There were 8 males (32%) and 17 women (68%). Median VAS score is 5.5. The median duration of pain was 7 months. The average value of BDI score is 12.4 ± 8.9 . Of the total number of respondents 7 (28%) had neuropathic pain component. Median DN4 questionnaire is 6.5.

The results of our study showed that there is a statistically significant correlation between BDI and VAS and BDI i intensity of pain ($p < 0.001$).

Conclusion

Conclusion: the results of our data establish that CLBP is associated with depression.
Screening for depression in CLBP patients should be an essential part of CLBP patient care.

Keywords

pain;lumbar pain;depression

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2094

CURATIVE EFFECT OF MUSCLE FUNCTION AND PROPRIOCEPTION IN PATIENTS WITH CHRONIC LUMBAR DISK HERNIATION USING DIFFERENT KINESITHERAPIES

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Introduction/Background

To evaluate the curative effect of muscle function and proprioception in patients with chronic lumbar disk herniation using two different kinds of kinesitherapies: isokinetic trunk muscle strength training and core muscle training.

Material and Method

Eighty patients with clinical features of lumbar disk herniation were randomly divided into treatment and control groups (40 patients in each group) according to the random number table. All participants were given routine rehabilitation treatment, including interferential electrotherapy, microwave therapy, lumbar traction treatment, and other physical therapies. The patients in the treatment group were provided isokinetic trunk muscle strength training, which lasted for 8 weeks, three times per week. The patients in the control group were provided core muscle training, which lasted for 8 weeks, three times per week. The improvement in patient's motor and sensory functions before and after treatment was evaluated using lower back pain standard scoring criteria of Japanese Orthopedic Association (JOA), Oswestry disability index (ODI), and visual analogue scale (VAS).

Results

After 8-week continuous training, the trunk muscle strength evaluation indexes [What is it? Provide it in method.] of the patients in the two groups significantly increased compared with those before treatment. Moreover, the JOA, ODI, and VAS scores suggested that both treatments could significantly improve lumbar function [What about different training?] about trunk muscle strength、 Rehabilitation evaluation of lumbar function、 Lumbar proprioception assessment .Further, the ontology sense test indicated that both training methods induced an obvious change that absolute error value of proprioception is reduced after routine rehabilitation treatment and isokinetic trunk muscle strength training treatment.

Conclusion

This study showed that isokinetic trunk muscle strength training could [?]improve proprioception in patients with chronic lumbar disk herniation, but also enhance muscle function, compared with core muscle training.

Keywords

isokinetic trunk muscle strength training; chronic lumbar disk herniation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-2110

PREVALENCE OF SACROILIAC JOINT DYSFUNCTION AND SACROILIAC PAIN PROVOCATION TESTS IN PEOPLE WITH LOW BACK PAIN.

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Introduction/Background

Sacroiliac Joint Dysfunction (SIJD) can explain about 15% to 30% the presence of idiopathic low back pain (LBP). SIJD can be diagnosed through the sacroiliac pain provocation tests (PPT), considering SIJD when 3 or more tests are positive. The aim of the study was to establish the prevalence of SIJD and sacroiliac PPT in people with LBP.

Material and Method

One hundred and thirty-six people with LBP of both genders, with 29 ± 12 years old and BMI 23.35 ± 2.9 Kg/m² were evaluated. A trained physical therapist applied six sacroiliac PPT with the best psychometric properties described in the literature (Distraction, Thigh thrust, Gaenslen, Compression, Sacral thrust and FABER).

Results

A prevalence of 40% of SIJD was found. Most prevalent tests were FABER and Sacral Thrust, while Distraction test was the least prevalent (Figure). Twenty-five percent of the population presented one positive test, 16% had at least 3 positive tests and only 5% of participants had 6 positive tests.

Conclusion

To our knowledge, there are no reports in the literature of the individual prevalence of sacroiliac PPT. According to the results, during the examination of people with low back pain suspected of having SIJD, FABER and Sacral Thrust tests should be done first, followed by compression and Gaenslen tests. The above mentioned could avoid unnecessary sacroiliac stress and pain to the patients' joint.

Keywords

Sacroiliac pain;Provocation tests;Prevalence

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-2118

WHOLE BODY VIBRATION EXERCISE FOR LOW BACK PAIN: A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Low back pain (LBP) is a high-incidence, high-burden condition. The most common form of LBP is non-specific low back pain (NSLBP). Whole body vibration (WBV) exercise remains ambiguous as a therapy for LBP patients based on the current evidence. To confirm the benefits of whole body vibration (WBV) exercise for pain, muscle strength and proprioceptive function in patients with non-specific low back pain.

Material and Method

This was a 2-arm single-blind randomized controlled trial. Eighty-six subjects met the inclusion criteria, they were randomly allocated to either the WBV exercise group (n=43) or control group (n=43). The WBV exercise group performed WBV exercise twice a week for 12 weeks. The control group received exercise protocol that was similar to the WBV exercise group, but without vibration, twice a week for 12 weeks. Primary outcome measures were the visual analog scale (VAS) for pain and adverse events. The secondary outcome measures included muscle strength and endurance of spine, trunk proprioception. Intention-to-treat analysis was conducted if any participants withdraw from the trial. An intention-to-treat analysis was conducted if any participants withdrew from the trial.

Results

Compared with the control group, the WBV exercise group provide additional beneficial effects for in terms of VAS ($P<0.001$), lumbar joint position sense ($P<0.05$), peak torque of the trunk flexors and extensors ($P<0.05$), and muscle endurance of trunk flexors and extensors ($P<0.05$). There were no adverse events or serious adverse events in either group.

Conclusion

The study demonstrated that WBV exercise could provide more benefits than general exercise in terms of relieving pain and improving trunk neuromuscular function in patients with NSLBP.

Keywords

Whole body vibration;low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-2128

THE CLINICAL STUDY OF KINESIO TAPING WITH JOINT MOBILIZATION IN THE TREATMENT OF NONSPECIFIC LOW BACK PAIN

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Introduction/Background

Kinesio tape is one of the most widely used soft tissue patch technologies, which has a considerable effect on the soft tissue injury. Meanwhile, joint mobilization technology now is regarded as the most effective way to treat with chronic low back pain as it has been tested in the past ten years of modern research.

This study will embark on nonspecific chronic low back pain patient as our research object, and with soft tissue patch technology and joint mobilization technology involved, we adapted contrasted experiment, and pay attention to the changes of evaluation indications. Our goal is to discuss the affection and clinical curative effect of joint mobilization technology and soft tissue patch technology in the treatment of chronic low back pain. And we also want to give you some new thoughts on the effect of soft tissue patch technology and joint mobilization technology in this disease.

Material and Method

Elderly patients with nonspecific low back pain were randomly divided into observation group (using Kinesio Taping with joint mobilization as well as conventional modalities, 18 cases) and control group (using only conventional modalities, 13 cases). Back flexion and extension muscle peak torque (PT), visual analogue scale (VAS) and Oswestry Pain & Disability Questionnaire (OPDQ) were assessed before and after the intervention.

Results

At baseline there were no significant difference between two groups; After 1 week of treatment, PT was significantly higher in the observation group than that of the control group ($P < 0.05$). The differences of VAS and OPDQ were statistically significant after one week of treatment compared with the control group ($P < 0.01$).

Conclusion

KT with JM may be more favorable in improving symptoms and dysfunctions in elderly patients with nonspecific low back pain.

Keywords

Low back pain;Kinesio Taping;joint mobilization

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2200

EFFECTS OF MANUAL THERAPY, SACROILIAC AND LUMBAR EXERCISES IN PATIENTS WITH SACROILIAC JOINT DYSFUNCTION SYNDROME

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Introduction/Background

The aim of this study was to determine the effects of sacroiliac joint (SIJ) manipulation, sacroiliac and lumbar home exercises on pain, sacroiliac mobilization levels and functional status in patients with sacroiliac joint dysfunction syndrome (SIJDS).

Material and Method

In a prospective, randomized interventional trial 69 eligible women were assigned to SIJ manual therapy + sacroiliac home exercise group (Group 1, n=23), SIJ manual therapy + lumbar home exercise group (Group 2, n=23) (n=19), or lumbar home exercise group (Group 3, n=23). All the patients who were included in the study were evaluated on the 0th, 28th day and 90th day of the treatment. Specific tests (motion palpation and pain provocation tests) for SIJ were performed. Activity and rest pain was assessed by using the Visual Analogue Scale (VAS). Functional status and quality of life were assessed using the Modified Oswestry Disability Index (MODI) and Short Form-36 (SF-36), respectively.

Results

The VAS scores significantly decreased in all three groups ($p < 0,05$). Gillet test, Vorlauf test, Posterior Shear Test (POSH), Irritation point test and Compression test showed significant decrease after treatment in both training groups ($p < 0.05$). A significant improvement was determined in MODI, quality of life scores, SF-36 and neuropathic pain in all three groups ($p < 0.05$). However, a more significant improvement was detected with manual therapy and sacroiliac home exercise program compared to patients in group 2 and group 3.

Conclusion

Our data suggest that manual therapy, sacroiliac and lumbar exercises programs can be effective in patients with sacroiliac joint dysfunction syndrome.

Keywords

Sacroiliac joint; manual therapy; Exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-2220

LOW BACK PAIN AFTER EPIDURAL PROCEDURES: A MINOR COMPLICATION?

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Introduction/Background

Among others, low back pain (LBP) is a common minor complication after epidural analgesia or anesthesia (EA). However, it may indicate a major problem. We present two cases of spinal epidural empyema (SE) after EA.

Material and Method

Clinical information regarding case presentation, imaging and laboratory data was obtained from electronic clinical records and office visits in the Physical and Rehabilitation Medicine (PRM) Department.

Results

Case 1: 36-year-old woman submitted to epidural analgesia during labor developing within a few days persistent LBP irradiating to the lower limbs and progressing to motor and sensory impairment in left lower limb and lumbosacral segments with urinary and fecal incontinence. Magnetic Resonance (MR) showed epi and subdural empyema at D11-L5 levels with cauda equina involvement. She underwent surgical drainage and started a motor and neuro-urolologic rehabilitation program. **Case 2:** 74-year-old man given an epidural anesthesia during a total knee arthroplasty and developing LBP two months after surgery with mild sensorimotor deficit at the lower limb. MR showed epidural abscess/empyema at L1-L2 levels. The man was treated conservatively with progressive improvement.

Conclusion

Epidural procedures are generally safe, but serious adverse events can occur, such as SE, and diagnostic delays may contribute to adverse neurological outcomes and the need for prolonged rehabilitation programs. Although rare, true incidence is unknown. The PRM physicians should be aware of this complication in order not to underestimate a LBP after an epidural procedure. MR is paramount for diagnosis and follow-up. Further information is needed regarding incidence of SE and clinical predictors of those having higher risk for this potentially serious complication.

Keywords

low back pain;epidural;diagnosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2235

EFFECTIVENESS OF MOBILIZATION WITH MOVEMENT (MULLIGAN'S CONCEPT TECHNIQUES) ON LOW BACK PAIN: A SYSTEMATIC REVIEW

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Introduction/Background

Manual therapy techniques based on Mulligan's concept (mobilizations with movement) are gaining increasing popularity for use in musculoskeletal conditions, such as low back pain (LBP). However, to date, no systematic review has been conducted to investigate the effectiveness of Mulligan's techniques on LBP. Therefore, the aim of this study was to evaluate the evidence on the effectiveness of Mulligan's techniques on LBP.

Material and Method

PubMed/Medline, Scopus, Ovid, CINAHL, Embase, PEDro, Google Scholar, and Cochrane Library were searched through July 2017 for studies reporting outcomes of pain or disability in adult patients (≥ 18 years) with LBP. Two authors screened the results and extracted data for use in this review. The risk of bias was evaluated using the Cochrane Back and Neck Review Group criteria. Additionally, the level of evidence of each included study and strength of conclusion for pain and disability were determined using the 2005 classification system of the Dutch Institute for Healthcare Improvement.

Results

Twenty studies with 693 patients were included. Nine trials focused on sustained natural apophyseal glides techniques, three on spinal mobilizations with limb movements, and seven on bent leg raise. The results showed that Mulligan's techniques can decrease pain and disability and increase range of motion in patients with low back pain; however, the strength of conclusion for pain and disability was moderate. Furthermore, inconclusive results were observed for the effectiveness of Mulligan's techniques on movement speed. In this review, eight studies (40%) were categorized as low risk of bias, while 12 studies (60%) had high risk of bias. Level of evidence analysis revealed that 17 studies (85%) were classified as level of evidence B, while three studies (15%) were classified as level of evidence A2.

Conclusion

Current evidence is insufficient in supporting the benefits of Mulligan's techniques on pain, disability, and range of motion in low back pain patients.

Keywords

Low Back Pain;Musculoskeletal Manipulations;Review

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2237

EFFECTIVENESS OF SLUMP STRETCHING ON LOW BACK PAIN: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

The slump test is a type of neurodynamic test, which is believed to evaluate the mechanosensitivity of the neuromeningeal structures within the vertebral canal. The objective of this review was to investigate the effectiveness of slump stretching on back pain and disability in patients with low back pain (LBP).

Material and Method

We searched 9 electronic databases (PubMed/Medline, Scopus, Ovid, CINAHL, EBSCO, Embase, PEDro, Google Scholar, CENTRAL). Publication language was restricted to English language articles and we searched the full time period available for each database, up to October 2017. Our primary outcomes were pain and disability and the secondary outcome was range of motion (ROM).

Results

We identified 12 eligible studies with 515 LBP patients. All included studies reported short-term follow-up. A large effect size (SMD=-2.15, 95%CI=-3.35 to -0.95) and significant effect were determined, favoring the use of slump stretching to decrease pain in patients with LBP. In addition, large effect size and significant result were also found for the effect of slump stretching on disability improvement (SMD=-8.03; 95%CI=-11.59 to -4.47) in LBP population. A qualitative synthesis of results showed that slump stretching can significantly increase SLR and active knee extension ROM.

Conclusion

There is very low to moderate quality of evidence that slump stretching have positive effects on pain in people with LBP. However, the quality of evidence for the benefits of slump stretching on disability was very low. Finally, it appears that patients with non-radicular LBP may benefit most from slump stretching compared to other types of LBP.

Keywords

Low Back Pain;Neurodynamic Technique;Slump Stretching

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2244

TEST-RETEST RELIABILITY OF SIT-TO-STAND AND STAND-TO-SIT ANALYSIS IN PEOPLE WITH AND WITHOUT CHRONIC NON-SPECIFIC LOW BACK PAIN

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Introduction/Background

Sit-to-stand (STD) and stand-to-sit (SIT) analysis can provide information on functional independence in daily activities in patients with low back pain (LBP). However, in order for measurements to be clinically useful, data on psychometric properties should be available. The main purpose of this study was to investigate intra-rater reliability of STD and SIT tasks in participants with and without chronic non-specific LBP (CNLBP). The second purpose was to detect any differences in lumbar spine and hips sagittal plane kinematics and coordination between asymptomatic individuals and CNLBP patients during STD and SIT.

Material and Method

Twenty-three CNLBP patients and 23 demographically-matched controls were recruited. Ten markers were placed on specific anatomical landmarks. Participants were asked to perform STD and SIT at a preferred speed. Peak flexion angles, mean angular velocities, lumbar to hip movement ratios, and relative phase angles were measured. The procedure was repeated after 2 h and 6–8 days. Differences between two groups were analyzed using independent t-test. Intraclass correlation coefficient (ICC 3,k), standard error of measurement (SEM), and limits of agreement (LOAs) were also estimated.

Results

The ICC values showed moderate to excellent intra-rater reliability, with relatively low SEM values ($\leq 10.17^\circ$). The 95% LOAs demonstrated that there were no differences between the measured parameters. Furthermore, CNLBP patients had limited sagittal plane angles, smaller angular velocities, and lumbar-hip discoordination compared to asymptomatic participants.

Conclusion

The results showed moderate to excellent test-retest reliability of STD and SIT analysis. Moreover, CNLBP patients had altered kinematics during STD and its reverse compared to asymptomatic participants.

Keywords

Functional activity;Biomechanical phenomena;Low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2245

KINEMATICS OF THE SPINE DURING SIT-TO-STAND USING MOTION ANALYSIS SYSTEMS: A SYSTEMATIC REVIEW OF LITERATURE

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Introduction/Background

Clinical evaluation of the spine is commonplace in musculoskeletal therapies such as physiotherapy, physical medicine/rehabilitation, osteopathic, and chiropractic clinics. Sit-to-stand (STS) is one of the most mechanically demanding of daily activities and crucial to independence. Difficulty or inability to perform STS is common in individuals with a variety of motor disabilities such as low back pain. The purpose of this systematic review was to evaluate available evidence in literature to determine 2D and 3D kinematics of the spine during STS in patients with LBP and healthy young adult participants using motion analysis systems (electromagnetic and marker based).

Material and Method

Electronic databases PubMed/Medline (NLM), Scopus, Science Direct, and Google scholar were searched between January 2002 and February 2017. Additionally, the reference lists of the articles that met the inclusion criteria were also searched. Prospective studies published in peer-reviewed journals, with full text available in English, investigating the kinematics of the spine during STS in healthy subjects (mean ages between 18-50 years) or in patients with low back pain (LBP) using motion analysis systems, were included. Sixteen studies fulfilled the eligibility criteria. All information relating to methodology and kinematic modelling of the spine segments along with the outcome measures were extracted from the studies identified for synthesis.

Results

The results indicated that the kinematics of the spine are greatly changed in LBP patients. In order to better understanding of spine kinematics, studies recommended that the trunk should be analyzed as a multi-segment. It has been shown that there is no difference between the kinematics of LBP patients and healthy population when the spine is analyzed as a single-segment. Furthermore, between-gender differences are present during STS movement.

Conclusion

This review provided a valuable summary of the research to date examining the kinematics of the spine during STS.

Keywords

Sit-to-stand;Spine;Review

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2281

THE EFFECT OF ELASTIC THERAPEUTIC TAPING ON ABDOMINAL MUSCLE ENDURANCE IN PATIENTS WITH CHRONIC NON-SPECIFIC LOW BACK PAIN: A RANDOMIZED, CONTROLLED, SINGLE-BLIND, CROSSOVER TRIAL

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Introduction/Background

Chronic non-specific low back pain (CNLBP) patients have decreased muscle activity and altered motor control of the abdominal musculature. The aim of this study was to determine the acute effect of elastic therapeutic taping and sham taping of the abdominal musculature on maximum hold time of endurance tests in CNLBP patients.

Material and Method

Twenty-six CNLBP patients and 26 asymptomatic individuals were recruited in this study. The outcome measures were maximum hold time of supine isometric chest raise, supine double straight-leg raise, and abdominal drawing in maneuver. Following the recruitment process, the CNLBP participants were allocated to an elastic therapeutic tape group or a sham tape group. Standard adhesive elastic therapeutic tape was utilized for facilitatory application in the elastic therapeutic tape group. The elastic therapeutic tape group received real elastic therapeutic taping on the transversus abdominis and internal obliques and the sham tape group received sham elastic therapeutic taping application. For the sham group, the elastic therapeutic tape was positioned horizontally above the navel and applied without tension. After a wash-out period, each CNLBP participant was switched to the other group.

Results

The CNLBP participants had lower maximum hold time compared to the asymptomatic individuals ($p \leq 0.01$). Following taping, both groups showed an increase in the maximum hold time (mean difference = 4.43 – 50.69 s; $p \leq 0.02$). Although there was no difference between the results of both groups ($p \geq 0.12$), effect sizes were large for elastic therapeutic tape group (Cohen's $d = -1.00 - -1.93$).

Conclusion

Abdominal musculature endurance could be improved by the application of elastic therapeutic tape.

Keywords

Low Back Pain;Abdominal Muscles;Kinesiology Tape

No conflict of interest

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A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2282

LUMBAR SPINE LORDOSIS DURING SIT-TO-STAND AND STAND-TO-SIT TASKS IN PEOPLE WITH AND WITHOUT CHRONIC NON-SPECIFIC LOW BACK PAIN: A CROSS-SECTIONAL STUDY

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Introduction/Background

Changes in normal lumbar lordosis can result in abnormal biomechanics of the lumbar spine. It has been shown that the loss of lumbar lordosis can be considered an initiating event of lumbar spine sagittal plane imbalance. The main objective of this study was to evaluate lumbar lordosis during sit-to-stand (STD) and stand-to-sit (SIT) in individuals with and without chronic non-specific low back pain (CNLBP). The secondary objective was to investigate sex-related differences in lumbar lordosis during STD and SIT.

Material and Method

Twenty-six CNLBP patients and 26 demographically-matched controls were recruited. Reflective markers were placed over the spinous process of T12, L3, S2, and the anterior and posterior superior iliac spines. The participants were instructed to stand up at a self-selected pace, and maintain their normal upright standing posture for 3 sec, and then sit down. Kinematic data was recorded at a sampling frequency of 100 Hz using a motion capture system. Lumbar lordosis angle was calculated from the intersection between the line joining T12 and L3, and the line joining L3 to S2.

Results

The results indicated that lumbar lordosis values were significantly decreased in CNLBP patients compared to asymptomatic controls during STD and SIT (mean difference[MD]=2.07°–10.50°; $p \leq 0.001$). Furthermore, no significant differences were seen in lumbar lordosis values at starting position between CNLBP and asymptomatic groups during STD (MD=1.69°–3.67°; $p \geq 0.09$). Interestingly, female participants usually had significant greater lumbar lordosis values compared to male participants during STD and SIT (MD=3.80°–9.49°; $p \leq 0.04$). However, this difference was not statistically significant for lumbar lordosis values at starting position during STD and for lumbar lordosis values at starting and end positions.

Conclusion

Decreased lumbar lordosis in CNLBP patients during STD and SIT could be considered as an important point during rehabilitation. Moreover, this study showed that there is a sex-related difference among females and males in lumbar lordosis during STD and SIT.

Keywords

Physical activity assessment; Sitting/standing; Kinesiology

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2350

FACTORS INFLUENCING THE ULTRASOUND CHARACTERISTICS OF THE LUMBAR MULTIFIDUS: A SYSTEMATIC REVIEW

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Introduction/Background

Chronic low back pain (CLBP) is a worldwide problem with important personal and socio-economic implications. Mostly no specific cause is identified, and CLBP is considered “non-specific”. Structural changes in the lumbar multifidus (LM) are seen in these patients, but relationship with symptoms or clinical outcome is not yet clear. Insight in the factors influencing these structural characteristics is crucial to improve understanding of this relation. Ultrasound is a promising tool in the evaluation of LM structure because it is dynamic, widely available, cheap and safe. Its reliability and validity for the evaluation of the LM was demonstrated already. The objectives of this review are to provide an overview on the current knowledge on ultrasound imaging of structural features of the LM in healthy subjects and patients with CLBP, and to improve the knowledge on factors influencing these characteristics.

Material and Method

A systematic search was performed in the databases Pubmed, Embase and Web of Science (last search on 18/10/2017). Additionally, reference lists of the included articles were screened. Selection of studies, data collection and assessment of risk of bias (Downs and Black checklist) was done by two independent reviewers (SR and ER). Eligibility criteria for inclusion in the review were:

- Full text available in English, Dutch or French
- Adults >18 years
- Asymptomatic or patients with non-specific CLBP (> 3 months)
- Outcome: structural characteristics (cross-sectional area, thickness, change during contraction, fatty infiltration) of the LM measured by ultrasound
- Exclusion: intervention studies, relation with prognostic factors, reliability or validity studies

Results

1064 studies were screened for eligibility, of which 70 studies were included.

Conclusion

An overview on the influence of gender, age, body mass index, activity level, lumbar level, side of the spine, posture and presence of LBP on the structural LM characteristics measured by ultrasound is provided

Keywords

ultrasound;lumbar multifidus

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.06 Musculoskeletal Conditions - Back Pain and Spine Disorders

ISPR8-2389

EFFECTIVENESS OF MESOTHERAPY AND PHYSICAL REHABILITATION IN JUVENILE BACK PAIN - A PILOT STUDY

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Introduction/Background

Back pain is one of the main causes of functional disability in the community, especially when it reaches chronicity, and it is considered a global public health problem. In most cases it is not possible to determine a specific cause of musculoskeletal pain in the spine, and around 90% of cases are considered nonspecific back pain, usually related to functional disorders due to overweight or vicious positions. In Physical and Rehabilitation Medicine (PRM), the treatment of this pathology requires an intervention at an early stage in order to cease the nociceptive stimuli, that originates the acute pain, avoiding its chronification. In the present clinical study we intend to compare the effectiveness of mesotherapy and rehabilitation, as well as the intensity of pain and functional level of young patients with acute nonspecific back pain.

Material and Method

This study was conducted in the period from September 2016 to February 2017 at the outpatient clinic of PRM and included 16 patients suffering from acute nonspecific back pain divided in 2 groups with different treatment methods. The following assessment instruments were used: pain intensity, evaluated by the Numeric Visual Analogue Scale, functional disability, assessed by the Quebec Back Pain Disability Score and the number of mesotherapy sessions performed.

Results

The analysis of the data showed a statistically significant relationship between pain intensity and functional disability. Between the beginning and the end of the treatment there was also a significant difference in terms of pain relief and the improvement of functional capacity.

Conclusion

Mesotherapy and physical rehabilitation are modalities of treatment that favorably affect the remission of acute back pain, also reflecting an improvement in functional capacity. It is highlighted the need for a comprehensive clinical approach to the nociceptive element, understood as a generator of limitation in activity and participation.

Keywords

pain;juvenile;mesotherapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2506

EFFECTS OF JING JIN TOU CI NEEDLING METHOD IN SOFT TISSUES INJURY ON DIFFERENT POSITIONS OF BODY

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Introduction/Background

Soft tissue injury is common in physical exercises and daily activities. The conventional treatments are movement restraint and ordinary rehabilitation. It usually takes weeks to recover and is easy to recur. The object is to observe the effects of Jing Jin Tou Ci (twelve meridian sinews penetration) needling method in treating soft tissues injury on different positions of body.

Material and Method

A total of 56 patients with soft tissues injury related to exercise were randomized into a control group and a trial group, 28 cases in each. The control group was given ordinary rehabilitation on local injury, which includes TENS(low-frequency electronic therapeutic apparatus) and intermediate-frequency electronic therapeutic apparatus. Based on the therapy of control group, the trial group was treated by Jing Jin Tou Ci needling method. Two groups were all treated every other day, 3 times a week. The two group were both given 5-week successive treatment. At the end of the treatment and 2 months after that, we observed the changes of VAS pain score standard, the damaged joint range of motion and SF-36 summary of health surveys.

Results

The therapies in two groups were both effective not only at the end of the treatment, but also 2 months after it. There were significant difference in comparing the VAS pain score, the damaged joint range of motion and SF-36 summary of health surveys between the two groups ($P < 0.05$), especially 2 months after the treatment ($P < 0.05$).

Conclusion

Jing Jin Tou Ci (twelve meridian sinews penetration) needling method coupled with ordinary rehabilitation on local injury shows significant advantage in the treatment of soft tissues injury on different positions of body, which can release the pain rapidly, improve the range of the damaged joint and reduce recurrence rate.

Keywords

twelve meridian sinews penetration;soft tissue injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2552

ISOKINETIC MANAGEMENT OF THE SHOULDER : DAVIES PROTOCOL ALWAYS EFFECTIVE.

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Introduction/Background

We report the case of a military high mountain guide who had a surgical shoulder stabilization and keep an anterior impingement syndrome.

The isokinetic evaluation show a deficit of peak torque, power and work of the external and internal rotators of the shoulder.

Material and Method

We propose a rehabilitation program during three weeks focused on isokinetic management twice a day.

The aim was the improvement of peak torque, power and work of the external and internal rotators.

We use the recommandations edited by Davies threw the pyramide work in two modes of contraction.

The configuration used was the Davies modified one.

First, we work with concentric contraction by 180°/s by 6 repetitions progressively to 30°/s by 2 repetitions, and 120°/s by 8 repetitions to 30°/s by 3 repetitions.

Second part of the work with eccentric contraction by 30°/s by 6 repetitions to 90°/s by 1 repetition, and 45°/s by 6 repetition to 120°/s by 1 repetition.

Results

We observed an increase of the peak torque, power and work on the three speeds tested at the beginning.

The rehabilitation program through the pyramid work is still effective, we prefer starting with concentric contraction at high speeds to a lower speed spectrum, and eccentric contraction at low speeds to higher speed spectrum.

Conclusion

Isokinetic training and testing are still the gold standard of evaluation and management of muscular deficits.

The rehabilitation program like Davies pyramid is a secure and effective management in addition of kinesitherapy and physiotherapy.

The isokinetic evaluation requires strict conditions of installation, while training requires more comfort of the patient.

Keywords

isokinetic rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0086

TIBIALIS ANTERIOR (TA) TEAR IN SCOTTISH HIGHLAND DANCER DIAGNOSED BY MUSCULOSKELETAL ULTRASOUND (MSKUS)

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Introduction/Background

World class competitive Scottish Highland Dancing involves rapid dorsiflexion of the ankle (“heel-toe” maneuver) with gymnastic-like high jumps. We report a 15-yo world class Scottish Highland dancer with a grade 1-2 strain/tear to her left TA muscle seen with dorsiflexion. This has not been reported previously in the literature in this sport.

Material and Method

An otherwise healthy 15-yo female presented with pain over the lateral anterior “shin” region after daily Highland dance training lasting 3-5 hours. The patient initially wore an over-the-counter knee brace, but this did not improve symptoms. Patient then was referred to a Sports Medicine specialist. Motor strength was 4+/5 dorsiflexion left ankle with reproduction of pain, and 5/5 otherwise. Sensory soft touch and deep tendon reflex were intact. No skin bruising was noted over the TA, but was tender to palpation. MSKUS showed an area of hypoechoity consistent with a grade 1-2 strain of the left TA muscle with dorsiflexion. The tear appeared as a dark diamond shape opening, then disappeared with plantarflexion.

Results

A rehabilitation program was given including icing and resistance band exercises for three weeks. She then resumed task specific Highland dance maneuvers without jumping, followed by her full dance exercise regimen. The dancer resumed completion and won a championship then participated in a 6 week tour including the World Championship with no recurrence of symptoms.

Conclusion

This tibialis anterior tear is documented in an unusual sport that requires rapid ankle dorsiflexion. MSKUS will help physiatrists diagnose and treat this injury for this type of elite dancer.

Keywords

Tibialis Anterior;Highland dancing;Musculoskeletal ultrasound

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0118

HIGH IMPACT FRACTURES OF SACRUM AND PELVIS WITH NO NEUROLOGICAL LOSS – A REPORT OF 2 CASES.

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Introduction/Background

Sacral fractures are common in trauma related cases. Whilst sacral fractures can be sustained as high energy fractures in road traffic accidents and polytrauma cases, they can also occur as insufficiency fractures in relatively trivial incidents in osteoporotic bones. We report two high impact Denis zone 2-3 sacral fractures in relatively young patients who have fortunately avoided neurological damage.

Material and Method

Two cases, one male and one female both migrant workers to Singapore, who sustained Denis type 2 sacral fractures are discussed. Fractures sustained were unstable and needed to be fixed. Sacral fractures sustained were close to sacral foraminae, however escaped neurological loss.

Results

Denis et al in 1988 described sacral fractures into 3 zones according to radiological location. While Zone 1 fractures occur in osteoporotic bones and escape neurological damage, Zone 2-3 fractures are usually associated with neurological loss. However more recent work done by Sugimoto et al contradicts this theory and has found that the incidence of lumbosacral plexus injury was not related to the zone of sacral fracture. Instead they found that risk factors for lumbosacral plexus palsy included longitudinal displacement of pelvis, transverse sacral fractures.

Conclusion

High impact sacral fractures are usually associated with neurological damage according to Denis classification of zonal sacral fractures. However recent work done by Sugimoto et al contradicts this and adds on that the incidence of lumbosacral plexus injury is not related to zone of sacral fractures. Instead they found that risk factors for lumbosacral plexus palsy included longitudinal displacement of pelvis and transverse sacral fractures. Our findings in 2 cases are concurrent to their findings. More work is needed in this regards to confirm or negate this.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2663

ANKLE SPRAINS IN DANCERS: WHAT IS THE EVIDENCE TELLING US?

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Introduction/Background

Dance is a challenging art form requiring years of training for precise motor control, often at the extremes of joint range of motion. Elite dancers are athletes with training schedules that predispose them to injury. Ankle sprain is the most common traumatic injury in dance. The aims of this study are to summarize the current evidence on the impact of ankle sprains in dancers and emphasize the particularities of treatment in this population.

Material and Method

We searched PubMed, Cochrane Library and Medline to identify studies concerning ankle sprains in dancers including observational studies and systematic reviews. The terms used in this search were “dance” AND “ankle” AND “sprain”. A total of 12 studies were eligible for this research after applying exclusion criteria (date, language, duplicates).

Results

Regarding the mechanism of lesion, ankle sprains commonly involve foot plantarflexion and inversion, such as when the dancer lands from a jump. The lateral ligament complex of the ankle is the most frequently injured structure in the dancer’s body. Initial therapy for ankle injury is compression, stabilization using a stiff controlling brace and contrast temperature therapy. Grade I and II sprains can be treated with early mobilization. Grade III sprains may require immobilization of the leg, with a short leg cast or an air boot. Surgery may be necessary for dancers with complete lateral ligament sprains. Follow-up therapy includes proprioceptive exercises, possible diagnostic or therapeutic ankle arthroscopy, infrared laser treatment, ultrasonography, and muscle-strengthening rehabilitation. A previous sprain and hip muscles weakness are predictive risk factors for ankle sprain.

Conclusion

Dancers often have particular responses to treatment due to the dynamic biomechanical features required by their individual dance form. Although most simple ankle sprains do not result in long-term disability, a significant number do not completely resolve, leading to residual symptoms that may persist for years.

Keywords

Dancers;Ankle sprain;Rehabilitation in Dance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2664

ISOKINETIC AND NEUROMUSCULAR TESTING OF THE KNEE, RETURN TO SPORT FOLLOWING RECONSTRUCTION OF THE ANTERIOR CRUCIATE LIGAMENT. PROSPECTIVE STUDY IN A COHORT OF 234 ATHLETES

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Introduction/Background

After an anterior cruciate ligament (ACL) reconstruction, a complete functional recovery of the knee is required before returning to sport. According to the latest recommendations, a deficit < 10% on isokinetic and functional tests of the operated side versus the healthy side means a satisfactory functional recovery. The main objective was to assess the objective postoperative functional recovery of the knee in a large cohort.

Material and Method

A prospective study has included a series of athletes operated in 2013-2016 for a primary total isolated ACL tear, with healthy contralateral knee and having complete postoperative evaluation. Isokinetic tests measured the strength of the quadriceps and hamstrings. Functional tests consisted of hop tests. The primary judgement criterion was postoperative functional recovery (yes/no) defined by a differential < 10% on the strength measurement of quadriceps in concentric at 60°/s (Q60°/s) and on single-leg hop test for distance (SLH), at a minimum of 4-months postoperative follow-up.

Results

173 men and 61 women were included, mean age 28,4±8,6 years. At 6,5±1,7 (4-12) months mean follow-up, 44 (18,5%) had satisfactory functional recovery of the knee whose 52 (21,8%) at Q60°/s and 125 (54,3%) at SS. There was no significant difference in the return-to-sport depending on the level of functional recovery. During follow-up, 2 patients showed transplant rupture and 2 contralateral ACL rupture, all classified with insufficient functional recovery.

Conclusion

At 6-months mean follow-up after ACL reconstruction, the objective functional recovery of the knee is mostly unsatisfactory and appears to be a risk factor for further rupture.

Keywords

Anterior Cruciate Ligament Reconstruction;Isokinetic test;Hop test

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0198

ABSTRACT NEED TO BE EDITED - EPIDEMIOLOGICAL AND CLINICAL ASPECTS OF HOSPITALIZED MEDICAL WOUNDS IN THE SERVICE OF PHYSICAL MEDICINE AND REHABILITATION OF THE HOSPITAL AND UNIVERSITY CENTER OF YOPOUGON

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Introduction/Background

Medullary lesions cause different motor and sensory deficits depending on the level of the lesion, thus causing functional difficulties and causing a major handicap. Our objective is to present the epidemiological and clinical aspects of spinal cord injured hospitalized in the department of Physical Medicine and Rehabilitation (MPR)

Material and Method

Retrospective descriptive study from 43 inpatient files in the Yopougon CHU's Department of MPR from 2015 to 2017.

Results

The average age was 35.65 years with extremes of 10 and 85 years. The sex ratio was 0.30. Medullary lesions of traumatic cause are represented at 76.74% against 23.26% non traumatic causes. The dominant clinical picture was that of quadriplegics with 51.16%. Of our patients, 88.38% had neurosurgical intervention. Pressure ulcers were found in 65.12% of patients on admission. Vesico-sphincteric disorders were found in all patients when 60.47% had anorectal disorders. The evaluation of the ASIA score was dominated by grades A and B in respective proportions of 34.88% and 20.93%.

Conclusion Although the neurological deficiencies (paraplegia and tetraplegia) are the most apparent in the spinal cord lesion, the psychological, cutaneo-trophic, respiratory, vascular, vesico-sphincteric and anorectal deficiencies must be taken care of in the initial phase. This management must be done by a multidisciplinary team coordinated by the doctors MPR.

KEY WORDS : Medullary injury, Rehabilitation, YOPOUGON CHU

Keywords

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0231

MYOFASCIAL CHAIN APPROACH TO MANAGE POSTTRAUMATIC STIFFNESS- THREE SINGLE CASES

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Introduction/Background

Movement restriction often occurs in those suffer from traumatic articular damage and prolonged post-operative immobilization. Protecting the injured segment in a shortened position could induce adjacent joint contracture. Considering the continuity of the myofascial system along the body, myofascial release may help to restore the coinciding joint motion.

Material and Method

The patients were 1) 67y/o female had right proximal ulnar and radial head fracture. 2) 9y/o female had right humeral supracondylar fracture. 3) 75y/o female had right distal radius fracture. All of them received internal fixation and immobilization in a sling for 4 weeks. The superficial front arm line was found to be primarily restricted in all three cases. Myofascial release was then applied to the involved limbs, targeting on the course from pectoral major to the medial intermuscular septum and down to the common flexor tendon. The intervention carried out 25min/time, twice per week, for 15 sessions.

Results

The average gain in motion were 35° in elbow flexion, 25° in elbow extension, 24° in forearm supination, and 6° in wrist extension, respectively. The subjective pain reduced from 6/10 to 2.7/10. The fracture sites achieved 60% of bone union and slings were discontinued to allow active movement.

Conclusion

All the individuals regained their functional range of motion. When early joint mobilization was not permitted for safety concern, myofascial chain release may serves as a sound and effective intervention to treat multiple joint contracture.

Keywords

Posttraumatic Stiffness;Myofascial release

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0264

ACUTE AND CHRONIC MUSCULOSKELETAL INJURY IN PARA SPORT: A SYSTEMATIC REVIEW

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Introduction/Background

The health benefits of sport are myriad, but sport also carries an inherent risk of injury. This systematic review summarizes musculoskeletal injury epidemiology in elite and recreational Para athletes, and highlights research gaps.

Material and Method

Five electronic databases were searched for relevant articles: Ovid Medline, Ovid Medline In Process & Other Non-Indexed Citations, Ovid Embase, Cumulative Index to Nursing and Allied Health (CINAHL), and Web of Science. Evaluation and data extraction were performed by two independent examiners. Inclusion criteria were: (a) written in English; (b) published in a peer-reviewed journal between January 1975 and June 2017; (c) describe Para athletes participating in recreational or elite sport; and (d) describe sports-related, acute traumatic or chronic overuse musculoskeletal injury (Figure 1).

Results

Fifty full-text manuscripts were reviewed. Seated Para athletes sustain upper extremity injuries more commonly, while ambulant Para athletes frequently sustain lower extremity injuries. The upper extremity, including shoulder, elbow, wrist/hand, is the most commonly injured anatomical area in all Para athletes, unlike able-bodied athletes for whom lower extremity injuries predominate. Increased age and spinal cord injury may increase risk of upper extremity injury. Sprains, strains, blisters and lacerations are the most common injuries among Paralympians, but winter Paralympic sports carry higher risk of head injury, fracture and contusion, possibly due to the high-velocity elements. Male and female summer Paralympic athletes have similar overall injury rates, and Football 5-a-Side, Para powerlifting, Goalball, Wheelchair fencing, and Wheelchair rugby are consistently highest-risk sports. Para ice hockey, alpine skiing, and snowboarding are highest-risk winter sports. Upper and lower extremity injury rates match in winter sport, unlike summer sport trends. Injury data for recreational and youth Para athletes are sparse.

Conclusion

MSK injury epidemiology data continues to mature. Recreational and youth athletes remain under studied. Updating such data may accelerate the development of injury prevention strategies and lifetime injury models for Para athletes.

Keywords

Systematic Review;Para athlete;Injury Epidemiology

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0333

WAKING UP TO AN OVERLOOKED RISK OF A GUNSHOT INJURY A CASE REPORT

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Introduction/Background

The literature on the kinetics of lead levels following a gunshot injury is scarce. We present a case.

Material and Method

A 29 year-old patient was hospitalized in a PM&R unit four months after an open fracture in the left leg surgically treated with an external fixation, secondary to a gunshot wound. X rays taken upon admission revealed >140 radiopacity millimetric images of hunting lead shots, the majority of which were located distally around the two leg bones and around the talocrural joint. Blood lead levels were 0.72 mM (normal 0.41 mM) and 149.2 µg/l for a normal 85 µg/l.

Results

These numbers indicate lead intoxication secondary to gunshot wounds. At the three-month follow up these levels had increased to 0,88 mM and 183,3 µg/l At that point, there was no clinical (endocrinological nor neurological) sign of lead poisoning. We are waiting for an electromyogram, a measurement of motive force of wrist extensors and cognitive tests.

Conclusion

Gunshot-induced fracture may spread lead in tissues, which can then increase lead levels and potentially emerging clinical symptoms. Long term monitoring is required, due to the risk of subsequent endocrinal or neurological complications. Surgical extraction may be necessary if lead levels further increase beyond 200 µg/l.

Keywords

lead;fracture ;gunshot

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0401

STABILITY OF EXTRACAPSULAR HIP FRACTURE: DOES IT AFFECT REHABILITATION OUTCOME OF POST-ACUTE PATIENTS?

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Introduction/Background

Various factors have been shown to affect rehabilitation outcome of hip fractured patients. The degree of extracapsular fracture stability may also affect functional recovery. The aim of our study was to assess the relationship between extracapsular hip fracture stability and rehabilitation outcome in a post-acute setting.

Material and Method

A retrospective cohort study of 144 hip fractured patients was carried out in a post-acute geriatric rehabilitation center from 1/2014 to 6/2015. The main outcome measures were the Functional Independence Measure (FIM) instrument, motor FIM (mFIM), Montebello Rehabilitation Factor Score (MRFS) on the mFIM and length of stay (LOS). The associations between patients with stable vs. unstable and clinical, demographic and comorbidity variables, were assessed by the Mann-Whitney U and chi-square tests. A multiple linear regression model was used to estimate the association between fracture stability and LOS score after controlling for sociodemographic characteristics and chronic diseases ($p=.009$).

Results

Rehabilitation outcomes (FIM and mFIM score changes, mFIM MRFS) were found independent of extracapsular hip fracture stability. Patients with an unstable fracture presented with a significantly longer LOS compared with a stable fracture ($p=.008$). Multiple linear regression analysis showed that fracture stability was significantly associated with LOS after adjustment for confounding demographic, clinical and functional variables ($p=.009$).

Conclusion

Patients with unstable extracapsular hip fractures may require a prolonged rehabilitation period in order to achieve the same functional gain as patients with stable fractures.

Keywords

hip fracture;stability;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0481

COMPARISON OF OPEN REDUCTION INTERNAL FIXATION, RADIAL HEAD REPLACEMENT AND RADIAL HEAD EXCISION IN RADIAL HEAD AND NECK FRACTURES

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Introduction/Background

Radial head and neck fractures account for 4% of all fractures and 33% of elbow fractures. The surgical methods for treatment of this fractures include open reduction and internal fixation (ORIF), radial head replacement and radial head excision, and there is no consensus on the best treatment therapy. The aim of this study is to compare the clinical outcomes of different operative treatment methods in radial head and neck fractures.

Material and Method

A total of 44 patients with radial head and neck fractures were retrospectively reviewed from February 2012 to September 2017. Patients were invited to the clinic for evaluation and 28 patients treated with radial head excision (n=8), radial head replacement (n=10) or open reduction and internal fixation (n=10) were agreed to participate in the study. Visual analog scale (pain and patient satisfaction), elbow range of motion, grip strength, Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire, Mayo Elbow score and Short-Form 36 (SF-36) were used to determine clinical outcomes.

Results

The average follow-up time is 49.45±19.57 months. There was no significant difference in clinical results between the the groups regarding the rest and activity pain level, Mayo Elbow and the SF-36 scores ($p>0.005$). Elbow flexion range of motion, grip strength and DASH scores were significantly better in patients treated with ORIF ($p<0.005$). Although there was no difference in patient satisfaction between the groups ($p>0.005$), the ORIF group had higher satisfaction score (ORIF group: $X\pm Ss=9.40\pm 1.57$, replacement group: $X\pm Ss=8.16\pm 2.72$, excision group: $X\pm Ss=7.31\pm 2.84$).

Conclusion

We found that ORIF is better than radial head replacement and excision in terms of the upper extremity functional performance and the strength in the treatment of radial head and neck fractures. However further randomized control trials are needed to evaluate the full benefits and deficiencies of each of the different surgical treatment methods.

Keywords

Radius Fractures;Open Fracture Reduction;Elbow Replacement

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0525

CHRONIC TENDINOPATHIES AND PLATELET-RICH PLASMA TREATMENT: HOW TO IMPROVE THE EFFICENCY ?

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Introduction/Background

Platelet-rich plasma (PRP) is blood plasma with a high concentration of autologous platelets which constitute an immense reservoir of growth factors. The clinical use of PRP is widespread in various medical applications.

Material and Method

In a literature review, we take a closer look at eight parameters which may influence the quality of PRP: 1) anticoagulants used to preserve the best platelet function, 2) the speed of centrifugation used to extract the platelets, 3) the platelet concentrations obtained, 4) the impact of the concentration of red and white blood cells on PRP actions, 5) platelet activators encouraging platelet degranulation and, hence, the release of growth factors, and 6) the use or nonuse of local anesthetics when carrying out infiltration. In addition to these parameters, it may be interesting to analyze other variables such as 7) the use of ultrasound guidance during the injection with a view to determining the influence they have on potential recovery.

Results

Analysis of the 59 studies shows that a majority use ACD-A as an anticoagulant during sampling. The best results have been obtained in studies which use no platelet activator. In terms of the speed of centrifugation, analysis of all these studies appears to confirm the existence of a great number of protocols in the literature. It is difficult to draw any conclusions when these different variables are unknown (volume of initial sample, equipment used to obtain the PRP). Although it would appear inadvisable to administer a local anesthetic Finally, it appears to be advisable to carry out infiltration under ultrasound guidance.

Conclusion

Our study helped identify features of PRP recommended a platelet concentration lower than 5 times the baseline (from 3 to 4), and avoiding leukocytes and erythrocytes. We recommend leveraging this information about PRP for future studies.

Keywords

PRP;Tendinopathy;Platelet-rich plasma

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0540

HOW DOES BALLET ALTER ANKLE TENDINOUS MORPHOLOGY AND HEMODYNAMICS IN ASYMPTOMATIC DANCERS? AN ULTRASONOGRAPHIC STUDY

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Introduction/Background

Among symptomatic dancers, sonographic abnormalities are common. Whether asymptomatic dancers have any abnormalities remains unknown. Some dancers became cyanosis over distal feet after ballet training. The hemodynamic changes at the feet in ballet are not clearly understood. We aimed to investigate tendon morphology and hemodynamic changes in ankles of asymptomatic pre-professional ballet dancers with ultrasonography (US).

Material and Method

In 25 dancers and 14 non-dancers, B-mode US was used to measure cross-sectional areas (CSA) of flexor tendons in the ankle. Doppler US was used to measure peak velocity of posterior tibial artery in three ankle postures: the neutral position, passively and forced actively plantar flexion (en pointe). The big toe oxygen saturation was recorded in neutral position and during 1-minute en pointe. Nonparametric Mann-Whitney test was used for between-group comparison and Wilcoxon signed-rank test for within-group comparison.

Results

Ankle plantar flexion range of motion was significantly larger in dancers ($p < 0.01$). The flexor hallucis longus (FHL) tendon CSA was larger in dancers (0.26 cm^2 [0.2, 0.3] vs 0.21 cm^2 [0.17, 0.24], $p < 0.01$), while other flexor tendons were not different between two groups (all $p > 0.05$). The peak velocity was significantly higher in passively plantar flexion than in neutral position ($p < 0.01$, in both groups). The blood flow was undetectable during en pointe, more frequently in dancers (54.9% vs 14.3%, $p < 0.01$). Oxygen saturation decreased during en pointe more prominently in dancers (85% [80, 90] vs 94% [84, 97], $p < 0.01$). Ankle hypermobility and the FHL muscle contraction may decrease the blood flow of posterior tibial artery, more frequently in ballet dancers.

Conclusion

US showed the FHL tendon thickening and en pointe-related vascular compromise in pre-professional dancers, even when they were asymptomatic.

Keywords

Ultrasound;Dancer;Ankle

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0560

ASSESSMENT OF FUNCTIONAL STATUS OF CONSERVATIVE TREATMENT FRACTURE OF THE WRIST

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Introduction/Background

Of all human skeletal fractures 10% make up fractures of distal radial bone. Fractura radii loco typico is localized to 1.5-2.5cm above the wrist. There is a Colles-type fracture (where the proximal fragment goes forward and medially and distal backward and dorsal) and Smith's fracture (proximal fragment moves backward and dorsally and the distal forward and the medial). Only 5% of these fractures require surgical treatment.

The aim was assessment of functional status of conservative treatment fracture, using the Gartland-Werley (G-W) score system, as well as its elements (residual deformities, complications, subjective and objective discomfort). Also, it was assessing which of these elements and to what extent have an impact on the final result of the scoring system and which correlations exist within the G-W scoring itself.

Material and Method

It was tested 74 patients with fractures of distal radial bone, which were treated non-operatively, minimum follow-up period of six months. In the age between 21-80 years-average 62.1. The left wrist was injured in 47 (63.4%) patients and right at 27 (36.6%). The G-W scoring was used to assess the results of the non-operative treatment.

Results

The results, when applying the G-W score, were excellent in 39.2%, good in 45.1%, satisfactory in 13.7% and poor in 2% patients. The G-W score elements had the following percentages in the scoring results: residual and subjective discomfort equally by 11 patients, objective discomfort 33 and complications 19. The correlation analysis showed a statistically significant correlation of the residual deformities and the total G-W score at the level of subjective discomfort and total G-W score and between objective discomfort and total G-W score at the same level.

Conclusion

Fractures of distal radial bone, require a special approach and adequate assessment of final treatment results, because inadequate treatment results in the reduction of patients daily activities and their ability to work.

Keywords

Functional Assessment, Scoring System, Fracture of the Wrist

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0575

THE EFFECT OF SHORT FOOT EXERCISE AT DIFFERENT ANKLE POSITION TO THE PEOPLE WITH FLAT FOOT.

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Introduction/Background

The flat foot is an abnormal condition that the height of medial longitudinal arch (MLA) is lowered due to the foot hyper-pronation. One of the strong causes of the flat foot is the insufficient support by abductor hallucis (ABH) and extrinsic muscles. Previous studies revealed that the short foot exercise (SFE) is an effective exercise for the flat foot by increasing the height of MLA. However, most of the research related to SFE determined the efficiency of SFE using the enhanced ABH activation. Therefore, we examined SFE with different ankle joint positions [neutral (NL), dorsiflexion (DF) at 30°, and plantarflexion (PF) at 30°] in sitting and standing position to the flat foot to clarify the optimal involvement of the intrinsic and extrinsic arch supporting muscles.

Material and Method

Twelve flat feet participated in this experiment, and during each condition, we measured the activation of the ABH, tibialis anterior (TA), and peroneus longus (PL) and the MLA angle. It is assumed that each ankle position and weight bearing provide different mechanical condition to the targeted muscles. Consequently, the muscle activity would be influenced while the subjects perform the SFE. The collected data were analyzed by two-way repeated ANOVA.

Results

TA, PL and ABH have interaction effect between ankle position and weight bearing. The muscle activation was significantly increased in standing condition. The TA was most highly activated in DF condition, and the activation of ABH was the highest in PF condition. The activation of PER was the lowest in DF condition.

Conclusion

According to previous research, the flat foot tends to overuse TA to compensate weakened ABH. SFE in ankle PF in standing could be considered as more effective way than traditional exercise (e.g., SFE in NL condition) in terms of harmonic activation of the arch supporting muscles. Further longitudinal intervention studies are required.

Keywords

flat foot;short foot exercise

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0636

VALIDATION OF A SELF-REHABILITATION BOOKLET AFTER AN ANTERIOR CRUCIATE LIGAMENT (ACL) RECONSTRUCTION AND EVALUATION OF ITS IMPACT ON PATIENT'S KNOWLEDGE IMPROVEMENT

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Introduction/Background

Muscular recovery conditions the functional restoration and return to sport after ACL reconstruction. Going on with personal muscular strengthening is necessary after patients have completed center physical therapy, but might be difficult without appropriate instructions. We have therefore created, validated and evaluated a rehabilitation booklet. The booklet aims to inform patients about their pathology and muscle strengthening as well as providing them with an exercise program they can perform alone for a good recovery.

Material and Method

- Booklet creation, proofreading and validation by a multidisciplinary group of experts.
- Open mono-centric prospective clinical trial in 2 periods. The first period targeted 124 patients (control group) who received non-standardized information, according to center usual practice. The second period covered 165 patients (intervention group) who received a rehabilitation booklet.
- Both groups answered a questionnaire to evaluate their learning curve between their first and their last day at the rehab center. We used a covariance analysis model to compare both groups scores.
- Collection of patients' assessments on the booklet.

Results

the average increase in patients' knowledge scores reaches 4,169 points (SD 3,097) in the control group and 5,806 points (SD 3,585) in the intervention group. The increase in the knowledge score is statistically higher in the intervention group ($p = 0.001$).

The patients' assessment collection reveals that more than 90% patients wish the booklet to be available and 87% believe that it can help them to go on muscle strengthening by themselves.

Conclusion

The booklet increases patients' knowledge and can allow them to go on by themselves muscle strengthening.

Keywords

KNEE;ACL;REHABILITATION

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0637

BENEFITS OF A SELF-REHABILITATION BOOKLET IN MUSCLE RECOVERY MEASURED 4 MONTHS AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION (ACL)

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Introduction/Background

We created and validated a self-rehabilitation booklet to allow patients to perform by themselves muscle reinforcement after they completed rehabilitation in a rehab center (between 2 and 4 months after surgery).

The aim of the study is to evaluate the impact of a self-rehabilitation booklet on quadriceps and hamstrings recovery 4 months after Bone Patellar Tendon Bone (BPTB) or Hamstrings (HST) autograft.

Material and Method

Open mono-centric prospective clinical trial on 2 periods.

1st period: 124 patients received non-standardized information, according to center usual practice. When leaving the rehab center, patients were provided either a prescription for physiotherapy sessions or strengthening sessions in a gym. 67 patients in this group returned to the center for a clinical assessment, isokinetic and a functional test.

2nd period: 165 patients received a self-rehabilitation booklet with instruction to perform three times a week muscle strengthening session in a gym or at home. 76 patients in this group returned for similar assessment as the first group (2nd arm).

We compared subjective and objective IKDC scores, quadriceps and hamstring peak torque deficiency and the functional score.

Results

All measured variables show no significant difference between the 2 groups. Quadriceps and hamstrings deficit are equal to literature. Patients with BPTB graft showed a greater deficit in quadriceps ($p = 0,00001$) and lower deficit in hamstring strength ($p = 0,0001$) at 60° /s.

The number of sessions at the gym significantly improves the subjective IKDC score and hamstrings recovery in both groups.

Conclusion

The self-rehabilitation booklet allows patients to perform by themselves muscle strengthening. The number of sessions at the gym improves IKDC score and hamstrings recovery.

Keywords

Knee;ACL;REHABILITATION

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0682

ANATOMIC SINGLE-BUNDLE ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING CALCIUM PHOSPHATE-HYBRIDIZED TENDON GRAFT

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Introduction/Background

We developed a novel technique to improve tendon–bone healing by hybridizing calcium phosphate (CaP) with a tendon graft using an alternating soaking process. We investigated clinical results of anatomic single-bundle anterior cruciate ligament (ACL) reconstruction using CaP-hybridized tendon graft.

Material and Method

patients (n = 90) with unilateral ACL rupture underwent arthroscopically assisted anatomic single-bundle ACL reconstruction using hamstring tendons. These patients were equally randomized to undergo the CaP (n = 45) or conventional method (n = 45). All patients followed the same postoperative rehabilitation protocol. At 1 and 2 years after surgery, they were evaluated with the manual knee laxity test, KT-1000 arthrometry, International Knee Documentation Committee (IKDC) examination form, Tegner scale, and Lysholm scale as clinical results.

Results

In the both groups, postoperative clinical results were improved compared to preoperative. The results were not significantly different at both follow-up period in the two groups.

Conclusion

The CaP-hybridized tendon graft improved anterior knee stability and clinical scores at the 2-year follow-up compared to preoperative.

Keywords

anterior cruciate ligament reconstruction;calcium phosphate-hybridized tendon graft

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0740

EFFECTIVE REHABILITATION PROGRAM OF THE NEGLECTED UPPER BRACHIAL PLEXUS INJURY PATIENT WITH POST DORSAL LATISSIMUS TENDON TRANSFER BY MYOBIOFEEDBACK EXERCISE: A CASE REPORT.

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Introduction/Background

Upper type plexus brachialis injury causes devastating loss of arm function. Latissimus dorsi tendon transfer to origin of biceps performed to restore forward flexion of shoulder and flexion of elbow. Rehabilitation before and after the procedure play essential role in refunctioning the arm. Myobiofeedback exercises enable to isolate certain muscle under precise intensity, thus applying resistance adequately to challenge the muscle with minimal risk of getting the muscles fatigue. Myobiofeedback has long been used as regiment in rehabilitation program of plexus brachialis and significantly improve clinical outcomes of tendon transfers procedures

Material and Method

Female, 30 years old consulted to rehabilitation department with left arm weakness and numbness after motor vehicle accident one year ago and relied on bone setter treatment until her arm and elbow was unable to flex at all. From physical examination and EMG finding, she was determined to had a post-ganglionic upper plexus brachialis lesion. She was planned for latissimus dorsi tendon transfer to restore flexion of shoulder and elbow. Prior to surgery, myobiofeedback was performed to train the left latissimus dorsi with intensity 70-80% the strength of right latissimus dorsi. The surgery was performed well and a week after, she started to undergo myobiofeedback exercises along with Neuromuscular Electrical Stimulation (NmES) and occupational therapy intervention in Rehabilitation Department

Results

Ten weeks after surgery and rehabilitation program, she able to flex her shoulder and elbow to near functional range of motions. She was able to lift objects with her left hand and to assist her right hand to lift heavier objects. From surface EMG, her left elbow flexors has reached 65% the strength of unaffected arm, indicating satisfying progress of the surgery and rehabilitation program.

Conclusion

Myobiofeedback exercises has promising role in recovery of arm function after upper plexus brachialis injury, especially in the case of latissimus dorsi tendon transfer.

Keywords

myobiofeedback exercises;upper plexus brachial injury;latissimus dorsi tendon transfer

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0745

REHABILITATION OF RIGHT LATERAL MENISCUS REPAIR AFTER ENDURING POSTERIOR LATERAL MENISCUS ROOT TEAR FOR 5 MONTH AFTER TRAUMATIC INJURY : A CASE STUDY

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Introduction/Background

We report the post-surgical rehabilitation of a case of posterior lateral meniscus root tear with anterior cruciate ligament (ACL) injury of the right knee.

Material and Method

A 30s male, presented with persistent right knee pain and swelling along with limited range of motion (ROM) after an injury in a traffic accident; however, at that time he was discharged after he went to the hospital. After 5 months, he was readmitted because the symptoms didn't improve. He was diagnosed with posterior lateral meniscus root injury with ACL injury. Preoperative ROM was -10° extension to 95° flexion. 6 months after the injury, he underwent arthroscopic lateral meniscus repair and synovectomy. Mild cartilage degeneration was observed throughout the lateral compartment of the knee. ROM exercise was started 3 weeks after surgery. ROM at this time was -15° extension to 35° flexion.

Results

ROM increased to 0° extension to 65° flexion at 4 weeks after surgery, 0° extension to 95° flexion at 6 weeks, and 0° extension to 120° flexion at 10 weeks. Although we acquired more ROM than preoperative ROM at 2.5 months after surgery, it took time and increased effort to acquire full ROM.

Conclusion

Meniscus injury is caused by mechanical stress to the synovial tissue, thus leading to arthritis. Arthritic edema then appears followed by chronic pain with accompanying fibrosis of the surrounding tissues after injury. ACL injury is characterized by intraarticular bleeding after injury and inflammatory symptoms, secondary suppressed excitability of the quadriceps muscles, and decreased muscle tone. Moreover, a report stated that flexion contractures may occur because of the impingement. We made it difficult to acquire postoperative ROM because of these changes that occurred during the period of 5 months after injury. Thus, medical intervention in the early stage of knee injury yields better results.

Keywords

meniscus repair; limited range of motion

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0774

THE EFFECT OF KNEE MIDDLE POSITION EXERCISE ON THE BIOMECHANICAL PARAMETERS OF KNEE JOINT DURING SINGLE LEG LANDING

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Introduction/Background

Prevention of anterior cruciate ligament (ACL) injury is likely the most effective strategy to reduce undesired health consequences. The aim of the study was to investigate whether the knee middle position exercise (KMPE) can effectively prevent the ACL injury.

Material and Method

Three dimensional motion analysis system, force plate and electromyography were used to synchronously measure biomechanical indexes of non- dominate leg during drop landing before and after the KMPE. Sixteen healthy female college recreational athletes (age 20.9±1.4 years; height 163.2±5.1 cm; mass 53.5±7.3 kg) participated in this study. The exercise mainly included squat, forward stride, jumping and landing, etc. The results were averaged for three successful maneuvers. Paired t tests were conducted to assess differences in the kinematics, kinetics, and EMG data between before and after exercise.

Results

After the KMPE, there were significantly reduced in knee valgus angles of a mean 1.5° during drop landing of the non- dominant leg at initial ground contact ($P < 0.05$). Peak knee valgus angle decreased by a mean of 2.23° ($P < 0.05$) and the maximum flexion angle of the knee was significantly increased by a mean of 5.88° ($P < 0.05$) during the drop landing process after the KMPE. Angles were not related to muscle activity around the knee before training. However, After the exercise, there were correlation between maximum flexion angle and biceps femoris, gastrocnemius medial muscle activity ($P < 0.05$), and the maximum valgus angle was correlating with hamstring to quadriceps functional ratios ($P < 0.05$).

Conclusion

Short - term KMPE may be beneficial to prevent the ACL injury.

Keywords

knee middle position exercise;drop landing;biomechanical

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0797

PREVALENCE, RISK FACTORS AND PREDICTION MODEL FOR PSYCHOLOGICAL DISTRESS AFTER TRAUMA

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Introduction/Background

Trauma patients often suffer short and long term psychological distress. This study aimed to (1) describe the prevalence of poor psychological outcome after injury in the general trauma population, (2) determine risk factors for this poor outcome and (3) develop prediction models for poor psychological outcome 6 months and 1 year after trauma.

Material and Method

The Brabant Injury Outcome Surveillance (BIOS-study) is a multicenter prospective observational cohort study. Adult trauma patients admitted to one of the hospitals in the county Noord-Brabant were asked to complete a questionnaire at 1 week, and 1, 3, 6 and 12 months after injury. The Hospital Anxiety and Depression Scale (HADS) was used to screen for anxiety and depressive disorders and the Impact of Event Scale (IES) was used to assess symptoms of posttraumatic stress disorder (PTSD). Potential predictors were assessed in univariable logistic regression, with psychological distress as outcome ($HADS \geq 8$ or $IES \geq 35$). All risk factors with $p < 0.2$ were included in multivariable model. In addition, mixed model for repeated measures was used to assess psychological outcome over time. The model performances were assessed with the Area Under the Curve, Nagelkerke R-square (R^2) and graphically with calibration curves.

Results

Overall, the prevalence of anxiety and depressive symptoms decreased during the follow up period. The highest prevalence of PTSS was found in female trauma patients with low injury severity. Risk factors for poor psychological outcome are female gender, low educational level, low injury severity, pre-injury presence of anxiety and depression, and low functional capacity index. The prediction model for 1 year psychological outcome had a discriminative ability of 0.687 (95% CI: 0.642, 0.733).

Conclusion

Prevalence of anxiety, depression and PTSS is high among trauma survivors. This study provides possible tools for early diagnosis and screening of poor psychological functioning after trauma. Further research is needed to externally validate these findings.

Keywords

Trauma;psychological outcome;prospective cohort study

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0823

STUDY OF THE ISOKINETIC PROFILE OF THE KNEE IN A JUDO MILITARY TEAM

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Introduction/Background

The knee is a highly sollicitated joint in judo. In Dead, the judoka uses one leg as a supporting leg while the other is always ready to attack the opponent (attacking leg). In this context, there should be a specific profile between the muscle groups strengths in each leg.

The aim of this work was to study the isokinetic muscular profile of the knee in both legs among a judo team.

Material and Method

It was about a cross-sectional, forward-looking and descriptive study conducted on a Judo Military Team. We raised the age and the anthropometric measures (weight, size and the body mass index (BMI)) by a complete clinical examination. The isokinetic evaluation of agonist and antagonist muscles of both knees was performed in concentric mode with a Biodex dynamometer. The angular velocities of the assessments were 60°, 90° and 120°/s. We held two parameters: The maximum peak torque (PT) and the ratio agonistic/antagonistic (R) of the extensors and flexors of the knee.

Results

The 13 athletes included were male. The mean age was 23,3 years. The mean BMI was 24,98 kg/m². Most judokas used the lower left limb as a supporting leg (76,9%). Our results show that regardless of the angular velocity used, and regardless of the member being assessed, the mean PT of the extensors was consistently higher than the mean PT of the flexors. Unlike the evaluation at 90°/s, the ratio Hamstrings/Quadriceps at 60°/s and 120°/s was higher at the attacking leg. The objective difference between ratios at different speeds and between the different limbs was statistically insignificant ($p > 0.05$).

Conclusion

According to this clinical and instrumental evaluation, a specific rehabilitation program was proposed in order to compensate the eventual imbalances and specially to prevent the occurrence of injuries detrimental to the career of these athletes.

Keywords

Martial arts;Knee;Isokinetic

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0842

ACTIVE PHYSIOTHERAPY AND REHABILITATION MANAGEMENT APPROACH OF DISTAL ULNA FRACTURE IN ART-MAKERS: A CASE REPORT

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Introduction/Background

This case report pointed to contribute to the literature about an active physiotherapy treatment methods of distal ulna fracture in art-makers and to report the results of the treatment programme.

Material and Method

The patient with distal ulna fracture was a 19-year old woman, Body Mass Index was 16.95. She was a student of Faculty of the Music and Performing Arts. A fall onto the outstretched hand position caused the fracture. A plaster of paris was applied and worn for 1 month. After removal of the plaster of paris, the subject was included in a physiotherapy programme for 3 weeks (5 days/week) by a physiotherapist. She had pain, atrophies, oedema, limitations of joint mobility in right hand wrist. Pain intensity was evaluated by Visual Analogue Scale. Life quality was investigated by Nottingham Health Profile. Quick DASH scores of before treatment (B.T.) and after treatment (A.T.) were compared to evaluate disability and performance on painting. An active management approach including TENS, pulsed ultrasound, infrared, retrograde massage for edema, mobilization of ulnar nerve and distal radius, active range of motion, strength, resistive, grip and proprioceptive neuromuscular facilitation exercises (PNF) were practiced. First 3 days of the treatment active, isometric and stretching exercises and gliding at the wrist were applied, 4th day the subject started to painting Resistive and PNF exercises were conducted after 2 weeks.

Results

After the treatment, range of motion of wrist (35° in flexion and extension) and forearm (13° radio-ulnar deviation), life quality (B.T. 144.81, A.T. 0) and performance on painting (B.T. 50, A.T. 0) were increased. Pain during rest, activity, and asleep (B.T. 6.7, 8.9, 1.8; A.T. 0, 0.8, 0, respectively) and disability (B.T. 62.5, A.T. 0) were decreased in favour of recovery.

Conclusion

This study reflected beneficial results of an active management approach in hand rehabilitation of art-makers.

Keywords

physiotherapy;ulna fractures

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0887

REHAND VERSUS TRADITIONAL HOME PROGRAM EXERCISE FOR DISTAL RADIUS FRACTURE.

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Introduction/Background

Home program exercises for distal radius fractures are commonly used in clinical practice. Evidence shows that these programs need to be personalized, progressive and controlled. (4–11) Currently methods consists on provide patients with a simple paper sheet of exercises which not compliment with these requirements.

We propose the use of ReHand to compare traditional methods with an innovative digital tool. ReHand is an app tablet that provides patients with exercises programs evidenced based and totally personalized. Therefore, ReHand's dashboard allows professionals to monitorizedand control adherence to treatment.

Material and Method

rehabilitation service of Hospital Virgen Macarena will select patients with diagnosis of distal radius fracture and volar plate fixation to be enrolled in a prospective clinical trial comparing those who receivedReHand home exercise program with those enrolled in the traditional home exercise program guided by paper sheet. Outcomes: dexterity (Nine Hole Peg Test), grip strength, sensorimotor assessment (Joint Position Sense), arc of motion for wrist flexion and extension and functionality (Patient Rate Wrist Evaluation Scale). Assessments takeplace at 3 weeks and at 3 month. This study is part of a multicenter study of Andalusian Public Health System.

Results

currently we are in analysis data and evaluation results phase. According to our preliminary studies we expect have significant results time before the congress.

Conclusion

According to our preliminary outcomes we will be able to conclude that Rehand is a effective tool for to improve the functional status of the hand after a distal radius fracture with better oucomes than a traditional home based exercise program.

Keywords

Distal radius frecture;Tele-Rehabilitation ;Home based exercises

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0912

RESULTS OF SURGICAL TREATMENT OF DISTAL HUMERUS (AO/OTA TYPE C) FRACTURES USING DOUBLE ANATOMICAL PLATES

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Introduction/Background

Distal humerus fractures are complex injuries that are particularly challenging to treat. For early rehabilitation and predictable outcomes, they should be surgically treated using double anatomical locking plates. However, several complications have been reported, such as decreased range of motion, nerve dysfunction and wound infections. The purpose of this study was to report the outcomes and complications after open reduction and internal fixation of intra-articular distal humerus fractures using double anatomical locking plates.

Material and Method

Between April 2010 and December 2017, we treated twelve patients with intra-articular distal humerus fracture (AO/OTA type C). Five patients were male and seven were female. The average age was 46.7 (range 22-80). The pretreatment AO/OTA type was C1 in three patients, C2 in six, and C3 in three. All fractures were treated with open reduction and internal fixation using double anatomical locking plates. Intraoperative ulnar nerve anterior transposition was performed for ten patients. Postoperative immobilization was one week followed by active range of motion.

Results

All patients obtained bone union. Regarding range of motion, mean elbow flexion arc was 108.5° (mean extension was -10.5° and mean flexion was 119°). The Mayo Elbow Performance Score was excellent in five patients, good in six, and fair in one. Radiographic evaluation was performed immediately and six months after surgery. There was no significant reduction loss during between these time periods. Postoperative complications in the eleven cases included seven with ulnar nerve neuropathy. All patients with motor weakness improved and five patients had persistent numbness.

Conclusion

For treating distal humeral intra-articular fractures, double anatomical locking plates can provide good stability for early rehabilitation. However, this surgical method includes some

complications, especially ulnar nerve dysfunction. Gentle management of the ulnar nerve is necessary.

Keywords

Fracture;Elbow;Surgery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-0981

NEUROCOGNITIVE DISORDER EFFECT ON EARLY FUNCTIONAL RECOVERY OF PATIENTS SURGICALLY TREATED BECAUSE OF HIP FRACTURE

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Introduction/Background

Acute rehabilitation of patients with hip fracture immediately after surgical treatment is short but crucial period for their functional recovery. Regaining of walking and basic activities of daily living are the aims of acute rehabilitation. The aim of this study was to determine the influence of neurocognitive disorder detected on admission to orthopedic ward on functional outcome few days after surgical treatment.

Material and Method

This cross-sectional study involved all patients older than 64 admitted to our hospital during one year due to surgical treatment of hip fracture. The cognitive state was assessed on admission by Abbreviated mental test – Serbian version (AMT-SV) (Score range: 0 – 10, scores 9 and 10 excluded neurocognitive disorder). Based on AMT-SV score, all patients were divided in two groups: with or without neurocognitive disorder. The functional recovery of both groups was assessed by the A-test (Score range: 0 – 50, severe disability indicator score: ≤ 7 on the 1st, ≤ 12 on the 2nd, ≤ 13 on the 3rd day after operation(DAO)) from the 1st to 3rd DAO. Statistical analysis: Mann-Whitney U test.

Results

Out of 240 admitted patients, 20 were excluded from the study (12 were younger than 65, 14 didn't undergo operation because of comorbidities, 4 couldn't fill in AMT-SV because they were deaf and blind). Of the remaining 220 patients, 119 (57%) patients had some degree of neurocognitive disorder. In this group of patients, the A-test score was significantly lower ($p=0.000$) than in the group without mental disorder indicating severe disability immediately after operation (6 ± 5 vs 8 ± 5 on the 1st DAO, 9 ± 6 vs 12 ± 6 on the 2nd DAO, 11 ± 7 vs 14 ± 8 on the 3rd DAO).

Conclusion

Neurocognitive disorder detected on admission to orthopedic ward is one of the indicators of delayed functional recovery of elderly patients with hip fracture during acute rehabilitation after surgical treatment.

Keywords

hip fracture;acute rehabilitation;neurocognitive disorder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1043

EARLY QUANTITATIVE WEIGHT BEARING EXERCISE AFTER LOWER EXTREMITY PERI-ARTICULAR FRACTURE USING LOWER BODY POSITIVE PRESSURE TREADMILL: A CASE SERIES STUDY

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Introduction/Background

The early stages of weight bearing can be achieved quickly by shortening the time required for rehabilitation after the fracture, thereby advantage of return to daily life. The definition of partial weight bearing is incorrect, and there are non quantitative procedures such as touch-down lighting, lighting as tolerated in actual rehabilitation. Lower Body Positive Pressure Treadmill(LBPPT) increases the air pressure in the chamber surrounding the lower limb to generate buoyancy, and allows the load to be quantitatively reduced by the adjustment of the pressure, and further can be carried out more precisely and safely in the initial rehabilitation after the fracture. It is intended to check whether early quantitative weight bearing exercise is

possible using a LBPPT for patients with an immediate difficulty with weight bearing.



Figure 1. LBPPT

Material and Method

LBPPT(Alter-G, CA, USA) training consisted of a total of 20 session five time a week, 30 minutes at a time.

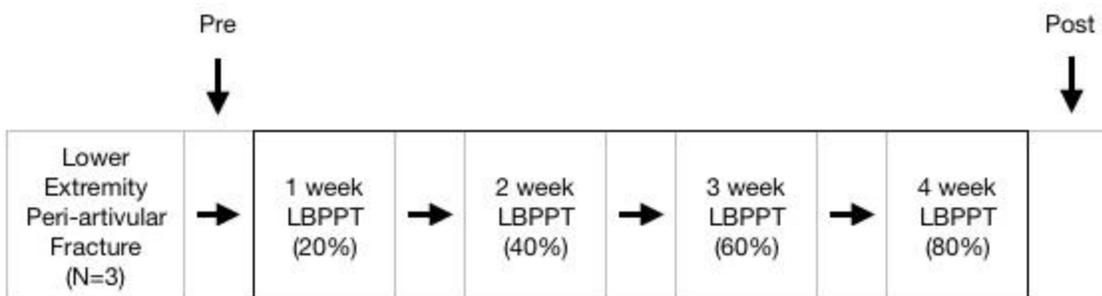


Figure 2. Early Quantitative Weight Bearing Exercise

Results

Case series

Case1.

A 47-year-old man presented with a history of Lt.tibiofifular Fx. In baseline evaluation, resting numerical pain rate scale(NPRS(rest)) was 0, walking is not test and Foot Pressure Impulse Ratio(FPIR) was 0.52. after training, NPRS(rest) was 0, NPRS(walk) was 3, 10 meter walking test(10mWT) was 15.96sec and FPIR was 0.82.

Case2.

A 79-year-old man presented with a history of Rt.tibiofifular Fx. In baseline evaluation, NPRS(rest) was 5, walking is not test and FPIR was 0.63. after training, NPRS(rest) was 3, NPRS(walk) was 5, 10mWT was 19.73sec and FPIR was 0.78.

case 3.

A 33-year-old man presented with a history of Rt.Proximal tibia Fx. In baseline evaluation, NPRS(rest) was 4, walking is not test and FPIR was 0.14. after training, NPRS(rest) was 2, NPRS(walk) was 4, 10mWT was 26.96sec and FPIR was 0.32.

Table 1. Functional test

Case 1	10mWT ^a	TUG ^b	L-test	BBS ^c	NPRS ^d (rest)	NPRS (walk)
17.6.23.	NT	NT	NT	37	0	NT
17.7.21.	15.96 s	17.15 s	40.46 s	41	0	3
Case 2	10mWT ^a	TUG ^b	L-test	BBS ^c	NPRS ^d (rest)	NPRS (walk)
17.12.11.	NT	NT	NT	NT	5	NT
18.01.10.	19.73s	18.67s	46.66s	36	3	5
Case 3	10mWT ^a	TUG ^b	L-test	BBS ^c	NPRS ^d (rest)	NPRS (walk)
17.12.21.	NT	NT	NT	NT	5	NT
18.01.24.	26.96s	25.57s	65.16s	NT	2	4

a: 10meter walk test, b: timed up and go test, c: berg balance scale, d: numerical pain rate scale

Conclusion

The three cases suggests that rehabilitation is possible early by using LBPPT applied quantitatively in lower extremity peri-articular fracture patients that have difficulty with weight bearing.

Keywords

Gait;Lower Extremity Peri-artivular Fracture;Early Quantitative Weight Bearing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1045

NEUROMUSCULAR TRAINING PROTOCOL AND PATIENT-CENTERED OUTCOMES ASSOCIATED WITH BURN REHABILITATION FOR EXPLOSIVE TRAUMA CASE

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Introduction/Background

Functional recovery and life quality after explosive burn injury are important goals of burn care. However, neuromuscular training of explosive burns in patients in their functional recovery had seldom been documented.

The purpose of this case report is to demonstrate the effectiveness of a short-term physical therapy program utilized scar tissue assessment and neuromuscular training that provided significant functional recovery in this severe explosive burn injury case.

Material and Method

A 32-year-old female, endured a traumatic explosive burn injury at Thailand on 17 August 2015. She suffered not only burns with a total body surface area (TBSA) up to 50% but also right elbow and right femoral shaft fracture, left posterior tibial and right ulnar nerve injury. She was referred from plastic surgeon to rehabilitation out-patient clinic due to prominent leg discrepancy with functional impairment. A patient-centered neuromuscular training rehabilitation for a 7-week period with total 11 physical therapy visits produced significant improvement in postural control and patient confidence.

Results

A quick response for low back pain in this burn case was obvious at the first week of therapy. Improvement of Trendelenburgs test, Time up and go test and Tandem walk test were pronounced since the last two tests were not possible without the quadricane.

Conclusion

A comprehensive short-term physical therapy program focused on neuromuscular training can improve the functional outcome and life quality effectively even after years of a major explosive traumatic burn case.

Keywords

Burn rehabilitation;Neuromuscular training;Explosive trauma

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1134

EFFICACY OF PHYSIOTHERAPY IN THE PRESENCE OF GLENOID CAVITY FRACTURE- CASE REPORT

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Introduction/Background

Shoulder glenoid cavity fractures are rare cases. It is usually seen as a direct effect of the humeral head against the glenoid fossa in patients who are exposed to high-energy trauma. This case report aimed to contribute to the literature about a physiotherapy treatment methods of glenoid cavity fracture and to report the results of the treatment program.

Material and Method

The patient with glenoid cavity fracture was 58-year old male farmer. His dominant upper extremity was right. A goat hit his right shoulder than, he fell down by impact. Patient presented to university hospital. The radiography of the patient showed a fracture of the right glenoid cavity and upper humerus. The patient's shoulder operated. Patient used a shoulder strap for 7 weeks. Then patient received physical therapy. Physical examination of the patient revealed sensitivity and pain around the shoulder. He had decreased in shoulder motions. First measurements were taken for glenohumeral joint motion by universal goniometer. Pain intensity was measured with Visual Analog Scale (VAS) and shoulder functions was assessed with the shortened disabilities of the arm, shoulder and hand questionnaire (DASH). In addition, Nottingham Health Profile (NHP) and Beck Depression Scale (BDS) were administered. Physiotherapy program (Pulse-ultrasound, TENS, High voltage cold pack, patient-specific exercises) was applied for 3 weeks (5 days/week). First week active isometric exercises were applied. Resistive exercises were conducted after 2 weeks.

Results

Before the treatment, shoulder range of motion was (62° flexion- 40° abduction). After the treatment, this motion increased (110° flexion- 90° abduction). Before treatment, scores were VAS-activity =6, DASH=40.9, NHP=86.66 and BDS=10. After the treatment this scores decreased (VAS-activity =2, DASH=25, NHP=35.17 and BDS=2) After 3 weeks, patient reported that he could easily do activities of daily life.

Conclusion

Physiotherapy applied with conventional treatment and personal exercise approach can be used as an effective method in patients with glenoid cavity fractures.

Keywords

Glenoid cavity;Exercise Therapy;Isometric Exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1214

A STUDY ON MUSCULOSKELETAL DISORDERS AND SOME PROFESSIONAL RISK FACTORS AMONG WRESTLERS

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Introduction/Background

Wrestling is one of the oldest sports that require high flexibility, muscular strength and endurance. The basis of this sport is competition. In competitions, individuals are divided into groups according to their weight and other parameters. Although this procedure somewhat reduces the risk of injury, however, it is possible that the Wrestler will be injured. There is limited information about musculoskeletal disorders (MSDs) in the Iranian wrestler. So, the purpose of present study was to determine the frequency of MSDs and professional risk factors among wrestlers.

Material and Method

This cross-sectional study was conducted on 55 wrestlers during 2017 using a questionnaire in three parts including: Demographic and occupational data, Nordic standardized musculoskeletal disorders questionnaire (NMQ) and Body Discomfort Assessment technique. The data were analyzed using descriptive statistics, chi-square and T-test, and a $p < 0.05$ was considered as significant.

Results

The Frequency of MSDs in wrestlers was 45.5%. The most common site of injury was knee and shoulder with a frequency of 27.3% for each. MSDs prohibited 41.8% of wrestlers to continue sports activities for one year. A significant correlation was found between training of basic professional techniques at the beginning of wrestling and frequency of MSDs ($P=0/001$). The Frequency of MSDs was significantly higher in wrestlers with longer sport history ($P=0/002$).

Conclusion

The results indicates that MSDs are the common problem among the wrestlers. Two most common risk factors were long sport history and inappropriate learning of basic professional techniques which must be considered in athletes and coaches education and their health care program.

Keywords

Musculoskeletal disorders;Wrestlers;Risk factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1268

SNAPPING SCAPULA SYNDROME: CASE REPORT.

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Introduction/Background

The snapping scapula syndrome (SSS) is a scapulothoracic joint disorder result of an incongruence between the scapula and the thoracic wall caused by bony or soft tissue masses and postural or structural deformities. Symptoms range from mild discomfort to painful, audible crepitus with active shoulder movements that produces notable shoulder dysfunction especially with overhead activity or repetitive overuse. Crepitus can be painless, but most patients present it, it's located mostly at the supero-medial angle or inferior pole, it can associate cervical irradiation. Diagnosis is mainly clinical, crepitus may be accentuated with compression of the superior angle of the scapula against the chest wall during arm abduction, pain and snapping decrease crossing the arm. Pseudo-winging may appear as compensation for pain. Initial management is conservative. Goals are reduce pain, improving muscle strength and balance, addressing postural conditions. Surgery is indicated after failure of 3-6 months of conservative management or in anatomic lesions.

Material and Method

We present the case of a 22 year old woman with scapula pain and cracking after a bad movement 5 years ago, symptomatology predominates during sports. No cervical symptoms were found. At physical examination there was tenderness, discomfort and crepitus in the supero-medial scapular angle, scapular tilt and minimal scapular dyskinesia with arm abduction. She associated kyphotic attitude. Range of motion was preserved and painless. Standard radiographs and magnetic resonance were normal. We prescribed 15 sessions of ultrasound, strengthening stabilizing musculature of the scapula centered on rhomboids and middle trapezius and postural correction.

Results

Kyphotic attitude and dyskinesia was corrected. Tenderness, discomfort and crepitus decreased in frequency.

Conclusion

The SSS is commonly misdiagnosed. It was described by Dr. Boinet in 1867, but during a long time it was only associated with osseous abnormalities. Our role is informing and explaining the patient the benign nature of SSS and guide the conservative treatment.

Keywords

snapping scapula;crepitus;conservative

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1371

HOW TO ASSESS THE RETURN TO PHYSICAL ACTIVITIES FOLLOWING ANTERIOR CRUCIATE LIGAMENT INJURY?

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Introduction/Background

Several outcomes could be used to assess return to physical activities (RTPA) after anterior cruciate ligament (ACL) injury: qualitative outcomes like return to main sport or pre-injury level; quantitative outcomes like weekly hours of practice or Tegner score. Performing a relevant clinical assessment is challenging, especially for patients who practice at a moderate sport level. Our objective was to compare the use of different outcomes to assess RTPA after functional and surgical treatment of ACL injury.

Material and Method

40 patients were included after surgery (group ST; 31.7±10.6 years-old, 15.0±5.0 months after ACL reconstruction); 18 after functional treatment (group FT; 38.1±14.8 years-old, 23.0±6.0 months after ACL tear). Qualitative criteria were subjectively assessed answering yes/no when questioned concerning their RTPA. Objective criteria were defined as variations between pre-injury and post-treatment of Tegner score, weekly hours of practice, "Tegner.h" (global volume of activity equal to Tegner score multiplied by weekly hours of practice) for main physical activity (MPA) and global activity (3 MPA included).

Results

Return to subjective global pre-injury level was 22% for FT group vs. 25% for ST group ($p=0.999$). Return to pre-injury (i) level of MPA was 17 vs. 23% ($p=0.736$); (ii) Tegner score for the MPA was 56 vs. 30% ($p=0.083$); and (iii) global Tegner.h was 61 vs. 18% ($p=0.002$) for FT versus ST group, respectively. Evolution of Global Tegner.h score, MPA Tegner.h score and Global weekly hours of practice were congruent for FT group, but not for ST group.

Conclusion

We found low RTPA rates with some discrepancies between different outcomes of RTPA. Global Tegner.h could be an interesting alternative to Tegner score of the MPA for assessment of RTPA in non-operated patients who have a moderate physical activity level.

Keywords

Anterior cruciate ligament;Return to Sport;Patient Reported Outcome Measures

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1445

RETURN TO COMPETITION IN AN ELITE JUDOKA AFTER NON-OPERATIVE MANAGEMENT OF AN ANTERIOR CRUCIATE LIGAMENT (ACL) INJURY: A CASE REPORT

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Introduction/Background

Current data supports that ACL reconstruction may not be needed for all individuals after injury. Copers demonstrate the capability of using coordinated muscle strategies to overcome a lack of passive instability and may return to higher levels of function after completion of a multidisciplinary rehabilitation program.

Material and Method

28 y/o male judo athlete presents to a sports medicine clinic due to a 3-week history of right knee trauma during a competition, while out of the country. Patient refers that during his combat his opponent fell on top of him while his leg was wrapped around the hip of his opponent (hip in abduction and knee in flexion, adduction and internal rotation). The patient was not able to finish his combat, but was able to limp off the mat. Pertinent findings during our evaluation were: mild swelling with quadriceps atrophy, tenderness in posteromedial joint line with medial knee pain upon full flexion, positive Lachman test (Grade +2), and negative pivot shift.

Results

MRI of the right knee demonstrated a partial ACL tear and bone contusion in the tibial tuberosity. Initial isokinetic test demonstrated significant deficit in peak torque of extensors>flexors. Patient was diagnosed with a right ACL tear and was started in physical therapy to focus in improving strength, flexibility and proprioception. Patient was allowed to return to practice as no pain, swelling or instability was evident; no contact or pivoting exercises were allowed until 3 months after injury.

Conclusion

Repeat isokinetic test and hop test, 3 months after initial injury, demonstrated no significant deficits or asymmetry. 6 months post injury, patient was cleared to participate in full combat due to adequate findings in physical exam (Lachman Grade +1, negative pivot shift, and full ROM), no pain, swelling or instability, adequate results in functional tests, and clearance by orthopedic surgeon and sports medicine psychologist.

Keywords

ACL;Judo;Non-operative Management

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1518

ACCELERATED REHABILITATION AFTER RECONSTRUCTION OF THE ANTERIOR CRUCIATE LIGAMENT OF THE PATELLAR TENDON UNDER ARTHROSCOPY BASED ON THE KENNETH JONES TECHNIC.

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Introduction/Background

This study evaluate the results following an accelerated rehabilitation using closed kinetic chain on patients who had received a reconstructive therapy of the anterior cruciate ligament via transplantation of the patellar tendon under arthroscopy based on the Kenneth Jones technic.

Material and Method

This prospective and descriptive study was conducted over 100 patients with an average age of 29. They were all taken care of by the rehabilitation unit of CHU Mustapha from year 2009 to 2015. They all received the same medical rehabilitation program based on the closed kinetic chain, that considered the ligamentization phenomenon and mechanical constraints imposed to the knee. The evaluation took place at day 0, day 21, month 2, month 3 and month 6 post-surgery, focusing on 5 major elements : pain, intraarticular effusion, joint mobility, muscle strength and amyotrophy. Stability of the knee was evaluated at month 6 post-surgery using IKDC, ARPEGE and Lysholm scores. The rate of activity recovery was evaluated at month 6 postsurgery.

Results

Minimal pain: 2,99/10 on EVA scale. Profuse Intra-joint effusion at day 21 in 50% of patients. Absent intra-joint effusion at month 6 in 78% patients. Mobility continuously improved. Muscular strength is identical to the contra-lateral side at month 6 post-surgery for 65% patients in regards to the quadriceps muscle and for 70% patients in regards of the hamstring muscle. A 1cm amyotrophy compared to the contralateral side, with a 10% loss of the muscular mass. Minimal residual laxity without any signs of instability for 9% of patients. Satisfactory results post closed kinetic chain rehabilitation.

Conclusion

The rehabilitation protocol in closed kinetic chain developed in the eighties shows its importance up to these days. It is now applied in the knee ligamentoplasty rehabilitation program.

Keywords

ACL reconstruction;Closed kinetic chain;Accelerated rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1519

MODERN SURGICAL TREATMENT OF VICTIMS WITH AMPUTATIONS OF LOWER LIMBS IN RESULT OF GUNSHOT INJURIES

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Introduction/Background

Statistics today shows that the proportion of injured limb in terms of fighting today constitute 53-70% of all combat injuries. The main reasons that led to amputations were: direct avulsion of traumatic limbs, massive limb soft tissue injury, damage to major vessels, compartment syndrome, infectious complications.

Material and Method

Defined two groups of patients: the main group - 37 and control - 39 patients. Homogeneous group of patients by age and the severity of injury. Tactics of surgical treatment of patients of the main group encompassing: complete surgical treatment using lavage systems, ultrasonic cavitation and negative pressure wound therapy. Non-surgical treatments were used: skin traction stump using adhesive tapes for physiotherapy, mirror therapy program and individual rehabilitation. Patients in the control group surgical tactics encompassing: primary landmark and surgical treatment of stumps, applied common rehabilitation.

Results

The algorithm of surgical treatment of patients with amputations battle that contained the active application lavage, ultrasound cavitation and V.A.C. therapy to control bacteriological content speeded up the healing of wounds stumps. This reduces the number of repeated surgical treatments by 22.4%, reduces reamputations 8.5% of infectious complications in 12.1% of bed

days 15.6. (figure 1)

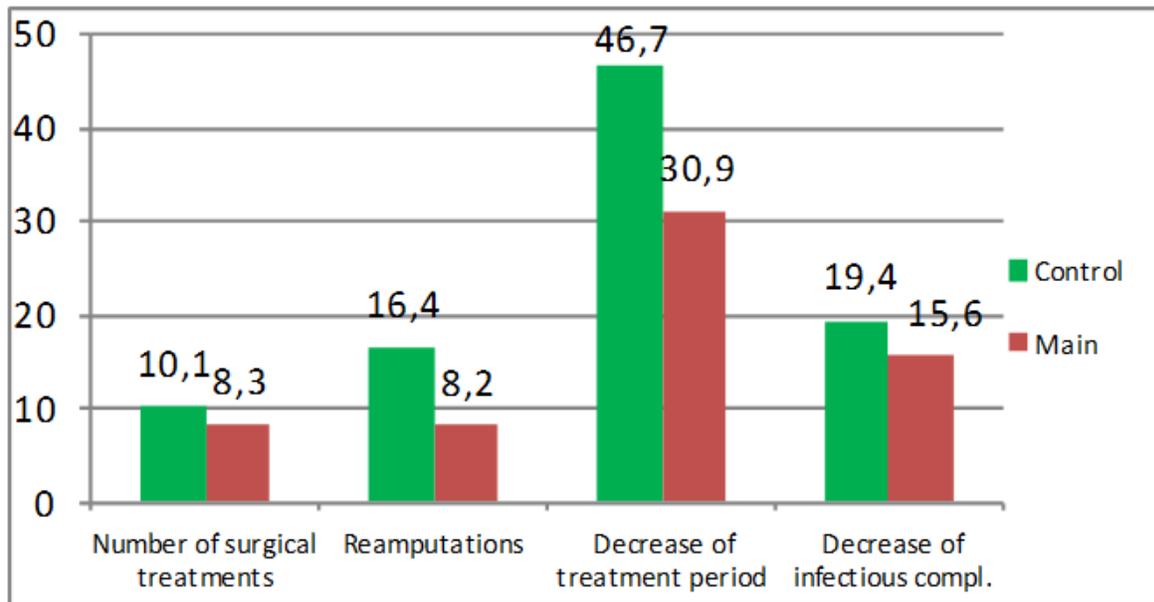


Figure 1. Results of treatment, using modern methods of surgical treatment

Conclusion

Despite the complexity of combat amputation, strict adherence to the algorithm providing surgical care to patients saves lives combat amputation. This set of measures makes it even easier to form functional stump, which in turn accelerates the prosthesis and further social adaptation. Implementation of advanced surgical treatment of gunshot wounds: active lavage, ultrasound cavitation and VAC therapy with monitoring of bacteriological properties significantly speeds up cleaning of wounds and their healing. This reduces the number of repeated surgical treatments by 21%; reduces quantity of reamputations to 8.2% ; infectious complications in 13.1%.

Keywords

combat amputation;negative pressure wound therapy;ultrasound cavitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1530

STAGED SURGICAL TREATMENT OF PATIENTS WITH MULTIPLY GUNSHOT FRACTURES OF LIMBS

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Introduction/Background

Due to the large number of victims of armed conflict in the East of Ukraine with multiple gunshot fractures of long bones there we need to create complex and staged recovery treatment through all level of medical evacuation.

Material and Method

The main group (119 patients) was treated according to proposed system in traumatology department of the National Military Medical Clinical Centre (Kiev) and then rehabilitated according to individual program of medical rehabilitation. The first comparison group (118 patients) was treated with generally accepted methods of treatment in other military hospitals of Ukraine. The second comparison group (118 patients) were soldiers which were treated during Soviet war company in Democratic Republic of Afghanistan with old fashioned methods of treatment, but with good rehabilitation system. Total - 380 patients with multiply fractures of limbs.

Results

To evaluate the effectiveness of treatment in all groups the results of treatment were analyzed using the scale of Luboshyce — Mattis — Schwartzberg. The best results of treatment were showed in main group, worse results were showed in 1 and 2 group of comparison (tab. 1)

Group	Quantity	Good results	Staisfactory results	Unsatisfactory results
Main group	119	68 (57,1%)	41 (34,5%)	10 (8,4%)
I group	112	45 (40,2%)	49 (43,7%)	18 (16,1%)
II group	120	35 (29,2%)	62 (51,7%)	23 (19,1%)
Total	351	148 (42,2%)	145 (41,3%)	58 (16,5%)

Table 1. Results of treatment in the delayed period (18 month) after finishing of recovery treatment on the anatomical and functional scale of Matiz-Lyuboshitsa-Schwartzberg.

Estimation of the statistical significance of the difference (p) according to the Chi-square (χ^2) criterion between the groups: $\chi^2 = 21,0$, $p = 0,0001$

Conclusion

Conclusion: The proposed in this article system of restorative treatment of multiple gunshot fractures of long bones is effective in preventing the most common complications.

Keywords

multiple gunshot fractures of long bones; system of recovery treatment of fractures, ; conversion of fixation method

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1612

NORMATIVE VALUES FOR THE FIVE-REPETITION SIT-TO-STAND TEST OF POPULATION OF TURKEY

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Introduction/Background

The ability to rise from a chair is an important activity of daily living and is one of the activities used in functional indexes and in test batteries of physical functioning. National variations in STS test performance suggest that norms developed for one country are not applicable to other countries. The aim of the study to determine the reference values of the Five-Repetition STS test according to age and sex in Turkish population.

Material and Method

A cross-sectional study design was used. Healthy individuals aged 20 years and older were invited to participate in the study. 527 individuals (269 women, 258 men) volunteered to participate in this study. The mean age of participants was 50.41 ± 20.67 (range 20-89) years. There were seven age groups (20–29, 30–39, etc.). The Five-Repetition STS test was performed two times with an interval of 3-minute rest. The average of these two trials was recorded as a result.

Results

The mean of the Five-Repetition STS test was 11.20 ± 4.44 (4.35-47.76) s. It was determined that there was a significant difference between men and women in the age groups of 20-29 and 40-49 years old. The mean of the Five-Repetition STS test was found to be higher in women men in these age groups. There was no significant difference between men and women in other age groups. It was observed that the mean of the Five-Repetition STS test increased gradually as the age progressed in men and women. It was determined that there is a strong, significant, and positive correlation between the Five-Repetition STS test age in both men and women.

Conclusion

The reference values of the Five-Repetition STS test according to age and sex specific to the Turkish society were determined in order to draw a person-specific rehabilitation program and to evaluate the treatment results more objectively.

Keywords

Five-repetition sit-to-stand test; Turkish population; Demographic transition

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1623

NORMATIVE MEASUREMENTS OF GRIP STRENGTHS OF POPULATION OF TURKEY

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Introduction/Background

Handgrip strength measurement is clinically used to determine the effectiveness of different treatment strategies in traumatic hand diseases as well as in diseases affecting hand function because of their systemic or local degenerative character. National variations in grip strength suggest that norms developed for one country are not applicable to other countries. The aim of the study to determine the normative values of handgrip strength in Turkish population and its relationship with age and gender.

Material and Method

A cross-sectional study design was used. Healthy individuals aged 20 years and older were invited to participate in the study. 427 individuals (227 women, 201 men) volunteered to participate in this study. The mean age of participants was 47.37 ± 18.98 (range 20-89) years. There were seven age groups (20–29, 30–39, etc.). Hand strength data were collected using a Jamar dynamometer with standard testing position, protocol and instructions. Handgrip strength was measured three times with a hand dynamometer. Averages of three measurements were reported.

Results

The means of handgrip strength measurement were 32.95 ± 11.20 kg for the right hand and 29.93 ± 10.11 kg for the left hand. In females and males, the grip strength reaches its peak value between 30-39 and 40-49 years and it is starting to decrease after the fifth decade. There was a strong correlation between the handgrip strength and age in the negative direction. There was a negative weak-to-medium correlation between the handgrip strength and body mass index. There was a positive strong correlation between handgrip strength and body height and body weight. In all age groups of males, handgrip strength was higher than females.

Conclusion

We believe that the Turkish society's unique age stratified handgrip strength obtained in our study may be used to evaluate hand injuries, set treatment goals, evaluate surgical outcomes, and assess patients' ability to return to employment.

Keywords

Demographic transition; Turkish population; Hand strength

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1656

FREE MOBILIZATION BETTER THAN IMMOBILIZATION IN PARTIAL RUPTURE OF ACHILLES TENDON IN MICE : A HISTOPATHOLOGY STUDY

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Introduction/Background

Achilles tendon injury mostly occurs to 30-50 year old-patient, and approximately 35% of all tendon injury cases. Caused by the specific placement of tendon structure, the athletes tend to have flat feet and often pull the soleus repeatedly, which leads to increase injury. Until now, tendon injury therapy becomes controversial. Some articles mentioned that the best treatments are open surgery and conservative medicine. But in this modern era, LLLT becomes such an alternative therapy, reduces inflammation and helps recovery process in acute phase. Therefore, this research aims to understand the differences of collagen fibers structure in partial rupture of Achilles tendon in mice

Material and Method

This research uses free mobilization and immobilization treatment, combined with low level laser therapy and measured with histopathology study. This is an experimental research, started November to December 2016 at Pet Clinic and Pathology Anatomy Laboratory Universitas Hasanuddin Hospitals. It has 14 samples, divided into two groups. First group comes with free mobilization treatment and the second group comes with immobilization treatment. The pure strains mice followed a seven-day adaptation, given a tenotomy and appropriate treatment based on its group. In the next seven days, the mice were given LLLT therapy for 4,28J/cm in three minutes alternately. Afterwards, the mice were taken to the laboratory for microscopic assessment. The pure strains mice followed a seven-day adaptation, given a tenotomy and appropriate treatment based on its group. In the next seven days, the mice were given LLLT therapy for 4,28J/cm in three minutes alternately. Afterwards, the mice were taken to the laboratory for microscopic assessment. The mice were also stained and analyzed in its collagen fibers formation.

Results

The collagen fiber formation in mice with free mobilization gained better than the immobilization one

Conclusion

free mobilization than the immobilization in partial tear of Achilles

Keywords

Achilles injury; mobilization and immobilization; LLLT

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1765

PATELLOFEMORAL INSTABILITY

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Introduction/Background

Patellofemoral instability is a prevalent clinical entity that causes disability and pain due to several anatomical changes. It is intended to summarize the most relevant information on the subject in order to obtain a better knowledge about it and optimize therapeutic strategies.

Material and Method

Bibliographical research on the subject through the pubmed and books of the area of physical and rehabilitation medicine and orthopedics using the terms “patellofemoral instability”, “patellar instability” and “patellar dislocation”.

Results

The incidence is higher in younger women and the recurrence rate after the first episode of patellar dislocation is elevated. The most likely causes of instability are associated with an increased Q angle, patella alta and trochlear dysplasia. Patella alta and trochlear dysplasia can be diagnosed with lateral x-ray, through the evaluation of the relation between patella and tibia and using the Dejour classification, respectively. In most cases the treatment of choice is conservative through analgesic medication, physical therapy and orthoses if necessary. Consider suspend or change the physical activity that caused the symptomatology during the rehabilitation program. The surgical treatment should be considered if recurrence or persistence of symptoms and if the chronic evolution of patellar instability causes major disability.

Conclusion

It is important to establish the correct diagnosis with a good clinical history and physical examination. The imaging tests are important in the diagnosis of the cause of patellar instability. Conservative treatment should be initiated as soon as possible in order to achieve a more effective rehabilitation. Surgical treatment is reserved for when conservative treatment fails.

Keywords

Patellar Instability;Patellofemoral Instability;Patellar dislocation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1808

CONTEMPORARY APPROACH IN MENISCAL HEALING-AUTOLOGOUS PLATELET RICH PLASMA AND PHYSICAL THERAPY

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Introduction/Background

Meniscal injuries are the most common knee injury. Treating of meniscal injury, which don't request operative management, is very limited and include physical therapy, compression, elevation and icing. The use of platelet-rich plasma (PRP) has been the subject of intense investigation and discussion in orthopaedic since the growth factors contained in platelet granules are shown to improve clinical outcome following a soft tissue injury, regeneration, and repair. Our aim was to present the results of research and technological advances of autologous PRP activated by autologous thrombin to reduce size of meniscal lesion and decrease time of healing and rehabilitation.

Material and Method

Experimental group included the meniscal injures that doesn't request surgical treatment. Whole blood was drawn from vein, collected in 60 mL syringes and mixed with 7 mL anticoagulant citrate dextrose formula A (ACD-A). The blood was then processed, PRP was obtained and activated with authologous thrombin. 5 mL of final product was injected in the knee joint space, contra lateral of meniscal lesion. Standard protocol for physical therapy was induced immediately after the procedure, without period of stagnation. Interferential current (1-100 Hz from 2 circuits) stimulation was applied, and movement increasing and quadriceps strengthening exercises were conducted. To observe healing process we have followed the clinical outcomes and MRI imaging.

Results

Clinical outcomes in treated patients showed shorter time of rehabilitation and return to normal daily activities. MRI imaging showed the increased healing in treated patients compared to untreated patients.

Conclusion

Different clinical studies showed the benefits of PRP application in orthopaedic pathologies. The use of activated autologous PRP gives great results in terms of clinical outcomes and along with physical therapy represents optimal treatment in patients with meniscal injury.

Keywords

platelet rich plasma;meniscal injury;physical therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1879

PROPRIOCEPTIVE TRAINING FOR FUNCTIONAL INSTABILITY OF THE ANKLE: A CASE STUDY

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Introduction/Background

The ankle sprain occurrences often happen in sports, and affect especially active individuals. About 40% of individuals report joint instability after a sprain. Several tests are used to evaluate the ankle instability including the Star Excursion Balance Test (SEBT), which is an indicator of improved stability after treatment. This test consists of a series of tasks performed with the lower limb in unipodal support, in which the opposing leg slides under eight straight lines (like a rose of the winds) demarcated on the ground. The objective of this study was to evaluate the effects of a six-week program of proprioceptive training in individuals with a history of ankle sprain using the SEBT.

Material and Method

It was conducted an case study of seven individuals with a history of ankle sprain in the last twelve months. All the subjects were submitted to a specific proprioceptive treatment program for the ankle, that consists of six exercises that worked proprioception in different degrees of demand. After this, they were re-evaluated by the SEBT.

Results

The results in the pre and post intervention SEBT presented statistical significance ($P < 0.05$) in 14 of 16 directions evaluated for both ankles, however the left ankle in all the evaluated ones presented greater improvement when compared to the right one.

Conclusion

The proprioceptive training proposed by this study was efficient because it was possible to observe significant differences in the pre and post intervention in the different directions evaluated by the Star Test.

Keywords

Ankle injuries;Functional Tests;Proprioception

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1907

COMPLEX PRM PROGRAMMES AFTER ARTHROSCOPIC RECONSTRUCTION OF THE ANTERIOR CRUCIATE LIGAMENT (A COMPARATIVE STUDY)

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Introduction/Background

The importance of anterior cruciate ligament (ACL) for knee stability and gait recovery is recognized.

The **goal** of current study was to realize a comparative evaluation of the efficacy of application of five different PRM programmes of care in patients with ACL rupture and subsequent arthroscopic reconstruction of ACL.

Material and Method

MATERIAL AND METHODS:

A total of 125 patients (divided into five groups) after ACL reconstruction were treated during one month. All patients received physiotherapy (analytic exercises), cryotherapy (ice massage), patient education. Patients of first group received only these procedures. In the other groups we added different preformed modalities: for gr 2 - *electrostimulations of the quadriceps femoris muscle (especially m.vastus medialis obliquus)*; in group 3 – *Deep Oscillation (DO)*; in group 4 - *low intensity low frequency magnetic field (MF)*; in gr 5 – *Interferential currents (IFC)*.

Patients were controlled before, during, at the end of the PRM course and one month later - using a battery of objective methods: tests and scales for pain, range of motion, knee stability and gait.

Statistical analysis was performed with SPSS package, using ANOVA and Wilcoxon methods ($p < 0.05$).

Results

The comparative **analysis of results** demonstrates the efficacy of physiotherapy and cryotherapy on mobility of the knee joint and gait velocity. The knee stability and the length of the step were significantly improved in group 2. Efficacy of PRM on pain, oedema was most significant in groups 3-5.

Conclusion

Authors consider that cryo-kinesitherapy is crucial for the functional recovery and gait restauration of patients after ACL rupture and subsequent ACL reconstruction. Our investigation proves that pre-formed physical modalities can ameliorate the efficacy of rehabilitation: electrostimulations are usefull for the knee mobility and stability, Deep Oscillation – for pain and oedema, Magnetic field – for pain, Interferential currents – for the knee trophy and oedema.

Keywords

ACL reconstruction, rehabilitation, cryokinesitherapy, Deep Oscillation, electrostimulation

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-1913

INTEREST OF MESOTHERAPY IN THE TREATMENT OF EPICONDYLITIS

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Introduction/Background

The lateral epicondylitis is a pathology of hyper sollicitation of the common tendon of the lateral epicondylar muscles. Mesotherapy is a procedure consisting of several subcutaneous drug injections performed simultaneously with one or a multitude of needles. The principle is to inject a very small amount of drugs directly into the painful area of the body. This work will allow us to demonstrate the effectiveness of mesotherapy in epicondylitis by a double evaluation: the improvement of pain and the function of the elbow.

Material and Method

This is a descriptive prospective study of a series of 16 patients treated in the Physical Medicine and Functional Rehabilitation of the Sahloul hospital for epicondylitis. A mesotherapy protocol was performed (5 intradermal injections in palpable pain points, 4 mm deep, injecting 0.1 ml per point) including 3 sessions at 7 days apart (D0-D7-D14). Drugs used : Lidocaine, Piroxicam and Thiocolchicoside.

Pain and function were evaluated using the Visual Analog Scale (VAS) and the Mayo Elbow Performance Score (MEPS) at days 0-7-14 and 30.

Results

All of the analysable results include 16 patients with epicondylitis, with an average age of 33,5 years and 68,7% of whom were male. No patient has received rehabilitation, analgesic or anti-inflammatory treatment. At day 0, the mean VAS score was 7,1/10 and the mean MEPS score was 55/100. At day 14, the mean VAS score was 3,4/10 and the mean MEPS score was 70/100. At day 30 (end of the protocole), the mean VAS score was 1,1/10 and the mean MEPS score was 85/100.

Conclusion

Our study found significant improvement in pain and elbow function after mesotherapy. however, large-scale studies should be conducted to truly demonstrate the benefit of mesotherapy by comparing it to management by rehabilitation or corticosteroid infiltration.

Keywords

epicondylitis;mesotherapy;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2044

STRESS FRACTURE OF DISTAL FEMUR IDENTIFIED WITH MUSCULOSKELETAL ULTRASOUND AFTER NORMAL X-RAY AND MAGNETIC RESONANCE IMAGING

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Introduction/Background

Magnetic resonance imaging (MRI) and x-ray have traditionally been used to identify musculoskeletal pathology. Diagnostic musculoskeletal ultrasound, however, is becoming increasingly popular among physiatrists.

Material and Method

A 35-year-old male runner with no significant past medical history presented with a complaint of right medial knee pain for the past 6 to 8 weeks. He reports that he had recently increased his running mileage significantly while running in shoes that were due to be replaced. He had stopped running but noted that the pain persisted. He described the pain as located in one specific spot on the medial aspect of the right knee, rated 4/10 most of the time, but was exacerbated by putting more force through his leg with activities including jogging, going up and down stairs, or carrying heavy objects.

Results

X-rays of the right knee were obtained and were normal, which prompted further imaging with an MRI one week later, which was also normal. Laboratory testing was remarkable for vitamin D deficiency of 13 ng/mL. Musculoskeletal ultrasound revealed a small fracture of the medial epicondyle of the femur measuring 3 mm x 3 mm that was tender to sonopalpation. The patient was instructed to avoid running until pain free for at least 2 weeks before starting on a graduated return to running protocol.

Conclusion

Musculoskeletal ultrasound may be a useful imaging modality for identifying stress fractures even in some cases where traditional imaging with x-ray and MRI are negative. This may have important implications for use in resource-limited settings where ultrasound is portable and relatively inexpensive in comparison to MRI.

Keywords

musculoskeletal;ultrasound;stress fracture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2050

EARLY REHABILITATION PROGRAM IN SURGICALLY STABLE ANCHOR FRACTURES

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Introduction/Background

BACKGROUND: In surgically stable ankle fractures there is discrepancy in mobility and weight load in the first 6 weeks, causing a reduction in joint range due to contracture of periarticular tissues, muscle atrophy and decreased muscle torque. Early rehabilitation consists of weight loading and active controlled ankle mobilizations and favorable changes in less time.

Material and Method

METHODS: Descriptive, cross-sectional, prospective study in 20 patients with surgically stable ankle fractures; early rehabilitation was applied by measuring clinical parameters, the Olerud Molander functional scale and recovery time. The results were analyzed with the Wilcoxon test.

Results

RESULTS: When the initial measurement was compared with the measurement at time of discharge, a positive tendency to improvement was made. In functionality: $Z = -4,472 / p = .000$, and in the pain and perimetry: $Z = -3.879 / p = .000$.

Conclusion

CONCLUSIONS: The weight load and early mobilizations support a positive clinical and functional evolution of the patient with surgically stable ankle fracture without representing greater risk or complications.

Keywords

ANKLE ;SURGERY;REHABILITATION

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2095

DETERMINANTS OF OUTCOME AFTER MILD TO MODERATE MOTOR VEHICLE CRASH INJURY: TYPE OF INJURY IS NOT A PREDICTOR

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Introduction/Background

Studies have shown that in people injured in a road traffic crash, persistent symptoms are common and can lead to significant ongoing personal impact. In this study we aimed to track the experience and key outcomes of persons who had sustained mild/moderate injuries as they returned to health (and work, where relevant) following a road traffic crash.

Material and Method

This is an inception study cohort of adults who had sustained mild to moderate injuries (that is, except serious injuries) in motor vehicle crashes in New South Wales, Australia, who were recruited and interviewed at baseline (within 3 months of the crash) and at 6, 12 and 24 months post-injury.

Results

Minor injuries had major impacts on pain ratings, physical and mental well-being, health-related quality of life and return to work and preinjury participation during the 24 months post-injury phase. Further, for mild to moderately severe injuries, biopsychosocial factors are the main prognostic indicators of recovery (not the location or type of injury). Examples of key biopsychosocial factors are: age; preinjury health; quality of life; reactions to injury (catastrophising, and pain); social support and the third party insurance compensation system.

Conclusion

Study findings have also reiterated the importance of looking beyond the injury to the 'whole person'. These results are important to rehabilitation services which should carefully assess and address psychosocial factors when providing rehabilitation programs.

Keywords

Disability;Biopsychosocial;Environmental factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2099

COMPARISON OF FUNCTIONAL RESULTS AFTER EARLY CONTROLLED MOTION FOR SURGICAL REPAIR OF ACUTE AND CHRONIC ULNAR COLLATERAL LIGAMENT INJURY OF THE THUMB

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Introduction/Background

Injuries to the UCL can lead to functional impairment. Rehabilitation is very important for functional results. Early motion after surgery is avoided. Usually the controlled motion starts after the 6th week. The aim of this study was to evaluate functional results of early controlled motion before 6th week.

Material and Method

19 patients (18♂/1♀) had an acute UCL rupture, 25 patients (23♂/2♀) had a chronic UCL rupture. Two soft anchor (Mini 1.0mm) were used to repair ruptured UCL to bone insertion at the acute UCL injury group. For chronic UCL injury group, 3,0mm bone tunnels were prepared to proximal and distal insertion of UCL and then tendon graft was passed through the tunnels. The tendon graft was stabilized by placing 3,0-mm bioabsorbable suture anchors within the tunnels. The motion was restricted in the 2 week with thumb spica. Dynamic splint and passive ROM exercises were started after 2 week. Active ROM exercises were started after 4 week.

Results

There were no significant differences between the two groups in the men/women ratio, mean age, mean follow-up period. All patients regained full stability at MCP joint in acute UCL injury group; 21 patients regained full stability and 4 patients presented with mild laxity (<10° laxity) in chronic UCL injury group. The ROM of injured MCP joint of thumb was regained at 8-10 week as good as healthy extremity MCP joint of thumb. There were no significant differences between operated and healthy thumb MCP joint in both groups in the grip and pinch strength, flexion, extension, radial deviation, ulnar deviation motions at final control. Glickel grading scale was excellent for 19 patients for acute UCL injury group; it was excellent for 21 patients and good for 3 patients in chronic UCL injury group.

Conclusion

Early controlled motions affect functional results positively. Repair with 1-mm soft anchors in acute UCL injury and reconstruction with tendon graft which stabilized by 3-mm bioabsorbable suture anchors within the tunnels in chronic UCL injury provides adequate stability for early controlled motion.

Keywords

Early controlled motion; Acute ulnar collateral ligament injury of thumb; Chronic ulnar collateral ligament injury of thumb

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2102

THE EFFECT OF MENISCAL REPAIR ON KNEE PROPRIOCEPTION

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Introduction/Background

Aim of our study was to evaluate the effect of meniscal repair on proprioceptive function of the knee. Also we assessed whether meniscal repair together with ACL reconstruction improve the knee proprioception and function.

Material and Method

The study included 32 patients underwent arthroscopic repair, who were diagnosed with meniscal tear and accompanying ACL rupture. Of the patients who underwent meniscal repair with suture, 8 had a longitudinal tear, 4 had a horizontal tear in the red-red zone and 7 had a bucket handle tear. 13 patients underwent partial meniscectomy, 6 had a displaced flap tear, 4 had radial tear in the white-white zone and 3 had a complex tear. The patients were evaluated pre-operative and post-operative two groups: Pre-operative group: ACL rupture+meniscus tear, post-operative 1st group: ACL reconstruction and partial meniscectomy, and post-operative 2nd group: ACL reconstruction and meniscal repair with meniscal suture. Knee joint position sense (KJPS) test and Lysholm knee scoring scale were used evaluate the knee joint proprioception and function at 12th month.

Results

The mean age was 28.3 (range 17 to 33 years), and 30 were male and 2 were female. Pre-operative (ACL rupture+meniscus tear) group had significantly different KJPS values on wide range of knee motion (15°-30°-45°-60°-75°) in the injured knee compared to the healthy knee. The mid-range proprioceptive function loss was healed after surgery. However, a statistically significant difference was observed in only the range of knee motion of 60° in patients underwent meniscal repair with meniscal suture, whereas in the range of knee motion (45°-60°-75°) in patients underwent partial meniscectomy. Significantly better results were achieved with ACL reconstruction with meniscal repair compared to the partial meniscectomy according to the Lysholm knee scoring scale.

Conclusion

In case of meniscal tears,the meniscal repair should be sutured,if possible,in order to obtain better results in terms of knee function and proprioception.

Keywords

Knee proprioception;Meniscal tear;Meniscal suture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2202

BILATERAL QUADRICEPS TENDON RUPTURE: FROM DIAGNOSIS TO REHABILITATION

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Introduction/Background

Bilateral quadriceps tendon rupture (BQTR) is a rare injury frequently associated with delayed diagnosis and predisposing risk factors. Two cases of BQTR were referred to our Department of Physical Medicine and Rehabilitation (PM&R). A four phased rehabilitation protocol was designed and executed in both cases.

Material and Method

We report two cases admitted to our PM&R department with description of the rehabilitation progress with the prescribed rehabilitation protocol. We also review the current literature about clinical and rehabilitation aspects of BQTR.

Results

Case report number 1: 50 year-old man, history of uncontrolled type 2 diabetes mellitus, fell while walking down stairs. At the emergency department, a BQTR was diagnosed and surgery was performed using a transosseous suture repair technique. At the PM&R department the rehabilitation program was executed until 16 weeks postoperatively. Normal knee range of motion was restored, normal gait was reacquired and the patient was able to engage in previous activities.

Case report number 2: 75 year-old man, history of untreated gout, fell down the stairs and became unable to walk normally. The diagnosis was missed in the first emergency department visit and 11 days after the patient was reassessed leading to BQTR diagnosis. Surgery was then performed with transosseous suture repair technique in the right knee and end-to-end Krackow sutures in the left knee. The rehabilitation protocol was executed until week 23 postoperatively. Despite the different surgical techniques, the progress through the rehabilitation program was similar for both knees.

Conclusion

BQTR is a rare injury that doctors must be aware of as well as potential predisposing factors. A rehabilitation protocol was conducted with success and may serve as reference for other PM&R

professionals. Different tendon repair technique performed in the same patient may not have significant implications in the rehabilitation process.

Keywords

quadriceps tendon;rupture;bilateral

No conflict of interest

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A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2217

PLATELET-RICH PLASMA THERAPY AND REHABILITATION EXERCISES FOR THE TREATMENT OF SKELETAL MUSCLE INJURY: A CASE REPORT

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Introduction/Background

Platelet-rich plasma (PRP) has been considered as a promising treatment for tissue repair and regeneration as an autologous blood product. The transforming growth factor- β (TGF- β) can be released from PRP and acts as a pluripotential cytokine to regulate fibrogenesis. The aim of this study is to first report muscle defects in forearm treated with PRP intramuscular injection and rehabilitation therapies.

Material and Method

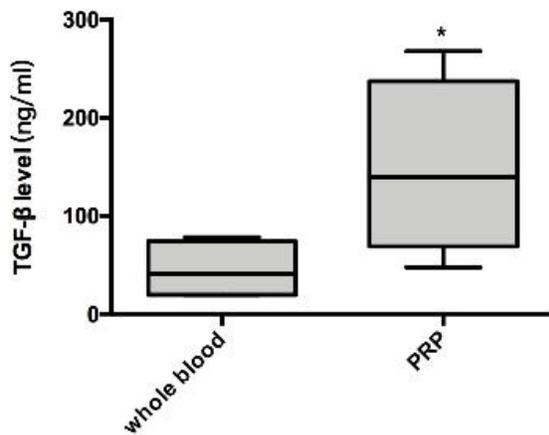
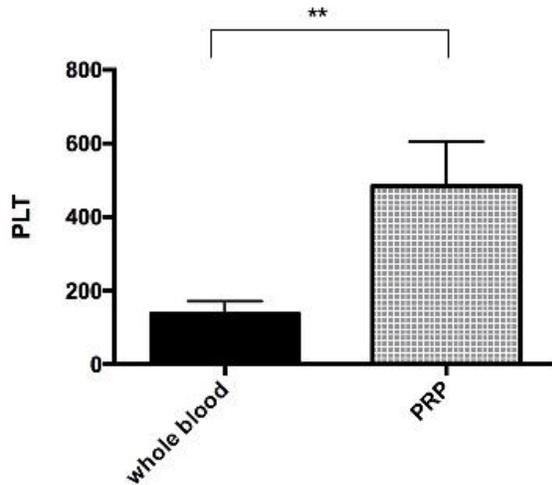
A patient with two muscle defects on the right forearm after gunshot surgery were treated with PRP intramuscular injection and rehabilitation therapies. 5 ml PRP were used for injection while 1ml were measured immediately after preparation. Forearm rehabilitation therapy were conducted after injection. The outcomes of this study include quantification of platelets and TGF- β , forearm performance evaluation and radiological



analysis.

Results

Our PRP preparation protocol with RCF 117.7g can obviously enrich the platelets up to $570.24 \times 10^9/l$ compared with baseline (352%, $P < 0.05$). The TGF- β was measure by ELISA and showed average concentration of 148.59 ng/ml (331%) . MRI shows thickened and enlarged muscles of the affected forearm with increased girth (19.67cm to 27.86cm). Isometric evaluation including wrist extension/flexion, pronation/supination, hand grip and pinch were significantly increased.



Conclusion

PRP is a nontoxic and autologous blood product with highly concentrated platelets and growth factor (TGF- β). Our protocol can produce highly efficient PRP and the PRP intramuscular injection may be able to conduct muscular repair and regeneration after injury.

Keywords

Muscle injury;platelet rich plasma;rehabilitation management

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2313

INTEREST OF THE BOTULINUM TOXIN IN ADDUCTOR RELATED GROIN PAIN

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Introduction/Background

Groin pain in athletes is a common problem. The use of botulinum toxin (BTX) has shown good results in neuromuscular diseases and more recently in pathologies such as epicondylitis. The aim was to assess the effectiveness and side effects of the BTX injections in adductor related groin pain which resists to rehabilitation and/or surgery. A pilot study with one year follow-up

Material and Method

Between March 2014 and April 2016 we systematically registered patients who received BTX injections in adductor muscles under both control by ultrasound and electrostimulation. We carried out a follow up at 1, 3, 6 and 12 months on pain intensity, HAGOS scores, professional disability, and side effect recording.

Results

30 patients, 83% males and 17% females have been included. Adductor tenotomy was recorded in 14 patients before the injection. Pain intensity decreased significantly (D0: 65±16mm; D30 31±23; D90 28±23; D180 33±28; D365 31±30; p<0.05). HAGOS score showed significant improvements on all sub-scales (symptoms, pain, physical function in daily living, in sport and recreation, participation on physical activities and hip or groin related quality of life (p<0.05)). The intensity Professional disabilities decreased significantly at D30, 90, 180 and D365 (p<0.05). Three patients failed to be relieved and all of them had a previous adductor tenotomy. Five patients had a recurrence during the follow up and 3 of them had a previous adductor tenotomy too.

Conclusion

This present study suggests that BTX is an effective treatment for the adductor related groin pain with no side effect and a low rate of recurrence

Keywords

Groin pain;botulinum toxin;sports injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2351

THE EFFECT OF PELVIS CONTROL ON THE CONSERVATIVE MANAGEMENT OF MULTIDIRECTIONAL INSTABILITY OF THE GLENOHUMERAL JOINT.

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Introduction/Background

Specific rehabilitation program that focus on dynamic muscular control to provide stability is the most accepted conservative approach for multidirectional instability (MDI). Our primary objective is to review the current evidence-based rehabilitation guidelines of patients with MDI. Additionally we describe our approach and present the effectiveness of a modified rehabilitation program for patients with MDI.

Material and Method

A comprehensive search of the PubMed, using various combinations of the keywords shoulder, multidirectional instability, glenohumeral, rehabilitation and exercise over the last thirty years was performed. We present step by step our approach based on expert experience and scientific evidence. A rehabilitation program is provided that designed with respect to whole body assessment in addition to the assessment of local muscular insufficiencies.

Results

Although our rehabilitation program was more time consuming in the preparatory phase, we observe that our patients had better results in relation to functional movements, recurrence and load increasing progress.

Conclusion

Our approach suggest that in order to achieve best results in MDI rehabilitation a preparatory phase is needed that focuses on whole body kinetic chain sequence.

Keywords

multidirectional instability;shoulder rehabilitation;pelvis control

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2455

REMOTE AFTER-EFFECTS OF RESISTIVE STATIC CONTRACTIONS OF LOWER TRUNK DEPRESSORS AND UPPER EXTREMITY ON MAXIMAL ACTIVE RANGE OF MOTION OF ANKLE EXTENSION IN ANKLE FRACTURES

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Introduction/Background

Direct approaches to improve maximal active range of motion (MAROM) of restricted joints may be difficult because of pain or weakness of agonist and/or antagonist muscles. Resistive static contraction (SC) of posterior depressors (RSCPD) using a PNF pattern in the mid-range of pelvic motion increases the flexibility of remote joints, such as the upper shoulder and knee, as remote after-effects in the clinic. The purpose of this study was to investigate the remote after-effects of RSCPD on the MAROM of ankle plantar flexion in patients with isolated ankle fractures.

Material and Method

Thirteen patients with ankle fractures (7 men and 6 women, mean age 50.9 years, SD 11.9 years) were randomly assigned to resistive SC of shoulder flexion on the affected side (SCUE), RSCPD on the affected side, and SC of the affected ankle extensors. Each SC was induced by resistance (20% MVC) generated by a manual force using a handheld dynamometer. The duration of each resistive exercise and stretch was 20 s. The % MAROM change for ankle extension after each technique was calculated by subtracting the MAROM before each technique.

Results

The mean (SD) MAROM was 3.32 (11.35)% for RSCPD, 0.64 (6.25)% for SCUE, and -5.65 (8.05)% for SC. A two-way ANOVA for the %MAROM change showed significant main effects for technique ($F(2,24)=3.84$, $p=0.04$, partial eta squared=0.24) and individual ($p=0.32$). A post hoc Scheffe test indicated that the % MAROM change for RSCPD was significantly larger than that for SS ($p=0.04$)

Conclusion

RSCPD showed a significant improvement over SC, which suggests that RSCPD may have immediate remote after-effects that improve flexibility of the plantar flexor muscle in patients with ankle fracture.

Keywords

PNF;static contraction;remote after-effect

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.07 Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

ISPR8-2461

REMOTE AFTER-EFFECTS OF RESISTIVE STATIC CONTRACTIONS OF LOWER TRUNK DEPRESSORS AND UPPER EXTREMITY ON MUSCLE STRENGTH OF THE PLANTAR FLEXOR MUSCLE AFTER ANKLE FRACTURE

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Introduction/Background

Remote after-effects of resistive static contraction (SC) of the posterior depressors (RSCPD) using a PNF pattern in the mid-range of pelvic motion to induce unilateral resistive SC of the lower trunk muscles while side-lying increases the muscle strength of the remote upper and/or lower extremities in the clinic. The purpose of this study was to determine the remote after-effects of RSCPD on the strength of the plantar flexor muscle after ankle fractures.

Material and Method

Eleven patients with ankle fractures (5 men and 6 women, mean age 48.7 years, SD 11.3 years) were randomly assigned to SC of shoulder flexion - adduction - external rotation on the affected side (SCUE), RSCPD on the affected side, and sustained stretch (SS) of the affected plantar flexors. The duration of each resistive exercise and stretch was 20 s. Each SC was induced by resistance (20% MVC) generated by a manual force using a handheld dynamometer. The % MVC change for the ankle plantar flexors after each technique was calculated by subtracting the MVC before each technique.

Results

The ICC (1,1) was 0.95 for the MVC. The mean (SD) for % MVC change **was** 3.82 (6.88)% for RSCPD, -1.99 (6.88)% for SCUE, and -4.95 (6.88)% for SS. The two-way ANOVA for % MVC change showed significant main effects for technique ($F(2,20)=5.45$, $p=0.1$, partial eta squared=0.36) and individual ($F(10,20)=2.44$, $p=0.00$, partial eta squared=0.86). A post hoc Scheffe test indicated that the % MVC change for RSCPD was significantly larger than that for SS ($p=0.11$).

Conclusion

The improvement in MVC suggests that RSCPD may have immediate remote after-effects that improve the strength of the plantar flexor muscle in patients with ankle fracture.

Keywords

PNF;static contraction;remote after-effect

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-2644

FLUOROQUINOLONE-ASSOCIATED TOTAL ACHILLES TENDON RUPTURE: A CASE REPORT

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Introduction/Background

Fluoroquinolones are broad-spectrum antibiotics that inhibit bacterial DNA synthesis, Levofloxacin emerges for its safety. Frequent side effects include: gastrointestinal (2-20%) and neurological symptoms (1-2%). Musculoskeletal toxicity is infrequent (<1%), being tendon rupture exceptional (1/10,000). We present a case of total rupture of Achilles tendon following fluoroquinolone use, that required surgery.

Material and Method

A 66-year-old patient, with hypertension, dyslipidemia and asthma, being treated with inhaled corticosteroids, was prescribed Levofloxacin 500 mg/day and bronchodilators for a respiratory infection. Two days after, he developed pain and edema in ankles, despite quitting antibiotics and using anti-inflammatories. There was no history of recent traumatism or overexertion. Examination showed swelling in both Achilles tendons, peri-malleolar edema and negative Thompson test. He was diagnosed of bilateral Achilles tendinitis and was prescribed anti-inflammatories. 13 days after, he re-consulted for progressive symptoms in the right ankle. Thompson test was positive and declination angle was altered. Magnetic resonance imaging demonstrated total Achilles tendon rupture, requiring surgery and subsequent cast immobilization for five weeks. After removing the cast, the patient had an active range of motion of 30° and needed walking aids, thus, physical therapy was arranged.

Results

After completing treatment, he improved 20° in the range of motion, and achieved walking without aids. Therapy consisted in: passive, active and resisted mobilizations, stretching, proprioception exercises and electrotherapy.

Conclusion

Levofloxacin is a safe drug, being exceptional its association with total Achilles tendon rupture. According to literature, this side effect is time and dose independent. Patients taking oral corticosteroid are predisposed, but ours only used inhaled corticosteroids. Conservative management is indicated in partial tendon rupture, while surgery is mandatory when rupture is

complete. Apart from surgery, physical therapy was essential to achieve the complete functional recovery of our patient.

Keywords

Achilles tendon rupture;tendinopathy;fluroquinolone-induced

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-2654

RESULTS FROM THE FIRST RECOMBINANT BOTULINUM TOXIN (BONT) EVER TO ENTER CLINICAL DEVELOPMENT. OUTCOMES OF A FIRST-IN-HUMAN STUDY WITH RECOMBINANT BONT/E (SXN102308).

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Introduction/Background

There are multiple naturally occurring botulinum neurotoxin (BoNT) serotypes that have different pharmacological features and are of interest for potential aesthetic and therapeutic use. We have manufactured a BoNT serotype E using recombinant technology (rBoNT/E), which was selected for its faster onset of action and shortened duration of effect compared with BoNTs serotype A (BoNT/A) products currently commercially available.

We performed a first-in-human study to assess the safety of increasing doses of rBoNT/E injected into the extensor digitorum brevis (EDB) muscle of healthy subjects, and to investigate their pharmacodynamic profile by recording the EDB compound muscle action potential (CMAP).

Material and Method

This was a double-blind, randomised, placebo-controlled single ascending dose study (sequential cohorts) in male subjects. Doses up to 3.6 ng rBoNT/E were investigated.

Results

Twenty-eight subjects were included to the study, 21 exposed to rBoNT/E on a single dosing occasion and 7 treated with placebo (ratio 3:1).

No related serious adverse events (AE) were reported, no subject had a related AE that led to withdrawal from the study. All doses were well tolerated.

For the dose range investigated, onset of action occurred between Day1 and Day2. Magnitude of CMAP inhibition increased with dose with about 50% inhibition for the 0.04ng starting dose, and maximal inhibition (above 90%) reached from 0.9ng. Maximal effect was recorded between Day3 and Day14 post-injection. Duration of CMAP inhibition was around 50 days for the two highest doses of 0.9 and 3.6ng.

Conclusion

This study demonstrated an overall good safety profile of single intramuscular doses of this first recombinant BoNT/E ever tested in humans within the dose range investigated, and a pharmacodynamic dose-effect allowing to thoroughly determine the doses to be used in patients. It confirmed the fast onset of action and short duration of effect of this botulinum neurotoxin as compared to currently commercialized BoNT/A.

Keywords

Recombinant botulinum toxin E;First-in-human study;Short-acting botulinum toxin

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-2673

PRESSURE ULCERS IN PHYSICAL MEDICINE AND REHABILITATION DEPARTMENT: EPIDEMIO CLINICAL STUDY

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Introduction/Background

The aim of our study was to analyze the epidemiological and clinical aspects of patients hospitalized with pressure ulcers in Physical and Rehabilitation Medicine Department and to identify the risk factors for their occurrence.

Material and Method

It is a retrospective study conducted in the Department of Physical and Rehabilitation Medicine in Sahloul Hospital TUNISIA among patients hospitalized for pressure ulcers over a period of 5 years

Results

63 patients were included in the study with a male predominance (71.4%) and an average age of 38.2 years. The majority of patients were transferred from an intensive care unit (49.2%), six patients (9,52%) were transferred from the orthopedic and six (9,52%) of neurosurgery department.

On admission, 58% of patients had stage 2-3 sacral pressure ulcer in 75% of cases with an average size of 6.6 cm, 63% had a heel pressure ulcer stage 2 or 3 in 45% of cases with a size average of 2.7 cm. 22.5% had trochanteric pressure ulcer stage 3 in 33% and grade 4 in 28% of cases with an average size of 6.7 cm, 14% of patients had stage 3 occipital pressure ulcers in 71% of cases with an average size of 4.5 cm. The average of Functional Independence Measure (FIM) score was 58.7/126.

The risk factors were: motor weakness (98%), layer port (87%), sensory disturbances (68%), urinary incontinence (68%), fecal incontinence (63%), hypoalbumin (43%), depression (38%), spasticity (36%), malnutrition (36%), anemia (33%), age > 65 years (14%).

Conclusion

Pressure ulcers are a real health problem. It is often the result of a misjudged risk or bad management. This is a pathology that affects the life quality of the patient. The occurrence of pressure ulcers causes a significant increase in the burden for nurses and hospital stay, hence the importance of preventing this complication.

Keywords

Pressure Ulcer;epidemiology;risk factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0159

NEUROGENIC HETEROTOPIC OSSIFICATION IN GUILLAIN-BARRE SYNDROME: A RARE CASE REPORT

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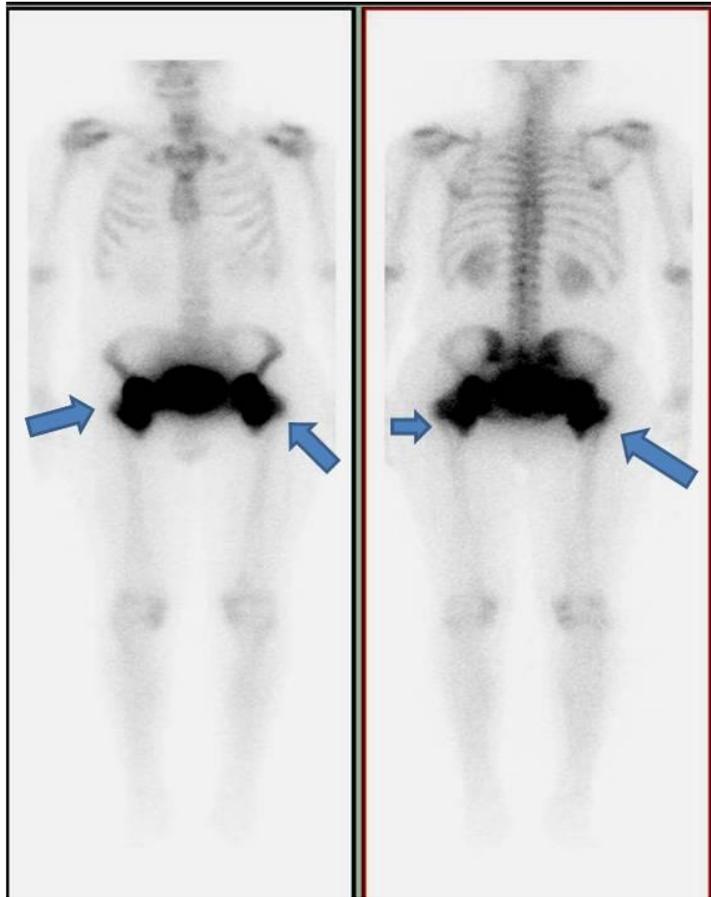
Introduction/Background

Neurogenic heterotopic ossification (NHO) is an abnormal development of bone in extraskeletal tissues frequently seen after traumatic brain injury or spinal cord injury. NHO may also occur as a rare complication of Guillain Barre Syndrome (GBS). NHO often forms around the hip, knee and shoulder joints and may cause pain and limitation. We present a 39 year old man with an acute onset of GBS who developed NHO around both hips.

Material and Method

Patient was admitted to the emergency department with paraesthesia in all limbs and diplopia. Neurologic examination revealed bilateral abducens nerve paralysis, facial diplegia, flaccid areflexic paralysis of the limbs. The patient underwent electromyography examination and diagnosed as GBS. The same day respiratory muscle weakness appeared and patient was taken intensive care unit for mechanical ventilation. Two months after the onset of GBS, pain and decreased range of motion (ROM) emerged in both hips. NHO was diagnosed on the plain X rays of the pelvis. Three-phase bone scan confirmed the diagnosis (Figure 1).

Figure 1:



Results

Biphosphonate was given for 12 weeks. When the patient was discharged from the ICU after two months, the muscle strengths improved in all extremities. The patient could stand up with support; however could not walk or sit in low position due to pain and limitation of hip joints. At 6 months of his rehabilitation program, he can walk with a walker.

Conclusion

NHO is a rare complication of GBS, and physicians should be aware that it can develop especially in patients who need mechanical ventilation with severe paralysis.

Keywords

heterotopic ossification, Guillain Barre Syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0276

PREVALENCE OF SIGNS AND SYMPTOMS OF MUSCULOSKELETAL DISORDERS IN PATIENTS WITH PSORIASIS VULGARIS

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Introduction/Background

Psoriasis vulgaris is an inflammatory, skin disease with considerable frequency in society. Sometimes complaints of musculoskeletal problems are observed in these patients. Therefore, we decided to evaluate frequency of patients' musculoskeletal disorders.

Material and Method

This cross-sectional study was based on the recall of patients with psoriasis vulgaris, whose files were recorded in outpatient clinics. Patients aged 18-60 years old, didn't have any Arthropathic and Erythrodermic or Pustular form of psoriasis, nor did they have any underlying rheumatologic or neurological, inflammatory disease and traumatic conditions. Finally 73 patients (29 females and 44 males) were evaluated for musculoskeletal signs and symptoms and related examinations.

Results

In this study, we asked patients about their musculoskeletal pains which results are mentioned in table 1 and the results of findings of musculoskeletal physical examinations are in table 2.

According to this study, the highest frequency observed in musculoskeletal pain was: knee pain (31.5%), back pain (23.3%), and neck pain (15.1%). The highest frequency of impaired musculoskeletal examinations was: positive phalen test (19.1%), positive Patrick test (12.3%), and hamstring tightness (10.9%). Often, the prevalence of musculoskeletal problems was higher in women.

Body pain	Male (%)	Female (%)	Total (%)
Shoulder pain	13.6	6.9	10.9
Elbow pain	4.5	3.4	4.1
Forearm pain	2.3	0	1.36
Wrist pain	4.5	3.4	4.1
Hand pain	6.8	10.3	8.21
Thigh pain	4.5	3.4	4.1
Knee pain	25	41.4	31.5
Leg pain	6.8	10.3	8.21
Foot pain	6.8	10.3	8.21
Cervical spine pain	9.1	24.1	15.1
Lumbar spine pain	27.3	17.2	23.3
Sacrum and coccyx	2.3	6.9	4.1

table 1: results of patients' Musculoskeletal pains

Physical exam	Male(%)	Female(%)	Total(%)
Post upper cervical tenderness	6.8	6.8	6.8
Trapezius tenderness	6.8	10.3	8.2
Shoulder test + *	6.8	13.8	9.6
Elbow test + **	4.5	13.8	8.2
Tinnel test +	6.8	6.8	6.8
Phalen test +	20.4	17.2	19.1
Finkenstain test +	6.8	0	4
Patrick test +	11.3	13.8	12.3
Hamstring tightness	13.6	6.8	10.9
Anteromedial of heel tenderness	4.5	10.3	6.8
Forefoot tenderness	11.3	6.8	9.6

* posterior, Anterior, Medial or lateral tenderness of shoulder joint

** Lateral or Medial epicondyle tenderness of Elbow joint

table 2: results of patients' Musculoskeletal physical exams

Conclusion

Although psoriasis vulgaris is basically a skin disease, due to considerable frequency of musculoskeletal problems observed in this study, we suggest considering pain control in these patients to improve their quality of life. Due to limited sample size, more comprehensive and larger studies are recommended to get more accurate data.

Keywords

Psoriasis vulgaris;Musculoskeletal Disorders;Muscle Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0306

MANAGEMENT OF NEUROGENIC HETEROTOPIC OSSIFICATION IN REHABILITATION

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Introduction/Background

The aim of this study is to determine the interest and the contribution of rehabilitation in the management of Neurogenic heterotopic ossification (NHO).

Material and Method

This retrospective study was conducted on the folders of patients hospitalized in Physical Medicine and Rehabilitation Department at Sahloul hospital Sousse Tunisia during a five years period.

Results

Twenty-five patients were included in the study with a mean age of 33.32 years (12 years - 54 years), the sex ratio was 2. Neurogenic heterotopic ossification followed mainly traumatic brain injuries (48%), polytrauma (27%) and spinal cord injuries (20%). 88% of patients have been transferred from an Intensive Care Unit. Multiple locations were observed in 80% of patients. The two most common locations were: hip (28%) and elbow (24%). 32% of patients had problems with prehension. Walking was possible only in 12% of cases. Standard x-rays detected NHO in 56% of cases. Nonsteroidal anti-inflammatory drugs were prescribed to most of our patients (23 cases) for an average period of 92 days. All patients benefited from functional rehabilitation based on icing, passive mobilization and installation in alternate extreme positions. Surgical management was needed in 16% of cases after a mean delay of 500 days. The rate of recurrence was 8%.

Conclusion

Neurogenic heterotopic ossification involves deposition of bone in extraskeletal tissue in the setting of a neurological disorder, and its pathophysiology is incompletely understood. It can lead to significant disability and functional impairment. Neurogenic heterotopic ossification can result in significant morbidity and impairs quality of life which justify a proper and early management.

Keywords

Neurogenic heterotopic ossification;Epidemiology;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0331

EFFECTS OF SHORT FOOT EXERCISE WITH VISUAL FEEDBACK ON BALANCE AND KNEE JOINT FUNCTION IN SUBJECTS WITH FLEXIBLE FLATFEET

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Introduction/Background

This study examined the effects of a 5-week short foot exercise (SFE) program with visual feedback on the balance and knee joint function in flexible flatfeet and compared the measures between a flexible flatfoot and normal foot.

Material and Method

A total of 30 subjects participated in this study (15 subjects with a flexible flatfoot, 15 subjects with a normal foot). The subjects were divided through the Navicular Drop Test (NDT). The flexible flatfoot group included subjects with an NDT greater than 10 mm. The normal foot group included subjects with an NDT of 5-9mm. The subject group performed SFE with visual feedback. SFE programs were completed 20 minutes a day, five times a week for 5 weeks.

Results

A significant difference in the static balance area was observed between the flatfoot group and normal foot group on the pre-test ($p<0.05$), and there was a significant difference in the Ant. direction and PM direction between the flatfoot group and the normal foot group on the pre-test ($p<0.05$). The knee joint motions accuracy on the closed chain was significantly different between group on the pre-test ($p<0.05$). A comparison of the pre and post intervention revealed a significant difference in the static balance area and all directions of dynamic balance in the flatfoot group, but only the dynamic balance was significantly different in the normal group ($p<0.05$). The closed chain motions accuracy of the knee joint after the intervention was similar in the flat foot group and normal foot group.

Conclusion

The balance and knee joint motions accuracy was different in the flat foot group and normal foot group. The SFT program with visual feedback was effective in improving the balance and knee joint motions accuracy.

Keywords

flat foot;short foot exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0384

THE EFFECTS OF EARLY WHOLE-BODY VIBRATION TRAINING FOR REHABILITATION AFTER TOTAL KNEE ARTHROPLASTY (TKA)

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Introduction/Background

Early physical therapy can prevent contradictions or improve functional mobility after total knee arthroplasty(TKA). One treatment of physical therapy, Whole body vibration (WBV), has been confirmed with increasing muscle strength, balance and physical function in several treatment area. The purpose of this study is to understand the effects of early WBV training for rehabilitation after TKA.

Material and Method

In the present control study recruited 13 patients with unilateral TKA after 6 weeks postoperatively. Control group (n=5) received conventional TKA rehabilitation, while WBV group (n=8) received 3 weeks (3 times/week) of WBV in addition to conventional rehabilitation. All subjects received assessments for quadriceps and hamstring strength, functional ability(Chinese version of the KOOS), balance(Biodex Balance System), walking ability(6-min walking test-6MWT) and knee range of motion(ROM) at first and third week. Two-tailed T-test analysis of variance was used for statistical analysis.

Results

No adverse side effects were reported in both groups. There were significant increases in dynamic balance, ROM, walking distance and physical function (symptoms、 activities of daily living and knee-related quality of life) for both groups ($P < .05$). The WBV group demonstrated significantly better knee extensor performance and dynamic standing balance ($P < .05$) than the control group.

Conclusion

Early WBV started from 6 weeks postoperatively was an effective training method which improved knee extensors muscle strength and dynamic balance than conventional TKA rehabilitation. The WBV might better to usual care as an early rehabilitation protocol after TKA. But future studies are necessary with larger sample sizes and long-term outcomes to be considered reliable.

Keywords

Whole-Body Vibration Training;total knee arthroplasty;physical function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0464

RELATIONSHIPS BETWEEN HAND STRENGTH AND MOTOR ABILITIES IN NON-AMBULANT PATIENTS WITH DUCHENNE MUSCULAR DYSTROPHY OR SPINAL MUSCULAR ATROPHY

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Introduction/Background

Upper limb function is fundamental for non-ambulant patients. In neuromuscular diseases, the impact of handgrip and key pinch progressive weakness on hand function is not described. This study aims to establish the relationships between hand strength and function in non-ambulant patients with Duchenne Muscular Dystrophy (DMD) or Spinal Muscular Atrophy (SMA).

Material and Method

The handgrip and key pinch maximal strength were measured with the MyoGrip and MyoPinch highly sensitive dynamometers, respectively. Hand function was assessed by the 6 items regarding distal upper limb function in the Motor Function Measure (MFM, a 4-points based scale rater-controlled with a total of 32 items) and by the Cochin scale (a 6-points based self-

administrated-questionnaire on hand abilities in everyday life with 18 items).



Results

53 DMD and 23 SMA patients (age 8–31 years) were included. The scales and single items functional scores were highly correlated to strength ($P < 0.001$). However, depending on the items, the Spearman coefficients reflected correlation varying from high to negligible, suggesting that some functional items require strength more than others.

For all the functional items but one, strength corresponding to the “greatest disability” score was significantly lower than strength corresponding to the “no disability” score (Kruskall-Wallis, $P < 10^{-5}$).

Hand function was rather preserved until a handgrip and key pinch strength cut-off. For strength lower than the cut-off, hand function scores decreased with decreasing strength although a large variability was observed.

Conclusion

Hand functional ability is correlated to strength. However, contractures, motor compensations and psychological state may contribute to the large variability observed in the strength – function relationships. Therefore, functional hand ability of a single individual cannot be predicted solely from handgrip or key pinch strength.

Keywords

Neuromuscular diseases; Muscle strength; Hand function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0508

THE RELATIONSHIP BETWEEN CORE ENDURANCE AND UPPER EXTREMITY PERFORMANCE IN SEDENTARY COLLEGIATE MALES

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Introduction/Background

Core muscles contribute to general spine stabilization when the trunk is exposed to flexion and extension moments. It is thought that movements begin from the center of the body (called the "powerhouse" or "core") and flow outward to the extremities, and a strong core strengthens the whole body. Few studies have examined the relationship between core endurance and upper extremity performance and most of the studies has been done in athletes. Thus, the purpose of this study was to investigate relationships between core endurance, and upper extremity performance in sedentary collegiate males.

Material and Method

Sedentary collegiate males who had not suffered any orthopedic injury in the past year were enrolled the study. Core endurance (CE) was evaluated using trunk extensor test, bilateral side bridge tests, and The Core Muscle Strength and Stability test. The results of the core endurance tests were compared with several upper extremity performance measurements: The Upper Quarter Y Balance Test (bilaterally in medial, inferolateral, and superolateral directions- UQYBT), Close Kinetic Chain Upper Extremity Stability Test (CKCUES test), medicine ball throws test (forward, reverse, right, and left in static and dynamic positions), hand grip strength, and Nelson hand reaction test.

Results

Eighty-three males were assessed during the study. Their mean age was 22.07 ± 1.89 year (range:18-25) and mean body mass index was 23.77 ± 3.26 kg/m² (range:17.67-36.11). We observed low correlations between the CE tests and UQYBT (r range=0.220–0.393, $p < 0.05$) but no correlations between the CE and hand grip strength and Nelson hand reaction test. CKCUES and medicine ball throws test (non-dominant side in dynamic position) correlated with side bridge test, $r=0.279$ and $r=0.240$, respectively ($p < 0.05$).

Conclusion

The results of this study imply that the core endurance is related to the upper extremity performance in closed kinetic chain but not with open kinetic chain functions, where only distal extremity performance is present.

Keywords

Trunk endurance;Upper Extremity;Upper Quarter Y Balance Test

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0595

CORRELATION BETWEEN LIFESTYLE AND MUSCULOSKELETAL PAIN AMONG SAUDI UNIVERSITIES' STUDENTS: A QUESTIONNAIRE-BASED STUDY FROM SAUDI ARABIA

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Introduction/Background

Chronic pain conditions of the musculoskeletal system (MSP) are common and have a high socioeconomic relevance. It affects more than 1.7 billion people worldwide and this burden has increased by 45% during the past 20 years.

Material and Method

A cross sectional study administrated an anonymous specially designed questionnaire to a random sample of 115 students in different Saudi universities. Students' life style characters, personal particulars and physical activities' likelihood were measured. The study was conducted over a 4 months period from December 2013 to March 2014.

Results

During this four months' work, 115 Saudi university students agreed to participate. More than half of the participants (68.7%) complained of musculoskeletal pain. The most prevalent sites were the back (44.3%), neck and shoulders (30.4%). Long period of sitting was reported as the most common cause for musculoskeletal pain in general. However, bad postural sitting was reported to be the most frequent cause for MSP. Single females had a higher prevalence for musculoskeletal pain. The percentage musculoskeletal pain among males who exercise was less than the percentage of those who lack physical activity.

Conclusion

This study strengthens the findings that musculoskeletal pain is common among college students and it is influenced by their lifestyle and daily activity.

Keywords

back;pain;student

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0605

RARE COINCIDENT STIFF PERSON SYNDROME AND POLYMYOSITIS

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Introduction/Background

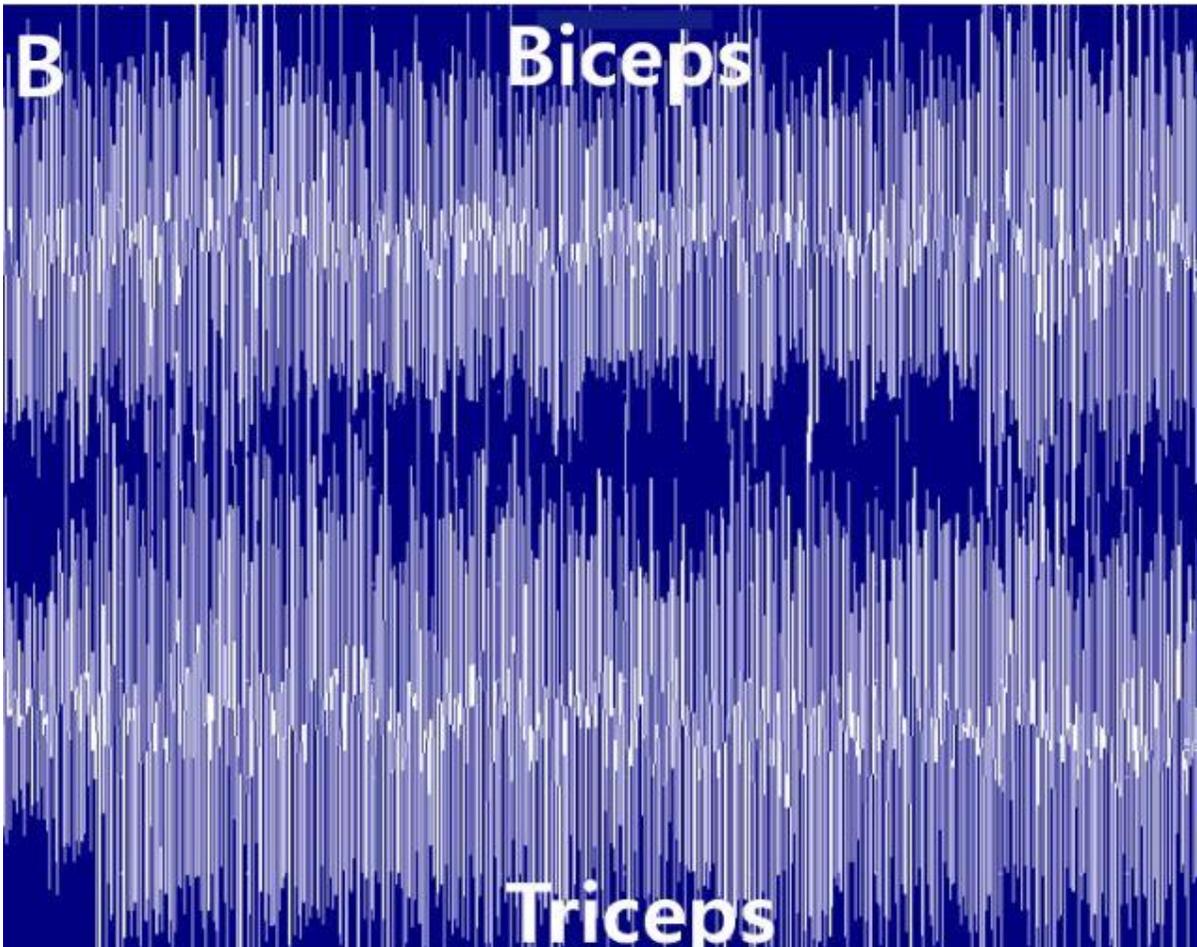
Stiff person syndrome is a rare neuroimmunological disorder associated with anti-glutamic acid decarboxylase antibodies. It is characterized by progressive muscular rigidity and spasms that affect axial and limbs muscles. Polymyositis is a type of autoimmune disease defined as a subacute myopathy characterized by weakness of the proximal limb muscles.

Material and Method

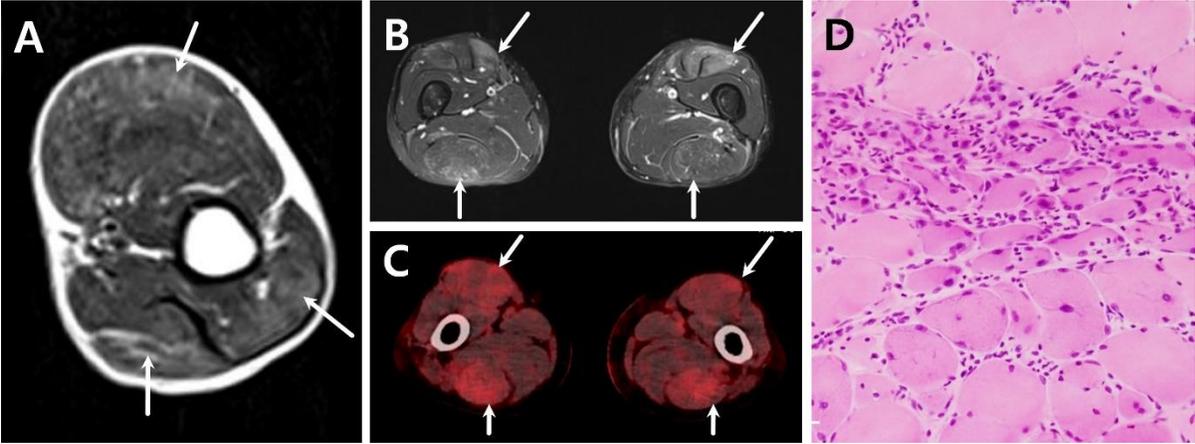
We report the case of a 36-year-old woman with stiff person syndrome in association with polymyositis.

Results

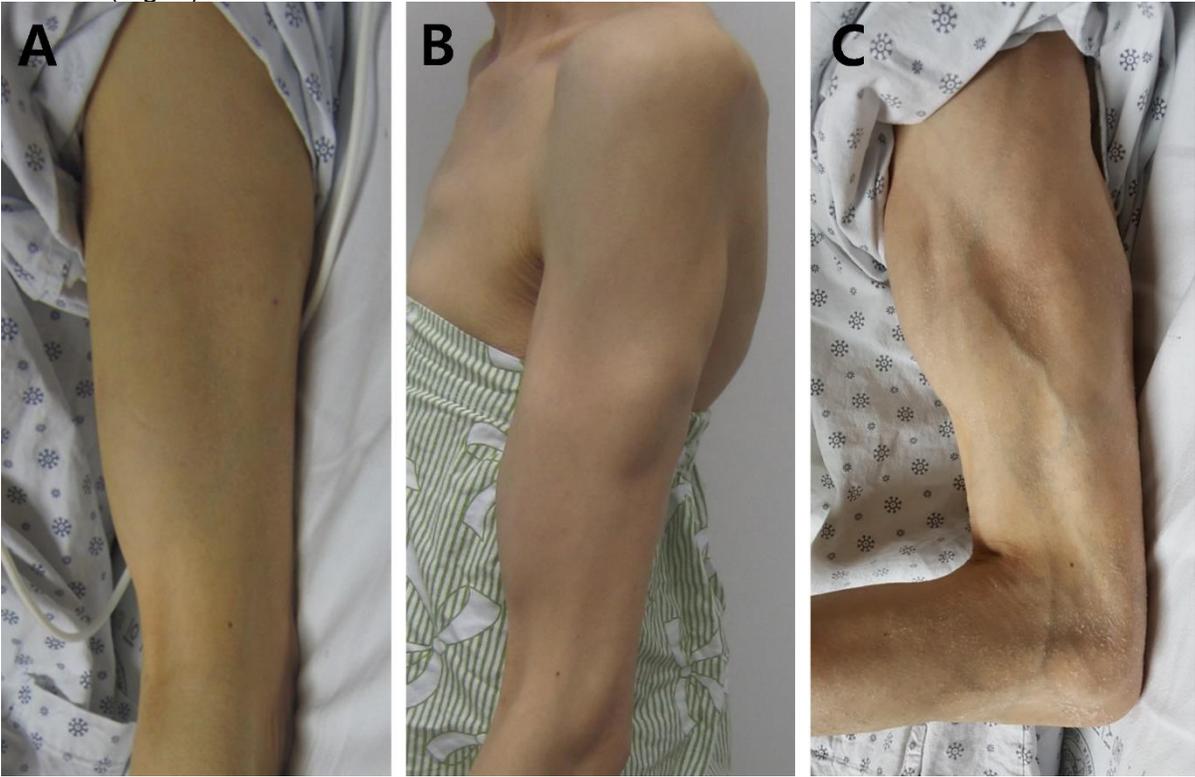
She presented with stiffness and pain in her four extremities. Electromyography revealed simultaneous continuous motor activity in the agonist and antagonist muscles of the proximal upper and lower extremities(Fig. 1).



Magnetic resonance imaging showed bilateral and symmetrical diffuse signal changes in the muscles of the proximal upper and lower limbs(Fig. 2).



Laboratory results showed elevated creatinine kinase levels and muscle biopsy showed inflammatory myositis(Fig. 2). Her symptoms were did not improve with diazepam and baclofen. She has undergone intravenous immunoglobulin therapy several times over the last 4 years due to episodic decline in walking ability and a worsening of muscular pain in both limbs and axial muscles(Fig. 3).



Conclusion

With immunotherapy, her serum creatinine kinase levels reduced; however, her clinical symptoms progressively worsened.

Keywords

Stiff person syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0670

COMPARISON OF THE EFFECTS OF OZONE VERSUS STEROID INJECTION, IN TREATMENT OF PATIENTS WITH TENNIS ELBOW.

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Introduction/Background

Tennis elbow is a prevalent musculoskeletal disorder. In recent years ozone injection has been proposed as a treatment for many musculoskeletal disorders. The aim of this study was to compare the effect of ozone with the standard treatment of steroid injection in patients with tennis elbow, resistant to conservative treatments. This comparison is made according to VAS score, Pressure pain threshold (PPT) and modified Mayo clinic performance index for elbow.

Material and Method

In this study 64 patients with tennis elbow, which have had the symptoms for more than 3 months and were resistant to conservative treatments, were randomized to two groups. In steroid injection group 40mg of methylprednisolone acetate and in ozone injection group 4ml of ozone with concentration of 15mcg/ml was injected. 32 patients in steroid and 29 patients in ozone injection group finished this study. Data were gathered before injection and 2 and 6 months after that by VAS score, modified Mayo clinic performance index for elbow and PPT (measured by the means of an algometer). Variables were compared between the two groups and also the changes in each group have been measured in reference to baseline data.

Results

In both groups VAS score, Mayo clinic performance index and PPT improved significantly in 2 and 6 month follow up. Steroid injection was significantly better than ozone injection in improving 2 and 6 months pressure pain threshold and 6 months Mayo clinic performance index. Other data didn't show significant difference between the two groups.

Conclusion

Both steroid and ozone injection improved pain and function in patients with recalcitrant tennis elbow for at least 6 months. Steroid injection was superior to ozone injection in improving PPT in 2 and 6 month and Mayo clinic performance index score at 6 month follow up.

Keywords

tennis elbow;ozone;steroid

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0861

EFFECTIVENESS OF EXTRACORPOREAL SHOCK WAVE THERAPY (ESWT) FOR PLANTER FASCIITIS IN KUWAITI PATIENTS SAMPLE

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Introduction/Background

Planter Fasciitis (PF) the most common cause of heel pain, affects 10% of the general population. ESWT is a noninvasive option for pain relief and has been recommended as a treatment for chronic PF. Our aim was to assess its effectiveness for treatment of such cases and to choose best treatment protocol.

Material and Method

58 patients with chronic PF were enrolled, they were divided into: group 1, low- energy group (Energy Flux Density (EFD) shock 0.08 mJ /mm²) and group 2, medium – energy group (EFD / shock 0.16 mJ /mm²). Outcome measures were visual analogue scale (VAS), Roles and Maudsley (RM) score and American Orthopedic Foot and ankle – hind Foot scale (AOFAS). Follow up was carried out 1 week, 1 month and 3 months after ESWT.

Results

Significant VAS, RM score and AOFAS improvements were observed in both groups ($P < 0.10$). Group 2 showed significant improvement after fewer number of sessions than in group 1.

Conclusion

Therapeutic effect might disclose a dose – related relationship, therefore EFD and times of sessions are considerable factors when treating with ESWT.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0890

EFFICACY OF HIGH-POWER LASER IN MITIGATING PAIN AND IMPROVING FUNCTIONS OF PATIENTS WITH PATELLOFEMORAL PAIN SYNDROME: A DOUBLE- BLIND AND RANDOMIZED-CONTROLLED TRIAL

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Introduction/Background

PFPS is one of the most common musculoskeletal disorders in active young adults. In this paper, a double-blind and RCT for assessing the effectiveness of high-power (up to 12W) 1064 nm LASER therapy on patients with PFPS is carried out.

Material and Method

40 patients were randomly allocated to two treatment groups. Group B patients underwent HPLT. Placebo laser was implemented on Group A patients. Both groups had the same exercise therapy programs. The group codes of patients were not revealed to subjects and data analyzer until the completion of study. The criteria against which patients were by Kujala, WOMAC and VAS questionnaires. These questionnaires were completed at three points during the study; at the beginning of the study and one month and three months after the start of the study.

Results

Within-group analyses indicated significant improvements in respect to all measurements where pre-therapy and post-therapy comparisons were conducted in both groups ($P < 0.05$). On the other hand, between-group comparisons did not reveal any statistically significant difference regarding the evaluative criteria ($P > 0.05$) except for pain VAS ($P < 0.05$). From VAS viewpoint, HPLT was significantly more effective than placebo laser in mitigating patient pains.

Conclusion

It was concluded that both HPLT and placebo laser treatments accompanied by appropriate exercise therapy programs had a significant impact on mitigating pain and improving functions of patients with PTFPS . Also, it was observed that HPLT outperformed placebo laser with respect to all criteria though the differences were proved to be statistically significant only for VAS measurements.

Keywords

patellofemoral pain syndrome;high power laser;exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0921

BOTULINUM TOXIN TYPE A INJECTION FOR HALLUX VALGUS

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Introduction/Background

Hallux valgus is the most common deformity of forefoot which is often associated with pain and disability . While it can be treated with conservative methods , most of patients may become exhausted with those maneuvers. Studies showed Muscle imbalance in abductor and adductor muscles of the big toe may be the reason or the result of joint deformity. Therefore in this study we evaluated the effect of Electromyographic (EMG) and sonographic guided Botulinum Toxin type A (BTX-A) injection of Adductor Hallucis muscle on painful hallux valgus.

Material and Method

Twenty two patients having painful Hallux valgus in at least one foot have participated. Patients received electromyographic guided intramuscular injection of 100 IU of BTX-A to the oblique and transverse heads of the adductor hallucis muscle. They were assessed for Foot Function Index (FFI) and first metatarsophalangeal (1st MTP) angle in standing anteroposterior radiograph of foot at baseline, one week, two and six months after treatment.

Results

Regarding to FFI , BTX-A reduced pain and disability in two months ($p < 0.001$) and six months evaluation after injection ($p < 0.05$). First MTP angle reduced significantly at two months assessment ($p < 0.05$), but there were no significant changes in six months evaluation ($p > 0.05$)

Conclusion

BTX-A injection resulted in a marked short-term improvement of pain and disability in patients with hallux valgus.

Keywords

Hallux valgus; Botulinum toxin; Injection

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-0956

RESECTION OF NEUROGENIC HETEROTOPIC OSSIFICATION (NHO) OF THE HIP, LESSONS LEARNED AFTER 377 PROCEDURES

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Introduction/Background

Neurogenic heterotopic ossification (NHO) of the hip is secondary to neurologic lesions such as cranial trauma, stroke, medullary injury or cerebral anoxia. Our practice of heterotopic ossification surgery has progressed during our experience, becoming better adapted to the pathology and to the patients, who are often fragile and show neurologic sequelae. We want to give a feedback of the lessons we learned in the Raymond Poincare Hospital about NHO resection.

Material and Method

377 first-line procedures were performed for heterotopic ossification of the hip between 1993 and November 2016. Surgery requires rigorous organization and planning, preferably in a rehabilitation department, by a multidisciplinary team experienced in this pathology. Preoperative work-up should include contrast-enhanced CT; scintigraphy is non-contributive. Indications for surgery are decided in a multidisciplinary team meeting, with a contract laying out expected functional gain. It is this contract that determines the extent of resection, without seeking complete resection, which would incur an increased risk of complications.

Results

The surgical approach and resection strategy depend on lesion location and any resulting neurovascular compression. In our own series, 3,5% of patients required revision for recurrence. The most common complications is infection: 10.3% in our experience, with wide variation according to location. No adjuvant treatments have demonstrated efficacy against recurrence.

Conclusion

Surgical treatment of heterotopic ossification of the hip is reliable when performed in an adapted center by an experienced multidisciplinary team. Clinical results are satisfactory. There remains, however, a risk of sepsis, especially with medullary injuries.

Keywords

neurogenic heterotopic ossification;hip;surgery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-1138

PERSONALIZED REHABILITATION OF PATIENTS WITH JOINT DISEASES

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Introduction/Background

The research was aimed at development and evidences of personalized rehabilitation of patients with inflammatory and degenerative joint diseases.

Material and Method

The object of the study was 479 patients with joint diseases with comorbidity (arterial hypertension, obesity). Methods were clinical, psychophysical, sociometric survey, and assessment according to the categories of the International Classification of Functioning, Disability and Health.

Results

The set of rehabilitation technologies (physical exercises, hydrokinesis therapy, climatomotor modes, complex modulated low-frequency magnetotherapy) resulted in medical effects manifested by decrease in clinical complaints, relief of joint and inflammatory syndromes, improvement of motor activity, parameters of hemodynamics, somatic metrics, psychophysiological condition.

The most pronounced therapeutic rehabilitation outcomes were due to the initial functional properties of the affected joints with osteoarthritis and rheumatoid arthritis without co-pathology, the hemodynamic status of the patient with joint diseases in combination with hypertension, body weight and lipid morphogenesis, with osteoarthritis combined with obesity.

The effectiveness of rehabilitation of patients was represented by initial indicators of the patient's clinical status, functional properties of joints, systemic hemodynamics, lipid profile. Rehabilitation of patients with degenerative and inflammatory joint diseases improved the categorical profile of the rehabilitation potential of patients significantly, and was effective in 95% of patients with osteoarthritis, 97% of patients with osteoarthritis combined with hypertension, 95% of patients with osteoarthritis in combination with obesity, 91% of patients with

rheumatoid arthritis and 90% of patients with rheumatoid arthritis in combination with hypertension. **Conclusion**

The concept of personalized rehabilitation of patients with inflammatory and degenerative joint diseases, based on the evaluation of structural, functional and socially adaptive features of the patient enables to determine the effectiveness of rehabilitation technologies and to recommend their differentiated use in patients with osteoarthritis and rheumatoid arthritis in isolated and combined forms.

Keywords

rehabilitation; joint disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-1251

SHORT-TERM OUTCOMES OF LOCAL STEROID INJECTION IN CARPAL TUNNEL SYNDROME: TRIAMCINOLONE (20 AND 40 MG) VERSUS METHYL PREDNISOLONE (20 AND 40 MG)

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Introduction/Background

Local steroid injection is one of the most common methods to treat carpal tunnel syndrome (CTS). However, the most efficient substance and the appropriate dosage are not clearly known. In current clinical trial, the outcomes of treating CTS with local injection of triamcinolone 20 and 40 mg and methyl prednisolone 20 and 40 mg were compared.

Material and Method

There were 73 patients with mild or moderate CTS assigned to 4 groups randomly: triamcinolone 20 mg (T-20 group; 18 patients), triamcinolone 40 mg (T-40 group; 20 patients), methyl prednisolone 20 mg (M-20 group; 17 patients) and methyl prednisolone 40 mg (M-40 group; 18 patients). Before and 3 months after injection the following measurements were performed: SNAP Amp and latency, CMAP Amp and latency, NCV, pain free grip (PFG), pain utilizing visual analogue scale and Boston CTS questionnaire including symptom severity scale (SSS) and functional severity scale (FSS).

Results

Before the treatment, all of the variables were the same in four groups. SNAP latency, CMAP Amp and latency, NCV, PFG, pain severity, SSS and FSS improved after treatment in all of the groups ($P < 0.05$). SNAP Amp did not change significantly after treatment in M-20 group. SNAP Amp was significantly higher in M-40 group compared to M-20 group ($P = 0.024$). Furthermore, FSS was significantly lower in T-40 group compared to T-20 group ($p = 0.009$). There was no significant difference between four groups in other variables after treatment.

Conclusion

In short-term follow up, local steroid injection was associated with improvement in functional status, grip strength, symptoms and electrodiagnostic studies (SNAP Amp and latency, CMAP Amp and latency, NCV). However, the authors suggest injection of methyl prednisolone and triamcinolone 40 mg due to significantly better outcomes in some variables compared to prednisolone and triamcinolone 20 mg.

Keywords

carpal tunnel syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-1386

PRIMARY HYDATIC CYST IN MUSCLES : A CASE REPORT

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Introduction/Background

Primary muscle hydatidosis is very rare, accounting for less than 1% of hydatid cyst locations. It is often asymptomatic and progresses slowly, which can delay diagnosis.

Material and Method

We report the rare observation to describe clinical and radiological aspects as well as the therapeutic options, particularly surgery, for muscular echinococcus disease.

Results

A 30-year-old man consulting for thigh tumefaction that had appeared 11 months before, progressively increasing in volume. The patient was afebrile, in good general health, presenting a voluminous anterior mass of the left thigh. The clinical symptomatology is insidious and nonspecific. It is a painless non-inflammatory tumefaction progressively increasing in volume over several years and no signs of nerve or vascular compression. Ultrasonography, and Magnetic resonance imaging (MRI) is helpful in diagnosis, since it reveals a very suggestive of hydatid cyst of the quadriceps femoris muscles and demonstrates the relationship between cysts and adjacent structures. The patient was treated with monoblock excision of the cyst with no complications in the immediate follow-up period. The histological examination confirmed the diagnosis of muscular hydatid cyst.

Conclusion

Hydatid cysts are rarely found in muscles, even in highly endemic zones. The diagnosis must nevertheless be entertained depending on the clinical and endemic context. Ultrasonography, and accessorially magnetic resonance imaging, are the exploration tools of choice to confirm the diagnosis before surgery and avoid puncture. Pericystectomy is the first-line treatment, but the best means to control hydatid disease, whatever its location, remains prevention.

Keywords

Hydatid cyst; Quadriceps femoris muscles ;Imagery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-1427

BENEFITS OF BOTULINUM TOXIN TYPE A IN SHOULDER DYSFUNCTION AND REGIONAL PAIN IN ASSISTANCE TO RECONSTRUCTIVE MAMMARY SURGERY: A PILOT STUDY.

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Introduction/Background

Shoulder dysfunction and regional pain in patients undergoing breast reconstruction with prostheses due to breast cancer is a long-term disabling condition. To evaluate the effect of botulinum toxin type A 60 U im regarding the volume differences of the affected arm before and after treatment.

Material and Method

Descriptive longitudinal study of a rehabilitation program during the reconstructive process addressed to women undergoing mastectomy and lymphadenectomy. All patients performed a structured program of group exercise before infiltration. Subsequently, if pain persisted and functional joint range decreased, a 60 U injection of botulinum toxin type A (Xeomin®) was performed in pectoralis major with ultrasound elastography. The difference in volume, distal force measured by claw dynamometry and VAS symptoms (pain, heaviness, tightness and hardness) was evaluated before (T0), at one (T1) and at six months (T2) of treatment, as well as changes in ultrasound images. SPSS 16.0 statistic program was used to compare paired data means (IC 95% alfa 0.005)

Results

Ten patients were selected. Baseline characteristics were: mean average age 51.1 years. Nine right-handed, nine with right arm affected (8 right, 1 bilateral). They all presented significant improvements regarding pain, heaviness, tightness and hardness (T0-T1) that remained at 6 months for tightness and hardness (T0-T2). They did not present significant differences in regard to volume difference or distal claw force after infiltration

Conclusion

The use of botulinum toxin at doses of 60 U im in pectoralis major has been shown to be a safe technique for lymphedema, improving symptoms during the first month post infiltration without decreasing distal claw force.

Keywords

botulinum toxin ;Reconstructive mammary surgery;Breast cancer

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-1802

RELIABILITY STUDY OF SUB-ACROMIAL IMPINGEMENT TESTS INCLUDING A NEW CLINICAL MANOEUVRE

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Introduction/Background

Neer, Hawkins, and Yocum tests are used in clinical practice to detect sub-acromial impingement. Their reliability has been few investigated. The goal of the study was to investigate reliability of Neer, Hawkins and Yocum tests. We also assessed an original manoeuvre.

Material and Method

Patients with shoulder pain due to degenerative rotator cuff disease were prospectively included. They were twice assessed at one week interval by two independent observers. Results of Neer, Hawkins and Yocum tests were recorded as positive or not. Results of an original manoeuvre (OM) including elevation in medial rotation followed by lateral one were also. Intra- and inter-observer reliability was assessed. Criteria of reliability were the percentage of agreement and the kappa coefficient of concordance with 95% confidence interval (CI). Kappa coefficient indicated moderate concordance if > 0.4, good > 0.61.

Results

34 Patients were included: age 60±11, ratio F/M 26/8, pain duration 27±67 months. For intra-observer reliability, agreement was 80-88% with Neer, Hawkins and Yocum tests. It was 80% with OM. Using kappa coefficient, intra-observer reliability was poor with Neer test (0.34 [-0.1;1]) and moderate with Hawkins (0.56 [0;.9]), Yocum (0.48 [0;0.8]) and OM (0.6 [0.2;0.9]). For inter-observer reliability, agreement was 73-88% with Neer, Hawkins and Yocum tests. It was 79% with OM. Using kappa coefficient, inter-observer reliability was poor with Yocum test (0.35 [0;0.7]), moderate with Hawkins (0.54 [0.2;0.8]) and OM (0.58 [0.2;0.8]), and good with Neer (0.64 [0.2;0.9]).

Conclusion

Neer test was impaired by poor intra-observer reliability and Yocum test was impaired by poor inter-observer reliability. Hawkins test and OM had a balanced profile of moderate reliability.

There was a trend to higher values with OM. We underlined there an interesting profile of reliability of an original clinical manoeuvre to detect sub-acromial impingement.

Keywords

subacromial impingement;rotator cuff

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-1877

THE RELATIONSHIP BETWEEN TRANSVERSUS ABDOMINIS MUSCLE THICKNESS WITH STATIC AND DYNAMIC BALANCE IN HEALTHY ADULTS

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Introduction/Background

Current evidence suggests that enhanced core stability increase lower extremity function and promote postural stability. Thus, the purpose of this study was to investigate relationships between ultrasonographic thickness of transversus abdominis muscle (TrA), which is one of the core muscle, and static and dynamic balance and core endurance in healthy collegiate males.

Material and Method

Healthy collegiate males who had not suffered any orthopedic injury in the past year were enrolled the study. The thickness of TrA was measured at rest and during contraction on both dominant and nondominant side using ultrasound. Also percentage of change in TrA thickness was calculated as $[(\text{thickness}(\text{contraction}) - \text{thickness}(\text{rest})) / \text{thickness}(\text{rest})] \times 100$. The static and dynamic balance parameters were evaluated with a balance system (Korebalance Mobile System). Core endurance (CE) was also assessed using trunk extensor test, bilateral side bridge tests and the core muscle strength and stability test.

Results

Sixty males were assessed during the study. Their mean age was 22.20 ± 1.77 years and mean body mass index was 23.53 ± 2.93 kg/m². Dominant side TrA muscle thickness at rest was correlated with dynamic balance ($r = -0.319$, $p = 0.013$) whereas no correlation for dominant side TrA muscle thickness at contraction. Nondominant side TrA muscle thickness at rest was correlated with core endurance ($r = 0.350$, $p = 0.006$) whereas no correlation for nondominant side TrA muscle thickness at contraction. Percentage of change in dominant side TrA thickness was correlated with dynamic balance ($r = 0.464$, $p = 0.000$). Percentage of change in nondominant side TrA thickness was correlated with core endurance ($r = -0.361$, $p = 0.005$).

Conclusion

According to our results, muscle thickness of TrA is associated with postural balance and core endurance. Training to increase the muscle mass of the TrA would be useful to improve balance parameters. Further prospective studies are warranted to investigate the effects of the training of TrA and core endurance on postural balance and athletic performance.

Keywords

Transversus abdominis; Ultrasonography; Balance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-1982

A CASE OF DIFFERENTIAL DIAGNOSIS OF POMPE DISEASE

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Introduction/Background

Glycogen storage disease type II or Pompe disease, is an autosomal recessive metabolic disorder which damages muscle and nerve cells. It is caused by an accumulation of glycogen in the lysosome due to deficiency of the lysosomal acid alpha-glucosidase enzyme. It has two forms: infantile-onset Pompe disease which begins within a few months of birth, and a late-onset type of Pompe disease may not become apparent until later in childhood, adolescence, or adulthood

Material and Method

Our case is a 50-year-old female patient, with a clinical history of generalized weakness. Which began in the lower limbs, and became progressive. Everything started about 20 years ago and the diagnosis of severe sensitive and motor polyneuropathy was made. However, the progression of the disease has been slow and the weakness was more marked at a proximal level, making walking and activities of daily life difficult.

Results

Given the diagnostic doubts, we decided to perform a filter paper test for Pompe disease, obtaining altered results that showed a deficiency in the acid alpha glucosidase enzyme. We also carried out confirmatory tests with enzymatic study on leukocytes with samples of 0.08 (nmol / mgprot / h) with reference values of (0.4 - 1.43).

Conclusion

Performing the diagnosis of Pompe disease. In our country we do not have the immediacy of genetic studies in order to reconfirm the sample, however we consider that clinically corresponds to the disease and is a difference diagnosis to take into account. We hope in the future to perform functional evaluations with the medical therapy initiated.

Keywords

Pompe;Disease;Glycogen

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-2042

PARSONAGE TURNER SYNDROME - A RARE AND INCAPACITATING ENTITY

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Introduction/Background

Parsonage-Turner syndrome (PTS) is an uncommon disorder characterized by rapid onset of severe pain mainly in shoulder, followed by wasting and weakness of the muscles. The exact etiology is unknown, but it's believed to be immune-mediated response. The diagnose is clinical and can be confirmed by electromyography (EMG). The treatment includes pain management strategies and ways to preserve muscle strength and range of motion (ROM) of the affected joints.

Material and Method

We report the case of a male, that in the beginning of April (3 days after being submitted to a cholecystectomy) initiated sharp pain, localized to the shoulder, associated with weakness on the ipsilateral arm and gradual limitation of the normal ROM of the joint.

In July/2017 he resorted a neurologist, having performed EMG, which result was compatible with C5-C6 and L5-S1 radiculopathy and a cervical/shoulder CT-scan that showed no significant changes. A month later, he repeated EMG showing signs supporting the clinical diagnose of PTS.

In October/2017, he was observed by Physical Medicine and Rehabilitation presenting atrophy of several muscles of shoulder, right scapular dyskinesia, limitation in active abduction and flexion of the right shoulder, positive jobe test, muscle strenght grade 4 (Medical Reserch Council Scale) in all muscles of the shoulder, pain intensity of 2 out of 10, at rest.

Results

Rehabilitation program was initiated with the objective of analgesia, muscle strengthening and gain in ROM. Two months later we notice improvement of the muscles atrophy, improvement in the right scapular dyskinesia, no ROM limitation, muscle tests negative, muscle strength grade 5 and pain intensity 0.

Conclusion

Clinicians should be aware of this rare entity for rapid detection and treatment, to avoid the installation of muscle atrophies, contracture and limitation of ROM. Since pain is excruciating in some cases, we must know all sorts of pain management, including the use of physical agents.

Keywords

Parsonage-Turner Syndrome ;Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-2103

CLINICAL PROFILE OF INDOOR PATIENTS IN THE DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION, CHITTAGONG MEDICAL COLLEGE HOSPITAL

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Introduction/Background

Abstract Background: This observational study done on the indoor patients of department of Physical Medicine and Rehabilitation, Chittagong Medical College Hospital, admitted during the year 2011. The objective of this study was to see the most prevalent diseases admitted in our department.

Material and Method

Methods: Participants (225) were all the patients admitted during the period of 2011. Patients admitted more than once were recorded once only. Patient's data were taken from hospital records.

Results

Results: Spondyloarthropathies (SpA) comprised 18.66% of the patients. Total patient of SpA was 42. Among them AS was 47.62%. Prolapsed lumbar disk (PLID) patients constituted 12.44% (28) of hospital admission. Twenty one (9.33%) patients suffered from other causes lumbago-sciatica. Admitted RA patient number were 12 (5.33%) during this year. Total twelve patients with bone TB (5.33%) were admitted during 2011. Nine TB patients (75% of bone TB) had TB in the hip. Total Stroke patients admitted in that year were 9 (4%). Among them 8 (88.89%) were ischemic

Conclusion

Conclusion: SpA, PLID and other lumbago-sciatica patients comprised the major bulk of the patients in inpatient department of PM&R. Musculoskeletal diseases were the commonest cause of hospital admission for rehabilitation. Neurological causes were next common. Inflammatory musculoskeletal diseases also formed a good number of patients.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-2172

NEUROMUSCULAR REPROGRAMMING IN FEMORO PATELLAR PAIN SYNDROME (FPPS) USING COMBINED MUSCLE CONTRACTIONS.

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Introduction/Background

The main objective of this study is to measure the effect induced by combined muscle contraction of the Quadriceps and rectus femoris (by neuro-muscular reprogramming) on pain phenomena and on the short-term recovery of muscle power. The goal to be achieved for these patients is to reduce the pain phenomena and to modify voluntarily and actively the orientation of their functional mechanical axes.

Material and Method

Evaluation of isokinetic quadriceps strength before and after stretching the injured knee and the healthy knee for 27 patients with FPPS and 12 healthy control subjects (matched). No pathology on the contralateral knee. The evaluation is carried out at 60°/s concentric 120°/s concentric and 30°/s eccentric contraction by an isokinetic dynamometer. After performing the isokinetic tests and evaluating the pain (by EVA), specific contraction work of the quadriceps of the injured knee according to an identical protocol for each patient was performed (3 times).

Results

Our results show a significant effect of these contraction exercises on the pain phenomena of patients in the short term. We obtained after quadriceps contraction a significant decrease in pain -38% and an increase in the strength of +17% for the pathological group. No significant change in the control group. There is a statistical correlation between the decrease of pain and recovery of strength after stretching. This significant decrease in pain associated with an increase in force parameters in only eccentric contraction.

Conclusion

We confirm the effectiveness of quadriceps stretching with slow eccentric contraction in the care of FPPS. These beneficial effects are in favor of a systematic use with muscle building. These results are in favor of a new therapeutic care by using this kind of stretching. The management

of stiffness and neurophysiological components that are directly associated with these phenomena of stiffness during the onset of this syndrome, encourages therapists to continue.

Keywords

neuromotor reprogramming;isokinetic;pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-2265

COGNITIVE BEHAVIORAL THERAPY-BASED EXERCISE FACILITATION METHOD USING THE “IKIIKI REHABILITATION NOTEBOOK” IN PATIENTS WITH INTRACTABLE CHRONIC PAIN

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Introduction/Background

The purpose of this study was to analyze the effectiveness of cognitive behavioral therapy-based exercise facilitation method using the “Ikiiki Rehabilitation Notebook” in patients with intractable chronic pain.

Material and Method

The subjects were 5 males and 9 females (19-77 years of age, mean age 46) with chronic low back, neck or lower extremity pain without specific lesions. Indications for using the notebook were as follows: 1) Numeric Rating Scale (NRS) for pain >3, and 2) the continuity of the pain >3 months. Patients were asked to write in their notebooks daily or once a week regarding their emotion, thought, and exercise routine (muscle exertion, gait distance). Once every 2 weeks, the patients returned to the clinic to go over the notebook/journal. The evaluation contents were NRS, PDAS (Pain Disability Assessment Scale), HADS (Hospital Anxiety and Depression Scale), PCS (Pain Catastrophizing Scale), EQ-5D (EuroQol 5 Dimension), PSEQ (Pain Self Efficacy Questionnaire).

Results

The NRS, PDAS, PCS and EQ-5D, but not HADS and PSEQ, improved significantly 9 months after starting to use the notebook.

Conclusion

The “Rehabilitation Notebook/Journal” is a valuable tool to educate patients about the cause and treatment of pain and to actively facilitate CBT-based exercise.

Keywords

chronic musculoskeletal pain;exercise;cognitive behavioral therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A2.08 Musculoskeletal Conditions - Miscellaneous

ISPR8-2433

MILD TO MODERATE CARPAL TUNNEL SYNDROME (CTS) : DOES PULSED SHORT WAVE DIATHERMY (PSWD) HAVE BETTER EFFICACY THAN TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) ?

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Introduction/Background

To compare the effectiveness of Pulsed Short-Wave Diathermy(PSWD) versus Transcutaneous Electrical Nerve Stimulation (TENS) in the treatment of mild to moderate carpal tunnel syndrome(CTS).

Material and Method

Conducted at a University Hospital in Malaysia between April and July 2017, this prospective comparative interventional study involved a total of 16 wrists in 14 patients with mild to moderate CTS. Using random allocation, group A (n=8) received PSWD and group B (n=8) received TENS twice a week for 6 consecutive weeks. Both groups also received exercise therapy and wrist orthoses. Assessments were done at baseline and at 6 weeks post intervention using Numeric pain rating scale (NRPS) and the Boston Carpal Tunnel Questionnaire (BCTQ) as outcome measures.

Results

Significant improvement in the above outcome measures were noted in group A (PSWD) compared to group B (TENS). The average baseline and final values of BCTQ measured in TENS group were 2.44 and 1.54 respectively while baseline and final values of group PSWD group were 2.69 and 1.36 respectively. The difference in BCTQ of patient who received PSWD and TENS were 1.33 and 0.9 respectively. The higher the difference between baseline and final values of BCTQ indicates better improvement in symptoms and function. NRPS was used to assess pain improvement. The average baseline and final values of NPRS in TENS group were 5.13 and 2.00 respectively. In PSWD treatment group, the values were 5.38 and 0.75 respectively. The outcome differences between both treatment groups were 3.13 in TENS group and 4.63 for PSWD group indicating good pain relief in the later group.

Conclusion

Symptoms outcome, function and pain relief proved more efficacious in PSWD than TENS. Therefore, PSWD could be considered as a treatment option in mild to moderate CTS.

Keywords

Boston Carpal Tunnel Questionnaire, Numeric Pain Rating Scale; Pulsed shortwave diathermy, TENS; Carpal Tunnel Syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2544

INFLUENCE OF BODY COMPOSITION AND MUSCLE STRENGTH ON FUNCTIONAL OUTCOMES IN POSTACUTE STROKE.

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Introduction/Background

Despite skeletal muscle is the main effector organ of disability in stroke, there is a paucity of data on skeletal muscle disorders in stroke. In addition to loss of muscle mass as a result of normal ageing, reduced physical activity, poor nutrition, and hormonal changes can play a role in the development of sarcopenia in stroke. This preliminary study was aimed to determine the influence of body composition and muscle function on functional outcomes in patients with postacute stroke.

Material and Method

Within 2 weeks of stroke onset, 45 subjects (66.1 ± 8.8 ; 32 men) with a first ischemic stroke event were prospectively assessed during in-patient rehabilitation hospitalization. The main variables were fat-free mass and fat-mass (in Kg and as a percentage of reference values) assessed with electrical impedance, body mass index (BMI), maximal isometric handgrip strength of non-paretic upper limb, and functional status assessed with the Barthel Index (BI) at hospital discharge.

Results

According to BMI, patients were classified in low weight ($n=2$), normal weight ($n=10$), overweight ($n=20$) and obesity ($n=13$). Fat-free mass was reduced in 3 patients and fat-mass in 8. Obese patients had lower BI (mean difference: 22.7, 95%CI 8.6-36.8, $p=0.002$, at admission; 14.9 (95% 0.58-29.1, $p=0.042$, at discharge). Twenty-eight patients had reduced strength of the non-paretic handgrip; these patients had lower BI (mean difference 15.2, 95%CI 0.8-29.6, $p=0.039$), but no differences in BI improvements at discharge were detected.

Conclusion

Strength in the non-paretic hand is reduced in 62% of the sample. Obesity and reduced handgrip strength are associated with worse functional status during stay in a neurorehabilitation ward. Further studies are required to assess the influence of body composition and muscle strength on functional outcomes.

Keywords

stroke;handgrip strength ;body composition

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0014

LONG-TERM FUNCTIONAL OUTCOMES OF STROKE PATIENTS

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Introduction/Background

Predictors of functional outcomes of stroke patients are important for providing efficient post-stroke care according to the degree of impairment. The authors attempted to use the data that are routinely recorded in acute stroke care to determine long-term functional outcomes of stroke patients.

Material and Method

This analytic study examined the long-term functional outcomes of stroke patients admitted to Maharat Nakhon Ratchasima Hospital with acute stroke between January 1 and December 31, 2015. We recorded patients' characteristic data and functional level on admission using Barthel index (BI) score. Long-term functional outcomes were evaluated with BI score at least 6 months after stroke onset by telephone interview and medical records. The predictors of long-term functional outcomes were determined with stepwise multiple logistic regression analysis.

Results

Of the 907 patients, 191 (21%) died during acute stroke admission, 117 (13%) died after and 210 (23%) were lost to follow-up and could not be contacted. There were 5 variables significantly correlated with good functional outcomes after multiple logistic regression analysis. Subjects aged 55 or under, male, admission BI score 30-100, muscle power grade 0-1 and with consciousness problems had adjusted odds ratios of 12.56, 3.78, 3.33, 0.28 and 0.24 respectively. Four variables correlated with poor functional outcomes were impaired consciousness, age over 65, more than 3 comorbidities, and admission BI score of 0-30 had adjusted odds ratios of 4.83, 4.08, 2.39, and 1.89 respectively.

Conclusion

Long-term functional outcomes of stroke patients were associated with age, consciousness, gender, muscle power, admission BI score and number of comorbidities.

Keywords

stroke;predictors;long-term functional outcomes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2554

IMPACT OF THE USE OF ACUPUNCTURE ON THE NEUROLOGICAL STATUS OF PATIENTS AFTER ISCHEMIC STROKE.

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Introduction/Background

Rehabilitation of patients after ischemic stroke should begin as soon as possible. Some centers use alternative treatments, including acupuncture. The aim of the study was to assess the effect of acupuncture on the normalization of muscle tone and improvement of muscle strength of paralyzed limbs.

Material and Method

The study included 42 people with ischemic stroke, aged from 31 to 86, hospitalized at the Rehabilitation Clinic. Rehabilitation was started on the 10th day after stroke. The persons were divided into two groups: I group (20 people) with the standard rehabilitation and II group (22 people) in which additional acupuncture was performed every other day. At the beginning and at the end of the rehabilitation the assessment of muscle tone using the Ashworth scale and muscle strength using the MRC scale was carried out. The duration of the rehabilitation- three weeks.

Results

The slight normalization of muscle tone in the Ashworth scale in the upper and lower limb in the group in with acupuncture was achieved. In the upper limb the difference was 0.04 points, in the lower limb 0.11 points. In the assessment of muscular strength in the MRC scale of the upper and lower limb, higher muscle strength scores were obtained in all muscle groups in participants with acupuncture. The highest difference was noted in flexors of the shoulder - 0.73 point and shoulder abductors- 0.69 point. In the lower extremity, the largest differences were in the hip flexors - 0.61 points, knee flexors and knee extensors - 0.57 points each.

Conclusion

In the group where acupuncture was additionally used, both in the muscle tension normalization as well as muscle strength, better results were obtained than in group with standard rehabilitation only. Differences in both groups were not statistically significant, probable due to small research groups. Further research is required.

Keywords

ischemic stroke; acupuncture; rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2570

EFFECTS OF PHYSICAL THERAPY ON POSTURAL IMBALANCE DEPENDING ON TIME SINCE STROKE: A META-ANALYSIS.

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Introduction/Background

Several studies highlight that the physical therapy (PT) timing is important in rehabilitation process from physical disability after stroke. The purpose of this meta-analysis was to investigate the effect of all PT on balance after stroke and to evaluate whether changes are related to stroke stage of recovering (acute and sub-acute (ASS) or chronic stage (CS)).

Material and Method

Randomised controlled trials (RCT), without language restriction, until October 2015, assessing the Berg Balance Scale (BBS), the Postural Assessment Scale for Stroke, the posturographic parameters in static condition and measures of independence in activities of daily living were included. Two independent authors (AH and JDM) led this selection following the Cochrane recommendations (Hugues *et al.*, 2017).

Results

193 parallel and crossover RCT from 9337 records were included, involving 8018 subjects (study sample: mean 41,5 (SD 49.7) subjects, age: pooled mean 61,7 (pooled SD 12.78) years). A significant difference in favor of PT compared to no treatment was immediately found after the intervention for the BBS at ASS and CS (ASS: 11 studies, mean difference (MD) 3.14; 95% confidence interval (CI) [2.21; 4.06]. CS: 12 studies, MD 1.31; 95% CI [0.79; 1.82]. Mixed: 2 studies, MD 0.89; 95% CI [-0.63; 2.40]).

Only at CS, PT is more effective than sham treatment or usual care immediately after the intervention for the BBS (ASS: 12 studies, MD 2.21; 95% CI [-0.37; 4.78]. CS: 13 studies, MD 2.50; 95% CI [1.00; 3.99]. Mixed: 2 studies, MD -1.17; 95% CI [-2.94; 0.60]).

Conclusion

These results show immediately after the intervention: i) that balance can be improved by PT compared to no treatment whatever the stage of stroke, and ii) an improvement of balance by PT compared to sham treatment or usual care at chronic stage.

Keywords

Stroke;Meta-analysis;Physical therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2571

EFFECTS OF PHYSICAL THERAPIES AIMING DIRECTLY OR INDIRECTLY AT THE RECOVERY OF BALANCE AFTER STROKE. A META-ANALYSIS

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Introduction/Background

After stroke, standing balance is usually described as a predictor of functional recovery. Regarding literature, various type of physical therapy (PT) is used to improve balance. The aim of this meta-analysis is to evaluate the effects of PT directly focused on balance training (DFBT) and theses of PT indirectly focused on balance training (IFBT) on balance after stroke.

Material and Method

Randomised controlled trials (RCT), without language restriction, until October 2015, assessing the Berg Balance Scale (BBS), the Postural Assessment Scale for Stroke, the posturographic parameters in static condition and measures of independence in activities of daily living were included. Two independent authors (AH and JDM) led this selection following the Cochrane recommendations (Hugues *et al.*, 2017).

Results

193 parallel and crossover RCT from 9337 records were included, involving 8018 subjects (study sample: mean 41.5 (SD 49.7) subjects, age: pooled mean 61.7 (pooled SD 12.78) years). A significant difference in favor of PT compared to no treatment was immediately found after the intervention for the BBS (DFBT: 7 studies, mean difference (MD) 1.38; 95% confidence interval (CI) [0.71; 2.05]. IFBT: 18 studies, MD 1.88; 95% CI [1.31; 2.45]). Only IFBT PT is more effective than sham treatment or usual care immediately after the intervention for the BBS (DFBT: 1 study, MD 5.33; 95% CI [-4.68; 15.34]. IFBT: 26 studies, MD 1.85; 95% CI [0.67; 3.03]).

Conclusion

These results show immediately after the intervention: i) that balance can be improved by PT aiming directly or indirectly at the recovery of balance compared to no treatment, and ii) an improvement of balance by PT indirectly focused on the recovery of balance compared to sham treatment or usual care.

Keywords

Stroke;Meta-analysis;Physical therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2582

KINEMATIC ANALYSIS OF REAL AND VIRTUAL DART GAMES PLAYED BY STROKE PATIENTS: A DECISION TREE FOR NEUROREHABILITATION

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Introduction/Background

Stroke is a pathology that causes several motor and functional impairments. The aim of the study was to realize a kinematic analysis of the elbow joint during real and virtual dart games and to construct decision trees for neurorehabilitation.

Material and Method

The sample consisted of 11 hemiparetic patients (8 men), mean age of 51±7 years. Participants made 15 attempts in two dart games (real and virtual). Elbow kinematics was video recorded during the dart throwing phase. Analysis was conducted using Kinovea software, paired Student's t-test and Classification Regression Trees.

Results

Patients exhibited a higher elbow extension angle ($P = 0.008$) and greater velocity in the real game ($P = 0.005$). In the virtual game patients had longer throwing time ($P = 0.021$) and better performance (fewer absolute errors) ($P < 0.0001$). The decision tree showed that there was a balance between the frequency of patients who played the virtual and real game and displayed elbow extension angles above 157° . Similar frequencies between velocity ≤ 29 cm/s and >87 cm/s for the virtual and real games were found. In regard to dart throwing time, there was greater frequency of patients with time ≤ 1.37 s for the real game and >1.37 s for the virtual game.

Conclusion

The construction of decision trees showed evidence that the patients can evolve satisfactorily in terms of angulation, velocity and time during virtual game training. Thus, we propose that the virtual dart game may be a useful tool in the neurorehabilitation of patients with chronic stroke, in line with therapeutic objectives and the patient's clinical condition.

Keywords

stroke;virtual reality;kinematic analysis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0073

ABSTRACT EDITED - RESULTS OF EARLY REHABILITATION IN FUNCTIONAL TRAINING OF PATIENTS AFTER AN ACUTE STROKE

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Introduction/Background

Stroke causes serious damage and disability which presents a major problem both for the diseased person, for the family as well as for society. Aim of our paper was to present results of early rehabilitation in functional training of patients after an acute stroke.

Material and Method

Prospective study included 90 patients (62 male and 28 female) age 45-78, average age 63.5, treated in SB for cerebrovascular disease "Sveti Sava" Belgrade after acute stroke. Functional independence scale (FIM) and Berg Balance Scale (BBS) were used to evaluate functional recovery. Patients were evaluated at the beginning of treatment (Measurement A), and after 14 days (Measurement B) and 60 days (Measurement C) of treatment. Early rehabilitation consisted of exercise program aimed at prevention of respiratory, vascular and locomotor complications. Program was individually conceived and implemented twice a day, each day, provided that the patient was hemodynamically stable and supervised by an ordinate physician.

Results

FIM and BBS scores increase over time, with a greater increase in the FIM score (Table 1). At the beginning the coefficient of correlation of FIM and BBS scores was higher, while it was slightly lower after 14 and 60 days of treatment (Table 2).

Table 1. Mean values of FIM and BBS scores	Measurement A	Measurement B	Measurement C
FIM (SV±SD)	63,34±5,42	80,20±5,98	97,43±6,87
BBS (SV±SD)	34,94±2,03	40,32±1,73	45,40±3,34

Table 2. Correlation between FIM and BBS scores at different measurement times	FIM/BBS (Measurement A)	FIM/BBS (Measurement B)	FIM/BBS (Measurement C)
R (correlation coefficient)	0,6888	0,6698	0,6612

Conclusion

Early rehabilitation program is of exceptional importance in the functional recovery of patients after the stroke. Our results suggest that in the process of functional recovery more important monitoring parameter is FIM score whose changes are more pronounced in relation to the BBS score.

Keywords

acute stroke;early rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2607

DEPRESSION IN ISCHEMIC STROKE

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Introduction/Background

Depression is the most frequent and recovery limiting affective disorder after a stroke. It is usually underdiagnosed in more than half of the cases. Furthermore, patients who suffer post-stroke depression have a lower functional status and greater cognitive impairment with an increased mortality risk.

Material and Method

An observational prospective study was carried out to assess the evolution of depression in a cohort of 100 patients diagnosed with ischemic stroke during 2013. Ischemic stroke severity was evaluated by the NIHSS Scale.

Sociodemographic, etiological and clinical characteristics and evolution of depression were evaluated using the Hamilton Depression Scale during follow-up: at discharge, one and three months after discharge.

Results

Mean age of the cohort was 72.43 years, evenly distributed by sex. 53.49% of the patients suffered from depression one month after hospital discharge dropping to 7% by the third month. The severity of the depression also decreased on the third month.

The association between the severity of the stroke at admission and the severity of depression was not found to be statistically significant. However, an association between the severity of stroke at discharge and the severity of depression at the 3rd month was found ($p = 0.04$).

In addition, a discharge to home versus to a medium-stay unit was associated with an improve in depression recovery at the 3rd month ($p=0.008$).

Conclusion

Our results show that higher severity of stroke was associated with a higher severity of depression and that a better recovery of the depression was reached in patients who went home directly after discharge.

Early detection and treatment of post-stroke depression is necessary to improve functional recovery and rehabilitation of patients.

Keywords

depression;stroke

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0094

RELIABILITY AND VALIDITY OF ARM FUNCTION ASSESSMENT FOR THE FUGL-MEYER ASSESSMENT WITH A JAPANESE GUIDELINE

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Introduction/Background

The Fugl-Meyer Assessment (FMA) is widely used in stroke research as a gold standard. However, the FMA has not been used in general clinical practice in Japan, which may be related to that the FMA was not translated in the standardized way (including forward translation and back translation). Against the background of linguistic and cultural differences, we translated the standardized FMA into Japanese and adapted it for use in Japan. The aim of the present study is to assess its reliability and validity for the FMA with a Japanese guideline.

Material and Method

A prospective single-center study involving 30 patients with mild-to-severe hemiparesis was conducted. This study was registered in 2016 as a pre-initiation condition. A standardized guidebook for the FMA test administration and scoring was used. The FMA and the Action Research Arm Test, the Box-and-Block Test, and the Motor Activity Log were employed. The simultaneous/non-simultaneous inter-rater reliability and the criterion-referenced validity were assessed in the following ways: the intraclass correlation coefficient (ICC) and the Spearman's rank-order correlation coefficient (Spearman's rho).

Results

The ICC for the simultaneous and the non-simultaneous reliability in the motor section were 0.999 (0.997–0.999, $P < 0.001$) and 0.983 (0.928–0.994, $P < 0.001$). The Spearman's rho for the validity in the motor section ranged from 0.93 to 0.95 ($P < 0.05$).

Conclusion

The FMA with a Japanese guideline reliably assesses the affected upper extremities in patients with hemiparesis after stroke.

Keywords

Fugl-Meyer Assessment; translation/adaptation; reproducibility of results

Conflict of interest

Disclosure statement:

This research was supported by Teijin Pharma Limited (Tokyo, Japan). Mr. Takebayashi serves as a consultant to Teijin Pharma Limited.

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ISPR8-0098

ASSESSING UPPER LIMB FUNCTION: TRANSCULTURAL ADAPTATION AND VALIDATION OF THE PORTUGUESE VERSION OF THE STROKE UPPER LIMB CAPACITY SCALE

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Introduction/Background

Background: Brachial hemiparesis is one of the most frequent sequelae of stroke, leading to important functional disability given the role of the upper limb in executing activities of daily living (ADL). The Stroke Upper Limb Capacity Scale (SULCS) is a stroke-specific assessment instrument that evaluates functional capacity of the upper limb based on the execution of 10 tasks. The objective of this study is the transcultural adaptation and psychometric validation of the Portuguese version of the SULCS.

Material and Method

Methods: A Portuguese version of the SULCS was developed, using the process of forward-backward translation, after authorisation from the author of the original scale. Then, a multicentre study was conducted in Portuguese stroke patients (n=122) to validate the psychometric properties of the instrument. The relationship between sociodemographic and clinical characteristics was used to test construct validity. The relationship between SULCS scores and other instruments was used to test criterion validity.

Results

Results: Semantic and linguistic adaptation of the SULCS was executed without substantial issues and allowed the development of a Portuguese version. The application of this instrument suggested the existence of ceiling effect (19.7% of participants with maximum score). Reliability was demonstrated through the intraclass correlation coefficient of 0.98. As for construct validity, SULCS was sensible to muscle tone and aphasia. SULCS classification impacted the scores of the Motor Evaluation Scale for Upper Extremity in Stroke (MESUPES) and the Stroke Impact Scale (SIS).

Conclusion

Conclusions: The present version of SULCS shows valid and reliable cultural adaptation, with good reliability and stability.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2620

THE INFLUENCE OF COMPREHENSIVE REHABILITATION ON BALANCE DISORDERS AND FUNCTIONAL STATUS OF PATIENTS AFTER STROKE

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Introduction/Background

The aim of this study is to determine the role of comprehensive rehabilitation on balance disorders and functional status of patients after stroke.

Material and Method

The research was carried out at the Municipal Medical Center Dr. K. Jonscher in Lodz at the Department of Neurological Rehabilitation among randomly selected people after stroke. The study involved 30 patients, including 11 women and 19 men, the average age was 62 years. The results of the control group, which consisted of 30 people, 21 women and 9 men with an average age of 23.1, were also analyzed. The study included people who were able to take up a standing position in 2 x 30 seconds.

In all patients, a body balance test was carried out twice on the CQ-Stab computer stabilization platform by CQ Elektronik System, before and after the rehabilitation. Results obtained after rehabilitation were compared with the results of the study before the rehabilitation and the results of people from the control group. All patients from the study group underwent a rehabilitation program including physical therapy and kinesitherapy according to the individual needs of the patient.

Results

The average right and left deflections with open eyes before the rehabilitation among patients after stroke was 4.51mm, and after the comprehensive rehabilitation 3.39mm and in the healthy group 3.30mm.

The average backwards and downwards tilts with open eyes before and after rehabilitation was respectively 4.01mm, 3.25mm, and 4.83mm in the control group.

The average right and left deflections with closed eyes before rehabilitation was 5.76 mm, after rehabilitation 3.97 mm and in the control group 2.28 mm, while forwards and backwards: before: 5.06mm, after: 4.47mm, and in control group: 0.82mm.

Conclusion

Comprehensive rehabilitation has a significant impact on the functional status and balance of patients after stroke.

Keywords

balance platform;physiotherapy,

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2662

FIRST-EVER ISCHEMIC STROKE IN YOUNG ADULT PATIENTS IN A REHABILITATION UNIT

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Introduction/Background

Stroke in young adults is reported as being uncommon, with recent publications reporting an increased incidence. Causes of ischemic stroke in young adults are diverse, but undetermined etiology predominates in the majority of studies. Stroke in young adults may have a dramatic impact on quality of life and economy by leaving victims disabled during their most productive years, when compared with stroke in older adults. This study aims to evaluate incidence and clinical characteristics of first-ever ischemic stroke in young patients.

Material and Method

Retrospective analysis of patients with a first-ever ischemic stroke admitted between September 1, 2014 and June 30, 2017 in a Rehabilitation Unit. A young patient was defined as the patient with 45 or less years of age.

Results

One hundred and two patients with a first-ever ischemic stroke were identified, with 58.8% of male gender and with a mean age of 59.2 years old. Twelve were considered young patients (11.8%), with 8 patients of male gender (66.7%). In these patients, dyslipidemia, smoking, and hypertension were the most prevalent risk factors (33.3%, 33.3%, 16.7%, respectively). According to TOAST classification, stroke was caused by large-artery atherosclerosis in 25.0%, cardioembolism in 16.7%, small-vessel occlusion in 8.3%, another determined etiology in 16.7%, and undetermined etiology in 33.3%. According to Oxfordshire classification, half of the patients have total anterior circulation stroke, 25% partial anterior circulation stroke, 16.7% posterior circulation stroke and 8.3% lacunar stroke. NIHSS was higher in younger patients (18.5 points vs 9 points).

Conclusion

Stroke in subjects under 45 years of age is not such a rare disease and is associated with high NIHSS. Given the increase incidence of stroke in young adults, there is an objective need for more research in order to reduce this social and economical burden.

Keywords

Ischemic stroke; Young patient; Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2684

CORRELATION BETWEEN COEFFICIENTS OF IMPAIRMENT AT VARIOUS MUSCLES AND ACTIVE FUNCTION IN THE PARETIC UPPER LIMB

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Introduction/Background

In hemiparesis, motor function may be hindered to various degrees by soft tissue contracture, spasticity, spastic co-contraction and agonist paresis. This retrospective study explores correlations between neuromuscular impairments at shoulder, elbow, wrist and fingers and overall function in the paretic upper limb.

Material and Method

Fifty one patients with chronic hemiparesis (25W, 48(±15) years (mean(±SD)), time since lesion, 7.7(±5.5) years) were assessed using the *Five Step Assessment*, at least three months after any botulinum toxin injection. The first step assessed motor function of the upper limb by the *Modified Frenchay scale* (MFS; score between 0 and 10). The 2nd, 3rd and 4th steps assessed coefficients of impairment in four key muscles: shoulder extensors, elbow flexors, wrist flexors and fingers flexors. These coefficients were calculated as: coefficient of shortening ($C_{SH}=(X_N-X_{V1})/X_N$; X_N , normally expected amplitude; X_{V1} , angle of arrest upon slow stretch), coefficient of spasticity ($C_{SP}=(X_{V1}-X_{V3})/X_{V1}$; X_{V3} , angle of catch upon fast stretch), coefficient of weakness ($C_W=(X_{V1}-X_A)/X_{V1}$; X_A , maximal active range of motion). For each impairment factor, a mean coefficient across the four muscles was calculated (C_{SHmean} , C_{SPmean} , C_{Wmean}). For each muscle group and for the mean, multivariable correlations were explored between C_{SH} , C_{SP} , C_W and MFS.

Results

The MFS correlated with $C_{SH-shoulder}$ ($r=-0.28$, $p=0.03$) and $C_{W-shoulder}$ ($r=-0.46$, $p=0.001$); $C_{W-elbow}$ ($r=-0.45$, $p=0.002$); $C_{W-wrist}$ ($r=-0.33$, $p=0.003$); $C_{W-Fingers}$ ($r=-0.63$, $p<0.0001$); C_{Wmean} ($r=-0.78$, $p<0.0001$).

Conclusion

The main factors impeding motor function in chronic spastic paresis are the combination of paresis in agonist and spastic cocontraction in antagonist (limiting active motion) for shoulder extensors and for elbow, wrist and finger flexors. Soft tissue contracture for shoulder extensors

also contributed to hinder motor function. Spasticity was not correlated with the mean score of MFS, whichever the muscle considered.

Keywords

Modified Frenchay Scale;spastic overactivity;muscle shortening

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0187

USE OF TRANSCRANIAL MAGNETIC STIMULATION IN INVESTIGATING UPPER EXTREMITY MOTOR RECOVERY: A CASE STUDY

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Introduction/Background

Measure Transcranial Magnetic Stimulation (TMS) parameters including resting motor threshold (RMT) and paired-pulse stimulation effects in first-time ischemic stroke patients within 3 months of stroke onset.

Material and Method

Design: Prospective study

Setting: Inpatient rehabilitation unit

Participant: 66-year-old male with a first ischemic stroke.

Interventions: At first visit (< 2 weeks post-stroke), TMS was performed over stroke-affected hemisphere and contralateral hemisphere. The RMT for stroke-affected and non-stroke affected abductor pollicis brevis (APB) were measured. Paired-pulse stimulation of a subthreshold stimulus (80% of RMT) followed by a suprathreshold stimulus (120% of RMT) were carried out with the following interstimulus levels (ISIs) of 2, 4, 10 and 15 milliseconds (ms) on both hemispheres. The above was repeated at 2nd visit (3 months post-stroke).

Outcome measures: Upper extremity strength measured with Medical Research Council scale and hand dynamometry, Functional Independence Measure (FIM) score, RMT of bilateral APB, average motor evoked potential (MEP) reading for each ISI in paired-pulse stimulation and its respective ratios of the mean conditioned MEP to the mean unconditioned MEP.

Results

Motor FIM score improved from 63 to 90 over 3 months. RMT of affected APB was higher than the unaffected APB at both visits. Facilitation (ratio 1.2) was observed with an ISI of 2 ms on the affected APB within 2 weeks post-stroke whereas inhibition (ratio 0.34) was observed at 3 months. As for ISIs of 4 ms, 10 ms and 15 ms, the respective ratios were 0.97, 1.03 and 0.93 at 1st visit versus 0.21, 0.40 and 0.44 at 2nd visit.

Conclusion

Although ISI of paired-pulse inhibition and facilitation effects were generally in the 1 to 3 ms and 9 to 12 ms range respectively in healthy individuals, there was variation seen in our post-stroke patient. We could determine a post-stroke individual's paired-pulse inhibition and facilitation at different stages of stroke recovery to explore recovery patterns.

Keywords

transcranial magnetic stimulation;stroke;paired-pulse

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0100

ABSTRACT NEED TO BE EDITED - EFFECTIVENESS OF THE RANGE CONSTRAINT THERAPY IN PATIENTS BRAIN STROKE

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Introduction/Background

To evaluate the efficiency of constraint-induced movement therapy to arm function recovery and to the person's autonomy after suffered a stroke.

Material and Method

Involved 65 persons of working age which were after stroke first time in their life. Research group where it was applied usual exercises therapy and constraint-induced movement therapy (IMT) and control group where it was applied just usual exercise therapy. Functional status was evaluated by the Functional Independence Measure, Barthel index, goniometria, dynamometry, Box and Block test, Lovett, Motors assessment and Ashworth scales and Mini Mental State Examination.

Results

After rehabilitation in both groups observed significant improvement ($p < 0.05$). RG self-service in daily activity increased by 1/3 more vs CG. Cognitive functions disorders in RG decreased significantly, than CG. There was improvement assessing range of motion analyzing arm function recovery, speed and accuracy, spastic and muscle strength after rehabilitation: hand breadth muscle strength increased 6.1 kg in RG and 4.1 kg in CG ($p < 0.05$); damaged hand muscle strength increased isn't significant. Arm range of motion increased from 3.5° up 14° in RG and from 0° up 10° in CG, difference between groups wasn't significant ($p > 0.005$). Significant variation between groups observed only in the upper arm construction and retraction motions. Accuracy of damaged hand increase up 31 % in RG and 20 % in CG ($p < 0.05$); all subjects with normal or mild arm hypertonia wasn't significant ($p > 0.05$). By MAS the arm movements increased 3 vs 1.5 point ($p < 0.05$).

Conclusion

Arm function of person's after stroke improved significant applying constraint-induced movement therapy, more efficient in recovering damaged arm to upper arm and shoulder indentation of the amplitude of the motion, the arc of the hand and arm movements, complex hand muscle strength vs usual occupational therapy sessions ($p < 0.05$). RG in self-service of daily activities was increased ($p < 0,05$). Increase arm muscle strength IMT aren't effective.

Keywords

stroke;rehabilitation;functional status

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0209

EVIDENCE-BASED PRACTICE IN REHABILITATION: HOW CAN WE DO MORE WITH QUESTIONNAIRE-BASED INSTRUMENTS?

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Introduction/Background

More and more rehabilitation professionals are using questionnaire-based instruments to evaluate patients' change over time. In some countries, the decision to continue or not the rehabilitation care is based on patient's scores with different questionnaires. In such a context, it is important to have robust and well-designed measurement tools for objective, valid and reliable decisions, whether in terms of interventions effectiveness or in terms of the development of care policies in developed and low-income countries. From key aspects of the measurement of latent variables that are more and more part of evaluations in rehabilitation context (activity, participation, quality of life), this talk will highlight limitations of some widely used tools, and will address the need for optimizing the measurement of intervention outcomes, both in research and clinical contexts, either in high or low-income countries.

Material and Method

N/A

Results

N/A

Conclusion

N/A

Keywords

Questionnaire-based instruments; Evidence-based practice

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0217

DETECTING IMPROVEMENTS OF UPPER EXTREMITY MOTOR COORDINATION BY ACCELEROMETER FOR STROKE

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Introduction/Background

Previous studies used accelerometer to determine the change in daily use of upper extremity or test reliability and validity of assessment tools. Stroke patients with minimal functional damage usually get high score in FMA-motor scale, especially in coordination. But patients still feel unsatisfied in ADL and seeking for training. However, they may be rejected in health insurance system in Taiwan. This study aims to find a simple and easily interpretable approach by accelerometer.

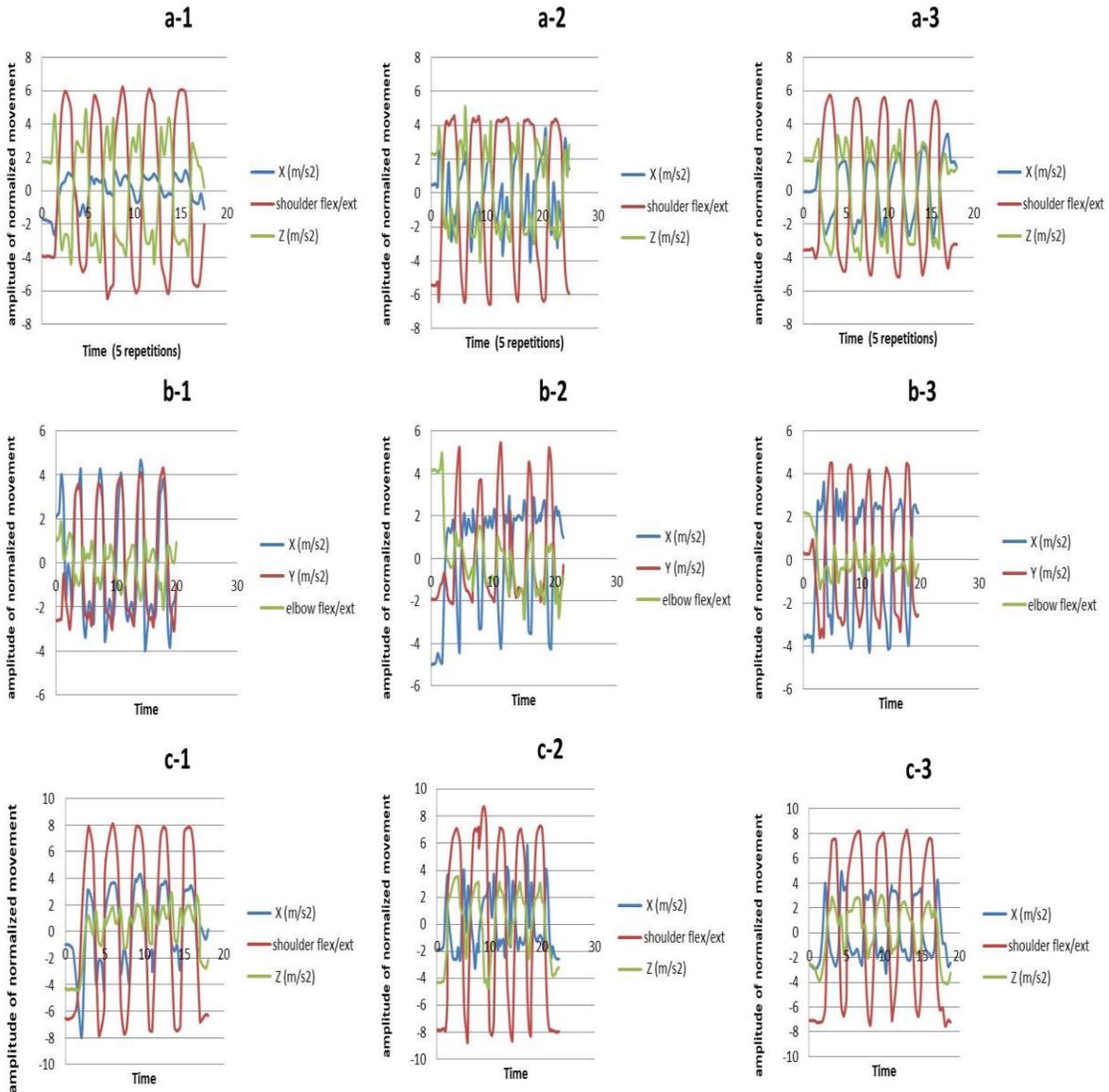
Material and Method

Researchers use a wearing tri-axial accelerometer to measure upper extremity for a 52 years-old male stroke patient. The study measured three situations: (1) sound side U/E, (2) affected U/E after stroke three months, (3) affected U/E after stroke six months. He got full score in Fugl-Meyer Upper Extremity Assessment-motor (FMA-motor), but only 35 points in Stroke Impact Scale after stroke three months. Therapist and doctor measured his movements by accelerometer for three movements: (a) sitting: shoulder flexion 70 degrees on table with elbow extension -> shoulder flexion 180 degrees to reach object above head, (b) sitting: shoulder flexion 90 degrees with elbow flexion -> elbow extension to reach a cup then elbow flexion to mouth, (c) standing: shoulder flexion 180 degrees to reach object above head. These movements simulated activities of daily living.

Results

The researchers extracted data from accelerometer and translated to graphs easily by Microsoft Excel for post-treatment difference. We can easily see the different routes between sound side (a-1, b-1, c-1) and affected side (a-2, b-2, c-2), and improvement in coordination (a-3, b-3, c-3) is similar to sound side. He also improved 75 points in Stroke Impact Scale and got much

satisfied with his quality of life.



Conclusion

Accelerometer is a simple and easy tool to verify motor coordination for clinical doctor and therapist. Future research can focus on applying to lots number of patients and detecting lower extremities.

Keywords

accelerometer; motor coordination; stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0241

RELATIONSHIP BETWEEN CORTICAL OR SUBCORTICAL LESIONS AND LONG-TERM FUNCTIONAL CAPACITY IN STROKE PATIENTS.

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Introduction/Background

Strokes occur in the cortical or subcortical regions of the brain, compromise cortical functions and sensory-motor performance, and have a negative impact on long-term functional capacity. The aim of this study was to evaluate the relationship between strokes in the cortical or subcortical regions and autonomy, functional independence, and use of locomotor aids.

Material and Method

We evaluated 62 patients with ischemic strokes confirmed by CT-scan. The cortical and subcortical regions were defined by an experienced neuroradiologist. Patients were divided into two groups: those with cortical strokes (Group 1: n = 47) and those with subcortical strokes (Group 2: n = 15). Patients were then assessed for autonomy and independence 90 days after stroke using the Barthel Index and modified Rankin scale. Locomotor aid included the use of wheelchairs, crutches, and walking sticks for community outings. The associations of cortical or subcortical strokes with autonomy, independence, and use of locomotor aids were analyzed by simple logistic regression corrected for confounding variables (age, severity of stroke and treatment received) and were considered significant when $p < 0.05$.

Results

Lower autonomy was observed in Group 1 than in Group 2. Specifically, 6.4% of patients in Group 1 scored higher than 95 on the Barthel Index, compared to 46.7% in Group 2 ($p = 0.04$). A significant difference in the use of locomotor aids was observed between the groups (wheelchair: 29.8% of Group 1 vs 6.7% of Group 2, $p = 0.03$; walking sticks or crutches: 44, 7% of Group 1 vs 33.3% of Group 2, $p = 0.03$; Table 1).

Table 1. Locomotion aid and functional capacity in cortical and subcortical strokes.

	Cortical strokes (n = 47)		Subcortical strokes (n = 15)		p-value
	N	%	N	%	
Locomotion aid					
Wheelchair	14	29.8	1	6.7	0.03
Crutches or sticks	21	44.7	5	33.3	0.03
Non-locomotion aid	10	21.3	10	66.7	0.04
Functional capacity					
mRS	3 (1-6)		3 (1-5)		0.64
mRS 0-2	9	19.1	10	66.7	0.16
Barthel	60 (15-95)		60 (15-95)		0.71
Barthel > 95	3	6.4	7	46.7	0.04

Legend: mRS = modified Rankin Scale

Conclusion

Patients with ischemic strokes in cortical regions demonstrate less autonomy and have a greater chance of using locomotor aids than patients with strokes in subcortical regions do.

Keywords

Stroke; Topography; Disability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0251

A SYSTEMATIC REVIEW: EFFICACY OF BOTULINUM TOXIN IN WALKING AND QUALITY OF LIFE IN POST-STROKE LOWER LIMB SPASTICITY.

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Introduction/Background

We performed a systematic review of the randomized control trials (RCT) to evaluate effectiveness of Botulinum toxin A (BoNTA) injection on walking and Quality of Life (QOL) in post-stroke lower limb spasticity (PSLLS).

Material and Method

We searched PubMed, Web of Science, Embase, CINAHL, ProQuest Thesis and Dissertation checks and Google Scholar, WHO International Clinical Trial Registry Platform, ClinicalTrials.gov, Cochrane, ANZ and EU Clinical Trials Register for RCTs looking at improvement in walking and QOL following injection of BoNTA in PSLLS. The original search was carried out prior to 16 September 2015. We conducted an additional verifying search on CINAHL, EMBASE, and MEDLINE (via PubMed) from 16 September 2015 to 6 June 2017 using the same clauses.

Results

Of 2026 records, we found 107 full text records and 5 RCTs qualifying our criteria. Two independent reviewers assessed methodological validity prior to inclusion in the review. Two studies reported significant improvement in gait velocity ($p=0.020$) and <0.05 respectively). One study showed significant improvement in 2-min-walking distance ($p <0.05$). QOL was recorded in one study without any significant improvement. Meta-analysis of reviewed studies could not be performed because of different methods of assessing walking ability, and small sample size with large confidence interval. This review identifies the need for a well-designed RCT to adequately investigate the issues highlighted.

Conclusion

This review could not conclude there was sufficient evidence to support or refute improvement on walking or QOL following BoNTA injection. Reasons for this are discussed and methods for future RCTs are developed.

Keywords

stroke;spasticity;Botulinum toxin

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0259

THE IMPACT OF POST-ACUTE CARE REHABILITATION ON FUNCTIONAL STATUS IN STROKE PATIENTS FROM DIFFERENT HOSPITAL ACCREDITATION LEVEL

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Introduction/Background

In order to construct a medical transfer system for the stroke, Taiwan Ministry of Health and Welfare implemented a national program of Post-acute Care for Cerebrovascular Diseases (PAC-CVD) in March 2014. Under the intensive in-patient rehabilitation programs and per diem payment, the healthcare utilization was expected to be improved. The purpose of this study was to investigate the impact of intensive post-acute stroke rehabilitation on functional status in different hospital accreditation level.

Material and Method

The stroke patients who were admitted to post-acute ward in two hospitals during 2014/03/01 to 2017/8/31 were indicated to the study. The patients was separated to group 1 (a rural regional hospital) and group 2 (a metropolitan district hospital). The modified Rankin Scale (mRS) score , Barthel Index (BI), Instrumental Activities of Daily Living Scale (IADL) and Berg Balance Scale (BBS) were used to evaluate functional status.

Results

740 stroke patients (311 patients in group 1, and 429 patients in group 2) were included. The length of days (LOS) between stroke onset and post-acute care (PAC) ward admission were 11.60 days in group 1, and 21.41 days in group 2. The length of days in PAC ward were 27.02 days in group 1, and 36.85 days in group 2. The percentage of patients referred from other acute hospitals were 23.47% in group 1, and 89.51% in group 2. The severity (MRS grading on PAC admission day) was 3.53 in group 1, and 3.88 in group 2. The functional improvement after rehabilitation training was noted in both groups.

Conclusion

Under the intensive post-acute in-patient rehabilitation programs, the stroke patients got functional improvement. No matter the accreditation level of the hospital, the same payment may make more chance for the district hospitals to develop. The healthcare utilization may work efficiently under the medical transfer system.

Keywords

post-acute rehabilitation;stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0267

THE EFFECT OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION COMBINED WITH MIRROR THERAPY IN STROKE PATIENTS

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Introduction/Background

In rehabilitation setting for stroke, it has been suggested that mirror therapy (MT) is a simple, inexpensive patient-directed treatment that improves upper-extremity function.

Electrical stimulation for cutaneous receptors can increase cortical excitability, it also induce cortical plasticity and motor recovery. TENS(transcutaneous electrical nerve stimulation) on the median nerve is a simpler than any other electrical stimulation method. So, the author hypothesized that TENS coupled with MT would achieve a larger effect in motor recovery and daily function than MT alone in the stroke patients .

Material and Method

10 patients were recruited for this study. All patients were diagnosed as stroke identified by brain imaging and randomly assigned to two groups. The TENS was applied on the median nerve at wrist level (100Hz frequency, 250 μ s pulse width, and intensity set to sensory threshold just below motor threshold) during MT (1 hour/day and five times/week for 3 weeks) in the TENS with MT group. MT groups underwent MT alone. Brunnstrom motor recovery stage, manual function test (MFT), Perdue pegboard test, Jamargrip strength test, modified Barthel Index(MBI), Stroke Upper Limb Capacity Scale (SULCS), amplitude of MEP (recording from APB) were evaluated pre and post treatment.

Results

The demographics and baseline characteristics in the two groups did not differ significantly. All result parameters did not have significant difference between the groups. However, there is tendency that TENS with MT group showed higher score than MT group in Brunnstrom stage, MBI, MFT, PPT, JAMAR grip strength, SULCS and MEP value.

Table. Comparison between 2 groups; pre and post treatment

Variable	Group	Pre	Post	P-value*	Δ (Post - Pre)	P-value†
Brunnstrom	M	2.7 ± 1.5	3.0 ± 1.8	0.317	0.2 ± 0.5	0.167
	T+M	1.0 ± 0.0	2.3 ± 1.1	0.157	1.3 ± 1.1	
MBI	M	40.0 ± 35.4	52.0 ± 35.7	0.068	17.5 ± 5.3	0.212
	T+M	19.3 ± 11.9	45.0 ± 11.5	0.109	25.6 ± 12.7	
MFT	M	9.0 ± 10.5	10.7 ± 12.4	0.180	1.7 ± 2.0	0.354
	T+M	0.0 ± 0.0	3.3 ± 3.0	0.180	3.3 ± 3.0	
PPT	M	0.2 ± 0.5	0.7 ± 0.9	0.157	0.5 ± 0.5	0.445
	T+M	0.0 ± 0.0	1.0 ± 1.0	0.180	1.0 ± 1.0	
JAMAR (grasp,%)	M	7.7 ± 11.8	10.0 ± 14.1	0.180	2.2 ± 2.6	0.271
	T+M	0.0 ± 0.0	7.3 ± 6.4	0.180	7.3 ± 6.4	
JAMAR (pad,%)	M	8.2 ± 16.5	11.2 ± 22.5	0.317	3.0 ± 6.0	0.329
	T+M	0.0 ± 0.0	8.3 ± 7.6	0.180	8.3 ± 7.6	
JAMAR (lat,%)	M	12.2 ± 17.4	16.2 ± 21.3	0.157	4.0 ± 4.6	0.445
	T+M	0.0 ± 0.0	6.6 ± 6.1	0.180	6.6 ± 6.1	
JAMAR (3pinch,%)	M	6.5 ± 7.5	10.0 ± 11.5	0.180	3.5 ± 4.1	0.354
	T+M	0.0 ± 0.0	7.6 ± 7.5	0.180	7.6 ± 7.5	
SULCS	M	6.5 ± 7.5	3.5 ± 3.5	0.157	0.5 ± 0.5	0.262
	T+M	7.0 ± 2.0	1.6 ± 1.5	0.180	1.3 ± 1.1	
MEP(mV)	M	0.3 ± 0.2	0.4 ± 0.3	0.180	0.0 ± 0.1	0.271
	T+M	0.1 ± 0.2	0.4 ± 0.4	0.180	0.4 ± 0.4	

Conclusion

Although there was no statistically significant group difference, MT + TENS group showed a positive tendency on most parameters. To clarify these results, larger sample sizes will be needed.

Keywords

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0282

VERTEBRAL ARTERY DISSECTION ASSOCIATED WITH HIGH INTENSITY EXERCISE TRAINING: A CASE REPORT

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Introduction/Background

CrossFit ® is a high-intensity strength and conditioning program that has grown increasingly popular over recent years. Similar to other sports, athletes who perform in CrossFit ® training may be at risk for various injuries. In rare cases, cervical vascular injuries including cervical internal carotid artery dissections have been reported. We present the first known case of vertebral artery dissection and posterior circulation infarct in association with CrossFit ® training.

Material and Method

The patient was a 39-year-old previously healthy female who presented with sudden onset headache and loss of balance. She experienced a weight-related neck injury during a CrossFit ® workout 2 days prior to symptom onset. On examination, she had impaired right eye adduction and right eye ptosis. Sensation was reduced in her right face and left extremities with intact strength. Gait was wide-based with tendency to fall to the right.

Results

Initial head CT was unremarkable. MRI brain revealed acute infarcts in the posterior right medulla and anterior inferior right cerebellar vermis. MRA showed evidence of right vertebral artery occlusion. The patient was initiated on secondary stroke prophylaxis with aspirin, clopidogrel, and atorvastatin. Etiology of the right vertebral artery occlusion was thought to be due to arterial dissection precipitated by her recent neck trauma during CrossFit ®.

The patient completed acute inpatient rehabilitation with outpatient therapy follow-up. With therapy, the patient demonstrated improved independence with functional mobility, balance, and advanced mobility skills including treadmill running. She was successfully able to return to work and driving.

Conclusion

Rehabilitation clinicians should be knowledgeable about the potential for cerebral vascular injury in athletes who train with CrossFit ® or similar exercise programs. Inpatient or outpatient rehabilitation may be indicated, with the overall goal to return the patient athlete to the best of his or her functional abilities.

Keywords

Dissection;Stroke;CrossFit

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0291

THE CEREBROVASCULAR ACCIDENT OF THE YOUNG SUBJECT: FREQUENCY, ETIOLOGY, PROGNOSIS CONCERNING 57 PATIENTS FOLLOWED AT THE HOSPITAL OF TIXERAINE

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Introduction/Background

stroke is a debilitating disease that increasingly affects the young population. although mortality stroke has declined over the last 20 years, this disease remains the leading cause of chronic loss of autonomy for those who are victims.

Material and Method

This is a retrospective comparative study in which we compared a cohort of 26 patients who had a stroke during the period (2006-2007 -2008) with a second cohort of 31 patients who had a stroke. during the period (2014-2015-2016)

Results

There is a male predominance in both series with a slight increase in the female sex in the second series. The average age is 42.4years in the first series and 48.3years in the 2nd. Among the risk factors in the antecedents: the frequency of the arterial hypertension is remarkable in the two series 15cases for the 1st series and 23cases for the 2nd series, then come in descending order diabetes 4 case 1st series, 9cas 2nd series. Without cause 6 cases 1st series and 5cases 2nd series 2cases of dyslipidemia in the 2series 1 case epilepsy in both series rehabilitation started within an average delay of 2months and a half for the 1st series and 1month and a half for the 2nd series The average duration of care is (3 months) for the 1st series. and 2, 5 months) for the 2nd series. Functional recovery of hemiplegic patients: we divided our patients according to a scale of assessment of autonomy. 20% of discrete sequelae in the two series, 21% of sequelae more or less important in the first series and 30% in the second series 22% of major sequelae in both series

Conclusion

The stroke of the young subject is a public health issue given the socioeconomic consequences and functional disability it causes the etiologies are multiple and the overall prognosis good.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0310

NONINVASIVE CEREBRAL ELECTRICAL STIMULATION IN PATIENTS WITH UNILATERAL SPATIAL NEGLECT AFTER STROKE (ELETRON TRIAL): CHALLENGES AND BARRIERS TO INCLUSION OF THE PROTOCOL.

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Introduction/Background

Unilateral spatial neglect (USN) after stroke can be caused by balance disorders of brain electrical activity, predominantly in the right parietal lobe. Recent literature suggests that spatial perception could be improved by rebalancing of hemispheric activity through non-invasive brain stimulation. The aim of this study was to evaluate the effect of transcranial direct-current stimulation (tDCS) on USN after stroke.

Material and Method

This is a prospective, randomized controlled double-blind trial will include individuals of both genders, aged above 18 years, with diagnosis of stroke confirmed by imaging tests and USN diagnosis by Behavior Inattention Tests < 129. Patients with USN will be randomized into three groups: 1 - treatment with anodic tDCS in right parietal lobe; 2 - treatment with cathodic tDCS in left parietal lobe; 3 - Sham. Randomization of a maximum of 45 patients is planned with 15 patients in each group. Individuals will be assessed by Catherine Bergego Scale, NIHSS, Functional Independence Measure, Barthel Scale, mRs, and Quality of Life Scale by an investigator blinded to treatment the patient received before the first session and 1 week after the last tDCS session. We will use regression models considering confounding factors for statistical analysis of the data.

Results

In March 2017, 32 patients were recruited, of which seven were effectively included. Our greatest difficulties were the delay in patient inclusion after a stroke, difficulty in transportation to the study center, and unavailability of trained personnel for patient recruitment. Six patients were stimulated, being 3 anodical, 1 cathodical and 2 sham (Figure 1).

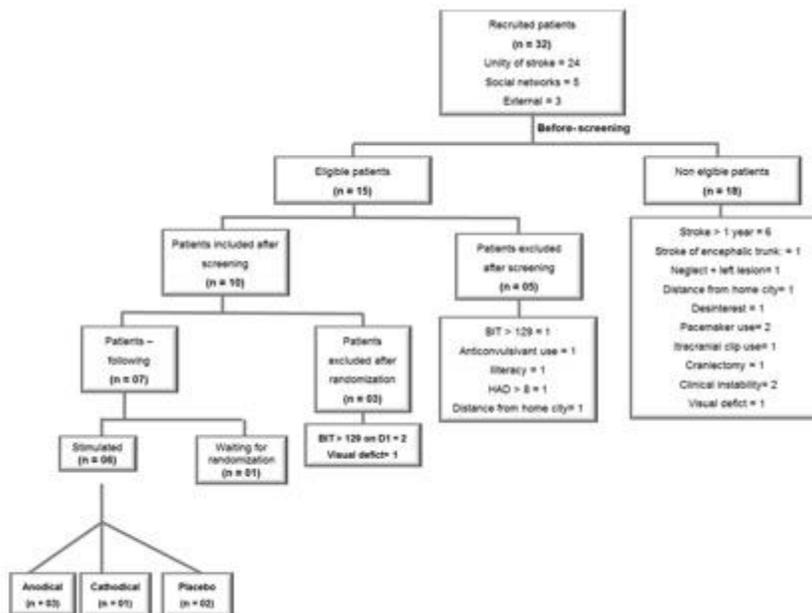


Figure 1. Flow chart of study progress

Conclusion

Given the importance of USN in the stroke context, the effectiveness of tDCS in stroke rehabilitation is expected to be verified at the end of the study.

Keywords

Stroke; Noninvasive brain stimulation; Randomized controlled trial

No conflict of interest

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ISPR8-0323

A BRAIN-COMPUTER INTERFACE BASED STROKE REHABILITATION SYSTEM, CONTROLLING AN AVATAR AND FUNCTIONAL ELECTRICAL STIMULATION, TO IMPROVE MOTOR FUNCTIONS.

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Introduction/Background

Brain-Computer Interfaces (BCI) can detect the neuronal activity of patients' motor intention to control external devices. With the feedback from the device, the neuronal network in the brain to reorganizes due to neuroplasticity.

Material and Method

The BCI controls an avatar and functional electrical stimulation (FES) to provide the feedback. The expected task for the patient is to imagine either left or right wrist dorsiflexion according to the instructions. The training was designed to have 25 sessions (240 trials of either left or right motor imagery) of BCI feedback sessions over 13 weeks. Two days before and two days after we did clinical measures to observe motor improvement. The primary measure was upper extremity Fugl Meyer assessment (UE-FMA) which evaluates the motor impairment. Four secondary measures were also performed to exam the spasm (modified Ashworth scale, MAS), tremor (Fahn tremor rating scale, FTRS), level of daily activity (Barthel index, BI), and finger dexterity (9-hole peg test, 9HPT).

Results

One male stroke patient (53 years old, 11 months since stroke, and right upper limb paralyzed) participated in the training. He quickly learned to use the BCI and the maximal classification accuracy was over 90% after the 5th session. The UE-FMA increased from 25 to 46 points. The BI increased from 90 to 95 points. MAS and FTRS decreased from 2 to 1 and from 4 to 3 points respectively. Although he could not conduct the 9HPT until 18th training session, he was able to complete the test from 19th session in 10 mins 22 secs and the time was reduced to 2 mins 53 secs after 25th session.

Conclusion

The patient could be more independent in his daily activity, he had less spasticity and tremor. Also, the 9HPT was possible to do, which wasn't before. The system is currently validated with a study of 50 patients.

Keywords

Brain-Computer Interface;stroke rehabilitation;EEG

No conflict of interest

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ISPR8-0342

PREDICTING ACCURACY OF RETURN TO WORK OF MALE STROKE PATIENTS AT WORKING AGE BY WHODAS 2.0

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Introduction/Background

Stroke is one of the main causes of morbidity and mortality in younger male adults and is particularly relevant to working individuals. When stroke at working-age, these patients must to face the challenges of employment and maintain the quality of life. How to comprehensively and objectively evaluation the opportunity of return to work is an important issue. The WHO Disability Assessment Schedule 2.0 (WHODAS 2.0) was developed based on International Classification of Functioning, Disability and Health (ICF) framework for evaluating functioning, including social participation and cognition-related daily activities. WHODAS 2.0 can be a reliable comprehensive functional assessment tool, and the aim of this study was to investigate the predicting accuracy of return to work of male stroke patients at working-age.

Material and Method

A total of 7687 male stroke patients at working-age (aged from 25 to 55 years old) were obtained from Taiwan Data Bank of Persons with Disability from the July 2012 to October 2017. According to their working status, we separated them as return-to-work group and nonreturn to work group. Demographic data and WHODAS 2.0 standardized scores of patients with stroke of both groups were analyzed and compared using the chi-squared and independent Student's t-tests. Receiver operating characteristic curve analysis was performed to investigate the prediction opportunity for the return-to-work status, and the optimal cutoff point was determined using the Youden index.

Results

All domains of return-to-work group (n=481) had lower WHODAS 2.0 scores than nonreturn-to-work group (n=7206). The receiver operating characteristic curve showed moderate accuracy for all domain-specific and summary scores of WHODAS 2.0 [area under the curve, 0.6–0.8]. The cuff-off point of summary score was 39.67 with 70.0% sensitivity and 65.3% specificity.

Conclusion

Our study presented that WHODAS 2.0 can be taken as an assessment tool to predicting the opportunity of return to work of male stroke patients at working-age.

Keywords

Stroke;Return to Work;WHODAS 2.0

No conflict of interest

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ISPR8-0355

THE CORTICAL MECHANISM OF “REMIN-TO-MOVE” IN STROKE PATIENTS: A NEAR INFRARED SPECTROSCOPIC TOPOGRAPHY CASE STUDY

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Introduction/Background

'Remind-to-move' (RTM) has been shown to be useful on promoting hemiparetic upper extremity motor recovery in patients with stroke and children with unilateral cerebral palsy in our previous studies. This study was to explore the cortical mechanism of RTM on upper extremity related to the brain responses in the form of sensory cueing in both healthy and stroke participants.

Material and Method

A block research design was used with Block 1 - baseline condition, Block 2 – sham condition, and Block 3 - experimental condition, on 2 stroke patients with hemiparetic upper extremity and their 2 healthy counterparts. They were required to wear cueing wristwatch device over both arms throughout the study but sensory cueing was emitted only in the experimental condition, i.e. Block 3. During sham condition, the participants were told to perform self-regulated hand movements every minute, whereas the participants just needed to perform hand movements after each sensory cue emitted from the device in the experimental condition. The cortical hemodynamics was recorded by functional near infrared spectroscopic topography (fNIRS).

Results

Activated regions of healthy and stroke participants showed different patterns of neuro correlates. Prefrontal cortex was found to be activated in healthy participants but the same area was less activated comparatively in stroke patients in the sham condition. Both prefrontal and primary motor cortices were less activated in healthy participants in the experimental condition but these areas in stroke patients were more activated instead. It was observed that the frontal cortex of both healthy participants and one stroke participant with higher paretic arm functioning was activated throughout different block conditions but not for another stroke participant with lower arm functioning.

Conclusion

The cortical mechanism leading to the positive effect of sensory cueing might be contributed by the enhanced attention and activation of the prefrontal cortex for preparedness of movements.

Keywords

Stroke;Upper extremity;Hemodynamics

No conflict of interest

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ISPR8-0364

LOWER LIMB EXPROPRIOCEPTION MAY BE IMPAIRED AFTER STROKE

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Introduction/Background

Exproprioception, the perception of limb position in the environment, is important for the control of functional activities. The purpose of this study was to determine if the lower limb exproprioception was affected by stroke.

Material and Method

Healthy young (YA, n=20) and age-matched control (CON, n=10) adults and first-time stroke patients with residual sensorimotor deficits (CVA, n=19) participated in this study and went through visual acuity and bilateral plantar sensitivity and grip strength tests. The exproprioception test was a foot placement matching test conducted in sitting. In external target condition (EXT-T), the target was an arrow mark on the ground near the foot and clearly seen by the subject. In internal target condition (INT-T), the target was the big toe of the affected foot (or nondominant for non-stroke) which was passively moved to a near-by random location with the subject's eyes closed. In both conditions, subjects were instructed to memorize the target location and, after the arrow was removed or the foot returned to its initial position, move the unaffected (or dominant for non-stroke) foot to the target, with eyes open (EO) and closed (EC). The distance between the big toe and target was used to indicate exproprioception error (Expro-Err) and was recorded using the SIMI motion analysis system.

Results

Compared to CON, CVA had poorer affected side plantar sensitivity and grip strength, but the differences in visual acuity or unaffected side functions were nonsignificant. Expro-Err in EO during both conditions and in EC during Ext-T did not show significant between-group differences. In EC during INT-T, CVA had significantly greater error than YA and CON ($p=0.003$ and 0.045 , respectively).

Conclusion

Stroke may affect the ability to match the foot placement of the other foot without vision. Further studies are needed to determine if and how such deficit would affect gait.

Keywords

stroke;exproprioception;somatosensation

No conflict of interest

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ISPR8-0371

MOTOR EVOKED POTENTIAL RESPONSE ASSOCIATED WITH THE TREATMENTS EFFECTS OF THETA BURST STIMULATION ON UPPER LIMB FUNCTIONS IN PATIENTS WITH STROKE: A PILOT STUDY

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Introduction/Background

Theta burst stimulation (TBS) therapy is recently used as an invasive intervention for patients with neurological and psychiatric disorders. However, few studies investigated in identifying who benefits from it for patients with stroke. This study aims to determine whether motor evoked potential (MEP) responses are related to TBS treatments effects on upper limb functions in patients with stroke.

Material and Method

Twelve patients with stroke, aged 30-70 years, were classified into two groups based on the presence of MEP: present (n= 6) and absent MEP groups (n=6). All patients received TBS therapy, 5/week for 3 weeks in addition to rehabilitation programs. MEP evaluation was performed before TBS intervention. Outcome measures, including Brunnstrom Staging, Modified Ashworth scale (MAS), and Nine Hole Peg Test (NHPT), were evaluated before and after TBS. associated with the responsiveness of MEP to treatment with TBS. Analysis of covariance was employed to compare the outcome measures between two MEP groups. A $p < 0.05$ is considered as significant difference.

Results

After TBS therapy, the MEP-present group had better improvement in Brunnstrom Staging in proximal upper limbs and NHPT than MEP-absent group ($p < 0.05$). However, the Brunnstrom Staging in distal upper limbs and MAS scores did not achieve the significant differences after TBS therapy between two MEP groups.

Conclusion

These findings may suggest MEP responses are associated with treatments effects of TBS on motor function, but not on spasticity, in upper limbs of patients with stroke. However, definite conclusion could not be drawn due to limited sample size. Future studies may increase the sample size to validate the association of MEP responses and the treatments effects of TBS on upper limb functions in these patients.

Keywords

theta burst stimulation; motor evoked potential; stroke

No conflict of interest

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ISPR8-0382

THE EFFECT OF HIGH BLOOD PRESSURE (HBP) ON TOTAL BARTHEL INDEX (BI) AND 10 ITEMS OF BI AFTER STROKE REHABILITATION

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Introduction/Background

We previously analyzed inpatients of conventional ward (ICW, n=9951) and subacute ward (ISW, n=6322) of Japan Association of Rehabilitation Database (JARD) and reported the effect of HBP on 10 items of BI after stroke rehabilitation. We analyzed total BI both with using method of dichotomized ordinal scale and continuous scale, because the method how to analyze total BI remains controversy.

Material and Method

In the analysis of ordinary scale, we dichotomized total BI into 80–100 (BI80+) versus 0–75 (BI80–), 60–100 (BI60+) versus 0–55 (BI60–), 40–100 (BI40+) versus 0–35 (BI40–), or 20–100 (BI20+) versus 0–15 (BI20–), compared between each category and control with using chi-squared test and 2x2 contingency table, and calculated odds ratios (ORs) and 95% confidence intervals (CIs). In the analysis of continuous scale, Shapiro-Wilk test and Wilcoxon test were conducted.

Results

In the ordinary analysis, HBP ameliorated total BI among ICW of atherothrombotic infarction (BI40+ versus BI40– OR 1.881 CI 1.088–3.253, and BI20+ versus BI20– OR 3.135 CI 1.660–5.918), and ISW of other infarction (BI80+ versus BI80– OR 1.823 CI 1.080–3.076), and deteriorated total BI of ICW of subarachnoid hemorrhage (SAH) (BI80+ versus BI80– OR 0.395 CI 0.166–0.939). In the continuous analysis, total BI of hypertensive ICW (median 60) of SAH was deteriorated (p=0.013) compared with non-hypertensive ICW (median 95).

Conclusion

HBP had both a favorable and unfavorable effect on total BI after stroke rehabilitation. The results of total BI of dichotomous ordinal analysis were consistent with those of BI items, while those of continuous analysis were not. Dichotomous ordinal analysis might be appropriate to analyze total BI, and results of BI items should be considered as well as total BI.

Keywords

Barthel Index;High Blood Pressure;Database

No conflict of interest

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ISPR8-0388

BRAIN MOTOR CONTROL ASSESSMENT OF ANKLE MOTOR FUNCTION IN PATIENTS WITH STROKE : A PILOT STUDY

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Introduction/Background

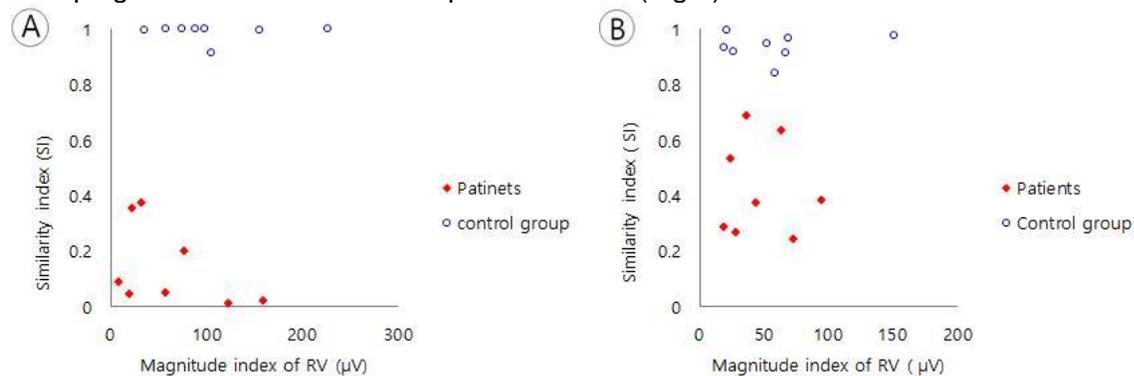
The Brain Motor Control Assessment (BMCA) is a surface EMG-based measure of motor output from the central nerve system. The aim of this study was to investigate whether the pattern of voluntary movements in patients with stroke could be correlated with clinical spasticity measurement tools.

Material and Method

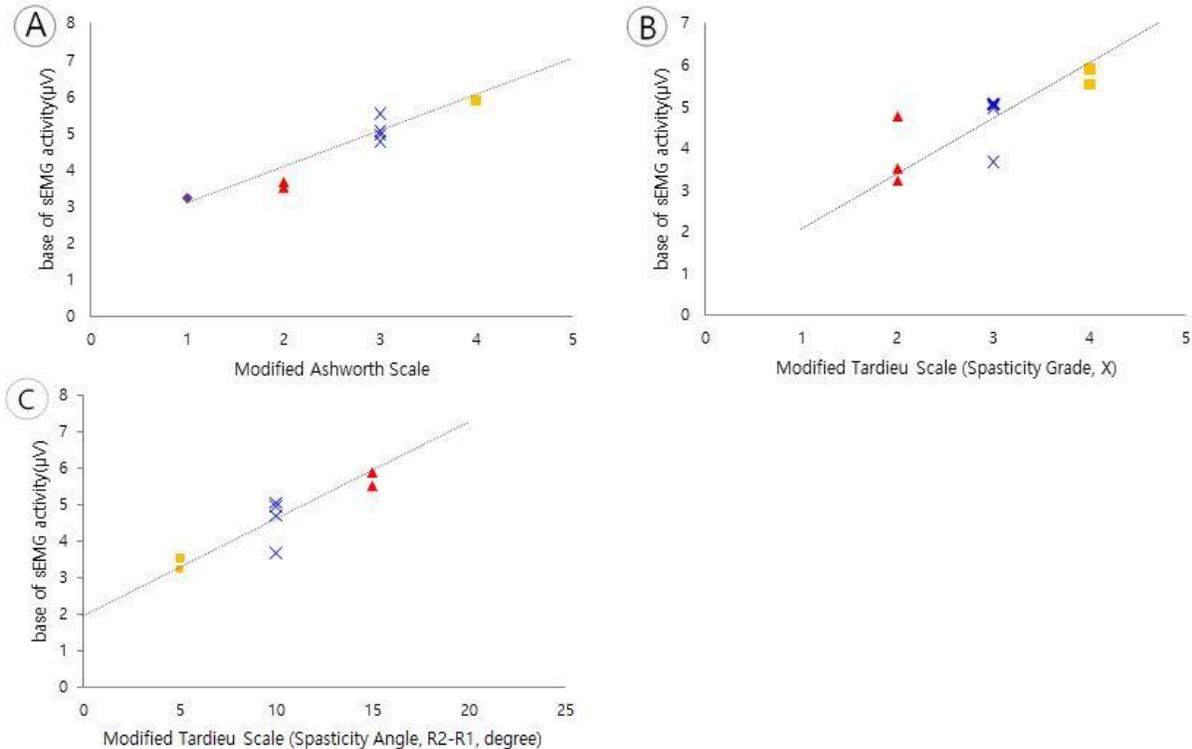
Eight subjects with stroke and eight healthy controls participated in this study. The surface EMG of 10 muscles was recorded with pairs of surface electrodes. These electrodes were placed in the muscle belly for the both quadriceps (Q), hip adductor (A), hamstring (H), tibialis anterior (TA) and triceps surae (TS) muscles. The maneuver included a bilateral task with two phases (ankle dorsiflexion/ plantar flexion) and unilateral task with two phases that were conducted on both sides. This set of values, one for each muscle, comprised the response vector (RV) for each phase of a task. They were presented in units of μV_{RMS} for each of the scalar elements. These values were used to calculate the similarity index (SI), which compares the relative distribution across the set of muscles chosen for the task. The voluntary response index value (VRI) was computed separately for each maneuver and it consisted of a pair of elements.

Results

The SI values were significantly lower in the stroke group compared to the control group for hemiplegic ankle dorsiflexion and plantar flexion (Fig.1).



The averaged magnitudes sEMG of RV revealed significant increases in the stroke group, as compared to the control group, with mean ALR values of $4.58\mu\text{V}$ and $3.44\mu\text{V}$, respectively ($p=0.036$). These averaged sEMG activities of RV significantly increased corresponding to the MAS, Tardieu spasticity grade (X) and the difference between R1 and R2, defined as the dynamic component (R2-R1) (Fig.2).



Conclusion

This neurophysiological assessment might be useful to provide objective assessment of spasticity and to tailor therapeutic strategies for each stroke patient.

Keywords

brain motor control assessment; surface electromyography; post stroke spasticity

No conflict of interest

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ISPR8-0399

STUDY OF BONE MINERAL DENSITY IN STROKE SURVIVORS

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Introduction/Background

Osteoporosis after stroke differs from age-related and other causes of osteoporosis. Stroke is frequently followed by extensive bone loss, precipitating the increased fracture risk in survivors. It is more evident on the paretic side and that too in the upper extremities. The present study is to assess the Bone Mineral Density (BMD) in hip, spine and wrist and to assess BMD difference between paretic and non-paretic side in ambulatory stroke survivors.

Material and Method

The study design is Cross-sectional observational study . Forty individuals attending the OPD of Department of Physical Medicine and Rehabilitation, VMMC & Safdarjung hospital, New Delhi with the diagnosis of stroke, fulfilling inclusion criteria were enrolled . Tools of measurement used were 1) BMD using Dual Energy X-ray Absorptiometry (DEXA) by OSTEOSCORE-3 (Digital 2D Densitometer) at spine, forearm and hip, 2) Biochemical markers(S.Ca, Phosphorous, ALP) 3) X –ray of spine, bilateral hip and wrist .

Results

Our study involved total 40 subjects having 33 (82.5%) males and 7 (17.5%) females. Mean age of study group was found to be 53.9 ± 10.9 years. The T score for forearm was found to be significantly higher in non-paretic side (Mean = -4.11 ± 2.46) compared to paretic side (Mean = -4.85 ± 2.01) ($P=0.04$). The T score for hip on non-paretic side was found to be higher (Mean = -1.96 ± 1.74) compared to that of paretic side (Mean = -2.14 ± 1.57) ($p=0.4$). 15 (37.5%) subjects were found to be osteoporotic on DEXA scanning of spine.

Conclusion

Most of the patients who presented after one year of stroke had low T-score at hip and forearm on paretic side in comparison to non-paretic side.

Keywords

Stroke;Osteoporosis

No conflict of interest

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ISPR8-0423

CHANGES IN SWALLOWING AND COUGHING FUNCTION IN STROKE PATIENTS BEFORE AND AFTER TRACHEOSTOMY DECANNUATION

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Introduction/Background

After stroke, patients may lack the ability to protect their airway. When prolonged ventilation is necessary, a tracheostomy is frequently performed. Few studies have evaluated functional changes in stroke patients before and after tracheostomy tube removal.

We investigated the functional changes in swallowing and voluntary coughing in stroke patients before and after tracheostomy decannulation. We also compared the functional status between stroke patients who had their tracheostomy tubes removed and those who did not within 6 months of their stroke.

Material and Method

Seventy-seven stroke patients who had undergone a tracheostomy were enrolled. All patients were evaluated videofluoroscopic swallowing studies and peak flow meter through the oral cavity serially until 6 months after their stroke. During the intensive rehabilitation period, if a patient satisfied the criteria for removal of their tracheostomy tube, the tube was removed.

The patients were divided into the 'Decannulated' group and the 'Non-decannulated' group according to their tracheostomy removal status. Cognitive function and activities of daily living were also evaluated in both groups.

Results

In decannulated group, swallowing function did not change before and after tracheostomy decannulation; however, coughing function was significantly improved after decannulation.

Although both groups exhibited all functional improvement over time, the improvement in the decannulated group was more significant than the improvement in the non-decannulated group.

Conclusion

Our results revealed that stroke patients who had better functional improvement were more likely to be potential candidates for tracheostomy decannulation. Stroke patients who recovered from their neurogenic dysphagia, they were no longer affected by the mechanical effect of the tracheostomy tube on swallowing function. As various functions were associated with the ability to remove a patient's tracheostomy tube after stroke, a multidisciplinary, personalized intensive approach for tracheostomy decannulation is needed to achieve better rehabilitation outcomes in tracheostomized stroke patients.

Keywords

Stroke;Tracheostomy;Decannulation

No conflict of interest

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ISPR8-0426

INTERVENTION DESIGN OF A RANDOMIZED CONTROLLED TRIAL ON REHABILITATION THROUGH CAREGIVER-DELIVERED NURSE-ORGANIZED SERVICE PROGRAMS FOR DISABLED STROKE PATIENTS IN RURAL CHINA (THE RECOVER TRIAL)

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Introduction/Background

Stroke is the leading cause of mortality and disability in rural China, but access to rehabilitation services for patients and families to improve function and quality of life is substantially inadequate. We aimed to design an intervention that delivers practical and easy rehabilitation services to stroke patients in rural China.

Material and Method

The RECOVER trial was designed under the principle of being simple and easy-to-implement. It integrated family caregivers and the evidenced-based “train-the-trainer” model into the rehabilitation approach. To maximize its feasibility in rural China, we adopted community-based rehabilitation model and further simplified it based on local needs. The entire intervention design consisted of four stages: needs assessment and model building, intervention refinement, intervention materials production and pilot study for user testing.

Results

Nurses in the county hospitals were trained by rehabilitation specialists from Peking University First Hospital and qualified through the program-design-specified tests. After the patients were randomly assigned to the intervention group, the nurses would evaluate their conditions, make in-hospital rehabilitation plans, train their family caregivers, make discharge plans and provide follow up consultation via phone calls post discharge. A “teach-back” technique was used by the nurses to ensure that the caregivers had fully mastered the rehabilitation skills. The whole intervention process is shown as a flowchart for the nurses to follow efficiently. The intervention manual and guidance VCD which were focused on mobility, self-care and continence were easy to understand for the nurses and caregivers. The procedure of the intervention was a little complex to nurses, and it need to be simplified.

Conclusion

The RECOVER trial was designed as a nurse-organized and caregiver-delivered stroke rehabilitation program. The standard intervention of rehabilitation can help nurses complete the whole process of intervention, and deliver rehabilitation skills to patients effectively and completely.

Keywords

Intervention design;Stroke Rehabilitation in Rural China;Nurse-Organized and Caregiver-Delivered

No conflict of interest

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ISPR8-0438

COGNITIVE FUNCTIONS USING LOTCA AND ADL IN PATIENTS WITH STROKE

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Introduction/Background

This study aimed to evaluate the correlation between the cognitive function using LOTCA(Lowenstein Occupational Therapy Cognitive Assessment) and the change of ADL function in patients with stroke who got the cognitive therapy combined with conventional therapy.

Material and Method

We included all patients with stroke (mean age 49.2, 36 male and 14 female) who were requested to cognitive therapy unit and got the cognitive therapy in our hospital from August to December of 2016. And we reviewed 50 medical records retrospectively. All patients got the cognitive therapy using computer(30minutes/session) and conservative occupational therapy(30minutes/session). We used the LOTCA for cognitive function and the K-MBI for ADL function. LOTCA is the range of 0-119 scores and consists of 8 factors as 'orientation for place', 'orientation for time', 'visual perception', 'spatial perception', 'motor praxis', 'visuomotor organization', 'thinking operation' and 'attention and concentration. We evaluated the correlation between total score(or subscore) of pre-therapy LOTCA and difference of K-MBI score(admission vs. discharge, mean interval: 93.7 days). The data were analyzed with correlation analysis using SPSS 18.0 software and a P value less than 0.05 was regarded as being statistically significant.

Results

The average of 50 patients' pre-therapy LOCTA total score was 67.1, and it was 78.9 when they discharged our hospital. And the mean scores of patients' K-MBI were 44.8 and 54.9 with admission and discharge, respectively. Subscores for LOTCA 'motor praxis', 'visual organization', 'attention and concentration' and total LOTCA scores showed significant correlation with a factor of K-MBI as toileting($r=0.313, 0.443, 0.302, 0.343$, all $p<0.05$). But, except these LOTCA subscores above mentioned, only limited factors of LOTCA were correlated with the improvement of K-MBI.

Conclusion

This study showed that there was some correlation between the cognitive functions using LOTCA and improvement of ADL after practicing cognitive therapy with conventional occupational therapy. Further large controlled study might be required.

Keywords

Stroke;cognition;Activities of daily living

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-0448

CLINICAL STUDY ON IMPROVING POST-STROKE MOTOR DYSFUNCTION BASED ON DELPHI ACUPUNCTURE PRESCRIPTION: A RANDOMIZED, OPEN LABEL, PARALLEL-CONTROLLED TRIAL

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Introduction/Background

In this study, we designed a randomized control trial to investigate the effectiveness of Delphi acupuncture prescription in PSMD. We hypothesized that the Delphi acupuncture prescription could improve the motor function of PSMD patients and has a similar therapeutic effect with traditional conventional acupuncture prescription. The findings of our study will confirm the feasibility of the Delphi protocol in the clinical trial or clinical practice setting. The findings will help promote acupuncture treatment in different regions and different cultural backgrounds worldwide.

Material and Method

A total of 260 participants with PSMD completed this trial, including 87 patients in the optimal acupuncture group, 86 patients in the conventional acupuncture group, and 87 patients in the waiting-list group. All patients received basic treatment and health education. The intervention continued for 4 weeks (30 min per day, 5 days per week). The relative functional outcomes were measured at baseline and 4 weeks (at the end of intervention) using the Fugl-Meyer assessment (FMA), modified Ashworth scale (MAS), Berg balance scale (BBS), modified Barthel index (MBI), and National Institute of Health stroke scale (NIHSS). After 4 weeks of treatment, the functional status of the patients in each group was improved to varying degrees.

Results

Multiple comparisons of the change in the FMA, BBS, MBI, and NIHSS values indicated that optimal acupuncture based on the Delphi theory had a similar therapeutic effect on the functional status of PSMD patients with conventional acupuncture ($P_{\Delta \text{change value FMA}}=0.434$, $P_{\Delta \text{BBS}}=0.000$, $P_{\Delta \text{MBI}}=0.001$, $P_{\Delta \text{NIHSS}}=0.011$) (Table 4).

Conclusion

The acupuncture program based on the Delphi theory is a clinically effective prescription for the treatment of motor dysfunction in post-stroke patients. It has certain clinical value and can help young or inexperienced clinicians develop effective acupuncture prescriptions for post-stroke patients with motor dysfunction. The acupuncture program is of great significance for the clinical promotion of the acupuncture treatment program.

Keywords

Acupuncture;Stroke;Motor dysfunction

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0461

STUDY ON THE CORRELATION BETWEEN MAGNETIC RESONANCE SPECTROSCOPY AND LOEWENSTEIN OCCUPATIONAL THERAPY COGNITIVE ASSESSMENT IN EVALUATION OF COGNITIVE IMPAIRMENT AFTER STROKE

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Introduction/Background

To explore the cognitive impairment after stroke in patients with magnetic resonance spectrum and Loewenstein Occupational Therapy Cognitive Assessment.

Material and Method

According to the diagnostic standard of cognitive impairment with MMSE, selected cognitive impairment after stroke group, stroke control group and healthy control group, each of the group have thirty unities. and age, gender, level of education was matched in the three group. All the subjects were assessed with MRS and LOTCA.

Results

All LOTCA scores and the value of NAA/Cr in bilateral hippocampus in cognitive impairment group were lower than those in stroke control group and those in normal control group ($P < 0.05$); The value of Cho/Cr in bilateral hippocampus of Cognitive impairment group is higher than the stroke control group and healthy control group ($P < 0.05$); The value of NAA/Cr in bilateral hippocampus of stroke control group is lower than the healthy control group ($P < 0.05$), The value of Cho/Cr in bilateral hippocampus of stroke control group is higher than the healthy control group ($P < 0.01$), The value of NAA/Cr in bilateral hippocampus had low to moderate positive correlation with the LOTCA total score, the each sub-items score of LOTCA and attention score (left: $r=0.376\sim0.609$, right: $r=0.396\sim0.691$, $P < 0.05$); The value of Cho/Cr in left hippocampus had low to moderate negative correlation with the LOTCA total score, the each sub-items score of LOTCA ($r=-0.368\sim-0.619$, $P < 0.05$); The value of Cho/Cr in right hippocampus had low to moderate negative correlation with the LOTCA total score, the score of orientation, visual perception, visuo-motor organization, the thinking operations ($r=-0.391\sim-0.632$, $P < 0.05$).

Conclusion

MRS can be used to assess the degree of cognitive impairment in patients with stroke. MRS is associated with LOTCA score degree of cognitive impairment is heavier, the lower score of LOTCA, the lower NAA/Cr value, the higher Cho/Cr value.

Keywords

stroke;Cognitive impairment;Magnetic resonance spectrum

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0471

STROKE REHABILITATION UNIT AND ROBOTICS IN EARLY REHABILITATION

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Introduction/Background

Conceptually we consider the necessity of creating an integral treatment of rehabilitation for: etiopathogenic study, therapeutic assessment, diagnosis of complications, functional and psychological consequences. Emphasis in starting as soon as possible with the process of rehabilitation.

Material and Method

Creating a stroke unit of rehabilitation to treat the post-acute phase of recovery following a stroke. Patient is transferred once they are medically stable. Length of stay in that phase in 4-6 weeks. The goal of this unit is to maximize the stroke recovery potential in patients so they may be able to function at the highest level of physical and mental ability they can achieve post-stroke.

- Comprehensive, evidence based, written protocols, order sets and care pathways/algorithms should be in place to guide
- Early use of robotic therapy: Rehabilitation is inherently a labor intensive process and has always relied on an individualized therapy programs provided by highly skill therapist. This type of therapist has advantages but it is very physically demanding, so the training duration is limited by the fitness of the therapist. As a solution to this limitation a robot driven therapy has been proposed
- Early intensive task specific, multisensorial stimulation performed by highly skilled team. In addition we have developed on cutting edge robotic department with excellent results.

Results

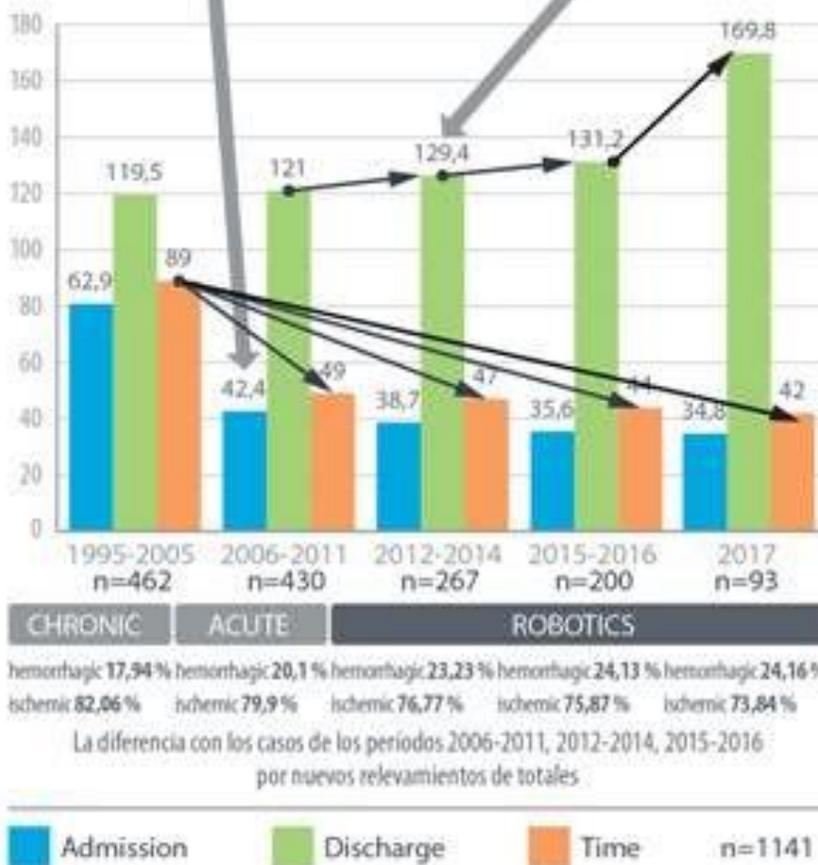
Results

With Stroke Unit

- Hospital stay is reduced by 50 % (average) in relation to stay of chronic patients
- Scores of discharge FIM+FAM show little increase

With Stroke Unit + Robotics

- Hospital stay time is sustained in a 52 % (average) in relation to stay of chronic patients
- But scores of discharge FIM+FAM were improved with the use of Robotics



Conclusion

Stroke rehabilitation unit and robotic are an effective program that provides:

- Early stimulation
- Prevention and treatment of risk factors
- Intensive stimulation
- Task specific stimulation
- Multi-sensory stimulation
- Decrease length of stay in the hospital
- Improvement in functional capacity

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0472

HETEROTOPIC OSSIFICATION AND STROKE: ABOUT FOUR PATIENTS

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Introduction/Background

Heterotopic ossification (HO) occurs in certain traumatic central neurologic pathologies, causing extra-articular heterotopic osseous formations. The frequency of their occurrence in stroke is relatively low (1%)

Purpose: to contribute to their existence in stroke.

Material and Method

They are three men and a woman old on average 44 years and have been hospitalized in Physical Medicine and Rehabilitation after a stroke. All had a hemiplegia, three were spastic. We studied the onset of the HO, clinical symptomatology and their location, and analytical and functional results obtained after surgery in two patients.

Results

It was 7 locations of HO (4 elbows, 2 hips and 1 knee). Six of them were located on the side of hemiplegia. One was haemorrhagic, two ischemic and the last one post cerebral thrombophlebitis.

The time to onset of clinical signs compared to the beginning of stroke is from 3 weeks for hemorrhagic case to 6 months in ischemic stroke case.

All HO occurred on the side of hemiplegia only one located on left knee in a right hemiplegia.

These HO are causing a stiff elbow and knee, and ankylosis of the hip in two patients fixed them in flexum-abductum and lateral rotatum greatly hindering the sitting.

Elbow HO was complicated by ulnar nerve compression.

One patient was operated for a functional purpose 18 months after stroke, and nerve decompression (neurolysis of the ulnar nerve) performed 6 months after stroke.

Conclusion

Lighting from our observations and our contribution to the reality of their existence in this type of pathologies.

Hip HO after central neurologic injury ultimately threatens articulation of ankylosis.

Elbow HO has often a major functional impairment with risk of nerve compression. Surgical indication concerns more frequently hip and elbow HO. Surgery is often delayed for fear of recurrence even if the functional prognosis is engaged.

Keywords

Stroke;Heterotopic ossification ;Ankylosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0494

EFFECT OF TURNING DIRECTION ON TIMED UP AND GO TEST RESULTS IN STROKE PATIENTS

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Introduction/Background

BACKGROUND: The Timed Up and Go (TUG) test is an assessment tool for measuring mobility for stroke patients. In the stroke patients, turning direction of the affected and un-affected side may influence turning time.

AIM: To investigate the effects of the turning direction according to the affected and non-affected sides of stroke patients during their Timed Up and Go (TUG) test and to define clinically salient outcomes during TUG tests performed in the clinic

Material and Method

DESIGN: Observational design.

SETTING: Department of physical therapy in rehabilitation center.

POPULATION: One-hundred thirteen hemiparetic stroke patients.

METHODS: Stroke patients were asked to perform the TUG tests by turning toward their affected and un-affected sides. Patients were divided according to gait speed, and their gait speed from the 10mWT was used. Those with a gait speed <48 m/min were assigned to the severe ambulatory dysfunction (SAD) group, whereas those with a gait speed ≥48 m/min were assigned to the moderate ambulatory dysfunction (MAD) group.

Results

RESULTS: The TUG test results showed a longer turning time when turning with the non-affected side as the turning axis (17.10 ± 5.69 sec) than with the affected side as the turning axis (17.52 ± 5.90 sec). When the patients were divided into the MAD and SAD groups based on the 10mWT results, patients in the SAD group exhibited slightly longer times (0.55 ± 1.11 sec) than did those patients in the MAD group (0.29 ± 1.03 sec); however, this difference was not significant.

Conclusion

CONCLUSIONS: The present study found that stroke patients showed differences in the TUG test results based on their turning direction, and less time was required when turning in the direction of the affected side compared to the non-affected side.

CLINICAL REHABILITATION IMPACT: Turning direction can affect the results of TUG test, it should be controlled in the execution of the TUG test in clinical settings.

Keywords

stroke; timed up and go test; turning direction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0498

UPPER LIMB FUNCTIONAL ACTIVITY OF CHRONIC STROKE PATIENTS IN THE COMMUNITY OF NARESUAN UNIVERSITY HOSPITAL, PHITSANULOK, THAILAND

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Introduction/Background

Upper limb functional activity (ULFA) dysfunction is one of the most common and persistent disabilities after stroke. Improvements in ULFA are likely to occur after discharge from active rehabilitation in hospital. However, currently no studies have been undertaken to investigate the ULFA of people with chronic stroke after discharge. This study aimed to investigate the ULFA of the affected arm in people with more than six months post-stroke.

Material and Method

A cross-sectional survey study was conducted during September to November 2017 in community areas of Naresuan University Hospital, Phitsanulok, Thailand. Participants were individuals with chronic stroke who were able to sit independently for at least 30 minutes and understand commands to perform a test. The Streamlined Wolf Motor Function Test (SWMFT) for chronic stroke was applied to evaluate the ULFA. Six tasks of the SWMFT were timed and rated by using the functional ability scores (FAS) starting from zero (cannot attempt task with involved arm) to five (movement appears to be normal). Scores of three or above indicated that all six SWMFT tasks could be completed to some degree by synergy, or were performed slowly or with effort. Data were analyzed by means of descriptive statistics.

Results

Forty-five community-dwellers who were on average of 66.38 ± 52.98 months post-stroke were recruited. The average SWMFT-FAS for the participants was 1.63 ± 1.52 points with a timescale of 69.93 ± 49.89 seconds (lower is better). Twenty-nine (64%) participants had SWMFT-FAS scores lower than 3. Twelve (26%) participants had a zero score.

Conclusion

The majority of people with more than six months post-stroke had poor ULFA of the affected arm. Continuing rehabilitation is therefore needed after hospital discharge, in order to enhance the ULFA recovery in people with chronic stroke.

Keywords

Stroke;Upper limb functional activity;Community

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0504

THE EFFECTS OF NON-ELASTIC TAPING COMBINED WITH EXERCISES TRAINING ON MOTOR FUNCTION IN CANE-ASSISTED INDIVIDUALS AFTER STROKE

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Introduction/Background

Cane is one of the common assistive devices prescribed for individuals with stroke to improve walking ability and safety. It was revealed that long term cane-assisted individuals with chronic stroke perform abnormal gait pattern during walking. To improve these impairments, strengthening, balance training, task-specific training and intensive mobility training have been suggested. However, the training effects on motor function were limited in cane-assisted individuals with chronic stroke. It is supposed that musculoskeletal alignment of these individuals isn't on the efficient position which may restrict the training effects. The immediate effects of joint alignment adjusted with Luekotape®P on muscle strength, balance and gait performance has been proved in individuals with stroke. However, the effects of taping combined with exercise training is unknown. This study aimed to investigate the effects of non-elastic tape combined with exercise training on motor function in cane-assisted individuals with chronic stroke.

Material and Method

Subjects were randomized into either the experiment group with Luekotape®P or control group with sham tape. Subjects in both groups received the same exercise training for six weeks. The primary outcomes were gait performance and Berg balance scale. The secondary outcomes were muscle strength of hip extensors and abductors, endurance and fear of falling. Outcomes measurements were performed before and after the intervention and then one-month follow-up.

Results

The intervention significantly improved cadence, stance time of affected side, spatial asymmetry ratio, Berg balance scores, and fall efficacy scale scores as well as 6-minutes walk test in the experimental group. In the control group, only the Berg balance scores and 6-minutes walk test had been significantly improved.

Table 1 Baseline demographic characteristics of the experimental and control groups

Variables	Experimental (n=5)	Control (n=5)	P-value
Age (years)	65.2 (10.03)	58.8 (6.97)	0.44
Gender			0.578
Male	4 (80%)	4 (80%)	
Female	1 (20%)	1 (20%)	
Height (cm)	165.4 (7.7)	170.6 (6.34)	0.278
Weight (kg)	66.36 (11.77)	72.6 (7.12)	0.23
Affected side			0.578
Right	2 (40%)	2 (40%)	
Left	3 (60%)	3 (60%)	
Post-stroke duration (months)	54.6 (38.18)	74.6 (59.68)	0.39
Cane-assisted duration (months)	54 (38.86)	74.2 (60.12)	0.38
MMSE	26.4 (1.94)	27.4 (2.3)	0.308

Note. Values are mean (SD) or frequency (percentage).
MMSE (Mini-mental state examination)

Table 2 The mean (standard deviation) motor function of subjects in the experimental and control groups at pre, post and follow up

Variables	Experimental group					Control group				
	Pre	Post	Follow up	P-value ^a	P-value ^b	Pre	Post	Follow up	P-value ^a	P-value ^b
Muscle strength										
Hip extensors (lbs)	33.1 (4.26)	36.85 (8.07)	35.55 (7.48)	0.225	0.345	40.23 (6.59)	46.99 (8.43)	44.62 (9.09)	0.144	0.08
Hip abductors (lbs)	35.02 (5.62)	36.5 (7.76)	34.07 (6.38)	0.345	0.686	41.69 (5.65)	47.07 (4.41)	44.63 (12.05)	0.138	0.686
Berg balance scale score	40.8 (2.16)	49.6 (4.27)	48 (4.69)	0.043^a	0.043^a	38.6 (6.31)	46.8 (5.16)	46.2 (4.6)	0.043^a	0.042^a
Fall efficacy scale score	36 (9.92)	22.8 (3.96)	22.6 (3.57)	0.042^a	0.042^a	29.2 (4.81)	20.8 (3.11)	23 (5.09)	0.066	0.068
6MWT (m)	187.2 (107)	205.37 (119)	205.14 (113)	0.043^a	0.043^a	136.4 (47.73)	169.46 (80.71)	180.18 (87.34)	0.345	0.043^a
Gait performance										
Gait speed (m/s)	0.49 (0.25)	0.53 (0.34)	0.56 (0.34)	0.893	0.225	0.32 (0.23)	0.29 (0.23)	0.37 (0.25)	0.715	0.225
Temporal asymmetry ratio (%)	13.95 (10.97)	29.06 (19.90)	16.87 (7.99)	0.074	0.686	52.45 (54.34)	14.01 (11.26)	20.76 (10.99)	0.225	0.138
Spatial asymmetry ratio (%)	19.03 (9.06)	9.63 (5.92)	5.86 (4.42)	0.043^a	0.043^a	33.24 (39.36)	13.26 (5.48)	13.61 (10.85)	0.345	0.686

^aSignificance level for within-group comparison (pre-post)^bSignificance level for within-group comparison (post-follow up)**Table 3** Change scores of motor function in experimental and control groups

Variables	Post-Pre			Follow up-Pre		
	Experimental	Control	P-value ^c	Experimental	Control	P-value ^d
Muscle strength						
Hip extensors (lbs)	3.74 (5.84)	6.76 (9.79)	0.917	2.45 (4.49)	4.39 (4.16)	0.754
Hip abductors (lbs)	1.554 (3.03)	5.37 (5.59)	0.251	-0.95 (3.24)	2.92 (14.36)	0.465
Berg balance scale score	8.80 (2.86)	8.20 (3.76)	0.675	7.20 (3.11)	7.60 (2.50)	0.829
Fall efficacy scale score	-13.20 (8.16)	-8.40 (6.02)	0.172	-13.4 (7.33)	-6.2 (7.22)	0.138
6MWT (m)	18.178 (18.85)	33.00 (54.53)	0.917	17.94 (13.75)	43.72 (52.84)	0.834
Gait performance						
Gait speed (m/s)	0.045 (0.135)	-0.03 (0.11)	0.917	0.073 (0.09)	0.046 (0.072)	0.602
Temporal asymmetry ratio (%)	15.11 (13.15)	-38.43 (62.73)	0.117	2.91 (14.48)	-31.69 (52.05)	0.117
Spatial asymmetry ratio (%)	-9.40 (6.91)	-19.98 (40.8)	0.917	-13.17 (6.66)	-19.6 (46.07)	0.465

^cSignificance level for between groups comparison (post-pre)^dSignificance level for between groups comparison (follow up-pre)

Conclusion

Although all outcomes didn't show significant differences between groups. Our results suggested that exercise combined with Luekotape®P may have more improvement than exercise alone in stance time, cadence, spatial asymmetry ratio, endurance, and fall efficacy scale.

Keywords

Chronic stroke;Leukotape® P;Gait

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0506

EFFECT OF COMORBIDITY ON FUNCTIONAL RECOVERY IN STROKE PATIENTS

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Introduction/Background

The impact of comorbidities on stroke functional recovery has yet to be studied in Taiwan. This study evaluated the comorbidities and their impact on functional recovery in stroke patients.

Material and Method

The participants were 105 acute stroke patients with moderate to severe functional disability who were admitted for comprehensive rehabilitation. Participants were 76 people who underwent Post-acute Care program and other 29 participants accepted a regular rehabilitation program within six months after stroke. The effect of each comorbidity on the patients' post-hospitalization daily living activities was analyzed based on the Charlson Comorbidity Index (CCI).

Table 1: Characteristics of the participants in the 2 groups

	post-acute care(n=76)	Control(n=29)	P value
Age	65.6±13.5	60.8±13.8	0.891
Onset weeks	2.5±0.8	15.4±12.0	<0.001 ³
Stay days	58.9±22.9	32.5±21.0	0.001 ³
mRS on admission	3.8±0.5	3.9±0.8	0.229
Comorbidity score(CCI)	3.4±1.4	3.7±1.4	0.941
MMSE at admission	24.0±6.2	21.1±9.7	0.016 ³
BSRS-5 at admission	2.9±3.1	2.1±3.0	0.252
Tract remove% ¹	78(n=9) ±44.1	33(n=3) ±57.7	0.543
BI admission	41.8±24.5	37.2±26.5	0.311
BI discharge	75.5±20.5	47.2±27.1	0.008 ³
BI improvement	33.75±19.7	10±11.4	<0.001 ³
% recovery ²	1.4±1.7	0.4±0.6	0.015 ³

¹Tracts refer to NG and Foley

² %recovery: imporvment/BI admission

ex:BI ad=30; BI dis=75; improvement=45; %recovery=45/30=1.5

³ p<0.05: The statistical significance of analysis results

Abbreviations: BI , Barthel index

Results

The average Barthel Index (BI) scores increased from 41.8 at admission to 75.5 at discharge; the average progress was 33.7 points. The stroke patients in control group had an average BI score of 37.2 at admission and 47.2 at discharge; the average progress was only 10 points. The functional recovery rate of daily living activities in the post-acute care group was equal to [(BI scoring improvement/BI at admission)x100%] and was significantly higher than that of the control group (post-acute care: control=1.4±1.7/0.4±0.6; p=0.015). For each 1 point increase to a patient's CCI score, there was a 0.97 point decrease to the patient's score on the BI after discharge from the hospital (p=0.013). An analysis of 19 comorbidities showed that the order of highest prevalence was diabetes (21%), prior cerebrovascular accident with mild or no residual or transient ischemic attack (17.1%), and diabetes with end-organ damage (14.3%). Analysis of the impact of the various comorbidities on stroke patients' daily living activities indicated that the

most harmful disease was chronic pulmonary disease, followed by prior history of hemiplegia.

Table 2. Effect of comorbidities on stroke patients' performance of daily living activities

Comorbidity	Prevalence (%)	Beta ¹	95% Wald CI		P value ²
			Lower	Upper	
Myocardial infarct	11.4	10.60	-9.50	30.60	0.301
Congestive heart failure	8.6	-2.30	-24.80	20.30	0.845
Peripheral vascular disease	11.4	9.98	-5.78	25.73	0.210
CVA with mild or no residual or TIA ³	17.1	-12.04	-24.33	0.24	0.060
Dementia	2.9	-5.88	-30.45	18.70	0.640
Chronic pulmonary disease	2.9	-35.50	-52.86	-18.13	0.004 ²
Connective tissue disease	1.0	27.30	16.08	38.52	0.001 ²
Peptic ulcer disease	7.6	-9.49	-31.05	12.06	0.390
Mild liver disease	1.0	-1.21	-8.69	6.26	0.750
Diabetes	21.0	4.91	-5.95	15.77	0.380
Hemiplegia ³	2.9	-18.51	-30.11	-6.92	0.002 ²
Moderate or severe renal disease	3.8	16.63	-7.13	40.38	0.170
Diabetes with end-organ damage	14.3	11.31	-8.68	31.29	0.267
Tumor without metastasis	1.9	41.37	16.75	65.99	0.001 ²
Leukemia	0.0	0.00			
Lymphoma	0.0	0.00			
Moderate or severe liver disease	0.0	0.00			
Metastatic solid tumor	0.0	0.00			
AIDS (not just HIV positive)	0.0	0.00			

Prevalence: disease item detected rate in stroke patients

Dependent Variable: Barthel Index score at discharge

¹ Beta value: every point that the effective factor can increase or decrease the independent variable

² p<0.05: The statistical significance of analysis results

³ CVA with mild or no residual or TIA and hemiplegia were recorded by prior history before this accident

Abbreviations: CI, confidence interval

Conclusion

Comorbidities, especially chronic pulmonary disease and hemiplegia, can affect the functional recovery and daily living activities of stroke patients.

Keywords

stroke;outcome;comorbidity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0536

HEALTH SEEKING BEHAVIOURS IN STROKE SURVIVORS IN MADAGASCAR

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Introduction/Background

Stroke incidence is increasing in low and middle income countries, thus stroke disability is too. This is at a disproportionate rate to high-income countries. Rehabilitation tackles stroke disability. Rehabilitation services in Madagascar are lacking in information regarding the needs of people with stroke disability. Understanding health-seeking behaviours can help us understand people's patterns of behaviour and plan services accordingly. This study aimed to understand the health-seeking behaviours of stroke survivors in Madagascar. Through exploring their understanding, service utilisation and motivations in their stroke experience.

Material and Method

This study used a cross-sectional, qualitative design. Thirteen semi-structured interviews were carried out with the use of translators. The study was conducted in the *Hopital Joseph Ravoahangy Andrianavalona* in Antananarivo, Madagascar. Thematic analysis was used to summarise and synthesis the data.

Results

Participants understanding of stroke and rehabilitation was limited but mainly rooted in a biomedical logic, with high blood pressure being mentioned most frequently. Geography and financial costs were barriers to receiving modern medical care, and made non-medical more favourable. Family support was the main facilitator in accessing any form support. Participants were motivated to seek healthcare for several reasons, specifically to return to employment.

Conclusion

The study's findings were similar to existing literature in low and middle income countries. Recommendations from the study included researching the benefits of physiotherapy techniques and caregiver strain. Furthermore, to produce a health promotion campaign centred on education and a community based rehabilitation scheme to reduce barriers.

Keywords

Madagascar;Behaviour;Health

Conflict of interest

Disclosure statement:

I received a £250 grant towards travel costs from Opt-In, a registered UK charity, which focuses on overseas training and partnerships.

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0571

SIX MONTH FOLLOW-UP COMPARISON OF LOW AND MODERATE INTENSITY WALKING ACTIVITY IN COMMUNITY-DWELLING PEOPLE WITH STROKE

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Introduction/Background

Although regular physical activity is vital for cardiovascular health, little is known about how the intensity of physical activity changes over time in community-dwelling people with stroke. The purpose of this study was to examine the changes in low and moderate intensity walking activity in community-dwelling people with stroke between discharge from a rehabilitation setting and in a 6 month follow-up.

Material and Method

Twenty-three stroke patients participated in this study. Step counts were measured using Step activity monitor for three days at baseline and at 6 months after baseline measurement. Step data were collected every 5 seconds. The start of a walking bout was defined as 3 strides within a 15 second interval and the end of a walking bout was defined as a 10 second interval in which no strides occurred. Based on the cadence in the walking bout, each bout was categorized as low intensity (<80 steps per min) or moderate intensity (≥80 steps per min). The number of steps per day, number of bouts per day, walking time per day, and percentage of time spent walking per day were calculated at each intensity. The differences in each variable were compared by paired t-test.

Results

Participants' characteristics are shown in Table 1. The baseline assessment was conducted 133.6 ± 5.6 days post stroke (11.7 ± 5.6 days post discharge). The follow-up measurements were conducted 182.5 ± 9.1 days from baseline assessment. Table 2. shows a comparison of the walking activity by intensity at baseline and follow-up. There were no significant differences between baseline and follow-up in all variables.

Table.1. Participant Demographics

	Stroke (n=23)
Male/Female	15/8
Age	63.7 ± 11.2
Stroke type (Ischemic/Hemorrhagic)	9/14
Location (Right/Left)	12/11
Mini mental state examination	28.8 ± 2.0
Functional Balance Scale	52.1 ± 7.4
Rivermead Mobility Index	13.5 ± 1.1
Use of assistive device	9
Use of orthotic device	7

NOTE. Values are mean ± SD.

Table. 2. Comparison of walking activity by intensity at baseline and 6 months follow-up.

Variable	Intensity	Baseline (n=23)	6Mo (n=23)	p-value	Mean difference	95% CI	
						Lower	Upper
Steps per day (steps)	Low	5199.6 ± 2846.1	5789.4 ± 2545.6	0.244	589.7	-432.1	1611.5
	Moderate	3731.1 ± 3469.6	3837.4 ± 3506.6	0.859	106.3	-1123.9	1336.5
Bouts per day (bouts)	Low	158.2 ± 91.3	161.0 ± 77.0	0.821	2.8	-22.6	28.2
	Moderate	16.6 ± 12.7	21.9 ± 23.0	0.216	5.3	-3.4	14.0
Walking time per day (min)	Low	102.0 ± 57.8	110.1 ± 49.1	0.359	8.1	-9.8	26.0
	Moderate	37.8 ± 33.5	39.9 ± 35.1	0.738	2.0	-10.3	14.4
Percentage of walking time per day (%)	Low	11.9 ± 5.8	13.0 ± 5.0	0.278	1.2	-1.0	3.3
	Moderate	4.5 ± 4.1	4.9 ± 4.6	0.595	0.4	-1.2	2.0

NOTE. Values are mean ± SD.

Abbreviation: CI, confidence interval

Conclusion

Not only low intensity walking activity but also moderate intensity walking activity did not change over 6 months. Establishing exercise habits at discharge might promote long-term physical activity in community-dwelling people with stroke.

Keywords

Physical activity;Secondary prevention;Community-dwelling

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-0577

ANALYSIS OF FACTORS PREDICTING DISCHARGE TO HOME AFTER HOSPITAL TREATMENT OF CEREBRAL INFARCTION WITH TROUSSEAU'S SYNDROME AT OUR STROKE CENTER

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Introduction/Background

Trousseau's syndrome (cancer-associated thrombosis) is known as one of the causes of cerebral infarction. However, there are few reports of the rehabilitation and outcome in ischemic stroke patients with this syndrome. The purpose of this study was to investigate predictors of the discharge to home from acute care hospital in those patients.

Material and Method

Fifty three ischemic stroke patients with Trousseau's syndrome were received the treatment and rehabilitation in our stroke center between April 2007 and July 2017. Subjects were 36 patients among them, excluding 17 patients who died during hospitalization. As the discharge destinations, 15 patients were discharged to home (home group), 21 patients were transferred to the other hospital (transfer group). To investigate predictors of the discharge to home, we compared in each groups for following items; age, sex, MRI findings, state of the cancer (primary lesion, histological type, presence of distant metastasis), treatment contents of ischemic stroke, NIHSS and modified Rankin scale (mRS) on admission, the number of days until the start of rehabilitation after the hospital, Brunnstrom stage and FIM scores on starting rehabilitation.

Results

The mRS on admission in the home group was significantly lower than that in the transfer group. The score of total FIM, motor FIM, and 4 subscale items of FIM (eating, dressing lower body, bladder management, comprehension) in the home group were significantly higher than that in the transfer group on starting rehabilitation. There were no significant differences in other items between two groups.

Conclusion

Patients with Trousseau's syndrome have poorer prognoses than other cerebral infarction patients. However, they may be able to be discharged home by appropriate rehabilitation. Our results suggest that we must focus their rehabilitation on independence of self-care such as

eating, dressing lower body, bladder management in order to discharge to home from acute care hospital.

Keywords

cerebral infarction;cancer;Trousseau's syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0629

EARLY MOBILIZATION IN INTENSIVE CARE FOR SEVERE ACQUIRED BRAIN INJURY PATIENTS: CURRENT PRACTICES AND IMPLEMENTATION BARRIERS IN FRANCE

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Introduction/Background

Early mobilization (EM) in intensive care units is safe, feasible and beneficial for patients; however, little is known about the current practices of early mobilization for patients with brain injury in intensive care units (ICU) in France.

Aim: To evaluate the current mobilization practices and its barriers in ICUs for patients with acquired brain injury.

Material and Method

A cross-sectional survey online was conducted with two questionnaires on early mobilization practices distributed to physicians and physiotherapists working in 130 ICUs across France.

Results

The survey was completed by 31 physiotherapists and 25 physicians in 24 different wards. Rehabilitation specialists were involved with care according to 88% of doctors. EM was most frequently started within 24-48 hours, according to 8 doctors and 15 physiotherapists. The majority of physiotherapists (84%) stated that 75%-100% of patients received positioning and passive range of motion therapy, alongside head of bed elevation (84% PTs). A lower proportion of patients received standing exercises (32% PTs reported 25-30% of patients), walking therapy (48% reported <25% of patients), whilst 77% of PTs reported that no patients received muscular electrostimulation. The most common medical barriers were high intracranial pressure and hemodynamic instability. Two thirds of doctors and over 80% of physiotherapists stated they did not use any pre-established protocol criteria for initiation of EM. Fourteen doctors (56%) did not have a wakening protocol to reduce sedation.

Conclusion

Early mobilization in various forms is being practiced in the ICUs of France. Main results demonstrate a good willingness and enthusiasm amongst physicians and physiotherapists, but a lack of medical support and not enough personnel to attain early mobilization objectives. We

suggest a need to have a standardize protocol to encourage early safe mobilization of neurological patients in intensive care. Further prospective research on safety and outcomes specific to neurological patients is needed.

Keywords

No conflict of interest

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ISPR8-0641

DISTURBANCES OF SPATIAL REFERENCE FRAME AND POSTURAL ASYMMETRY AFTER A CHRONIC STROKE

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Introduction/Background

Asymmetrical postural behaviours are frequently observed after a stroke. They are due in part to the sensorimotor deficit, but could also be related to a disorder of the representation of the body in space. The objective was to determine whether the asymmetrical postural behaviours of chronic stroke patients are related to a disruption of the perception of spatial frame.

Material and Method

30 chronic stroke patients (mean age 60,3y± 10, mean delay post-stroke 4,78 y±3) 15 patients with right brain damage (RDB) and 15 patients with left brain damage (LBD) and 20 healthy subjects participated in the study. Postural asymmetry was detected by the evaluation of body weight repartition on a force platform (Weight Body Asymmetry) and was related to the Longitudinal Body Axis (LBA) and the Subjective Straight Ahead (SSA) (egocentric space representation) and also to the Subjective Visual Vertical (SVV) (allocentric space representation) by means of a multivariate analysis of variance (MANOVA) which was adjusted with motor function and sensitivity as covariables.

Results

Both patients with RBD (35%+/-8) and LBD (39%+/-4) had a body weight asymmetry and there was still space misperception at this stage of recovery, especially in the RBD group. WBA was related to LBA when considering both patients with RBD and LBD (p=0,03). However, this relation was dependent on the side of the lesion (p=0.0006) with a stronger relation in the RBD group (58,26%). No relation with WBA was found neither with SSA (p=0,58) nor with SVV (p=0,47).

Conclusion

This study pointed out a strong relationship between disturbance in the perception of the longitudinal body axis and postural asymmetry in chronic strokes, and predominantly within the RBD group. Whereas other spatial perturbations did not seem to be involved in this particular postural behaviour.

Keywords

stroke;postural asymmetry;spatial frame of reference

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-0708

EXPLORING THE NEEDS OF INFORMAL CAREGIVERS OF STROKE SURVIVORS ACCESSING REHABILITATION SERVICES IN ANTANANARIVO, MADAGASCAR

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Introduction/Background

In Madagascar, half of those affected by stroke are less than 50 years old and it is the second leading cause of disability in the country. All treatment must be paid for but with 92% of the population living on less than 2€ a day, informal caregivers are essential. Stroke caregiver needs remain poorly understood; this is the first study that aims to explore these needs in Madagascar

Material and Method

In 2017, a medical student interviewed 15 caregivers of stroke survivors, in the university hospital in Antananarivo, Madagascar. A semi-structured interview guide was used, exploring needs related to understanding of stroke, assistance in Activities of Daily Living (ADL) (using visual cues) and care burden (based on caregiver burden tools). Audio-recorded interviews were dictated verbatim and analysed using thematic analysis.

Results

Caregivers had a good understanding of the definition of stroke but lacked understanding around prevention of recurrence and the extent of possible recovery. Preferred information sources included doctors, physiotherapists, other stroke survivors and their caregivers. Caregivers felt that they had little access to specialized equipment or help to assist in ADL. Care burden was considerable, including impact on own wellbeing and finances. Participants were eager for information regarding stroke care and recovery; this may have influenced how they approached the interviewer, as a potential information source, and therefore not been as critical of the health service.

Conclusion

These findings complement those of other studies in higher income countries. Limitations include that a high-income, well-educated group were interviewed and a translator was used. There were no occupational therapists in Madagascar, which limits the exploration of their potential benefit. This study is the first to explore the needs of caregivers of stroke survivors in Madagascar, which informs future research in the area, particularly in low-income countries.

Keywords

stroke;caregivers;madagascar

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0730

IMPACT OF SOMATOSENSORY DEFICITS ON FUNCTIONAL INDEPENDENCE AFTER FIRST INPATIENT REHABILITATION PROGRAM POST STROKE

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Introduction/Background

It is estimated that somatosensory deficits (SSD) are present in more than half of ischemic strokes. SSD can influence motor outcomes and thereby impair participation in activities of daily living (ADL). Rather few studies have investigated SSD after stroke. Previous studies showed a negative correlation between SSD following stroke, the functional prognosis of rehabilitation. The aim of this study is to illustrate the influence of SSD in functional outcomes as measured by the functional independence measure (FIM).

Material and Method

Prospective observational study, with retrospective analysis of admission and discharge data, after a 1st inpatient rehabilitation program. Four groups were created: A - no SSD, B - only superficial SSD, C - only deep SSD, and D - both types of SSD. Functionality was measured by the FIM, subdivided in ADL, motor outcomes, cognitive outcomes and total outcome. The results were analyzed with ANOVA.

Results

From a total of 119 patients who were discharged in 2014, complete data on SSD were available for 79, of which 57% were women. Mean age was 60.84 years. In 68% of cases the stroke was ischaemic. On average, patient stay was 65.82 days (SD 13.66). At admission, 22 patients had no SSD, 9 patients had changes only in superficial sensitivity, 3 had only deep sensitivity and 45 had both types of SSD. There are significant differences between having no SSD and having both types of SSD, regarding ADL, motor scores and total FIM scores, at admission. At discharge, the differences were statistically significant for: ADL, motor scores, cognitive and total FIM scores, as well as for the change of ADL scores and total FIM scores.

Conclusion

SSD had an impact in the functional outcomes, especially when both SSD were impaired. In agreement with previously published data, SSD after stroke have a negative effect on motor and functional performance.

Keywords

stroke;somatosensory deficits

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-0734

THE EFFECT OF PARALYTIC ARM PAIN IN THE SHOULDER JOINT ON THE EFFECTIVENESS OF REHABILITATION AFTER STROKE

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Introduction/Background

Post-stroke shoulder pain (PSSP) is a common impairment and occurs in approximately one-third of an unselected stroke population. Although PSSP can improve during rehabilitation, studies have shown that it can be a long-lasting or persistent problem. Patients with more severe paralysis of the arm are increasingly likely to develop shoulder pain.

The aim of study was to investigate effectiveness of rehabilitation after stroke in individuals with and without PSSP.

Material and Method

The study consisted of 58 after stroke patients treated in the neurology department of rehabilitation clinic from 2016 October to 2017 September. The patients were divided into two groups PSSP and non-PSSP. The data were collected using questionnaire, interviews, medical records before and after patient rehabilitation. Functional independence was measured by Functional Independence Measure (FIM) scale. Patients emotional health was evaluated by SF-36 questionnaire which was adapted for this study. Pain in the shoulder of paralytic arm was evaluated by pain scale from 0 to 10 when 0 – no pain and 10 – unbearable pain. Statistical analysis was performed with SPSS, $p < 0.05$ was significant.

Results

The analysis of pain influence for rehabilitation after stroke shown, that rehabilitation has statistically significant effect for both groups of patients ($p < 0.001$). FIM has been statistically significant higher in non-PSSP group than in PSSP group ($58,86 \pm 13,68 \rightarrow 93,64 \pm 17,41$ vs $52,90 \pm 13,49 \rightarrow 79,80 \pm 10,72$). Non-PSSP group has shown statistically significant improvement for physical health than PSSP group ($34,32 \pm 7,24 \rightarrow 54,67 \pm 17,95$ vs $28,70 \pm 7,74 \rightarrow 29,85 \pm 14,29$). Study has shown that there was no statistically significant difference in improvement of emotional health between groups ($p < 0.001$).

Conclusion

Rehabilitation has statistically significant effect for patients after stroke with and without PSSP.

The analysis has shown statistically significant effect for functional independence and physical health for non-PSSP patients group.

Keywords

No conflict of interest

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ISPR8-0739

THE ASSOCIATION BETWEEN SERUM BDNF LEVELS WITH POST-STROKE DEPRESSION AND ANXIETY: A COHORT STUDY

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Introduction/Background

Brain-derived neurotrophic factor (BDNF) has been shown to play an important role in psychological function. The aim of this study was to investigate the association of serum BDNF and development of poststroke depression and anxiety.

Material and Method

Serum concentration of BDNF was measured in stroke patients on admission to inpatient rehabilitation hospital. Depression and anxiety mood was diagnosed using (Diagnostic and Statistical Manual of Mental Disorders 4th edition[DSM-IV] criteria). The functional outcome was measured using Functional Independent measures(FIM).

Results

Poststroke depression was diagnosed in 61 (37.7%) patients and anxiety was diagnosed in 40 (24.7%) patients. Except for marital status ($P=0.030$) and BDNF levels ($P=0.033$), none of the predictor variables showed statistically significant differences among the three groups. Low level of BDNF was significantly associated with poststroke depression ($P=0.009$, OR:0.93, 95%CI:0.88-0.98), but not with PSA ($P=0.469$, OR:0.98, 95%CI:0.93-1.04). In addition, BDNF level was associated FIM motor scores at discharge in this cohort patients ($P=0.027$, OR:0.036-0.602, B:0.319).

Conclusion

Low BDNF levels were found to be important risk factors for PSD but not for PSA.

Keywords

poststroke depression and anxiety;BDNF;outcome measure

No conflict of interest

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ISPR8-0773

EFFECTS OF NESS H200 HAND REHABILITATION SYSTEM WITH SUPPLEMENTARY UPPER EXTREMITY SURFACE STIMULATION FOR CHRONIC HEMIPLEGIA : AN INTERIM REPORT (APPROXIMATELY 6 WEEKS)

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Introduction/Background

Paralysis from a stroke can lead to learned non-use of the affected upper limb (Wolf et al., 1989, Taub et al., 2002). In the present study, we tried to turn severe hemiplegic upper limbs into assisting hands using occupational therapy and the NESS H200[®] hand rehabilitation system. This is an interim report of approximately 12 weeks of that case series study.

Material and Method

Target: Three subjects (one male and two females) with severe hemiplegic upper limbs were enrolled. They had an average age of 60.7 years (SD \pm 4.5), and their paralysis had lasted for an average of 50.3 months (SD \pm 32.2). Initial motor function evaluations showed on average 34.7 (SD \pm 8.3) on Fugl-Meyer Assessment (FMA), with an average amount of use (AOU) of motor activity log (MAL) of 0.2 (SD \pm 0.3) and an average quality of movement (QOM) of 0.2 (SD \pm 0.3).

Explanation and agreement: All subjects provided informed consent forms to participate in the study. An ethical review of the study is being conducted (Yamato University Ethics Review No. 33), and no conflict of interest exists.

Methods: The rehabilitation programme involved occupational therapy matching life goals practiced more than once a week and independent training using NESS H200[®] at least three times a week.

Results

At the end of the interim evaluation, FMA average was 44.0 (SD \pm 13.5), MAL AOU average was 0.6 (SD \pm 0.4) and MAL QOM average was 0.6 (SD \pm 0.3).

Conclusion

Our results show the rehabilitation programme encouraged patients to use their paralysed upper limbs. This suggests that the programme can improve the use of supporting technologies for chronic severely paralysed upper limbs.

Keywords

Occupational therapy; Surface stimulation of the forearm and hand; severe hemiplegic upper limbs

No conflict of interest

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ISPR8-0777

THE TEMPORAL EVOLUTION AND THE RELATIONSHIPS OF THE DEEP TENDON REFLEX, SPASTICITY, MOTOR RECOVERY AND PERFORMANCE OF DAILY FUNCTION IN CHINESE PATIENTS WITH STROKE

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Introduction/Background

Stroke is a common etiology causing disability. But the epidemiologic data regarding the neurological features and recovery after stroke is scarce. The aim of this study was to reveal the temporal evolution and the relationships of the deep tendon reflex (DTR), spasticity, motor recovery and performance of daily function in Chinese patients with stroke.

Material and Method

Consecutive patients with confirmed diagnosis of stroke were recruited from a medical center in Taiwan from 2014 May to 2014 Nov. We assessed patients' DTR, spasticity with Modified Ashworth Scale, motor recovery with Brunnstrom stage, and performance of daily function with Barthel Index at 5 time points: onset within week 1, 2, 3, 4 and 24 weeks after stroke.

Results

A sample of 34 patients with stroke was recruited in the study. All of these patients received at least 4 times of assessments after onset, and 57.5% (n=19) of patients had followed up at 24 weeks after onset. DTR increased over the weak limbs occurred one week before or at the same time as emergence of spasticity. Different patterns of spasticity were noted in patients with hemiplegia and hemiparesis. Spasticity emerged in most hemiplegic patients at 2 weeks after stroke. In Brunnstrom stages, small portions of patients improved within 4 weeks, and larger portions of patients recovered from 4 to 24 weeks. As for performance of daily function, improvement was shown in all patients at 24 weeks.

Conclusion

This study showed the temporal evolution and the relationships of the DTR, spasticity, motor recovery and performance of daily function in Chinese patients within 6 months after stroke. It may help physicians provide some early and relevant interventions to facilitate the brain plasticity and recovery.

Keywords

stroke; spasticity; motor recovery

No conflict of interest

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ISPR8-0778

EARLY REHABILITATION BY ELECTRICAL MUSCLE STIMULATION IN INTENSIVE CARE UNIT FOR PATIENTS WITH INTRACRANIAL HYPERTENSION

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Introduction/Background

Japanese guidelines for the management of stroke recommend early rehabilitation for the prevention of disuse syndrome. However, there are few reports concerning the safety and risk of the rehabilitation for the patients with intracranial hypertension. The patients with intracranial hypertension can't attempt to move their extremities, and ROM exercise without contraction of muscle tends to the main early rehabilitation in intensive care unit. It leads to disuse muscle atrophy. Therefore we introduced Belt electrode-Skeletal muscle Electrical Stimulation (B-SES) as electrical muscle stimulation, which causes a muscle contraction, for patients with intracranial hypertension, and we assessed the safety of B-SES for the patients with intracranial hypertension.

Material and Method

We use AUTO Tens PRO Rehabili Unit made by HOMER ION LABORATORY CO.,LTD, and selected LEG DISUSE MODE, and the duration of the stimulation is 20 minutes. Physical therapist determined the output level by palpation of triceps surae muscle of each patient, and the effective intensity was usually between 20V and 50V.

Results

Case1: A 43-year-old woman underwent coil embolization of the ruptured right VA-PICA aneurysm. We monitored her intracranial pressure (ICP) by external drainage, and her ICP kept 14.5-18.0 cmH₂O during B-SES.

Case2: A 66-year-old man underwent external drainage for the acute hydrocephalus due to left thalamic hemorrhage and intra ventricular hemorrhage. His ICP kept under 17.5-19.0 cmH₂O during B-SES.

Case3: A 49-year-old man with right acute subdural hematoma underwent hematoma removal with decompressive craniotomy. His ICP kept 8-11 mmHg during B-SES.

Case4: A 41-year-old woman presented with subarachnoid hemorrhage underwent neckclipping of the left middle cerebral artery aneurysm. Her ICP kept 8-11 mmHg during B-SES.

Conclusion

Electrical muscle stimulation with B-SES, as can be seen from these four cases, never worsened intracranial hypertension. Therefore, early rehabilitation with B-SES is safety and worth introducing for the patient with intracranial hypertension in intensive care unit.

Keywords

early rehabilitation;electrical muscle stimulation;intracranial hypertension

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0789

THE RELATIONSHIP BETWEEN HAND SPASTICITY AND UPPER EXTREMITY MOTOR PERFORMANCE IN STROKE PATIENTS

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Introduction/Background

Background and aims. Spasticity is one of the upper motor neuron syndrome that can result in reduced function. The spasticity in the upper extremity has been found to be associated with reduced arm function. The aim of this study was to realize the impact of spasticity on upper extremity motor performance.

Material and Method

Methods. Thirty-six patients with first-ever stroke (mean age 56.3 ± 14.3 years, mean onset time 0.43 ± 0.33 years) were included and accepted two outcome measures. Spasticity was assessed on the Modified Ashworth Scale (MAS) and defined "no spasticity~mild spasticity" as $MAS \leq 1$ in any of the examined upper limb joints, "moderate~severe spasticity" as $MAS > 1$; upper extremity motor performance was evaluated with Fugl-Meyer Assessment of the upper extremity (FMA-UE) and defined "mild upper extremity impairment" as $FMA-UE = 51 \sim 66$, "moderate upper extremity impairment" as $FMA-UE = 21 \sim 50$, and "severe upper extremity impairment" as $FMA-UE = 0 \sim 20$.

Results

Results. Multinomial logistic regression with penalized likelihood revealed that patients with "moderate~severe spasticity" were more likely to have "severe upper extremity impairment" than "mild upper extremity impairment" (odds ratio [OR] = 16.07; 95% confidence interval [CI], 1.56-376.18; $P = .018$); patients with "no spasticity~mild spasticity" were easily to have "moderate upper extremity impairment" than "severe upper extremity impairment" (OR = 6.45; 95% CI, 7.57-81.33; $P = .089$).

Conclusion

Conclusions. Hand spasticity in stroke patients could have some impact on their upper extremity motor performance, it is necessary to consider the marked spasticity problem in stroke patients and make great efforts to deal with it.

Keywords

Stroke Patients;Hand Spasticity;Upper Extremity Motor Performance

No conflict of interest

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ISPR8-0812

GASTROCNEMIUS MUSCLE SPASTICITY AND ITS ASSOCIATION WITH GAIT SPEED, BALANCE, AND QUALITY OF LIFE IN STROKE

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Introduction/Background

There is no consensus concerning the relationship between spasticity and gait speed, balance and quality of life in stroke patients. Therefore, the aim of the present study was to investigate spasticity and its association with balance, gait speed and quality of life.

Material and Method

Fifty one stroke patients who can cooperate and have 3 or higher grade in Functional Ambulation Scale were included in the study. Gastrocnemius muscle spasticity by the Modified Ashworth Scale (MAS), gait speed by the 10-meter Comfortable and Fast Gait Speed Tests (CGST-FGST), balance by the Single Leg Stance Test (SLST) and Timed Up and Go Test (TUG), and quality of life by the Stroke Specific Quality of Life Scale (SS-QOL) were assessed. $P \leq 0.05$ was considered statistically significant.

Results

The MAS score of gastrocnemius muscle was 2.87 ± 1.03 . Significant correlations were found between the MAS score and the 10-meter FGST ($r=0.31$; $p=0.002$), and the affected limb SLST ($r=-0.43$; $p=0.004$). There were no statistically significant correlations between the MAS score and 10-meter CGST ($r=0.23$; $p=0.129$), TUG ($r=0.28$; $p=0.071$), and SS-QOL ($r=-0.02$; $p=0.852$).

Conclusion

The results indicated that the gastrocnemius muscle spasticity may contribute to impairment of fast gait speed and static balance in stroke patients. To increase ambulatory skills of stroke patients, gastrocnemius muscle spasticity should be aimed in rehabilitation programme.

Keywords

Stroke;gait speed;static balance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0819

EFFECTS OF AEROBIC TRAINING ON MEMORY, ATTENTION, AND WORKING MEMORY IN PATIENTS WITH STROKE OR TRAUMATIC BRAIN INJURY

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Introduction/Background

Patients with stroke or traumatic brain injury (TBI) often suffer from impaired memory, attention deficits and fatigue. As a consequence they meet difficulties in planning and organising daily activities, participation in family and social life, and returning to work. Experimental studies show that aerobic training promotes plastic changes in the brain with development of new vasculature, changes in neurotransmitter levels and increase in Brain-Derived Neurotrophic Factor (BDNF). Furthermore, aerobic training improves cognition in the general population. The effects of such training on cognition after stroke and TBI are, however, not well known. Our study therefore aims to investigate if aerobic training improves memory, attention and working memory in patients with stroke or TBI.

Material and Method

This randomized (1:1) controlled study includes 12 stroke or TBI patients with cognitive impairments, 18-60 years old. All patients participate in a rehabilitation program with a multidisciplinary team including training of physical, psychological, cognitive and communicative abilities, all according to the patient's deficits and individual goals. The intervention consists of 30 min aerobic training on a stationary ergometer bicycle at an intensity of 60-80% of estimated maximum heart rate, 3-4 times a week for 8 weeks. The control group participates in the regular rehabilitation program. Participants are tested before and after the program, and at a 3-month follow-up. The cognitive tests include assessment of verbal, visual, working memory and attention. Physical endurance is tested with Åstrand's sub maximal endurance test. CNS effects are studied with functional magnetic resonance imaging (fMRI) using blood oxygenation level dependent technique (BOLD).

Results

The study is ongoing. Eight patients have so far completed the program. Preliminary results will be presented.

Conclusion

The study is ongoing. Eight patients have so far completed the program. Preliminary results will be presented.

Keywords

aerobic training;Brain injury;cognition

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0830

TAKE CARE OF THE STROKE PATIENTS HOSPITALIZED OUT OF THE NEUROVASCULAR PATHWAY : THE MULTI-DISCIPLINARY FOLLOW-UP POST STROKE CONSULTATION ON THE UNIVERSITY HOSPITAL OF RENNES

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Introduction/Background

“The lack of formalised monitoring following in the year after the stroke establishes a reduction of likelihood in the course of patient care.” (*DGOS instruction 2015*) A third of the patients return home at best with only a single follow-up neurological consultation. Within the context of this reality establishing the deficits is therefore held up, favouring a negative socio-professional impact. To overcome this, a Multidisciplinary Consultation Post-stroke program (CM post-stroke) was developed at the University Hospital of Rennes in 2016 (*French National Stroke Program 2010-2014*). The particular characteristic of our consultation was to single out those patients who neither went through the neuro-vascular pathway.

Material and Method

Patients hospitalized in the CHU for stroke were extracted from the Program For Medicalization of Information Systems. Patients who neither went through the neuro-vascular pathway were selected. Neurologist and PMR physician checked together the medical history of these patients. During a telephone interview, our occupational therapist coordinator filled out a questionnaire orienting the choice of professionals met at the consultation. The consultation was personalized and centred on the patient specific needs. A feedback was made for the treating physician permitting for continuous follow up of the patient.

Results

On the basis of a sample of patients selected over 6 months, we study 80 patient files, they were interviewed and 40 consultations were organized (including 25 with 2 professionals and 15 with more 2 professionals), 9 were directed towards the physical medicine and rehabilitation department, 30 to a liberal professional and only 1 did not have any change in his Physical Medecine and Rehabilitation care. This tends to show interest in the follow-up of these patients.

Conclusion

The CM post stroke appears as a link filling a deep in the follow-up of the care of post-stroke patients and a transversal work between neurologic and PMR departments.

Keywords

Stroke;multi-disciplinary follow-up post Stroke consultation;neurovascular pathway

No conflict of interest

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ISPR8-0838

PREDICTION OF THE OXYGEN COST OF WALKING IN HEMIPARETIC STROKE PATIENTS.

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Introduction/Background

The energy cost of walking is a marker of metabolic solicitation and allows energy quantification of walking. It is strongly correlated to the patient's walking speed with post-stroke sequelae. We wanted to develop a model for predicting the energy cost of walking to create of walking distance recommendations aimed at achieving recommended energy expenditure levels to ensure health benefits (>1000kcal/week during physical activities).

Objective : To verify the close relationship between spontaneous walking speed (S_{free}) and energy cost of walking at S_{free} (Cw_{free}) in subjects with post-stroke hemiparetic patients sequelae and to test the validity of a prediction model to estimate Cw_{free} based on S_{free} .

Material and Method

Twenty-six mild to moderately disabled chronic participants with stroke aged 65 yrs (+/- 15.7yrs) walked at S_{free} using mobility aids if necessary, for 6 minutes. The Cw_{free} was measured at a stabilized metabolic rate by indirect calorimetry using the Metamax3B device. The relationship between S_{free} and Cw_{free} was analyzed using the correlation coefficient, coefficient of determination. The Cw_{free} prediction model was developed from a regression equation and then tested on a new population with the same inclusion/exclusion criteria (n=29).

Results

S_{free} and Cw_{free} had a correlation coefficient of -0.94 and a R^2 of 0.97 enabling to formulate a regression equation and develop the Cw_{free} prediction model based on S_{free} . The prediction model tests yielded accurate results with a mean bias of $-0.02\text{mL}\cdot\text{kg}^{-1}\cdot\text{m}^{-1}$ – MD%=4%. The limits of agreement were $-0.31; 0.26\text{ mL}\cdot\text{kg}^{-1}\cdot\text{m}^{-1}$ MD%=30.9% of the mean measured Cw_{free} .

Conclusion

Cw_{free} can be estimated precisely by a simple measurement of the walking speed. In this way, we can easily define the distance the subject must travel according to his Cw to reach the recommended energy expenditure targets. It is a great help for the practitioner for recommendations in the field of physical activity after stroke.

Keywords

stroke;oxygen cost of walking;prediction model

No conflict of interest

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EFFICACY OF BOTULINUM TOXIN A FOR THE TREATMENT OF HEMIPARESIS IN ADULTS WITH CHRONIC UPPER LIMB SPASTICITY

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Introduction/Background

Our aim was to assess the effectiveness of botulinum toxin-A (BoNT-A) injection in chronic spastic upper limb after stroke or traumatic brain injury and to identify baseline factors that predict favorable functional outcome of this treatment.

Material and Method

We conducted a prospective study including 45 adults with hemiparesis after stroke or traumatic brain injury and who received an injection of botulinum toxin type A (Dysport®).

We evaluated muscle tone using Modified Ashworth Scale (MAS). Functional disability was assessed using Modified Frenchay Scale (MFS), Nine Hole Peg Test (NHPT) and Barthel Index (BI). Quality of life (QoL) was assessed using the 36-Item Short Form Health Survey (SF-36). The achievement of treatment goal was assessed by the Goal Attainment Scaling (GAS).

Binary logistic regression test was performed to identify the independent factors predicting a favorable or unfavorable functional outcome of BoN-T treatment.

Results

MFS showed improvement at 1 month after injection with a median change from baseline of 8 (range: 1-16; $p < .001$). The change from baseline ranged from 0 to 5 points for NHPT at 1 month after injection ($p < .001$). Improvements in Barthel Index was observed at 3 months with a median change from baseline of 5 points (range 0-15; $p < .001$). The mean change from baseline of SF-36 score was 4.77 ± 3.39 ($p < .001$). The mean change from baseline of GAS T-score was 25.36 ± 8.46 (95% CI 22.82 to 27.90; $p < .001$).

In multivariate analysis, previous injection of BoNT-A was an independent *predictive factor* of favorable functional outcome of this treatment ($p=.03$, OR=0.3) while neglect was independent *predictive factor of treatment failure* ($p=.04$, OR=1,876).

Conclusion

Our study showed that treatment of chronic upper limb spasticity in patients with hemiparesis after a stroke or TBI with BoNT-A injections is a usefull method of treatment for improving spasticity, passive and active function and quality of life.

Keywords

traumatic brain injury;stroke;botulinum toxin

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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CLINICAL APPLICABILITY OF ROBOT-ASSISTED GAIT TRAINING SYSTEM IN ACUTE STROKE PATIENTS

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Introduction/Background

In Taiwan, stroke is not only the second-highest cause of mortality, more alarmingly, it is also the number one cause of long-term disability and institutionalization. Given the resource-demanding nature of post-stroke rehabilitation, the utilization of robotic assisted gait rehabilitation has been well advocated in recent years. However, despite some promising preliminary results, there is still a lack of empirical and concrete evidence supporting its inclusion as part of the routine clinical rehabilitation. Furthermore, much of the research to date have focused on the very expensive commercially available suspension robotic systems and very limited research has been conducted for the more cost-effective end-effector robotic system. Therefore, it is the aim of the current study to investigate and document the clinical applicability of a new end-effector robotic gait training system in acute stroke rehabilitation.

Material and Method

All participants received daily hospital routine rehabilitation but the experimental group received an additional 30 minutes of supervised robotic assisted gait rehabilitation training daily for a total of 15 sessions over a 3-week period. Berg balance scale, Brunnstrom stage, European Quality of Life questionnaire, Pittsburgh Sleep Quality Index as well as the Taiwanese Depression Questionnaire were assessed prior- and after every five training sessions for all patients.

Results

Forty-four acute stroke patients were recruited for the current study. Through block allocation, the experimental group included thirty patients (18 males and 12 females, mean age: 60.7±14.0 years) whilst fourteen patients (3 male and 11 females, mean age: 57.9±12.8 years) were allocated to the control group.

Conclusion

Our study results indicated that patients undertook additional end-effector robotic gait training on top of the routine hospital rehabilitation demonstrated identifiable and significantly greater improvement in Berg balance scale, gait related lower limb capacity, as well as the Taiwanese Depression Questionnaire.

Keywords

Stroke; Robot-assisted; gait

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0895

IMPACT OF UNILATERAL SPATIAL NEGLECT ON THE QUALITY OF LIFE OF INDIVIDUALS AFTER STROKE.

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Introduction/Background

Unilateral spatial neglect (USN) is characterized by the inability to respond to people or objects that are presented contralaterally to the lesioned side of the brain and can decrease a patient's ability to return to work, and thus, has socioeconomic impacts on a community's public health status. The aim of this study was to evaluate the relationship between the degree of USN with quality of life in stroke patients.

Material and Method

This is a cross-sectional study including stroke patients of both genders, aged 18 to 85 years, in the acute, subacute, or chronic phase of the USN clinical diagnosis setting. Patients with prior stroke, pre-existing dementia, global aphasia, previous visual disturbances and other associated neurological diseases were excluded. The USN was evaluated by Behavioral Inattention Test (BIT), and quality of life through the European Quality of Life (EuroQoL), and analyzed: mobility, health care, usual activities, pain or discomfort, and anxiety or depression. An association among USN and EuroQoL items was analyzed using the Spearman correlation and was considered statistically significant if $p < 0.05$.

Results

Fifteen individuals were evaluated, 75% of whom men, with a mean age of 64 years, a BIT variation from 53 to 124 (mean = 96.63) and a EuroQoL score from 5 to 11 (mean = 7.75). The correlations are shown in Table 1. The association between a higher BIT value indicated a higher score in the personal care items ($r = 0.95$, $p < 0.001$), usual activity ($r = 0.81$, $p < 0.001$); pain or discomfort ($r = 0.75$, $p < 0.001$); anxiety and depression ($r = 0.95$, $p < 0.001$), and total

EuroQoL score ($r = 0.74$, $p < 0.001$). There was no association with mobility ($r = 0.51$, $p > 0.05$).

Table 1. Correlation of the items of the quality of life scale with the degree of unilateral spatial neglect measured by the BIT

		BIT
EuroQoL items	r	p-value
Mobility	0.51	$p > 0.05$
Health care	0.95	$p < 0.001$
Usual activities	0.81	$p < 0.001$
Pain or discomfort	0.75	$p < 0.001$
Anxiety or depression	0.95	$p < 0.001$
Total	0.74	$p < 0.001$

Legend: BIT = Behavioral Inattention Test (BIT)

Conclusion

The data demonstrated that a lower degree of neglect indicated a higher quality of life in individuals after stroke.

Keywords

Stroke; Unilateral spatial neglect; Quality of life

No conflict of interest

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FACTORS NECESSARY FOR INDEPENDENT WALKING IN PATIENTS WITH PUTAMINAL HEMORRHAGE

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Introduction/Background

Putaminal haemorrhage accounts for 30%–40% of all cerebral haemorrhages and is responsible for various neurological symptoms, including motor paralysis. Its prognosis varies according to factors such as age, neurological severity, site and size of hematoma, complications, and choice of treatment. We examined the factors related to independent walking in patients with putaminal hemorrhage who were admitted to a rehabilitation hospital.

Material and Method

We evaluated 264 patients with thalamic hemorrhage (172 men and 92 women; age range, 29–88 years) who were admitted to our rehabilitation hospital. The mean duration from symptom onset to rehabilitation hospital admission was 29.9 ± 14.8 days, and the mean rehabilitation hospital stay was 74.6 ± 35.3 days. Patients' neurological and cognitive functions were examined with the National Institutes of Health Stroke Scale (NIHSS) and Mini-Mental State Examination (MMSE), respectively. The relationship between patients' scores on these scales and their walking ability at discharge from the rehabilitation hospital was analyzed. Additionally, a decision-tree analysis was used to create a model for predicting independent walking upon referral to the rehabilitation hospital.

Results

Among the patients, 143 could walk independently and 121 could not. The two patient groups were significantly different in terms of age, duration from symptom onset to rehabilitation hospital admission, hematoma type, hematoma volume, neurological symptoms, and cognitive function. The decision-tree analysis revealed that the patient's age, motor leg of the NIHSS, MMSE score, and hematoma volume were factors that could predict independent walking.

Conclusion

In patients with putaminal hemorrhage, the neurological symptoms, and neuroimaging factors at onset are useful for predicting independent walking.

Keywords

cerebral hemorrhage;ambulation;functional outcome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

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CONSTRAINT-INDUCED MOVEMENT THERAPY PRACTICE IN MADAGASCAR: RESULTS AND FEASIBILITY

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Introduction/Background

After stroke, patients do not recover all the function of the upper extremity. Constraint-induced movement therapy (CIMT) is one of the new methods used to improve recovery of the functionality of the upper extremity after stroke. The aim of this study is to describe the results obtained after the first use of CIMT in Madagascar and to discuss its feasibility.

Material and Method

An interventional trial in 3 patients with hemiparesis following a stroke lasting more than 6 months is realized. CIMT was administered 60 minutes 3 times per week for 5 weeks. The motor function of the hand was evaluated by the wolf motor function test (WMFT) and the research arm test (ARAT) action. The motor activity log (MAL) was used to assess the activity of daily living (ADL). The evaluation was carried out before and after treatment by the same evaluator.

Results

An improvement in the motor function of the 3 patients was observed. The ADL's achievement increased in the 3 patients after the intervention.

Conclusion

The CIMT is feasible in Madagascar for patients with chronic phase of stroke. This feasibility is the outcome of the acceptance of the technique by the therapists as well as by the patients

Keywords

No conflict of interest

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PREDICTABILITY OF WALKING ABILITY AND OF BED-CHAIR TRANSFERS AT THE END OF INPATIENT REHABILITATION PERIOD OF ELDERLY PATIENTS AFTER STROKE

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Introduction/Background

Walking independently is one of the most important goals for patients post-stroke and their families. Standing up is an essential function for walking independently. The aim was to explore initial physical evaluation component that predict patients ability to stand up and walk independently at discharge from rehabilitation, in older adults' post-stroke.

Material and Method

131 elderly patients post-stroke admitted to rehabilitation. Excluded were patients with debilitating orthopedic conditions, or previous progressive neurological diseases. Initial evaluation, within 3-7 days of admission, included motor function, lower extremities muscle strength, sitting balance and cognitive assessment. Patients had a follow up one week before discharge, the follow up included two parts of the Functional Independence Measure (FIM) test: walking and chair-bed transition.

Results

Initial pelvic lift, bed rolling performance were significantly correlate ($r>0.7$, $p<0.01$) to patients' outcome measures at discharge and had highly significant prediction value. A combination of the inadequate static balance upon admission, dependence of rolling to the affected side and lack of independence at pre-stroke daily function predicted 85% chance that a patient will be dependent in walking at discharge. Inadequate static balance upon admission, major/full dependence of rolling to the less affected side and major/full dependence in pelvic lift at bed predicted 89% chance that patient will be dependent in chair-bed transfer at discharge.

Conclusion

Initial physiotherapists evaluation to evaluate patient current functional status have a significant predictive value for patients' outcome at discharge in terms of standing and walking. These clinical predictors can help in setting treatment goals, educating families, and coordinating expectations.

Keywords

stroke;transfer;predict

No conflict of interest

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ISPR8-0968

EFFICACY OF REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION IN POST-STROKE COGNITIVE RESTORATION

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Introduction/Background

Repetitive transcranial magnetic stimulation (rTMS) is a noninvasive tool to modulate cortical plasticity and brain processes in healthy or diseased brain. While previous studies of rTMS provide potential benefit on neurocognitive impairment in post-stroke patients, the evidence and optimal protocol were still undetermined. In our current pilot study, we sought to investigate whether the positive cognitive effects of intermittent theta-burst stimulation (iTBS) over the left dorsolateral prefrontal cortex can be observed in post-stroke patient and compare the efficacy to the sham-controlled group in double-blinded parallel study design.

Material and Method

Patients with cognitive impairment followed by left hemispheric stroke were randomly allocated to 2 groups: (1) iTBS (group A, n = 15), and (2) sham stimulation (group B, n = 16). Both two groups underwent 10 consecutive sessions with 10-minute conditioning period. The repeatable battery for the assessment of neuropsychological status (RBANS) was assessed at baseline and after completion of the 10-session treatment.

Results

No related adverse events were observed during the study. After the intervention, iTBS group manifested significant improvement than the sham stimulation in the RBANS total score and in the subtests of language, immediate memory and attention.

Conclusion

iTBS protocol showed a benefit on cognition amongst chronic stroke patients in cognitive recovery and also a good safety profile. Further research on the mechanism of effect, the optimal parameters, and the effects of concurrent cognitive training or medications are warranted for clinical applications.

Keywords

STROKE; Repetitive Transcranial Magnetic Stimulation; cognitive impairment

No conflict of interest

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ISPR8-0975

IMMEDIATE EFFECTS OF REPETITIVE PERIPHERAL MAGNETIC STIMULATION (RPMS) TO THE HEMIPLEGIC LOWER LIMB MUSCLES IN GAIT PARAMETER

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Introduction/Background

To study the immediate effects of rPMS to paretic leg muscles on gait parameters in hemiparesis patients.

Study design: a descriptive study

Setting: Physical Medicine and Rehabilitation, Faculty of Medicine, Ramathibodi hospital, Mahidol University

Material and Method

rPMS at the frequency of 20Hz was applied to Gastrocnemius and Tibialis Anterior muscles in pulses of 4 seconds stimulation alternate with 4 seconds rest for 8 minutes. The parameters were assessed by computer dynography(CDG) before and immediately after stimulation

Results

There were 10 male and 3 female participants their average age is 54.38 years. This study demonstrate improved gait velocity (m/s) ($p < 0.01$), single support time(%) ($p < 0.01$) and spasticity by tardieu scale ($p < 0.01$) immediately after stimulation

Conclusion

rPMS at paretic lower limb muscles could have immediate positive effects on gait velocity and %single support time and spasticity.

Keywords

rPMS;stroke;gait

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-0987

THE ROLE OF MEDICAL REHABILITATION OF THE UPPER LIMB IN POST-STROKE HEMIPARESIS

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Introduction/Background

The study aims to illustrate the progress of patients following the numerous methods of recovery and determining the factors that most influence the medical recovery of the hemiplegic upper limb.

Material and Method

This study attempts to demonstrate that the evaluation and treatment of the recovery of neurological manifestations, metabolic and biomechanical alterations in the hemipleg patient's upper limb represents a necessity in the clinical and therapeutic approach of the patient with stroke. The clinical trial was performed on a group of 25 post-stroke hemiparesis patients.. The purpose of applying kinetotherapy to patients in the study was to improve the functional state of the upper limb from the motor point of view. Also in therapy, the peace lovers were trained to use orthoses and certain devices.

Results

13 patients affected the upper right after the stroke, and 7 affected the left upper limb. It is noted that all 20 patients were right-handed. The upper limb has numerous complications in patients with post-stroke hemiplegia. The painful shoulder was present in 18 patients, then atrophy, present in 16 patients, dyskinesia in 15 patients. Glenohumeral joint luxation, an important complication, was seen in 8 patients. Veno-lymphatic stasis syndrome and retractile capsulitis were present in 5 patients.

Conclusion

An improvement in motor performance of the upper limb has been observed in a shorter time compared to classical intensive physiotherapy, thus accelerating the recovery trend. Sensor-motor formation with robotic devices improves functional results of the upper extremity and motor results of the shoulder and elbow but does not improve the functional and motor results of the wrist and hand.

Keywords

No conflict of interest

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ISPR8-0989

OBSERVATIONAL STUDY ON MEDICAL REHABILITATION IN STROKE

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Introduction/Background

Stroke leaves behind a multitude of disabilities that affect a patient's hemicorp. The superior member is greatly affected by this event. According to the World Health Organization, stroke is defined as a rapid development of clinical signs of focal or global cerebral dysfunction, with a 24-hour, longer-lasting symptom that may even lead to the patient's death. Brain strokes can be of two kinds: ischemic, accounting for approximately 80% of total cerebral and hemorrhagic accidents, which is approximately 20%. In Romania, there are on average 200 cases per 100,000 inhabitants. The situation becomes alarming because acute stroke accounts for about 17% of all deaths.

Material and Method

We performed a prospective observational study on a group of 20 patients (n = 20). with the rehabilitative diagnosis of hemiplegia / hemiparesis after stroke.

The evaluation methods used in the patients included in the study consisted of a wide range of tests and assessment scales, ie questionnaires (Scala Albert, Scale Rankin, Modified Ashworth Scale (MAS), Barthel Scale, Minimal Examination of Mental Status The Folstein Mini Mental State Examination Questionnaire (MMSE), Beck Questionnaire).

Results

The results of the study confirm the data from the literature that states that men have a higher predisposition to stroke than women. Subjects who have suffered an ischemic stroke are 75% of those who have had a hemorrhagic stroke and 25%, respectively. The ratio obtained from the lesion type analysis gives values very close to those in the literature, where we find an 80% ischemic attack ratio, compared to 20% haemorrhagic attack.

Conclusion

13 patients affected the cerebral hemisphere and the cerebral hemisphere was affected in only 7 patients. A large number of patients experienced cardiac disease, an important risk factor for cerebral vascular events.

Keywords

No conflict of interest

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ISPR8-0993

ASPECTS THAT INFLUENCE POST-STROKE MEDICAL REHABILITATION

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Introduction/Background

Stroke is a cerebrovascular disease, which sums up all the diseases caused by primary or secondary damage to one or more cerebral (intra- or extracranial) cerebral arteries caused by ischemic, haemorrhagic or mixed lesions of the cerebral parenchyma.

In Romania cerebrovascular diseases are placed on the third place as a cause of mortality and morbidity, registering 168,2 cases per 100,000 inhabitants, the first and the second are attributed to cardiovascular diseases and neoplasms.

Material and Method

The progression of an acute stroke for survivors can be directed to complete healing, but in most cases it comes through important sequelae that require a long-lasting and persistent medical recovery.

Results

Medical rehabilitation therapy is needed in the early stages for 70-80% of survivors, and in the long run about 50% maintain the need to maintain or improve their abilities and possibilities. Given that the incidence of this disease is on the rise, physiotherapists who are responsible for rehabilitating these patients from the motor point of view should be aware of the factors that influence the medical recovery of post-stroke patients in order to address them as accurately as possible.

Conclusion

Old age has an impact on post-stroke recovery in that the recovery of tissues is slow and not always total, favoring the permanence of acquired sequelae due to disease and increasing recovery time for lost functions. The location of the lesion and the extent of the affected region are two important aspects that need to be taken into account when it comes to factors influencing recovery. Cerebral injury located in the cerebellum may significantly reduce the results of medical recovery, as these patients will need assistance and lifestyle assistance.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-0996

CONSEQUENCES OF STROKE ON WALKING PARAMETERS OF HEMIPARETIC PATIENTS IN THE BORGOU (BENIN).

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Introduction/Background

After stroke, performing activities of daily living depends on the recovery of motor function. Few data exist on post stroke stroke recovery in the African context. The aim was to determine the relationship between the average stroke age in Benin and its motor impact on walking speed and endurance in hemiplegic patients.

Material and Method

This cross-sectional pilot study was conducted at the Departmental University Hospital of Borgou with 22 hemiplegics (63.8% men). The Functional Independence, the Barthel Index and the Modified Rankins Scale were used for functional evaluations. 10-meter walking speed and 6-minute endurance tests for motor performance.

Results

The subjects (54.9 ± 5.5 years) had an average speed of 0.82 ± 0.2 m.s⁻¹ (16.7 ± 2.6 steps) and an average endurance of 329.3 ± 67 , 1 m. Comparison of the 2 statistically different subgroups in age ($p < 0.05$): G1: < 55 years (51 ± 3.2 years) and G2 ≥ 55 years (58.8 ± 4.4 years) did not revealed no significant difference for walking speed, step count, and endurance ($p > 0.05$).

Conclusion

The young age of the participants does not influence the performance of walking speed, number of steps and endurance for the two subgroups of patients aged between 43 and 68 years. A multi-center study will help to better understand the role of the young age of Beninese hemiplegics, the functional characteristics and motor recovery after stroke.

Keywords

Stroke;Age;Walking

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1007

CHANGES IN AMBULATION SPEED IN CHRONIC SPASTIC PARESIS, USING A GUIDED SELF-REHABILITATION CONTRACT INCLUDING SMALL GROUP WORKSHOPS

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Introduction/Background

In spastic paresis, Guided Self-rehabilitation Contracts (GSC) involve daily self-rehabilitation exercises, prescribed by the therapist for the explicit purpose of active functional improvement.¹

Small Group Workshops (SGW) are offered to groups of 4-6 patients to improve GSC performance, particularly the technical quality and intensity of the self-rehabilitation work. This study measured changes in 10-meter ambulation speed² associated with the practice of a GSC that included three SGW, in patients with chronic spastic paresis.

Material and Method

Retrospective study of 16 patients (n=16) with chronic stroke-induced hemiparesis (10F, 16M, age 57±10, delay post lesion 38±2 months) who consecutively benefited from GSC including 3 lower limb SGWs. Outcome measures included comfortable and maximum ambulation speed with shoes and barefoot on the 10-meter ambulation test. We distinguished two groups of 8 patients depending on the mean interval between SGWs: Group 1, (n=8, 5F) SWG interval < 4.5 months; Group 2 (n=8, 4F) SWG interval > 4.5 months).

Results

Mean duration of GSC participation was 13±7 months.

Ambulation speed improved in the four conditions, with greatest improvement at maximum speed barefoot, from 0.66 to 0.87 m/s (+32%, $p<0.001$, t -test). Other changes included maximum speed with shoes (0.69 to 0.89 m/s, + 28%, $p= 0.003$), comfortable speed barefoot (0.52 to 0.65m/s, +24%, $p= 0.013$) and with shoes (0.54 to 0.68 m/s, + 21%, $p=0.007$). Comparing ambulation speed changes in the two groups, greater improvements were seen in Group 1 for maximum speed with shoes (0.65 to 0.82m/s, +26%, $p=0.018$) and barefoot (0.62 to 0.82m/s, +25%, $p=0.022$).

Conclusion

In chronic hemiparesis, the combined practice of GSC and GGW may improve ambulation, with potentially greater benefit when the small group workshops are attended with inter-workshop-intervals < 4.5 months.

A large scale, prospective study is required.

Keywords

Self Rehabilitation Contract;Spastic paresis;small group workshops

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1027

DIFFERENCES IN ALTERATION OF MOTOR NETWORK BETWEEN SUPRA- AND INFRA-TENTORIAL ISCHEMIC STROKE PATIENTS

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Introduction/Background

In recent stroke studies, connectivity-based approaches have been used to investigate recovery-related indicators. However, most of previous studies were performed in heterogenous patients with different lesion locations or different types of stroke. In addition, there is not enough investigation on recovery-related network analysis in the infratentorial stroke (ITS) which may show different network dynamics from the supratentorial stroke (STS). In this study, we investigated the differences in alteration of motor network between STS and ITS in ischemic stroke patients.

Material and Method

Forty first-onset ischemic stroke patients were recruited within 2 weeks after stroke onset. Patients were divided into STS and ITS groups according to their lesion location. All patients underwent resting-state fMRI scans twice (2 weeks and 3 months after onset). Twenty-four healthy subjects participated as an age-matched control group. To investigate the altered connectivity during recovery and to compare between groups, various analysis methods such as interhemispheric connectivity, network symmetry, and graph theoretical analysis which were already established in the previous studies were used.

Results

In STS group, interhemispheric connectivity was significantly decreased and network symmetry was disrupted compared to control group at 2 weeks post stroke, while the ITS group did not show differences compared to control group at this time point. During recovery, global efficiency and global reorganization including increasing network efficiency and randomization showed only in the STS group. In contrast, the ITS group demonstrated significantly increased interhemispheric connectivity during recovery. There was an interactive relationship between cortico-cerebellar connectivity and interhemispheric connectivity in the ITS group.

Conclusion

Alterations of recovery-related motor network connectivity in ITS patients were very different from that of STS patients. These results may be caused by differences of damage of diverse motor-related pathways by stroke lesion. (This work was supported by the National Research Foundation of Korea grant funded by the Korea government (MSIP) (NRF-2017R1A2A1A05000730, NRF-2017R1D1A1B03034109))

Keywords

Ischemic stroke;Motor network;Lesion location

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1028

ISCHEMIC STROKE AND PROGNOSTIC FACTORS: WHAT TO EXPECT?

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Introduction/Background

Stroke is a life-changing event with a dramatic effect on survivors, family members, health services, and socio-economic impact. It is the third most common cause of disability and the 2nd leading cause of death worldwide.

Several factors influence the prognosis of ischemic stroke, and the aim of this study is to understand how the process of neurophysiological recovery develops, framed in the factors of better or worse prognosis in the presentation and evolution of the disease, allowing the Physiatrist Physician a more assertive perception of the functional potential of the patient with ischemic stroke.

Material and Method

A search was made in the Pubmed database of the terms "stroke prognostic factors", "stroke rehabilitation" and "stroke recovery" (limits: publication date - last 10 years, article type - review and clinical research).

Results

There were 8 articles in the limits proposed in the design of this work, however, a further 7 articles were added in the bibliography of those obtained in the research, totaling a total of 15 articles analyzed.

Recovery from stroke depends on an intrinsic or spontaneous recovery and an adaptive or functional recovery. The main mechanisms of recovery are related to local processes and cerebral reorganization. Of the major prognostic factors in stroke, those showing the most impact are clinical neurological severity at presentation, age, stroke extent, location, etiologic mechanism, associated comorbidities, and acute complications.

In Rehabilitation, the factors that may ad initium condition a greater or lesser functional recovery are the paresis of the upper limb (shoulder and hand), paresis of the lower limb and gait, aphasia, dysphagia and sensory alterations.

Conclusion

The intervention of Physical Medicine and Rehabilitation is fundamental in the improvement of functional status in stroke survivors, however, this is conditioned by several intrinsic and extrinsic factors that all the physicians involved in this process should be aware.

Keywords

stroke prognostic factors;stroke rehabilitation;stroke recovery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1044

EFFICACY OF STROKE REHABILITATION SERVICE IN RAMATHIBODI HOSPITAL

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Introduction/Background

To study the efficacy of rehabilitation service in improving functional independence in stroke patients at Ramathibodi Hospital

Material and Method

Acute stroke patients whom consulted to Rehabilitation Medicine Department from February to May 2016 were recruited. The patients' demographic data, Barthel Index of activities of daily living (BI), 3 types of impairments (swallowing, communication and cognitive impairments) and type of rehabilitation service (home-based, OPD-based and IPD-based rehabilitation program) were recorded within the first 2 weeks and the next 12 weeks.

Results

Subjects were 77 patients (32 male and 45 female patients). The mean age (standard deviation; S.D.) was 66.3 (13.6) years. After the patients were consulted to Rehabilitation Medicine Department, the mean time (S.D.) to the first rehabilitation evaluation was 8.7 (3.3-31.5) hours and the mean initial BI score (S.D.) was 57.8 (29.0). Fifty-six and twenty-one patients had BI score ≤ 75 and >75 , respectively.

For stroke patients with BI score ≤ 75 , 39, 11, and 6 patients had home-based, OPD-based and IPD-based rehabilitation program, respectively. The mean BI score change at 12 weeks compared to the baseline (S.D.) were increased 16.1 (16.2), 25.9 (13.0), 39.2 (10.7), respectively.

For stroke patients with BI score between 75-100, 9 and 1 patients were received home-based and IPD-based rehabilitation program, respectively. The BI score at 12 weeks was ≥ 95 and the mean BI score (S.D.) change at 12 weeks was increased 10.0 (4.7).

Conclusion

For stroke patients with BI score ≤ 75 , the IPD-based rehabilitation program could significantly increase BI score compared to the home-based program. All stroke patients with the initial BI score > 75 who received either home-based or IPD-based rehabilitation program had BI score ≥ 95 at 12 weeks.

Keywords

Stroke rehabilitation service;Bathel index;impairment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1047

LEUKOARAIOSIS INDUCE DISCREPANCIES BETWEEN NEUROLOGICAL SEVERITY AND ACTIVITIES OF DAILY LIFE IN PATIENTS WITH ISCHEMIC STROKE AT CONVALESCENT REHABILITATION

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Introduction/Background

There are discrepancies between neurological severity and activities of daily life (ADL) after stroke. We investigated associations between neurological severity and ADL in patients with ischemic stroke at the convalescent rehabilitation stage. We particularly focused on the severity of leukoaraiosis on magnetic resonance imaging (MRI) and various clinical factors.

Material and Method

The participants included 723 patients with ischemic stroke (484 men and 239 women; mean age, 73.2 ± 8.5 years; subtypes, lacunar infarction [$n = 54$], atherothrombosis [$n = 305$], artery-to-artery embolism [$n = 105$], cardiogenic embolism [$n = 129$], undetermined embolism [$n = 93$], and uncategorized ischemic stroke [$n = 37$]) that were transferred from acute care hospitals for inpatient convalescent rehabilitation. Leukoaraiosis was graded according to periventricular hyperintensity (PVH) and deep white matter hyperintensity on MRI. The National Institutes of Health Stroke Scale (NIHSS) was used to measure neurological severity and the Functional Independence Measure (FIM) was used to assess ADL on admission and at discharge.

Results

Multiple regression analysis revealed that total FIM scores were significantly associated with leukoaraiosis as estimated by PVH grade ($P = 0.001$) and NIHSS score ($P < 0.001$) both on admission and at discharge for all patients, in addition to clinical factors, such as age, history of heart disease, and bilateral infarction lesions. In contrast, multiple regression analysis of NIHSS

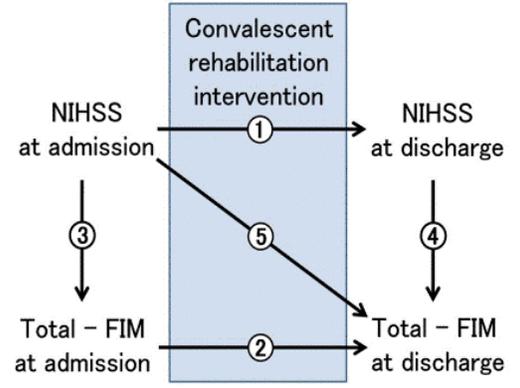
scores revealed no association with PVH.

Multiple linear regression analysis of associations among neurological severity, ADL, and clinical factors

① NIHSS at discharge vs. NIHSS at admission and clinical factors				
Influencing factors	β	B	p-value	R ²
NIHSS score at admission	+0.924	+0.886	<0.001	0.867
Age	-0.047	-0.023	0.001	
② Total FIM at discharge vs. total FIM at admission and clinical factors				
Influencing factors	β	B	p-value	R ²
Total FIM score at admission	+0.896	+0.859	<0.001	0.869
Age	-0.061	-0.146	<0.001	
PVH score	-0.050	-1.382	0.001	
③ Total FIM at admission vs. NIHSS at admission and clinical factors				
Influencing factors	β	B	p-value	R ²
NIHSS score at admission	-0.652	-3.202	<0.001	0.556
Age	-0.263	-0.666	<0.001	
PVH score	-0.120	-3.450	<0.001	
History of heart disease	-0.065	-5.892	0.010	
④ Total FIM at discharge vs. NIHSS at discharge and clinical factors				
Influencing factors	β	B	p-value	R ²
NIHSS score at discharge	-0.657	-3.222	<0.001	0.602
Age	-0.270	-0.654	<0.001	
PVH score	-0.145	-3.999	<0.001	
History of heart disease	-0.063	-5.498	0.008	
Bilateral infarction	-0.049	-1.975	0.038	
⑤ Total FIM at discharge vs. NIHSS at admission and clinical factors				
Influencing factors	β	B	p-value	R ²
NIHSS score at admission	-0.627	-2.949	<0.001	0.584
Age	-0.295	-0.715	<0.001	
PVH score	-0.158	-4.368	<0.001	
History of heart disease	-0.058	-5.004	0.021	

ADL: activity of daily life, FIM: functional independence measure, PVH: periventricular hyperintensity, β : standardized regression coefficient, B: unstandardized coefficient, R²: coefficient of determination.

Clinical factors: use of various medications, including those for hypertension, diabetes mellitus, and hyperlipidemia; age; sex; history of stroke; history of heart disease; history of tobacco use; lateralization of ischemic stroke lesion (right or left side); unilateral vs. bilateral lesion; the presence of atrial fibrillation; PVH grade; diffuse white matter hyperintensity grade; and the presence of stenosis of $\geq 50\%$ or occlusion on magnetic resonance angiography.



Conclusion

Our study revealed that ADL were associated with the degree of leukoaraiosis as indicated by PVH at the convalescent rehabilitation stage in patients with ischemic stroke. However, neurological severity was not associated with leukoaraiosis, likely because the progression patterns and anatomic backgrounds of PVH affect ADL in patients who have had ischemic stroke.

Keywords

Convalescent Rehabilitation; Ischemic Stroke; Leukoaraiosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1055

EFFECTIVENESS OF OCCUPATIONAL THERAPY COUNSELING BASED COGNITIVE BEHAVIORAL THERAPY FOR THE PATIENTS WITH CEREBROVASCULAR ACCIDENT

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Introduction/Background

Therapeutic strategies of occupational therapy for cerebrovascular accident include functional improvement, acquisition of compensatory skills, and increasing awareness of the impairment. However, various difficulties are present in specific and general methods of intervention depending on cerebrovascular accident. Cognitive behavior therapy (CBT) has been widely recognized as an effective intervention for treatment of "patients with depression". We employed CBT to promote the awareness in patients with cerebrovascular accidents, and achieved a favorable outcome.

Material and Method

Three adult patients (two female, one male) with cerebrovascular accident were included in the study.

Their consciousness was clear, but their level of activities of daily living (ADL) was still low. Some interview and sessions by Occupational Therapy counseling (OTC) were performed. Intervention employed the self-monitoring method under the OTC to promote patient's awareness. On analysis, conversation was analyzed employing process codes, and changes in awareness were continuously evaluated.

Results

The patients was not aware of their accident in the initial OTC, but after intervention by OTC based CBT, they became aware of problems due to the subjects of ADL and came to propose and execute ways to cope with it by themselves.

Conclusion

Although the OTC based CBT promotes patient's awareness of symptoms and the importance of coping, but it may also lead to loss of self-efficacy. However, the patient's experience was slowly externalized using a self-assessment sheet, and transition to coping behavior was facilitated with less stress. In occupational therapeutic training based OTC, there are few opportunities to help patients to understand their symptoms and reflect on the results of the training to make them aware of the direction of compensation. These results suggest that their awareness by OTC is closely related with the ADL in patients with cerebrovascular diseases.

Keywords

CVA; Cognitive Behavioral Therapy; Occupational Therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1065

POST-STROKE REHABILITATION IN YAOUNDE

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Introduction/Background

Stroke is common in sub-Saharan Africa, where it is the second leading cause of death and the leading cause of adult motor disability.

The aim of this study was to assess the follow-up and evolution in the rehabilitation of patients who have survived a stroke

Material and Method

From June 2015 to June 2017, we identified all stroke patients in the neurology department of the Yaoundé General Hospital with a neurovascular and rehabilitation file. And they were followed externally in rehabilitation consultation.

Results

About 200 patients with stroke were assessed. Several severe autonomic disorders are found such as: total inability to walk, talk, swallow, use of the upper limb. This is because patients use their finances for drug treatment exclusively and few have enough resources for an effective rehabilitation program. The lack of a rehabilitation center is a real problem observed in our communities where a total handicap after a stroke has become a norm for the society because many become discouraged after one to two months of rehabilitation due to lack of finances.

Conclusion

Rehabilitation support and education programs for families of stroke patients are in place to improve the quality of life of stroke patients.

Keywords

Stroke ;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1088

CONVERGENT APPROACH INCLUDING COGNITIVE AND PHYSIOLOGICAL STIMULATION FOR SENSORY-MOTOR FUNCTIONAL IMPROVEMENT IN CHRONIC STROKE: A CASE REPORT

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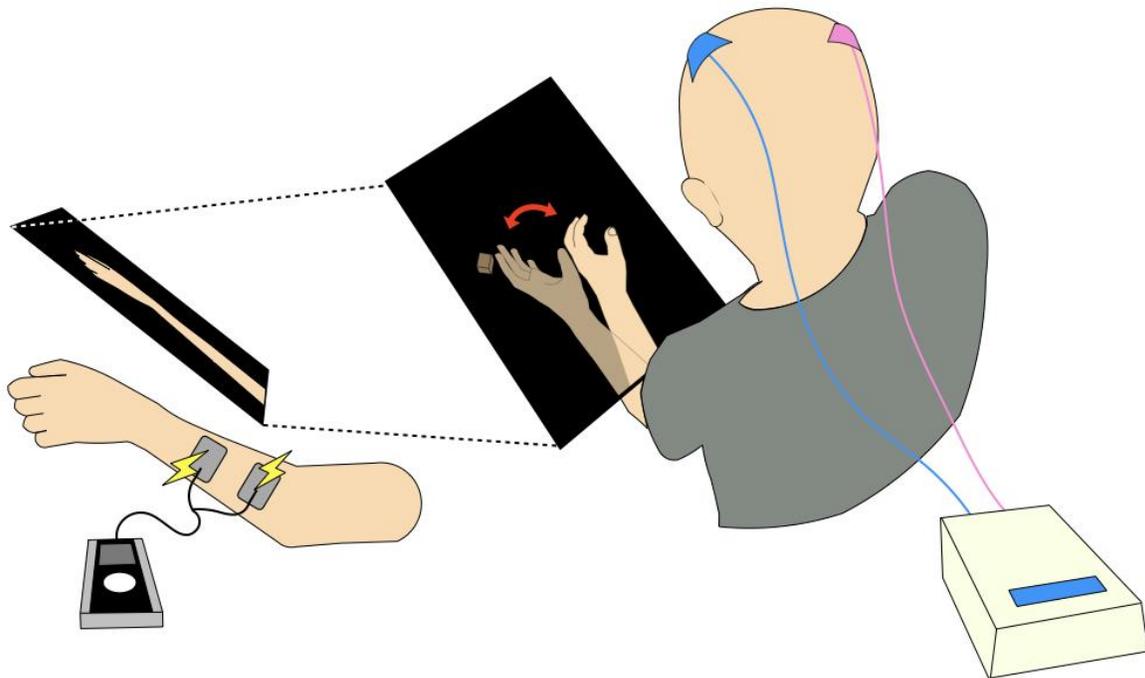
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Introduction/Background

Temporal and spatial summation of multimodal inputs enhances neural plasticity. We have developed a virtual reality rehabilitation system which can induce kinesthetic sensation using visual stimulation (KiNvis). This study presents the rehabilitation approach of KiNvis, using transcranial direct current stimulation (tDCS) and neuromuscular electrical stimulation (NMES), for sensory-motor functional improvement after stroke.

Material and Method

The patient, a right-handed man in his 50s, presented with right putamen hemorrhage in the chronic stage, without cognitive impairment. The hemorrhage occurred 2 years before presentation; conventional post-stroke rehabilitation was performed, and the patient underwent repetitive transcranial stimulation therapy for the hemisphere contralateral to the damaged side for 2 weeks, 1 year before participating in this study. The left upper extremity indicated anesthesia and severe motor paralysis.



The figure illustrates the treatment paradigm followed in this study. The hand and elbow movement corresponding to the uninvolved side was recorded before the intervention. The laterally inverted version of the 6-second recorded movie, mirroring the movement to the involved side, was repeatedly projected for 20 minutes. The patient was instructed to imagine the kinesthetic sensation of the finger and wrist extensor muscles during KiNvis. For online dual hemisphere tDCS, the anode was centered over the C4 region, delivering a constant current of 2 mA. The NMES was applied to the extensor digitorum muscle in synchrony with the finger extension movement in the movie. The patient received conventional therapeutic exercises after the convergent approach.

Results

After 10 days of the intervention, all clinical outcomes of motor function for the upper extremity improved, especially the range of motion and reciprocal motor control of the elbow joint, examined using surface electromyogram.

Conclusion

The results demonstrate the feasibility of the mentioned convergent approach for patients with chronic stroke for a future systematic study.

Keywords

motor imagery;virtual reality;transcranial direct current stimulation

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1092

STEPWISE INTERVENTION FOR PROXIMAL AND DISTAL UPPER EXTREMITY MOTOR FUNCTION IN PATIENTS WITH CHRONIC STROKE: A REPORT OF 2 CASES.

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Introduction/Background

Upper extremity (UE) dysfunction is a common problem in patients with stroke. Recently, several neurorehabilitation approaches have been developed to improve the UE motor function (Langhorene P, Lancet Neurol, 2009). However, most approaches target either proximal or distal UE motor function, although interventions targeting both portions are necessary to restore functional UE in actual daily life. Therefore, we conducted stepwise intervention for both shoulder and finger function to improve UE motor function.

Material and Method

Two stroke patients with severe hemiparetic stroke participated in the study. Firstly, we attempted to improve shoulder function using brain machine interface (BMI) technology for 7 days (Fig 1). After the shoulder BMI training, a combination of motor imagery and electrical stimulation (MI+ES) was conducted to improve finger function for 10 days (Fig 2). Motor function of the affected UE was assessed with motor items of the Fugl-Meyer assessment UE motor score (FMA-UE). FMA-UE consists of 4 categories (A: Shoulder/Elbow/Forearm; B: Wrist; C: Hand; D: Coordination) and has a maximum score of 66.

Fig 1. The system of brain machine interface training for proximal upper extremity motor function.

Task: Kinesthetic motor imagery of shoulder flexion
Amount of training: 100 trial per day

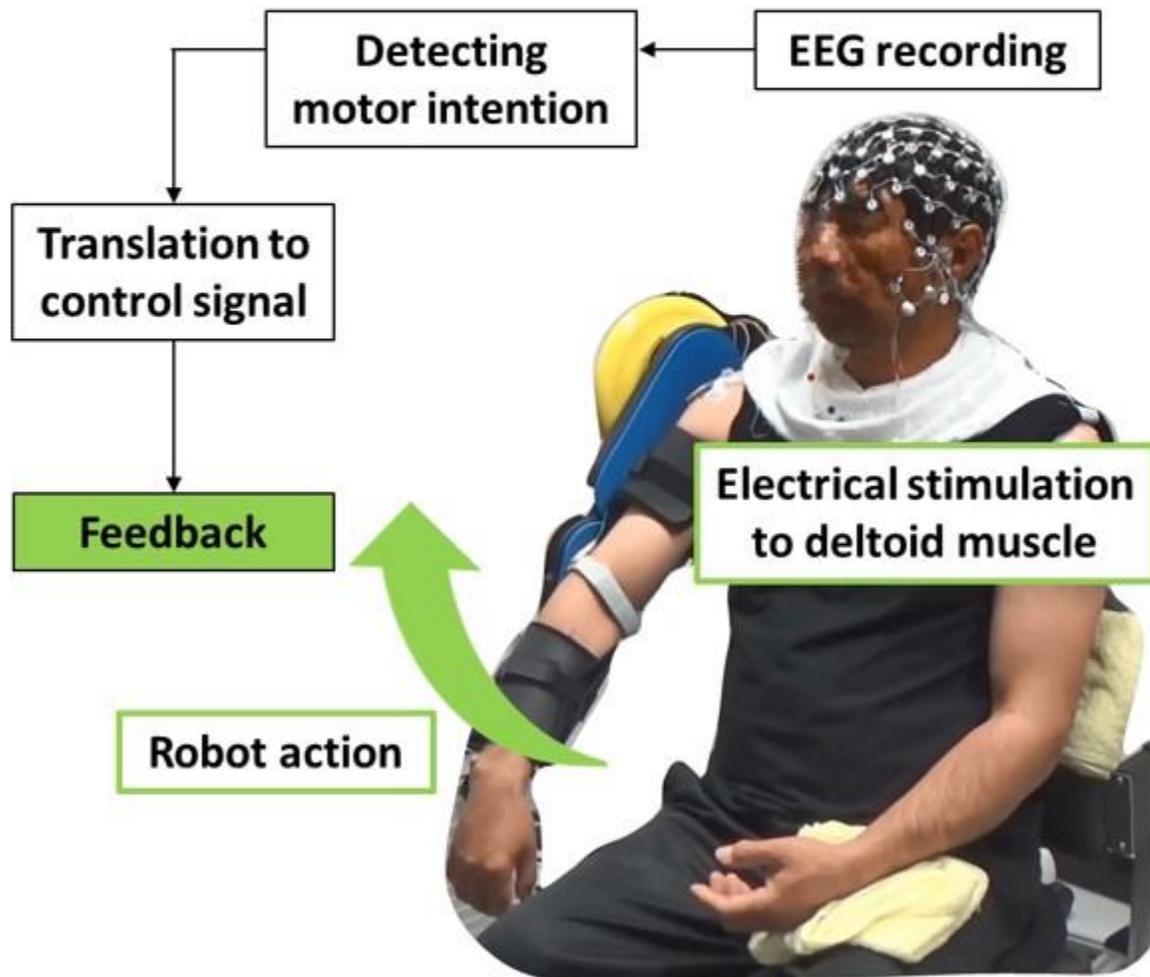
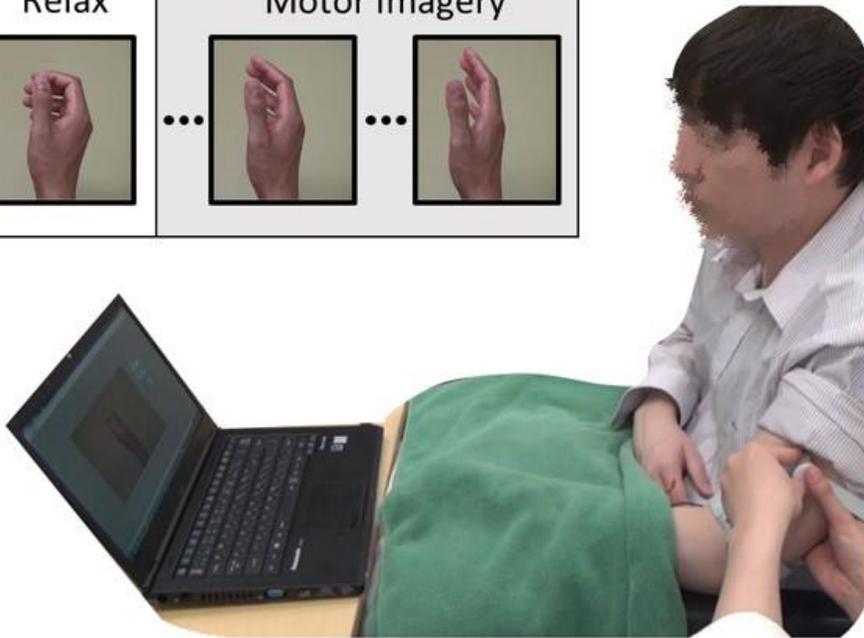
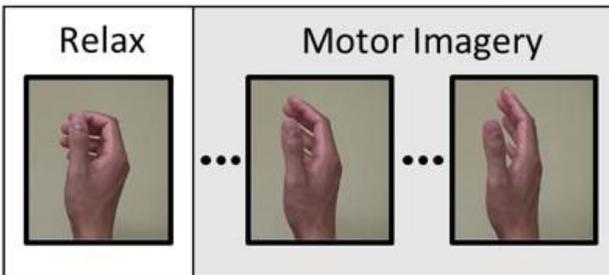


Fig 2. The system of motor imagery training combined with electrical stimulation for distal upper extremity motor function.

**Task: Kinesthetic motor imagery of finger extension
Amount of training: 150 trial per day**

Visually guided movement (1 trial)



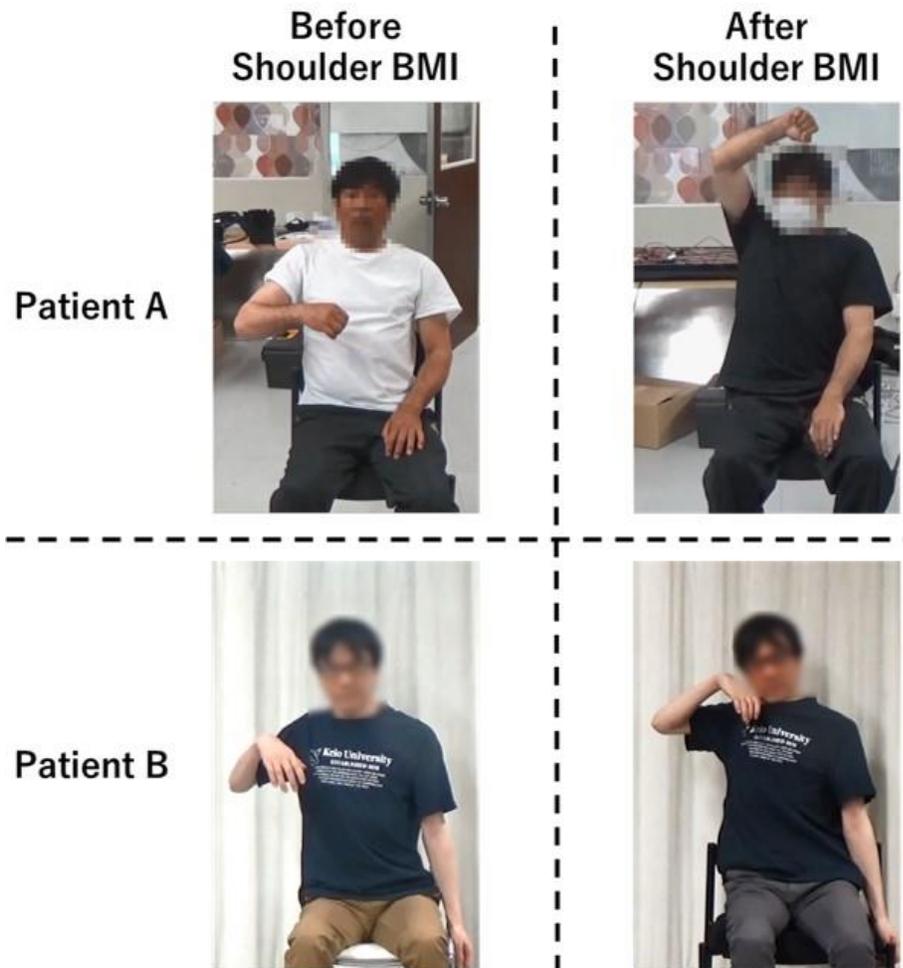
**The radial nerve was stimulated
in the spiral groove during motor imagery**

Results

The FMA-UE score increased remarkably after the stepwise intervention (Patient A: 17→33; Patient B: 11→25). The effect of shoulder BMI training is shown in Fig 3. It became possible for patients to raise their arms above the shoulder position after the shoulder BMI training. Patients'

UE motor function was also further improved by the subsequent MI+ES intervention.

Fig 3. The effect of shoulder BMI training



Conclusion

The improvement in UE motor function with our stepwise intervention for proximal and distal motor functions greatly exceeded the minimal clinically important difference in the subjects of this study.

Keywords

brain machine interface; motor imagery; rehabilitation

Conflict of interest

Disclosure statement:

This study was supported by "Development of medical devices and systems for advanced medical services" by the Japan Agency for Medical Research and Development (AMED).

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1106

AWARENESS OF STROKE AND ASSESSMENT OF KNOWLEDGE OF RISK FACTORS AMONG STROKE SURVIVORS IN A TERTIARY CARE LEVEL HOSPITAL

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Introduction/Background

Stroke is one of the leading causes of the death worldwide. Those who survive suffer with disability affecting their quality of life. Knowledge of stroke risk factors and awareness of stroke symptoms would reduce the incidence of stroke for the first time or recurrent. Also timely management would remain instrumental in reducing morbidity and mortality from stroke. The aim of the study was to examine knowledge of stroke, risk factors and its determinants among stroke survivors.

Material and Method

An ongoing cross sectional study in PMR department. Consenting stroke survivors attending the OPD and satisfying the inclusion criteria were enrolled for the study. Subjects were interviewed through a structured proforma which included questions to assess their knowledge regarding stroke and risk factors

Results

A total of 100 subjects enrolled for the study. Mean age of subjects was 55.6 ± 6.8 years, M:F ratio was 7:1 & mean duration of stroke was 18.10 ± 12.2 months. Only 12 percent reported to specialized care within the window period. Almost 80 % were unable to name a warning sign of stroke. Hypertension(80%), diabetes mellitus(42%), and smoking(23%) were identified as major risk factors. The knowledge of the risk factors was also very low and varies among the subjects depending on age and level of education. Forty three percent could not name a single risk factor. It was also observed that management of risk factors were not appropriate in 55 % of stroke survivors despite treatment either due to non adherence to the medication, improper follow up, diet, lifestyle changes and education.

Conclusion

Knowledge about stroke and risk factors were relatively poor. Large gaps in knowledge thereby place patients at high risk for stroke. Our finding highlights the need to develop stroke-education programs for stroke survivors as well for those high risk for stroke.

Keywords

Stroke risk factor; Awareness of stroke

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1116

COMBINING NEUROREHABILITATIVE INTERVENTIONS TARGETED FOR PROXIMAL AND DISTAL MUSCLES BRINGS ABOUT CLINICALLY IMPORTANT IMPROVEMENT OF UPPER EXTREMITY FUNCTION IN PATIENTS WITH SEVERE HEMIPARETIC STROKE

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Introduction/Background

About half of the stroke patients with hemiparesis have poor arm function 6 months post-stroke. Although some newly developed rehabilitation approaches have indicated improvement of upper extremity (UE) motor function in patients with chronic stroke, there are few reports demonstrating an improvement effect beyond the minimal clinically important difference (MCID) in patients with severe UE paralysis. This study aimed to investigate the effect of our new therapeutic approach combining several different neurorehabilitative interventions for severe UE paresis.

Material and Method

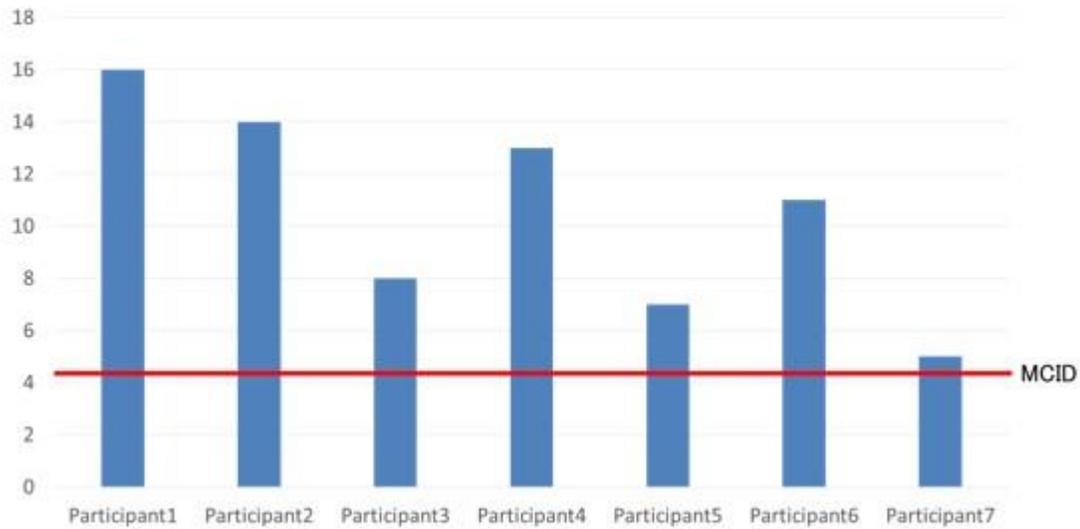
Seven patients with chronic stroke participated in this study. They had severe UE paralysis and the mean Fugl-Meyer assessment (FMA) score was 14.1 (range; 10 to 19). To improve finger paralysis, they received either the Hybrid Assistive Neuromuscular Dynamic Stimulation (HANDS) therapy for 3 weeks or the combination of motor imagery and electrical stimulation for 10 days. In addition, they received shoulder flexion exercise assisted by a brain-machine interface (BMI) controlled exoskeleton shoulder robot for 7 days. The movement of the robot was triggered by contralesional primary motor cortex EEG activity changes decoded online during motor imagery of shoulder flexion.

Results

The paired t-test showed significant improvement of the FMA score during this series of treatments (post treatment mean FMA ; 24.7, $p < 0.01$). As shown in Figure 1, the mean gain of

the FMA was 10.6, and all patients demonstrated improvement greater than the MCID.

Figure 1. The gain of the FMA between this series of treatments



Conclusion

The selective use of ipsilesional and contralesional pathways depending on the target muscles may indicate a new treatment strategy for severely paralyzed patients.

Keywords

Hemiparesis; Upper extremity; Brain-machine interface

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1117

GASTROESOPHAGEAL REFLUX DURING NASOGASTRIC TUBE FEEDING VERSUS OROESOPHAGEAL TUBE FEEDING IN STROKE PATIENTS: A 24HOUR ESOPHAGEAL PH-MONITORING

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Introduction/Background

Patients who are diagnosed to dysphagia after stroke may receive tube feeding such as percutaneous endoscopic gastrostomy (PEG), nasogastric tube or oroesophageal (OE) tube. Although the most common complication for stroke patients is known to be aspiration pneumonia, the physiology of gastroesophageal reflux (GER) associated with tube feeding has not been fully assessed. OE tube feeding and nasogastric tube feeding are non-invasive tube feeding methods both, but the tube can be inserted intermittently using OE tube to avoid continuous esophageal reflux.

Material and Method

The goal of this study was to examine, by 24-hour esophageal pH monitoring, whether GER is related to feeding method, nasogastric tube versus OE tube. 7 stroke patients were examined 24-hour esophageal pH monitoring during nasogastric tube feeding and OE tube feeding, sequentially. The parameters were collected of total acid exposure time, the mean esophageal pH, total reflux episode and deMeester composite score.

Results

Total reflux episode improved only in OE tube feeding, statistically. ($P < 0.05$) There were no significant differences between the two groups for total acid exposure time, the mean esophageal pH and deMeester composite score.

Conclusion

OE tube can be a possible substitute for nasogastric tube in patients with dysphagia suffering from gastroesophageal reflux disease. And OE tube feeding may be used to facilitate recovery of swallowing function without aggravated reflux disease associated with tube feeding.

Keywords

DYSPHAGIA;TUBE FEEDING;STROKE

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1119

RELATIONSHIP BETWEEN GRAVITY LOAD AND SYNERGIC MUSCLE ACTIVITIES IN PATIENTS WITH HEMIPARETIC STROKE

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Introduction/Background

Synergic movement is specific pathology of patients with stroke hemiplegia, and inhibition of synergic is one of the important factors in the functional recovery. However, muscle activation patterns are complex and individualized. Also, it has been reported that synergic movement is promoted by gravity (Beer 2004). However, it is no clear about change of patterns when gravity load for paretic extremity change. In this study, the aims are 1) comparison of muscle activation patterns between healthy volunteers and patients with hemiplegia, and 2) investigation about relationship between gravity load and synergic muscle activities.

Material and Method

Three healthy volunteers and five patients with chronic stroke (Fugl-Meyer assessment test: 23.4±4.8) were participated. They wore exoskeleton robot by pneumatic artificial muscle and performed voluntary movement of shoulder flexion (Figure 1). Electromyogram (EMG) of anterior deltoid (AD), posterior deltoid (PD), trapezius (TR), and biceps brachialis (BB) were measured when participants elevated their shoulder with four types of assistance by the robot. Assist rate for gravity is 0%, 25%, 50%, and 75% respectively. Each EMG signal was integrated

during shoulder flexion and relative values of each muscle to all muscles were calculated.

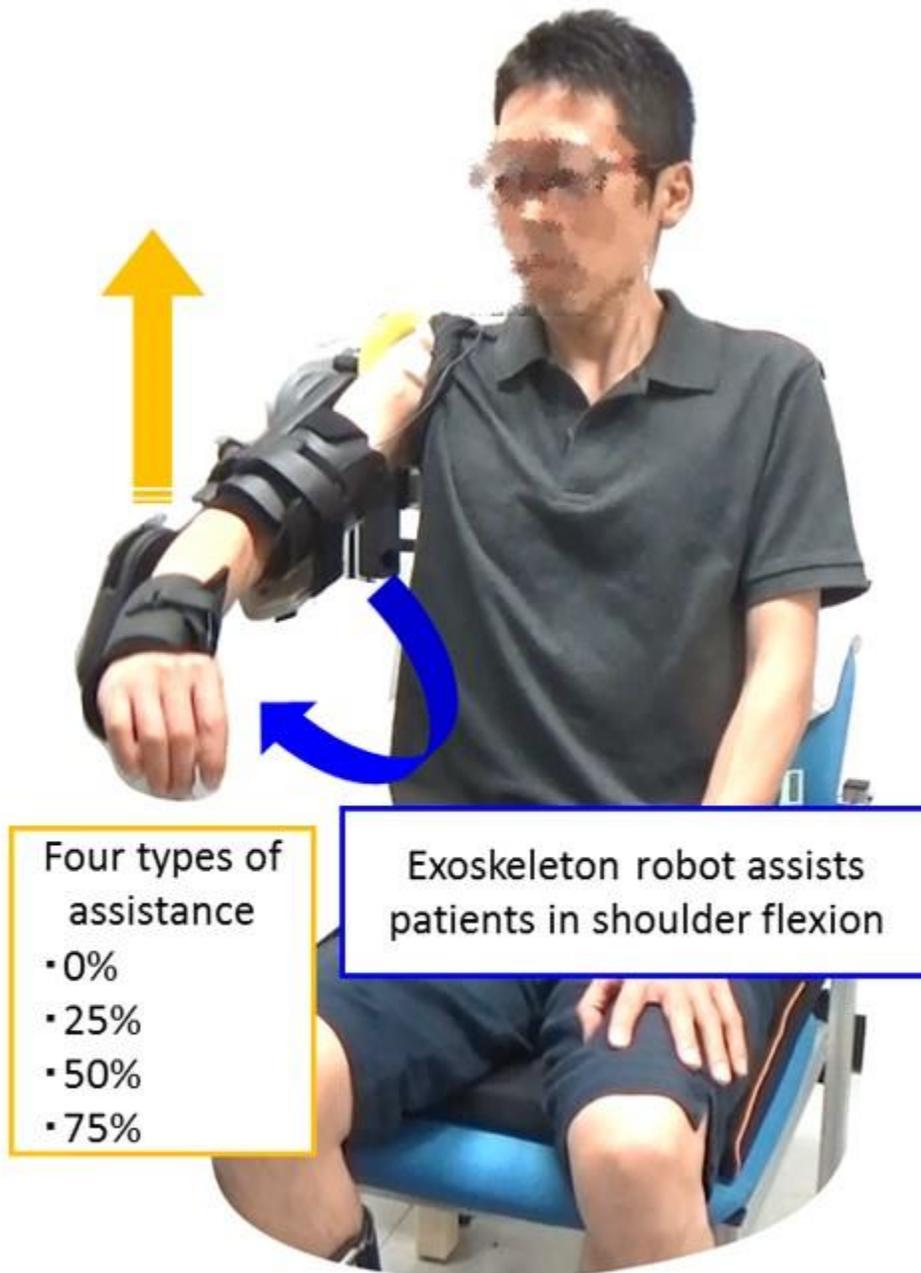


Figure 1. Exoskeleton robot powered by pneumatic artificial muscles

Results

In one of stroke patients, AD activity was higher than the other muscle, this pattern was similar to that of healthy volunteers. In two patients, TR activity was highest. In the others, relative values of four muscles were same approximately (Figure 2). Also, in all patients, BB activity

tended to decrease as assist rate increased.

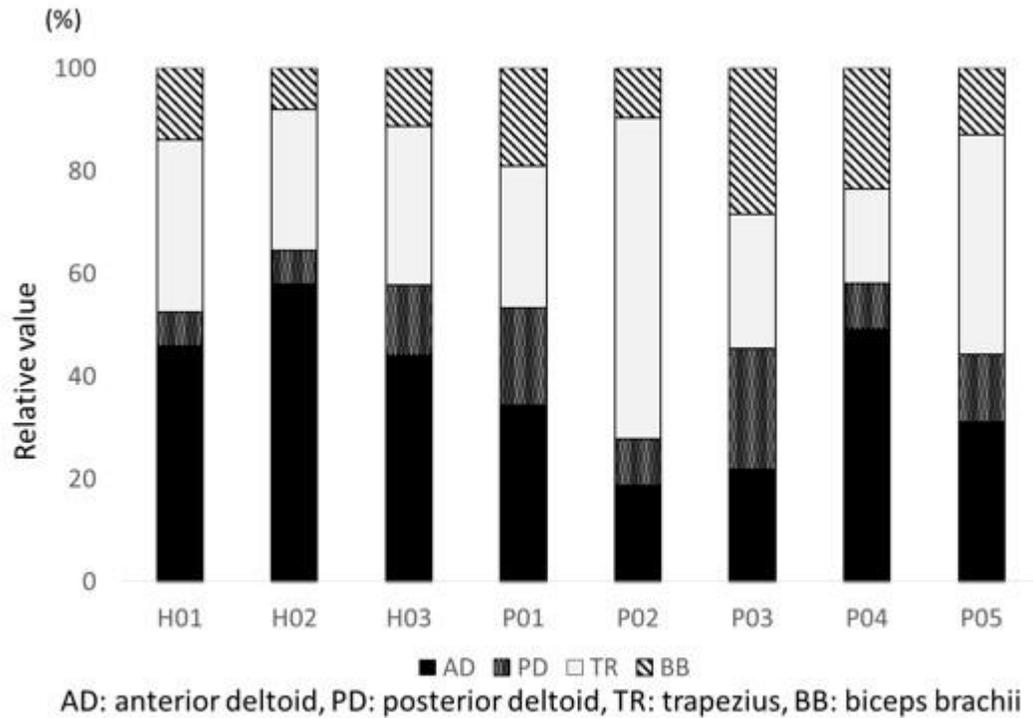


Figure 2. relative values for each of the four muscle in assist 0%

Conclusion

The results of this study showed that synergic patterns were classified into three patterns; AD dominant, TR dominant, co-contraction of several muscles. Furthermore, synergic pattern changed by changing the influence of gravity.

Keywords

stroke; Electromyogram; gravity

Conflict of interest

Disclosure statement:

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1124

COMBINED SPATIAL GAME AND PARTIAL LENS OCCLUSION TRAINING FOR STROKE PATIENT WITH SPATIAL NEGLECT ,CASE REPORTS

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Introduction/Background

One discharged patient of severe spatial neglect continues morning walk after discharge by himself. He discovered morning walk makes him easier to move and act all day. According to that, pay special attention wildly with body move seems to have meaning for spatial neglect patients. There are two style approaches of rehabilitation for spatial neglect. One is the top-down approach which is trying to expand the viewpoint by which attention is possible into an affected side gradually is generally performed by a rehabilitation program to spatial neglect. The other the bottom-up approach to which attention of the view of the affected side include visual field is promoted overall is also necessary as attention and practice. There is also a report surplus attention on the non -affected side is kind of clinical condition of spatial neglect.

So to release surplus attention have a key. We programmed partial lens occlusion and special game for rehabilitation program.

Material and Method

A 65 years old man with right putamen bleeding has severe left hemiparesis and spatial neglect and high-level brain dysfunction. It was admitted hemianopia pattern by a static view check using Humphrey visual field analyzer. From the 50th disease day spatial recognition game to hit the presented paper by hand and part time partial lens occlusion was started added to conventional top-down approach training.

Results

The walking distance by the walking practice developed double from the next day of visual practice. Such as involving serious case's shoulder hand syndrome, though a difficult element as high-level brain dysfunction, it was possible to do walking practice and movement acquisition practice.

Conclusion

Combined spatial game and partial lens occlusion training for stroke patient with spatial neglect is bottom-up strategy program for spatial neglect. There are spontaneous recovery but there is possibility of effectiveness.

Keywords

spatial neglect;lens occlusion

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1128

CHANGES IN QUADRICEPS RATE OF FORCE DEVELOPMENT ON THE UNAFFECTED SIDE OF POST-STROKE PATIENTS DURING THE SUBACUTE PHASE

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Introduction/Background

Rate of force development (RFD) reflects instantaneous muscle activity. Previous studies reported that quadriceps RFD in post-stroke patients is lower not only on the affected side but also on the unaffected side compared to healthy adults. However, it remains unclear whether RFD on the unaffected side improves during the subacute phase after stroke. This study aimed to examine RFD changes on the unaffected side between the first and second months after stroke onset.

Material and Method

Sixteen post-stroke patients (age, 64±11 years) and 20 age-matched healthy adults (age, 67±8 years) participated in this study. Maximum voluntary contraction (MVC) strength and quadriceps RFD were measured with a hand-held dynamometer, and surface electromyogram (EMG) was recorded from the vastus lateralis muscle. MVC, RFD, and EMG on the unaffected side were assessed twice during the first and second months after stroke onset. MVC was calculated as peak torque divided by weight. RFD was calculated as the average slope of the time-torque curve in 50 ms after the start of contraction. Root mean square (rms) EMG of RFD was also obtained in 50 ms after the start of contraction. Differences in peak torque and RFD between post-stroke patients and healthy adults, and differences in peak torque, RFD, and rmsEMG of RFD between the first and second months after stroke onset were assessed in post-stroke patients.

Results

Only RFDs in post-stroke patients were significantly lower compared to healthy adults at the two time points assessed (all, $p < 0.05$). Peak torque, RFD, and rmsEMG of RFD in post-stroke patients showed no significant changes between the two time points.

Conclusion

Quadriceps RFD in post-stroke patients showed no changes with time, and was lower on the unaffected side compared to healthy adults. These results suggest that traditional rehabilitation for one month may be insufficient to improve leg extensor RFD.

Keywords

stroke;rate of force development;subacute

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1129

GAIT SPEED IS A STRONG PREDICTOR OF THE ABILITY TO WALK INDEPENDENTLY WITHOUT WHEELCHAIR ASSISTANCE IN A FACILITY SETTING FOR POST-STROKE PATIENTS

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Introduction/Background

The ability to walk independently without wheelchair assistance around a hospital ward or facility, i.e., practical ambulation, is not taken into account when assessing ambulation status of patients. To our knowledge, no study has adequately examined indicators of practical ambulation in stroke patients living in facilities. This study aimed to identify factors associated with practical ambulation in a facility setting based on prospective observational data from recovering stroke patients.

Material and Method

Ninety-four stroke patients (mean age, 67.9 years) who received inpatient rehabilitation services at the Okinawa Rehabilitation Hospital from January 2011 to November 2016 were enrolled in this observational study. Exclusion criteria were dementia, orthopedic disease, or requiring assistance to walk 10m. In addition to clinical characteristics, lower limb motor function on affected and unaffected sides (Stroke Impairment Assessment Set and leg strength, respectively) and comfortable gait speed (CGS) in a 10m-walk test were examined at the time when 10m-walking was acquired without assistance. Ambulation status was continuously assessed for up to 6 months after stroke onset. Cox proportional hazards regression was used to assess the contribution of clinical characteristics, lower limb motor function and CGS to practical ambulation ability, and receiver operating characteristic (ROC) curve analysis was performed to assess the diagnostic accuracy of these indicators.

Results

A total of 72 stroke patients acquired practical ambulation during the study period. Only CGS was associated with practical ambulation, and the hazard ratio of acquiring practical ambulation per 1m/min increase in CGS was 1.03 (95% confidence interval (CI), 1.02-1.08; P<0.001). ROC curve analysis revealed the optimal cut-off point and diagnostic accuracy to be 19.9m/min and 0.903, respectively (area under curve, 0.923; 95% CI, 0.814-0.970).

Conclusion

These findings suggest that gait speed is a strong predictor of practical ambulation ability in a facility setting for recovering stroke patients.

Keywords

stroke;walking ability;gait speed

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1040

ASSESSMENT TOOLS FOR FUNCTIONAL INDEPENDENCE AND RESIDUAL DISABILITY AFTER STROKE: ARE THEY COMPARABLE?

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Introduction/Background

The aim of this study was to investigate the correlations between the modified Rankin Scale (mRS) grades and Korean versions of the MBI (K-MBI) scores in assessing the residual functional status of stroke survivors.

Material and Method

The Korean versions of the MBI and mRS scales were administered to 5,759 ischemic stroke patients at 3 months after onset of stroke. The sensitivity and specificity were calculated at all possible K-MBI score cutoffs for each mRS grade in order to obtain the optimally corresponding K-MBI scores and mRS grades. Receiver operator characteristic (ROC) curves and the area under the curve (AUC) was calculated.

Results

The K-MBI cutoff points with the highest sum of sensitivity and specificity were 100 (sensitivity 0.940; specificity 0.612), 98 (sensitivity 0.904; specificity 0.838), 94 (sensitivity 0.885; specificity 0.937), 78 (sensitivity 0.946; specificity, 0.973), and 55 (sensitivity 937; specificity 0.986) for

mRS grades 0, 1, 2, 3, and 4, respectively. The AUC for the ROC curve was 0.791 for mRS grade 0, 0.919 for mRS grade 1, 0.970 for mRS grade 2, 0.0 for mRS grade 3, and 0.991 for mRS grade 4.

Conclusion

The K-MBI cutoff score ranges for representing mRS grades were variable. mRS grades 0, 1, and 2 had narrow K-MBI score ranges, while mRS grades 3, 4, and 5 showed broad K-MBI score ranges. mRS grade seemed to sensitively differentiate mild residual disability of stroke survivors, whereas K-MBI can provide more specific information of the functional status of stroke survivors with moderate to severe residual impairment. (This work was supported by the Research Program funded by the Korea Centers for Disease Control and Prevention (2016E3300302)).

Keywords

disability scale;stroke;functional evaluation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1146

ACUTE CEREBRAL CONNECTIVITY MODULATION AND EARLY RECOVERY AFTER ISCHEMIC STROKE

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Introduction/Background

Stroke induces massive changes in cerebral function in the acute phase, which are gradually modulated over time. Identification of early neurophysiological changes provides insight into recovery processes and opportunities for rehabilitation. This study aims to identify post-stroke acute reorganization patterns of cerebral activity during rest and passive movements of lower limbs (LL) by means of event related desynchronization/synchronization (ERD/ERS) and functional connectivity.

Material and Method

EEG of 5 participants (4M, 1F; age: 67 ± 12 years) was recorded within the 48 hours after an ischemic stroke (T0) and after 5 days (T1). Cortical topography of ERD/ERS and task-related coherence in alpha1, alpha2 and beta bands were computed during passive movements. Resting state relative powers in the same frequency ranges were calculated. Clinical and behavioral data were collected.

Results

Altered coherence patterns during LL movements, as identified in healthy controls (Formaggio et al., 2017), was evident during the acute phase coupled with hypostenia and altered function (Motricity Index) of the affected, and to a lesser extent, unaffected limb. At T1, coherence patterns recovered in parallel with LL function. ERD/ERS showed a disorganized distribution immediately after the event, but reorganized, with a more physiological pattern over the healthy rather than unhealthy hemisphere, after 5 days, which was paralleled by a functional recovery.

Conclusion

Functional connectivity and oscillatory rhythms after a stroke show a precise time-course, with different patterns over the affected and unaffected hemisphere. Identification of these modulation will provide neurotherapeutic targets to promote early recovery of function.

Keywords

electroencephalography;neurophysiology;biomarker

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1163

EFFECT OF INITIAL COGNITIVE STATUS ON THE ADL OUTCOME STRATIFIED BY INITIAL ADL IN STROKE PATIENTS

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Introduction/Background

Many inhibitory factors affect the outcome in stroke patients. However, few studies have focused on the differences in the degree of the cognitive effect in improvement in the activities of daily living (ADL) according to the ADL level on admission. The aims of this study were to assess to what extent cognitive function influences ADL improvement in stroke patients and what type of cognitive function has an effect on ADL.

Material and Method

Participants were 2650 hemiplegic patients with a first stroke who were discharged from our comprehensive rehabilitation wards (Kaifukuki rehabilitation wards) between September 2004 and March 2017 (1581 men and 1069 women; mean age 65.9 years).

The motor subscores of the Functional Independence Measure (FIM-M) on admission and at discharge were measured and gain (or loss) during the stay of our hospital was calculated. Patients were stratified by the cognitive subscore, communication items, and social cognition items on the FIM and the average FIM-M gain was calculated using all subscores on the FIM-M on admission in each of the stratified groups.

Results

The FIM-M gain tended to be smaller in patients with higher FIM-M on admission. Greater FIM-M gains were observed in patients with higher admission cognitive status, especially in the patients with FIM-M scores on admission of 30 or more. This difference was most clearly seen when we examined the social cognition items in the stratification.

Conclusion

Cognitive function at admission affects the ADL outcome of stroke patients. Since the ability to remember is probably a critical factor in motor learning, social cognition items on the FIM would be suitable to use to stratify patients.

Keywords

ADL outcome;cognitive function;stroke rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1175

THE OUTCOME AFTER ENDOVASCULAR MECHANICAL THROMBECTOMY FOR PATIENT WITH ACUTE CEREBRAL ISCHEMIA

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Introduction/Background

We examined the outcome of cases after endovascular mechanical thrombectomy (EMT).

Material and Method

Patients who underwent EMT in our stroke care unit (SCU) between April 2014 and September 2017 participated in the study. Glasgow Outcome Scale (GOS) scores were used to evaluate the outcome at the time of discharge. The data were collected retrospectively from medical record.

Results

The participants included 52 patients with acute cerebral ischemia who were treated by EMT. The occlusion arteries were 18 for internal carotid artery, 26 for middle cerebral arteries, 7 for vertebral arteries and 1 for posterior cerebral artery. Thirty-eight cases (73.1%) had good recanalization rate defined thrombolysis in cerebral infarction (TICI) grade $\geq 2b$. Intracranial hemorrhage followed as a complication after treatment in 14 patients (26.9%). Eighteen patients (34.6%) had atrial fibrillation. Four patients could not undergo rehabilitation program because of disease severity. Twenty-five cases had favorable outcomes (GOS 4-5) and 23 cases had severe disability (GOS 2-3) at the time of discharge. After leaving hospital, 24 cases admitted to rehabilitation ward, 13 cases were back home, 7 cases returned to former hospital, 3 cases admitted to other hospital, 1 cases entered to nursing home and 4 died. The score of Functional Independence Measure (FIM) improved in 17 cases at the discharge of rehabilitation ward.

Conclusion

We investigated the outcome of patient with acute cerebral ischemia treated by EMT for acute cerebral ischemia. About half of patients had favorable outcome after completed their rehabilitation program.

Keywords

endovascular mechanical thrombectomy;outcome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1178

GAIT DISORDERS IN SUB-ACUTE STROKE: META-ANALYSIS AND CASE SERIES

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Introduction/Background

Gait disorders are one of the first complaints after a stroke. No specific classification of these gait disorders has been proposed in the literature. Furthermore, few epidemiological data are available, including speed and walking abilities in acute and sub-acute stages.

Objectives: To determine the walking speed and prevalence of acute and subacute gait disorders after stroke. To propose a classification of gait disorders, and analyze the link between motor and cognitive impairments, walking abilities and patient outcomes.

Material and Method

A meta-analysis was performed, selecting hospital based-studies reporting walking speed after a first stroke. Then, we evaluated the walking abilities of patients in a Neurovascular unit. The severity of the stroke was evaluated using the National Institute of Health Stroke Scale (NIHSS), cognitive functions with the MMSE (Mini-Mental State Examination), autonomy using Rkm (Modified Rankin Scale), and gait autonomy with the FAC (Functional Ambulation Categories). In addition, a classification of gait disorders was established for the study.

Results

Prevalence of gait disorders in acute and sub-acute stroke was 63.6%, with an average walking speed of 0.34 m/s. Walking abilities depends on initial stroke severity, location of ischemic stroke, and patient's outcome ($p=0001$). Walking speed was associated with cognitive functions ($p=0.01$), as well as walking abilities ($p=0.001$).

Conclusion

Gait disorders are frequent in acute and subacute post-stroke stages, with a decrease in walking speed $>70\%$. Walking abilities depends on the initial severity of the stroke, and are predictive of patients' outcome. In addition, walking and cognitive functions seem to be linked

after stroke, demonstrating cognitive-motor interference. Eventually, the classification proposed in this study will allow a better management of post-stroke gait disorders and rehabilitation.

Keywords

Stroke;Neurologic gait disorders;Walking speed

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1224

JOINT CONTRACTURE OF STROKE PATIENTS AFTER ONSET 1 MONTH AND ABOVE AT CENTRE OF REHABILITATION MEDICINE AND 103 HOSPITAL, 2017

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Introduction/Background

Stroke is the 3rd cause of death among patient in Laos, every year there are 300 -500 new cases. The highest complication is spasticity.

Material and Method

Describe joint Contracture of Stroke Patients after onset 1 month and above

Results

There were 105 stroke patients enrolled in this study, average age was 55.8 year olds, 42.9% aged 60 and 33,2 % above 65, male was 71.4 %, married 82.9%, no profession 55.2% , educational level at high school was 46.7% , monthly income below 2.000.000 kip was 52.4%, underlying disease was high blood pressure 68.9%, onset from 1-3 months was 52.4% and 36.6% from 3 -5 months and average 4.2 months , ischemic stroke was 78.1%, 93.3 % was first episode, Lt. Hemiplegia was 53.3%, associated symptom were dysarthria 36.8 % and aspiration 68.18% , Lt side neglect was 34,2 % , The average time of treatment was 4,6 months. Activity Daily Living performed partial independent 55.3%, ambulation performed with walker 53.7% and one pointed cane 21.9 % , spasticity was first complication which interfered joint movement and gait pattern, ankle contracture was 61.4% male was higher than female and both gender had wrist stiffness 25,2%, ankle contracture was found after onset 2 months. Muscle atrophy was found in quadriceps after onset 6 months.

Conclusion

105 stroke patients aged 55.8 years old, ischemic stroke, Lt. Hemiplegia, onset time was 4.2 months, treatment time was 4.6 months. Activity Daily Living was partial independent. Ambulation were with walker. Spasticity was first complication, ankle contracture was found higher in male, wrist stiffness was found in both gender.

Keywords

stroke ankle contracture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1234

BACKWARD WALKING PERFORMANCE WITH AND WITHOUT ADDITIONAL VISUAL INFORMATION IN STROKE PATIENTS

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Introduction/Background

Backwards walking has been used as training in stroke patients since lacking of visual information in the heading direction could increase postural demands. However, whether such lacking of visual information would affect gait performance is unclear. The study aimed to investigate backwards walking performance with and without additional visual information in stroke patients.

Material and Method

Fourteen stroke patients (59.5±10.1 years) and healthy elderly controls (67.9±8.0 years) were recruited and instructed to walk backwards under two visual conditions: (i) normal vision (NBW), and (ii) looking at a mirror placing at the end of the walkway (MBW). SIMI MOTION® system (SIMI Reality Motion Systems GmbH, Germany) was used to obtain kinematic data during walking. Gait parameters, including step length, step width, gait phases, and velocity, were then calculated. MANOVA was used to compare the gait performance under the two visual conditions between the two groups. Significance level was set at $p < 0.05$.

Results

Two different backwards walking patterns were observed: toe contact, and then heel off or toe off pattern. Stroke patients who walked with toe off pattern showed significant shorter step length and slower velocity than with heel off pattern, whereas no significant difference was found between the two patterns in controls. In heel off pattern, stroke patients walked with significantly wider step than controls. No visual condition difference was found in heel off pattern. In toe off pattern, stroke patients demonstrated significantly wider step, shorter swing phase, and slower velocity than controls. Stroke patients walked with significantly shorter step length than controls in NBW, whereas no group difference was found in MBW.

Conclusion

Walk backwards with toe off pattern might be a more cautious gait pattern than with heel off pattern in stroke patients. Providing visual information in the heading direction could reassure the patients to walk with better performance.

Keywords

Backwards walking; Visual information; Stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1237

EEG PREDICTS UPPER LIMB MOTOR IMPROVEMENT AFTER ROBOTIC REHABILITATION IN CHRONIC STROKE PATIENTS

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Introduction/Background

Robotic rehabilitation is known to be at least as effective as conventional training for upper limb motor recovery after stroke; nevertheless, which patients could benefit from this treatment is unknown and finding markers that could predict rehabilitation outcome is a challenge.

We aimed at understanding the neural mechanisms of motor function recovery after upper limb robotic rehabilitation in chronic stroke patients using neurophysiological markers obtained by electroencephalography recording (EEG)

Material and Method

Fourteen chronic stroke patients (M/F:11/3; 59,5 ± 13 yrs) with mild to moderate upper limb paresis were subjected to 10 sessions of upper limb rehabilitation with a planar mobile robotic device (MOTORE, Humanware). Fugl-Meyer Assessment Scale (FMAS) and Wolf Motor Function Test (WMFT) were administered before (t0), at the end (t1) and at 1 month follow-up (t2); at the same timing 64-channels EEG was recorded.

We analyzed power spectrum density in different frequency bands of the affected and unaffected hemispheres with 64-ch EEG and their correlation with motor impairment as measured by clinical scales. Correlation analysis were performed to identify the indicators of good rehabilitative outcome.

Results

Clinical assessment indicated a significant functional improvement in upper limb motor function at the end of rehabilitation as assessed with FMAS and WMFT score that is maintained at follow-up.

We found a positive correlation between global Alpha activity at t0 and WMFT score variation (t0-t1) and between global Beta activity at t0 and WMFT time variation (t0-t1) and a positive correlation between Beta activity at t0 in the unaffected hemisphere and FMAS variation (t0-t1 and t0-t2).

Conclusion

Robotic rehabilitation improves upper limb motor performance in stroke patients even in the chronic phase. The amount of Alpha and Beta band power at t0 is suggestive of rehabilitation-related motor outcome. Our results suggest that EEG recording preliminarily to robotic rehabilitation could help identifying good responders to treatment thus optimizing results.

Keywords

stroke;EEG;robotic rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1241

SELF-REHABILITATION PROTOCOL IN CENTRAL FACIAL PALSY AFTER STROKE

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Introduction/Background

Rehabilitation in facial palsy has showed efficacy on facial symmetry and quality of life. There is no self-rehabilitation protocols in central facial palsy. We elaborated a self-rehabilitation protocol based on usual speech therapy rehabilitation.

Material and Method

Protocol was elaborated with speech therapists and rehabilitation physicians specialized in neurological rehabilitation.

Results

Usual exercises were listed, and presented in the form of photos with simple instructions for each exercise. Exercises concerned lips, tongue, cheeks, top of the face. They have to be realised once a day, in front of a mirror, with 1 ou 2 series of 5 mouvements for each exercise, insisting on strength, amplitude, precision of movement. Protocol validation is planned in a cross over study (A : speech therapy and B : self rehabilitation) in patients after sylvian ischemic stroke.

Conclusion

Self-rehabilitation protocol may be validated in stroke patients.

Keywords

facial palsy;self rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1259

VALIDITY AND RELIABILITY OF CLINICAL TESTS TO ASSESS SEATED BALANCE AND TRANSFER TASKS FOR ADULTS WITH STROKE: LITERATURE REVIEW

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Introduction/Background

The seated balance and transfer tasks have been used in clinical practice and research to assess trunk control in adults with hemiparesia post-stroke. But, it is unclear if the evidence is sufficient to warrant its use in stroke patients.

The aim of this study was to realize a literature review about validity and reliability (intra and inter-raters) of seated balance and transfer tasks tests in patients with hemiparesis post-stroke.

Material and Method

The research was conducted using keywords related to seated balance and transfer tasks on electronic databases: PubMed, ScienceDirect, Pedro, Cochrane and Kinedoc. Observational studies involving adults with stroke that explored any measurement property of transfer tasks or seated balance were included. The Qarel scale was used to assess the methodological quality of included studies.

Results

1241 articles were identified. Following the selection criteria, 12 articles were included, with 5 on seated balance (Qarel: 7 / 12, min: 6 / max: 8) and 7 on transfer tasks (Qarel: 8.14 / 12 min: 6 / max: 10). The findings about the seated balance revealed that these tests had efficient inter-raters ($0.92 < ICC < 0.97$) and intra-rater ($0.93 < ICC < 0.99$) reliability, while the validity was more variable ($0.20 < r < 0.94$). For transfer tasks, the studies highlighted good inter-raters ($0.93 < ICC < 1.00$) and intra-rater ($0.64 < ICC < 0.99$) reliability, but poor to moderate validity ($0.03 < r < 0.75$).

Conclusion

Despite a large number of tests used in clinical practice, very few studies exist on the measurement properties of the tests used to assess sitting balance and transfer tasks in stroke patients. This review indicates that appropriate tests with good validity and reliability exist. The tests are varied (stable sitting position, unstable, sit-to-stand, standing floor, etc.) and with a good feasibility in clinical practice.

Keywords

Stroke; Seated balance; Transfer tasks

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1288

IMPACT OF POST-STROKE CHECK LIST IN CHRONIC STROKE PATIENTS MANAGEMENT

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Introduction/Background

Post-Stroke Checklist (PSCL) is an easy-to-use questionnaire to standardize follow up care of Chronicpost-stroke patients and facilitate referral to Rehabilitation Services by general practioners (GPs) in an evidence-based-way. Although it was developed some time ago, there is no published Our main objective was to further understand if training GPs if the use of the PSC makes an impact on referral of these patients in our area.

Material and Method

We reviewed 55,000 inter-consultations (IC) from chronic stroke patients 6 months before and after training and presentation of the PSC to GP in our area. We determined endpoints such as number and percentage of patients undergoing treatment and concordance in goal setting between GP and Physical Rehabilitators (PR).

Results

We identified 16 chronic stroke patients from 756 inter-consultations from GPs in our area, 6 months before PSC training session. Only seven in these 16 patientunderwent any intervention (5 were treated with botulinum toxin (BT) and in 3 patient postural orthosis was recommended). Goals between GPs and PhisicalRehabilitator matched in less than 50% of patients. After PSC training session, we identified 23 patients that suffer from a cardiovascular event in 682 inter-consultations reviewed. 20 underwent any interventions, 18 were treated with BT (10/18 cases after a diagnostic nerve block), 21 were referred to physiotherapist and we prescribed functional orthosis to 8 patients. Diagnosis between GPs and our team matched in 20/23 patients.

Conclusion

Bearing in mind limitations of the study such as the small numbers of patients included, we may conclude that training in PSC to GPs may improve referral of chronic stroke patients, as it improves diagnosis concordance and the ratio of patient that underwent any intervention.

Keywords

stroke list;spasticity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1301

PREDICTORS OF IMPAIRED QUALITY OF LIFE AMONG ELDERLY POPULATION HAVING POLYARTHROSIS

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Introduction/Background

Osteoarthritis (OA) is the most common degenerative joint disease in the elderly. The often multifocal location at this age can be a source of pain, limitation of everyday activities, thus affecting their quality of life (QOL).

The objective of our work was to evaluate of the impact of polyarthrosis on the QOL among patients affected dypolyarthrosis.

Material and Method

A cross-sectional, descriptive study done in 2017. Patients aged 65 years and over were included, followed for polyarthrosis according to the criteria of Lawrence J.S. A clinical evaluation (anthropometric data, postural examination, and joint assessment) was made. The quality of life was studied by the SF36 scale translated into Tunisian dialect and the OAKHQOL questionnaire, specific for lower limb arthrosis.

Results

Fifty patients were included. The mean age was 71 years with a sex ratio of 0.4. Almost all of our patients had knee osteoarthritis (98% of cases), spinal involvement was in the second position (88%). We noted an alteration of the different physical health items of the SF-36 predominant in the areas of physical limitation, general health and emotional limitation, as well as the physically under-score (28/100) which was significantly lower than the mental under-score (52/100). The quality of life was impaired in the dimensions of social functioning and physical activities assessed by the OAKHQOL

Factors associated with poor QOL were: Female gender, spinal osteoarthritis, diabetes and heart disease as comorbidities and lack of functional rehabilitation ($p < 0.05$).

Conclusion

Polyarthrosis is accompanied by an alteration of the QOL in the elderly. Factors associated with QOLimpairment should be considered in the patient management program.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1310

ASSESSMENT OF BRAIN MOTOR CONTROL CHANGES RELATED TO NAVIGATED INHIBITORY RTMS IN THE CONTRALESIONAL HEMISPHERE IN PATIENTS WITH STROKE

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Introduction/Background

The Brain Motor Control Assessment (BMCA), a functional electromyography measure, provides baseline quantification of multi-muscle control for discrete movements against which we can compare the coordination of people with neurological impairment. Extensively studied in people with spinal cord injury, this small prospective case series represents the first time the BMCA technique has been applied to evaluate motor control changes potentially induced by rTMS post stroke.

Material and Method

We performed the BMCA on a subset of 4 patients who we enrolled as part of a larger multi center, sham-controlled randomized trial of navigation-guided 1 hz rTMS administered to the contralesional hemisphere as adjuvant to task-oriented occupational therapy, in patients with upper extremity weakness 3-12 months post stroke. We calculated the voluntary response index, pre-and post intervention, a BMCA measure involving the magnitude (Mag) - total EMG activity across muscles, and the similarity index (SI) - a vector comparison of the subject's multi-muscle pattern to that of normal control subjects.

Results

With just 4 subjects, we did not achieve statistical significance, however, we observed the greatest change in Mag and SI for wrist control tasks in the 3 active rTMS subjects vs the 1 sham subject.

Conclusion

This pilot demonstrated the feasibility of applying the BMCA to the assessment of an rTMS intervention. We could distinguish between the affected and non-affected sides and quantitatively track changes related to rTMS application. The one sham subject had the worst results.

Keywords

TMS;Neurophysiology;Stroke

No conflict of interest

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ISPR8-1352

VIRTUAL REALITY INTEREST IN CHRONIC VASCULAR HEMIPLEGIA

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Introduction/Background

In chronic hemiplegia, physiotherapy often only aims at upkeeping of the few recovered mobility in the upper limbs.

In partnership with Virtualis®, we adapted, to virtual reality, a rehabilitation protocol based on mirror therapies combined with a sensorimotor approach. Our goal was to modulate by this method the brain plasticity for improving this chronic disability.

Material and Method

14 stable hemiplegic patients, still benefiting from "maintenance by physiotherapy" (average of 66.8 ± 36.6 months post-stroke) were rehabilitated for 2 months, 3 times per week by virtual therapy. Each patient was assessed at T0 (before treatment), T1 (after 1 month of treatment), T2 (after 2 months of treatment), T3 (1 month after the treatment end and 3 months after its beginning).

The evaluation was based on a video analysis, a dynamometric analysis, an evaluation of spasticity, a "Jebsen Test" and a FIM.

Results

4 patients gave up the study. For the other 10 (9 males, 1 female, average 55.4 ± 13.96 years-old), our results converge towards a positive change but with a very variable progression gradient. We observed a change in spasticity, an analytic and functional improvement with a tendency to reintegrate the paretic limb into daily life.

Conclusion

Our results, even if they are still preliminary, highlight the interest of this immersive therapy. Having modified the plasticity in cerebral palsy patients, who was stable since several years, we are now encouraged to extent this technique to patients in the acute phase.

Keywords

Virtual Reality;Hemiplegia;Plasticity

No conflict of interest

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ISPR8-1357

STROKE WARNING TREND IN PEOPLE UNDER 65: ANALYSIS OF 57,713 CASES FROM 2002 TO 2015

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Introduction/Background

Data from UK and USA' studies show that the average age of stroke patients is falling. Given that stroke is the main cause of adult disability, we want to understand if the same is true in Australia.

Material and Method

Our retrospective study included 244,276 admissions to Hospitals in Queensland between 2002 and 2015 for stroke and related issues (ICD = I60-I69). 151,733 admissions had stroke (I60-I64) as a principal diagnosis, of which 57,713 were defined as first ever episode. We analyzed the patient data on the basis of age range (under or equal 65 and over 65 years of age) and year of admission.

Results

Data from 57,713 patients reveals that the crude incidence rate of stroke patients age 25-64 x 100,000 inhabitants increased from 44 to 62 ($p < 0.0001$). It represents a jump of + 18/100,000 from 2002 to 2015.

Moreover preliminary data shows that younger people seem to get to the hospital later than older ones, missing the chance for acute therapy and facing a worse outcome with chronic disability.

Conclusion

As a word of caution, the results have yet to be adjusted for catchment area changes, new stroke units opening, and changes in population statistics. Nonetheless, our study suggests that stroke is becoming more frequent in younger Australians. Primary and secondary prevention techniques are effective, as results from older shows, but that they need to be carried over to younger at-risk groups too, together with an awareness campaign.

Keywords

stroke;epidemiology;younger

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1358

FEASIBILITY AND TOLERANCE OF AN AEROBIC MOTOR TRAINING PLUS TDCS PROGRAM ON WALKING PERFORMANCE IN HEMIPLEGIC STROKE PATIENTS

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Introduction/Background

Limited improvement of post-stroke gait capacity have been shown with exercise training programs. Neuromodulation techniques such as transcranial Direct Current Stimulation (tDCS) may enhance the efficacy of exercise training programs. In this aim, we have designed an aerobic training program coupled with cortical stimulation by tDCS for hemiplegics stroke patients. The first objective was to evaluate the feasibility and tolerance of this program and secondly its effects on the walking performance.

Material and Method

This study was performed on 9 patients suffering an initially complete hemiplegia due to a first-ever stroke (*age: 62.9 ± 10.0 years, 6 women, 3 men, post stroke delay: 4.9 ± 3.5 months*). All patients followed 18 sessions, 3 times a week over 6 weeks, combining cycloergometer and walking training. Walking training was achieved with treadmill and body weight support. Anodal tDCS stimulation (2 mA) was applied over the lower limb ipsilesional motor area during the first 20 minutes of each session. The tolerance and adverse events (AE) were collected through a questionnaire filled in after each session. 10 meters walking test (10MWT) and 6-minutes walking test (6MWT) were assessed before and after the complete training program.

Results

The tDCS-training program was completely achieved for 7 out of 9 patients. No major AE was reported, but 27% of the sessions was associated with minor AE. The most frequent AE were tingling, headache and skin redness under the electrodes. The walking performance was significantly improved for the 6MWT (mean effect + 4.5%).

Conclusion

This feasibility study illustrates the good tolerance of an aerobic motor training plus tDCS program in stroke patients. A follow-up prospective control study, conducted on a larger stroke population, will precise the target population among stroke patients and evaluate the impact of this program on exercise capacity versus walking performance.

Keywords

stroke;transcranial Direct Current Stimulation;walking

No conflict of interest

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ISPR8-1363

EFFECTS OF BOTTOM-UP AND TOP-DOWN APPROACHES OF PHYSICAL THERAPIES IN THE REDUCTION OF POSTURAL IMBALANCE AFTER STROKE. PRELIMINARY RESULTS OF FIRST-META-ANALYSIS.

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Introduction/Background

The particular effects of the bottom-up (BU) and top-down (TD) approaches of physical therapy (PT) for the recovery of postural imbalance after stroke have never been studied, compared to the rehabilitation for spatial neglect after stroke (Bowen *et al.*, 2013). The aim is to determine the efficiency of all PT used after a stroke to improve the balance performance in adult patients after stroke.

Material and Method

Randomised controlled trials (RCT), without language restriction, until October 2015, assessing the Berg Balance Scale (BBS), the Postural Assessment Scale for Stroke, the posturographic parameters in static condition and measures of independence in activities of daily living were included. Two independent authors (AH and JDM) led this selection following the Cochrane recommendations (Hugues *et al.*, 2017).

Results

190 parallel and crossover RCT from 9337 records were included, involving 7946 subjects (study sample: mean 41 (SD 50) subjects, age: pooled mean 61,7 (pooled SD 12.78) years). A significant difference in favor of the intervention group was found for the BBS at immediate effect (BU: 6 studies, mean difference (MD) 1.17; 95% confidence interval (CI) [0.38; 1.96]. TD: 16 studies, MD 2.71; 95% CI [1.62; 3.80]. Mixed: 3 studies, MD 3.33; 95% CI [1.29; 5.37]). Only BU approaches of PT are more effective than sham treatment or usual care on the BBS for immediate effects (BU: 12 studies, mean difference (MD) 3.25; 95% confidence interval (CI) [1.20; 5.30]. TD: 12 studies, MD 1.17; 95% CI [-0.31; 2.65]. Mixed: 0 study. Neuromodulation: 3 studies, mean difference (MD) -1.60; 95% confidence interval (CI) [-4.49; 1.28]).

Conclusion

These preliminary results show in the short term: i) that balance capacity can be improved by all PT compared to no treatment, and ii) an improvement of balance by BU approaches of PT compared to sham treatment or usual care.

Keywords

stroke;meta-analysis;physical therapy

No conflict of interest

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ISPR8-1364

EVOLUTION OF DYSPHAGIA AFTER STROKE

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Introduction/Background

Dysphagia can be caused by many different disorders, affecting especially old people, people with neurological diseases, cancers of head and neck or severe reflux. Prospective studies have demonstrated an incidence of dysphagia as high as 41.7% in the first month after a cerebrovascular accidents (CVA). The overall rate of aspiration resulting from a CVA is approximately 33.3%. As many as 20% die of aspiration pneumonia in the first year after a CVA, and from 10% to 15% will die of aspiration pneumonia after the first year following the stroke. The goal of rehabilitation is to identify and treat abnormalities of swallowing while maintaining safe and efficient nutrition.

Material and Method

Eighty-year-old male who suffers CVA in left middle cerebral artery territory. Intravenous fibrinolysis is performed in the emergency room, persisting dysphagia and aphasia. Days later the patient suffers bronchial pneumonia, so nasogastric tube (NGT) is placed to him. On examination, weakness of the right oral musculature and complete lack of teething. The velopharyngeal and palatoglossal seals are much altered and have an absence of gag reflex. Hypophonia and weak cough. The volume-viscosity swallow test (V-VST) was performed with 2-point desaturation and wet voice with 10ml of nectar and 5ml of pudding, finishing the test.

Results

Six sessions of speech therapy were performed, improving muscle strength and the velopharyngeal seal. After another 6 sessions, an oral diet can be introduced, subsequently removing the NGT. With a total of 16 sessions, the patient recovers the normal physiology of swallowing, the V-VST was negative and is discharged with a complete basal diet.

Conclusion

With actual advances in neuroimaging techniques, our knowledge of the anatomy and physiology of swallowing has increased. This allows to improve the therapeutic approach of patients with neurogenic dysphagia and recover the quality of life lost after CVA.

Keywords

dysphagia;stroke;dysphagia rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1375

CHANGE PATTERN OF ITEMS IN STROKE IMPAIRMENT ASSESSMENT SET (SIAS) IN KAIFUKUKI REHABILITATION WARD.

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Introduction/Background

Impairment and disability are both important in rehabilitation medicine. Although the change pattern of the ADL has been eagerly researched in stroke patients, the course of impairment is not well known. We tried to clarify the characteristic of items in Stroke Impairment Assessment Set (SIAS) by comparing their scores on admission and at discharge.

Material and Method

Subjects were 4001 first stroke patients who admitted to our comprehensive inpatient rehabilitation wards between 2004 and 2016. Patients who had severe comorbidity, complication, or falling accident, or showed deterioration of FIM motor subscore were excluded and 3279 patients were analyzed. Higher score of the SIAS means less impaired. Percentage of patients with highest rank of the rating of each item of the SIAS on admission was counted. Rate of patients whose score was improved, deteriorated, or unchanged during hospital stay were also checked separately in each item of the SIAS. The items of the SIAS was grouped by the pattern of these percentages.

Results

Trunk, visuo-spatial, unaffected-side quadriceps, and pain were put together as the first group with large number of high score on admission and high improvement rate. Five items of motor paralysis and abdominal item were thought to be the second group with small number of high score on admission and high improvement rate. Items handling sensory, tone, range of motion, and speech were presumed to be the third group with low improvement rate and possibility of deterioration.

Conclusion

We must be cautious with the different pattern of the change of the impairment during rehabilitation.

Keywords

stroke;SIAS

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1406

SNEDDON SYNDROME: PERSONAL HISTORY OF STROKES WITH AN EARLY RECOVERY AFTER A REHABILITATION PROGRAM

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Introduction/Background

Sneddon syndrome is a chronic, progressive, arterio-occlusive disease of unknown etiology. Dementia occurs in 50% of patients and it is usually associated with antiphospholipid antibodies. It is defined by the association of livedo reticularis and recurrent cerebrovascular ischemic lesions. Its annual incidence is 4 / 1,000,000. We report the case of a 62 years old male patient with history of recurrent ischemic strokes, migraine, dermatological disease with psoriasis and livedo reticularis, cardiovascular involvement, cognitive decline, and absence of antiphospholipid antibodies.

Material and Method

The patient suffered a right occipital stroke in 1991, with sequels of left homonymous hemianopsia. Then in 2010 he suffered an ischemic stroke in the left temporal lobe, with no sequels. In 2014, he presented a right acute talamocapsular stroke that required anticoagulation and in 2017 a new acute ischemic stroke was diagnosed in right middle cerebral artery. In all the episodes he presented a recovery quickly and progressively.

Results

Bradypsychia and slow response.

Left supranuclear paresis and homonymous left hemianopsia.

Psoriasis lesions in bilateral temporal region and in lower limbs with scratching signals. Livedo reticularis in lower limbs. Global hyporeflexia. Failures in finger and position recognition of left toes. Bilateral plantar flexor response. Walk with tendency to lateralization to the left.

Supplementary tests: Computer Tomography at 2014: talamocapsular hypodensity in the right radiated crown.

Computer Tomography at 2017: areas of acute ischemia in right middle cerebral artery.

During the stay of his hospitalization, he progressed favorably. He underwent rehabilitative treatment for reeducation of walking. The patient was discharged and had not more strokes in the follow up and assessment.

Conclusion

In the review he reported a complete improvement during the first week. The most accepted treatment is anticoagulation with warfarin. Its benefits are better than the risk of bleeding. The early rehabilitation treatment is essential to favor its early recovery and maintenance.

Keywords

Sneddon syndrome;stroke;Livedo reticularis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1409

USEFULNESS OF MIRROR TREATMENT METHOD WITH DIGITAL IMAGE DISPLAY DEVICE IN STROKE PATIENTS WITH UPPER ARM DYSFUNCTION.

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Introduction/Background

This is a method of reducing the load of patient's posture. Because the equipment of the mirror therapy that uses a new picture processing was developed, We introduce this system.

Material and Method

It is possible to undergo rehabilitation of making the paralyzed hand follow to the movement of a healthy hand. The patient does the problem with a mirror box.

The experiment is assumed to be an end by not deciding time to use the mirror box, and clearing all problems.

the game of scissors-paper-rock are selected at random and the patient is told the experiment problem by oral. The patient moves his hand as shown in the problem mentioned in the mirror box. It is assumed about eight seconds, the patient gives the problem at intervals from giving the problem to giving the following problem, and the following problem is given even if not made. The problem is done 20 times by one experiment.

Results

Figure is a number of pixels obtained because of the experiment. The image of the hand is acquired by the USB camera in the mirror box and the binarization of the image is done. The blue graph shown in figure shows the number of pixels when the image of a healthy hand is made two values, a red graph shows the number of pixels when the image of the paralyzed hand is made two values, and the graph of the pea green is a number of pixels when the difference between a healthy hand and the paralyzed hand is done.

Conclusion

The possibility of quantitatively appreciable of the target change at the time of passing the paralysis and the disturbance of attention was suggested at identity frequency and reactive time of the image of hand.

Keywords

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1431

PATIENT AND PROFESSIONAL VIEWS OF MOTIVATION FOR REHABILITATION OF SUBACUTE STROKE

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Introduction/Background

Despite its importance, both patients and rehabilitation staff lack knowledge about the motivation for rehabilitation. This qualitative study aimed to identify factors related to motivation for rehabilitation in patients with subacute stroke.

Material and Method

Semi-structured interviews were performed with 20 patients with subacute stroke (mean age, 65.8 years) as well as with rehabilitation staff (10 physical therapists, 10 occupational therapists, and 10 nurses). Individual interviews were recorded in a quiet room. Text data were subjected to content analysis. The local ethics committee approved the research protocol and all participants provided prior written informed consent.

Results

The average patient interview time was 19 minutes, with total interview time of 370 minutes. The average staff interview time was 20 minutes, with total interview time of 590 minutes. For both patients and staff, the same 7 core categories were considered as factors influencing motivation: rehabilitation goals, relationships with staffs, relationships with other patients, support of patients, success and failure experiences, physical and cognitive status, and resilience of patients. Additional factors of "patient behavior related to motivation" and "labeling patient motivation" were identified as categories for patients and rehabilitation staff, respectively.

Conclusion

This study found that the motivation for rehabilitation in patients with subacute stroke is influenced by multiple internal and external factors. In addition, motivation may change patient behavior, and rehabilitation staffs tend to label patient motivation.

Keywords

Cerebrovascular disease;Motivation;Qualitative study

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1456

TRUNK EXERCISE USING THE SWISS BALL IMPROVES THE FUNCTIONAL BALANCE AND WALKING OF STROKE PATIENTS IN THE EARLY STAGES OF RECOVERY

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Introduction/Background

At present, we pay more attention to limb function assessment and improvement in stroke, and rarely give intensive training on their trunk control functions, resulting in unsatisfactory rehabilitation outcomes. Based on the above background, we used Swiss ball to enhance the trunk function of stroke patients in the early stage and observed the impact on patient balance and walking ability.

Material and Method

Sixty hemiplegic stroke patients were randomly assigned to a control group or an experimental group, each of 30. Both groups were treated with routine physical training. Those in the control group did conventional trunk exercises, while the patients in the experimental group were given trunk exercises performed using a Swiss ball. The trunk control test (TCT) and the Berg Balance Scale (BBS) were used to assess the patient's trunk and balance function. Gait and balance function training and assessment apparatus (model AL-080) was used to measure and compare the scope of movement of the patient's center of pressure in static sitting over 30 seconds (LOM), the limits of stability (LOS), velocities and a gait asymmetry index (GAI).

Results

Significant improvements in TCT, BBS, LOM and LOS were observed in both groups after the training, but all of the measures improved significantly more in the experimental group than in the control group.

Conclusion

Swiss ball trunk exercise can obviously improve the trunk control, functional balance and walking of stroke patients in the early stages of recovery.

Keywords

stroke; Trunk exercise; Swiss ball

No conflict of interest

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ISPR8-1458

ACCURATE ASSESSMENT OF CARDIOPULMONARY FITNESS AND ANALYSIS OF ITS RELATED FACTORS IN STROKE PATIENTS

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Introduction/Background

To accurately assess cardiopulmonary fitness of stroke patients and to analyze its related factors.

Material and Method

The basic data of 38 stroke patients, such as age, sex, height, etc, were collected. Fugl-Meyer, MMSE, ADL, and Berg scales were used to evaluate their exercise function, cognitive function, daily activity and balance function. All the patient used the power bicycle to carry out the maximum progressive cardiopulmonary exercise test with a restrictive symptom, and data on cardiopulmonary index, subjective fatigue, heart rate, blood pressure and other data were collected. Single factor analysis and multiple factors logistics regression analysis of cardiopulmonary fitness in stroke patients were carried out by SPSS 17.0 statistical software to explore the factors affecting the cardiopulmonary fitness.

Results

38 stroke patients enrolled in the study were able to complete the cardiopulmonary exercise test without adverse events. Cardiopulmonary fitness significantly decreased (VO₂ peak was 12.89 + 3.42 ml/kg/min). Single factor analysis showed that age, sex, Fugl-Meyer, MMSE, ADL, bad habits and daily exercise habits were the influencing factors of cardiopulmonary fitness in stroke patients ($P < 0.05$). Multiple factor logistic regression analysis showed that high Fugl-Meyer score, high MMSE score and regular exercise habit were independent protective factors of cardiopulmonary fitness ($OR < 1$), while advanced age, women and bad living habits were their independent risk factors ($OR > 1$).

Conclusion

Cardiopulmonary fitness significantly decreases in stroke patients. High Fugl-Meyer score, high MMSE score and regular exercise habit are independent protective factors of cardiopulmonary fitness, while advanced age, women and bad living habits are its independent risk factors.

Keywords

stroke;cardiopulmonary fitness;cardiopulmonary exercise test

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1477

THE EFFECT OF MIRROR THERAPY ON THE UPPER LIMB FUNCTION REHABILITATION OF STROKE PATIENTS WITH HEMIPLEGIA

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Introduction/Background

To explore the effects of mirror treatment of upper limb functional recovery in patients with hemiplegia after stroke.

Material and Method

56 patients with hemiplegia after stroke were randomly divided into the mirror treatment group (28 cases) and control group (28 cases by routine rehabilitation therapy). Before treatment and after treatment for 4 weeks, WMFT and FMA were used to evaluate the two groups of patients with upper limb movement function. Modified Ashworth Spasm Scale was also used to assess the spasticity of upper limb.

Results

After 4 weeks of treatment, in two groups, the scores of WMFT, FMA were significantly higher than before ($P < 0.05$); Between the two groups, the scores of WMFT, FMA in the mirror treatment group were higher than those of control group ($P < 0.05$). The difference of Ashworth spasm improvement was not significant before and after treatment ($P > 0.05$).

Conclusion

Mirror therapy on the recovery of upper limb movement function in patients with hemiplegia after stroke has certain curative effect, but the improvement of limb spasm is not obvious.

Keywords

mirror treatment;hemiplegia;upper limb

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1484

HANDEDNESS AND LATERALITY IN INDONESIAN STROKE PATIENTS : A PRELIMINARY STUDY

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Introduction/Background

Handedness was determined by brain dominance which had importance influence on motor skills. Aims was to know whether post stroke hemiparesis that affect dominance or non-dominance influence handedness.

Material and Method

A preliminary study in acute, sub-acute or chronic phase stroke patients. Hand dominance was evaluated using Edinburgh Handedness Inventory–Short Form (EHI-SF), which the result was Laterality Quotient Score (LQ) . Evaluation was done twice, before (by interview) and after stroke. LQ score was categorized as Right Handedness/RH (61 to 100), Mixed Handedness/MH (-60 to 60) and Left Handedness/LH (-100 to -61).

Results

Seventeen post stroke subjects, nine with right hemiparesis (52,9%), eight with left hemiparesis (47,1%), eleven men (64,7%), six women (35,3%). Pre-stroke LQ score was sixteen RH (94.1%), one MH (5.9%). Eight subjects in the chronic phase (47,1%), seven subjects in the sub-acute phase (41,2%), and two in the acute phase (11,7%). Post Stroke LQ score shows , twelve (70,5%) show same LQ scores, that is hundred which was categorized as RH category. Five (29,41%) had change in LQ score with three (17,64%) still in the same category as RH and had Right Hemiparesis. One (5,89%) also still in the same category as MH. One (5,89%) was in chronic phase in which LQ score change from RH to LH.

Conclusion

Hemiparesis in the dominant side influence changes in Laterality Quotient scores , only one subject (5,89%) change from RH to LH. Hand dominance impairment, stroke onset, age and adaptive mechanism may affect laterality. It is important to use EHI-Short Form to determine handedness before giving hand rehabilitation program.

Keywords

Edinburgh Handedness Inventory Short Form (EHI-SF);Laterality Quotient (LQ);Stroke

No conflict of interest

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ISPR8-1499

ASSESSMENT OF HEALTH RELATED QUALITY OF LIFE AND ITS DETERMINANTS IN STROKE SURVIVORS AND EVALUATE THE IMPACT OF DETERMINANTS ON QUALITY OF LIFE

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Introduction/Background

With advancement in medical treatment longevity post stroke has increased. As most of stroke survivors are left with some impairment the quality of life assumes importance. The majority of study reported a decline in health-related quality of life following stroke. However the data from developing countries are limited. The aim of this study was therefore to determine the quality of life (QoL) and correlation of factors influencing QoL of community-dwelling stroke survivors.

Material and Method

Ongoing observational cross sectional study in PMR department. All the stroke survivors > 6 weeks duration of stroke, satisfying the inclusion and exclusion criteria and willing to participate were enrolled for the study. Subjects were interviewed using semi structured proforma, Quality of life was assessed using WHO QoL Bref, functional independence was measured by Barthel Index Hospital Depression and Anxiety Scale (HADS) was used to identify level of anxiety and depression.

Results

A total of 133 subjects enrolled for the study, Out of which 94(70.6%) were male and 39(29.4%) female. Mean age was 51.44 ± 12.1 , mean duration of stroke 1.76 ± 1.8 years, and mean score of barthel Index 62.78 ± 26.32 . Some degree of depression was present in 47 % subjects and anxiety in 50 % subjects. In majority of subjects overall quality of life score was fair to poor and were dissatisfied with their health. Mean QoL domain score was also low in all the four domains physical health(47.56), psychological health(41.96), social relationships(49.14) and environment(49.38). The QoL post stroke was significantly influenced ($P < 0.05$) by age, stroke-severity, education, socioeconomic status and presence of anxiety & depression.

Conclusion

Stroke survivors have impaired quality of life. Multidimensional evaluations of the QoL and periodic screening for anxiety and depression of stroke survivors is recommended. In addition community-based rehabilitative approaches need to be strengthened which includes continuous and coordinated counselling and support to improve QoL.

Keywords

Quality of Life in Stroke survivors;Hospital anxiety and depression scale;Functional independence

No conflict of interest

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ISPR8-1506

THE EFFECT OF REPETITIVE TRANS-CRANIAL MAGNETIC STIMULATION FROM THE PERIPHERAL TO MOTOR CORTEX ON SUBACUTE STROKE PATIENTS

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Introduction/Background

The purpose of this study was to evaluate a new way of improving function applied with trans-cranial magnetic stimulation from peripheral neuron-muscular to motor cortex for subacute stroke patients.

Material and Method

65 subacute stroke patients with both upper and lower limb hemiparesis were included and divided into three groups: group A, with paired peripheral to cortex stimulation (n=29, iTBS stimulate from lower paralytic limb, upper limb, spinal cord, brain stem to lesional hemisphere cortex, for 3-5times/site), group B, with the cortex stimulation alone (n=20, low frequency trans-cranial magnetic stimulation on non-lesional hemisphere cortex, 1Hz, 1200pulses, 90%RMT), group C, control group (n=16, no stimulation). All patients received treatments 1 time/day for 10 days and the motor function evaluated by the Fugl-Meyer Assessment (FMA) pre- and post-treatment.

Results

Compared with pre-treatment FMA score of post-treatment showed a significant increase in Group A and B patients, and the FMA score of Group A patients' showed significantly increase than Group B. FMA score of Group C had no significant improvement between pre and post treatment.

Conclusion

It might be a new way of using trans-cranial magnetic stimulation that stimulate from peripheral to cortex for subacute stroke patients with hemiparesis.

Keywords

subacute stroke;repetitive transcranial magnetic stimulation;peripheral magnetic stimulation

No conflict of interest

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ISPR8-1517

CORRELATION BETWEEN BALANCE AND WALKING PERFORMANCE IN STROKE PATIENTS

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Introduction/Background

Balance problems are common after stroke, and have been implicated in poor recovery of daily activities, mobility and increase the risk of falls. A simple and reliable method for evaluating balance is Timed Up and Go Test (TUG). The 2-minute walk test (2MWT) is a test of walking performance and may provide achievement of walking ability in daily living. Aims of the study is to know the influence and relationship balance on walking ability and its relation in stroke patients.

Material and Method

A cross sectional study, thirty outpatient stroke subjects were examined once with Time Up and Go Test (TUG) for balance and Two Minute Walking Test for walking ability.

Results

Mean age of subjects 57.87(\pm 11.837) years. Mean value of TUG score was 14.58 minutes with range between 6 minutes till 29.37 minutes . Mean walking ability using two minutes walking test were 101.82 meter with range between 44 meter till 201 meter. Pearson Correlation test show strong negative correlation between TUG and two minute walking test ($r = -0.822$, $p < 0.01$).

Conclusion

This study show that balance is highly correlated with walking ability in stroke patients. Time up and go test (TUG) can be used as a simple examination that is easy to apply in stroke patients as a predictor of walking ability.

Keywords

Stroke; Time Up And Go Test; Two Minutes Walking Test

No conflict of interest

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ISPR8-1562

THE PATTERN OF IMPAIRMENTS IN STROKE PATIENTS AND IT'S IMPACT ON FUNCTIONAL OUTCOMES: AN OBSERVATIONAL STUDY IN A TERTIARY CARE HOSPITAL OF BANGLADESH

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Introduction/Background

Stroke is one of the leading cause of death and disability worldwide, more so in Bangladesh where health support system including rehabilitation is not expectedly available.

Rehabilitation remains the cornerstone of treatment in stroke survivors. Rehabilitation outcome are assessed by functional outcome measures.

Predicting stroke recovery is complex. Knowledge of functional outcome stratified according to initial impairments is very important for prognostication of stroke and for rational planning of rehabilitation.

Aim: To measure the impact of different types of impairments on functional outcomes in stroke patients.

Material and Method

Study design: Observational study

Study period: January 2017 – December 2017

Study place: Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh

Participants: Individuals (n= 264) who sustained an eligible stroke and admitted in Shaheed Suhrawardy Medical College Hospital were evaluated prospectively.

Methods: The patients were evaluated clinically and by standardized assessment tools at enrollment and followed up at 1 month and at 3 months after stroke. Assessments included baseline demographics, clinical findings, stroke characteristics, impairments and functional abilities. Individual impairments were assessed using the 11-item NIHSS (National Institute of Health Stroke Scale) index. Accumulated impairments were used to form 4 impairment groups: motor deficits only (M); motor and somatosensory deficits (MS); motor and visual deficits (MV); and motor, somatosensory and visual deficits (MSV).

Main outcome measures: Mobility and Activities of Daily Living (ADLs) were assessed at 1 month and at 3 months after stroke using the Barthel Index (BI).

Results

The BI score gain at 1 month and 3 months were different for the following 4 impairment groups in descending order: motor; motor and somatosensory; motor and visual; and motor, somatosensory and visual.

Conclusion

Cumulative impairments affect patients' functional outcome in the first 3 months after stroke beyond the effect of motor impairment alone.

Keywords

No conflict of interest

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ISPR8-1584

PREDICTORS OF FUNCTIONAL OUTCOME IMPROVEMENT IN HOSPITALIZED ACUTE STROKE REHABILITATION

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Introduction/Background

Functional Independence Measure (FIM) has been widely used as outcome evaluation in stroke patients. The effectiveness of FIM represents the improvement levels of functional outcome. This study aimed to identify the predictors of the FIM effectiveness in hospitalized acute stroke patients.

Material and Method

This study was conducted at the rehabilitation ward in a medical center, and data were retrieved from the clinical pathway data set which including complete record of the stroke assessment at admission and at discharge, mobilization ability, past medical history, whether nasogastric intubation or urinary catheterization or not, and the types of caregivers during admission. A total of 1640 stroke patients were included in this study with mean age, 72.4 [SD, 13.5] years, 652 (39.8%) women, and mean FIM initial score, 71.5 [24.5].

Results

The variables measured with univariate analysis showed that significant difference ($p < .05$) were age, length of stay (LOS), past medical history, speech function, nasogastric intubated or urinary catheterized, trunk control (roll, sit, stand), Functional Ambulation Category, family care (or not) and Brunnstrom stage. Multivariate logistic regression analysis identified 7 independent risk factors of FIM effectiveness including age (odds ratio [OR]: 0.98, 95% CI = 0.97-0.99), LOS (OR: 1.03, 95% CI = 1.00-1.05), dysarthria (OR: 0.691, 95% CI = 0.50-0.96), aphasia (OR: 0.353, 95% CI = 0.24-0.53), initial nasogastric intubation (OR: 0.61, 95% CI = 0.47-0.78), initial standing ability (OR: 1.61, 95% CI = 1.08-2.39), and care only by his family (OR: 1.41, 95% CI = 1.12-1.77).

Conclusion

This study showed that the effectiveness of rehabilitation can be predicted at patients' admission to the rehabilitation department, and it could be used as a reference for rehabilitation goal setting and further management.

Keywords

FIM effectiveness ;Acute stroke rehabilitation;Predictors of functional outcome

No conflict of interest

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ISPR8-1626

SLEEP DISORDERS IN PATIENTS WITH CHRONIC STROKE: A CROSS-SECTIONAL STUDY

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Introduction/Background

Sleep disruption is a common disorder (about 50%) in patients after stroke, resulting in reduction in sleep time due to the increased number of awakens. It has already been described that sleep architecture is modified in stroke patients: time spent in non-rapid eye movement-1 (NREM1) phase is increased, while rapid eye movement (REM) and non-rapid eye movement-3 (NREM3) phases are reduced. The aim of this cross-sectional study was to investigate the mechanisms of sleep alterations and the correlation with the impact of the cerebrovascular accident on health and quality of life in patients with chronic stroke

Material and Method

We included patients aged ≥ 18 years with a diagnosis of chronic stroke (≥ 12 months from acute event). Patients with Sleep Breathing Disorders (SBD) or presenting other major comorbidities were excluded. We assessed: stroke severity, using the Stroke Impact Scale (SIS); depression, by Hamilton Depression Rating Scale (HAM-D); pain using the Brief Pain Inventory (BPI); sleep perception by Pittsburgh Sleep Quality Index (PSQI). Sleep architecture was assessed by X4 Sleep Profiler™ In-Home EEG Sleep Monitor–Advanced®, an in-home multi-night sleep monitoring device.

Results

We enrolled 9 patients, mean aged 71.11 ± 12.64 years, with a mean HAM-D = 15.11 ± 6.90 , a mean BPI intensity index = 3.75 ± 1.51 and mean BPI interference index = 6.21 ± 2.82 . Sleep was perceived as poor, with a global PSQI of 10.00 ± 4.66 . We found a reduction of time spent in NREM3 phase and an increased time spent in NREM1 and NREM2 with an increased number of awakens and cortical arousals in accordance with the literature. Moreover, time spent in NREM3 phase was significantly correlated to SIS mobility ($r=0.861$; $p=0.003$) and SIS hand function ($r=0.707$; $p=0.030$).

Conclusion

This cross-sectional study suggests a correlation between sleep alteration and the functioning of stroke patients, although prospective trials are necessary to better clarify this finding.

Keywords

sleep disorders;stroke;polysomnography

No conflict of interest

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ISPR8-1631

A COMPARISON OF PRISM ADAPTATION, OPTOKINETIC STIMULATION AND VISUOSPATIAL TRAINING IN THE REHABILITATION OF SPATIAL NEGLECT

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Introduction/Background

Prism adaptation (PA) is one of the most investigated and effective therapy among those for the rehabilitation of unilateral spatial neglect. Two other techniques have received the higher degree of efficacy from the literature analysis: Visuo-Spatial Training (VST) and Optokinetic Stimulation (OKS). The aim of this study was to compare the effectiveness of these rehabilitation methods between and within two groups of neglect patients.

Material and Method

Two groups of post-acute spatial neglect patients (of 12 and 8 participants), who have never been received rehabilitation, were subjected to different rehabilitation procedures: PA and OKS for the first group and PA and VST for the second group. Within each group a crossover design was applied for the sequence of the two therapies. Each therapy was applied for 10 sessions, twice a day. Neuropsychological assessments were performed before the first type of training, between the first and the second training, after the second training and two weeks after the end of treatment.

Results

All three methods induced an improvement. The first group showed a significant effect of the first training, independently from which type. Similar trend of results was shown in the second group. Overall the sequential application PA- VST seems to be more effective than VST- PA.

Conclusion

The results suggest that bottom-up techniques (PA and OKS) induce higher amelioration of neglect patients than VST, at least for a short therapy. OKS and PA showed a comparable degree of efficacy in the first session of rehabilitation. Finally, a first treatment with a bottom-up technique and a subsequent top-down method seems to show the high efficacy in rehabilitation of neglect.

Keywords

Neglect;prism adaptation;Rehabilitation

No conflict of interest

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ISPR8-1647

IS THERE ANY EFFECT OF STROKE TYPE AND LATERALIZATION ON TRUNK CONTROL OF HEMIPLEGIC PATIENTS IN EARLY TERM?

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Introduction/Background

This study was planned to investigate the effects of stroke type and lateralization on trunk control of hemiplegic patients in early term.

Material and Method

Forty hemiplegic patients (22M,18F) sitting balance at least 30 seconds were included in this study. After saving demographic and clinical data of patients, Trunk Control Test (TCT) and Trunk Impairment Scale (TIS) were used to determine trunk control.

Results

The mean age of the patients is 48.48 ± 13.54 years. According to stroke type, 24 (60%) patients are ischemic and 16 (40%) are hemorrhagic. Twenty-four (60%) of the affected body half are left and 16 (40%) are right hemiplegic. When trunk control measurements were compared with stroke type and lateralization, no statistically significant difference ($p>0,05$). At the same time, it was found a statistically significant positive correlation between TCT and static balance, dynamic balance and coordination sub-parameters of TIS and total TIS score ($p<0,001$).

Conclusion

Patients' trunk control of hemiplegic patients is similarly disturbed after ischemic and hemorrhagic stroke. In addition, the severity of trunk dysfunction seen in both right and left hemiplegic patients is similar.

Keywords

Stroke, Trunk Control, Lateralization.

No conflict of interest

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ISPR8-1653

THE USE OF ARMEO®SPRING IN ACUTE STROKE

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Introduction/Background

Over the last decade, application of exoskeleton devices in clinical use has been increasingly more important. Armeo®Spring is one of them, providing weight support to the arm and also enables simulation of active movement in a safe and controlled way. Therefore, the aim of this study was to evaluate its efficacy in patients with acute stroke.

Material and Method

Consecutive stroke patients, referred to Occupational therapy (OT), have been, within a period of three months additionally screened for eligibility to use the Armeo®Spring. The inclusion criteria for treatment with an exoskeleton were at least voluntary movement in affected shoulder, being able to follow the demands of this device and sit for an hour. Patients who fitted the criteria and were willing to participate, undergone standard rehabilitation practice, and additional treatment for upper limb with an exoskeleton. They were assessed by the Barthel index (BI) and by the Fugl-Meyer Assessment (FMA) – upper extremity, prior and after the treatment with device. SPSS was used for analysis.

Results

There were 11 consecutive acute ischaemic stroke patients (seven men/four women), with an average age of 60 ± 12 , six have right hemiparesis and five has left hemiparesis. Average time of initiating the therapy was day 9 ± 9 (OT started at day $7 \pm 6,8$) since admission and average days of therapy with the exoskeleton were $8 \pm 3,6$. Average initial BI was $11,6 \pm 5,9$ and average discharge BI was $14,8 \pm 6$. This difference was significant at $p < 0,05$. The average initial FMA was $96 \pm 19,6$ and the average discharge FMA was $101 \pm 20,8$. This difference was significant at $p < 0,05$.

Conclusion

The use of an exoskeleton has proved to be a beneficial device for treatment of the hemiparetic hand after an acute stroke. Further clarification of the degree of change and its impact on the activities of daily living performance will be determined by additional comparison with a relevant control group.

Keywords

No conflict of interest

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ISPR8-1672

DEVELOPING A CLINICAL PREDICTION RULE FOR DISCHARGE HOME IN PATIENTS WITH SEVERE STROKE.

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Introduction/Background

Even in patients with severe stroke, it is necessary to predict in an early stage whether they can be discharged home from hospital in order to offer the later services at home. The purpose of this study was to develop a clinical prediction rule (CPR) for discharge home after rehabilitation in patients with severe stroke.

Material and Method

The subjects were 206 patients with stroke during post-acute phase, registered in the Japan Rehabilitation Database, whose Functional Independence Measure (FIM) scores was 36 points or less. The following potential independent variables at the time of admission to the rehabilitation ward were collected; age, gender, side of lesion, duration since stroke onset, National Institutes of Health Stroke Scale score, cognitive status, speech disorder status, motor/sensory impairment status and scores of each item of FIM. The collected data were evaluated using Classification and Regression Trees (CART) analysis method to develop a CPR for discharge home.

Results

Forty-six percent of the patients were discharged home after rehabilitation. The CART analysis found the CPR included age, motor FIM score, motor impairment status of upper limb, functional status of eating, grooming, and memory (sensitivity=76.6%, specificity=76.8%, positive predictive value=73.5%, negative predictive value=79.6%, accuracy=76.7%). The best predictor for discharge home was the level of functional status of eating, the next predictors were age and motor FIM score.

Conclusion

The CPR with moderate accuracy was developed to predict discharge home after rehabilitation in patients with severe stroke. Further investigation including environmental factors is necessary to improve accuracy of the CPR.

Keywords

clinical prediction rule;severe stroke;discharge home

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1677

AMBULATORY OUTCOME IN TOTALLY NON-AMBULATORY STROKE PATIENTS AFTER INPATIENT REHABILITATION

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Introduction/Background

Although previous studies have looked at outcome and predictors of ambulatory status in patients with impaired ambulation after stroke, what is scarcely reported is detailed knowledge of ambulatory outcomes in patients who are totally non-ambulatory on after stroke. This study aims to document ambulatory outcome and establish factors predicting outcome after rehabilitation in totally non-ambulatory patients admitted to our rehabilitation centre.

Material and Method

All stroke patients admitted to the rehabilitation center of Tan Tock Seng Hospital, Singapore are prospectively included in the center's database. This was a retrospective review of data of patients admitted in years 2014 and 2015. Data analysed included: Functional Independence Measure (FIM), National Institute of Health Stroke Scale (NIHSS), Montreal Cognitive Assessment (MOCA), Fugl-Meyer Assessment (FMA) and Truncal Impairment Scale (TIS). Ambulatory status of patients in this study was evaluated based on the 'walk' score of the FIM. Total non-ambulators were defined as patients with a FIM-walk score of 1 on rehabilitation admission.

Results

577 stroke patients (mean age 63.2 ± 11.8 years,) were analysed. On admission, 113 (19.6%) of patients were total non-ambulators. Compared to other ambulators, total non-ambulators had significantly higher admission NIHSS, lower FMA-upper limb, FMA-lower limb, MOCA, FIM-motor and TIS scores and stayed longer in rehabilitation. Dysphasia, neglect and a haemorrhagic stroke was also significantly commoner in total non-ambulators. Post-rehabilitation, 20% remained as total non-ambulators, 46.0% achieved FIM-walk scores of 4-5 and 8.8%, FIM-walk scores of 6-7.

Univariate analyses predicting discharge ambulatory status revealed that age, dysphasia, neglect, NIHSS, FMA-upper limb, FMA-lower limb, MOCA, FIM-motor and TIS scores. Multivariate logistic regression analysis showed that only age, MOCA and FIM-motor scores remained independent predictors of discharge ambulatory status.

Conclusion

Almost 80% of totally non-ambulatory stroke patients had good ambulatory outcome after rehabilitation. Older age, poorer functional status and cognition are predictors of poor ambulatory outcome.

Keywords

No conflict of interest

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RESPONSIVENESS OF THE ACTIVITY MEASURE FOR POST-ACUTE CARE (AM-PAC) FROM DISCHARGE FROM INPATIENT STROKE REHABILITATION TO SIX MONTH FOLLOW-UP

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Introduction/Background

Functional stroke scales must detect significant change over time, but defining “significant” is difficult. The Activity Measure for Post-Acute Care (AM-PAC) measures activity limitations in 3 domains: basic mobility (BM), daily activity (DA), and applied cognitive (AC). This study assesses the ability of the AM-PAC to detect change from inpatient rehabilitation facility (IRF) discharge (DC) to an outpatient setting 6 months (6M) later.

Material and Method

We analyzed data from a observational database for stroke patients treated at our academic IRF. We assessed AM-PAC domains at IRF DC and again by phone 6M later. Change between DC and 6M was calculated by: 1) standardized response mean (SRM, 0-0.4-0.6=moderate effect) and 2) proportion achieving the minimal clinically important difference (MCID, estimated as 0.5SD of baseline scores after Norman *et al.*, 2003) with our data and 3) the published, mixed population minimal detectable change (MDC).

Results

Of 273 patients at DC, 139 (51%) had both AM-PAC scores and were included. Those included were not demographically different but were better on physical and cognitive measures at IRF admission. The mean age=67.1±14.8y, NIHSS=7.9±7.5, discharge FIM=84.1±19.1, FIM Gain=20.2±10.6, and rehabilitation length of stay=14.8±7.6d. The mean DC/6M scores for BM were 51.7±11.2/56.0±12.1, DA=44.4±9.9/49.2±14.5 and AC= 40.0±9.8/44.7±9.2. Change metrics for the 3 AM-PAC domains are below:

AM-PAC Domain	Current Data SRM	Current Data MCID(% responders at 6M)	Published MDC (% responders at 6M)
BM	0.43	5.81 (37.4%)	4.28 (46%)

AM-PAC Domain	Current Data SRM	Current Data MCID(% responders at 6M)	Published MDC (% responders at 6M)
DA	0.36	5.32 (40.3%)	3.70 (49.6%)
AC	0.48	5.01 (49.6%)	5.55 (47.5%)

Conclusion

Between 40%-50% of stroke patients were classified as “significantly” improved, depending on measure, suggesting the AM-PAC is able to capture "real life" change. The sample experienced change at the lower end of “moderate improvement” by SRM. Estimated MCID and the MDC were similar for DA and AC, not BM. Further research should explore factors which predict functional success or failure.

Keywords

stroke;Activity Measure Post Actue Care;responsiveness

No conflict of interest

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PREDICTION OF FUNCTIONAL AMBULATION WITH SITTING POSTUROGRAPHY IN PATIENTS WITH SUBACUTE HEMIPLEGIC STROKE

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Introduction/Background

The purpose of this study is to investigate the usefulness of sitting posturography in stroke patients.

Material and Method

A retrospective review of medical records was performed for subacute hemiplegic stroke patients admitted to the university hospital from December 1, 2016 to May 31, 2017. Twenty-nine patients (17 males and 12 females; average age, 63.41±15.44 years) were evaluated for balance ability using sitting posturography and clinical assessment of balance, such as Scale for the Assessment and Rating of Ataxia (SARA, using balance categories) and Berg Balance Scale (BBS). Posturography parameters are consisted of percentages of weight bearing distribution (WBD), static stability and dynamic stability. Static stability index was obtained by measuring sway of surface area and length from the center of pressure. The limit of stability (LOS), representing the dynamic stability. In addition, gait status were also assessed by Functional Ambulatory Categories (FAC) after 4 weeks of conventional treatment. Collected data were statistically processed using Pearson correlation coefficients to investigate the relationships between posturography parameters and the clinical assessment of balance (BBS, SARA). Multiple regression analysis was used to find independent variables related to FAC after 4 weeks of conventional rehabilitation.

Results

The average ratio of percentages of WBD and ratio of LOS were 0.852±0.09, 0.766±0.23, respectively. A strong relationships were found in posturography parameters (ratio of percentages of WBD, ratio of LOS) in regards to BBS ($r=0.761$, $r=0.781$, $p<0.01$) and SARA ($r=-0.852$, $r=-0.804$, $p<0.01$) scores. The ratio of LOS statistically significantly predicted FAC after 4 weeks. ($b = 1.89$, $SE = 0.72$, $95\% CI = 3.38, 0.40$, $p < 0.01$)

Conclusion

In patients with subacute hemiplegic stroke, sitting balance parameters of posturography correspond well with SARA and BBS. Furthermore, our data suggest that the ratio of LOS, which evaluated in sitting position, can significantly predict FAC after 4 weeks of rehabilitation.

Keywords

Posturography;balance;Subacute hemiplegic stroke

No conflict of interest

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ISPR8-1697

CLINICAL PRACTICE GUIDELINE 2017 FOR POST STROKE REHABILITATION IN IRANIAN POPULATION (BRIEF REPORT)

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Introduction/Background

Stroke is the major cause of disability in many countries. The annual incidence of stroke in Iran has been reported to be in a range from 23 to 103 per 100,000 people in 2010, causing a significant burden. Many studies have indicated the effectiveness of rehabilitation after stroke on things such as improvement in activities of daily living (ADL) and reduction of disability as well as mortality rate. Therefore, based on various and valid guidelines in this field, adaptation of the available guidelines into one suitable for the Iranian population was taken into consideration.

Material and Method

After selecting the subject and determining the scope of the guideline, the clinical questions, based on PICO were designed. Then, recent guidelines were searched for and reviewed using the AGREE II tool, in order to select the more suitable ones. Developing the initial scenarios (as the alternatives to a clinical problem) and analyzing the clinical advantages and cost-effectiveness were the next steps.

Results

In internal expert review panel, final recommendations were approved after revision by a number of Iranian professionals who were expert in various aspects of stroke rehabilitation. Final recommendations included these topics: design of a comprehensive rehabilitation program, general principles of care in rehabilitation service, rehabilitation of common impairments, the interaction of patients and their families or caregivers, early supported discharge, and pre- and post-discharge considerations.

Conclusion

Due to the high diversity of rehabilitation measures in this field, this clinical guideline aimed at prioritizing these measures based on efficiency and cost effectiveness by considering the national capacities and limitations. All expert Iranian societies related to rehabilitation approved this guideline.

Keywords

Stroke Rehabilitation;Neurological Rehabilitation;Guideline

No conflict of interest

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DIFFUSION TENSOR IMAGING AS A PROGNOSTIC BIOMARKER FOR MOTOR RECOVERY IN PATIENTS WITH PONTINE INFARCTION

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Introduction/Background

To investigate the dynamic evolution of diffusion indexes in the corticospinal tract (CST) distal to a pontine infarct by using diffusion-tensor imaging, to determine the relationship of these indexes with clinical prognosis, and to explore the structural changes in the motor pathway during recovery.

Material and Method

Twenty-four patients (17 men; average age, 58.6 years; range, 42–83 years) were recruited for this study. All patients were diagnosed with pontine infarct and underwent diffusion-tensor imaging examinations after stroke (mean duration: 50±115 days). Reconstructions of the CST were performed. All Fiber numbers were measured in the medulla, cerebral peduncle, internal capsule, and centrum semiovale. Fiber numbers across the pons of the CST in the ipsilateral side of the infarct were calculated. Their relationships with clinical scores such as Fugl-Meyer score (FMS), Berg balance test (BBS) and Modified Barthel index (MBI) were analyzed by using Pearson correlation analysis. A P value of .05 (two tailed) was considered to indicate a significant difference for all statistical procedures.

Results

All patients had some degree of motor deficit. The FMS ranged from 0 to 66 at the first examination. The number of fiber across pons were correlated positively with BBS at discharge ($r=0.549$, $P=0.005$) and MBI at discharge ($r=0.682$, $P=0.000$). Fractional ratio of fiber across pons (The number of fiber across pons/total number of CST fiber) were correlated positively with BBS at discharge ($r=0.423$, $P=0.039$) and MBI at discharge ($r=0.511$, $P=0.013$). Difference between admission and discharge of MBI score was well correlated with the number of fiber across pons ($r=0.436$, $P=0.038$) diffusion-tensor tractographic images showed regeneration and reorganization of the motor pathways.

Conclusion

Secondary degeneration of the CST can be detected at diffusion-tensor imaging in the subacute stages after pontine infarction, which could help predict the motor outcomes. Diffusion-tensor tractography can allow detection of regeneration and reorganization of the motor pathways during recovery.

Keywords

Diffusion Tensor Imaging;Pontine;Prognosis

No conflict of interest

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ISPR8-1703

ASSOCIATION BETWEEN THE INTENSITY OF OUTPATIENT REHABILITATION THERAPY AND THE RISK OF DEMENTIA IN PATIENTS OF ISCHEMIC STROKE

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Introduction/Background

Patients with stroke have an increased risk of dementia. Some studies have found that outpatient rehabilitation programs may improve cognitive function in chronic stroke patients. However, little is known about the use of rehabilitation in the outpatient setting and its impact on the risk of dementia. The objective of this study was to examine the association between the intensity of outpatient rehabilitation services received and the risk of dementia.

Material and Method

We used the National Health Insurance Research Database in Taiwan to identify 16264 patients diagnosed with stroke from 1997 to 2005. Rehabilitation intensity was categorized as none, low, medium or high based on the sum of physical therapy, occupational therapy, and speech therapy within the first 6 months after discharge from inpatient rehabilitation. Cox proportional hazard regression models were used to evaluate the association between the intensity of rehabilitation and the risk of dementia.

Results

During the follow-up period (median, 7.5 years), 1429 patients were diagnosed with incident dementia. Compared to patients in the no rehabilitation group, those who received high intensity therapy had a decreased risk of dementia during the follow-up period (hazard ratio, 0.68; 95% confidence interval, 0.56–0.84). The results remained consistent in analyses stratified by gender.

Conclusion

The intensity of outpatient rehabilitation therapy and the risk of dementia was significantly inversely related in the ischemic stroke patients. Thus, further programs aimed at promoting greater use of outpatient rehabilitation services in patients with stroke are warranted.

Keywords

rehabilitation;stroke;dementia

No conflict of interest

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ISPR8-1708

SENSORIMOTOR STRATEGIES FOR THE IMPROVEMENT OF NAMING ABILITIES IN APHASIA: NEURAL AND BEHAVIOURAL CORRELATES OF POEM- PERSONALIZED OBSERVATION, EXECUTION, AND MENTAL IMAGERY THERAPY

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Introduction/Background

Anomia is the most frequent and pervasive symptom for people with aphasia (PWA) and can affect all grammatical categories. Research has long focused on name retrieval, while therapies targeting verb anomia remain scarce. Single word retrieval therapy for verbs is effective across different approaches. Nevertheless, the impact of sensorimotor strategies on aphasia recovery has been rarely explored. This study reports on the efficacy of Personalized Observation, Execution, and Mental Imagery therapy (POEM), a new therapy approach designed to integrate sensorimotor and language based strategies to treat verb anomia.

Material and Method

Two participants with chronic aphasia and verb anomia were followed-up in a pre-post therapy fMRI study. Tests of language and cognitive functions were completed. A personalized set of stimuli was built based on the naming performance on baseline controlled for linguistic variables. POEM therapy was administered in a massed stimulation schedule: three 60-minutes sessions per week for 5 weeks.

Results

The results show a significant improvement in both participants, with trained and untrained items. Changes in fMRI patterns following POEM reflect a reduction in the number of recruited areas supporting recovered naming, and the recruitment of brain areas, part of language and mirror neuron systems.

Conclusion

This study originally contributes to the research on verb anomia treatment with an innovative structured combination of sensorimotor strategies allowing PWAs to retrieve more precisely and quickly treated and untreated verbs. Changes in fMRI patterns following POEM reflect a reduction in the number of recruited areas supporting recovered naming, and the recruitment of brain areas, part of language and mirror neuron systems.

Future studies with a larger sample of participants are required to further explore this avenue.

Keywords

Aphasia;neuroimaging;therapy

No conflict of interest

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RESTORATION OF NORMAL SWALLOWING FUNCTION IN WALLEMBERG SYNDROME BY REPETITIVE ELECTRICAL STIMULATION AND SPEECH LANGUAGE PATHOLOGIST TREATMENT. A CASE REPORT.

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Introduction/Background

Background and methods

Oropharyngeal dysphagia is common in patients with Wallenberg syndrome. Although the functional outcome is good for most patients, the risk of inhalation pneumonia is high. Nevertheless, some patients exhibit permanent and chronic oropharyngeal dysphagia with pharyngeal residue and bronchial aspiration. In such cases, the central pattern generator for swallowing may be affected [1]. We report 1 case for which we proposed a novel strategy based on repetitive electrical stimulation and a traditional speech language pathologist (s.p.l.) treatment.

Material and Method

Methods

P. B. 74 y.o. affected by Wallenberg syndrome diagnosed at the Neurologic Unit in S. Benedetto del Tronto Hospital. Patient had hemiparesis, walking impairment, and dysarthria. Nutrition was only possible by feed tube because of severe aspirations. Swallowing was evaluated by clinical assessment, DOSS and MISA scales, FEES. The treatment began one week after admission to our Rehabilitation Division. She was submitted to daily electrical stimulation treatment (Vitalstim, Chattanooga, CA) five times per week and to the s.p.l. treatment three times per week.

Results

Results

General motor activities improved gradually with the physiotherapy. After four weeks, the assessment was completely repeated. The feed tube was removed and the patient began to feed orally. After the first assessment the patient began to be fed with pureed foods. She continued physiotherapy in the Rehabilitation Unit for one additional month. After discharge the patient carried on the rehabilitation treatment in our outpatient center, totally recovering swallowing abilities, and eating foods with all textures.

Conclusion

Conclusions

Swallowing evaluation for this case demonstrated no aspiration with all food consistencies and slight stasis for pureed food in the operated hemi-pharynx. With Wallenberg syndrome recovery is very rare. Vitalstim seemed to help recovery as demonstrated in other studies.

Keywords

Wallenberg;dysphagia ;electrical stimulation

No conflict of interest

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RECOVERY OF UPPER LIMB USE AFTER STROKE AND ITS RELATIONSHIP WITH UPPER LIMB FUNCTION

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Introduction/Background

A stroke often results in functional impairments of the affected upper limb and in distorted upper limb use of the affected arm in daily life (ULUaff). It is currently unclear how ULUaff recovers after stroke and how it relates to upper limb function (ULF). Therefore, the aims of this study were to explore the recovery of ULUaff post-stroke and its relationship with the recovery of ULF during rehabilitation.

Material and Method

In fifteen people after stroke receiving 'usual care' in a rehabilitation center, ULUaff and ULF was assessed at 3, 12, and 26 weeks post-stroke. ULUaff was estimated for one week using an activity monitor consisting of three accelerometers: one on the unaffected leg and one on each wrist and was defined as the ratio of the amount of movement of the affected arm divided by the unaffected arm, with 1 expressing equal levels of use. ULF was measured with the Fugl-Meyer Assessment (FMA).

Results

Data of 10 participants could be used for analysis. At 3 weeks, ULUaff was on average 0.26 with a large inter-individual variability (ranging from 0.14 to 0.62). The average ULUaff increased to 0.37 at 12 weeks and 0.43 at 26 weeks. The recovery patterns also showed a large inter-individual variability (Fig 1). Changes in ULUaff had no significant correlation with changes in ULF ($r=0.48$, $p=0.18^{**}$, Fig. 2).

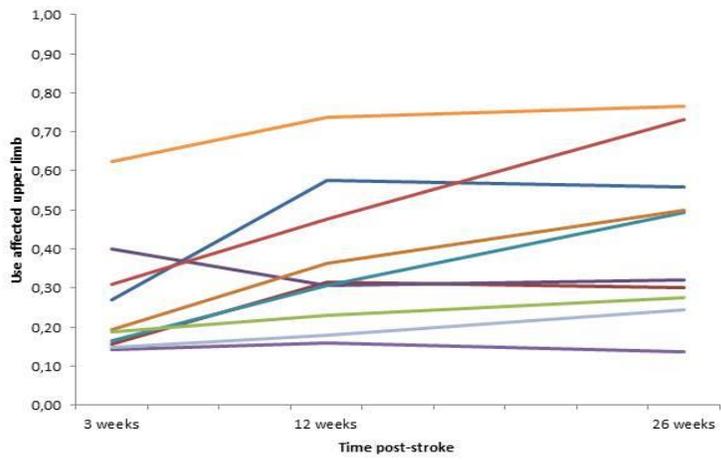


Figure 1. Change in ULUaff per participant after stroke.

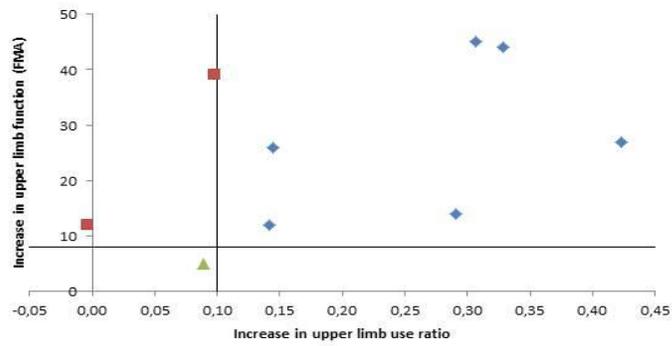


Figure 2. The change in ULUaff and ULF per participant. Horizontal line is improvement threshold ULF; vertical line is improvement threshold ULUaff.

Conclusion

At group level the amount of use of the affected arm is strongly affected in the 6-month period after a stroke, but increases over time. However, considerable inter-individual differences were found, in the amount at three time moments post-stroke as well as in the recovery patterns. Recovery of use of the affected arm was not related to recovery of upper limb function.

Keywords

Accelerometry;Upper limb use;Longitudinal data

No conflict of interest

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THE VALUE OF FRONTAL ASSESSMENT BATTERY IN STROKE PATIENTS

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Introduction/Background

The aim of this study is to evaluate the value of Frontal Assessment Battery (FAB) compared with Mini-Mental State Examination (MMSE) for detecting frontal lobe dysfunction and evaluate the correlations between FAB and neurocognitive function test.

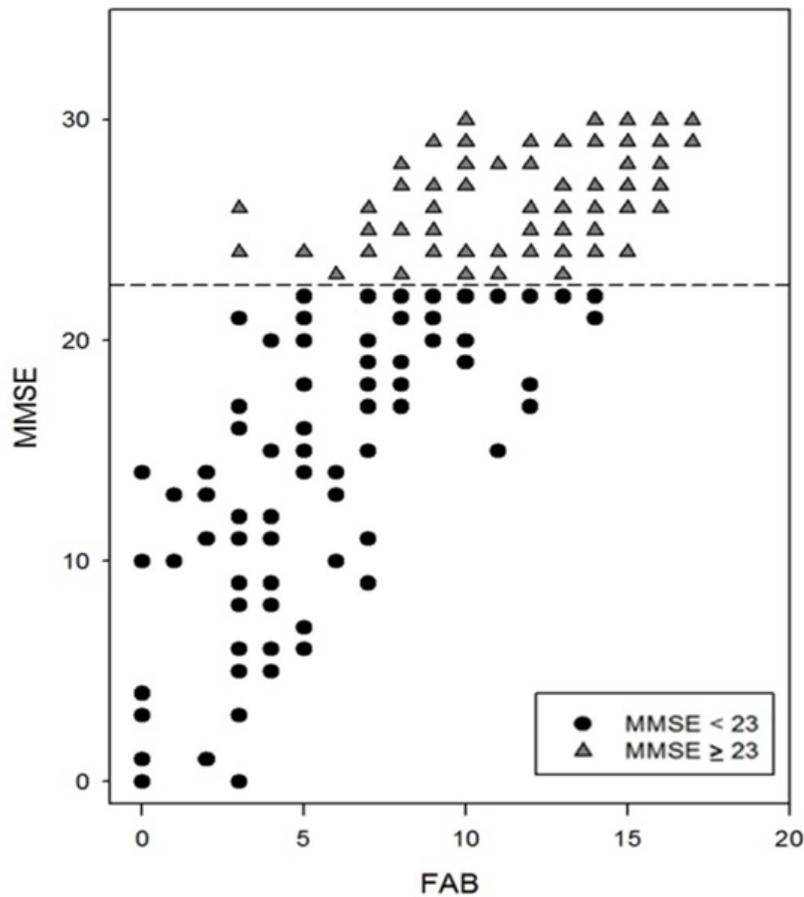
Material and Method

Medical records of stroke patients underwent cognitive assessment including the FAB and MMSE were retrospectively reviewed and the patients divided into three groups; lesions involving frontal lobe cortex, lesions related with frontal subcortical circuit and other lesion groups. We compared the FAB and MMSE scores, especially frontal lobe function domain among these groups.

Results

A total of 186 Patients with frontal lobe lesion had significantly lower total FAB score compared to other lesions with frontal subcortical circuit. In correlation with neurocognitive function test, FAB scores were more correlated with measures of high cognitive function and memory tests, such as trail making test A, card sorting test, digital span and visual span, than MMSE. Even after controlling MMSE scores, FAB scores were correlated with trail making test A, digital span and visual span tests. In scatterplots, there was a positive correlation between MMSE and FAB scores. When divided group by median MMSE score, high MMSE score group showed lower

correlation with FAB compared to low MMSE score group. (Figure 1)
Figure 1. Scatterplots for FAB and MMSE scores of brain lesion patients ↵



FAB, Frontal Assessment Battery; MMSE, Mini-Mental State Examination ↵

When divided group by median MMSE score (MMSE = 23), high MMSE score group (Pearson's correlation coefficient $r=0.542$; $p<0.001$) showed lower correlation with FAB compared to low MMSE score group (Pearson's correlation coefficient $r=0.759$; $p<0.001$).↵

Conclusion

FAB showed better correlation with other frontal lobe function tests than MMSE, especially executive and memory functions domains. The FAB scores were proportional to MMSE scores and this correlation was more prominent in low MMSE score group. In patients with high MMSE scores, there may also be frontal dysfunction that cannot be detected with the MMSE score, therefore additional FAB testing should be performed. The FAB has screening value for frontal lobe function added to MMSE and can be used in clinical to detect cognitive impairment more specifically.

Keywords

Mini-mental state examination;Frontal assessment battery

No conflict of interest

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PILOTING THE “STEPPING ON AFTER STROKE” FALL PREVENTION PROGRAM FOR COMMUNITY STROKE SURVIVORS IN SINGAPORE: A FEASIBILITY STUDY

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Introduction/Background

Intervention studies to date have shown limited evidence of fall reduction in community-living stroke survivors. The Stepping On after Stroke (SOAS) program for community-living stroke survivors is a newly developed program that aims to reduce falls and improve post-discharge community participation. This study aims to test the feasibility and outcomes of the SOAS program with community stroke survivors and their caregivers in Singapore.

Material and Method

We sought to run the program in two community sites. Feasibility was measured by reporting subject recruitment, attendance and compliance; the applicability of the program measured using field notes, surveys and qualitative interviews. Fidelity to program content was measured using an adapted fidelity checklist. Content analysis of data from interviews and field notes was conducted. Pre-post clinical outcome collected at baseline and one month post-intervention were analysed using SPSS; graphs and descriptive statistics were generated to visualize the trends. Fall incidence was measured using self-report, and collected at monthly for 6 months.

Results

Two programs were completed with a total of eight stroke participants, seven caregivers and two program leaders. All stroke participants attended 100% of sessions over the 7-week program. All participants highlighted the applicability of having group-based fall prevention program in the local context. Group discussion, the role of program leaders as facilitators, and the involvement of the caregivers were seen as important factors in implementing the program by all participants. Stroke participants demonstrated significant improvement in community participation at one month post-intervention follow up.

Conclusion

It is feasible to run the SOAS program for community-living stroke survivors in Singapore. The study findings can be used to further improve the program and its methodology, and determine its cost-effectiveness in a larger scale study.

Keywords

stroke;accidental falls;Singapore

No conflict of interest

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EFFECTS OF PROGRESSIVE RESISTANCE STRENGTH TRAINING OF LOWER LIMB IN HEMIPLEGIC PATIENTS : A PRELIMINARY STUDY

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Introduction/Background

Muscle weakness is one of the major symptoms that develop as a result of a stroke and can lead to a reduction in physical activity. An impairment in walking performance can be observed, resulting in asymmetry and a decrease in speed as well as an increase in energy cost.

The purpose of our work is to determine the effects of progressive resistance strength training of lower limb associated with conventional rehabilitation in chronic hemiplegic patients following stroke, on strength, walking and balance.

Material and Method

We conducted a comparative study of 12 patients with chronic-phase stroke who were divided into two groups, group A who underwent conventional rehabilitation, and group B who received treatment based on progressive resistance muscular strengthening exercises associated with conventional rehabilitation. Evaluation parameters were the muscle strength, the balance and the walking.

Results

It seems from the results obtained that muscular strengthening clearly improves the strength, the timed up and go and the Berg balance scale. A less notable improvement in speed and walking distance was also obtained.

Conclusion

Progressive resistance muscle strengthening in combination with conventional rehabilitation seems to be an effective approach in the management of patients with chronic hemiplegia.

Keywords

chronic hemiplegia; progressive resistance strength training; rehabilitation

No conflict of interest

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ISPR8-1788

THE NEURAL NETWORK CHANGE OF ACUTE STROKE PATIENTS ALONG THE ROBOT THERAPY

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Introduction/Background

Robot therapy becomes more and more important in clinical practice. In our facility, a robot suit HAL® (hybrid assistive limbs) has been applied to stroke patients for several years. In addition, we evaluated their motor function and brain function using functional MRI along the robot therapy. In this study, we investigated the relationships between motor and brain functions during recovery from acute stroke.

Material and Method

Acute stroke patients participated to this study. The robot therapy with HAL® applied a participant two or three times a week in two or three weeks during hospitalization in addition to conventional rehabilitations. We also acquired 10m walk speed and functional MRI along the therapy almost two times a week. Functional connectivity (FC) among the 20 regions, assumed as motor related area, were calculated from functional MRI. The relationships between the walk speed and FC were evaluated statistically.

Results

Five subjects, 3 men and 2 women, participated, and gave their informed, written consent. The subjects (mean age; 49.8 years from 12 to 79) with acute stroke (3 intracranial hemorrhages and 2 cerebral infarctions) suffered left hemiparesis, and were applied the robot therapy. All patients gradually improved in walk speed. Statistically significant FC were shown in many regions, and the most significant FC in each side was between primary motor area and primary somatosensory area. The statistically significant negative correlation between walk speed and FC was found at between primary motor area in unaffected side and premotor area in affected side. That might suggest the relationships among functional connectivity and interhemispheric inhabitation.

Conclusion

The robot therapy with HAL® was performed for acute stroke patients. They improved gradually in motor function, and the walk speed and functional connectivity between primary motor area in unaffected side and premotor area in affected side were correlated negatively.

Keywords

Robot therapy;Functional MRI;Stroke

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-1791

MULTI-SEGMENTAL MUSCLE STRENGTHENING ORGANIZED (PNF CONCEPT) IN HEMIPARETIC PATIENTS.

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Introduction/Background

The postural organization and gait strategies are disrupted due to brain damage. Thus, improved proprioceptive sensitivity could increase voluntary movement and decrease muscle weakness, leading to a progress in the clinical condition of the patient. In this study we investigated the efficacy of a therapeutic program involving tridimensional multi-segmental coordination, on global proprioceptive recovery in post-stroke hemiparetic individuals, in order to allow them a more efficient functional recovery with a view to their autonomy of displacement.

Material and Method

The study involved 31 volunteer post-stroke participants in 2 groups of 16 and 15 patients. 1 control group training (CGP) which received after normal rehabilitation, 30 minutes of segmental muscle training against gravity in three positions (supine, sitting and standing) of the paretic limb. 1 muscle chain training group (CMG) which received after normal rehabilitation, 30 minutes of muscle training using the concept of muscle chain synergies. All patients were assessed before and after treatment on posture (normal erect position), gait test, strength test and on the KATZ range of autonomy. The patients groups are matched in all particularities.

Results

Overall, our results show an improvement in the functional level of CMG compared to the CGP, even if the level of functional autonomy of all 31 patients improves associated to the rehabilitation. The clinical improvement of the patients' possibilities appears more marked for the CMG group between the beginning and the end of the study, for all evaluated parameters (except for the 10 m walk).

Conclusion

From all our results, the work in multi-segmental and three-dimensional synergistic chains gives a clinical picture extremely sensitive to proprioceptive information organized and structured at the cortical level. We observe an effect on the functional index, as well as on postural indexes and dynamometric evaluations, which represent the basis of coordination, necessary for the establishment of an appropriate motor program.

Keywords

Gait;Stroke;Strength

No conflict of interest

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ISPR8-1804

RESILIENCE THROUGH ADAPTIVE RECREATION IN STROKE SURVIVORS: A BIOPSYCHOSOCIAL APPROACH

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Introduction/Background

Due to medical advances, survivability after stroke is increasing. Intensive rehabilitation focusing on regaining physical, cognitive, and language function, is often necessary after stroke. However, stroke survivors are at risk of chronic disability, depression, and social isolation. Community-based providers, such as adaptive recreation programs, are often challenged to continue the long-term job of rehabilitation and community reintegration after stroke. The objective of this study was to explore the effects of adaptive cycling participation (using modified equipment or assistive devices) on aspects of physical, psychological and social resilience in stroke survivors. We hypothesized that participants, who engaged in a 16-week cycling program, would demonstrate improvement on measures of all three aspects of resilience.

Material and Method

The current study utilized a longitudinal design (baseline, 8, and 16 weeks). Outcome measures include: resting heart rate, 10 Meter Walk Test (10MWT), 2 Minute Walk Test (2MWT), Timed Up and Go, UW-Self-efficacy Scale, NeuroQOL Positive Affect and Well-being, Connor-Davidson Resilience Scale, NeuroQOL Satisfaction with Social Roles and Activities (SSRA), Interpersonal Support Evaluation List. Due to sample size and exploratory design, we calculated effect sizes.

Results

We enrolled 18 stroke survivors (ages 25-72) in the study. Outcomes were available at all time points for 10-18 participants depending on the measure. Pairwise comparisons were calculated between baseline to 8-weeks and baseline to 16-weeks. We observed change score effect sizes >0.5 for one social and two physical measures. For baseline to 8-weeks, the NeuroQOL-SSRA had a medium effect (Cohen's $d = .564$). For baseline to 16-weeks, the 2MWT and 10MWT had large and medium effects respectively ($d = 1.068$ & 0.612).

Conclusion

The results highlight the importance of exploring: (1) the influence of adaptive recreation on not only physical but social outcomes. Due to the exploratory design of this pilot, future research is warranted.

Keywords

adaptive sports;stroke;resilience

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1822

EXOSKELETON LOCOMOTION TRAINING OF PATIENTS WITH STROKE: OUR PROTOCOL AND EXPERIENCE

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Introduction/Background

Advances in rehabilitation technology, such as powered exoskeletons, have given patients with stroke the opportunity to walk, to improve their gait, health and psychological status, thereby reducing their stay in the rehabilitation center.

Material and Method

Exoskeleton walking training (EWT) has been used in our center as part of the rehabilitation program of stroke patients for the last 18 months. Patients were selected using strict criteria. Parameters such as standing time, walking time, total number of steps, the statistics of the last 60 steps were recorded. mAshworth and Oxford scale were used for spasticity and muscle power assessment, pre- and post EWT.

Results

Until now, 10 stroke patients male and female from 27 to 65 years old with ischemic or haemorrhagic stroke (l) or (r) hemiparesis, participated in EWT program. The program included 2 sessions per week, for 8 weeks. Totally, 131 EWT sessions have been done; average sessions' number per patient: 18.

Conclusion

Despite the small number of patients, EWT has been shown effective in promoting ambulation, improving balance and perception of patients with stroke decreasing spasticity and enhancing health status. As disadvantages, we consider the strict somatometric criteria (weight<100 kg, hip width, upper and lower leg length, normal range of motion) and the necessity of two therapists' involvement.

Keywords

stroke, exoskeleton, locomotion

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1848

UPPER LIMB POSITION SENSE QUANTIFICATION USING ROBOTICS IN PATIENTS WITH STROKE: PRELIMINARY RESULTS

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Introduction/Background

Proprioceptive deficits affect around 50% of stroke survivors. Most commonly used proprioception assessments have poor psychometric properties and are not adapted for people with multiple impairments. To address these limitations, we developed an assessment protocol that enables the quantification of elbow position sense without using the opposite arm, involving active movement of the evaluated limb or relying on working memory. The objectives of this study were to quantify elbow position sense of stroke survivors and to compare it with a control group.

Material and Method

Elbow position sense of the affected arm was quantified in subacute stroke patients and compared to age-matched healthy persons. Elbow position sense was evaluated using a KINARM exoskeleton and a virtual reality display. The exoskeleton passively moved the participant's arm from an initial to a target position (no visual cues of arm position). A virtual arm representation was then projected on a screen placed over the participant's arm. The participant had to indicate verbally its relative position (more flexed or more extended) compared to the virtual representation. A 75% detection threshold was extracted from a sigmoid curve fit representing the relationship between the angular difference and the percentage of successful trials. Independent T-tests were used to compare the results of both groups.

Results

Eleven people with a stroke (67±9 yrs old; 6 males; 72±30 days post-lesion) and 19 age-matched controls (63±6 yrs old; 8 males) were recruited. A significant difference in the mean elbow position sense detection thresholds between the stroke group (12.8±5.2 degrees) and the control group (7.2±3.5 degrees) was noted (p=0.001).

Conclusion

This robotic assessment enables the quantification of elbow position sense in patients with stroke. Difference in detection thresholds observed between both groups demonstrated that

stroke survivors might have impaired proprioception. More participants are required to confirm these results.

Keywords

robotics;stroke;proprioception

No conflict of interest

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ISPR8-1861

CEREBROPRO: RETURN-TO-WORK AFTER BRAIN INJURY : A PROSPECTIVE COHORT STUDY.

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Introduction/Background

To study return to work after 3 years of patients who present an acquired brain injury and to evaluate occupational reintegration unit efficiency as well as predictive epidemiologic factors of returning to work.

Material and Method

This is a prospective monocentric study realized at the Physical Medicine and Rehabilitation Center of Saint-Hélier. All working-age patients who present a traumatic brain injury or a stroke, even those who don't work before, were included between the 01-01-2014 and the 12-31-2014. The patients were joined by phone 3 years after inclusion to know about their current professional situation.

Results

85 patients were included, the response rate was 82% (70 patients), the average age was 48 years (18-66) and the sex ratio 1, 92. 16 patients present traumatic brain injuries and 54 strokes. Average PMSI was 12 (6-24). 57 (81%) were working before brain injury, 30 patients were followed by the occupational reintegration unit.

28 patients (40%) were working after 3 years, among those who work before, 26 (45%) return to work. Significant prognostic factors were to work before brain injury and the fact that patients consult their occupational physician. We don't find other prognostic factors.

Conclusion

In international literature return to work varies from 13 to 70% for traumatic injury and from 19 to 73% for strokes. But most of studies follow patients who already worked before injuries. Only few studies follow patients at 3 years.

The professional reintegration of those patients seems to be facilitated by the presence of a job before their injury and the collaboration between the patient, the Physical Medicine and Rehabilitation Center and the occupational health services.

Keywords

No conflict of interest

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ISPR8-1871

CHARACTERISTICS OF POSTURAL REACTIONS TO UNEXPECTED LOSS OF BALANCE DURING STANDING IN STROKE SURVIVORS WITH EMPHASIS ON ARM REACTIONS

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Introduction/Background

Falls after stroke are a major health concern, as they are one of the most frequent complications. An important and effective strategy to avoid falling is the "change of support" strategy, which is characterized by rapid compensatory stepping and/or grasping that increase the base of support, and by so, stability is regained. Using the arms may also be an effective way to avoid falling when balance is lost due to balance perturbations. Here we aimed to characterize the arm responses to perturbations in stroke patients.

Material and Method

15 post-stroke subjects and 15 age and gender matched healthy controls were exposed to unexpected surface translations while standing on a movable platform (Balance Tutor, *MediTouch*, Israel). Perturbation intensity increased in six levels of difficulty. Kinematic parameters were collected using the Ariel Performance 3D motion Analysis System (APAS) and the data was analyzed by MatLab algorithms written especially for the study.

Results

Post- stroke subjects and healthy controls had a symmetric response with two arms. Stroke group had a few reactions with one arm mostly with the paretic arm. We found a significant difference in the overall arm displacement and overall arm velocity between the right arm of control group and the paretic arm of stroke group. When we compared between the paretic and non-paretic arms of stroke survivors we found that the non-paretic arm had a faster reaction time, larger displacement and the paretic arm has a higher velocity. Arm reaction time was faster than leg reaction time.

Conclusion

Our results show that hemiparetic stroke patients have the ability to respond with both arms, similar to healthy control subjects, but stroke survivors' responses seems to have reflexive and spastic movement patterns, not as effective as the movement patterns observed in healthy controls.

Keywords

falls;arm responses;stroke

No conflict of interest

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ISPR8-1883

THE REALITY OF AN ACUTE STROKE UNIT IN PORTUGAL

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Introduction/Background

Despite several acute stroke units (ASU) in Portugal, stroke is still a major cause of morbidity and death in our country. The aim of this work was an epidemiological study of some variables of all the patients admitted in the ASU in our Hospital.

Material and Method

Retrospective and descriptive study was done by using SPSS 25. Evaluation of the discharge letters from 1 February 2017 till the first 200 patients was done to retrieve the information.

Results

From a total of 200 patients admitted in the ASU were selected all the ischemic stroke (167 – 83%). The average age was 72,2 years with 102 male patients and 65 female patients. There was no relationship between the length of stay and the patient age. There was also no relationship between the type of procedure and the length of stay. Most of patients (73) were discharged to home with physical treatment and there was no relationship between the procedure and the destination of discharge.

Conclusion

This analysis shows it is necessary to keep evaluating the discharges from this unit to see if some relationship can be achieved. The prevalence of ischemic stroke in this unit and the median age of patients was similar to several studies described in the literature.

Keywords

Stroke;Unit;Neurological

No conflict of interest

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ISPR8-1892

THE IMPACT OF OSTEOARTHRITIC KNEE PAIN ON THE FUNCTIONAL STATUS OF THE LOWER LIMBS IN AMBULATORY STROKE PATIENTS

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Introduction/Background

Osteoarthritic knee pain (OAKP) may interfere with stroke rehabilitation. The aim of this work was to assess the impact of OAKP on the lower limb function in ambulatory stroke patients.

Material and Method

Participants were 25 hemiparetic patients with OAKP. **Exclusion criteria:** non-ambulatory patients, those with contraindication to NSAIDs and those having any other lower limb disorder that interferes with walking ability (e.g. peripheral neuropathy, injury, foot ulcer, infection, tendinitis or bursitis). All patients were subjected to careful examination. Knee pain severity was assessed (by VAS and VRS). Impairment was assessed using the Fugl-Meyer lower extremity motor performance (FMLL). Also, the 10 meters walking time (10mWT) was assessed. Radiological knee assessment was done using Kellgren and Lawrence grading. Then, intramuscular injection of one ampoule of diclofenac potassium (75 mg) was given. One hour after injection, reassessment of VAS, VRS, 10mWT and FMLL were done.

Results

Knee pain severity decreased following diclofenac potassium injection in either the hemiplegic or the non-hemiplegic side ($p < 0.01$). Also, the 10mWT decreased following injection ($p < 0.01$). The 10mWT correlated positively with knee pain VAS on the hemiplegic side ($p < 0.05$) whether done before or after treatment. Furthermore, there was a positive correlation between the improvement in walking time and knee pain relief on the hemiplegic side ($p < 0.05$). There was no correlation between radiographic grading and either VAS, VRS, 10mWT or FMLL scores.

Conclusion

OAKP has a negative impact on walking speed among stroke patients. Thus, care should be taken to treat OAKP during stroke rehabilitation.

Keywords

Stroke;Osteoarthritis

No conflict of interest

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ISPR8-1933

QUALITY OF LIFE AND PREVALENCE OF DEPRESSION AND ANXIETY AFTER STROKE: CROSS-SECTIONAL STUDY

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Introduction/Background

Cerebral stroke is the major cause of disability and, given its consequences, poses serious medical and social problems. The functional outcomes have been much studied but the impact on quality of life is little known.

The aim of the present study is to evaluate impact of stroke on the quality of life and the prevalence of depression and anxiety during the first two years post stroke.

Material and Method

This is a cross-sectional study. It included patients with the first ischemic cerebral stroke of moderate and mild severity. The quality of life was evaluated based on the SF 36 (short form 36) and the hospital anxiety and depression scale (HAD) was used to specify the prevalence of depression and anxiety.

Results

Preliminary results:

Fifty patients were enrolled with the mean age of 54.5 years. Twenty-seven were men. All patients had ischemic stroke. The quality of life of the patients was significantly reduced in 76% of the cases: Items evaluated with the SF36 were: Physical functioning (average in percentage: 36.5%), Role limitations due to physical health (24%), Role limitations due to emotional problems (39.7%), energy/fatigue (57%) Social functioning (32%), Pain (47.5%), General health (41%).

The average of HAD (hospital anxiety and depression scale) was 13.5 for depression (moderate level) and 9.65 for anxiety (mild level).

Conclusion

Reduced quality of life, depression and anxiety are frequent during the first two years post stroke. The post hospitalization care, including treatment for depression and increased social support, may reduce the negative impact of the disease on the perceived quality of life.

Keywords

Quality of life ;stroke;depression and anxiety

No conflict of interest

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ISPR8-1974

OXFORD CASE COMPLEXITY ASSESSMENT MEASURE (OCCAM), A NEW SCALE TO MEASURE COMPLEXITY IN PATIENTS AFFECTED BY STROKE AND ITS CONCORDANCE WITH OTHER SCALES OF DISABILITY

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Introduction/Background

Stroke is considered the most common cause of complex disability in our society. There are only few scales evaluating complexity. The aim of our study is to evaluate the correlation of the Spanish version of OCCAM score, which includes biopsychosocial aspects, with other scales which measure disability and quality of life, in patients affected by stroke: National Institutes Health Stroke Scale (NIHSS), Barthel Index (BI), Modified Rankin Scale (MRS) and the Short Form 12 Questionnaire (SF-12).

Material and Method

A prospective study was conducted, 74 patients admitted to hospital diagnosed with stroke and subsidiary to rehabilitation programs. The concordance between the OCCAM scale with the other scales were evaluated by means of the Spearman correlation coefficient. Statistical significance was set at $p < 0,05$.

Results

A total of 74 patients were analysed, 62% men against 38% women, mean age 74 years. Previous history of: high blood pressure (60%), Diabetes Mellitus (36%), Dyslipidemia (39%), previous stroke (12%), arrhythmia (33%). The correlation coefficients with OCCAM were: NIHSS ($\rho = 0,697$), BI ($\rho = 0,905$), MRS ($\rho = 0,829$), SF-12 ($\rho = 0,331$).

Conclusion

The OCCAM scale has a strong correlation with other measures of disability, less with the quality of life measures; and is a quick and easy way to evaluate complexity in patients affected by stroke. It is based in a biopsychosocial model taking into considerations all factors that influence patients, so resources can be used more efficiently and predict prognosis /outcomes.

Keywords

Stroke; Quality of life; OCCAM

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2709

EFFECTIVENESS OF CONSTRAINT INDUCED MOVEMENT THERAPY IN UPPER EXTREMITY FUNCTION AFTER STROKE: CASE REPORT

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Introduction/Background

Constraint-Induced Movement Therapy (CIMT) is a technique that consists of intensive training of the hemiparetic arm in functional activities, application of visual methods to the transfer of the gains obtained in the therapy for the patient's daily life and restriction of the arm unaffected by the lesion. CIMT is considered gold standard in the rehabilitation of the paretic upper limb, however, it is commonly used with patients that presents motor impairment in the upper limb of mild to moderate

Material and Method

The aim of this study is to analyze and discuss the results of the functional evaluations by verifying the possible gains from an intervention through the case report of a patient with severe motor impairment and a sequela of chronic hemiparesis after stroke. It was used the Mini Mental State Examination (MMSE), Wolf Motor Funcional Test (WMFT), Motor Activity Log (MAL), Fugl-Meyer upper limb section, goniometry and the modified Ashworth scale; the data obtained with MAL and WMFT were analyzed using the Wilcoxon test, adopting the level of significance of $p \leq 0.05$.

Results

Statistically significant results were observed for WMFT ($p = 0.031$) and for MAL in terms of quantity and quality, these were statistically significant in the pre- and post-treatment ($p = <0,001$) and 3 month follow up.

Conclusion

Although the chronicity of the lesion and the patient presented severe motor impairment in the upper limb, an adapted and personalized CIMT has shown to be promising to favor the use of the paretic upper limb and it was observed that a patient with severe motor impairment could benefit from the use of the technique.

Keywords

stroke;upper extremity;rehabilitation

No conflict of interest

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ISPR8-2019

CLINIMETER EVALUATION FOR STROKE INJURIES

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Introduction/Background

CLINIMETER / CLINIMETRE digital application developed to optimize assessments in rehabilitation medicine and in particular functional assessments. Functional evaluation is the main universal pillar for developing a therapeutic plan in a rehabilitation team. In particular for monitoring hemiplegia. There are many scales of functional evaluation or score: at the world level, the main scale for the reeducator is the MIF or FIM, but we can also mention the SMAF, the MPAI, the ADL, the Index of Barthel

Material and Method

The clinimeter provides functional evaluations with an innovative response to these different brakes. For the input time: the ergonomics of the Human-Machine interface, the adaptation of the display according to the evaluator, the graphic visualization and the interactivity facilitate the speed, the verification and the exchange of the seizures .

Results

The study of the use of the clinimeter for 100 evaluations, as part of the management of stroke, shows a clear increase in the number of reports, a time of evaluation divided by two for the first evaluation, divided by four for the following evaluations. Ownership by users is very fast. The patient appreciates the visual side of the objectives and the communication in the team is very clearly increased. The patient's outgoing mail and residency report contain updated functional assessments.

Conclusion

The clinimeter provides a real benefit for the functional assessment of hemiplegia and their follow-up.

Keywords

Stroke Injuries;evaluation;NTCI

No conflict of interest

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ISPR8-2035

DEPRESSION IN A SITUATION OF PERSISTENT MOTOR HANDICAP: CASE OF VASCULAR HEMIPLEGIA IN AN AFRICAN CONTEXT

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Introduction/Background

Introduction: Post-stroke depression is a very common nosological entity and its perception in Africa is sometimes experienced as a stigmatizing situation, often poorly accepted.

Objectives: To specify the incidence of depression after vascular hemiplegia, and also its functional repercussion in rehabilitation in the PMR department at Yopougon's University Hospital

Material and Method

It was an eight-month prospective cross-sectional study from January to August 2016. It involved all cases of patients with hemiplegia following a stroke managed in the PMR service. Patients presenting in addition severe cognitive impairment were excluded

Results

On 49 hemiplegic patients, 19 patients with a mean age of 57.21 years with extremes of 37 and 70 years had post-stroke depression (38.8%), mostly men with a sex ratio of 1, 71. Ischemic stroke represented 89.5% of the PSD; 11 patients (57.9%) had minor depression and 8 patients (42.1%) had severe depression. There was a suicidal risk in 6 patients, 31.6%. Motor handicap was present in all depressed patients with an average Demeurisse's score at 55.16 / 100 and extremes ranging from 9 up to 80.

Conclusion

Discussion: Post-stroke depression is common in our context despite its debilitating and poorly accepted nature by a segment of the general population. It compromises the functional prognosis, which is a source of demotivation for patients, especially for the execution of the rehabilitation program.

Conclusion: Post stroke depression should be searched systematically in all hemiplegic vascular in our African context, during the decline in performance and achievements during rehabilitation sessions, and during regular meetings with the family.

Keywords

Depression;Stroke;Rehabilitation

No conflict of interest

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A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2040

BRAZILIAN FUNCTIONING INDEX APPLICATION IN STROKE INDIVIDUALS: FUNCTIONAL PROFILE ASSESSMENT

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Introduction/Background

Background:The Brazilian Functioning Index (BR-FI) was developed and published by an interministerial task force at the request of the Presidency of the Republic, aiming to standardize and quantify the functioning assessment of the population for social benefit purposes.

Aims: Analyze psychometric properties and the functional profile of stroke individuals using the BR-FI.

Material and Method

An observational, longitudinal, prospective, and descriptive study. In order to ascertain intra and inter-examiner concordance two evaluations were conducted, with a six-month interval between them, in which the BR-FI was applied and compared with another evaluation instrument, the Functional Independence Measure (FIM), in 30 individuals (women 56.7%, mean age: 64.6±14.6) that had a history of stroke from December 2016 to January 2018.

Results

The Spearman correlation between the BR-FI and the FIM was performed (0.85; $p < 0.001$), after which a strong, positive relationship was observed, indicating that the functional assessment instruments are directly proportional. When comparing the inter-examiner data, all of the correlations were identified as positive among the stroke individuals. In turn, when analyzing the intra-examiner data during the six-month interval, both evaluation instruments displayed positive associations, and all of the stroke individuals were observed to be more functional. Among the seven domains that compose the BR-FI, the sensorial, domestic life and education, work, and economic life domains did not exhibit any correlation with FIM.

Conclusion

The BR-FI is considered a complete evaluation instrument to assess functional profiles since it analyzes aspects that are not contemplated in other tools, such as Environmental Factors.

Keywords

Brazilian Functioning Index;Functioning;Functional evaluation scales

No conflict of interest

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ISPR8-2046

COGNITIVE IMPAIRMENT AND DISCHARGE HOME FOR STROKE PATIENTS WITH MILD, MODERATE AND SEVERE MOTOR IMPAIRMENT

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Introduction/Background

Stroke-related alterations to cognition especially when mild can often go undetected. Cognitive impairment can increase the likelihood of falls and medication nonadherence and have negative downstream effects. The purpose of this study was to examine the association of discharge cognitive impairment with discharge destination of home compared with a skilled nursing facility (SNF) for stroke patients with mild, moderate and severe motor impairment.

Material and Method

This retrospective observational study includes stroke patients who received acute rehabilitation from 2008-2011 at three facilities in the United States. Cognitive and motor function were measured as part of clinical practice using the Functional Independence Measure (FIM). We examined the association of four domains of cognition (comprehension, expression, problem solving, and memory) with discharge disposition home versus SNF for patients with motor impairment categorized as mild (motor score 78-91), moderate (39-77) or severe (1-38).

Results

Among 1,882 acute stroke patients (85.5% ischemic), 65.5 years of age on average, 49.3% were female, 62.6% White and 21.9% lived alone pre-stroke. All patients with mild motor impairment were discharged home regardless of cognitive functioning; 85.7% with moderate motor impairment and 38.4% of patients with severe motor impairment were discharged home. After adjusting for patient characteristics selected by stepwise logistic regression, a higher score (less impairment) for comprehension, expression, problem solving, and memory increased the likelihood of discharge home versus SNF among patients with moderate motor impairment but there was no association between cognition and discharge disposition among stroke patients with severe motor impairment (Table).

Table. Relationship between discharge FIM cognitive subscales and discharge disposition (home versus skilled nursing facility) stratified by level of motor impairment (unadjusted and adjusting for all other covariates)

Patient Subgroup by Motor Impairment at Discharge	FIM Cognitive Domain	Discharge Home Mean ± SD	Skilled Nursing Facility Mean ± SD	Unadjusted			Adjusted		
				Odds Ratio	95 % Confidence Interval	p-value	Odds Ratio	95 % Confidence Interval	p-value
Moderately motor impaired (FIM motor 39-77) N=1,560	Comprehension	5.39 ± 1.29	4.81 ± 1.25	1.38	1.24-1.53	<.0001	1.19	1.06-1.35	0.0040
	Expression	5.16 ± 1.57	4.59 ± 1.57	1.24	1.14-1.35	<.0001	1.12	1.02-1.24	0.0204
	Problem Solving	4.57 ± 1.34	3.95 ± 1.24	1.40	1.26-1.56	<.0001	1.21	1.07-1.36	0.0018
	Memory	4.82 ± 1.43	4.09 ± 1.36	1.41	1.28-1.55	<.0001	1.23	1.10-1.38	0.0002
Severe motor impaired (FIM motor 1-38) N=281	Comprehension	3.70 ± 1.45	3.98 ± 1.35	0.87	0.73-1.03	0.1036	0.87	0.73-1.04	0.1245
	Expression	3.13 ± 1.58	3.55 ± 1.50	0.83	0.71-0.98	0.0256	0.85	0.73-1.01	0.0576
	Problem Solving	2.78 ± 1.31	2.81 ± 1.25	0.98	0.81-1.19	0.8400	1.20	0.91-1.58	0.1945
	Memory	3.14 ± 1.35	3.20 ± 1.41	0.97	0.82-1.16	0.7342	0.95	0.80-1.14	0.5960

Conclusion

This study found that patients with mild motor impairment were discharged home independent of cognitive status and higher cognition was not associated with an increased likelihood of home discharge among patients with severe motor impairment. Transition planning for management at home or continued care needs to consider level of cognitive and physical disability.

Keywords

Stroke;Cognition

No conflict of interest

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ISPR8-2054

SURFACE EMG GUIDED REHABILITATION TRAINING FOR UPPER EXTREMITY MOTOR RECOVERY AFTER STROKE

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Introduction/Background

Patients with mild to moderate upper extremity paresis in acute phase after stroke have a good prognosis for functional recovery. However, the recovery in severely affected patients is limited with current available treatments. Optimization of rehabilitation treatment to promote brain plasticity is very crucial but challenging at early phase of stroke recovery.

Material and Method

The patients admitted to our Acute Stroke Inpatient Rehabilitation Program with profound upper extremity weakness (flaccidity phase) receive dynamic surface EMG analysis to the proximal muscle groups (primarily trapezius, deltoid, pectoralis major, triceps and biceps) in the motor control lab. Patients are instructed to perform isometric or bimanual tasks including push forward or sideways on table top with or without trunk movement restraint. The recorded EMG signals on affected side are compared with unaffected arm. Based on the muscle activation pattern, patients are directed to optimized functional training in occupational therapy treatment.

Results

Based on the analysis of 20 patients' EMG activities collected in the lab, we found there are varied muscle groups activated on severely impaired arm when performing same isometric or bimanual tasks in different patients. We speculate some upper motor neuron volitional signal is getting through to different muscles at different stages of recovery after stroke. We promote early recruitments of activated muscle groups in repetitive, task specific training to potentially improve upper extremity functional recovery.

Conclusion

Although what best represents "optimal treatment" for upper extremity recovery after stroke is still limited, the tailored specific therapeutic intervention program is under exploration using upper limb dynamic EMG analysis in our motor control lab with hope to provide more insights to the optimal intervention for improving functional outcome after stroke.

Keywords

stroke, dynamic surface EMG

No conflict of interest

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ISPR8-2114

EFFECT OF MANUAL LYMPHATIC DRAINAGE ON EDEMA AND MOTOR FUNCTION OF HEMIPLEGIA UPPER LIMB IN STROKE PATIENTS

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Introduction/Background

The dysfunction of the upper limb after stroke, which is a kind of disease with high morbidity and morbidity seriously affects the daily life of the patients. The upper limb of the hemiplegic patients often have symptoms such as edema and pain, which may Especially affect the recovery of motor function. This study aims to evaluate the effects of treatment of Manual lymphatic drainage technique on edema and motor function of the hemiplegic side upper limb in stroke patients.

Material and Method

Ninety patients after stroke with hemiplegic limb edema were randomly divided into control group and the Manual Lymphatic Drainage (MLD) group, the two groups of patients were treated with conventional therapy, including upper limb joint mobilization techniques, limb passive and active training, physical therapy and other measures, and Manual lymphatic drainage respectively on the basis of routine treatment. The differences of pain, edema and Fugl-Meyer scale score in two groups were compared before and after treatment.

Results

Pain and edema in the two groups of patients were alleviated and Fugl-Meyer scale scores were significantly higher than before treatment. There is a statistically significant difference between the two groups ($P < 0.05$). The above three aspects in MLD patients after treatment were better than the control group with a statistically significant difference ($P < 0.05$).

Conclusion

The technique of lymphatic drainage technique can relieve edema and pain and improve upper limb motor function of post-stroke patients. The method is simple and noninvasive and has some clinical value.

Keywords

Manual lymphatic drainage;stroke;edema

No conflict of interest

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ISPR8-2120

ELECTROPHYSIOLOGICAL CHANGES OF SYMPATHETIC NERVES IN PATIENTS WITH STROKE

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Introduction/Background

To investigate the electrophysiological changes of sympathetic nerves in patients with stroke, explore the characteristics of SSR and assess the value of SSR in detecting dysfunction of autonomic nervous system and evaluating long-term prognosis in patients with stroke.

Material and Method

Sympathetic skin response (SSR) was tested in 34 patients with stroke. The motor function of affected extremities was assessed by Brunnstrom grade. Then the changes in electrophysiological test of both sides were compared and the correlation with function outcomes of affected extremities were analyzed.

Results

1) No statistically significant difference was determined in the SSR latency and amplitude values obtained with stimulation of the affected sides compared with latency and amplitude values obtained from the healthy sides ($P > 0.05$). 2) nomatter which side was stimulated, the rate of abnormal changes in SSR was above 67%. And abnormal rate of bilateral upper extremities or bilateral lower extremities was significantly higher than which of unilateral extremity. 3) No significant difference was found between the duration within 3 months group and the duration more than 3 months group. 4) Abnormal changes of SSR in patients with left hemiplegia were found more commonly than those with right side affected. 5) The SSR latency of the affected sides with upper extremity in non-basal ganglia group is longer than that in the basal ganglia group ($P < 0.05$). 6) No significant difference was found between the Brunnstrom stage 1–3 group and 4–6 group.

Conclusion

Dysfunction of sympathetic nerves conduction in both side extremities were found in patients with stroke. Abnormal rate of bilateral upper extremities or bilateral lower extremities was significantly higher than which of unilateral extremity. Lesion location is the main factor which affecting SSR. Further studies about the value of SSR evaluating motor function of stroke are needed.

Keywords

Stroke; Neuroelectromyography; Sympathetic Skin Response

No conflict of interest

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ISPR8-2129

PILOT TESTING A POSITIVE PSYCHOLOGY INTERVENTION TO PROMOTE WELL-BEING IN COUPLES COPING WITH STROKE

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Introduction/Background

Depressive symptoms post-stroke occur in 30-50% of survivors and partner caregivers, and can have negative consequences for recovery, function, and quality of life. Further, emotional well-being is interdependent in couples; depression in one partner increases risk of depression in the other. Sustaining well-being in both partners is important for rehabilitation engagement and community re-integration. However, support for couples post-stroke is lacking or inaccessible. We aimed to pilot test a self-administered positive psychology-based intervention (PPI) for these couples.

Material and Method

Eighteen couples consisting of one partner who had a stroke >6 months ago and a cohabiting caregiver were enrolled. One or both partner(s) reported depressive symptoms. The sample was primarily White, well-educated, consisted of 50% female survivors and male caregivers, and had a mean age of 55 years (range: 27-84). A variety of stroke types and locations were represented. After a brief training, participants engaged in the PPI at home, completing two activities alone and two together each week. Activity booklets, tracking calendars, and weekly check-in calls were provided. Pre-, post-intervention, and 3-month-follow-up measures included the PROMIS-Depression, PROMIS-Fatigue, PROMIS-Positive Affect and Well-being, and Stroke Impact Scale 3.0 (SIS). Due to the exploratory nature of the study, significance was set at $p=.10$.

Results

Fourteen of 18 couples completed the program. Analyses show a trend for decreased depressive symptoms across time points. Fatigue and well-being significantly improved. Caregivers demonstrated greater improvement in fatigue and depressive symptoms. Participants with stroke reported significant improvement in the SIS cognition, communication, and participation in meaningful activities domains.

Conclusion

Preliminary results suggest the PPI may be effective for improving mood, fatigue, and well-being in couples post-stroke as well as stroke-specific quality of life. Though more research is needed, this represents a promising first step in a novel dyadic intervention for this population with exciting potential clinical implications.

Keywords

Stroke;post-stroke depression;caregiver

Conflict of interest

Disclosure statement:

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ISPR8-2136

ACTION OBSERVATION THERAPY IN THE RECONSTRUCTION OF THE UPPER EXTREMITY MOTOR FUNCTION OF STROKE PATIENTS.

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Introduction/Background

To explore the effects of action observation therapy on the motor function of upper-extremity in patients with stroke, and to investigate the effects of action observation therapy on motor cortex by functional magnetic resonance imaging(fMRI).

Material and Method

Thirty-one stroke patients were randomly assigned to an experimental group (n = 16) and a control group (n = 15). The control group received conventional rehabilitation therapy. The experimental group also received action observation therapy for 8 weeks. Both groups were assessed by the Fugl-Meyer assessment(FMA) and the Barthel index(BI) in pre-treatment and after 4 and 8 weeks of treatment. Latencies and amplitudes of the N9 and N20 in somatosensory evoked potentials (SEPs) were recorded. Both groups were assessed by functional magnetic resonance imaging before treatment. Followed up for 2 months, nine patients who continued to do action observation training for two months after discharge were assessed by functional magnetic resonance imaging(fMRI).

Results

There were no significant differences in evaluation indices between the two groups before treatment ($P > 0.05$). At 8 weeks after treatment, performance improved on all indices in both groups ($P < 0.05$). Compared with the control group, the experimental group showed significantly greater improvements in FMA scores (upper extremities), Barthel index scores, as well as latencies and amplitudes of N9 and N20 on the hemiplegic side ($P < 0.05$). Brain functional magnetic resonance imaging(fMRI) showed that there was a significant rise in activity in the bilateral precentral gyrus, parietal lobe and the supplementary motor area (SMA) of the patients in the observational group compared with the control group.

Conclusion

Action observation therapy can improve upper extremity motor function in the early stages of stroke while elevating ADL performance, and cause changes in the excitability of cerebral motor cortex, as well as increasing the amplitudes and shortening the latencies of the N9 and N20 in SEPs.

Keywords

action observation;mirror neurons;stroke

Conflict of interest

Disclosure statement:

I have no potential conflict of interest to disclose.

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EFFICACY NEUROPROTECTION THERAPY IN BRAIN STROKE COMBINED PARKINSONISM.

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Introduction/Background

Background: To determine efficacy neuroprotection therapy of citicoline (somazina) 1000 mg or pyracetami in patient with stroke (rehabilitation period) combined Parkinsonism.

Material and Method

We studied 68 patients with ischemic stroke combined Parkinsonism, aged 60-75 years. Patients were divided into 2 groups: the control group (n=32) received pyracetami 20%-10,0 ml; citicoline (somazina) 1000 mg group (n=36) was treated for 20 days.

Results

Somazina treatment was more efficient than pyracetami which we observed in our studied patients and it can be explained by different pharmacologic mechanisms. Treatment with somazina during 20 days showed in a significant decrease of ischemia zone volume by 25,7%, which was associated with better outcomes in neurologic and functional status. Treatment with pyracetami demonstrated decrease of ischemia zone volume by 7,6%, and no outcomes in neurologic and functional status. Neuroprotective therapy with somazina in patients with brain insult combined Parkinsonism led to significant improvement in clinical and morphological variables.

Conclusion

Our data justify the need admission of somazina in patients with ischemic stroke combined Parkinsonism.

Keywords

No conflict of interest

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ISPR8-2145

PATHOGENIC THERAPY OF DEPRESSION AND ANXIETY-NEUROTIC DISORDERS DURING ISCHEMIC STROKE.

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Introduction/Background

Known that combined stroke and depression increases the risk of death in patients compared with patients without depression.

Study the role of antidepressants in the treatment of depression and anxiety and neurotic disorders in ischemic stroke.

Material and Method

We observed 95 patients with stroke with mild and moderate form of depression. Age of patients ranged from 55 to 70 years (average $60,5 \pm 3,5$ years). Among them, 44 male (46.3%), 51 female patients (53.6%). All patients were assigned pathogenetic therapy depending on the etiology of stroke and Escitalopram 5 mg 2 times a day depending on age of patients: above 65 years old was taken 10 mg, under 65 years old – 5 mg a day. The course of treatment was 3 months. To assess the level of anxiety and depression were conducted neuropsychological tests.

Results

As a result of treatment escitalopram significantly improved the condition of patients in the first week of treatment. Was a decrease in feelings of lump in the throat, anxiety, attacks of breathlessness, shortness of breath, normal sleep, increase of intellectual activity and performance. Before treatment, the average score on the Hamilton scale was $19,0 \pm 3,0$, after treatment showed a significant improvement- $10,0 \pm 3,0$. The scale of Spielberg-Khanin showed that patients treated with escitalopram after 3 months of treatment decreased personal and reactive anxiety by 22% and 31%, respectively.

Conclusion

1. Depression and anxiety-neurotic disorders worsen during ischemic stroke. 2. Escitalopram is a drug of choice in the treatment of patients with ischemic stroke with anxiety and neurotic disorders, which reduces these symptoms of anxiety at 74.2% and give positive effect on cognitive function in patients.

Keywords

No conflict of interest

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ISPR8-2162

RESEARCH OF INTERACTIVE ACUPUNCTURE THERAPY FOR POST-STROKE ANXIETY DISORDER BASED ON BRAIN-COMPUTER INTERFACE TECHNOLOGY

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Introduction/Background

Post-stroke anxiety (PSAD) is a common complication of strokes that directly affects the quality of life of stroke patients and causes long-lasting distresses, disrupts the recovery of somatic and cognitive functions in stroke patients, and stroke in severe cases the recurrence. Therefore, the timely treatment of post-stroke anxiety, not only help to improve the quality of life of patients, and can promote functional recovery, thereby reducing the morbidity and mortality.

Material and Method

To explore the clinical efficacy of interactive acupuncture on post-stroke anxiety disorder (PSAD) based on brain-computer interface technology (BCI). Forty stroke patients with anxiety disorder were randomly divided into two groups according to random number table: BCI group (20 cases) and control group (20 cases), Selected acupoints for the two groups were Baihui, Neiguan, Shenmen, Yintang, were selected specifications for the 0.25mm × 40mm, using the method of supplementation and retention, needle retention 30min, needle 10min line 1 time. Treatment every other day, 20d for a course of treatment, a total of 1 course of treatment. In BCI group, we used the 14-lead brain-interface instrument to guide patients into quiet before the application of the needle, and then give acupuncture, and guide patients to experience the emergence of air feeling. The pre-treatment treatment was scored using the Hamilton Anxiety Scale (HAMA).

Results

After a course of acupuncture treatment, the two groups of patients in the HAMA score than before treatment were improved, BCI group increased more significantly than the normal acupuncture group.

Conclusion

Compared with ordinary acupuncture, patients can be a more intuitive observation of the static state of mind based on the brain-computer interface instrument, the use of interactive acupuncture can significantly improve post-stroke anxiety disorder.

Keywords

stroke;brain-computer interface technology;post-stroke anxiety disorder

No conflict of interest

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ISPR8-2196

A RESEARCH ON EFFICACY OF REHABILITATION FOR POST-STROKE PATIENTS IN KRASNOYARSK REGION PERFORMED UPON THE PROGRAMME OF THE MINISTRY OF HEALTH OF RUSSIA IN 2016

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Introduction/Background

Krasnoyarsk Region is among the largest regions of Russia. Its population amounted 2 875 790 by January 1, 2017. A three-stage rehabilitation system for patients after stroke has been created in the region. Over 6000 patients received successive rehabilitation in 2016. The purpose of the research was to assess efficacy of complex successive post-stroke rehabilitation in Krasnoyarsk Region in 2016.

Material and Method

A total of 163 patients after stroke (12 months), were enrolled into the unblinded study among which were 103 male and 60 female patients. The age varied from 32 to 91 years (57 ± 12.4). Ischaemic stroke was revealed in 144 patients while haemorrhagic stroke was revealed in 18. The study was conducted in the regional vascular centre at Stage I, in the Centre of neurorehabilitation of the FSSRCC of FMBA of Russia at Stage II and in the clinic of Krasnoyarsk Medical University at Stage III. Glasgow Coma Scale (Stage I only), modified ranking scale, NISSH, Ashworth spasticity, pain, dysarthria assessment scales, Wasserman test, MASA, HADS, MOCA, Rivermead Mobility Index, BBS, Hauser Ambulation Index, Frenchay Arm Test, FIM, EQ-5D were used. Statistical analysis was performed using nonparametric Wilcoxon and Mann-Whitney criteria.

Results

The patients were divided into 3 groups after examination: Group I (n=39) included patients after only rehabilitation Stage I. Group II (n=61) included patients after Stages I and II, and Group III (n=63) included patients after all stages. It has been found that best statistically significant results according to clinical scales were found in Group III patients as manifested by disablement and neurological deficit decrease and motion activity value enhancement.

Conclusion

In Krasnoyarsk Region, the best efficacy has been shown by the complex successive rehabilitation for patients after stroke performed in stages.

Keywords

Rehabilitation;Krasnoyarsk;Efficacy

No conflict of interest

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ISPR8-2215

REPRESENTATIONAL NEGLECT FOLLOWING RIGHT HEMISPHERE STROKE: FAILED RETRIEVAL OF VISUAL AND TACTILE DATA FROM WORKING MEMORY

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Introduction/Background

According to the representational theory of neglect, contralesional objects remain outside conscious awareness, because their spatial position is represented incorrectly. Here we assessed the impact of spatial position and temporal order of acquisition on the accuracy of same/different judgements for visual and tactile images reconstructed in working memory (WM).

Material and Method

35 right-hemisphere damaged stroke patients with left-side neglect and 29 healthy controls were presented with pairs of 2D geometrical shapes for same/different judgment, in 3 testing conditions: a. 'visual static' [VS] – each object exposed in its entirety; b. 'visual dynamic' [VD] – objects moved horizontally (leftward/rightward) behind a central narrow slit exposing only part of the object at one time; c. 'tactile dynamic' [TD] – the blindfolded subject palpates the upper contour of objects similar in appearance to the visual objects, in either rightward or leftward direction, with the index finger of the healthy right hand. In tasks b and c the spatial representation has to be reconstructed mentally from partial, non-lateralized, sensory information.

Results

Judgement errors were more prominent when the element distinguishing one object in a pair from the other had a left-side position. This was true not only for the VS mode but also for the VD and TD modes, where left and right in an object are reconstructed in representational space following non-lateralized presentation. Detection of left-side differences in the dynamic tasks improved in rightward exposure direction in vision and leftward direction of palpation, i.e., in conditions where the left side of the object is captured last.

Conclusion

In patients with neglect, secured sensory capture of object parts (by non-lateralized presentation) does not prevent lateralized retrieval failure from WM, following mental

reconstruction of the entire object from the captured parts. The temporal order of the mental reconstruction process is important - recency benefits retrieval accuracy.

Keywords

representational neglect ;stroke

No conflict of interest

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ISPR8-2216

MORTALITY IN ISCHEMIC STROKE

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Introduction/Background

The 30-day mortality rate of the first stroke is estimated in a range between 16-23% and 92.7% occurs in people >65 years.

Controlling risk factors has shown to decrease morbidity and mortality of these patients and costs.

Material and Method

Observational prospective epidemiological study to determine the factors related to mortality for a sample of 100 patients who were diagnosed with an ischemic stroke (assigned to the Rehabilitation Service by the Stroke Service during 2013).

Follow-up checks: at discharge, one and three months after discharge.

The socio-demographic, etiologic and clinical characteristics and the evolution of the patients are assessed.

Results

Death ratio:18%.

Average age of the patients who died:77.5 years

Mortality was higher in men(55.56%) than women(44.44%).

Patients who previously lived alone had a significantly lower mortality rate(21.4%) than patients who had socio-familiar support(78.57%).

Regarding the destination at discharge, the percentage of mortality was higher in those who went to a half-stay unit(64.71%) than those who went to their home(35.29%).

88.9% of the patients who died had hypertension($p=0.036$), 33.3% obesity, 27.8% atrial fibrillation and diabetes, 22.2% dyslipidemia, ischemic cardiopathy and previous strokes.

Atherothrombotic stroke(47.06%) was the one associated with higher mortality($p>0.05$).

Severe strokes were associated in a statistically significant way($p=0.003$) with mortality. 88.9% of the patients who died had a severe stroke on admission and 11.11% had a moderate stroke.

100% of patients who died had a disability at admission (score>2 modified Rankin scale).

Stroke complications were directly related in a statistically significant way with mortality($p=0.016$). 83.3% of the patients who died had suffered complications.

Conclusion

Our results match those found in the bibliography. The factors for which found a significant relation with mortality were hypertension($p=0.036$), the severity of the stroke NIHSS >14 ($p=0.003$) and the onset of medical complications($p=0.016$). Understanding the factors related to mortality in stroke is essential to undergo actions to reduce mortality.

Keywords

stroke;mortality factors

No conflict of interest

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ISPR8-2241

MANAGEMENT OF PAINFUL HEMIPLEGIC SHOULDER IN PHYSICAL MEDICINE AND REHABILITATION DEPARTMENT

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Introduction/Background

Shoulder pain is a frequent complication of hemiplegia. Its appearance brings pain and limits daily living activities as well as participation in specific Neuro-rehabilitation programs. All this leads to a worse functional outcome. its cause is multifactorial. Good management can reduce shoulder pain and improve functional outcome.

The aims of our study were to identify causes of shoulder pain in hemiplegic patients and to assess the impact of medical and rehabilitative interventions used.

Material and Method

A transversal study over 5 months from August 2017 to February 2018. It covered all cases of stroke hemiplegia admitted in the physical medicine and rehabilitation department of Djebel Ouest during this period. Assessed parameters were patient's : socio-demographic characteristics, pain characteristics (severity using Visual Analog Scale (VAS)), shoulder mobility, etiology for shoulder pain, therapeutic options.

Results

We collected 19 hemiplegic patients with an average age of $48,5 \pm 14$ years and a male predominance. The majority of strokes was ischemic. The predominant clinical form was left-side hemiplegia (16 patients). Pain assessed using VAS was estimated to 8.4/10 on admission. The average time for hospitalization in our department was 11 weeks \pm 9. Etiologies for shoulder pain were shoulder subluxation in eight patients, complex regional pain syndrome (CRPS) in 5 patients, spastic pectoralis major muscle in 4 patients and preexisting rotator cuff disorders in 2 patients. Only five patients used arm sling on admission .Management options provided included analgesic treatment, intra articular steroid injections in CRPS and rotator cuff disorders, botulinum toxin injections for spasticity, massage therapy, shoulder-positioning programs and TENS . VAS pain was estimated to 3.7/10 after therapeutic program. Most improvements in pain and range motion were noticed in-patient with spasticity.

Conclusion

Shoulder pain improves with prompt diagnosis and appropriate management. However prevention remains crucial, consisting in gentle shoulder mobilization within a lower range of motion and right positioning.

Keywords

Stroke;shoulder;pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-2242

HAND-LATERALITY EFFECT ON UNILATERAL NEGLECT: A RARE INSIGHT ON THE LONGITUDINAL DYNAMICS OF INTER-HEMISPHERIC BALANCE FOLLOWING STROKE

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Introduction/Background

The occurrence of unilateral spatial neglect (USN) in non-hemiplegic stroke patients is rare. Earlier studies of such patients revealed an advantage when typical neglect tests, e.g., line bisection (LB), were performed by the patient's left hand as compared to the dominant right hand. This 'output-mode effect' is generally attributed to an increment in the lesioned right hemisphere (RH) activation level, induced by left-hand use, thus affecting the pathological inter-hemispheric balance. Here we assessed this phenomenon longitudinally in order to evaluate possible dynamics with the passage of time since stroke onset

Material and Method

5 non-hemiplegic USN patients with RH stroke performed a multi-length LB task using both the left and right hands, at different time points along the rehabilitation period. Neglect was assessed using the Behavioral Inattention Test (BIT).

Results

4 out of 5 patients demonstrated significant improvement in the BIT scores along with decreased rightward error in LB during the rehabilitation period. The effect of hand laterality early after stroke onset was not uniform: 2 patients demonstrated right-hand superiority, 1 patient demonstrated left-hand superiority and for 2 patients there was no significant difference between right and left-hand performance. For all the patients with improved BIT, a single pattern of left-hand superiority was evident late in the sub-acute period.

Conclusion

Early after stroke onset, hand superiority varied between patients with different lesion characteristics, while subsequently most patients performed better with their left hand. This finding is likely to reflect a highly variate dynamics of RH activation and subsequently of the inter-hemispheric balance, in the first weeks after stroke onset. Better understanding of the factors influencing this dynamic and recognition of the current status of a given patient in this process, are crucial for proper application of intervention measures like tDCS and rTMS, aimed to affect the hemispheric activation level.

Keywords

Unilateral Spatial Neglect;Line Bisection;Laterality

No conflict of interest

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ISPR8-2273

THE INFLUENCE OF ACTIVITY-DEPENDENT STIMULATION ON GAIT RE-TRAINING IN CHRONIC STROKE SURVIVORS: A PILOT STUDY

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Introduction/Background

While walking is a major goal in stroke rehabilitation, many chronic stroke survivors have not achieved independent ambulation. Task-specific gait re-training shows promise in post-stroke therapy. Research on transcranial direct current stimulation (tDCS) has shown potential benefits for fine motor skill learning but lacks evidence for gross motor skill learning; specifically gait re-training. It is hypothesized that a combination of these therapies may yield benefits for stroke rehabilitation. Consequently, this study endeavoured to compare the efficacy of gait re-training during real and sham stimulation on gait kinematics in chronic stroke survivors.

Material and Method

A randomized double-blinded case study was implemented, whereby 10 chronic stroke survivors (≥ 6 months) were divided into either an attention-matched control group (CON; n=4), or an 8-week task-specific gait re-training program with concurrent tDCS (1mA; 20 minutes; n=2) or with sham stimulation (20 minutes; n=3). Gait kinematics were measured pre- and post-intervention by using the two-minute walk test and the APDM mobility lab™.

Results

Double support (DS) time improved in real (Median=0.46, IQR=0.59), compared to sham stimulation (Median=0.73, IQR=1.93) and the CON attention-matched group (Median=-1.12, IQR=1.36).

Additionally, DS variability decreased in real (Median=-0.08, IQR=0.18) and sham (Median=0.05, IQ =0.04) stimulation groups; compared to the CON group (Median=0.25, IQR=0.46).

Conclusion

This study presents preliminary evidence for the benefits of tDCS combined with task-specific gait re-training on gait quality, specifically synchronization, in chronic stroke survivors. Additionally, task-specific gait re-training alone may also benefit gait steadiness.

Keywords

Stroke;Transcranial direct current stimulation;gait

No conflict of interest

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ISPR8-2276

ANALYSIS OF THE SUBJECTIVE POSTURAL VERTICAL ON DIAGONAL PLANE IN ELDERLY SUBJECTS AND LEFT HEMIPARETIC PATIENTS AFTER STROKE

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Introduction/Background

The subjective postural vertical (SPV) in healthy subjects is robustly maintained by integrating somatosensory and vestibular information, and extremely correct on frontal and sagittal plane. It is well-known that brain injury patients indicate disturbance of SPV on frontal or sagittal plane. On the other hand, stroke patients frequently fall paretic side and backward, but SPV on diagonal plane in normal subjects and stroke patients is unclear. The purpose of present study was to clarify the difference of SPV on diagonal plane between elderly subjects and stroke patients.

Material and Method

The subjects comprised 14 elderly subjects (control group) and 10 left hemiparetic patients (LHP group). All subjects provided their written informed consent to take part in the study. SPV was measured using an electrical vertical board (EVB). The subjects sat on the EVB and was moved in the opposite direction from the left-backward or right-forward. The tilt of the seat when the subject feels and judges vertical position was recorded with a digital inclinometer. The mean (tilt direction) and standard deviation (variability) of eight trials were calculated. A true vertical position was considered 0°, diagonally backward and diagonally forward was treated as negative and positive, respectively. The values of SPV were compared between groups using the unpaired t-test ($P < 0.05$).

Results

There was no difference between control group (66.8±9.2 years [mean ± SD]) and LHP groups (67.5±10.8 years) in age. In tilt direction, LHP group (-2.5±0.7°) demonstrated significant tilt backward to the left than control group (-1.3±1.4°). Variability was significantly higher in LHP (5.4±2.0°) than control (2.5±0.9°).

Conclusion

In stroke patients, tilt direction deviated to the diagonally backward and the judgement of verticality was unstable. These results suggest a possibility to explain the tilt of sitting posture and the difficulty of transfer movement in stroke patients.

Keywords

subjective postural vertical;diagonal plane;stroke

No conflict of interest

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ISPR8-2280

THE EFFECT OF SITTING BALANCE TRAINING ON THE DIAGONAL PLANE IN PATIENT WITH PUSHING BEHAVIOR-A SINGLE CASE STUDY-

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Introduction/Background

Pushing behavior is known to disturb postural verticality on frontal plane. However, postural disorder such as tilting toward paretic side and backward on diagonal plane was often observed in the pusher, so it is important to improve postural orientation on diagonal plane. The purpose of present study was to clarify the effect of sitting balance training on diagonal plane in patients with pushing behavior.

Material and Method

60 years-old man, with right middle cerebral artery infarction including insula and postcentral gyrus, participated. Subject has severe hemiplegia, sensory disorder, and unilateral spatial neglect. He provided his written informed consent to take part in the study. To determine the effect of the intervention, the ABA design was used. This design consists of 3 phases; baseline, intervention, and follow-up. In intervention phase, patient sat without leg support on a sitting device tilted 10 degrees to the diagonally paretic side and backward. Patient was asked to move his trunk toward diagonally non-paretic side and forward. This training was repeated 40 times a day over 3 days. Patient received conventional physiotherapy for 1 hour each phase. The effect of the intervention was assessed using scale for contraversive pushing (SCP) and subjective postural vertical (SPV) on diagonal plane. In the SPV, a true vertical position was considered 0°, while diagonally backward toward paretic side and forward toward non-paretic side was treated as negative and positive, respectively

Results

In before baseline, before intervention, after intervention, and follow-up, the total score of SCP was 3.75, 3.75, 2.5, and 2.5, respectively. The sitting score of SCP improved from 1.25 to 0 at after intervention and follow-up phase. The standing score of SCP was no change in all phase. After intervention, SPV on diagonal plane changed from -4.9° to -1.9°.

Conclusion

The sitting balance training on diagonal plane might improve pushing behavior and calibrate postural vertical.

Keywords

pushing behavior; sitting balance training; diagonal plane

No conflict of interest

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ISPR8-2285

PERIPHERAL PLUS CENTRAL REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION (RTMS) FOR UPPER LIMB MOTOR REHABILITATION IN CHRONIC STROKE – A CASE REPORT

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Introduction/Background

Motor dysfunction of the hand and upper limb is a major cause of physical disability for patients with chronic stroke. Our aim was to investigate the effectiveness of a peripheral plus central repetitive transcranial magnetic stimulation (rTMS) treatment for upper limb motor rehabilitation in chronic stroke patients.

Material and Method

We reported the case of a patient WLX, who had one ischemic stroke more than 3 years ago, and had underwent intermittent rehabilitation since then. He still had profound right upper limb paralysis and moderate spasm, accompanied with non-fluent aphasia when came to our department; and complained that his recovery had been rather slow for about two years. In addition to the custom rehabilitation, we applied a peripheral plus central rTMS paradigm to him, which included 3 sessions of peripheral magnetic stimulation to his paralyzed right forearm, followed by a session of high frequency rTMS to the bilateral sensorimotor cortex region. The total magnetic stimulation therapy lasted about 30min a day, and was applied 5 days / week for 4 weeks.

Results

After 4 weeks' treatment, the patient's Fulg-Meyer upper limb assessment (FMA) score was obviously improved (from 27 to 37 points), and the spasm was largely relieved in his right hand and arm.

Conclusion

Peripheral plus central rTMS might be an effective treatment for motor dysfunction of chronic stroke patients.

Keywords

motor dysfunction;magnetic stimulation;upper limb rehabilitation

No conflict of interest

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ISPR8-2294

THE EFFECTIVENESS OF EXTRACORPOREAL SHOCK WAVE THERAPY TO REDUCE SPASTICITY OF LOWER LIMB FOR POST-STROKE PATIENTS: A SYSTEMATIC REVIEW

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Introduction/Background

Recent studies indicate that extracorporeal shock wave therapy (ESWT) is being considered as a new treatment method for spasticity. ESWT is a non-invasive technique where high-energy acoustic impulses produced by different types of generators cause a mechanical stimulus to trigger a chemical reaction (mechanotransduction) in the tissues.

Objective: To establish if ESWT can reduce and improve spasticity, range of motion (ROM) active and passive, balance, pain, gait and activities of daily living in post-stroke patients

Material and Method

CENTRAL, MEDLINE, CINAHL, PEDro, REHABDATA, Scielo, Scopus, Web of Science, Trip Database, and Epistemonikos were searched and reference lists screened to identify clinical trials (randomized and nonrandomized) of ESWT, in stroke survivors published until February 2018. Two reviewers independently screened references, selected relevant studies, extracted data, and assessed trial quality. The primary outcome was spasticity; secondary outcomes were ROM (active and passive), balance, gait and activities of daily living. Due to the heterogeneity of included studies meta-analysis was not possible.

Results

PRELIMINARY RESULTS: To date a total of 10 studies with 265 participants have been analyzed. The primary targeted muscle was gastrocnemius and secondary was semitendinosus. ESWT showed moderate evidence to reduce spasticity as assessed by the Modified Ashworth Scale and to improve active and passive ROM and gait.

Conclusion

PRELIMINARY CONCLUSIONS: ESWT performed with radial or focused modalities could be a good rehabilitation strategy in stroke survivors to reduce spasticity in the lower limb, increase ROM of ankle and improve gait. ESWT does not show adverse events. ESWT is a safe and effective method for reducing spasticity in stroke survivors (subacute and chronic stage).

Keywords

lower limb;stroke;extracorporeal shock wave therapy

No conflict of interest

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ISPR8-2307

REPETITIVE STEREOTYPED MOTION TRAINING USING NINTENDO WII® FOR RECOVERY FROM UPPER HEMIPARESIS AFTER STROKE: A CASE REPORT

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Introduction/Background

Rehabilitation using virtual reality technology, including TV games such as Nintendo Wii®, has recently been reported to aid recovery of motor function in hemiparetic upper extremities after stroke. However, it is unclear which element of motion exercise is effective because patients play some games independently. We report the case of one patient for whom voluntary training specialized to encourage elbow flexion and extension with Wii® was effective for recovery of motor impairment and motor function in a hemiparetic upper extremity.

Material and Method

case report

A 60-year-old man who had suffered left hemiparesis due to cerebral infarction was admitted to our rehabilitation center 1 month after onset. Intensive rehabilitation was conducted and hemiparesis gradually improved. Three months after onset, improvement reached Brunnstrom Stage V in the upper limb and fingers, and we recommended voluntary training with Wii®. Wii® training was conducted 1 hour per day, 5 days a week for 2 weeks, in addition to regular upper limb rehabilitation. We also instructed him to play table tennis games with flexion or extension of his hemiparetic elbow. During the subsequent period without Wii® training, he performed conventional voluntary training, as had been done before Wii® training, for 1 hour a day. Motor impairment and motor function were evaluated at four time points: 2 weeks before the start of Wii® training, at the start, at the end of Wii® training, and 2 weeks after the end.

Results

Maximum improvement was observed during the Wii® training term.

Conclusion

For this patient, intensive flexion and extension training of the elbow may have been a key element contributing to improvement. Even with voluntary training using Wii®, results might be better if stereotyped motion elements and intensive repetition are specified, as opposed to letting the patient perform complex movements ad lib.

Keywords

upper hemiparesis after stroke; voluntary training

No conflict of interest

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ISPR8-2316

DEVELOPMENT OF A DEVICE FOR THE ASSESSMENT OF AN ANKLE FOOT ORTHOSIS

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Introduction/Background

An ankle-foot orthosis (AFO) is often used to control pes equinovarus and drop foot and improve walking ability among patients with stroke. Many AFOs are composed of a thermoplastic material such as polypropylene and custom-molded to a patient's lower limb anatomy. AFO stiffness is important to understand the effect of an AFO on gait biomechanics. We developed a simple device using a force gauge for the assessment of AFO stiffness.

Material and Method

The device has metal frame structure. A digital force gauge engaged with the frame slidably in an X direction. An AFO to be tested is fixed firmly the device, and the elastic repulsion force is measured by the digital force gauge. The fixation can be changed in four directions of up, down, left, and right along measuring direction of the AFO. We measured the two-different material plastic AFO stiffness by the device.

Results

We could measure AFO stiffness in four directions of ankle-dorsiflexion, planterflexion, inversion, and eversion.

Conclusion

The device is considered feasible for a quantitative assessment of AFO stiffness.

Keywords

ankle foot orthosis;stiffness

No conflict of interest

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ISPR8-2320

RESEARCH ON THE THREE-DIMENSIONAL GAIT ANALYSIS SYSTEM AFTER STROKE BASED ON THE REHABILITATION THEORY OF UPPER AND LOWER EXTREMITIES INTEGRATION

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Introduction/Background

To investigate the changes of three-dimensional gait to wear the Orthosis of hand functional rehabilitation on affected side of stroke patients.

Material and Method

Whole body three-dimensional gait analysis system was tested before and after in 50 stroke patients [(male 28, female 22, cerebral hemorrhage 17, cerebral infarction 33, age (56.32±5.27)y] in the hemiplegic hand wearing the Orthosis of hand functional rehabilitation. They were assessed twice by the same physiotherapist. The research height, weight, age and gait temporal-spatial parameters and lower extremity motions as well as walking capacity were compared.

Results

There were significant differences ($P<0.05$) in spatiotemporal parameters (cadence, walking speed, step length, cycle time, swing phase and support phase) of the stroke patients after wearing the Orthosis of hand functional rehabilitation. The maximum range of motion (ROM) of hip extension increased significantly in hemiparetic stroke patients compared with before, and the mean velocity of hip flexion-extension motion increased significantly ($P<0.001$). The maximum ROM of knee flexion and the mean velocity of knee flexion-extension motion also significantly increased ($P<0.001$). The maximum ROM of ankle flexion and the mean velocity of ankle flexion-extension motion also significantly increased ($P<0.001$). The walking capacity of hemiparetic stroke patients significantly improved after wearing the Orthosis of hand functional rehabilitation.

Conclusion

Torsion stability and lower limb walking ability were significantly improved after wearing the Orthosis of hand functional rehabilitation on affected side of stroke patients. Stroke patients

ipsilateral upper and lower limbs exist, that is, Upper and Lower Extremities Integration. This training method is conducive to guiding clinical work.

Keywords

stroke;Upper and Lower Extremities Integration;Three-dimensional gait analysis system;

No conflict of interest

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ASSESSMENT OF DEPRESSION AFTER HEMIPLEGIC STROKE IN PHYSICAL MEDICINE AND REHABILITATION DEPARTMENT

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Introduction/Background

Post-stroke depression is a serious complication. However, it often remains underestimated despite its negative impact on functional recovery and quality of life. Our objective was to assess the prevalence of depression in our hemiplegic stroke patients.

Material and Method

A transversal study over 4 months from September 2017 to January 2018. It covered all cases of stroke hemiplegia admitted in the physical medicine and rehabilitation department of Djebel Ouest during this period. Assessed parameters were patient's socio-demographic characteristics, clinical presentation, Hospital Anxiety and Depression Scale (HAD depression) and Barthel Index of Activities of Daily Living.

Results

We collected 32 hemiplegic patients with an average age of 63.7 ± 14 years and a male predominance. The majority of strokes was ischemic. The average time for hospitalization in our department was 14.1 weeks ± 20.6 . Eleven patients demonstrated post-stroke depression. Ten from depressed patients were not treated before. The mean Barthel Index and HAD depression scale were respectively 39.3/100 and 12.6 ± 7.1 . Depression was associated with increased disability ($p < 0.01$).

Conclusion

Depression is commonly experienced post stroke. It should be sought systematically in all hemiplegic patients, especially in the early phase because it compromises functional prognosis. An anti-depressive therapy are potentially great, not only on mood but also on functional recovery.

Keywords

Stroke;hemiplegia;depression

No conflict of interest

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ISPR8-2376

CASE REPORT TO IDENTIFY THE KEY ELEMENTS OF NEURO-PHYSIOTHERAPY TREATMENT TO OPTIMISE BRAIN SENSORY AWARENESS FOR MOTOR RECOVERY OF THE ARM AND BALANCE POST-STROKE

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Introduction/Background

This case report aims to identify the links between neuro-physiotherapy treatment to enhance brain sensory awareness post-stroke to promote motor recovery of the upper limb and balance. Individual Participant Data : Mr D, aged 74, sustained a severe left CVA in October 2017. This resulted in right sided hemiplegia, for which Mr D sought independent neuro-physiotherapy treatment in December 2017 to improve his transfers, balance, to start walking and explore potential movement recovery within his non-functional right arm.

Material and Method

Mr D participated in a course of neuro-physiotherapy treatment at home comprising twice weekly visits for 1.5 hours over a 5 week time period in January 2018.

Treatment focused on 4 key elements:

1. strength training
2. increasing brain awareness of the right arm, hand and leg
3. facilitating re-alignment of right shoulder girdle and wrist with supported task practice
4. Home exercise program

Results

Mr D responded positively and demonstrated consistent and rapid progress related to brain neuro-plasticity and motor re-learning. Mr D has undertaken task practise outside of sessions which has consolidated learning.

Mr D's transfers improved from requiring a Sara Steady transfer aid with 1 carer, to being able to walk independently indoors at home using a wheeled gutter frame. Mr D has been able to reduce the number of care visit calls per day from 3 to 1. Mr D has achieved his initial goals as identified with the Goal Attainment Scale (GAS), ie. to walk independently with a frame indoors, to learn how to go in and out of his back door onto his patio with supervision, and to begin to use his right arm functionally again eg. washing up & serving food onto plates.

Conclusion

For Mr D, improving brain sensory awareness promoted motor recovery of the affected arm and improved balance post-stroke

Keywords

Stroke;Neurophysiotherapy;Recovery

No conflict of interest

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ISPR8-2383

THE INFLUENCE OF COGNITIVE FUNCTIONS ON THE EFFECTIVENESS OF POST-STROKE REHABILITATION IN PATIENTS OVER 80 YEARS OLD

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Introduction/Background

Stroke is the main cause of disability in people over 40 years old.

The aim of this study was to evaluate the effectiveness of hospital rehabilitation after the age of 80, considering the level of cognitive functions.

Material and Method

The study was performed retrospectively on the basis of medical documentation of patients hospitalized in the Rehabilitation Clinic in 2012-2017. 152 persons were qualified for the study. Inclusion criteria were: previous ischemic or hemorrhagic stroke, age over 80 years. Exclusion criteria: lack of cooperation with the patient, interrupted rehabilitation.

The Barthel-ADL scale was used to assess functioning in everyday activities. Cognitive functions were assessed using the MMSE scale. Patients were examined on the day of admission to the Clinic and after the treatment.

Results

In 111 people, there were statistically significant differences between the results of ADL scale on the day of admission and on the day of discharge. There was a 4-person deterioration of the result, 107 persons improved, while the result of 41 people remained unchanged.

After an analysis of the improvement after hospital rehabilitation in the Barthel ADL scale depending on the MMSE score was respectively: in the group of patients with the MMSE standard - by 2.34 points, in the group with functional disorders cognitive 3.35, at dementia 3.37 points, with low dementia 2.66 points, with average dementia 2.1, deep dementia no change.**Conclusion**

1. There is a strong justification for conducting post-stroke rehabilitation in patients over 80 years old.

2. Most benefits from post-stroke rehabilitation were achieved by patients with MMSE score on the borderline of dementia and norm.

3. Patients with medium and deep dementia receive the smallest benefits of post-stroke rehabilitation measured on the Barthel ADL scale.

4. Due to the small number of patients with deep dementia, this topic requires continuing research in this group of patients

Keywords

stroke;Barthel ADL;Mini-Mental State Examination

No conflict of interest

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ISPR8-2384

THE COMBINED EFFECT OF NON-INVASIVE CORTICAL STIMULATION AND MOTOR TRAINING ON HAND MOTOR DEFICIT IN CHRONIC STROKE

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Introduction/Background

A growing body of evidence supports the effectiveness of transcranial direct current stimulation (tDCS) in rehabilitation of patients with hand motor impairment in the chronic phase of stroke. Furthermore, it is assumed that the combination of stimulation- and practice-induced plasticity may be especially beneficial. Aim is to compare the combined effects of anodal tDCS and specific motor training (MT) to sham tDCS and MT (control) on hand motor deficit in patients with chronic stroke.

Material and Method

A total of 30 patients were randomly assigned to an active treatment group (real tDCS+MT) or a control group (sham tDCS+MT) in this parallel, two-arm, double-blind, sham-controlled study. MT was administered for 45 min/day (10 sessions) and preceded by 20 minutes of either 2 mA anodal tDCS or sham tDCS over the ipsilesional primary motor cortex. A modified Jebsen-Taylor Hand Function Test (mJTt) was the primary outcome measure, with handgrip dynamometer and upper limb Fugl-Meyer (ULFM) assessments as secondary outcomes. A subset of 21 patients was additionally evaluated by transcranial magnetic stimulation measures of the primary motor cortex excitability

Results

The ANCOVA, controlling for baseline status (T0), showed a statistically significant Time x Group interaction for mJTt due to a statistically significant change over time in the active tDCS group compared to the sham tDCS group. In the active tDCS group, the mJTt time was significantly shorter both at the end of treatment (T2 vs. T0, decrease of 35.36 ± 22.90 s or 28.42 ± 14.56 %) and at the follow-up (T3 vs. T0, decrease of 24.21 ± 24.66 s or 19.98 ± 17.49 %). The active motor threshold decreased and the MEP amplitude increased.

Conclusion

Our findings suggest that hand motor deficits in chronic stroke survivors can be reduced when intensive MT is primed with anodal tDCS over the ipsilesional primary motor cortex.

Keywords

stroke rehabilitation;non-invasive brain stimulation;transcranial direct current stimulation

No conflict of interest

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ISPR8-2443

THE STUDY OF EVENT-RELATED POTENTIALS IN UNILATERAL SPATIAL NEGLECT

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Introduction/Background

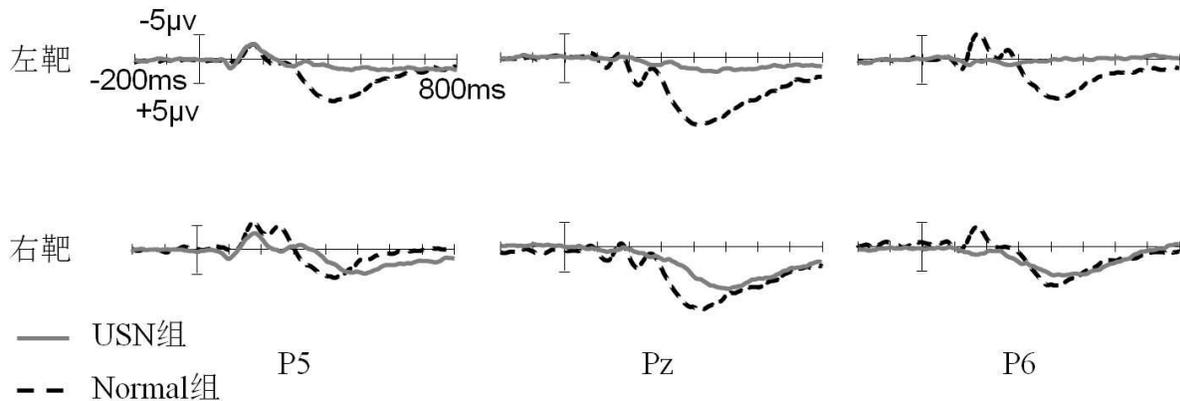
To compare the amplitude and latency of P1, N1, P2, N2, P300 between the Unilateral Spatial Neglect patients after right hemisphere stroke and normal people, in order to study the spatial attention processing characteristic of Unilateral Spatial Neglect patients, further to explore the mechanism of USN.

Material and Method

20 cases (10 USN patients and 10 Normal people) were enrolled in the study. We recorded the ERP, and then compared the reaction time and correct rate, the amplitude and latency of P1, N1, P2, N2, P300 when the target appeared in the left and right, to study the mechanism of USN.

Results

The correct rate of the USN group was lower than the Normal group. There were no significant differences between the two groups in P1 amplitude and N2 amplitude. The N1 and P2 amplitude of right hemisphere of the USN group was lower than the Normal group. When the target appeared in the left, the P300 amplitude of the USN group was lower than the Normal group. The latency of P1, N1, P2, N2, P300 in the USN group was prolonged than the Normal group.



Conclusion

During the spatial attention processing, regardless of the stimulus from the left or right, the information processing speed of the USN group slowed down compared with the normal group. In the early stage, there was no significant reduction of activated neurons. In the mid-stage, the number of activated neurons was reduced significantly in the right hemisphere. But in the late stage, the number of activated neurons was reduced significantly when the stimulus from the left side.

Keywords

Unilateral Spatial Neglect;Event-related Potentials;mechanism

No conflict of interest

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ISPR8-2449

ADVANCES IN DIAGNOSIS OF VASCULAR DEMENTIA

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Introduction/Background

Vascular dementia(VaD) is a syndrome characterized by cognitive impairment caused by vascular risk factors or cerebrovascular disease. It is the second most common form of senile cognitive impairment after Alzheimer's disease, which is extremely harmful. Early diagnosis is beneficial to the prevention and treatment of disease, which is of great significance in reducing disability and improving the patient's activities of daily living. However, the pathogeny, pathological and imaging manifestations of the disease are diversification, which makes it difficult to diagnosis.

Material and Method

In this paper, we searched Pubmed, Google Scholar and VIP database, Vascular dementia, diagnosis and advances as the key words, then read the relevant literature and references in recent 5 years. The article reviews the advances in diagnosis of VaD in recent years, including the clinical diagnosis, neuropsychological diagnosis and imaging diagnosis.

Results

Attention, information processing and executive function decreased significantly, while memory and speech disorders were light, which was the characteristic of VaD. The 5 minute assessment scheme (simplified by Montreal Cognitive Assessment) is suitable for the initial screening of disease. The assessment of activities of daily living and mental behavior (such as depression and apathetic) also contribute to the diagnosis of VaD. Diffusion tensor imaging(DTI) has high sensitivity and high specificity to alba injuries caused by cerebrovascular disease. Magnetic resonance spectroscopy(MRS) can observe the changes of brain tissue metabolites related to brain function early in the disease. Susceptibility weighted imaging(SWI) is highly sensitive to cognitive impairment caused by hemorrhagic VaD. Blood oxygen level dependent functional MRI(BOLD-fMRI) can further monitor the brain functions through changes in the concentration of deoxyhemoglobin.

Conclusion

Although there is no unified standard of diagnosis, symptoms of cognitive impairment, accurate neuropsychological scales for assessment combined with magnetic resonance imaging(MRI) could improve the detection rate at early stage.

Keywords

Vascular dementia;diagnosis;advances

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2473

THE IMPACT OF THE PHARMACOTHERAPY ON STROKE RECOVERY. A RETROSPECTIVE COHORT STUDY.

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Introduction/Background

Stroke represents a leading cause of worldwide disability with a reduced quality of life and participation to work, family and social life activities. During the recovery stage, several approaches have been studied to enhance the processes underlying spontaneous recovery, among which drugs, such as the dopaminergic or serotonergic agents. Conversely, several classes of drugs have been proposed to have a detrimental effect on recovery, such as the anticholinergic agents, anticonvulsants, neuroleptics and GABAergic agents. The aim of this study is to evaluate the possible association between drug assumption during an inpatient rehabilitation and functional recovery after stroke. Specifically, we hypothesized that there is a different use of antidepressants (positive effect) or GABAergic, anticholinergic agents and neuroleptics (negative effect) in patients with different level of functional recovery.

Material and Method

We included in the study subjects (aged > 18y) who underwent a stroke multidisciplinary rehabilitation program at Ferrara University Hospital. We categorized them into Good Responders (GR) or Poor Responders (PR) according with their functional improvement, measured by the Functional Independence Measure (FIM) score. From digital medical records, we extrapolated clinical, demographic data, the total FIM score and the drugs assumed.

Results

We enrolled 181 subjects (76 female), age 65.30 ± 13.27 y, with a diagnosis of ischemic (n=118) or hemorrhagic stroke (n=63). Antidepressants were assumed by 40.98% of the PR group and the 20.83% of the GR group ($p = 0.004$); Benzodiazepine were taken by 31.15% of the PR group compared with the 15% of the GR group ($p=0.01$). Anticholinergic agents were assumed by 31.15% of the PR group compared with the 12.50% of the GR group ($p=0.002$).

Conclusion

Benzodiazepines and anticholinergic agents may play a negative role on functional recovery after stroke. Acknowledgment: this study was partially supported by ER Grant 1786/2012.

Keywords

stroke;recovery;drugs

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2481

THE EFFECTS OF NEURO MODULATION ON PATIENTS WITH DYSPHAGIA AFTER STROKE.

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Introduction/Background

To investigate immediate efficacy of Mirror Neuron System Training which one is a kind of neural modulation technique on patients with dysphagia after stroke and to compare the treatment effect with neural modulation technique and electric stimulation.

Material and Method

Adopting random control test design, 30 patients(in plateau by traditional electric stimulation therapy) with dysphagia in 3 to 6 monthes after stroke. They were divided into 3 groups by random and each group includes 10 patients. Group A received the treatment protocol including hand action observation training by an equipment named Mirror Neuron System Training (MNST), as well as traditional electric stimulation therapy approaches. Group B received MNST and Group C just received electric stimulation therapy. Each Patient completed total of 40 sessions over an 4-week period, with two sessions a day and five day each week.

Results

All 30 patients did the test included 30 ml. Water screening test, Mann assessment of swallowing ability, The volume-viscosity swallow test and Functional oral intake scale. The degrees of every test for the patients in Group A were much higher than the other groups. And the performance of Group B were higher than Group C ,too ($p < 0.05$).

Conclusion

Evidence from this random control case study indicates potential effect of integrating neuromodulation technique (MNST) with traditional electric stimulation therapy to improve swallowing capacities for patients with dysphagia.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.01 Neurological and Mental Health Conditions - Stroke

ISPR8-2493

EFFECT OF SENSORY-MOTOR TRAINING ON GAIT QUALITY AND EXECUTIVE FUNCTIONING OF CHRONIC STROKE SURVIVORS

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Introduction/Background

Traditionally gait was believed to be an automated task; however current research shows that walking involves higher cognitive functions i.e. executive function (EF). Optimal EF allows allocation of appropriate attentional resources to performing motor tasks correctly and effectively and is severely affected in stroke survivors. Limited research has been done on the effectiveness of sensory-motor training (SMT) on cognitive functioning in stroke. It is hypothesized that SMT may improve this motor-cognitive interaction during gait, as well as EF. This study endeavoured to determine if an eight-week SMT programme would influence executive functioning and dual-task gait quality in chronic stroke survivors.

Material and Method

This pre-post study design consisted of ten chronic stroke survivors (67±14 years; ≥6 months since stroke) with no severe cognitive impairment (24±2 score on Montreal Cognitive Assessment) who participated in the eight-week SMT programme, three times a week (45-60 minutes per session) under therapist-supervision. A two-minute walk test assessed single (ST) and dual-task (DT) spatial-temporal gait variables; while EF was assessed with an adapted Stroop, Trail Making (Part A and B) and Verbal Digit Span Forward and Backward tests. Stroke related self-efficacy was determined by completing the Stroke Self-efficacy Questionnaire.

Results

No significant changes were found in EF or ST gait variables. DT stride velocity ($p=0.05$, $d=0.39$, 95%CI: -11.07 to -0.73), paretic stride velocity ($p=0.04$, $d=0.40$, 95%CI: -11.34 to -1.18), cadence ($p=0.03$, $d=0.78$, 95%CI: -19.04 to -2.50), stride time ($p=0.02$, $d=0.82$, 95%CI: 0.00 to 0.40) and peak medio-lateral trunk acceleration ($p=0.02$, $d=0.45$, 95%CI: -5.93 to -1.16) showed improvement. Stroke-related self-efficacy ($p<0.001$; $d=2.66$, 95%CI: 1.26 to 4.57) also improved.

Conclusion

Preliminary findings suggest that SMT have some benefits for improving cognitive-motor interaction during walking, while also improving factors that specifically influence performance in stroke survivors. Furthermore, studies should investigate the use of DT as an ecological assessment tool for stroke survivor's EF.

Keywords

Chronic stroke; Executive function; Cognitive-motor interaction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0031

PREVALENCE OF TRAUMATIC BRAIN INJURY BETWEEN TRAUMATIC NEUROLOGICAL DISEASES WITH ATTENTION IN PHYSICAL THERAPY SERVICES

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Introduction/Background

The Traumatic Brain Injury is one of the more important problems between the neurological problems for your implications in cognitive functions, mobility, communications and functional capacity of the persons, and your presentation have a increment for the number of accidents and violences cases in the modern societies. To know the prevalence of the traumatic brain injury is important for the plans of attention in services of health and the prevention programs in young people

Material and Method

The study is a cross sectional investigation, the people of study are persons with attention in Physical Therapy Services with clinical practices of the Physical Therapy Program of Manuela Beltran University in the year 2012 for traumatic neurological diseases, the instrument for recolection of the information are the statistical register of attention of patients in the period of study, the analysis of information have general pevalences and specific prevalences and chi square test for to see the relation ship of the gender with the presentation of the brain injury

Results

In the year 2012, 191 persons had attention in physical Therapy Services for traumatic neurological diseases, the prevalence of traumatic brain injury in this context is 44.50% (n=85, standard error= 0.03), the traumatic brain injury is the first traumatic neurological diseases between the entities of this type in Physical Therapy. 72.94% of the persons with brain injury are of male gender (n= 62, standard error=0.02, O.R =3.04, C.I. 95 % 1.93 – 4.75, X²=21.08, p < 0.05)

Conclusion

The traumatic brain injury is the first traumatic neurological diseases and this entity is more prevalent in persons of male gender that have three more times risk of the presentation of this problem with respect persons of female gender with statistical significance

Keywords

Epidemiology;Physical Therapy;Traumatic Brain Injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0079

PHYSICAL ACTIVITY INTERVENTIONS, APPROACHES AND OUTCOMES FOR INDIVIDUALS WITH TRAUMATIC BRAIN INJURY: A SCOPING REVIEW PROTOCOL TO ASSIST CLINICAL DECISION-MAKING

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Introduction/Background

Growing evidence suggests physical activity improves physical and cognitive function and alleviates fatigue, sleep and mood disorders in individuals who sustain a traumatic brain injury (TBI). Physical activity intervention (PAI) modalities/approaches appear to vary across the care continuum and with TBI severity, making it difficult to choose the most appropriate intervention for a given individual. There are no available standards for PAI use with this population. Our study aims to systematically map the current state of the literature describing PAIs and their outcomes following TBI.

Material and Method

Our scoping review follows a 6-step framework (Levac, 2010; Arskey and O'Maley, 2005). Grey literature and four databases were searched (SportDISCUSS, MEDLINE, CINHAI & EMBASE), resulting in 4964 references. Documents reporting any type of PAI (e.g. yoga, aerobic exercise) for individuals with TBI, are included. Data extraction, analysis, and synthesis are ongoing. A focus group with stakeholders from a rehabilitation center providing TBI interventions will validate and enhance the results thereby constituting the consultation phase of the review.

Results

Preliminary results indicate that PAIs vary from specific interventions with a therapeutic goal (e.g. decrease headache) to global multidisciplinary programs aiming to facilitate community integration. These include individual and group interventions, unsupervised and unstructured programs or rigorously monitored programs with technological assistance. Several outcomes exist that are organized using the International Classification of Functioning, Disability and Health.

Conclusion

This review will contribute in assisting service providers select the most appropriate PAI on a case-by-case basis linked to desired outcomes.

Keywords

Traumatic brain injury;Physical Activity;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2618

THE EFFECT OF BODY MASS INDEX ON INDICES OF FUNCTIONAL PROGNOSIS: EVIDENCE FOR 'OBESITY PARADOX' AMONG TRAUMATIC BRAIN INJURY POPULATION

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Introduction/Background

While many studies have demonstrated that obesity is correlated with an increased risk of chronic disease, some have reported a paradox by which those in the higher weight categories actually recover better during hospitalization. This study was designed to determine whether this obesity paradox is also reflected in the recovery of patients with a traumatic brain injury who were undergoing care in a rehabilitation hospital.

Material and Method

Retrospective cohort study which included all patients admitted to the brain injury unit of a rehabilitation hospital from January 2000 – April 2006. The data used for this study included patient height and weight (measured on admission) and functional independence measurements (scored on admission and discharge).

Results

For the 444 patients admitted, the overall FIM efficiency did not differ significantly by BMI ($p=0.93$). After adjusting for age and sex, the overweight and obese patients had the lowest FIM efficiency (1.04 for both groups), followed by the underweight and normal weight groups (1.11 and 1.26).

Conclusion

This study demonstrated that higher BMI patients did not adversely influence the rate of functional recovery among patients admitted to a rehabilitation hospital for TBI.

Keywords

Traumatic Brain Injury;Stroke;FIM Efficiency

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0125

APPLICABILITY OF CLINICAL PRACTICE GUIDELINES FOR REHABILITATION IN TRAUMATIC BRAIN INJURY IN DISASTER SETTINGS: A CRITICAL APPRAISAL

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Introduction/Background

To provide an overview of recommendations and quality of existing clinical practice guidelines (CPGs) for management of traumatic brain injury (TBI) focusing on rehabilitation medicine; and synthesise recommendations from these for applicability in disaster settings.

Material and Method

Comprehensive literature search including health databases, CPG clearinghouse/developer websites, and grey literature using internet search engines to September 2017. All TBI CPGs published in the last decade were selected if their scope included: management of TBI, systematic methods for evidence search, clear defined recommendations and supporting evidence for rehabilitation interventions. Three authors independently critically appraised the quality of included CPGs using the Appraisal of Guidelines, Research and Evaluation (AGREE) Instrument. All recommendations were extracted, compared and categorized for applicability in disaster settings.

Results

Only 4 of the 14 potential identified CPGs met the inclusion criteria. Despite variation in scope, target population, size, and guideline development processes, all four CPGs were assessed as of good quality (AGREE Global score of 5-7 out of 7). The recommendations included: patient/carer education, general physical therapy, practice in daily living activities and safe equipment use, direct cognitive/behavioural feedback, basic compensatory memory/visual strategies, basic swallowing/communication and psychological input for TBI survivors in disaster settings. More advanced interventions are generally not applicable following disasters due to limited access to services, trained staff/resources, equipment, funding and operational issues.

Conclusion

Although CPGs in this study were of high quality, many recommendations for TBI care are challenging to implement in disaster settings and need further research to identify and address barriers for implementation.

Keywords

Traumatic brain injury;clinical practice guidelines;natural disasters

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2636

EFFECT OF BODY MASS INDEX ON FUNCTIONAL OUTCOME IN PATIENTS WITH TRAUMATIC BRAIN INJURY

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Introduction/Background

Currently, there is a considerable body of literature that has reviewed the effect of body mass index (BMI) on the individual's health. However, there are few data on how BMI influences the outcome of people with traumatic brain injury (TBI).

The purpose of this study was to investigate the association between body mass index (BMI) and functional outcome of patients admitted to a Rehabilitation Center, after TBI.

Material and Method

This retrospective study included patients admitted with TBI between January 2016 and December 2017. Data collected included patient demographic features (age, sex, weight and height by admission), severity of TBI (Glasgow Coma Scale score), and functional outcome measured by the Functional Independence Measure (FIM) score, on admission and on discharge. Inclusion criteria consisted of age of 18 years or older and complete information on FIM score, height or weight.

Results

A total of 58 subjects met the criteria for inclusion in the study. The mean age was $43,31 \pm 17,82$ years (range, 19-86), 84,5% were male and 15,5% were female. Of these, 10 (17,2%) were underweight, 37 (63,8%) were normal weight, 11 (18,9%) were overweight and moderately obese. All groups showed similar improvement in FIM score: $31,00 \pm 21,04$ for the underweight group, $26,75 \pm 19,26$ for the normal weight group and $27,82 \pm 15,80$ for the overweight and moderately obese group ($p=0,873$). All groups showed similar FIM score by admission ($p=0,633$) and discharge ($p=0,628$). The weight showed a negative correlation with improvement of FIM score ($r=-0,326$, $p=0,013$).

Conclusion

Among patients undergoing inpatient rehabilitation after TBI, BMI by admission had no impact on functional outcomes. This was found to be consistent with other study demonstrating no impact of obesity on motor functional outcomes of the TBI patients. However, this is contrary to previous studies in non-TBI patients that suggested that obesity hampered recovery of motor functions during rehabilitation.

Keywords

Traumatic Brain Injury;Body Mass Index;Functional Outcome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2638

“UNILATERAL RUNNY NOSE DURING TASKS REQUIRING CONCENTRATION”: ORIGINAL CIRCUMSTANCES OF DIAGNOSIS OF CEREBROSPINAL FLUID FISTULA 8 MONTHS AFTER A TRAUMATIC BRAIN INJURY

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Introduction/Background

Secondary rhinorrhea can be observed as a complication of traumatic brain injury and witness to the presence of cerebrospinal fluid (CSF) fistula. Making the diagnosis of this complication appears like a major issue since it can lead to central nervous system infection. It seems primary to keep this complication in mind during long-term follow-up of patients with traumatic brain injury.

Material and Method

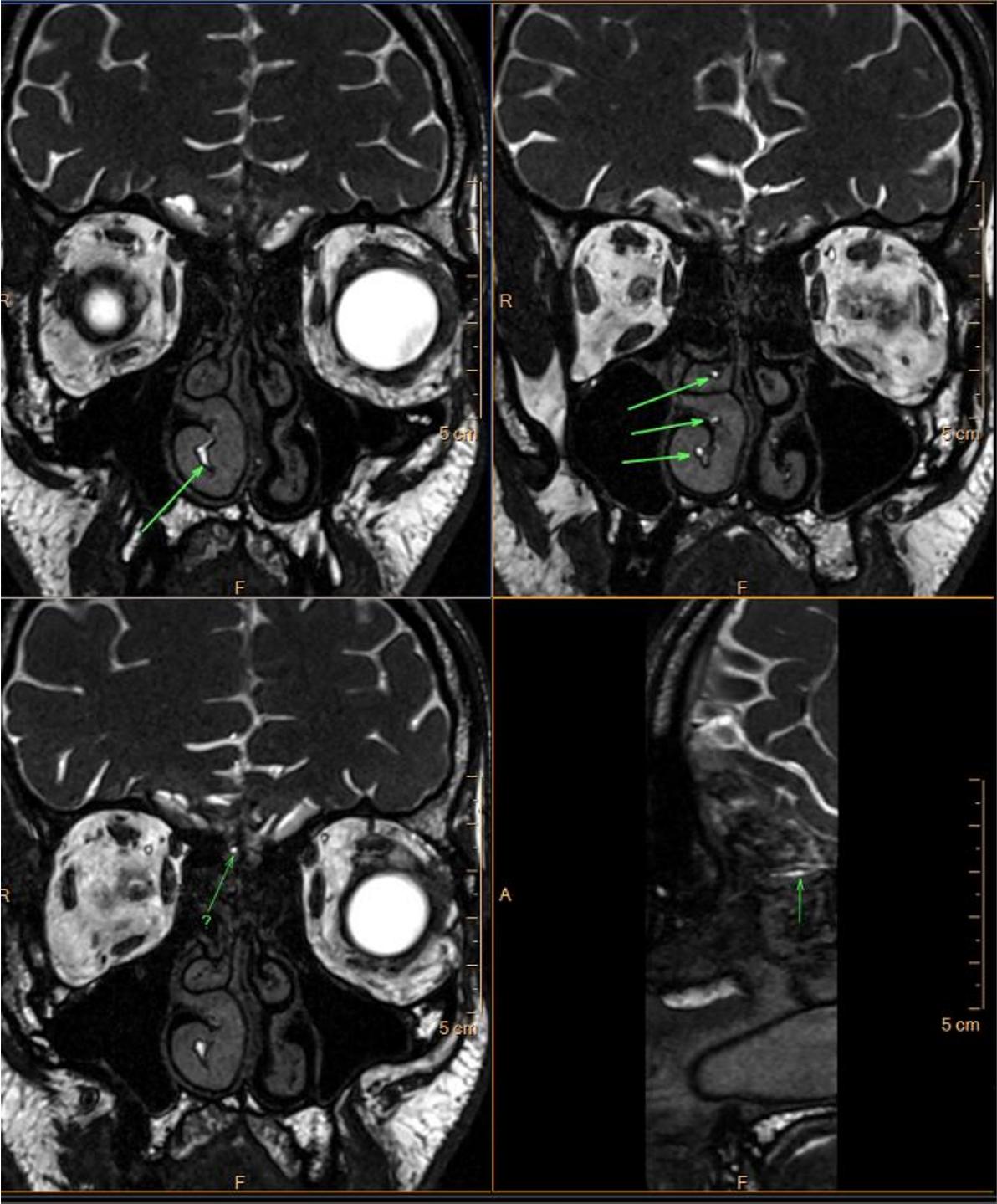
We report the case of a 30-year-old man, whom was the victim of a severe traumatic brain injury in 2017, June. He presented right translabyrinthine fracture, left occipital fracture, multiple hemorrhagic contusions, right frontal and temporal sub-arachnoid hemorrhage and sigmoid sinus thrombosis.

Right deafness and anosmia persisted. The patient complained about cognitive impairment and was addressed in a Physical Medicine and Readaptation service for cognitive assessment in 2018, february. During an ergotherapy session, he made a confidence: “when I am faced with tasks requiring concentration, I have a right runny nose”. This element led to raise the diagnosis of CSF fistula.

Results

A right slightly abundant clear rhinorrhea was observed during different and reproducible activities: cognitive tasks, physical activities such as cycling or push-outs. Cerebral computed tomography (CT) did not show any sign of CSF fistula. Then, cerebral magnetic resonance imaging (MRI) succeeded in highlighting the right ethmoidal CSF fistula. The patient could be

addressed to surgery service.



Conclusion

This case report highlights the importance of the attention paid to complaints of patients and the communication between members of a rehabilitation multidisciplinary team. In addition, it

exemplifies the importance of clinical examination to guide the diagnosis strategy and the choice of diagnosis tools.

Keywords

Cerebrospinal fluid fistula;rhinorrhea

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2646

HYPOGONADISM IS ASSOCIATED WITH LOWER FUNCTIONAL PERFORMANCE DURING INPATIENT REHABILITATION FOLLOWING HYPOXIC ISCHEMIC ENCEPHALOPATHY

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Introduction/Background

Neuroendocrine dysfunction, including hypogonadism, is a frequent complication after traumatic brain injury (TBI). Hypogonadism has been associated with worse functional performance after TBI. The prevalence of hypogonadism and its relationship to functional status after hypoxic ischemic encephalopathy (HIE) has not been previously reported. This study aimed to determine if hypogonadism is also negatively associated with functional performance during inpatient rehabilitation following HIE.

Material and Method

Records were reviewed from male patients sequentially admitted for inpatient rehabilitation following HIE over a three-year period at an academic inpatient rehabilitation facility in the United States. Demographic, diagnostic, Functional Independence Measure (FIM) data, and serum endocrine results were collected. Linear regression analysis was performed to investigate the association between hormone values and functional status with a focus on Testosterone (T) function.

Results

Twenty-nine male subjects were admitted with HIE during the target time frame. Subjects had a mean age of 37.6 years. Twenty subjects had T levels drawn on admission to rehabilitation; of these, five (25%) had levels below the normal range (2.0 – 8.0 ng/mL). Lower T levels were associated with worse admission total FIM ($p=0.001$), motor FIM ($p=0.004$) and cognitive FIM scores ($p=0.003$). Low T levels were also associated with worse discharge total FIM ($p=0.04$) and cognitive FIM scores ($p=0.05$) and a trend towards lower discharge motor FIM scores ($p=0.06$).

Conclusion

The prevalence of hypogonadism in this population of HIE subjects was 25%, similar to that seen in studies of subjects with TBI. Hypogonadism was negatively associated with a lower

functional status across domains. This relationship is similar to that seen in the traumatic brain injury population. Impaired hormone function should be considered clinically following HIE and warrants further investigation.

Keywords

Brain Injury;Endocrine;Hypogonadism

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0211

EPIDEMIOLOGICAL AND SOCIAL PROFILE OF PATIENTS WITH BRAIN TRAUMA IN PHYSICAL AND REHABILITATION MEDICINE

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Introduction/Background

We proposed to study the social and epidemiological profile of patients with severe brain trauma in Physical and Rehabilitation Medicine Department.

Material and Method

This is a retrospective study conducted on patients hospitalized at the Department of Physical and Rehabilitation Medicine (PRM) in Sahloul Hospital SOUSSE TUNISIA for severe head trauma in the period extending from January 2011 to December 2015.

Results

We collected 43 patients: 35 males and 8 females. 25% of patients were young (21-30 years). 44.2% were workers, 9.3% were retired. It was estimated that 65.1% had an average socio-economic level. 48.8% had a primary level of study. 25% had no health insurance. 55.8% were married and 95.3% lived with their families. 30.2% lived in a single-storey house. 76.7% were victims of a road accident, 9.3% were victims of a work accident. 37.2% had an initial Glasgow Coma Scale between 3 and 8. At the initial assessment of the lesions, 25.6% had a subarachnoid hemorrhage and 34.9% had surgical treatment. 11% of patients had a post critical amnesia. Only 2 of our patients were in persistent vegetative state. 61.9% of patients were transferred from the intensive care unit, 4.8% from orthopedics, 2.4% from neurosurgery and the rest of the PRM external consultation. The management delay in PRM was less than one month in 30.2% of cases, between one and three months in 51.2% of cases and more than three months in 18.6% of cases.

Conclusion

Head injuries are the leading cause of mortality of patients under 45 years.

Reeducation and rehabilitation of head trauma patients must be provided by multidisciplinary teams. The care and support of these patients is a course that fits throughout life.

Keywords

brain trauma ;epidemiology;Physical and Rehabilitation Medicine

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0218

PHARMACOLOGICAL MANAGEMENT OF POST-TRAUMATIC SEIZURES IN ADULTS: CURRENT PRACTICE PATTERNS IN THE UNITED KINGDOM AND THE REPUBLIC OF IRELAND

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Introduction/Background

Patients who have suffered a traumatic brain injury (TBI) uncertainty remains around post-traumatic seizure prophylaxis and for duration of treatment with anti-epileptic drugs (AEDs) for those who developed post-traumatic seizures (PTS). In early 2017, a collaborative group of neurosurgeons, neurologists, neuro-intensive care physicians and rehabilitation medicine physicians was formed in the UK with the aim of examining current practice patterns, gauging the degree of uncertainty, and thus designing relevant future studies. In order to address the first two objectives, we undertook a questionnaire survey of clinicians managing patients with TBI.

Material and Method

An online questionnaire survey was developed and piloted. Following approval by the Academic Committee of the Society of British Neurological Surgeons, it was distributed via relevant electronic mailing lists

Results

The online questionnaire was answered by 117 respondents, predominantly neurosurgeons (76%) from 30/32 trauma-receiving hospitals in the United Kingdom and Ireland. 53% of respondents do not use seizure prophylaxis and 38% prescribe prophylaxis for 1 week. 70% feel there is uncertainty regarding seizure prophylaxis and 69% would participate in further research to address this question. 62% of respondents used levetiracetam for treatment of seizures and 42% continued for a total of 3 months' post seizure but 90% were unclear concerning duration of treatment of seizures.

Conclusion

The survey results demonstrate the uncertainty in both described aspects of management of patients who have suffered a TBI. The majority of respondents would want to participate in future research to help try and answer these questions and this shows the importance and relevance of these two clinical questions.

Keywords

Post traumatic Seizures;Traumatic Brain Injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0299

REHABILITATIVE OUTCOME OF COMATOSE PATIENTS 12 MONTHS AFTER TRAUMATIC BRAIN INJURY.

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Introduction/Background

As a result of improvements in the rescue system and progress in intensive care therapy, an increasing number of patients have survived severe traumatic brain injury in recent years. An early and consistent administration of the correct rehabilitation programme is of crucial importance for the restoration and improvement of cerebral function, as well as social reintegration. Prospective study conducted at the neurosurgical department of a university hospital to assess the one - year - outcome of comatose patients after severe traumatic brain injury.

Material and Method

27 patients were included. Patients received multimodal early-onset stimulation and continuous inpatient and outpatient rehabilitation therapy.

12-months outcome was assessed by means of Glasgow outcome scale, Barthel index, Functional independence measure (FIM) and need of care.

Results

Results: 7 patients died, 4 remained in a vegetative state, 7 were severely disabled, 6 were moderately disabled, and 3 achieved a good recovery 12 months after injury. Mean Barthel index was 66.7 and mean FIM was 85.2. The majority of patients still were at least intermittently dependent on care.

Conclusion

Despite intensive rehabilitation treatment, severe traumatic brain injury is still burdened with significant mortality and morbidity.

Keywords

traumatic brain injury;coma;outcome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0300

REHABILITATION OUTCOME 6 MONTHS OF SEVERE TRAUMATIC BRAIN INJURY AND DECOMPRESSIVE CRANIECTOMY.

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Introduction/Background

Traumatic brain injury is still a significant cause of death due to a raise of intracranial pressure leading to deterioration of cerebral perfusion which represents a major predictor of mortality To evaluate the effects on patients´ outcome of decompressive craniectomy with duraplasty (dc) in case of increased intracranial pressure consequent to severe traumatic brian injury (stbi).

Material and Method

A prospective study was conducted to assess outcome as measured by GOS, Barthel index, and Functional Independence Measure (FIM). In asddition, professional ability and the need for care were evaluated. A total of 15 cases were included. Endpoint of follow-up was at 6 months after injury.

Results

Overall outcome was unfavourable with a median GOS of 3 and a mortality rate of 33%. Mean Barthel index was 46.5 (range 0-100), mean FIM score 67.5 (18-126). Only 3 cases reached a condition completely independent of care. None of the patients regained professional ability.

Conclusion

Despite treatment with dc, overall outcome in stbi remains unfavourable.

Keywords

decompressive craniectomy.;outcome;traumatic brain injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0346

DUAL TASK GAIT AFTER MODERATE TO SEVERE TRAUMATIC BRAIN INJURY: CHARACTERIZATION OF TROUBLES AND CONSEQUENCES

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Introduction/Background

Patients suffering from traumatic brain injury (TBI) often present with cognitive but also posture and gait impairments. In this study, we aimed at evaluating the cost of the addition of 3 types of cognitive concurrent tasks on gait parameters, and studying the relationship between dual task cost and patient-reported perception of their confidence in balance and gait in daily living.

Material and Method

Spatiotemporal gait parameters were assessed using a GAITRITE mat in 22 moderate to severe TBI patients and 26 age-matched healthy controls. The addition of 3 cognitive tasks (letter back-task, subtractions by 3, talking when walking) was studied during unobstructed walking and stepping over an obstacle. We also evaluated the relationship between dual task cost during gait and (1) cost in another motor task (Baddeley) and (2) patient perceived confidence in dynamic balance and gait in daily living (ABCscale).

Results

Dual task cost during gait was higher in TBI patients compared to healthy controls when walking unobstructed and in the subtraction and talking concurrent tasks. Alteration of gait speed was primarily due to a decrease of step length more than of gait cadence. TBI patients tended to prioritize the cognitive task. Dual task cost during gait was correlated with the Baddeley dual task performance ($r=-0.420$; $p=0.003$) but not with the ABCscale score.

Conclusion

TBI patients exhibit difficulties in dual task gait conditions, which can be easily assessed and should be addressed in rehabilitation. The dual task cost could be not specific to locomotor activities. Finally, other factors seem to explain the alteration in confidence in gait and balance in daily living.

Keywords

traumatic brain injury;gait;dual task gait

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0378

COGNITIVE REHABILITATION IN MILD TRAUMATIC BRAIN INJURY: A RESEARCH PROTOCOL

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Introduction/Background

Multiple cognitive complications persist following mild traumatic brain injury. A proportion of this population quite often progress to have chronic cognitive disability that is overlooked due to the initial 'mild' presentation. Currently there is no standard treatment protocol for cognitive therapy in mTBI. In this study we developed a cognitive therapy protocol for attention deficits.

Material and Method

This study is registered with ClinicalTrials.gov (NCT03237676). This is a two arm randomised controlled trial. We applied the *Medical Research Council (MRC) Developing and Evaluating Complex Intervention* in the development of study intervention. To strengthen the components, we conducted a pilot study and Expert Panel review. The protocol is divided into three segments; 1) **Neurocognitive evaluation**, 2) **Diffusion Tensor Imaging**, and 3) **Cognitive rehabilitation**. Each arm receives standardised evaluation of the first two segments mentioned but different treatment approach. Both treatment starts at 3 months post trauma. Control arm receives a pre-existing **patient-centred cognitive therapy** at the recruitment centre, which include symptoms management and cognitive coping strategies. Intervention group receives **individualised structured cognitive rehabilitation** that consist of **Direct Attention Training (DAT)** and **Metacognitive Approach (MA)**. DAT is a deficit-oriented computer-based treatment on all types of attention deficits whereas MA involves generalisation of learned attention tasks to everyday function. This approach include review of individualised goals and cognitive functional problem-solving training. Therapy frequency is one hour per week for three months.

Results

Three outcome measures are changes in neuropsychological assessment scores, white matter tract (WMT) parameters and Goal Attainment Scale (GAS) scores measured at baseline and end of treatment. Statistical analysis include descriptive analysis, effect size calculation and correlation between cognitive treatment and outcome measures. WMT post-processing involves Tract-based Statistical Analysis and Region of Interest approach.

Conclusion

The results of this study will contribute to an evidence-based, early cognitive treatment in mTBI.

Keywords

mild traumatic brain injury;cognitive therapy;research protocol

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0386

TRANSCRANIAL DIRECT CURRENT STIMULATION ON THE CLINICAL CURATIVE EFFECT OF PATIENTS WITH DISTURBANCE OF CONSCIOUSNESS

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Introduction/Background

Transcranial direct current stimulation (Transcranial direct current stimulation, tDCS) is a non-invasive brain stimulation techniques.tDCS plays a role by regulating the activity of spontaneous neuronal networks.Such as stimulation in patients with primary cerebral cortex motor area (M1), which can effectively improve the patient's motor dysfunction , and stimulate the prefrontal cortex, which can effectively improve patient swallowing dysfunction , etc. but the tDCS with conventional rehabilitation therapy in patients with disturbance of consciousness of clinical research is rarely reported.

Objective To explore the clinical efficacy of transcranial direct current stimulation on the clinical curative effect of patients with disturbance of consciousness(DOC).

Material and Method

Method thirty-eight DOC patients were randomly divided into a observation group and a control group, each of 19. Both groups were given routine rehabilitation intervention, and the observation group were treated with transcranial direct current stimulation on this basis for 20 sessions. The Brainstem auditory evoked potential (BAEP), the Upper sense evoked potential (USEP), the nerve electrophysiology evaluate electroencephalogram (EEG) and the Glasgow coma scale(GCS) or PVS rating scale were used to test both groups before and after the treatment.

Results

Before treatment , the two groups of patients were compared with BAEP,USEP,EEG,GCS or PVS scores, and the difference was not statistically significant ($P > 0.05$). After treatment, BAEP,USEP,EEG,GCS or PVS scores were compared with those in the group before treatment , and the difference was statistically significant ($P < 0.05$). And the observation group's BAEP,USEP,EEG,GCS or PVS scores were better than the control group ($P < 0.05$).

Conclusion

On the basis of conventional rehabilitation therapy, tDCS treatment can further improve the patients' consciousness disorder, and this combination therapy is worthy of clinical promotion and application.

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Keywords

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0454

RASCH ANALYSIS FOR THE RECOVERY PROCESS FOR PATIENTS OF PERSISTENT VEGETATIVE STATE USING THE NATIONAL AGENCY FOR AUTOMOTIVE SAFETY AND VICTIMS' AID (NASVA) SCORE

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Introduction/Background

The purpose of this study was to analyze NASVA scores using Rasch analysis, and to create a difficulty map of NASVA score to predict the recovery process for persistent vegetative state, and to improve the fitness of the sub-items of NASVA score.

Material and Method

Participants were 114 inpatients (mean age, 37.4 ± 20.4 years) who had been diagnosed with persistent vegetative state after a traffic accident. Rasch analysis was performed by an application named "winsteps". This application produces a score table, an item measure of the sub-items containing an information-weighted mean square fit statistics (infit) and an outlier-sensitive mean square fit statistics (outfit) of the sub-items. First, I replaced NASVA score with the binary score. Rasch analysis provided a scaled score corresponding to the binary score. The raw score was the sum of the binary score of the sub-item. Then, I made the difficulty map using the scaled score that was calculated in winsteps as the item measure. Furthermore, I analyzed the fitness of the sub-items for the recovery process for persistent vegetative state using their infit and outfit. Here, I set 1.5 or more as misfits for infit or outfit of sub-items.

Results

In the results of the fitness analysis, nine sub-items were identified as misfits: one motor function, three feeding functions, one excretory function, one cognitive function, and three articulatory and utterance functions.

Conclusion

Nine misfit sub-items had room for interpretation depending on the insufficient of the items description. Therefore, it was suggested that we improve the scale by removing sub-items from the NASVA score, or creating an interpretation manual. On the other hands, by making use of the difficulty map of NASVA score, the medical staff might be able to decide on the proper goals of rehabilitation and care according to the recovery process of the patient.

Keywords

Rasch analysis;Recovery process;Vegetative state

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0527

POST-TRAUMATIC BRAIN INJURY OLFACTORY DYSFUNCTION: FACTORS INFLUENCING QUALITY OF LIFE

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Introduction/Background

Previous studies have explored the quality of life (QoL) in people with olfactory dysfunction from various aetiologies. However, knowledge on QoL in people with post-traumatic brain injury (TBI) olfactory dysfunction is still limited. This study evaluates the impact of post-TBI olfactory dysfunction on QoL and determine factors influencing resultant QoL.

Material and Method

A case-control study conducted in a single centre on 30 TBI adults with olfactory dysfunction; matched by age and gender with 32 TBI controls having intact olfactory function. All 64 adults self-rated their olfactory function using a Visual Analogue Scale (VAS). Sniffin' Sticks test was used as an objective olfactory function assessment and results measured as TDI (Threshold, Discrimination and Identification) score. QoL was determined by a self-rated questionnaire; Questionnaire for Olfactory Disorders (QOD). Influential factors evaluated include age, gender, employment, level of education, marital status, smoking habit, TBI-related clinical information and Disability Rating Scale (DRS) score. A correlation test between the VAS and natural log TDI was also conducted.

Results

Mean QOD score of case group was significantly higher than control group (26.31±14.37 vs 9.44±8.30 respectively; $p<0.001$). After removing the effect of employment, smoking habit, co-morbidities, TBI duration and DRS score; there was a significant difference of mean QOD score between the two groups ($F=16.426$, $p<0.001$, $\eta^2=0.224$). Calculated effect size was large with $d=1.07$ and odds ratio of 7.02. The most affected QoL domain was "perception of smell changes". DRS score and olfactory function severity were factors influencing QoL ($p<0.05$). VAS score was positively correlated with natural log TDI score ($r=0.433$, $p<0.05$).

Conclusion

Individuals with post-TBI olfactory dysfunction are at higher risk of developing a lower QoL. One of the factors influencing this is the severity of olfactory dysfunction itself.

Keywords

anosmia;quality of life;brain injury

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0726

VOLUNTARY POSTURAL OR DUAL-TASK TRAINING IMPROVES MOTOR AND MENTAL FUNCTIONS IN PATIENTS WITH TRAUMATIC BRAIN INJURY

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Introduction/Background

Traumatic brain injury (TBI) is the most common cause of social disadaptation among young people and accompanied by disorders in motor and cognitive spheres. The aim of our study was to estimate a rehabilitation effect of voluntary postural and dual-task training at different periods after TBI.

Material and Method

Seventeen TBI patients (28±5.3) and 32 healthy persons (27,6±0,07) participated at the investigation. Electroencephalographic (EEG), stabilographic studies and clinical scales (MMPI, FIM, MMSE, Berg's scale) were utilized for estimation of different spheres of human functioning.

Results

Clinical scales demonstrated deficits in all domains including motor and cognitive activity at the early terms after TBI. These deficits accompanied by global decrease of EEG connectivity between brain areas especially for distant brain areas while the increase of connectivity for local networks was observed as a reflection of compensator brain mechanisms. Postural training focused at vertical pose recovery while demonstrated improvement of motor as well as mental functions and accompanied by an increase of EEG connectivity. Dual-tasking was used as next step of rehabilitation course. EEG data demonstrated additional increase of EEG connectivity between different brain areas. Clinical scales showed improvement of all functions and improvement the quality of patient's life and their social adaptation.

Conclusion

Thus, voluntary postural and dual-task training may be used as effective rehabilitation approach that can serve as trigger for brain functional integration resulting in recovery of disordered functions. This approach may be recommended for patients with functional deficits to enhance

their social adaptation and quality of life.
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Keywords

postural control;cognitions;dual-tasking

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0756

EFFECTIVE REHABILITATION SERVICES IN THE POST-ACUTE PHASE OF MODERATE AND SEVERE TRAUMATIC BRAIN INJURY.

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Introduction/Background

Background and aims: Rehabilitation services to traumatic brain injury (TBI) have been focused in the acute phase, underpinning the importance of early initiated and well-organized delivery. Less is known about effective rehabilitation service delivery in the post-acute and later phases after TBI. Lack of a framework for depicting differences in service delivery may also contribute to the knowledge gap. Recently, Gutenbrunner et al (J Rehabil Med 2015) proposed a classification for health-related rehabilitation services (International Classification System for Service Organization in Health-related Rehabilitation, ICSO-R) describing provision (i.e., context of delivered services), funding (i.e., sources of income and refunding) and delivery (i.e. mode, structure and intensity) aspects which may be useful for contrasting and comparing rehabilitation services. Aims of this review are

-Provide an overview of randomized controlled trials (RCTs) with rehabilitation service relevance provided to moderate and severe TBI in the post-acute phase.

-Evaluate to which extent providing, funding and delivery dimensions of rehabilitation services are addressed.

Material and Method

A systematic literature search was carried out in OVID MEDLINE; EMBASE, CINHALL, PsychINFO and Social SCI, identifying 50 relevant RCTs .

Results

The studies emerged from nine different countries across all continents except Africa. Two-third of the studies was conducted in a hospital-based rehabilitation setting. In general, funding of the services was not described. In the delivery dimension, therapeutic strategies targeting body functions (78%) was dominating. Only one study was clearly designed to evaluate service delivery mode aspects, finding no difference between the effects of in-hospital or home-based rehabilitation regarding return to gainful employment.

Conclusion

There is a lack of RCTs for evaluation of rehabilitation services in the post-acute phase for moderate and severe TBI. Service aspects may be implicit and possible to evaluate given standardized and better descriptions of the provider, funding and delivery dimensions according to ICSO-R.

Keywords

Traumatic brain injury; Rehabilitation services; post-acute

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0776

REHABILITATION NURSING FOR TRAUMATIC INTRACRANIAL HEMORRHAGE- CASE REPORT

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Introduction/Background

Traumatic brain injury affects the physical and cognitive aspects. Intensive rehabilitation has been shown to benefit this population. However, emotional distress could hinder patients' will to engage in rehabilitation. We described the supporting role of nurses to drive a patient's motivation in the rehabilitation regime.

Material and Method

A 60-year-old male underwent ventriculoperitoneal shunt evacuation for intracerebral hemorrhage after a car accident. The person soon revealed negative mood regarding his recovery from physical and occupational therapy. The staff nurses administered Gordon 11 Functional Health Patterns to identify patient's need and provide according therapeutic care. Barthel Index was applied to evaluate improvement in performing activities of daily life.

Results

Powerlessness, incapacity of self-care, and locomotor disabilities were determined as the primary issues. With accompanying and encouragement, the patient became motivated to engage in and practice therapeutic exercises. The ability to complete daily activities improved from 35 to 80 in the Barthel Index. The patient could independently ambulate with a quadricane > 100m and fulfill dressing and hygiene. By 47 days of hospitalization, he was discharged home and then continued outpatient therapies.

Conclusion

In patients experienced catastrophic disability, psychosocial involvement often aggravates dysfunction alongside with physical impairment. A systematic approach to each individual may help to cope stress and improve the quality of intervention. The case raises our awareness of including nursing care in the holistic practice.

Keywords

Rehabilitation Nursing;Case report;Gordon 11 Functional Health Patterns

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0829

VALIDITY OF THE NORWEGIAN VERSION OF THE NEEDS AND PROVISION COMPLEXITY SCALE

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Introduction/Background

The Needs and Provision Complexity Scale (NPCS) (Turnes-Stokes et al. 2013) is a simple, pragmatic tool to measure the *needs* an individual has for rehabilitation and support, and the extent to which those needs are *met* through service provision. The NPCS comprises two domains; *Health and personal care* and *Social care and support*. *NPCS – Needs* are rated by health professionals based on patient's needs for health and social care in a given period; whereas *NPCS – Gets* may be rated by health professionals, patients or significant other based on services received over the same period. The NPCS has been translated to Norwegian (van Walsem et al. 2015), but not validated. The aim of the present study was to do so through assessment of test-retest reliability, inter-rater reliability and concurrent validity in patients with lasting symptoms after traumatic brain injury (TBI) and subarachnoid haemorrhage (SAH).

Material and Method

Fifty adult patients referred to a specialized head injury outpatient clinic at Oslo University Hospital, with ICD-10 diagnosis of TBI (S06.0-S06.9) and of SAH (I60.0-I60.9), will be included in the study. The participants have to provide informed consent and speak Norwegian fluently. The test-retest reliability of the NPCS patient version is tested using a test-retest procedure with a 7 days interval. The inter-rater reliability of the NPCS health personnel version is tested with 2 independent raters. Concurrent validity was tested with the Rivermead Post-Concussion Symptoms Questionnaire, Functional Independence Measure, Community Integration Questionnaire and Neurological Impairment Set.

Results

Sixteen individuals with TBI (68.8 % women, mean age 34.4 years at time of injury) and three individuals with SAH (66.7 % women, mean age 59.3 years at time of injury) have been followed-up so far. The results of test-retest reliability, inter-rater reliability and concurrent validity will be presented at the Congress.

Conclusion

Conclusions will be presented at the Congress.

Keywords

Validation;Needs and Provision Complexity Scale (NPCS);Rehabilitation medicine

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0846

A CHANGE OF CEREBRAL PERFUSION OF PATIENTS WITH CHRONIC NEUROPSYCHOLOGICAL IMPAIRMENTS BEFORE AND AFTER A DAYTREATMENT GROUP REHABILITATION

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Introduction/Background

The objective of this study is to evaluate a change of cerebral perfusion of patients with chronic neuropsychological impairments (NPIs) before and after a daytreatment group rehabilitation, using 99mTc-ethylcysteinate dimer single photon emission computed tomography (Tc-ECD SPECT) and its novel analytic software.

Material and Method

8 patients were examined in the chronic period of acquired brain injury with NPIs. All patients received a daytreatment group rehabilitation (3 hours once per week for half a year). The group rehabilitation included patient and family education, mindfulness exercise and group discussion exercise. The examinations of patients were performed before and after the group rehabilitation, and it included the assessment of neurological deficit, cognitive functions, and Tc-ECD SPECT. Statistical parametric mapping (SPM) was applied to each Tc-ECD SPECT image, for spatial pre-processing and analysis and to determine the quantitative perfusion change before and after the group intervention (paired t-test, uncorrected, $p < 0.001$).

Results

SPM analysis of Tc-ECD SPECT showed the significant improvement of cerebral perfusion in right frontal lobe (Brodmann area 10) before and after the group rehabilitation. There was no significant improvement in cognitive functions as assessed with structured batteries for NPIs, while there was a trend towards the improvement behaviorally (for example, 6 patients had been able to rework after the intervention).

Conclusion

Using Tc-ECD SPECT and its novel analytic software, we identified specific lesions with improvement of cerebral perfusion before and after the daytreatment group rehabilitation for NPIs. It might relate with social reintegration of patient with NPIs.

Keywords

Cognitive rehabilitation; Group rehabilitation

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0860

CORRELATION BETWEEN THE QUALITY OF LIFE AFTER BRAIN INJURY IN JAPANESE VERSION; QOLIBRI-J AND COMMUNITY INTEGRATION QUESTIONNAIRE; CIQ

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Introduction/Background

The Quality of Life after Brain Injury(QOLIBRI ; 37items) is a disease specific subjective questionnaire of health-related quality of life(HRQoL) in persons after traumatic brain injury. We developed Japanese version of QOLIBRI;QOLIBRI-J and reported that it's test-retest reliability(ICC; 0.92, Cronbach α = 0.86) and validity (Correlations of SF-36) were excellent. The Questionnaires of QOLIBRI-J are based on subjective satisfaction, although those of another popular QOL instrument, Community Integration Questionnaire; CIQ is based on objective situations. We investigated between the relationship of QOLIBRI-J and CIQ of the persons with higher brain dysfunctions after TBI to show the differences of subjective and objective QOL.

Material and Method

Subjects: 73 recruited community-dwelling Japanese with higher brain dysfunction after traumatic brain injury (61 male, 12 female: age 41.6 ± 14.3 , Glasgow Outcome Scale-Extended; GOSE (3 to 8: median 5)

Design: The Correlations between QOLIBRI-J and CIQ were investigated in 73 subjects at the same time. They were also asked to fill the GOSE. The questionnaires were administered in one of three modes: by self-report(mail), self-report(participant presents at the clinic), and face-to-face interview.

Results

Distribution of GOS-E score were as follows, 3: lower severe disability (12.3%), 4: upper severe disability (27.4%), 5: lower moderate disability (27.4%), 6: upper moderate disability (16.4%), 7: lower good recovery (11.0%), 8: upper good recovery (5.5%). There was a low correlation between QOLIBRI-J total score and the CIQ total score($\rho=0.326$ Spearman correlation coefficient). By the subscale analysis, the strongest correlation was found between QOLIBRI-J(Daily life/autonomy)and CIQ(social life). In contrast there was the weakest correlation between QOLIBRI (emotions) and CIQ(productive life). There was no correlation between the QOLIBRI and GOSE($\rho=0.21$).

Conclusion

QOLIBRI-J had a mild correlation with CIQ. There were some differences between QOLIBI and CIQ. One of the reasons of this difference was thought to be the subjective emotional factor about taking a productive work.

Keywords

QOL;TBI;Satisfaction

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-0888

« EXCESSIVE COMPLAINTS » MORE THAN ONE YEAR AFTER A MILD TRAUMATIC BRAIN INJURY (MTBI) : HYSTERICAL PSYCHIC FUNCTIONING OR NOT ?

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Introduction/Background

A wide range of cognitive, emotional and somatic symptoms are frequently reported after mild Traumatic Brain Injury (mTBI) and usually disappear in a few months. However a « miserable minority » keeps looking for medical attention more than one year post mTBI. Their complaints are often considered excessive, histrionic and unfounded. Here we present a prospective study to assess neuropsychological disorders and intrapsychic functioning in such patients.

Material and Method

Twenty-three adults (6 men, 17 women), mean age 48, sought care at our consultation about 41 months after mTBI. They all had a neurological, neuropsychological, psychological (projective tests: Rorschach and TAT) and psychiatric assessments (Minnesota Multiphasic Personality Inventory: MMPI). Projective tests are known to bring to light intrapsychic functioning in terms of narcissistic and objectal relationships while MMPI assesses personality traits and psychiatric symptomatology.

Results

While 21 patients were socially well integrated pre mTBI, only 6 were back to effective work at the time of assessments.

The neuropsychological assessment showed cognitive impairments, from moderate to severe, notably in attention (87%), working memory (74%), long term memory (65%) and psycholinguistic abilities (74%). Some patients (38%) also presented discrete visuo-spatial impairments.

Patients talkatively told their mTBI story in a tragic, histrionic style, with impressive suffering feelings. The MMPI pointed out a non-significant value of malingering (5%) and a significant high value of hysteria (73%) and somatisation (45%) scales. Surprisingly projective tests never highlighted an hysterical psychic functioning but exhibited signs of narcissistic fragility.

Conclusion

Despite of the histrionic style of excessive expression of emotion, dramatization, attention seeking and physical symptoms, the projective tests were not in favour of an hysterical psychic functioning. The specific role of the traumatizing context of mTBI in conjunction with psychic specificities, notably self-image and aggressivity drive are discussed.

Keywords

MTBI;cognitive disorders;psychic functioning

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1005

PREVALENCE AND SEVERITY OF ALL HEAD IMPACTS AMONG SEMI-PROFESSIONAL SOCCER PLAYERS OVER ONE FULL SEASON, ACCORDING TO THEIR GAME POSITION

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Introduction/Background

Soccer players are frequently subject to head injuries, from impacts with another player's head or body part and impacts with the ground. Moreover, game-play in soccer involving intentional and repeated head impacts through heading the ball. These impacts can sometimes cause concussion and soccer players might have a risk of developing neurodegenerative disorders on the long term by cumulative effect. However, the prevalence of head impacts when playing soccer is relatively unknown, because until now this was evaluated most of the time by only self-assessment questionnaires. The objective of this study was to quantify players' exposure to all various head impacts during one soccer season.

Material and Method

We have followed a group of 51 semi-professional soccer players, aged from 16 to 35 years old, during one full season. With video analysis of the games, the number of head impacts per player, including heading and concussion, has been counted.

Results

The average of heading per hour during a game was from 0 to 9 depending on the player position, with a median of 4.61 for the forwards, 5.84 for the centre backs, 2.85 for the fullbacks, and 2.48 for the midfielders ($p=0.0001$.) We recorded three concussions due to a direct head to head trauma, including two on the same player. The number of head trauma recorded during practices was lower than during games.

Conclusion

We have evaluated the exact prevalence of heading and all other head impacts during a full soccer season, and their direct consequences during the games (stoppage time, medical stoppage, exit game). Forwards and centre backs are mostly exposed. Next step should focus on improving the evaluation of the consequences of these repeated head impacts on brain structure and function, in order to consider possible prevention and protection tools for soccer players.

Keywords

Soccer;Concussion;Heading

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1231

DOCUMENTING THE GUSTO GROUP COOKING INTERVENTION FOR KNOWLEDGE TRANSFER

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Introduction/Background

The effect of the holistic, intensive acquired brain injury (ABI) rehabilitation program developed at the Pitié-Salpêtrière hospital, France (5 days/week for 7weeks) was demonstrated (Poncet et al. 2017). This program includes the Gusto intervention (i.e. group cooking activity once a week). Based on these results, and to ensure the sustainability of the intervention and to enable it being used in other rehabilitation centers and other settings, the authors wished to document the Gusto intervention.

Objective: To document the Gusto intervention for the purpose of knowledge transfer.

Material and Method

Using a participatory and iterative approach, two occupational therapists (OT) created a theoretical logic model (Champagne et al. 2011) of the intervention and documented its components using a common language (i.e. the International classification of functioning disability and health (ICF); OMS, 2001). Four experts (OTs and neuropsychologists) validated the documentation.

Results

The Gusto intervention targets 7/8 domains from the Activities and Participation sections of the ICF, the 8th domain (engagement in education, work) not being covered by Gusto. More than 50 body functions appear to be targeted (e.g. Calculation functions - consider the number of guests and modify the food portions accordingly) and more than 80 activities/participation are involved (e.g. listening).

Conclusion

Because cooking is complex, persons with ABI require many body functions/capacities to be able to cook meals. Documenting Gusto with the ICF should allow an understanding of the

intervention by different professions (clinician, manager ...) and thus its applicability in other rehabilitation centers and for other populations (e.g. the elderly).

Keywords

cooking intervention ;logical model;ICF

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1249

FUNCTIONAL RESULTS IN SEVERE TRAUMATIC BRAIN INJURY. IS DECOMPRESSIVE CRANIECTOMY A PROGNOSTIC FACTOR?

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Introduction/Background

Traumatic brain injury is a common cause of acquired brain injury, especially in young people. The first hours and days are especially important for prognosis and several factors involved have shown morbidity and mortality association. The aim in this study is to evaluate if decompressive craniectomy is a prognosis factor in patients with severe traumatic brain injury.

Material and Method

Retrospective review study in severe traumatic brain injury patients admitted in Neuro-rehabilitation Ward for a 4 years period (2013-2017). One group was treated with decompressive craniectomy and the other group was not.

Results

We have evaluated 58 patients divided into two groups. The first group (22 patients) have had surgery and the second group (36) have not. The average age in the first group was 48,4 years $\pm 16,5$ (range 20-77) and 48,8 $\pm 19,6$ years in the second group (18-80). The disability level was evaluated with different scales. The craniectomy group had 22.3 points in average in Barthel Scale at admission vs 19.9 points of the non-surgical group. At discharge the average results were 62.7 in the first group vs 72.6 in the second group. The improvement evaluated according to Barthel scale was statistically significantly correlated in non-surgical group ($p= 0,049$). The results evaluated according to the Rankin and GOS scales did not improve statistically significantly.

Conclusion

Patients with severe traumatic brain injury treated without decompressive craniectomy had at hospital discharge better functional results than patients treated with surgery according to Barthel Scale. However, we cannot prove difference in other evaluated scales. Surgical treatment should be performed according to patient clinical status and complications, but in a borderline case these data could be consider.

Future research will be necessary to confirm these results.

Keywords

Traumatic brain injury;decompressive craniectomy;Prognosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1552

NEUROPSYCHOLOGICAL ASSESSMENT OF A LONG-TERM (LT) OUTCOME AFTER SEVERE TRAUMATIC BRAIN INJURY (TBI)

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Introduction/Background

Neuropsychological assessment of a LT outcome after severe TBI, in correlation with daily life disability.

Material and Method

Severe TBI patients admitted in the Intensive Care Unit in Pitié-Salpêtrière hospital (France) from 2005 to 2012 were included.

MRI, clinical PRM and neuropsychological assessments were performed. Neuropsychological performances were measured by 10 composite scores (CS) representing the main cognitive functions.

The Glasgow Outcome Scale Extended (GOSE) assessed the global functional outcome.

Use of self and relatives' assessment questionnaires allowed evaluation of cognitive complaints in everyday life (Dysexecutive questionnaire – DEX; Working Memory Questionnaire -WMQ; Brain Injury Complaint Questionnaire - BICoQ).

Results

101 patients (84.16% men; mean age 38.55 ± 16.03 [19 - 73]) were included. They presented with initial severity of TBI: GSC median 8 ± 3.6 [3-15]; coma duration 19.01 days ± 18.22 [0-120]; PTA duration 97,8% > 1 day.

Assessments were performed at a mean delay of 5 years and 2 months after BI.

This cohort had a mean moderate disability according to GOSE (Median 6 \pm 1.32 [3-8]).

Neuropsychological evaluation emphasized high prevalence of different cognitive deficits: attention (sustained attention deficit in 63,04% of subjects, tonic alertness 24.75%, divided attention 43.56%), executive functions (EF) (planning 55.56%, mental flexibility 24.75%, generation of new information 20.79%), working memory (WM) (46%) and update (46.88%), anterograde episodic memory (AEM) (46%). Surprisingly inhibition was not noticeable in this cohort (1%).

GOSE was significantly related to EF, WM (0.0047*), AEM (<0.0001*), Tonic alertness (<0.0001*), divided attention (0.0012*) and to relatives' complaints questionnaire (DEX & BICoQ <0.0001*). Moreover, several CS (AEM, fluency...) were significantly associated with the relatives' complaints in the BICoQ.

Conclusion

5 years after TBI, patients and their relatives are still affected by cognitive disorders. Relatives complaints are clearly informative of participation restrictions.

This study emphasizes the importance of LT assessment and follow up in TBI patients and their relatives.

Keywords

traumatic brain injury;outcome;neuropsychology

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1609

CHRONIC TRAUMATIC ENCEFALOPATHY: FROM CONCUSSION TO DEMENTIA IN SPORT

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Introduction/Background

Chronic traumatic encephalopathy (CTE) is a neurodegenerative disease associated with repetitive cranial trauma, and was first described by Martland in 1928 as "dementia pugilistica". No definitive premortem diagnosis and no treatments are available and risk factors associated include contact sports.

Material and Method

A bibliographic review of the subject was made using the Medline database with the following keywords: chronic traumatic encephalopathy, traumatic brain injury, concussion, sports medicine, neurotrauma, rehabilitation.

Results

The exponential increase in contact sports practitioners in the last decades has given rise to greater attention on neurological sequelae due to cranioencephalic trauma (TBI), namely cerebral concussion. Repetitive concussion occurs in a variety of sports such as boxing and soccer, however, there is a lack of consensus about the amount and severity of trauma necessary for the development of CTE. The clinical diagnosis of CTE can be problematic in that the development of chronic neurological symptoms is not temporally related to a single concussion event, usually manifesting at a later age after a latency period. The definitive diagnosis is made in patients with neurological signs compatible with CTE and histological confirmation of deposition of tau protein with or without deposition of amyloid or TDP-43 protein. Prevention is the main mechanism of protection. According to the consensus set out in the 5th edition of the International Concussion Conference on Sport held in Berlin in 2016, the return to sports practice should be delayed at least 4 weeks after the acute event in order to ensure neuro-metabolic recovery, which can be documented through neuropsychological studies and functional magnetic resonance imaging.

Conclusion

CTE is a syndrome of neurological impairment associated with phosphorylated tau protein deposition resulting from repeated head trauma. The most widely used approach to CTE is

based on prevention: avoiding prolonged exposure to contact sports and identifying individuals with a higher level of risk.

Keywords

chronic traumatic encefalopathy;concussion;chronic traumatic brain injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1731

THE FAMILY AS A RESOURCE FOR IMPROVED PATIENT AND FAMILY FUNCTIONING AFTER TRAUMATIC BRAIN INJURY: A DESCRIPTIVE NON-RANDOMIZED FEASIBILITY STUDY OF A FAMILY-CENTRED INTERVENTION.

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Introduction/Background

Disability following traumatic brain injury (TBI) is multidimensional, affecting those injured and their family members. The family as a whole is seldom recognized as an arena for rehabilitation efforts. The aim of this study was to evaluate the feasibility of an eight-session, manualized multidisciplinary family-centred rehabilitation intervention for families facing TBI, aimed at improving individual and family functioning. We evaluated the families' willingness to participate; the appropriateness of inclusion criteria; the need for cultural adjustment of the intervention; the collaboration with municipal health care service and the leadership structure of the sessions; and the appropriateness of the selected self-reported questionnaires for data collection.

Material and Method

Two families, six people, participated in this non-randomized feasibility study of the intervention arm of a full-scale RCT, conducted at the University Hospital in Oslo, Norway (ClinicalTrials.gov #NCT03000400). The study was performed in close collaboration with a municipal health care service. Pre-defined success criteria were determined prior to conducting the feasibility study. The evaluation of these criteria was based on the families' feedback regarding acceptability of the intervention, the self-report measures and the experiences of the group facilitators conducting the intervention.

Results

The pre-defined success criteria were fulfilled. Both families completed all eight sessions of the intervention. Minor cultural differences were detected, however, the topics and strategies covered in the intervention were perceived as relevant and recognizable. Some challenges emerged and were discussed before commencing the full-scale RCT. The challenges were related to the logistics regarding the delivery of the intervention. This pertained to keeping an acceptable level of burden of participation for the families and the collaborating municipal health

professionals, and making the necessary adjustments of the intervention to suit the families' unique needs.

Conclusion

The family-centred intervention and trial procedures were feasible. A pragmatic approach is considered necessary when commencing the full-scale RCT.

Keywords

Traumatic brain injury;Family-centred intervention;Feasibility study

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1732

EXPLORING VERBAL ASSISTANCE USED BY OCCUPATIONAL THERAPISTS TO IMPROVE FINANCIAL MANAGEMENT SKILLS AFTER BRAIN INJURY: A CASE STUDY

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Introduction/Background

Cognitive difficulties following a brain injury can impact an individual's capacity to complete activities of daily living (ADLs). Combining metacognitive strategies, such as those part of the Cognitive Orientation to Daily Occupational Performance (CO-OP) approach and assistive technology for cognition (ATC) can facilitate financial management (Poncet, 2017).

The objective of this study was to examine how the COOP approach was implemented by paying attention to the type of verbal assistance (VA) provided by the therapist throughout the intervention and how it affected the participant's process of taking ownership of the CO-OP approach and therefore improving his ability to manage his finances.

Material and Method

Case study of a 41-year old man, XC, who suffered a moderate traumatic brain injury (TBI). He participated in 10 individual therapy sessions where he learned to use CO-OP in combination with ATC. Throughout the sessions, an emphasis was placed on his personal goal of managing his grocery expenses. A qualitative analysis of the verbatim of the therapist-client interactions was completed. Two (representative) extracts from sessions 6 (first independent use of CO-OP) and 9 were selected to illustrate how XC established a goal to improve the management of grocery expenses.

Results

The quantity and type of VA changed between sessions 6 and 9 (i.e. n=8 VA to 2). In session 6, the therapist provided several restarting and scaffolding assistances in order for XC to formulate a goal (Le Dorze, 2014). However, in session 9, the therapist only used restarting and explicit advice to support XC in formulating a goal, indicating improvement.

Conclusion

This study begins to fill a gap with regards to the use of CO-OP by examining how a therapist assisted an individual with TBI in taking ownership of cognitive strategies for managing expenses. A more in-depth understanding of the use of VA could benefit therapists in their clinical practice.

Keywords

financial management ;traumatic brain injury;verbal assistance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1738

SCHOOL FUTURE OF TEENAGERS WITH A SEVERE BRAIN INJURY AFTER A HOSPITALIZATION AT THE CENTRE MEDICAL ET PEDAGOGIQUE POUR ADOLESCENTS IN NEUFMOUTIERS EN BRIE FRANCE

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Introduction/Background

To study the school progress of teenagers with a severe brain injury at the end of their inpatient stay at rehabilitation center of the Centre Médical et Pédagogique pour Adolescents. All of them have benefited from both schooling and rehabilitation at the same time .

Material and Method

Only patients aged between 12 and 17 years and hospitalized between 2012 and 2017 were included in the study. Demographic data (age, sex), initial Glasgow coma scale (GCS), duration of coma, duration of intubation, time between accident and hospitalization in rehabilitation, duration of stay in rehabilitation, neuropsychological assessment results, school level prior to the brain injury and at the end of the hospitalization were noted.

Results

Eighty-six brain injury cases were examined. Only 25 patients were included in the study among them 17 males and 8 females. The average age at admission was 15.8+/-1.7 years. The average time between accident and hospitalization in rehabilitation was 145+/- 269 days. The average duration of stay in rehabilitation was 260+/- 197 days. The average GCS was 5.6+/-1.8. The average duration of coma was 9.9+/-4.1 days. The average duration of intubation was 14 +/- 6 days. Twenty teenagers have resumed their school education. Ten students have returned to pre-traumatic brain injury level, four patients have increased to a level higher than before the accident. Two patients were redirected to apprenticeship studies, two referred to Training and Orientation Assessment Unit and two have resumed their education with additional support.

Conclusion

Teenagers with severe brain injury require multidisciplinary rehabilitation and appropriate school education. The follow up of this population should be extended beyond hospitalization in a rehabilitation center.

Keywords

severe brain injury;teenageres;schooling

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1817

DEPRESSION FOLLOWING TRAUMATIC BRAIN INJURY

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Introduction/Background

Traumatic brain injury (TBI) is a worldwide epidemic problem which affects people of all age groups.

The aim of this work was to detect depressive syndrome in traumatic brain injury (TBI) patients occurring during the acute phase of their management in physical and rehabilitation department and to identify possible predictors.

Material and Method

We conducted a retrospective study in 55 TBI patients followed in physical and rehabilitation department of Sahloul Tunisia. Screening for depression and anxiety was assessed by the Hospital Anxiety and Depression (HAD) scale:

Results

Forty-five TBI men and 10 women (sex ratio = 9/2) were included in this study. Forty percent of the patients were aged between 21 and 40 years old ,66,1% had an average socio-economic level. Mean Glasgow Outcome scale following the trauma was 6/15 and 67.9% of the patients were polytraumatized.

At admission, 59% of patients had a motor impairment and 35,6% were undernourished.

Depressive symptoms were found in 52,5% of patients with an HAD scale greater than 11 (which means certain depression) and 23,6% with a HAD scale between 8 and 10, 69,1% were treated with antidepressant treatment and they have been sent to be examined by a psychiatrist .

No correlation was found between depression and sex ($p = 0,3$)initial Glasgow score ($p = 0,1$) or motor deficit ($p = 0,5$).

Conclusion

Depression can impede the achievement of optimal functional outcome Remediation of symptoms during rehabilitation significantly improved adherence to treatment.

Keywords

traumatic brain injury;depression

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1834

EPIDEMIOLOGICAL CHARACTERISTICS OF HETEROTOPIC OSSIFICATION IN PHYSICAL MEDICINE AND REHABILITATION DEPARTMENT

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Introduction/Background

The aim of this study was to highlight the epidemiological characteristics and therapeutic approaches of neurogenic heterotopic ossification (HO) in patients in a Physical Medecine and Rehabilitation (PMR) department.

Material and Method

This is a descriptive study involving all diagnosed patients having HO from January 2016 to December 2017, hospitalized in a PMR department in Sahloul Hospital, Tunisia. Epidemiological data including age, gender, causal pathology and diagnosis approach of HO were collected. Clinical, biological and imaging data were also noted.

Results

Twenty one patients with HO were included in this study. The average age was 39 years with a sex-ratio of 6/1. The main causal pathology was traumatic brain injury TBI (42,9%), polytraumatism (23,8%) and spinal cord injury (9,4%). The average intensive care stay period was 36 days. Several complications were noted mainly pressure ulcers (57,1%) and sepsis(19%).The main locations of HO were respectively hips, knees, elbows and shoulders.

The diagnosis was established by clinical examination and standard X-Ray. Scintigraphy was requested in 47,6% of cases in search of hyperactivity. Drug treatment included non-steroidal anti-inflammatory and analgesic. Rehabilitation processes such as alternate postures were performed to all patients. Preoperative radiotherapy was indicated in eight cases to control pain. Their Visual analog scale (VAS) for pain decreased from 8 to 3. Surgical resection was performed in five patients having hip heterotopic ossification with a significant sitting limitation. Surgery average delay from HO diagnosis was 20 months. These patients could comfortably sit down after surgery.**Conclusion**

Neurogenic HO occur in central nervous disorders and mainly in TBI. Early detection of HO is important and multidisciplinary management is needed for a better functional prognosis.

Keywords

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1867

PROGNOSTIC FACTORS OF TRAUMATIC BRAIN INJURY

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Introduction/Background

Current prognostic models for traumatic brain injury (TBI) are developed from diverse historical data sets.

The objective of this study was to characterize trends and prognosis of severe traumatic brain injury (TBI).

Material and Method

This is a retrospective study of traumatic brain injury including 55 patients who had been hospitalized in the Physical and rehabilitation medicine department of a University Hospital, over a five-year period.

Results

The study comprised 55 patients, with an average age of 27 years and the most of the patients were male (45 males). It was estimated that 75% of the cases were related to road accidents. The average intensive care stay period was 30 days and 66% of patients were transferred from intensive care units.

Forty one percent had severe traumatic brain injury, defined by an initial Glasgow score between 3 and 8. Most of the patients were classified as polytraumatized (67.9%). At admission, 59% of patients had a motor impairment and 35,6% were undernourished.

Associated frontal lesions were present in 32% of cases. Intracranial lesions with extradural haematoma / subdural haematoma were objectified in 31.2% of patients, the frequency of meningeal haemorrhage was of the order of 24.6%. A neurosurgical intervention was performed in 38.9% of patients. At admission, 40.9% of patients were spastic, 3.7% were vegetative. 18.7% of patients had a percutaneous endoscopic gastrostomy (PEG) tube 5.8% patient with tracheostomy tube. During their care, 57.8% developed pressure ulcers, infectious complications were isolated in 43.9% case, 9% of the patients had thromboembolic events. The Neurogenic para-osteo-arthritis was found in 35.6% of cases.

Conclusion

The prognosis of a TBI is never obvious in the first moments, several factors participate actively in the evolution and the prognosis

Keywords

traumatic brain injury;prognostic

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1896

EPIDEMIOLOGICAL PROFILE OF TRAUMATIC BRAIN INJURED IN REHABILITATION DEPARTMENT

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Introduction/Background

Traumatic brain injury (TBI) is a worldwide epidemic problem and affects people of all age groups. The aim of this study was to highlight the epidemiological characteristics and therapeutic approaches of traumatic brain injury in patients in the physical and rehabilitation department.

Material and Method

This is a descriptive study involving all TBI patients from January 2012 to December 2017, hospitalized in Physical and Rehabilitation department in Sahloul Tunisia.

Results

Fifty five patients were included in this study with a sex ratio of 4.5. The average age was 27 years.

The trauma was mainly caused by public road accidents (75%) or a work accident (10,7%). Mean Glasgow Outcome scale following the trauma was 6/15.

Most of patients (66,1%) were transferred from intensive care department and 5,6% of them came from an orthopedic department. The transfer delay to rehabilitation unit was less than one month in 30.2% of cases, between 1 and 3 months in 51.2% of cases and more than 3 months in 18.6% of cases.

The average rehabilitation stay period was 27 days.

A neurosurgical intervention was performed in 38.9% of patients. At admission, 40.9% of patients were spastic, 3.7% were vegetative. 18.7% of patients had a percutaneous endoscopic gastrostomy (PEG) tube 5.8% patient with a tracheostomy. During their care, 57.8% developed pressure ulcers, infectious complications were isolated in 43.9%, and 9% of the patients had thromboembolic events.

The heterotopic ossifications were found in 35.6% of cases.

Conclusion

Depending on its severity, traumatic brain injury may require a lifelong rehabilitation process. A comprehensive assessment of complications after traumatic brain injury is crucial to plan the appropriate management. This requires an understanding of the medical, functional, cognitive, behavioral, and psychosocial consequences.

Keywords

Brain injury;clinical profile

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1903

NEUROPSYCHOLOGICAL DISORDERS, FUNCTIONAL OUTCOMES AND QUALITY OF LIFE IN TRAUMATIC BRAIN INJURY (TBI) PATIENTS

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Introduction/Background

The goals of our study were: The assessment of neuropsychological and behavioral disorders outcomes, functional outcomes and quality of life in TBI victims. It was also to study correlations between neuropsychological and behavioral disorders with injury severity, functional status and quality of life.

Material and Method

It was a cross-sectional study including 50 patients with TBI conducted in the (PMR) department. Memory disorders were performed by the (MMS) test. Executive functions were evaluated by the DEX scale. The psychological profile was evaluated using the HAD scale and behavioral disorders were tested by the agitated behavior scale. Glasgow Outcome Scale has allowed the assessment of TBI severity in terms of disability. Otherwise, functional capacity was measured by FIM scale. Finally, health-related quality of life was measured using the QOLIBRI scale.

Results

Abnormal executive functions were noted in 41 patients (82%) with a DEX average score of 33, 20±22, 74. About psychological profile, depressive symptoms were found in 32 patients(64%). Behavioral disorders such as aggressiveness and agitation were noted respectively in 32 (64%) and 8 patients (16%). The global social functional evolution was considered as unfavorable (GOS 3-4) in 42% of the patients. Regarding to Functional Independence Measure (FIM) scale, 92% of the victims showed impairment (FIM<126). Memory impairment (MMS) and abnormal executive functions (DEX) were statistically correlated with TBI severity evaluated by Glasgow Coma Scale, and coma length. Our study showed that patients with severe memory impairment (MMS), abnormal executive functions (DEX) and depressive mood (HAD) had significant functional dependence (FIM) as well as a poor overall evolution (GOS).

Conclusion

Executive function disorders, depressed mood and memory disorders seemed to be the most frequent among neuropsychological disorders in Tunisian TBI patients. These

neuropsychological disorders are so important to evaluate but were underestimated in our rehabilitation department because of the lack of objective means of assessment.

Keywords

traumatic brain injury;neuropsychological disorders;functional outcomes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1909

INITIAL MANAGEMENT AND ORIENTATION POST RESUSCITATION CHARACTERISTICS IN TRAUMATIC BRAIN INJURY VICTIMS

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Introduction/Background

Objective: It was to evaluate our initial means of care and orientation post resuscitation characteristics in Traumatic Brain Injury (TBI) victims and to compare them with those used worldwide to identify insufficiency and to perform better care.

Material and Method

It was a cross-sectional study including 50 patients with moderate or severe TBI conducted in the (PMR) department between January and July 2016. We have established a data sheet for each patient. We collected through it; epidemiological data, clinical data and orientation post resuscitation characteristics.

Results

A total of 50 patients including 40 (80%) male and 10 (20%) female were enrolled with an average age of 32.19 ± 12.37 . Patients were reviewed with an average follow up of 4 years. Referring to the Glasgow coma scale in patients during admission, 66% had a severe accident with a score < 8 . In our series, we found that only 2 patients (4%) were admitted in a private Physical Medicine and Rehabilitation structure; there was no hospitalization in the PMR department of Sfax which does not yet include any hospitalization bed. The remaining 96% returned to their homes directly after Intensive Care Unit hospitalization. Initial investigations showed that only 36% of these patients had an ambulatory follow up in our PMR department. Their management consisted in botulism toxin injections (55%), physiotherapy (70%), ergotherapy (14%) and orthophony (11%). Otherwise, 60% escaped from any assessment and have been reintegrated into their families without follow-up. It should be noted that none of these patients have had a neuropsychological assessment.

Conclusion

The discrepancy between the number of TBI and the number of visits to rehabilitation is reported by several studies. Thus the care pathways of TBI are quite random in our population; they depend not only of the patient's clinical condition but especially on the non availability of beds in our PMR structure.

Keywords

traumatic brain injury;initial managment;orientation post resuscitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-1921

NEUROPSYCHOLOGICAL AND BEHAVIORAL DISORDERS OUTCOMES AFTER TRAUMATIC BRAIN INJURY AND THEIR CORRELATIONS WITH RADIOLOGICAL ASPECTS

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Introduction/Background

Objective: The assessment of neuropsychological and behavioral disorders outcomes in TBI victims and to study their correlations with radiological aspects in a Tunisian population.

Material and Method

It was a cross-sectional study including 50 patients with moderate or severe TBI conducted in the (PMR) department. Memory disorders, executive functions, psychological profile and behavior disorders were evaluated using the MMS, DEX, HAD and ABS scales respectively. All of the patients underwent CT scan immediately after the trauma. The nature, extent, and location of the traumatic lesions were classified on the basis of the Traumatic Coma Data Bank criteria (Marshall et al., 1983). MRI was not performed to all patients. In fact, it has been done in 14 patients; those who had delayed awakening post artificial ventilation or patients which CT scan results needs further examination by MRI.

Results

There were correlations between the elementary brain injury lesions shown on CT and memory disorders (MMS) especially for temporal ($p < 0,05$, $r = 0,37$), cortical brain contusion ($p < 0,05$, $r = 0,39$) and diffuse axonal injury ($p < 0,05$, $r = 0,45$). Furthermore, frontal contusions lesions were correlated with behavior disorders such as agitation ($p < 0,05$, $r = 0,63$). The highest DEX scores were associated with frontal contusions and diffuse axonal injury but there were not significant correlations. In our study, the extent of CT lesions mentioned by the Marshall classification was not correlated with memory impairment severity, neither with the achievement of executive function nor with behavior disorders. Lobar white matter abnormalities shown in MRI were correlated with memory disorders with ($p < 0,02$, $r = 0,53$).

Conclusion

In our study, we suggest that diffuse axonal injury, temporal and cortical lesions play a part in the development of cognitive impairment after TBI. MRI plays a more and more substantial role in the assessment of cognitive impairment.

Keywords

traumatic brain injury;neuropsychological disorders;radiological aspects

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2073

THERAPEUTIC OPTIONS FOR BEHAVIORAL DISORDERS FOLLOWING TRAUMATIC BRAIN INJURY: A REGIONAL CROSS-SECTIONAL OVERVIEW

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Introduction/Background

To give an overview of the management of behavioral disorders following traumatic brain injury (TBI) in a cohort of 129 patients, in post-acute period.

Material and Method

This cross-sectional regional cohort study included 129 adults suffering from moderate-to-severe TBI, in post acute period, and referred to medical or community based facilities in our region. A structured interview of patients and proxies collected information regarding socio-demographic data and the ongoing interventions, including psychotherapy and medication. Psychiatric outcomes were assessed by the Hospital Anxiety and Depression scale (HADS), and behavioral disorders by the Behavioral Dysexecutive Syndrome Inventory (BDSI). Each type of intervention was expressed as the prevalence in percentage of the study sample. Chi-square test, Fisher's exact test or Student's-t test were used to search an association between the type of intervention and behavioral disorders, living area, psychiatric outcomes, psychiatric history, or delay after TBI.

Results

Patients were predominantly young men (mean age 26 years and 76% males) having sustained traffic accidents (78%). Forty-four percent received no interventions; 33% received psychotherapy and 43% were on pharmacological medication. 23% received medication alone with no other intervention. The prescribed medications were antidepressants (21%), neuroleptics (18%), anxiolytics (16%), mood stabilizers (14%) but no beta-blockers. Polypharmacy concerned 20% of patients. BDSI was completed for 120 patients and 85 (71%) presented current BDS. The main factor that was found to be associated with the different types of prescription was BDS. Patients with current BDS received more frequently interventions ($p=0.004$), psychotherapy ($p=0.048$), medications, all types combined ($p=0.007$), and antiepileptics mood stabilizers ($p=0.037$).

Conclusion

Our study highlights that compliance with the current recommendations remains insufficient. Non pharmacological interventions, like psychotherapy, are inadequately implemented, although they are recommended as a first line treatment. Medications are overused, especially neuroleptics. Recommended medications, such as mood stabilizers and beta-blockers, are poorly used.

Keywords

traumatic brain injury;behavior;disease management

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2087

EVALUATION OF MEDICAL DECISION MAKING CAPACITY IN ACUTE TRAUMATIC BRAIN INJURY REHABILITATION

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Introduction/Background

Concerns regarding medical decision-making capacity (MDC) occur during acute traumatic brain injury (TBI) rehabilitation. Although a majority of providers report MDC as a common concern, the level of training is inconsistent. This presentation provides an overview of MDC assessment and recommendations during acute TBI rehabilitation.

Material and Method

MDC assessment involves a clinical interview, cognitive examination, and record review, although clinical practice varies. Clinical determination of MDC includes “has capacity,” “diminished capacity,” and “lacks capacity.” Four commonly adopted standards for determining MDC are: **expressing** a choice, **understanding** relevant information, **appreciation** of the situation and its consequences, and **reasoning** through the benefits and consequences of treatment options. While clinical judgment remains the “gold standard” for MDC assessment, instruments have been designed to enhance and support these evaluations (Table 1).

In acute TBI rehabilitation, evaluators should consider how TBI-related changes influence MDC (Figure 1). Appreciation of temporal changes in awareness and cognitive function might require assessment of MDC at multiple time points. Efforts to improve capacity, such as addressing communication barriers or treatment of delirium, might be necessary. Within the acute environment, providers have unique opportunities to assess and observe functional abilities on an inpatient service (e.g., psychology, speech therapy). Given the complexities of MDC assessment, potential “pitfalls” exist in determining MDC (Table 2).

Results

Although MDC concerns are common among individuals during acute TBI rehabilitation, there is a dearth of MDC assessment training. While determination of MDC is based upon clinical judgment, instruments enhance MDC assessment. Given the complex dynamic nature of acute TBI rehabilitation, providers should be mindful that chronic and acute factors may influence evaluation of MDC.

Conclusion

Awareness of MDC standards and TBI factors allow for more accurate assessment of MDC during acute rehabilitation.

Keywords

Medical Decision Making Capacity; Traumatic Brain Injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2722

EPIDEMIOLOGY OF SERIOUS TRAUMATIC BRAIN INJURY IN A CAPITAL OF THE SOUTH OF BRAZIL: A PROSPECTIVE STUDY

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Introduction/Background

Traumatic brain injury (TBI) is a serious public health problem due to its high incidence in young adults under the age of 35. In view of this, this present study has the objective of elucidating this gap and unveiling and better understanding the regional characteristics related to traumatic brain injury in the metropolitan region of a capital of southern Brazil.

Material and Method

This is a prospective epidemiological study carried out in the metropolitan region of Florianópolis. All patients who suffered severe TBI (Glasgow coma scale at admission ≤ 8) and entered the emergency room from March 2014 to January 2016 ($n = 154$) in hospitals, which are a reference in traumatic brain injury. All the variables collected for the study were: type of TBI, trauma cause, identification, gender, age, date of trauma, pupil and patient Glasgow.

Results

In twenty-two months, 154 patients with severe TBI were admitted to the two reference hospitals in the metropolitan area of Florianópolis. The city of Florianópolis, the city with the largest population, was where it had the highest concentration of TBI, 39 percent ($n = 60$), presenting a high mortality rate of 50% ($n = 30$), with the rest of the patients admitted, 18.2 percent ($n = 28$) of the patients. Of the 154 patients, 36.2 percent ($n = 55$) had as cause the motorcycle accident, then 22.7 percent ($n = 35$) fall, trampling 13.8 percent ($n = 21$), auto accident 11.8 percent ($N = 6$), cycling accident 2.6 percent ($n = 4$), and unknown causes 3.9 ($n = 6$).

Conclusion

The conclusion is that the TBI is a growing problem of great repercussion and over the years its statistics have been increasing. This study observe that the number of hospitalizations, and from which cities are coming from the patients identifying specific causes of the TBI.

Keywords

Traumatic brain injury;epidemiology;Rehabilitation

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2727

SUBACUTE CHARACTERISTICS OF THE SWALLOWING AFTER SEVERE TRAUMATIC BRAIN INJURY IN ADULTS

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Introduction/Background

Dysphagia is a common problem following severe traumatic brain injury (TBI), indeed, has been reported an incidence as high as 60%³. Several are the risk factors that can lead to dysphagia in TBI, among them, the severity of the injury, lower Glasgow Coma Scale (GCS) and Rancho Los Amigos Scale (RLAS) scores on admission, presence of a tracheostomy and mechanical ventilation for more than two weeks. Despite this, there are few studies that determine the characteristics of dysphagia in this population.

Material and Method

The aim of this investigation was describe the principal characteristics of the swallowing in a group of squealed patients with a severe TBI.

A total of 16 patients who survived their hospitalization due a severe TBI, during the year 2017 at the Hospital of Trabajador, were evaluated through clinical evaluation and videofluoroscopy (VFC) within a period no longer than one month after the recovery of consciousness.

Results

Of the total of patients, 56,25% were using a nasogastric tube at the moment of the assessment. 62.5% showed aspiration (PAS > 7) during the VFC, with a major prevalence of aspiration of thin liquid (40%). 68,75% of the patients demonstrated penetration (PAS: 4 or 5) also with a mayor prevalence for thin liquids. The reflex cough was present only in 12.5%. Other characteristics are shown in the following table.

Characteristic of the Swallowing	Prevalence %
Restriction of the laryngeal excursion	37%
Failure to get pharyngeal clearance	93,75%
UES opening failure	50%
DOSS mean score	4
FOIS mean score	4.5

Conclusion

The results allow to demonstrate the importance of the early assessment of swallowing in a patient with severe TBI, determining in this study 68.75% prevalence of dysphagia and a high risk of aspiration pneumonia. This population requires early and specific care for the maintenance and improvement of their quality of life, also preventing complications to their complex health condition.

Keywords

dysphagia;traumatic brain injury

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2119

SENSITIVE SENSORY STIMULATION FOR THE TREATMENT OF PERSISTENT VEGETATIVE STATE FOLLOWING TRAUMATIC BRAIN INJURY:A CASE REPORT

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Introduction/Background

An effective treatment of patients in a persistent vegetative state (PVS) caused by traumatic brain injury (TBI) is not yet available. The purpose of this study was to investigate the therapeutic use of sensitive sensory stimulation for patients in PVS following TBI.

Material and Method

Our patient is a male and 36 years of age. He had TBI (Primary brain stem injury) 75 days before admission. When admitted to the hospital, the patient was unconscious, opening eyes automatically, but couldn't avoid light, vision escape, trace things or executive command. He was under nasal feeding diet, urinary and fecal incontinence, postoperative urinary retention and pulmonary infection. He has no activities of upper and lower extremities with hypomyotonia. Therapy: 1. Take medicines for nerve nurturing, regaining consciousness, preventing seizure, resolving phlegm and protecting stomach. 2. Improve activities of extremities by exercise therapies, low or medium-frequency electric stimulation. 3. Improve bladder and bowel function by acupuncture and abdominal massage. 4. Regain consciousness by acupuncture and hyperbaric oxygen therapy. 5. Assess disorder of consciousness scale half of month, chose sensitive sensory stimulation and enhance those. Assessment: Glasgow coma scale, Barthel, video long range EEG monitoring, EEG, evoked potentials.

Results

Five months later, the patient was conscious, with improved bladder and bowel function. EEG reminded that the brain function improved significantly. Auditory evoked potentials and somatosensory evoked potentials reminded that the function of sensation conduction pathway improved significantly.

Conclusion

The sensitive sensory stimulation in combination with routine rehabilitation treatment can effectively regain the consciousness of the patients with PVS following TBI, improve ADL and the function of sensation conduction pathway.

Keywords

TBI;PVS;sensitive sensory stimulation

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2139

THE PLACEBO AND NOCEBO EFFECT IN TBI: IMPLICATIONS FOR CLINICAL TRIALS AND CARE

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Introduction/Background

Placebo and Nocebo (P/N) effects have been increasingly recognized as an important factor in clinical trial results, care paradigms, ethics, and even health insurance policy. Critical to the appreciation of the role that placebo has in healthcare is the understanding of the distinct biological and psychosocial mechanisms underlying these processes. Research into the psychological and neurobiological mechanisms underlying placebo effects (along with its counterpart nocebo) has grown remarkably in the past twenty years. Placebos are now conceptualized as a multimodal response with potential genomic influence.

Material and Method

In the postacute setting can be distinct since the many biopsychosocial impacts can be enhanced in the chronic setting. Such findings are even more profound in brain injury medicine where many of the behavioral and pharmacologic manipulations may be uniquely influenced by placebo effects. We will review a careful analysis of several postacute trials with examples of placebo effects and the implications for TBI clinical care and research. In specific clinical trials involving, behavior, pain, and cognition will be reviewed.

Results

Both the positive and negative ethical impacts of P/N have yet to be fully explored. Placebo effects have caused investigators and insurers to perhaps prematurely presume a null effect of specific therapies. The role of Placebo and Nocebo effects in clinical practice are also underappreciated and the potential role of counter intuitive placebo based therapies as well as labeling are profound.

Conclusion

Placebo effects have caused investigators and insurers to perhaps prematurely presume a null effect of specific therapies. In specific, we will discuss how P/N effects can impact clinical trial results (both behavioral and medical interventional) and examine how such effects may be better accounted for via clinical trial design. In addition a discussion of the ethics of placebo will be reviewed

Keywords

Conflict of interest

Disclosure statement:

I serve on the Scientific Advisory Board of Myomo, EIMINDA, and Oxeia Biopharma

Dr Zafonte receives research funding from NIH, NIDILRR and theUSARMC

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2141

CASE SERIES OF MTBI PATIENTS RECEIVING THE MODIFIED STORY MEMORY TECHNIQUE INTERVENTION

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Introduction/Background

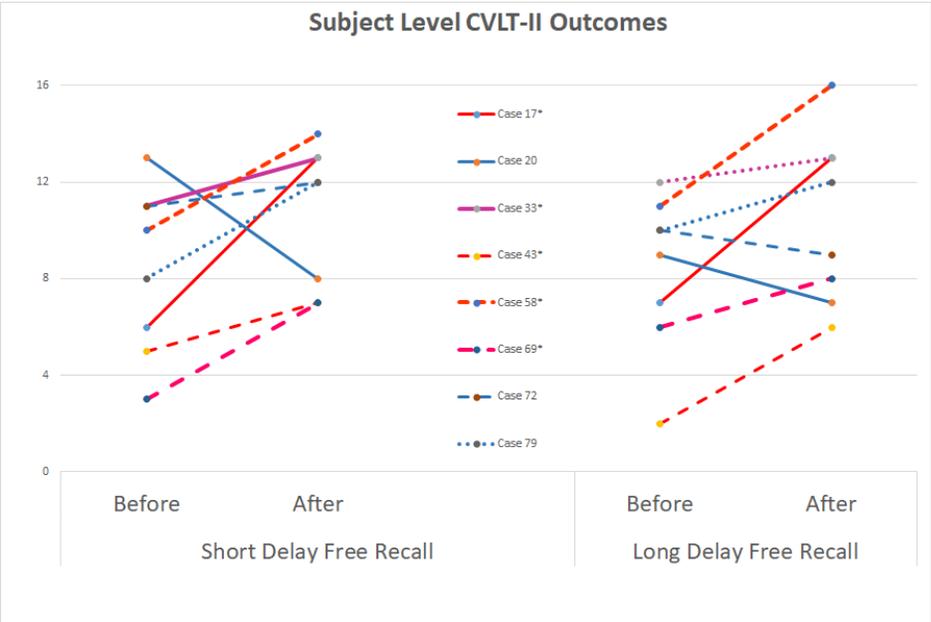
Concussion / mild TBI (hereafter mTBI) prognosis is still a divisive topic in clinical practice. While some continue to subscribe to a “full recovery model,” others note slower recovery with longer term residual symptoms that may respond well to psychotherapy (CBT) and multimodal rehabilitative care. While evidence for functional gains resulting from mTBI interventions like psychoeducation is accumulating, there is little research and support for cognitive interventions that target learning and memory, despite patient complaints in these domains. We present early evidence of possibly therapeutic gains made by chronic mTBI survivors.

Material and Method

- Design: Participants with mTBI completed a double-blind, placebo-controlled randomized clinical trial, with baseline, post-treatment and 6-month follow-up assessments. Outcomes were compared using non-parametric statistics (Wilcoxon Signed Ranks Test) for related samples given the small sample size in this pilot study.
- Setting: Not-for-profit research organization in a diverse, suburban setting.
- Participants: 5 out of 9 mTBI patients in intervention group ($N=9$).
- Interventions: Modified Story Memory Technique (mSMT) aims to improve learning by teaching *context and imagery strategies* in 10 sessions.
- Main Outcome Measure(s): California Verbal Learning Test II (CVLT-II) and Memory Assessment Scale (MAS) – Prose Memory.

Results

Treated participants showed improvement in CVLT short delayed free recall (+5/0/0/, $Z = -2.04$, $p = 0.041$) and long delayed free recall (+5/0/0/, $Z = -2.02$, $p = 0.043$) following the mSMT. No differences were observed for the MAS Prose Memory.



Conclusion

Our pilot data provides preliminary evidence for cognitive gains resulting from cognitive rehabilitation targeting acquisition of context and imagery strategies for memory. A full-scale study can better address the mechanisms of change (e.g., depression, anxiety, socialization) since one-on-one interactions introduce confounders.

Keywords

Concussion / mild TBI;Cognitive Rehabilitation;Memory Strategies

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2176

A SYNTHETIC JUDGEMENT OF THE SIMPLE DRIVING SIMULATOR FOR DRIVING EVALUATION

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Introduction/Background

We have developed the 'Simple Driving Simulator' (SiDS) and used it clinically. Normative ranges of the SiDS were calculated from the data of over 200 participants in the control group. Three performance ranges were established 'normal', 'borderline', and 'impaired', which were defined using standard deviation cut-off values in the control group. The objective of this study was to compare the performance of age-matched young adults with a traumatic brain injury (TBI) based on this three performance ranges, and to establish a synthetic judgment of the SiDS.

Material and Method

The performance of patients with a TBI, aged 18 to 35 years, was evaluated by SiDS and were compared with the control group. The performance scores for the TBI group in the 'impaired range' were calculated for each test item and used to make a synthetic judgement regarding the clinical value for the SiDS.

Results

The TBI group exhibited higher values for all four tests (nine items) than the control group. For the control group, almost of participants had performance scores in the 'impaired range' on ≤ 2 of the nine test items. For the TBI group, about two thirds of participants had performance scores in the 'impaired range' on ≤ 2 of the nine test items.

Conclusion

The numbers of an 'impaired range' of the nine SiDS items may indicate the 'driving fitness' of young adults after a TBI.

Keywords

driving simulator;traumatic brain injury;driving evaluation

No conflict of interest

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2186

A PECULIAR TRAUMATIC BRAIN INJURY - STUTTERING, MOTOR WEAKNESS AND COGNITIVE IMPAIRMENT

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Introduction/Background

Traumatic brain injury can affect multiple domains, with resultant impairment in motor, sensitive, cognitive and emotional functions. Communication problems are also common. They are usually motor speech disorders, such as dysarthria or aphasia. Stuttering consists in a speech rhythm disorder and more frequently result from a developmental problem. Acquired neurogenic stuttering is a rarer form, but it was already described.

Material and Method

The authors describe a clinical case with literature review of a minor and particular traumatic brain injury, with cognitive and motor compromise and stuttering.

Results

A 28-year-old man suffered a traumatic brain injury, from a small falling object - a lamp - when he was replacing it from the chandelier. In the first 48 hours, he presented no neurological deficits. Soon thereafter, his family started to notice stuttering (dysfemia) and right hemibody weakness.

Seeking for rehabilitation, he was admitted in our Center 3 months after the initial episode for inpatient intensive rehabilitation program. He presented cognitive impairment in several domains, stuttering, hyperacusis and right hemibody weakness (MRC 4). CT showed no alterations. Brain MRI was also unremarkable.

Methylphenidate was initiated and neuropsychological intervention was undertaken. Bromocriptine were administered and the patient start speech language pathology sessions, with improvement. The patient also presented good motor function recovery with physical and occupational therapy.

At the moment, the patient is followed in outpatient clinic, in specialist consultation. He presents dysfemia, minor cognitive impairment and hemibody muscle deficit. Functionally, total independence.

New results, from a more recent MRI, showed unspecific lesion in the left frontal lobe.

Conclusion

The authors present and discuss a very peculiar traumatic brain injury with neurogenic stuttering, hemibody muscle weakness and cognitive impairment in several domains. It is discussed the approach and the interventions. No lesions were observed initially. A recent MRI showed an unspecific lesion.

Keywords

Concussion; Stuttering ; Cognitive impairment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2257

DEVELOPMENT THE COMPUTER APPLICATIONS OF COGNITIVE REHABILITATION

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Introduction/Background

We examined the changes of cognitive functions by the cognitive rehabilitation using the computer applications.

Material and Method

1. The computer applications of cognitive functions: Following 10 tasks on attention, memory, executive function and unilateral neglect were developed. 1) cancellation of letters, 2) word recognition. 3) picture recognition, 4) word recall after categorizing, 5) tracing symbols with assigned order, 6) estimating arrival time after assigned transference, 7) pressing the button when the sound and letter were matched, 8) pressing the button when the assigned sound and the letter were matched, 9) letter cancellation, 10) canceling horizontally moving circle.
2. Subjects: 16 persons with neuropsychological disorders. 13 males and 3 females, and mean age was 45.4 (20~73) years old. Their etiologies were traumatic brain injury 10, cerebral vascular accident 5, and hypoxic ischemic encephalopathy 1. 3. Duration of the therapy: 1 month.

Results

1. Changes of the task performance: 1) Subject had difficulties in recognition of 4 or 5 words, and their performance recovered after the exercise. After categorizing words, they could recognize 7 or 8 words, and semantic encoding was effective for verbal memory. 2) The subjects showed difficulty in maintaining 2 or more pictures simultaneously. The subjects showed difficulties in patterned maze task with many symbols. 3) The estimation task was aimed to train executive function, and the task was confirmed to be efficient. 4) Attention tasks with auditory stimulus was proved to be sensitive for executive disorder. 5) Spatial attention tasks showed high scores before the therapy.

Conclusion

This program of cognitive rehabilitation have many levels of difficulty, and one can select adequate tasks. Therefore individual subject had shown significant recovery.

Keywords

cognitive rehabilitation;computer application

Conflict of interest

Disclosure statement:

This study have been cooperated with INSITE corp.

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A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2385

PREDICTIVE FACTORS OF LONG-TERM DYSPHAGIA AFTER TRAUMATIC BRAIN INJURY - A LITERATURE REVIEW

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Introduction/Background

Oropharyngeal dysphagia is common after TBI. Given the clinical heterogeneity of the lesions, is challenging to accurately predict which patients will recover fast, as opposed to the ones who will need PEG to manage long-term dysphagia (LTD). The aim of this review was to identify predictive factors of LTD after TBI.

Material and Method

Two electronic databases (PubMed and Cochrane) were searched using the query ["traumatic brain injury" AND "dysphagia" AND ("prognosis" OR "recovery" OR "evolution" OR "outcome")]. All the studies with relevant information about predictive factors of LTD after TBI published until January 2018 were included.

Results

The most consensual factors to dysphagia recovery were the TBI severity and cognitive status with studies suggesting a parallel between improvement in cognitive disability status and resolution of the swallowing dysfunction. Studies revealed that lower *Rancho Los Amigos* and higher Disability Rating Scale scores was related to LTD. Younger age has been identified as a prognostic factor for global function as well as for swallowing function recoveries, except under 3-year-old. CT scan findings as brainstem injury, midline shift and intracranial bleeds requiring emergent surgery was associated with higher risk of dysphagia, as well as a worse prognosis to return to oral feeding. Some studies found tracheostomy tube, aphonia, duration of mechanical ventilation, days to swallow evaluation and aspiration to be predictors of worse recovery. Contrariwise, in some studies, gender, days to swallow evaluation, to tube feeding or to oral intake, days on ventilation, duration of tracheostomy and videofluoroscopy parameters were not predictive of LTD.

Conclusion

Early determination of prognosis for dysphagia recovery is necessary to decide which patients will require PEG and for which ones nasogastric feeding is sufficient until complete recovery. Despite the heterogeneous methodology in the studies, common predictive factors of LTD were identified, and should be used to guide clinical decisions.

Keywords

Traumatic Brain Injury;Dysphagia;Prognosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2417

TRANSCRANIAL DIRECT CURRENT STIMULATION FOR COGNITIVE REHABILITATION IN TRAUMATIC BRAIN INJURY

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Introduction/Background

Cognitive impairment is often a common sequela of traumatic brain injury (TBI). Mild TBI has been referred to as a “silent epidemic” because the problems experienced by patients after injury are often unnoticed but can have profound consequences, such as long-term physical, mental, social, or occupational sequelae. Memory and executive dysfunction seems to be one of the most debilitating symptoms. In moderate to severe TBI cases, impairment has been seen to persist for even decades after trauma. Most survivors being young and having near normal life expectancy, the burden on public health and social care is substantial. Recent reports have documented the therapeutic potential of non-invasive neuromodulation techniques for cognitive enhancement. Here we present a case of an individual suffering from post TBI cognitive deficits having received tDCS for cognitive function recovery.

Material and Method

A 23-year-old male presented with history of fall from height and subsequently was unconscious for two days following which he developed significant cognitive deficits leading to poor functioning and he was unable to perform his routine activities including maintenance of self-care. Neuropsychological assessment showed deficits in multiple cognitive aspects particularly in memory, attention and concentration.

Patient was given 20 sessions of transcranial direct current stimulation (tDCS) over a period of 20 days (2mA current for 20 minutes in a single session with anodal stimulation at dominant dorsolateral pre-frontal cortex and cathode at occipital cortex).**Results**

There was significant improvement in cognitive functioning of the patient. He started performing usual duties and keeping adequate self-care with coaxing. His interaction with others improved and there was improvement observed on neuropsychological testing particularly in areas of verbal fluency, category fluency and working memory.

Conclusion

Brain stimulation with tDCS can be useful in improving cognitive outcomes in individuals with TBI from a neuro rehabilitative purpose.

Keywords

traumatic brain injury;tDCS;neuromodulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2450

IMPACT OF REHABILITATION ON FUNCTIONAL OUTCOME DURING FIRST YEAR OF MODERATE AND SEVERE TRAUMATIC BRAIN INJURY

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Introduction/Background

Objectives: To describe the functional level after one year in moderate and severe traumatic brain injury (TBI)

Material and Method

Study design: prospective, cross-sectional study Setting and Participants: 70 individuals with TBI were admitted directly from acute care hospitals to rehabilitation facility in Sawai Mansingh Medical College and Hospital, Jaipur (SMS). A follow up of 58 patients was done up to one year in the period from July 2011 to July 2012

Results

Results: Mean change in FIM scores from admission to discharge was 51.26 and from admission to 12 months it was 85.3 in moderate injury group. Mean change in DRS from admission to discharge was -8.19 and from admission to 12 months it was -17.76 in moderate injury group while -8.55 and -19 in severe injury group respectively. The correlation coefficient (r) between FIM and GOSE was 0.570 and between FIM and DRS was -0.8190 both of which were extremely significant

Conclusion

Conclusions: All individuals improved significantly in the inpatient rehabilitation facility in the acute and sub-acute phase with maximum gain in function seen from admission to discharge as assessed on FIM and DRS. Majority of the individuals continued to improve up till six months post trauma

Keywords

Traumatic brain injury (TBI);, Functional Independence Measure (FIM);, Disability Rating Scale (DRS)

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.02 Neurological and Mental Health Conditions - Traumatic Brain Injury

ISPR8-2476

NEUROGENIC PARAOSTEOARTHROPATHY FOLLOWING HEAD TRAUMA

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Introduction/Background

The aim of the study was to focus on neurogenic paraosteoarthropathy in patients with severe head trauma, to determine its prevalence, the diagnostic and therapeutic procedures.

Material and Method

This retrospective study was conducted at the Physical and Rehabilitation Medicine Department in Sahloul Hospital TUNISIA. We reviewed the folders of patients hospitalized for management of a severe head trauma during the period extending from January 2011 to December 2015.

Results

Forty-three patients with severe head trauma were included in the study (6.2% of the total hospitalizations). Neurogenic paraosteoarthropathy were observed in 27.9% of patients. 33% had multiple locations. The hip was the most commonly involved site (25%), followed by the elbow (16%). Functionally, grip disorders were objectified in 25% of the patients, sitting position was impossible in 75% of cases and walking was possible only in 16.7% of patients. No patient developed a nerve compression. Diagnosis of neurogenic paraosteoarthropathy was based primarily on clinical examination. Radiography detected evident neurogenic paraosteoarthropathy in 75% of cases. Ultrasonography demonstrated neurogenic paraosteoarthropathy in 33.3%. The three-phase bone scan was performed at 41.7% of cases looking for hyperactivity.

Nonsteroidal anti inflammatory drugs were prescribed to all patients, 50% of them were treated with radiation. All patients benefited from functional rehabilitation based on icing, passive mobilization and installation in alternate extreme positions. A posture brace was prescribed to 8.3% of patients.

25% of patients underwent a surgical resection of the neurogenic paraosteoarthropathy (hip: 16.7%, knee: 8.3%) after an average delay of 480 days from diagnosis. Recurrence of neurogenic paraosteoarthropathy was reported in 8.3% of patients (at the hip level).

Conclusion

Neurogenic paraosteopathy can result in a variety of complications and may increase patient morbidity. Patients with neurogenic paraosteopathy following head trauma are more likely to have a poor outcome.

Keywords

Neurogenic paraosteopathy;head trauma;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2542

NEUROLOGIC OUTCOME OF EARLY VERSUS LATE SURGERY FOR SPINAL CORD INJURY

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Introduction/Background

The study was conducted to determine whether neurologic and functional outcome is improved in traumatic spinal cord-injured patients who had early surgery (<72 hours after spinal cord injury) compared with those patients who had late surgery (>5 days after spinal cord injury). It is controversial whether early decompression following SCI conveys a benefit in neurologic outcome.

Material and Method

Patients meeting appropriate inclusion criteria were randomized to an early (<72 hours after spinal cord injury) or late (>5 days after spinal cord injury) surgical treatment protocol. The neurologic and functional outcomes were recorded from the acute hospital admission to the most recent follow-up.

Results

Comparison of the two groups showed no significant difference in length of acute postoperative intensive care stay, length of inpatient rehabilitation, or improvement in American Spinal Injury Association grade or motor score between early (mean, 2.1 days) versus late (mean, 18.2 days) surgery.

Conclusion

There are currently no standards regarding the role and timing of decompression in acute SCI. We recommend urgent decompression of bilateral locked facets in a patient with incomplete tetraplegia or in a patient with SCI with neurologic deterioration.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2513

POTTICAL PARAPLEGY: ABOUT 10 CASES.

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Introduction/Background

Pott's disease corresponds to the localization of the infectious tuberculous process (of Mycobacterium tuberculosis) on one or more disco-vertebral set. It is the most common osteoarticular tuberculosis. Pott's pain can lead to serious neurological damage involving functional prognosis.

Material and Method

This is a retrospective study of 10 patients with vertebral tuberculosis (Pott's disease) collected at the KASDI MERBAH (EHS TIXERAINE) Functional Rehabilitation Department from 2006 to 2016.

Results

The average age of our patients is 41.6 years (27-64).

In 2 patients (20%) we find a tuberculous contagion, 1 patient (10%) has a history of tuberculosis (pleural tuberculosis, cerebral abscess, ganglionic tuberculosis). All our patients had spinal pain: dorsal or dorsal-lambar preceding the neurological deficit; the average duration of onset of the deficit is 3.8 months (1-6), 9 patients (90%) have incomplete paraplegia with vesico-sphincteric disorder, 1 patient (10%) has complete paraplegia with vesico-sphincteric disorder; Objective marrow MRI: 90% dorsal involvement, 10% lumbar involvement, 60% paraspinal abscess and 30% psoas abscess. All our patients benefited from drug treatment of average duration 8.7 months (6-18), as well as surgical treatment, 5 patients (50%) of a support brace, 5 patients (50%) of Uro-dynamic exploration (40% Cystomanometry: 20% normal, 20% vesical hypertonicity with reduced capacity and 10% deemimetry: normal). The average duration of hospitalization is 5.7 months (4-7). The recovery of walking is total in 3 patients (30%), 4 patients (40%) use a cane, 2 patients (20%) a walker, 1 patient (10%) aggravation of the neurological deficit (addressed for explorations then lost of view). All our patients recovered from their vesico-sphincteric disorders.

Conclusion

In simple forms a well-conducted medical treatment alone can cure pott harm without sequelae, whereas in complicated forms the combination of medical treatment with early surgery allows the patient a better neurological recovery and rapid spinal stabilization.

Keywords

POTTICAL PARAPLEGY;drug treatment ;surgical treatment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2550

TRANSLATION AND VALIDATION OF THE SPINAL CORD INDEPENDENCE MEASURE (VERSION IV) TO BRAZILIAN PORTUGUESE

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Introduction/Background

The Spinal Cord Independence Measure (SCIM) is a comprehensive functional scale for measuring the execution of daily tasks by patients with spinal cord lesions (SCL). To date, it is the only scale designed specifically for patients with SCL, which considers performance in all aspects of primary tasks according to their value for the patient. The aims of this study was to translate and validate the SCIM IV, to Brazilian Portuguese.

Material and Method

Observational, longitudinal, and prospective study of descriptive characteristics. 30 individuals were evaluated (being 70% men, with mean age of: 45.2 ± 15.6) all presenting with chronic spinal cord injury and completed the rehabilitation program. The subjects were scored on the same day by 2 evaluators independently. In order to verify the intra-examiner concordance the SCIM-IV was applied.

Results

The intra-examiner coefficient of correlation for SCIM-IV (0.99%, $p < 0.001$) indicated a significant reproducibility.

Conclusion

SCIM-IV is a reproducible functional evaluation instrument capable of assessing the level of independence of the individual with traumatic and non-traumatic spinal cord injury.

Keywords

Spinal Injury; Translation; disability assessment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2518

VESICAL PRESSURE STUDIES IN SPASTIC PARAPLEGIA USING A SIMPLE BEDSIDE TECHNIQUE: A PROSPECTIVE STUDY

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Introduction/Background

Voiding dysfunctions and its complications are commonly encountered in persons with Spinal Cord Injury(SCI). Timely identification of type of voiding dysfunction, decisions on management and follow up is important. Effective cystometry helps to classify the voiding dysfunction and management of the problem. Water cystometrogram(CMG) is simple, easier to use, inexpensive.

Material and Method

35 Paraplegia patients with spastic bladder admitted to wards were enrolled for the study and evaluated with Water CMG and values recorded. Those with safe Vesical volumes less than 300ml were included in the study. Subjects were randomized into two groups. Group I was given oxybutynin chloride 5 mg BD and Group II given Tolterodine 2 mg LA OD and effect on the bladder was assessed using water CMG after 2 weeks. Patients were taught self-intermittent clean catheterization(SICC) along with a bladder diary and drinking voiding schedule followed by reassessment at the end of 6 weeks.

Results

Data were analysed using Statistical Package for Social Sciences (SPSS) and expressed in its frequency, percentage, mean and standard deviation. Using water CMG it was found that 25 persons had low bladder compliance with leaks and 10 patients had detrusor sphincter dyssynergia(DSD). It was also found that people who came in early for bladder rehabilitation had better improvement of vesical volume(45% more). When patients with Bladder FIM < 3(36.3 ml) was compared with FIM > 3(216.7 ml) there was statistically significant increase in vesical volume(p value < 0.001). When the two drugs were compared bladder rehabilitation within the first year both groups showed similar increase in vesical volumes whereas in cases of late bladder rehabilitation tolterodine had 75% more increase in safe capacity.

Conclusion

Water CMG is a useful tool for Rehabilitation of SCI having neurogenic bladder.
Both anticholinergic drugs improved vesical volumes in neurogenic bladder patients.
Tolerodine showed improved efficacy in late bladder rehabilitation.

Keywords

cystometrogram;Anticholinergic drugs;Neurogenic bladder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0067

EFFECTS OF A SERVICE DOG ON SOCIAL PARTICIPATION OF A C5 COMPLETE SPINAL CORD INJURY PATIENT: A CASE REPORT

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Introduction/Background

Patients with complete high cervical spinal cord injury have significantly restricted social participation even with the use of various prosthetic devices. We describe a patient with a C5 complete injury who showed remarkable improvements in social participation after obtaining a service dog.

Material and Method

During March X-8, a 48-year-old man experienced a C5 complete spinal cord injury and underwent anterior cervical fusion. In January X-7, he underwent cystostomy. He discharged from the hospital in September with Zancolli classification: C5A and American Spinal Injury Association Classification: A. Since living with his service dog, he has been giving lectures about his experiences and opinions regarding physical disabilities and barrier-free-concepts at medical institutions and schools. In October X-2, he successfully flew from Ishikawa Prefecture to Tokyo with his service dog. He received the Ishikawa Prefectural Barrier-free Governor Prize. In July X, a semi-structured interview was conducted using the International Classification of Functioning, Disability, and Health (ICF) Rehabilitation Set. The interview and analysis were performed after obtaining written consent. The ethics committee of our institution permitted this study. There are no conflicts of interest.

Results

Using a service dog positively changed the man's health condition as defined by ICF. The following outcomes were observed: ability to take initiative and focus on actions, increased motivation, clearer planning for specific care needs, physical improvement, increased resilience, increased physical movements, emergence of new roles, better ability to resolve emotional conflict, improved autonomous health management, locomotion with a service dog, communication facilitation, acquisition of stress coping measures, living with consideration of other people, acquiring a job, employment, experiencing positive emotions, reduction of psychological barrier, increased social support and empathy due to visualization of disability,

assistance from public service providers (Fig. 1).

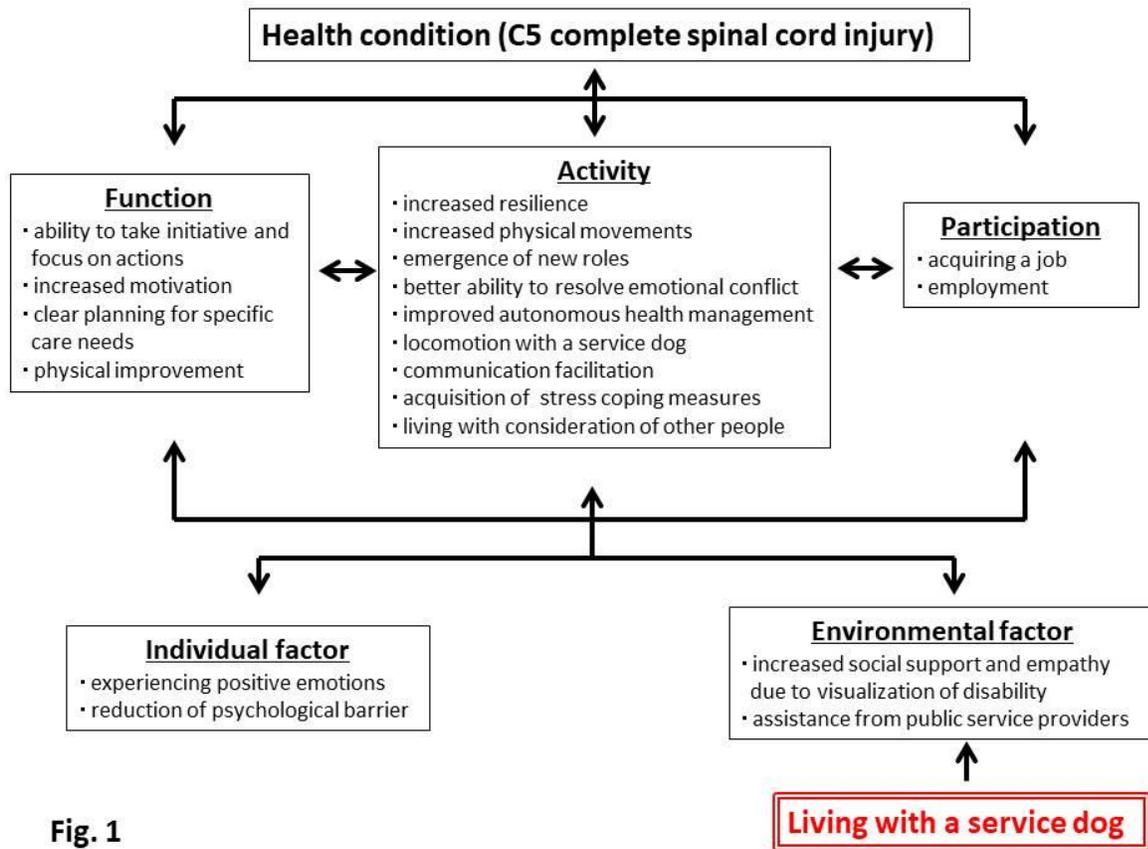


Fig. 1

Conclusion

Service dogs can encourage social participation, even for those with a complete high cervical spinal cord injury.

Keywords

complete high cervical spinal cord injury; service dog; social participation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2613

DIAPHRAGMATIC PACING IN UPPER CERVICAL SPINAL CORD INJURY REPORT

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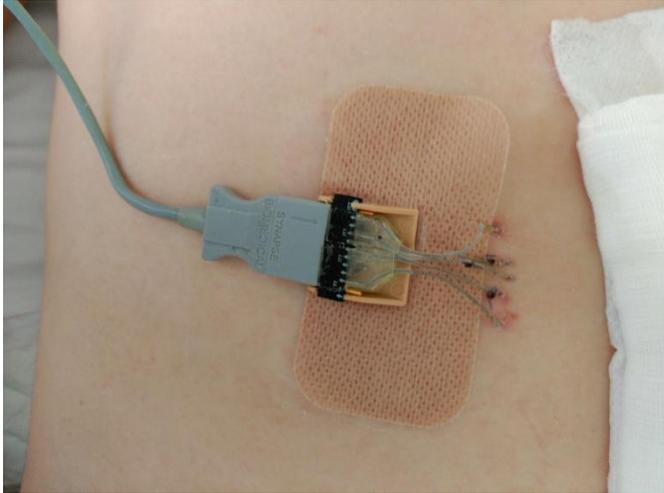
Introduction/Background

17-year-old man who accidentally fell down from a swing (29/06/16): traumatic brain injury and lateral cervical flexion with Glasgow 3 at initial assessment. After vital stabilisation he was transferred to the a reference hospital with an endotracheal tube. Once stabilised, patient was transferred to a specialized spinal cord injury clinic (I.Guttmann) with complete C2 spinal cord injury (ASIA A) without zone of partial preservation, tracheostomy, percutaneous endoscopic gastrostomy, permanent bladder catheter and 24-hour invasive ventilatory support.

Material and Method

Evaluation of potential candidates for diaphragmatic pacing includes demonstration of severe hypoventilation from diaphragmatic paralysis, as well as intact phrenic nerve function: An electromyogram was performed (08/11/2016): no phrenic nerve activity. 29/06/17: Despite the preoperative results, due to high false negative rates, intraoperative stimulation of phrenic nerve at diaphragm level was tested.

Results



intraoperative assess of phrenic nerve; since the results were positive, pacemaker through diaphragmatic approach was performed. After successful implantation patient begins an escalating pacing during waking hours.

Conclusion

Complete Upper Cervical Spinal Cord injuries (SCI) above C3, apart from its complex management it presents with added ventilatory failure due to diaphragm paralysis. Suitable candidates for diaphragmatic pacing are those with SCI above C3. The major goal of pacing is the patient's desire to be liberated from the need for non-invasive or invasive ventilation, improving their quality of life. Requirements for successful pacing include intact phrenic nerve function, but intraoperative assessment is recommended due to high false negative rates. Pacing can be performed at cervical, thoracic and diaphragmatic level; the latter has less complications but requires a specialised surgeon. At postoperative patient begins an escalating regimen of diaphragmatic pacing to strengthen and condition the diaphragm. Pacing should commence slowly hourly during waking hours. Many patients may be completely weaned from ventilatory support and some only partially

Keywords

diaphragmatic pacing ;spinal cord injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2629

CERVICAL MYELOPATHY AS A RESULT OF MULTIPLE INTRAMEDULLARY NEUROFIBROMAS AND POSTOPERATIVE REHABILITATION PROGRAM : A CASE REPORT

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Introduction/Background

We present the case of a patient, with cervical myelopathy as a result of multiple intramedullary spinal cord tumors associated with neurofibromatosis and the rehabilitation program planned after the surgical management of spinal cord compression

Material and Method

A 43 year old female patient with history of neurofibromatosis type I, was referred for evaluation of progressive spastic ataxic gait and bilateral upper extremity weakness over the last two years. Cervical magnetic resonance imaging (MRI) revealed multiple intramedullary spinal cord tumors (total number 14), extending from medulla cervical junction to lower cervical spine. Cervical laminectomy C1-C7, gross total resection of the intraspinal tumors and meningeoplasty was performed. After the surgical procedure, the patient was admitted in rehabilitation clinic, presenting spastic quadriplegia (ASIA B, C7) and total functional dependence (Barthel Index: 0/100). The multidisciplinary rehabilitation program included physical therapy, occupational therapy, bladder and bowel management, aquatic therapy and psychological support.

Results

Eight months after the initiation of inpatient rehabilitation program, the patient presented significant clinical and functional improvement. At discharge, the patient was able to stand with a minimum support and walking using AFO's and walker for short distances while for longer distances using a wheelchair was necessary. Moreover the patient improved Barthel index (70/100), having a moderate dependence in the activities of daily living. An intermittent catheterization program was implemented following improvement of hand function leading finally to cessation of self catheterization due to initiation of voluntary urination.

Conclusion

Multiple intramedullary neurofibromas and resultant spinal cord compromise pose challenging management problems in patients with neurofibromatosis type 1. Radical resection of intraspinal tumor components combined with a post-operative multidisciplinary rehabilitation program can lead to a notable amelioration of neurological function.

Keywords

Neurofibromatosis;cervical spine;quadripareisis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0224

ASSESSMENT OF THE PATIENT'S STATE WITH A SPINAL CORD INJURY (SCI) CHRONIC SITUATION USING INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH (ICF).

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Introduction/Background

Actuality of SCI rehabilitation increases all over the world every year in connection with the increase in the number of car accidents, the popularity of extreme sports, wars and technogenic catastrophes.

According to research on assessment of patient's state with SCI chronic situation was completed a literature review, in result of this review the brief ICF core set for SCI chronic situation was included in formalized rehabilitation card with additions from comprehensive ICF core set for SCI chronic situation.

Categories were used from 4 domains and were expressed in patients complains and difficulties. Categories reflect impairments of basic body functions and structures, limitations of activity and participation, influence of environmental factors on rehabilitation process and integration of a person into society.

Material and Method

Active developing methods of robotic-assisted rehabilitation and innovational medical technology demand modern approaches of dynamic assessment and using evidentiary methods.

Objective assessment methods are protocol of American Spinal Injury Association (ASIA), Visual Analog Scale (VAS), Rankin scale, Modified Ashworth scale of muscle spasticity, Medical Research Council Scale, Functional Independence Measure (FIM) and Medical Outcome Study 36-Item Short-Form Health Survey (MOS SF-36).

Results

Data obtained with the application of the above assessment tools were correlated with the grades of the common determinant and, in case of body structure assessment additionally with the second determinant.

Conclusion

This method of the patient's state assessment may be used as an instrument for help to:

1. Identify and evaluate the patient's problems and their severity
2. Make a rehabilitation plan
3. Facilitate interaction inside the multidisciplinary team and between doctors
4. Assess rehabilitation efficiency
5. Give objective information about dynamics of the state and his abilities and capabilities to patient, his relatives and medical staff
6. Track the dynamics of changes between hospital cases and patient's activity at home.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0239

DOCTOR I CAN'T SEE ANYTHING: PRES AND AUTONOMIC DYSFUNCTION IN SPINAL CORD INJURY

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Introduction/Background

Autonomic dysreflexia is a vegetative manifestation that consists of a dysregulation of the parasympathetic activity in spinal cord injured people above the T6 level. The main complications of autonomic dysreflexia are high blood pressure, headache, sweating, and tachycardia. We report a clinical case of a quadriplegic patient with posterior reversible leukoencephalopathy syndrome secondary to an autonomic dysreflexia.

Material and Method

Clinical case: A 56-year-old man, who is quadriplegic C6 AIS A since 2009, has had vegetative instability for several days in a context of infected pressure ulcer. He suddenly suffered from hemi cranial headaches, as well as right lateral homonymous hemianopia and paresthesia of the right upper limb in the same time as a very high blood pressure. He was transferred to the neurological emergencies for a suspicion of hemorrhagic stroke after epileptic seizures. In neurology, the diagnosis of PRES was retained thanks to the regressive nature of the neurological symptoms, and the appearance of posterior T2 hyper signals on the head MRI. The treatment consisted in regulating the high blood pressure and prevent the seizures. The evolution was favorable.

Results

PRES is a reversible neurological syndrome, explained by vasogenic edema during episodes of hypertensive attacks with cerebrovascular dysregulation. It is a rarely described complication of autonomic dysreflexia in the spinal cord injured patients. The initial clinical presentation evoked a hemorrhagic stroke as a priority. The few cases described in the literature (*Chaves, Spinal Cord, 2008*) of PRES in spinal cord injured patients are of severe prognosis and often lead to the patient death.

Conclusion

Any central neurological symptom in a context of vegetative instability must lead to an emergency head MRI. Our case is singular thanks to the early diagnosis and management, probably explaining the complete reversibility of the symptomatology.

Keywords

PRES;autonomic dysreflexia;head MRI

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0268

AUTONOMIC DYSREFLEXIA: LET'S TALK ABOUT A CASE

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Introduction/Background

Autonomic dysreflexia is a common complication of patients with spinal cord injury and can have very serious consequences if it isn't treated quickly and correctly. Despite that, unfortunately, at least in our country, not all the health professionals are aware of this pathology.

Material and Method

We want to present the case of a young paraplegic patient due to a traumatic lesion at level C6-C7 to illustrate how important is to know about autonomic dysreflexia. In addition, we want to review its correct management.

One day, our patient started with an acute pulsatile headache. He made an emergency call and an ambulance approached. The HR was 45 and the BP 220/130. The patient just was transferred to the nearest hospital in supine position (30 minutes on road) and he even was administrated 500 ml of saline serum. The patient had a suprapubic catheter, but, no one checked it.

At the moment of entry in the emergency services of the hospital the patient was hemiparetic. A CT scan revealed a hemorrhagic stroke. After 18 days in Intensive Care Unit, the patient sadly past away. He was 30 years old and totally independent in self-driven wheelchair.

Results

The reason of the brain hemorrhage was an episode of autonomic dysreflexia secondary to an obstruction in the suprapubic catheter. The reason why the patient carried that catheter was a refractory bladder sphincter *dyssynergia*.

In this work, we will discuss about the measures that should had been taken in the first place. We will also do a brief resume of the most relevant aspects of this pathology.

Conclusion

Is very important for all health professionals to know the existence of autonomic dysreflexia and how to manage it: the first measures are the simplest and the most important.

Keywords

spynal cord injury complications;autonomic dysreflexia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0322

SECONDARY SARCOPENIA IN SPINAL CORD INJURED SUBJECTS

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Introduction/Background

The European Working Group on Sarcopenia in Older People (EWGSOP) categorized sarcopenia in primary-age related and secondary sarcopenia. Whole body Dual-energy X-ray Absorptiometry (DXA) measurement remains the gold standard for muscle mass measurements. Sarcopenia is defined by measuring muscle mass (ratio of appendicular skeletal mass (ASM) / height² (kg/m²), (skeletal muscle index, SMI) and muscle strength. An alternative for muscle strength (in Newton, N) is muscle cross-sectional area (CSA) in cm² (a surrogate for muscle effectiveness or loading-force). The present study investigated if a similar approach to define secondary sarcopenia in spinal cord injured subjects

Material and Method

The study included 31 paraplegics with complete paraplegia compared with 50 controls. All were examined by whole body DXA (Norland XR 36, USA) regarding muscle mass (relative appendicular skeletal mass (RASM), in Kg) and peripheral quantitative computed tomography (pQCT XCT-3000, Stratec, Germany) in 66% of tibia's length (muscle CSA, mm²). Sarcopenia in the spinal cord injured subjects was defined as SMI, as well as relative ASM, RASM) by the residual method, respectively.

Results

Paraplegics had significantly lower values in muscle area (CSA) and RASM ($p < 0.001$) compared to controls. In the adjusted analysis according to age, height and relative fat mass, paraplegia was associated with lower values of RASM ($\beta \pm se; -2.74 \pm 0.28, p < 0.001$).

Conclusion

In SCI paraplegics muscle CSA can be measured. Muscle mass can be measured also. This study suggests that we may categorize paraplegics with the current functional definition of

EWGSOP for sarcopenia for research purposes. The sensitivity and specificity of this measurement remains unclear.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0468

AN AUDIT ON VENOUS THROMBOEMBOLISM PROPHYLAXIS IN PERSONS WITH SPINAL CORD INJURY IN UNIVERSITY MALAYA MEDICAL CENTRE, MALAYSIA

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Introduction/Background

Background and Aim:

Venous thromboembolism (VTE) is a common complication in acute spinal cord injury (SCI). In the presence of established consensus on VTE prophylaxis for SCI population, this study aims to audit the current clinical practice for prevention of VTE in persons with SCI in University Malaya Medical Centre.

Material and Method

Materials and methods:

This is a retrospective study on 79 patients who presented with acute SCI and were referred to the SCI Rehabilitation service from January to December 2015. We collected data on age, gender, aetiology, level of injury, impairment, co-morbidities, spine-related intervention, methods VTE prophylaxis (mechanical and pharmacological) and the occurrence of VTE.

Results

Results:

The sample mean age was 54.7 years; the subjects were predominantly male (67 %), of non traumatic aetiology (68%) and had lumbosacral neurological level (32%). Approximately half (54%) had spine-related intervention. Forty-seven percents received VTE prophylaxis, of which 15.2% received pharmacological treatment, 19% received mechanical only and 13% received both pharmacological and mechanical intervention. Seven and 14 patients had pharmacological and mechanical prophylaxis correspondingly within 72 hours of admission. The majority (72.7%) received fixed dose unfractionated heparin while the remaining received LMWH. All had thromboembolic deterrent stockings as mechanical prophylaxis with one patient had additional intermittent pneumatic compression device. Patients with traumatic aetiology, surgically managed, incomplete injury and paraplegia had higher proportions of receiving VTE prophylaxis across both pharmacological and mechanical prophylaxis. In this series, five patients had VTE complication: one had PE and 4 had lower limb DVT. None of those who developed DVT received prophylaxis within 72 hours admission.

Conclusion

Conclusion:

Prescription of VTE prophylaxis according to the recommended guideline for acute SCI in our centre is low. The reasons for this needs further assessment.

Keywords

venous thromboembolism;rehabilitation;implementation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0557

ASSESSMENT OF AUTONOMIC DYSFUNCTIONS IN PATIENTS WITH SPINAL CORD INJURY: A CROSS SECTIONAL STUDY

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Introduction/Background

The importance of all the domains of autonomic functions and their impact on successful rehabilitation of spinal cord injury (SCI) victims is often overlooked. The purpose of the study was to find out the problems associated with their dysfunctions and correlate their influences, if any, by neurological level, duration and mode of injury.

Material and Method

The subjects above 18 years of age, either sex, irrespective of cause & level of injury and off the strict bed rest were evaluated using a questionnaire and clinical examination. The Degree of injury was assessed by modified ASIA impairment scale. The extent of lesion was assessed by voluntary control of perineal muscles. The international Spinal Cord Injury data sets were used for obtaining detailed information about the various autonomic dysfunctions.

Results

The most common cardiovascular complication was orthostatic hypotension (OH); the incidence of OH (26%) was high in acute injury. The Deep venous thrombosis and autonomic dysreflexia found in patients with higher SCI lesions. Pulse rate was significantly higher with thoracic and lumbar level ($p < 0.05$). Sleep apnoea is one of the most common complications after cervical SCI. There was significant difference between the temperature above and below the neurological level ($p < 0.05$). The average bowel evacuation was 36.3 ± 21 minutes. The perineal sores were the most common problem; rectal prolapse was seen in one female patient. There was no significant correlation of USG-KUB findings with either duration or neurological level of injury. There was significant correlation (< 0.05) between psychogenic erection and duration of SCI. The resumption of menses was complete with duration of injury more than 24 months.

Conclusion

SCI patients should be made aware of the autonomic dysfunctions besides their only concern about mobility. The health care professionals should be able to understand and evaluate the autonomic dysfunctions in order to decrease morbidity and improve the quality of life.

Keywords

Autonomic Dysfunctions ;Spinal Cord Injury;Cross Sectional Study

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0566

NEUROLOGICAL AND FUNCTIONAL OUTCOMES OF PATIENTS WITH TRAUMATIC SPINAL CORD INJURY IN WESTEN OF ALGERIA: SERIOUS CONSEQUENCES OF ROAD TRAFFIC ACCIDENTS

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Introduction/Background

The rate of road traffic accident reports grows annually in Algeria causing a high number of traumatic spinal cord injury (TSCI).

The aim of this study was to describe the epidemiological characteristics of patients with TSCI in a PRM department in westen of Algeria and to analyze their neurological and functional outcomes.**Material and Method**

We conducted a retrospective descriptive study by reviewing medical records of patients with TSCI admitted to our department from April2016 to March2017. The recorded variables included age, gender, etiology, the level of injury, the initial treatment, length of stay, occurrence of complications and the America Spinal Injury Association(ASIA) impairment scale, the urinary drainage modalities and the functional outcome of patients at their discharge.

Results

A total of 39 patients were included, the mean age was 32.72 ± 13.86 years (16-73), and the male/female ratio was 5,49. The main cause of TSCI was road traffic accidents accounting for nearly more than 52%. The most common injury sites were the thoracic (56%) and the cervical (36%) spinal cord. The initial treatment consisted on surgery in 80% of cases. The average of length of stay was 114 ± 129 days with occurrence of complications as pressure ulcers(56%), urinary tract infections(41%) and para-osteo-arthropaties(5%).

At discharge, the proportions of ASIA grades A, B, C, and D were 60%, 12%, 5%, and 23%, respectively. Patients acquired a walking without assistance (8%), a walking with assistive devices (22%), a gait orthosis (9%), an autonomy of use of the wheelchair (41%) and finally 20% were dependent on a third party. 18% of patients had voluntary micturition, 63% had acquired a clean intermittent self-catheterization, 10% had acquired a clean intermittent third-party catheterization and 9% had an indwelling catheterization.**Conclusion**

TSCI is a public health problem and a major cause of autonomic function loss and bladder/bowel dysfunction. Preventative measures against TSCI must be taken.

Keywords

Traumatic spinal cord injury;Functional outcomes;Neurological outcomes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0667

PAIRED ASSOCIATIVE STIMULATION AFTER SPINAL CORD INJURY: WHO SHOULD UNDERGO?

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Introduction/Background

Paired associative stimulation (PAS) combines electrical stimulation of peripheral nerves (ESPN) with transcranial magnetic stimulation (TMS) and is believed to induce plastic changes in the human corticospinal tract after spinal cord injury (SCI). The aim of the present study was to investigate the advantages of PAS added to the general rehabilitation protocol for chronic SCI.

Material and Method

The study was monocentric sham-controlled. Patients with lower paraplegia 3-12 months after the trauma were randomly divided into study and control groups: 11 and 9 respectively. TMS was delivered over vertex using a round coil with 90-100% absolute intensity. ESPN of both *n. peroneous* and *n. tibialis* was performed with supramaximal intensity at *fossa poplitea* for 5 minutes for each nerve. The interval between TMS and ESPN was 0.2ms. The intervention consisted 30 sessions of 1Hz PAS in total.

Results

After the intervention, the improvement of motor and sensory function (via ASIA impairment scale) was observed in both groups but the intergroup difference was insignificant (Mann-Whitney U test, $p=0.0675$). Spasticity (via modified Ashworth scale) was not changed significantly but 4 patients noticed more uncontrolled movements. Noticeably, patients with no peripheral M-response at the beginning do not demonstrated any improvements. The best functional outcome was found into patients with preserved MEP in the study group. Two patients with no MEP at the beginning from the study group showed unstable MEP after the month.

Conclusion

PAS could be seen as an additional tool to facilitate the recovery after chronic SCI. Patients with preserved MEP may benefit more from this technique. On the other hand, the absence of M response could be considered as an exclusion criterion while the selection of individuals for PAS. The choice of stimulation protocols is still arguable that can lead to diverse and controversial results.

Keywords

chronic spinal cord injury;paired associative stimulation;motor evoked potentials

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0679

INTRODUCTION OF CLEAN INTERMITTENT SELF-CATHETERIZATION IN ADULTS WITH SPINAL CORD INJURY: PROPOSAL FOR A PROTOCOL

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Introduction/Background

Clean intermittent self-catheterization (ISC) remains the reference technique of bladder emptying in patients with spinal cord injuries (PSCI) and has many advantages. Nevertheless, there is no clear consensus nowadays concerning the introduction of this technique. The main objective of this work was to develop an educational approach combining the use of ISC guide and therapeutic education session (TES) for the implementation of this technique.

Material and Method

This was a two-year prospective, evaluative and comparative study with two groups of PSCI who have already learned and used ISC for urine drainage. One group had benefited from an educational approach, associating TES and ISC guide. We conducted an evaluation and comparison of the results of various theoretical and practical skills required to realize the ISC, before and after a 3-month period of the TES in both groups. A correlation study was carried out later to determine the predictive factors for adhesion to ISC.

Results

Sixty PSCI divided into two groups of 30 were included. Post-TES assessment and ISC guide submission concluded that there was a significant improvement in both the theoretical and practical skills required for ISC compared to the control group. After the TES, all single patients adhered to the ISC. Married patients admitted to ISC in 83.3% versus only 25% of divorced patients. A positive correlation for civil status was objectified ($p = 0.002$). The subjective evaluation of the program showed that all our patients were satisfied with the content of the TES session and the ISC guide. However, 48% preferred several short sessions, to better assimilate the amount of information considered important.

Conclusion

At the end of our study, we were able to develop a customized diagram adapted to PSCI combining the ISC guide and TES for the installation of the ISC. The implementation of this approach could improve the management of this population.

Keywords

Therapeutic education; Spinal cord injuries; Intermittent self-catheterization

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0701

UNEXPECTED FOREIGN BODY IN THE BLADDER OF A SPINAL CORD INJURED

PATIENT: A CASE REPORT

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Introduction/Background

Clean intermittent catheterization (CIC) is the gold standard method for neurogenic bladder management among the patients of spinal cord injury (SCI). Although CIC is a suitable method for SCI, infection, hematuria, urethral trauma, and the remaining of a foreign body are some of the complications of CIC. Here, we presented a case with an unexpected foreign body detected in the bladder of patient performing CIC.

Material and Method

A 40-year-old female patient who diagnosed T10 AIS A was interned to our rehabilitation service. At another rehabilitation center, she was undergone an anticholinergic drug (Oxybutynin HCL 10 mg/day) and advised self-CIC (6 times a day) due to the detrusor overactivity. The patient described increase in spasticity and urinary leakage recently. As a result of the investigations, the urinary tract infection was diagnosed. In routine urinary system ultrasonography evaluation, 19 millimeters sized linear echogenic appearance was detected in the bladder. The bladder was evaluated by urinary system computed tomography with the pre-diagnosis of bladder stone, and two rod-like foreign body densities were observed in the bladder.

Results

The foreign bodies were extracted from the patient's bladder with cystoscopy by urologist, and it was found that the extracted foreign bodies were the 'insertion sleeves' which were located on the catheter that prevented hand contact during CIC. The patient claimed that she was unaware that impairment of the catheter integrity during any CIC. After the removal of foreign bodies from the bladder, the patient showed a decrease in urinary leakage and spasticity grade.

Conclusion

The catheter-related parts may remain during the CIC in the bladder. To prevent this complication, a proper education should be given to neurogenic bladder patients about CIC performing. When foreign bodies detected in the bladder of patients performing CIC, it should be considered to may be a part of the catheter fragment.

Keywords

Clean Intermittent Catheterization; Neurogenic Bladder; Spinal Cord Injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0793

IMPACT OF A THERAPEUTIC EDUCATION PROGRAM ABOUT INTERMITTENT SELF-CATHETERIZATION ON THE PSYCHOLOGICAL PROFILE OF A GROUP OF SPINAL CORD TRAUMA PATIENTS

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Introduction/Background

The management of intermittent self-catheterization (ISC) among spinal cord trauma patients (SCTP) responds in every respect to the program of therapeutic education, which once correctly established, will ensure bladder continence primordial for psychosocial balance.

The objectives of this work were to study the psychological profile of SCTP through a validated scale and to evaluate the impact of a therapeutic education session (TES) on their psychological profile.

Material and Method

This was a two-year prospective and comparative study with two groups of SCTP. The psychological evaluation was carried out by the HAD scale in both groups. Each patient had to answer two subscales, one concerning anxiety (HAD-A), the other depression (HAD-D). One of the groups had also benefited from an educational approach, associating TES and ISC guide. We conducted an evaluation and comparison of the impact this program on the psychological profile after a 3-month period.

Results

Sixty PSCI divided into two groups of 30 were included. We noticed that 68% of our patients had a moderate anxiety state (HAD-Mean Anxiety = 10.9) and 19% were in serious anxiety. In addition, we found a moderate depressive state in 42% of patients and a severe depressive state in 33% of patients. Women were more anxious and more depressed (HAD-D=11.6) than men (HAD-D=10.7). We have noted a predominance of depression and anxiety in patients whose age does not exceed 30 years. The anxiety component was higher among SCTP with incomplete involvement (HAD-A=10.2 versus 9.7). Statistical analysis found that anxiety improved with integration into TES workshops. Indeed, the average HAD-A had gone from 10.2 to 9.9. This objectified difference was not significant ($p = 0.326$). Integration into TES workshops had no effect on the depression component.

Conclusion

ISC provide a good psychosocial balance through the reduction of incontinence and infectious episodes. Indeed a well-educated patient could better manage his anxiety.

Keywords

Spinal cord injuries;Intermittent self-catheterization;psychological profile

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0834

PROGNOSTIC VALIDITY OF A CLINICAL TRUNK CONTROL TEST FOR INDEPENDENCE AND WALKING IN INDIVIDUALS WITH SPINAL CORD INJURY

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Introduction/Background

One of the main concerns of the individual with a Spinal Cord Injury (SCI) is the possibility of being able to recover his/her independence and walking. A clinical trunk control test was developed at the Mexico City-based National Rehabilitation Institute (INR). The test was reliable and valid, and could have prognostic value for walking, and independence. The main objective of this work was to determine prognostic validity for independence and walking of a trunk control clinical test in individuals with SCI.

Material and Method

A cohort study was carried out in all individuals with sub-acute SCI who had not received a rehabilitation program. The trunk control test was performed at baseline at treatment initiation and independence and walking were evaluated at 1, 3, 6 and at 12 months of the first evaluation.

Results

90 patients were recruited, including 35 with adequate initial trunk control (>13 points in trunk control test) and 55 patients with inadequate trunk control. The survival analysis revealed that the trunk control scale can predict gait and independence in individuals with a SCI at one year. The Cox analysis demonstrated that the AIS (ASIA Impairment Scale) is the most important variable to predict gait and the neurologic level to predict independence. Furthermore, it was proven that the trunk control scale is predictive of gait and independence independently of the AIS and the neurologic level of the SCI.

Conclusion

The present study revealed that the trunk control scale is useful for providing a prognosis of independence and walking at one year in individuals with SCI.

Keywords

trunk control;spinal cord injury;prognostic valididty

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0871

INTRATHECAL BACLOFEN (ITB) THERAPY TO SEVERE SPASTICITY

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Introduction/Background

To determine the outcome of intrathecal baclofen (ITB) therapy in patients with severe spasticity.

Material and Method

The baclofen of 50µg was administered to 39 patients who had severe spasticity due to 27 spinal cord injury, 3 hereditary spastic paraplegia, 2 cerebral bleeding, 1 syringomyelia, 1 spinal cord infarction, 1 cerebral infarction, 1 subpial lipoma, 1 spastic cerebral palsy, 1 subarachnoid hemorrhage, 1 autoimmune encephalitis in lumbar puncture as a schooling injection, and the pump burial operation were performed to 29 patients. The change of the spasticity was evaluated by the Ashworth score points. Follow up period was 82 months on average (10~137 months).

Results

The mean Ashworth score for rigidity decreased from 3.0 ± 0.7 to 1.3 ± 0.5 ($p < 0.01$). The improvement of the spasticity was remarkably admitted in all cases, and the pain from the spasticity disappeared. The pain was reduced by adjusting the amount of the medicine without the exacerbation of the spasticity. Two catheter-related complications were found. Additional operations of the exchange of the catheter were needed. The improvement of the spasticity was recovered of additional operations.

Conclusion

In Japan, 25 cases have been clinically examined since 2002, and remarkable clinical effects were proved. And since April 2006, 1895 cases have been implanted of a programmable subcutaneous pump by the end of January 2018. The spasticity of the pain who doesn't obtain the improvement by the taking treatment is improved enough, and the reduction of the pain is seen, and the ITB therapeutic effect is expected that the improvement of patient and family's QOL can be attempted from the experience of these series.

Keywords

spasticity;spinal cord injury;ITB therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0914

LONG-TERM OUTCOME OF PATIENTS WITH SPINAL CORD INJURY IN MOROCCO

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Introduction/Background

Spinal cord injuries (SCI) are responsible for para or quadriplegia-type motor impairment that can be very disabling in daily life activities. The study aims to describe the long-term outcome of people suffering from SCI in Morocco while specifying their limitations of activity and their specific needs in terms of health care.

Material and Method

The national database of people with disabilities in Morocco set up following the national disability survey in Morocco in 2014 was interviewed to identify adult SCI patients. Subsequently, the data for this specific population were re-analyzed in a descriptive mode. These data included demographic characteristics, geographical distribution, clinical presentation, activity limitations, support from the entourage, and needs and expectations in terms of medical care.

Results

Our population consisted of 136 people, including 24 tetraplegia, with an average age of 55.8 years and a slight female predominance (52.2%). 50% were married, 81.6% were illiterate and 62% were unemployed. The geographical distribution varied widely throughout the Moroccan territory. 53.5% had contracted their disability as adults with 43% of the cases as a result of a non-traumatic cause. Activity limitations were dominated by significant dependency in movements and body washing, and 80% relied heavily on their family or close entourage for activities of daily living. Only 36% reported having access to specific health care, and 89% said that their highest expectation was free health care, medicines and technical aids for people with disabilities.

Conclusion

The situation of SCI in Morocco is characterized by many difficulties, some of which would be avoidable if specialized care still almost unavailable in Morocco could be implemented.

Keywords

LONG-TERM OUTCOME;SPINAL CORD INJURY;MOROCCO

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-0971

EFFICACY OF THE EXOSKELETON APPLICATION IN THE SPINAL CORD INJURY PATIENT'S REHABILITATION.

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Introduction/Background

500.000 people are injured spine each year. A real revolution in the rehabilitation and expansion of the barrier-free environment was the exoskeletons appearance. Evaluation of the safety and effectiveness of the Exoskeleton + FES application in the SCI rehabilitation was the aim of this study.

Material and Method

92 of SCI patients, 6 months after incomplete SCI; thoracic region. Objective: lower paraparesis - <3 points (Muscle Strength Grading Scale); muscle tone - <3 points (Ashworth scale); safe function of the upper extremities. 2 groups. Patients had robotic-assisting walking: 46 patients had Lokomat + FES (control group), 46 patients had exoskeleton + FES (study group). Rehabilitation course included 15 trainings. Safety was assessed via physical and instrumental examination (blood pressure, heart rate, saturation, electrocardiography). Truck stability was evaluated via video analyses. Spine muscles below SCI and gluteus were tested with electromyography during strength test. Physiological cost index was calculated using MacGregor's equation.

Results

Significant changes in the neurological status were not revealed in both groups. BP values were changed by not more than 15% from baseline, HR and ECG was within acceptable values. The saturation was 96-99%. PCI decreased at average by 32%. Basic group had better results in Strength test: ratio "Average strength/Myogram average amplitude" was increased. Maximum strength after trainings didn't change but signal amplitude decreased that means improvements in back and gluteus muscles control. Spectral analysis of the ground reactions comparing dynamic walking parameters was done. Spectral power decreased after 15th training on exoskeleton. Decreasing of the spectral density on Fx, Fy and Fz means that patient's gait became more stable in longitudinal and transverse directions.

Conclusion

We can do conclusions on the safety and clinical efficacy of the Exoskeleton + FES application in the SCI patient's rehabilitation. And Exoskeleton is not only an assistive device, but also an instrument for rehabilitation treatment.

Keywords

exoskeleton;gait;spinal cord injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1004

IS ACTIGRAPHY SUITABLE FOR SLEEP ASSESSMENT IN C4 TETRAPLEGIA?

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Introduction/Background

Preliminary findings showed that head-mounted actigraphy is more sensitive to movements during sleep than wrist-mounted actigraphy, and suggested that it is a feasible alternative for sleep assessment in patients with C4 tetraplegia. To confirm these findings, sleep assessment based on actigraphy was compared with polysomnography (PSG) in these patients.

Material and Method

Head and wrist actigraphy, and PSG were conducted out overnight, at the Sleep Disorders Unit of Loewenstein Rehabilitation Hospital, in 5 patients with AIS grade A C4 tetraplegia, and in 11 healthy control subjects. Several sleep assessment variables were computed concomitantly by head and wrist actigraphy, and by PSG.

Results

Patients' PSG values of total sleep time (TST), sleep efficiency (SE=TST/time in bed), wake after sleep onset (WASO), sleep latency (SL), and number of awakenings during sleep (NOA) were 341.40±12.42, 81.20±5.09, 48.66±20.38, 15.38±10.96, and 21.80±8.22, respectively. Head-mounted actigraphy values of the same variables were 422.75±29.90, 97.90±0.93, 1.75±2.06, 5.25±5.12, and 3.0±3.56, respectively. Actigraphic head and wrist NOA and WASO values were highly correlated ($r=0.97$, $p<0.05$), and the difference between their mean values was non-significant, but on most of the measured variables actigraphy indicated less wakefulness than did polysomnography ($p<0.05$). Furthermore, whereas the difference between C4 tetraplegia patients and controls was non-significant in the wakefulness indicated by the

mean values of all the sleep assessment variables, C4 tetraplegia patients showed significantly less wakefulness than the controls on the mean values of wrist-mounted actigraphy NOA and TST, and on all head-mounted actigraphy variables ($p < 0.05$).

Conclusion

Although sleep assessments using head-mounted actigraphy was similar to that of wrist-mounted actigraphy, both failed to detect wakefulness that was detected by PSG in patients with AIS A-C C4 tetraplegia. Therefore, our findings do not support the use of actigraphy for sleep assessment in these patients.

Keywords

actigraphy; Polysomnography; Teraplegia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1031

« HANDISOINS 44 », A HEALTHCARE SINGLE SERVICE DESK IN FAVOR OF DISABLED PEOPLE

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Introduction/Background

The multifactorial difficulties of access to healthcare for the disabled people notably led in France to a ministerial mission which led to the signature of the "Romain Jacob's Charter". Nantes'University Hospital wished to set up an organisation of healthcare, whose objectives would be a simplicity of use, adapted and secure managements, and an easier medical regulation of acute care.

Material and Method

In 2006, a phone call number was set up 24/24 and 7/7 by the medical staff within the department of neurological Physical Medicine and Rehabilitation of Nantes' University Hospital, intended for any doctor, indoor or outdoor, with the aim of getting any information about rehabilitation programs or to be helped in the orientation of a patient towards an acute medical care.

The direct access by patients, supported by a public financing of the Regional Healthcare Authority (ARS), consists of a single phone number for any disabled person wishing to obtain information about his/her orientation and/or access to primary and specialized healthcare. The staffs of the call unit are receiving a specific training and are supported by a nurse specialized in neurological MPR.

Results

This organization is assessed by monitoring indicators (weekly mean of 10 medical calls 85% outdoor calls, 90% problems immediately solved) and by the impact of the project on the target public, on behavior changes and on the organization evolution: directly expressed satisfaction of the calling doctors, directly expressed satisfaction of the patients for instance within the framework of a gynecological or obstetric follow-up, reassurance of acute healthcare departments (e.g. ICUs) by the signature of an indoor charter.

Conclusion

« Handisoins 44 » should lead to formal networks simplifying the local access to healthcare of the disabled people and justifies the search for ways of its sustainability.

Keywords

access to healthcare; networks; single service desk

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1054

DEMOGRAPHIC AND CLINICAL CHARACTERIZATION OF PATIENTS WITH TRAUMATIC SPINAL CORD INJURY FROM UNIT OF PHYSICAL MEDICINE AND REHABILITATION CENTER (UMFRC) OF MEXICO CITY

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Introduction/Background

With an incidence of 18.1 cases/million of spinal cord injury in Mexico, knowing epidemiological changes worldwide and without recent studies in our country, the objective of our study was to determine the demographic and clinical characteristics of patients with traumatic spinal cord injury (tSCI) in the UMFRC (national referral hospital).

Material and Method

Observational, cross-sectional and retrolective study. Records with a diagnosis of tSCI from September 1, 2010 to August 31, 2016 were reviewed. Demographic and clinical characteristics were recorded. Descriptive and inferential statistics were performed for association between variables (ANOVA and Chi-square).

Results

The medical records of a total of 489 patients were analyzed. The male/female ratio was 4.6:1, average age: 38.6+15.18 years; education predominantly middle school (30.9%); in occupation, employees (63.8%). Injury mechanisms: falls (39.7%), motor vehicle accidents (MVAs) 37% and violent acts (17%). Most frequent associated lesions: polyfractures (11.9%) and hemopneumothorax (10.4%). 81.8% of patients underwent surgery. Average evolution time at admission: 58.12+68.05 days; average days of hospital stay 36.19+19. Complete paraplegia (37.2%) and incomplete paraplegia (26%) were more frequent; as well as the thoracic level (50.7%); neurological level C4 predominating (13.1%); likewise, ASIA A (49.5%) followed by ASIA C (22.9%); cauda equina syndrome (11.9%) the most frequent. Violent acts predominated in men ($P < 0.000$). Falls were more frequent for ASIA A ($P < 0.000$); MVAs were significantly more frequent for cervical injuries ($P < 0.000$) and for central cord syndrome ($P < 0.005$). Incomplete tetraplegia was the most common secondary to MVAs ($P < 0.000$), complete paraplegia was the most frequent secondary to falls, violent acts and crush injuries ($P < 0.002$), ($P < 0.03$) and ($P < 0.01$), respectively.

Conclusion

The demographic and clinical profile of the LMT in Mexico presents very similar characteristics to other countries, however, it has undergone an epidemiological transition, currently ASIA A, less than 50%.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1061

COMPLICATIONS IN SUBACUTE TRAUMATIC SPINAL CORD INJURY AND THE IMPACT IN PATIENTS FROM UNIT OF PHYSICAL MEDICINE AND REHABILITATION CENTER OF MEXICO CITY

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Introduction/Background

Because of the epidemiological changes and limited information of complications in subacute traumatic spinal cord injury, our objective was to determine the complications and their limitations to culminate rehabilitative management in patients with traumatic spinal cord injury (tSCI) in the unit of physical medicine and rehabilitation center of Mexico City.

Material and Method

Observational, transversal and retrolective study. We analyzed files from 1/September/2010 to 31/August/2016 obtaining demographic and clinical data, complications, transfers due to severity and causes that limited their rehabilitation. Descriptive and inferential statistics were performed, for association of variables (ANOVA and Chi square).

Results

The medical records of 489 patients with tSCI were analyzed; average intrahospital stay: 36.19±19 days. Main complications: urinary tract infections (UTIs) 77.5%; anemia (56.6%), depression (44.6%), pressure ulcers (PU) 43.8%; neuropathic pain (43.6%); nociceptive pain (42.5%), spasticity (39.3%), rhythm disturbances (13.7%), orthostatic hypotension (OH) 12.7%, lower respiratory tract infection (LRTI) 7.0% and deep vein thrombosis (DVT) 2.5%. Most frequent associated peripheral nerve injury, multiple radiculopathy 18.6%. Due to the severity

and instability, 29.7% of patients required secondary transfer to: multiresistant UTIs (6.1%), fever of unknown origin (3.1%), complicated LRTI and PU (2.7%, respectively), DVT (2.2%); re-entering only 26.89%. Of the 489, 22.7% did not complete their rehabilitation due to: urosepsis (5.5%), thrombosis (3.1%), complicated PU (2.2%), LRTI (2.0%). UTIs occurred more frequently in ASIA A ($P<0.000$) and complete paraplegia ($P<0.004$); PU predominated in complete paraplegia ($P<0.000$), thoracic levels ($P<0.004$) and ASIA A ($P<0.000$). Nociceptive pain was associated with ASIA A ($P<0.05$); spasticity was predominant in incomplete tetraplegia, cervical level and ASIA A ($P<0.000$), as well as OH in incomplete tetraplegia ($P<0.003$) and cervical level ($P<0.004$).

Conclusion

Complicated UTIs were the main complication due to frequency, determinant of transfer and limitation to complete rehabilitation; secondarily, PU and thrombosis also delay and limit rehabilitation in the subacute tSCI.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1194

HEAD- AND WRIST-MOUNTED ACIGRAPHY AND POLYSOMNOGRAPHY IN PARAPLEGIA

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Introduction/Background

Head- and wrist-mounted actigraphy have been studied to identify feasible methods of sleep assessment for patients with tetraplegia. The present study compares these methods with polysomnography (PSG), in patients with paraplegia.

Material and Method

Head and wrist actigraphy, and PSG were conducted overnight, at the Sleep Disorders Unit of Loewenstein Rehabilitation Hospital, in 11 patients with paraplegia T1-T12 (10 with AIS grade A, 1 with grade C), and in 11 healthy control subjects. The sleep assessment variables total sleep time (TST), sleep efficiency (SE=TST/time in bed), wake after sleep onset (WASO), sleep latency (SL), and number of awakenings (NOA) were evaluated concomitantly, by head and wrist actigraphy, and by PSG.

Results

In the healthy control subjects, PSG did not differ significantly from wrist-mounted actigraphy on any of the studied sleep assessment variables, and from head-mounted actigraphy on any of them, except WASO. In the patients with paraplegia, no significant differences were found between PSG and wrist-mounted actigraphy on any of the studied sleep variables either, but head-mounted actigraphy indicated significantly less wakefulness than PSG on all corresponding sleep variable values ($p < 0.05$).

Conclusion

Results indicate that wrist-mounted actigraphy is suitable for sleep assessment in paraplegia, but that head movements may not be sufficiently sensitive for sleep assessment in paraplegia.

Keywords

Actigraphy; Polysomnography; Paraplegia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1300

PREVENTION AND TREATMENT OF OSTEOPOROSIS AFTER SPINAL CORD INJURY: A SYSTEMATIC REVIEW

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Introduction/Background

Spinal cord induced osteoporosis is a significant health condition associated with fragility fractures beneath the level of injury. In the scientific literature several treatment options have been proposed. The aim of this paper is to review the current literature about treatments' efficacy for osteoporosis in spinal cord injury.

Material and Method

A systematic literature search is conducted in four electronic databases: PubMed, Embase, The Cochrane Library and PEDro. All identified records are analysed by title, abstract and if relevant by full text to determine if they meet all inclusion criteria. Additionally, the included RCTs are judged to a quality control according to the Cochrane Handbook for Systematic Reviews of Interventions, Risk of bias assessment. Due to the heterogeneity of the included trials no meta-analysis is performed.

Results

Thirty-two randomized controlled trials are included. Bisphosphonate therapy, if applied correctly, is effective to optimize bone quality, in both the early and chronic phase of the disease, although the evidence is debatable. Moderate-quality evidence suggests that intravenous administration of zoledronic acid is potentially the best approach to tackle this condition. Rehabilitation techniques, although widely used, show no proven efficacy on this matter. In addition, numerous experimental therapies have been proposed, but require further research to prove their applicability.

Conclusion

This systematic review suggests that bisphosphonate administration could attenuate sublesional bone loss, while we did not find conclusive evidence about various rehabilitation techniques. Although this paper does not provide final evidence, it could be a useful tool for future research purposes.

Keywords

Spinal Cord Injuries;Osteoporosis;Therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1350

USABILITY OF THE PARTICIPATION AND QUALITY OF LIFE (PAR-QOL) OUTCOMES TOOL-KIT WEBSITE FOR SPINAL CORD INJURY

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Introduction/Background

Spinal cord injury (SCI) is a life-changing event as it incurs primary impairment (e.g., paralysis, bladder dysfunction), as well as secondary health conditions (e.g., spasticity, pressure sores), and impacts on life domains (e.g., housing, transportation). As a result, assessing quality of life (QoL) post-SCI is challenging since QoL can be impacted in various ways depending on specific (or a combination of) health conditions and life domains. To address these challenges, the Participation and Quality of Life (PAR-QoL) website, an online knowledge mobilization tool, was developed to aid clinicians and researchers in the selection of QoL outcome tools specific to SCI. The aim of this study was to evaluate the usability and use of the website.

Material and Method

Using a technology acceptance framework, an online usability survey was developed and employed to gain information about how the website was used, perceived ease of use, and improvement recommendations. The actual use was assessed through a 26-item survey and through Google analytics. Recruitment targeted researchers and clinicians who worked with individuals with SCI. Survey and web data were analyzed using descriptive statistics.

Results

Forty-six individuals responded. More than 60% used the website to find tools for work. The website was perceived as easy to use by 80% of respondents. To improve the website, respondent suggested rearranging classification, developing a French version, and adding more up-to-date evidence. There were a total of 181,179 users who made 303,810 visits to the

website between April 2012 and November 2017. Returning visitors comprised 13% of the total visits.

Conclusion

The PAR-QoL website was perceived to be an important and useful knowledge mobilization tool with QoL outcome tools for SCI that are easy to find. Usability may be improved through modification of navigation processes and improved organization of content, which may facilitate greater uptake.

Keywords

Quality of life ;Outcome tool;Usability

No conflict of interest

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A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1362

PREDICTING COMMUNITY REINTEGRATION AFTER SPINAL CORD INJURY

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Introduction/Background

The degree to which a person with SCI is an active, productive member of society, well integrated into family and community life, is a complex phenomenon influenced by many factors. These factors include physical characteristics of the injury (neurological SCI level and severity, impairment at the organ level and body dysfunctions, functional problems), personal characteristics (demographics, lifestyle, behaviour and psychoemotional), and the environment (physical, social, attitudinal, and cultural issues).

Purpose. To determine the factors influenced on the community reintegration of people with SCI.

Material and Method

A total, 219 people with SCI (1-25 years after SCI) who received independent life skills and recreation camps in a Landscape Therapy and Recreation Centre were involved in research. Database were studied cross-sectionally, and a subset of 109 individuals who were also enrolled in a 10 year longitudinal study. Main Outcome Measures: Life Situation Questionnaire-revised (LSQ-r, J.S.Krause); Comprehensive ICF Core set for SCI. Ethical approval has been obtained from the Lithuanian Bioethics Committee.

Results

Statistically significant interactions were found (ANOVA): between age and years post-injury on physical independence; between neurological level / severity and gender on mobility; between SCI complications (spasticity, pressure sores, and infections of urinary system, contractures) and psychoemotional state on daily life activities; year post-injury and education level on employment. The predicted functioning in daily life factors (regression analysis β coefficients) of people with tetraplegia was significantly related to the age, education, post-injury time, self-confidence, social interactions and family support ($P < 0.05$). However, in paraplegia significant factors included post-injury time, medical complications, self-confidence and psychoemotional state ($P < 0.05$).

Conclusion

The present study indicates that these factors are inadequate to explain most of the variation in community reintegration after SCI, they might appropriately be used during post-injury time to adjust and ensure support and environment, promoting self-confidence and social activity of people with SCI.

Keywords

No conflict of interest

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A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1378

SCHWANNOMATOSIS PRESENTING AS CAUDA EQUINA SYNDROME: OUTCOMES AFTER COMPREHENSIVE REHABILITATION APPROACH

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Introduction/Background

Schwannomatosis is a rare disorder characterized by benign peripheral nerve sheath tumors arising from Schwann cells. More commonly seen in cervical and lumbar regions, cauda equina compression accounts for only 6% spinal tumors. We present a case of Schwannomatosis with cauda equina and upper limb paresis managed with a comprehensive multidisciplinary rehabilitation approach, after rejecting surgical treatment.

Material and Method

A 36-year-old man, with 2-year diagnosis of Familial Schwannomatosis (SMARCB1 gene mutation), denoted upper and lower limb weakness, back pain, inability to walk and bladder dysfunction that required permanent catheterization. Physical findings revealed a neurological level L2, American Spinal Injury Association (ASIA) grade C according to the International Standards for Neurological Classification of Spinal Cord Injury, and 19 points score in Spinal Cord Independence Measure III scale. MRI evinced large tumors occupying the spinal canal, partially at level D2 and totally at levels D12-S1, with secondary compression of medullar cone and cauda equina roots. Patient started a rehabilitation program consisting in: postural changes, respiratory and muscle strengthening physiotherapy, gait and daily activities re-education, bladder and bowel re-education and wheel-chair use training.

Results

After 6 months of treatment, the patient managed to perform therapeutic walk with walker and supervision. Training in transfers from wheelchair allowed him to perform daily life activities independently. He also handled self-catheterization and regulation of bowel habit with laxatives. Patient was discharged with L2 ASIA D and 57 points score in SCIM III scale.

Conclusion

Schwannomatosis is characterized by peripheral nerve sheath tumors that very rarely affect the central nervous system by compression. Surgical management is a proper indication when refractory pain and neurologic deficits appear. We consider the need to enhance the role of the PM&R multidisciplinary approach, as it led to acceptable functional results, improving significantly the patient's personal autonomy.

Keywords

Schwannomatosis; Schwannoma; Cauda equina

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1379

EFFECT OF TWO DIFFERENT PROGRAMS OF ROBOTIC ASSISTED GAIT TRAINING IN INDIVIDUALS WITH CHRONIC MOTOR INCOMPLETE SPINAL CORD INJURY

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Introduction/Background

Gait training is one of the main objectives in rehabilitation of motor incomplete spinal cord injury (SCI). There are different modalities of locomotion training, being the robotic orthosis among them, and offering until now, positive outcomes. However there's still a lack of evidence of the optimal training characteristics.

OBJECTIVE

To determine the effect of two different training programs with robotic gait orthosis for patients with chronic motor incomplete SCI .

Material and Method

Study design: randomized, blinded to the observer, clinical trial. Patients from the National Institute of Rehabilitation (INR) with motor incomplete SCI, with at least 6 months of evolution and who were able to walk , were eligible. Patients were randomly assigned to either one of the two different training groups: 30 minutes or 60 minutes training group. Both groups received a training period of six weeks, five days a week. Assessments of gait pattern analysis with the GaitRite instrument, functional assessment with Spinal Cord Independence measure (SCIM), walking index for spinal cord injury (WISCI) and quality of life with Life satisfaction questionnaire (Lisat-9); repeating such evaluations in a 6 and 12 months follow-up.

Results

12 participants were studied. After 30 training sessions with the robotic orthosis, both groups had significant improvements in gait as well as in SCIM, LISAT-9 and WISCI. No significant differences between groups were found.

Conclusion

Robotic orthosis gait training has a positive effect improving gait pattern in incomplete SCI. Until now, there are no significant differences between a 30 minutes and a 60 minutes training program.

Keywords

spinal cord injuries;gait;Robotic Orthosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1387

RESILIENCE, COPING AND SPINAL CORD INJURY : A PILOT STUDY FOR THE VALIDATION OF A SPECIFIC SCALE

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Introduction/Background

Resilience corresponds to one's ability to positively outcome while experiencing aversive situation. It may be linked with a disparity of coping strategies after a spinal cord-injury (SCI). After a recent work realized in a population without SCI, suggesting the influence of Empathy and Alexithymia, the aim of our work consisted in studying their relative contribution on resilience in a sample of SCI patients.

Material and Method

The survey consisted in the French version of the Connor-Davidson resilience scale (CDRISC10), the interpersonal reactivity index (IRI), the Toronto-alexithymia-scale (TAS20), the Brief-cope scale (b-COPE), the Hospital anxiety-depression scale (HAD) and the sense of coherence scale (SOCs), administered to 17 SCI patients included in the French study QualiPREPS (qualitative analysis of SCI patients' perception of a systematic medical follow-up). Mean scores for full scales and their respective dimensions were calculated. The correlations between the different constructs were analyzed and the predictors of resilience were highlighted on the basis of multiple linear regression studies.

Results

Mean scores calculated for anxiety/depression, adaptation, sense of coherence and resilience were comparable to those calculated for a sample of adults with no SCI. Resilience presented significant positive correlation with copying ability and empathy, and significant negative correlation with alexithymia. Our data suggested that two dimensions of alexithymia (i.e., difficulty to describe one's own emotions and externally oriented thinking) and one dimension of empathy (fantasy ability) are negative predictors of resilience. By contrast, three dimensions of empathy (perspective taking, empathic concern, personal distress) positively influenced the resilience.

Conclusion

We present the first analysis of resilience predictors in SCI patients. However, our study is limited by the small number of patients included into the survey. It justifies a scaling up in order to increase the strength of our conclusions.

Keywords

empathy;alexithymia;predictors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1389

WHAT IS THE EFFECTIVENESS OF UPPER LIMB REHABILITATION AFTER TETRAPLEGIA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

Individuals with cervical spinal cord injury experience tetraplegia with dramatic impairment of upper limb (UL) including hand function and decreased autonomy. In absence of very recent evidence and meta-analysis, we addressed UL rehabilitation effectiveness after tetraplegia.

Material and Method

Two independent reviewers performed the systematic review and meta-analysis addressing PUBMED, PEDRO, CENTRAL and SCOPUS®. We considered studies with a randomized controlled trial design, published in English language, which included individuals with tetraplegia and measured UL rehabilitation effect on strength, somesthesia, hand function and autonomy.

Results

From 573 records identified, 24 studies were included totaling 517 participants with C2 to C7 tetraplegia (ASIA A to D). Interventions lasted from 66 to 3780 minutes. Three different strategies were used i) *bottom-up* (namely massed practice, Functional Electrical Stimulation – FES, resistance or robotic training), ii) *neuromodulation* (i.e. electrical nerve, trans-cranial or magnetic stimulations), or iii) *top-down* (brain computer interfaces with FES or virtual reality). The 17 studies analyzed displayed heterogeneity for all outcomes except for strength. Overall, strength significantly increased with positive but non-significant effect on hand function and autonomy. Sub-analysis revealed a significant effect on strength only for bottom-up strategy. All other sub-analyses albeit non-significant revealed at least a medium effect size for all outcomes with exception to the very small effect size displayed for somesthesia.

Conclusion

These results support the effectiveness of UL rehabilitation on strength using. There is a potential interest of using bottom-up and neuromodulation strategies to improve hand function and autonomy but with heterogeneity between interventions and participants. Conversely, there is no evidence for top-down strategy and interventions targeting somesthesia appear ineffective. Further effort on funding may promote high-quality multi-centric studies with increased

standardization in intervention and participants to completely address UL rehabilitation effectiveness after tetraplegia while separating recovery and compensation effects.

Keywords

Top-down;bottom-up;neuromodulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1422

CAUDA EQUINA SYNDROME IN A TERTIARY CARE CENTER – CHARACTERIZATION AND REHABILITATION IMPACT

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Introduction/Background

Cauda Equina Syndrome (CES) reflects injury to the lumbosacral nerve roots of the cauda equina and will classically produce impaired sensory modalities and lower motor neuron signs with flaccid lower limbs, areflexic bladder and bowel.

The purpose of this study was to characterize patients diagnosed with CES and assess the impact of rehabilitation through the functional independence measure (FIM) variation between admission and discharge. **Material and Method**

Retrospective longitudinal study on a cohort of all patients admitted to a portuguese rehabilitation center between 01/01/2015 and 15/09/2017. Clinical files were consulted, and relevant data was collected and reviewed. Inclusion criteria was the diagnosis of CES. Exclusion criteria were the absence of information on the FIM scores and insufficient clinical information regarding the diagnosis.

Descriptive statistics were used to analyse the patient characteristics. As ordinal data FIM values were displayed with median, interquartile range and coefficients of variance, both at admission and discharge and Shapiro-Wilk and Wilcoxon tests were applied. **Results**

Of 1008 patients admitted, 965 were excluded for not matching the inclusion criteria, 21 for insufficient information and 1 for absence of FIM values, remaining 21 patients (2,1%).

There were 11 females for 10 males, mean age was 54,7 years and the average length of stay was 51,7 days. The most frequent causes for the CES were surgeries of L4-L5 and L5-S1 disc herniation with 6 patients each (28,6%). There was a second admission in 4 patients.

Median FIM score at admission was 99, with interquartile range of 24,25 and coefficient of variation 24%, while at discharge, it was 114, 19 and 17%, correspondingly. A statistical significant difference ($p=0,000$) between admission and discharge FIM scores was found. **Conclusion**

Despite the reduced number of patients in this study, the impact of rehabilitation and functional improvement observed with the FIM scale seems undeniable.

Keywords

Cauda Equina Syndrome;Functional Independence Measure;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1440

RELIABILITY ASSESSMENT OF ELECTRICAL IMPEDANCE MYOGRAPHY USING TWO DIFFERENT HAND-HELD ELECTRODE ARRAYS

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Introduction/Background

Electrical impedance myography (EIM) has been used to quantify muscle changes in different neuromuscular diseases.

Material and Method

Hand-held sensors of different sizes (large and small sensors) were used to evaluate the inter- and intra-rater reliability of the biceps brachii muscle in 20 healthy control subjects by two raters. The EIM testing procedures were repeated 5–8 days after the first experiment. Intra-class correlation coefficient (ICC) analysis was conducted for resistance, reactance and phase angle at two different current frequencies (50 and 100 kHz).

Results

Both the intra- and inter-rater reliabilities were highly reproducible for the large sensor, which had higher ICCs (ICCs=0.84–0.986) than the smaller sensor (ICCs=0.281–0.947).

Conclusion

High-frequency current tended to improve the ICC for the small sensor. The results demonstrate reasonable repeatability of the hand-held electrode array for EIM measurements and suggest that electrode array size should be appropriately selected based on the muscle being tested.

Keywords

Electrical impedance myography (EIM)

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1447

EFFECT OF COMBINATION UPPER EXTREMITY ROBOTIC THERAPY IN SPINAL CORD INJURED PATIENTS : RANDOMIZED CONTROL TRIALS

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Introduction/Background

There have been few studies of upper extremity rehabilitation robots in patients with spinal cord injuries. Especially, there are more few studies on the effects of treatment by applying combined upper extremity robots for rehabilitation. Therefore, in this study, we investigated the effect of combined upper extremity robot therapy on rehabilitation of spinal cord injury patients.

Material and Method

The subjects were selected for the patients with cervical spinal cord injury. The subjects received upper extremity rehabilitation therapy using two different type of upper extremity robots. Armeo power was applied for proximal upper extremity training and Amadeo was applied for distal upper extremity training. The outcome measure are as follows; upper extremity MMT, grip power. graded and redefined assessment of strength, sensibility and prehension(GRASSP), korean version of spinal cord independence measure 3(KSCIM-3).

Results

The total number of subjects was 15. After intervention, all the muscle strength of the upper extremity were improved(In particular, the C5(elbow flexion), C7(elbow extension) and the sum of MMT). The grip power increased in full grasp, lateral pinch, and three-jaw chuck items. The results of SCIM-3 measurement showed improvement in all category. Especially bathing(upper extremity), dressing(upper extremity), grooming and overall score showed significant improvement. The score of the strength in the GRASSP item were increased.

Conclusion

In this study, it was confirmed that combined upper extremity robot treatment is effective for patients with cervical spinal cord injury.

Keywords

Robotic rehabilitation;Spinal cord injury;Clinical trials

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1464

TRANSTIBIAL PROSTHESIS IN SPINAL CORD INJURED

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Introduction/Background

Spinal cord injury and amputees rehabilitation are fundamental study areas of Physical Medicine and Rehabilitation (PMR). These are true working groups in which the role of the physiatrist is central.

This overlapping syndrome represent a real challenge to rehabilitation and demonstrate the need for specialized multidisciplinary teams.**Material and Method**

Data collection with the patient and in the clinical process.

Results

A 46-year-old male patient was referred to the PRM department after trans-tibial amputation of the left lower limb.

The patient suffered a work accident in 1999 with L1 fracture and performed surgical fixation resulting in AIS-A paraplegia (bilateral L3 sensory level, right L3 motor level, non-testable motor level on the left). Since then he has been walking with an Ankle Foot Orthosis (AFO) on his left leg and a crutch.

Due to chronic wound, transtibial amputation was performed in October 2009. As a result, endoskeletal prosthesis was used, with a distal pin and a fixed joint, with an interface dermo 343 from Ossur , and an AFO of the right tibia-tarsal per pendent foot was also prescribed. In 2016 he was diagnosed with seminoma for which is under follow-up of oncology and urology with periodic chemotherapy treatments.

The patient maintains neurogenic bladder follow-up, with intermittent algaliations. Maintain regular intestinal transit with training every second day. Presents multiple interurrences with pressure ulcers in the zones with hypoesthesia.

He is autonomous under the use of prosthesis and one crutch and maintains his work activity.

Conclusion

Given the conjunction of these pathologies it is necessary to adapt the intervention of the rehabilitation team to the particular case. The timely follow-up of patients with spinal cord injury prevents multiple complications. And proper prescription of support products is fundamental to maintaining patients' autonomy, especially in amputees.

This case demonstrates that often our greatest success may be just maintaining the patient's functional capacity.

Keywords

spinal cord injury; transtibial prosthesis; multiples condition's rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1505

NEUROLOGICAL AND FUNCTIONAL IMPROVEMENTS FOLLOWING HAL EXOSKELETON REHABILITATION IN ACUTE AND CHRONIC SCI PATIENTS

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Introduction/Background

Several studies revealed that Hybrid assistive Limb (HAL®) Locomotion training induces improvements in functional and ambulatory mobility due to an effective treadmill training based on a neurological controlled feedback in chronic paraplegic patients after SCI.

The purpose was to determine the neurological and functional improvements of HAL® Locomotion training in acute and chronic SCI patients.

Material and Method

In total 30 acute and 70 chronic SCI patients were included in this longitudinal prospective study. The patients performed 60 sessions of a body weight supported treadmill training using the HAL® exoskeleton in a 12 week period of time.

Assessment of motor and sensory function of all patients has been achieved using the International Standards for Neurological Classification of SCI examination, prior to training and after completing the intervention. Functional outcomes were measured by using the 10-Meter-Walk-Test (10 MWT), 6-Minute-Walk-Test (6 MWT), Timed-Up-And-Go-Test (TUG-Test) and the Walking-Index-for-Spinal-Cord-Injury II Score (WISCI-II-Score).

Results

Acute and chronic patients improved in treadmill training after using HAL®. In terms of functional mobility all patients improved their performance in 10 MWT, 6MWT and TUG compared to baseline. Significant gains occurred in the lower extremity motor scores (LEMS). The majority of the patients improved in their WISCI-II-Score. The lesion level in chronic SCI did not significantly influence the functional outcome. According to time since injury a cut-off of 12 month significantly divided the groups in acute and chronic SCI.

Conclusion

HAL-Training induces significant improvements in ASIA motor scores and functional mobility in chronic and acute SCI patients.

Keywords

Spinal Cord Injury;HAL;Locomotion

No conflict of interest

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A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1583

MELATONIN SECRETION IN PATIENTS WITH SPINAL CORD INJURY

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Introduction/Background

We evaluated the secretion of melatonin and the sleep quality in spinal cord injury patients versus healthy volunteers.

Material and Method

This observational non-randomised study was conducted from June 2016 to January 2018 and includes tetraplegics, paraplegics and healthy volunteers. Urinary 6-sulfatoxy-melatonin (U6SM) was measured during 5 periods per day (8h-12h; 12h-16h; 16h-20h; 20h-00h; 00h-8h). Sleep quality was evaluated on Pittsburgh Sleep Quality Index and sleepiness on Epworth Sleepiness Scale. Correlation between U6SM dosage and sleep quality and sleepiness was analysed.

Results

Preliminary Results 12 tetraplegic patients AIS A and B (10 men and 2 women) and 7 paraplegics AIS A and B were included in the study. No patient took neuroleptics or beta-blockers. No patient had a brain trauma associated.

8 tetraplegic patients (66,6%) had an absence of melatonin secretion, 4 (33,3%) had a decreased secretion with a shift of melatonin secretion. Unlike data of the literature, secretion of melatonin was not strictly normal in paraplegic patients: 4 (57,1%) had an absence of melatonin secretion, one T10 AIS A patient had a shift of melatonin secretion, 2 (28,5%) T9 and T10 AIS A patients had a normal melatonin secretion.

The Pittsburgh Sleep Quality Index showed a poor sleep quality in tetraplegics (10,18±4,62) versus (7,57±3,64) in paraplegics and Epworth Sleepiness Scale showed a moderate sleepiness in tetraplegics (11,18±4,30) versus (4,57±2,50) in paraplegics.

Conclusion

Secretion of melatonin is abnormal in patients with tetraplegia. It may partly explain sleep impairment of patients with tetraplegia. Further studies are needed to better understand the impact of this absence of melatonin secretion and to assess the effect of melatonin treatment in this population of patients.

Keywords

spinal cord injury;sleep;melatonin

No conflict of interest

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A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1624

EPIDEMIOLOGICAL PROFILE OF PARAPLEGICS IN PHYSICAL MEDICINE AND REHABILITATION DEPARTMENT

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Introduction/Background

Paraplegia is a public health problem due to its medical complications . The purpose of this work is to evaluate the epidemiological, clinical and para-clinical profile of paraplegic patients as well as the predictive factors for the development of major complications (pressure sores, neurogenic paraosteopathy and urinary tract infection) in order to make recommendations aimed at improving the medical care and the prognosis of these patients.

Material and Method

Descriptive cross-sectional study carried out in the Department of Physical Medicine and Rehabilitation at the National Institute of Orthopedics Mohamed Kassab from October until December 2016 concerning paraplegic patients (due to different etiologies). 60 patients were collected : epidemiological data, clinical examination data, Functional Independence Measurement Scale and para-clinical data. Many different predictive factors may influence the development of pressure sores, neurogenic paraosteopathy and urinary tract infection.

Results

The average age of our patients was 41.2 +/- 12.9 years with a male predominance (60%) and an average duration of paraplegia of 5.27 years. Traumatic causes were at the top of the etiologies (55%). On clinical examination, 48.3% of patients had complete deficiency ASIA A, 53.3% a low dorsal neurological level and 80% were spastic. Articular limitation was noted in 68.33% of the patients, 41.7% of the patients had pressure ulcers (main localization: sacral, ischiatic and heel), 41.7% of them had bladder disorders. Most of our patients had an average FIM of 101 +/- 11.8. Predictive factors for the development of pressure sores, neurogenic paraosteopathy and simple urinary tract infections were identified.

Conclusion

Paraplegia is a disability affecting functional capacities, socio-professional life and psychology. Multidisciplinary management, an early transfer into the Department of Physical Medicine and Rehabilitation, preventive measures are necessary to avoid the main complications. A regular follow-up will lead to better functional results with early socioprofessional reintegration of paraplegic patients.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1673

EFFECT OF TRAINING IN A KAYAK ERGOMETER ON TRUNK CONTROL, INDEPENDENCE AND CARDIOVASCULAR FUNCTION IN INDIVIDUALS WITH SPINAL CORD INJURY

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Introduction/Background

One of the main objectives in spinal cord injury (SCI) rehabilitation is the improvement in trunk control, to achieve independence in daily activities, to prevent complications, and in specific cases to walk. Also, one of the main causes of death in individuals with a SCI is the cardiovascular complications. In order to improve trunk control and cardiovascular function in these individuals, training in a kayak ergometer was evaluated.

Objective: To determine the effect of training in a kayak ergometer on trunk control, satisfaction with life, independence and cardiovascular function in individuals with SCI.

Material and Method

: A randomized clinical trial was carried out in individuals with a sub-acute SCI with a neurologic level below C8. The subjects were randomly assigned to one of the following training groups:

Group A. Control, with conventional therapy (neuro-proprioceptive facilitation) of 30 minutes, 5 days per week during 6 weeks.

Group B: Experimental, with training in kayak ergometer during 30 minutes, 5 times a week during 6 weeks. **Results**

13 patients have been trained. Kayak ergometer training has a beneficial effect in terms of trunk control, independence, cardiovascular function and satisfaction with life.

Conclusion

Kayak ergometer seems to be a good option to improve trunk control, independence, cardiovascular function and satisfaction with life in individuals with sub-acute SCI.

Keywords

spinal cord injuries;trunk control ;kayak ergometer

Conflict of interest

Disclosure statement:

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ISPR8-1744

BARRIERS TO PARTICIPATE IN ACTIVITIES OF DAILY LIVING IN THE COMMUNITY AMONG THE PERSONS WITH SPINAL CORD INJURY

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Introduction/Background

To assess the Socio-demographic information and understanding and communicating, mobility. Self-care, getting along with people, household activities, work or school activities and participation

Material and Method

It was a cross sectional study. 50 samples were conveniently selected from Savar and Dhamrai Upazilla of Dhaka district of Bangladesh for the study. Among them 78% (n=39) was male and 22% (n=11) was female. Interviewer administered Bengali version of The World Health Organization Disability Assessment Scale II (WHODAS II) 36 items was applied to people with spinal cord injury living in their own community who completed their rehabilitation from CRP.

Results

In the study the total participants were 50. The minimum age was 20 years old. The maximum age was 80. Each item of WHODAS 2.0 questioner was rated on a 5-point scale, from 1 (no difficulty) to 5 (extreme difficulty/cannot do). The instrument produces a total score (disability level) and 6 domain scores, ranging from 0 (best) to 100 (worst).

Conclusion

This study provides a common metric of the impact of spinal cord injury in terms of functioning. This study makes it possible to focus directly on functioning and disability and allows the assessment of functioning separately from the spinal cord injury.

Keywords

No conflict of interest

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ISPR8-1757

HOW PRESSURE SORES PREVENTED FOR PERSONS WITH SPINAL CORD INJURY IN BANGLADESH

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Introduction/Background

Understand the role of Occupational Therapy in preventive pressure sores for persons with SCI. Learn about the different techniques to preventive pressure sores.

Learn about the re positioning strategies used by people with spinal cord injury in the seated, supine and long sitting position

Material and Method

An integrative literature review was exploiting for the purposes of methodological analysis and concept review drawing on both the empirical and theoretical literature. There were some articles, all qualitative and quantitative which are included in this review. All studies were mixed methods in design. The literature search here, OT Seeker, Google search, Google Scholar, PubMed, and Hinari searched for literature related to the contribution to and involvement how can prevent pressure sores.

Results

There were some articles all are mixed methods in design. All but one study was not conducted with participants.

- Use a pressure relief cushion: A pressure relief cushion will help to reduce pressure
- Sit upright: Sitting upright helps to distribute weight evenly
- Use pressure relief techniques: Regular pressure relief can be effective in preventing pressure sores
- Eat well and drink lots of water: A well balanced diet with fresh vegetables, fruits and meat can help to prevent pressure sores.
- Avoid friction: Make sure the wheelchair fits correctly and has no rough edges.
- Avoid moisture
- Check skin every day
- While lying or sitting, change positions regularly: Changing position regularly helps to relief pressure. For example, change position from sitting to lying.

Conclusion

Occupational Therapists played a vital role in pressure care for persons with SCI. Occupational Therapist should inspect the skin and discuss the possible causes for pressure sore. Provide advice about positioning and bed mobility then Occupational Therapist should

consider pressure relief cushion, seating, equipment, mattress, transfer and engage functional task.

Keywords

No conflict of interest

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A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1826

EFFECTIVENESS OF RADIOTHERAPY TO PREVENT RECURRENCE OF HETEROTOPIC OSSIFICATION IN PATIENTS WITH SPINAL CORD INJURY AND HEAD INJURY.

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Introduction/Background

The prophylactic effect of radiotherapy on the development of heterotopic ossification (HO) is well-described following orthopedic surgery; however there are few studies of the effect in patients with central nervous system lesions. The aim of this case-control study was to evaluate recurrence and early postoperative complications (sepsis) following surgical excision combined with radiotherapy on troublesome hip HO in patients with spinal cord injury (SCI) and traumatic brain injury (TBI).

Material and Method

Methods: Data from patients in the BANKHO database with SCI or head injury who underwent surgical excision of hip HO were included. Case patients underwent excision + radiotherapy and controls only underwent excision. Control patients were matched to case patients for gender and age (± 4 years). The primary end-point was recurrence, and secondary-end points were postoperative complications, and more specifically, sepsis that required surgical revision.

Results

Results : Data from 19 case patients and 76 controls were analysed. Odds ratios for recurrence were not significantly different between groups (OR case group=0.63, OR SCI subgroup= 0.45 and OR head injury subgroup=1.04). Rate of sepsis requiring surgical revision was significantly higher in the case group ($p<0.05$).

Conclusion

Based on the results of this case-control study, we suggest that radiotherapy should not combined with surgery in patients with troublesome hip HO undergoing excision. Radiotherapy does not appear to prevent recurrence and moreover is associated with an increased risk of postoperative sepsis.

Keywords

heterotopic ossification;radiotherapy;CNS injury

No conflict of interest

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ISPR8-1830

FAMILY RESILIENCE AND ITS ROLE FOR THE REHABILITATION OF SCI PATIENTS : A CASE REPORT

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Introduction/Background

“Resilience” is defined as the ability of a family to adapt to new circumstances resulting from a sudden change of one of its members’ health status.

Aim: To show that the degree of a family’s resilience can increase through psychological interventions, thus enhancing the rehabilitation outcome of a SCI patient/member.

Material and Method

"Anastasia", a 21-year-old young female, was admitted to our Center on 07/06/2016, presenting with complete paraplegia T₈, AIS A, due to T₉ fracture, after falling from great height. On admission, she had a tracheostomy and nasogastric tube, and was fully dependent for ADL, with a FIM+FAM score of 63/210. Psychological intervention was a part of her rehabilitation program from the beginning; she was compliant and consistent, in contrast with her parents who did not regard the intervention quite important.

Results

After the first 3 months, the family’s resilience was assessed using the Brief Resilience Scale (BRS), achieving “low” grade. During that period, Anastasia had many emotional explosions, which made her parents concern and seek help themselves. The program they followed included counseling, psychoeducation based on their daughter’s needs and couple psychotherapy.

Six months post admission, the degree of this family’s resilience increased to “medium”, according to BRS. Meanwhile, Anastasia’s functional status improved significantly, reaching a FIM+FAM score of 169/210.

Conclusion

Psychological interventions, an important part of the rehabilitation program, can improve the degree of a family’s resilience, significantly enhancing the functional outcome of the SCI patient/family member.

Keywords

Resilience, family, SCI; Psychological interventions

No conflict of interest

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ISPR8-1857

PATIENT DECISION MAKING IN RELATION TO NEUROGENIC BOWEL AND BLADDER MANAGEMENT

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Introduction/Background

An important attribute of patient-centered care is the active engagement of patients when critical health care decisions are affecting their quality of life. Decisions related to neurogenic bowel and bladder management (NBB) to prevent complications and accidents are key to successful living after chronic disease or disability. Very little information exists with respect to patient's involvement in decision regarding their bowel and bladder. This study is part of a larger study designed to examine the decision making (DM) process of persons with spinal cord injury (SCI) living with NBB. The purpose is to provide an understanding of relevant literature in this topic; identify major issues; and review proposed solutions to address problems.

Material and Method

Researchers conducted a literature review of topics related to health decision making, patient-provider communication, and specific aspect of decision making related to NBB. Three major searches were conducted in PubMed to include: 1) neurogenic bladder and bowel, bladder and bowel dysfunction, and management; 2) SCI; and 3) healthcare decisions and patient centered decisions. We identified relevant Medical Subject Headings in the MeSH database. From a total of 400 abstracts and titles 63 articles were selected for review.

Results

Some of the important findings included patients being overwhelmed during their rehabilitation hospital stays and not being able to make their own decisions regarding their care due to emotional, cognitive and physical health factors. Decisions on bladder restoration function were difficult due to lack of knowledge of preferences. Decisions regarding optimal treatment for severe bowel dysfunction were particularly challenging. Other topics discussed included patient autonomy in DM, socio economic factors influencing decisions, health systems and clinical practice guideline implications.

Conclusion

In conclusion, the process of patient DM related to NBB deserves further study. Consideration should be given to DM aids that help patients and caregivers to successfully make such decisions with providers.

Keywords

neurogenic bladder and bowel;spinal cord injury;decision making

No conflict of interest

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A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1869

A CASE OF SPINAL CORD INJURY WITH SEVERE SENSORY DISORDER IN WHICH ORTHOSIS WAS EFFECTIVE

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Introduction/Background

The use of orthosis for paralysis is common, but there is not enough report on the effect of orthosis for severe sensory disorder. In this report, we report a case in which orthosis has been effective in treating spinal cord injured patients with severe sensory disorder.

Material and Method

We report our experience treating a case of adult spinal cord injured patient. A 41-year-old male admitted to our hospital for rehabilitation of spinal cord injury,neurological level C5.

Results

At the time of admission, ASIA impairment scale C, moderate motor paralysis in the right lower limb, and severe sensory disorder was confirmed. While standing and gait started as a training. Without the use of orthosis, he could not perform standing position and walking in the parallel bars, he did standing and gait training with KAFO. With visual feedback using a mirror, the standing and gait in the parallel bars was stable, but knee instability was noticeable without visual feedback. Knee instability was alleviated when using Sensomotoric insole to promote proprioceptor for severe sensory disorder. KAFO of plastic shell was made as personal orthosis, the knee joint was CCAD joint and the foot was double upright ankle foot orthosis. Also, since Sensomotoric insole had effect, it was somewhat tightly molded, and by strengthening the compression of the thigh as a whole, we expected a prompting effect on proprioceptor.

Conclusion

As a treatment for sensory disorder, it is known that the input signal from proprioceptors is increased due to the use of weight or compression by an elastic bandage. It is considered that improvement of walking ability with KAFO in this case is also based on a similar mechanism .

Keywords

spinal cord injury;sensory disorder;orthosis

No conflict of interest

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A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1873

EVOLUTION OF IDIOPATHIC LONGITUDINAL EXTENSIVE TRANSVERSE MYELITIS

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Introduction/Background

Longitudinal Extensive Transverse Myelitis (LETM) is a rare disease with an incidence of 1 to 8 new cases per million people per year that consists on an inflammation of three or more spinal cord segments. Earlier studies highlight the idiopathic cause and the one related with Neuromyelitis Optica Spectrum Disorders (NMOSD) as the more frequent causes of LETM.

Material and Method

We present the case of a 45 year old woman with no significant medical history that starts with a rapid onset of weakness, sensory alterations, and both bowel and bladder dysfunction. The complementary exams showed a spinal cord MRI scan with images of patched myelopathy from C2 to T2 levels, a normal brain MRI, a blood test with no relevant data and all the antibodies carried out negatives: ANA, ANCA, antiphospholipid and anti-aquaporin. The patient was admitted in our hospital diagnosed as spinal cord injury syndrome C5 level D grade according with ASIA Impairment Scale, and 15 points for Spinal Cord Independence Measure III (SCIM III) scale score. She underwent corticoid protocol and a comprehensive rehabilitation program with physical and occupational therapies, respiratory physiotherapy and bladder and bowel management.

Results

After 2 months of follow-up, the patient presents an improvement on the strength and sensory, presenting a regular bowel habit, a spontaneous bladder voiding and reaching a SCIM III score of 50.

Conclusion

Although LETM clinical features do not approach us to the etiology, it is important to carry out an exhaustive differential diagnosis for rapid intervention and predicting possible recurrences. Even so, idiopathic etiology remains among the most frequent causes and it is necessary to know the evolution and prognosis in order to establish a correct rehabilitation program.

Keywords

Idiopathic Longitudinal Extensive Transverse Myelitis ;Evolution;prognosis

No conflict of interest

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A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1918

URINARY MICROBIOLOGICAL CHARACTERIZATION IN A SPINAL CORD INJURY REHABILITATION UNIT

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Introduction/Background

Urinary tract infections (UTI) are important causes of morbidity and mortality in patients with spinal cord injury (SCI). The aim of this study is an epidemiological and urinary microbiological characterization, determining bacterial spectrum, antimicrobial susceptibility and factors influencing asymptomatic bacteriuria and UTI development during rehabilitation as inpatients in a SCI Unit.

Material and Method

Retrospective and descriptive study performed with a design using SPSS 23. Chi-Square Test and Fisher's exact Test were used for the comparison of frequencies and the statistical significance level was set as $p < 0,05$. Evaluation of the discharge letters and urine analysis of 91 patients hospitalized in a Physical Medicine and Rehabilitation Center from 1st January to 31st December 2017.

Results

From a total of 91 patients with SCI hospitalized in our Center, 55 were male. The average age was 50,28 ($\pm 17,32$) years. In this sample 32 patients had less than 1 year of injury and 69 came from household, 14 acute care hospital, 8 from a nursing home. According to American Spinal Injury Association Impairment Scale, 24 patients had a complete lesion. Mode of bladder emptying was considered at the entrance and discharge. 52 patients had asymptomatic bacteriuria at the entrance in our Center. The most frequent isolated pathogen was *E. coli* (32%) followed by *K. pneumoniae* (25%). During hospitalization 46 patients developed ITU, 37 of these patients had bacteriuria at their entrance urine culture. The relation between bacteriuria, UTI and also mode of bladder emptying was statistically significant ($p < 0,001$). Comparison between bacteriuria and UTI pathogens was performed.

Conclusion

This analysis allows projections of future needs in terms of patient numbers and healthcare strategies. Asymptomatic bacteriuria is common in SCI patients and should not be checked systematically or treated, with the risk of bacterial strains showing increased antimicrobial resistance.

Keywords

Spinal Cord Injury;Asymptomatic Bacteriuria;Urinary Tract Infection

No conflict of interest

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A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1926

COMPLICATIONS OF SPINAL CORD INJURIES IN SOUSSE, TUNISIA: A SINGLE CENTER REPORT OF 177 CASES

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Introduction/Background

Spinal cord injury (SCI) is a devastating event. It causes permanent serious dysfunction and leads to several disorders of organ systems, including the respiratory, urinary and autonomic nervous system, as well as bone and joint. SCI exerts a significant burden on patients, their families and society.

Aims:To investigate major complications of spinal cord injuries during 2 years of follow up and compare our findings with those of other studies.

Material and Method

A retrospective study was conducted in rehabilitation Department in university hospital center Sahloul, Sousse, Tunisia. We detected clinical features, main complications observed and therapeutic measures

Results

A total of 177 patients is included in our study(114 men et 63 women) with a mean age of 39.6 +/-15 years. , the cervical level was the most frequently affected(43.5%) .Regarding AIS scales score, 42% of patients were AIS A and 1.3% were diagnosed with conus medullaris. Most patients (80.8%) had at least one complication, including urinary tract infection (38.9),neuropathic pain (19%) and pressure ulcer (13.6%) .All types of complications diagnosed were significantly more frequent among patients with Traumatic spinal cord injuries($p<0.001$), those with complete lesion(AIS A) and cervical level($p : 0.02$)

Conclusion

Life expectancy of patients with SCI is growing, but this predisposes to several complications. Through our study, a large variety of complications had been detected and analyzed.

Keywords

spinal cord injury;complication;rehabilitation

No conflict of interest

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A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1934

SUPPORTGROOVE: AN INTERDISCIPLINARY COLLABORATION TO DEVELOP AN ONLINE POSITIVE PSYCHOLOGY INTERVENTION FOR DYADS POST-SPINAL CORD INJURY

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Introduction/Background

Navigating spinal cord injury (SCI)-related changes can impact health for both partners: Individuals with SCI and their partners are both at higher risk for depression and lower quality of life. Little attention has been paid to developing behavioral interventions targeted towards supporting these dyads. Existing interventions are limited by physical, social, structural, and economic accessibility. To respond to this need, we developed a web-based app (SupportGroove) to deliver a positive psychology intervention (PPI) for dyads post-SCI.

Material and Method

SupportGroove is based on a previously-developed pen-and-paper PPI for couples coping with stroke. The 8-week self-administered intervention consists of brief activities completed individually and together as a dyad. Initial development meetings between the investigative team and the app design and development team included a “designbox”, in which the needs and key elements of the app were discussed. As we developed a prototype, stakeholders and end-users, including clinicians and individuals with SCI, were involved in the iterative process to inform the design and usability of the app. The SupportGroove prototype was then tested by 10 dyads for 2 weeks to identify technical errors and gather feedback on usability and accessibility.

Results

Feedback from stakeholders resulted in development of app features for individuals with limited functional ability. Initial designs lacked accessibility design principles made visible by end-users. Solutions included large text, single-click, and minimal scrolling to facilitate menu navigation for individuals using eye-gaze technology. Prototype testing allowed further refinement and demonstrated high usability and engagement with activities in the app. Qualitative feedback indicated high levels of satisfaction, accessibility, and confidence in potential utility.

Conclusion

The SupportGroove app was developed with stakeholder input to offer a more accessible behavioral intervention for dyads coping with SCI. Online tools that are accessible and engaging provide better dissemination of behavioral interventions.

Keywords

spinal cord injury;mobile intervention;design

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-1971

COLONIZATION IS NOT INFECTION - A CASE REPORT AND REVIEW OF THE LITERATURE OF ASYMPTOMATIC BACTERIURIA IN A PATIENT WITH SPINAL CORD INJURY

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Introduction/Background

Urinary Tract Infections (UTI) are defined as the combination of bacteriuria, leukocyturia, and clinical symptoms. An analysis of the UTI treatment strategies in Spinal Cord Injury (SCI) rehabilitation centers demonstrated that even in specialized units, asymptomatic bacteriuria (ASB) was treated in plus 50% of the institutions if the amount of bacteria and leukocytes was regarded as significant. The aim of this study is to illustrate a case of a patient with SCI that allows us to perceive how only the infections should be treated.

Material and Method

Description of a clinical case of a patient with SCI with ASB and that evolved to the negative of urine culture (UC).

Results

A 46-year-old man with traumatic SCI (fracture and dislocation of C6-C7), due to an accident car. He has a consequent tetraplegia AIS A on the American Spinal Cord Injury Association Impairment Scale. After 7 months in an acute care hospital, he was admitted in rehabilitation hospital. In regards to bladder management, he was with intraurethral indwelling catheter. From the initial analyzes, he had leukocytosis, elevated C-reactive protein (CRP), but negative urinalysis and UC. Hyperthermia was started and a new analytical evaluation was performed, recording again leukocytosis and higher elevation of CPR. He initiated non-steroidal anti-inflammatory drugs and repeated analysis with normalization of blood inflammatory parameters but with leukocyturia and an isolation of *Enterococcus faecalis* and *Pseudomonas aeruginosa*. In this way, a prophylactic treatment was made with change of catheter, water reinforcement, urine acidification and probiotics. Before initiating intermittent catheterization, it performed a new UC that was negative.

Conclusion

Although the appropriate treatment of UTI in this population (whose symptomatic differentiation is difficult) is clearly important, the potential for the overdiagnosis of UTI in patients with SCI is high because many of these patients have bladders colonized with urinary pathogens.

Keywords

Spinal Cord Injury;Asymptomatic Bacteriuria;Urinary Tract Infection

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2018

INVESTIGATIONS OF CUTANEOUS PH ALTERATIONS IN PATIENTS WITH SPINAL CORD INJURY, AS A POTENTIAL RISK FACTOR OF POSTOPERATIVE INFECTION : A CASE-CONTROL STUDY.

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Introduction/Background

Neurogenic heterotopic ossification (NHO) is usually treated by surgical excision. We conducted a previous case-control study to identify risk factors for post-operative infection (POI) after surgical excision of NHO, to determine the frequency of POI and identify the causative organisms. In this study, a spinal cord injury (SCI), as the cause of NHO at the hip, was one of the risk factors for POI (22% in SCI patients vs. 5% in others). In these SCI patients, POI was mainly due to Gram-positive cocci (69%), while other patients developed mainly Gram-negative bacilli infections. In order to decrease the risk of POI after NHO excision, we study the alteration of skin-pH as a potential risk factor, by comparing skin-pH in SCI patients and controls.

Material and Method

In our prospective observational study, we include traumatized SCI patients and valid volunteers as controls. The pH of the skin is measured with a MDD-4 pH-meter, in four sites corresponding to right and left C4 and S1 sensitive points from the ASIA score.

Results

A preliminary analysis is carried out on 54 SCI patients and 41 controls, included between September 2017 and January 2018. The difference in average skin-pH is 0.49 between the two groups (5.77 for patients vs. 5.28 for controls). In the SCI group, there is no difference in pH above and below the lesion level (5.74 in C4 vs. 5.79 in S1).

Conclusion

Our intermediate results tend to show a higher skin-pH in SCI patients, but need to be confirmed in a larger study to come. If the end results prove a higher skin-pH in SCI patients, this could be related to the risk of POI in this population, especially as a higher skin-pH promotes the proliferation of Gram-positive pathogens such as *Staphylococcus aureus*.

Keywords

skin pH;postoperative infection;neurogenic heterotopic ossification

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2028

GENITOURINARY TRACT DYSFUNCTION FOLLOW-UP IN SPINAL CORD INJURY PATIENTS

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Introduction/Background

SCI patients, in most cases, have neurogenic lower urinary tract dysfunction. This patients' quality of life (QOL) improvement is related with preservation of renal function, treatment of urinary incontinence and prevention of associated complications. The aim of this study is to review available medical literature to understand how the genitourinary tract (GUT) follow-up should be done in SCI patients.

Material and Method

Pubmed database was used to search the term "management of neurogenic lower urinary tract dysfunction". In addition, existing guidelines of several international societies were consulted.

Results

A study developed at 12 UK Rehabilitation Centers (UKRC) was consulted, as well as 3 international reference guidelines, namely the "European Association of Urology (EAU) guidelines for management of neurogenic lower urinary tract dysfunction", the "British guidelines for urological management of patients with SCI" and the "Consortium for spinal cord medicine in United States".

Recommendations focused on 5 parameters: outpatient (OP) follow-up, GUT imaging, Urodynamic Studies (UDS), UTI's therapeutic approach, and cystoscopy.

Regarding follow-up in OP, all guidelines suggest annual check, with few exceptions in sacral lesions (biennially).

For GUT imaging, 10 of 12 UKRC perform renovesical echography (RVEcho) annually, as recommended by "British guidelines" and "USA Consortium", while "EAU guidelines" defends bi-annually frequency.

The UDS should be taken from 1 to 2 years, according to "EAU guidelines" and "USA Consortium", as "British guidelines" only recommend the exam when there's clinical indication.

Regarding the therapeutic approach of UTIs, there's a consensus among the guidelines, with antibiotic therapy indication for recurrent UTI, and no indication for asymptomatic bacteriuria.

Guidelines don't refer to cystoscopies with associated biopsy, however, some studies indicate

they should be performed between 1-2 years, depending on the presence/absence of symptoms and pathology.

Conclusion

The GUT follow-up in SCI patients is crucial for their QOL improvement. Nowadays, existing guidelines aren't consensual regarding the periodicity that parameters should be evaluated. Therefore new long-term high-evidence studies are needed to standardize guidelines, and allow an efficient clinical approach. Nevertheless, it's extremely important to regularly evaluate patients, with special attention to clinical findings that will be the determining factor for new complementary diagnostic tests.

Keywords

Genitourinary tract; Spinal cord injury; Neurogenic lower urinary tract dysfunction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2036

SITTING POSITION AND WHEELCHAIR APPROPRIATENESS IN PATIENTS WITH SPINAL CORD INJURY : ASSESSMENT OF PROFESSIONAL PRACTICES IN A SPECIALIST UNIT

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Introduction/Background

Skill profiles of a wheelchair, notably leading to the initial choice after a spinal cord injury (SCI), include the patient's comfort, his/her safety as well as physical and social performances. The multidisciplinary team of first rehabilitation within a spinal unit wondered about the quality of the patients' positioning. The team consequently wished to create an indoor reference document as well as a simple helping tool, so as to choose correctly the wheelchair, to settle any patient in a convenient manner and to check this settling.

Material and Method

Frontal and profile photos were taken of SCI individuals in the sitting position in a manual or a powered wheelchair. A multidisciplinary specialist team working in a spinal unit (doctors, nurses, physiotherapists, occupational therapists and caregivers) analyzed each patient positioning within his/her wheelchair, mentored by trained medical quality practitioners. A review of the literature relating any component and accessories of the wheelchairs was then carried-out and compared with data from the previous analysis.

Results

An illustrated reference notebook was created, describing the choice of the wheelchair according to the motor level of the SCI patient, then according to the characteristics of his/her positioning and the adaptation of components and accessories. A check-list form was also developed to make easier the procedure of settling and then its revision, as a potential tool for the transmissions of detected anomalies between the various professionals. Both documents will be assessed by using them for the analysis of a new series of photos.

Conclusion

The whole staff of the neurological PMR department will then be trained with these documents, that will afterwards be placed in the documentary management system of our University Hospital. They could be useful as information tools for already involved staffs either or as training tools for professionals newly dealing with SCI patients.

Keywords

reference notebook; multidisciplinary

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2037

TRANSTIBIAL PROSTHESIS IN PARAPLEGIC

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Introduction/Background

Spinal cord injury and amputees rehabilitation are fundamental study areas of Physical Medicine and Rehabilitation (PMR). These are true working groups in which the role of the physiatrist is central.

This overlapping syndrome represents a real challenge to rehabilitation and demonstrates the need for specialized multidisciplinary teams.

Material and Method

Data collection with the patient and clinical process.

Results

A 46-year-old male patient was referred to the PRM department after trans-tibial amputation of the left lower limb. The patient suffered a work accident in 1999 with L1 fracture and performed surgical fixation resulting in AIS-A paraplegia (bilateral L3 sensory level, right L3 motor level, non-testable motor level on the left). Since then he has been walking with an Ankle Foot Orthosis (AFO) on his left leg and a crutch. Due to chronic wound, transtibial amputation was performed in October 2009. As a result, endoskeletal prosthesis was used, with a distal pin and a fixed joint, with an interface dermo 343 from Ossur, and an AFO of the right tibia-tarsal pendent foot was also prescribed.

In 2016 he was diagnosed with seminoma for which is under follow-up of oncology and urology with periodic chemotherapy treatments.

The patient maintains neurogenic bladder follow-up, with intermittent algaliations. Maintains regular intestinal transit with training every second day. Presents multiple intercurrences with pressure ulcers in the zones with hypoesthesia.

He is autonomous under the use of prosthesis and one crutch and maintains some professional activity.

Conclusion

Given the conjunction of these pathologies it is necessary to adapt the intervention of the rehabilitation team to a particular case. The timely follow-up of patients with spinal cord injury prevents multiple complications. And proper prescription of technical aids is fundamental to maintaining patients' autonomy, especially in amputees.

This case demonstrates that often our greatest success may be just maintaining the patient's functional capability.

Keywords

spinal cord injured; transtibial prosthesis; multiple condition's rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2038

PEDIATRIC SPINAL CORD INJURIES, IN SOUSSE, TUNISIA : A SINGLE –CENTER REPORT OF 13 CHILDREN

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Introduction/Background

As it's known, the pediatric spine is both more resilient to injury and more compliant to traumatic stress. Thus, detection of pediatric spinal cord injury is challenging combining mechanisms with the properties of the growing physiologic skeleton, it is clear that pediatric spinal injury has its own set of diverse and unique characteristics.

Material and Method

A retrospective descriptive study was conducted from 2010 to 2014 at rehabilitation department in university hospital center Sahloul, Sousse, Tunisia; all cases of spinal cord injuries in patients under 18 year old were included.

Results

Thirteen patients were included (9 boys and 4 girls) with an average age of 15.8 (11-18). Based on etiology, 10 children had traumatic spinal cord injury and three patients had non-traumatic spinal cord injury. At admission, 7 patients were classified ASIA A and there was only one case of conus medullaris syndrome. The most common lesion was dorsal. Nine children had urinary disorders since admission. The most frequent complications observed were urinary infections, pressure sores and neuropathic pain. After 2 years of follow up, 3 patients were classified ASIA C, 5 ASIA D and 5 ASIA A. Only four patients achieved "walker" status.

Conclusion

Spinal cord injury in pediatrics, although uncommon, can be devastating. Although there have been many evidence-based adult trials in SCI management, the data in the pediatric population are limited. Researchers continue to explore both clinical and radiographic guidelines to help better identify potential SCI.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2045

INTEGRAL ASSESSMENT AND REHABILITATION PROGRAM TO IMPROVE UPPER EXTREMITY FUNCTION IN A PERSON WITH TETRAPLEGIA BEFORE AND AFTER NERVE TRANSFER SURGERY

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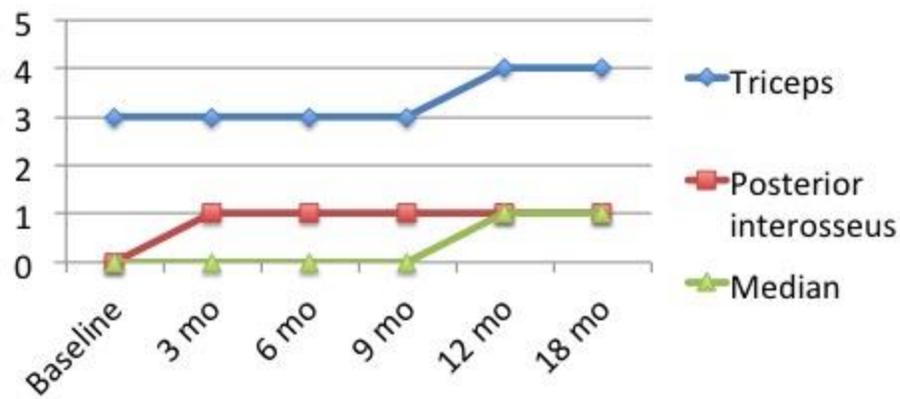
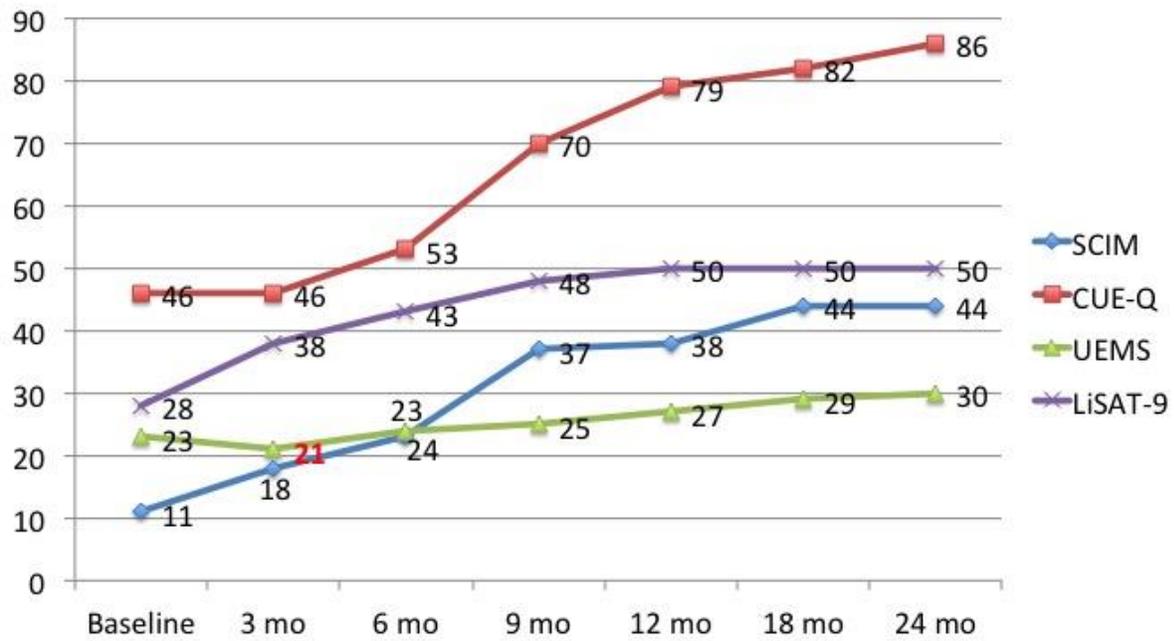
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Introduction/Background

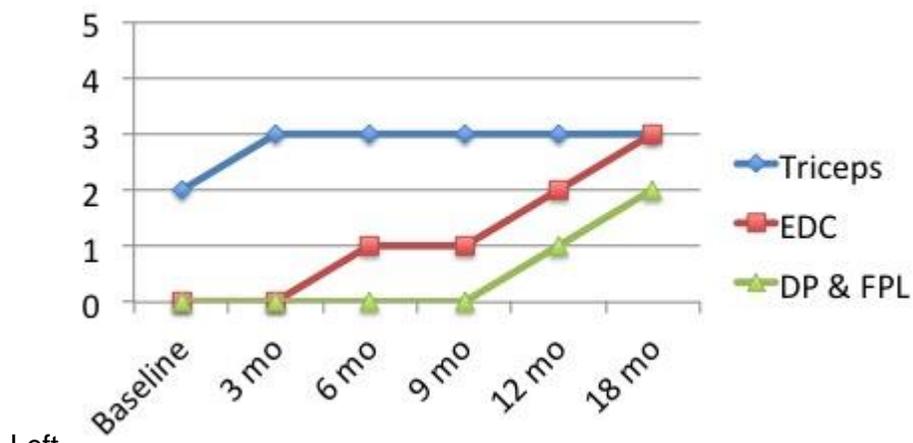
A 28 years old male suffer a traumatic spinal cord injury (SCI) on January 2015, he was classified as an AIS A, NL C5. After his inpatient stay at the SCI specialized rehabilitation unit, he underwent a multidisciplinary assessment by: SCI specialists, plastic surgery, electrodiagnosis, psychology, occupational and physical therapy. It was decided he was a candidate for nerve transfer surgery to improve upper extremity function.

Material and Method

Surgery was performed bilaterally, 11 months after SCI (right extremity), 13 months after SCI (left). The surgery performed for the right side was: nerve transfer from posterior deltoid branch to triceps, long thoracic with sural nerve graft to PIN transfer and from brachioradialis to median motor branch; and for the left extremity: nerve transfer from posterior deltoid branch to triceps, brachioradialis to EDC, and from pronator teres to flexor digitorum profundus and flexor pollicis longus. The individual assisted to a pre surgery neurorehabilitation program based on the objectives, 3 months prior to the intervention.



Right



Left

Results

Based on the established goals, after the procedures were done, the individual underwent an intensive postquirurgic rehabilitation program. The improvements were notable for wheelchair propulsion, the ability to relieve pressure, to grasp, to pinch, and to let go and object. Improvement on independence, quality of life and strength measured with standardized measures such as SCIM-III, CUE-Q, LiSAT-9 and UEMS was also remarkable.

Conclusion

Nerve transfers in tetraplegics are an underused technic, which demonstrated substantial benefits, along with an intensive neurorehabilitation program. The improvement on independence and performance in daily living activities are life changing.

Keywords

tetraplegics;nerve transfer;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2723

EPIDEMIOLOGICAL AND FUNCTIONAL PROFILE OF PATIENTS WITH MEDULAR INJURY MULTIPROFESSIONAL REHABILITATION PARTICIPANTS

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Introduction/Background

Functional independence can be reduced or lost due to spinal cord injury (MML), a pathology considered to be a serious public health problem of high socioeconomic impact. Knowing the characteristics of these patients allows the rehabilitation centers to structure themselves to meet their demands adequately. Objectives: To compare the functional independence of people with spinal cord injury before and after multiprofessional rehabilitation through the Functional Independence Measure (MIF) scale; characterize the sample and verify if there was effectiveness of the rehabilitation process. discharge from the program.

Material and Method

Methods: Pre-experimental study with a quantitative approach divided into two phases, the first comparing the initial and final MIF scores, available in medical records, of 44 patients with LM who participated in multiprofessional rehabilitation between the years 2012 and 2015, in the second phase were reassessed 19 individuals from the total group in order to analyze the current level of independence (post-discharge). The characterization of the sample was based on the medical records.

Results

Results: There was a predominance of young male individuals who suffered a traumatic spinal cord injury, with gunshot wound being the main cause, and paraplegia was the most frequent sequel. The sample remained in the degree of dependence modified, but with a functional gain of 11.90%. Functional maintenance was observed by the third application of the scale, there were no significant variations, except for the self-care activity, which presented a gain of 7.14%.

Conclusion

Conclusion: It is assumed that the sample rehabilitation process was successful, due to the immediate functional gain and the maintenance of the scores after discharge from the program.

Keywords

Epidemiology;Spinal cord;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2144

PREVALENCE OF HEALTH PROBLEMS EXPERIENCE BY PERSONS WITH SPINAL CORD INJURY IN MALAYSIA

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Introduction/Background

Spinal cord injury (SCI) is known to have a risk of developing secondary health problems which can be debilitating and increases the burden of care on patient and their caregiver. Our aim is to address the prevalence of health problems experience by people with SCI that living in the community and to investigate the relationship between secondary health problems with SCI characteristics.

Material and Method

This is a database analysis of International Spinal Cord Injury (InSCI) Survey, which was carried out in Malaysia from March 2017 to February 2018. Total of eight rehabilitation centres nationwide participated in this study. However as of this point of this study analysis was conducted, only data from four centres were included for analysis. Data were extracted and analysed based on 3 items: personal background (PB), lesion characteristics (LC) and health problems (HP). We conducted analysis on 7 out of 10 sub-items from PB, all sub-items from LC and 15 out of 16 sub-items from HP.

Results

A total of 117 eligible participants were included in this study. More than half of the participants are from the age group of 25-44 years old (52%), most were single (47%). As for education, 73% of participants reported to at least completed Upper Secondary level. In relation to hierarchy of associated health problems, sexuality is the highest number of health concerns with 67% participants classified as high severity. This is followed by contractures and spasticity with percentage of 59% and 56% respectively. Except for prevalence of joint contractures, there is no difference in the prevalence of secondary health problems between participants with paraplegia and tetraplegia.

Conclusion

Sexuality, contractures and spasticity are the top three health problems reported in persons with SCI. There occurrence of health problems among persons with paraplegia and tetraplegia is similar.

Keywords

Rehabilitation;sexuality;contractures

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2150

NON TRAUMATIC SPINAL CORD INJURY IN TUNISIA : DEMOGRAPHIC CHARACTERISTICS AND COMPLICATIONS

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Introduction/Background

As a devastating condition, spinal cord injury and particularly Non traumatic spinal cord injury (NT/SCI) not only causes permanent serious dysfunction but also leads to disorders of several organ systems. It is generally known that NT/SCI exerts a severe burden on patients, their families and society because of the tremendous cost of health-care treatments, rehabilitation and lost of productivity

Aim: To investigate the demographic characteristics and complications of nontraumatic spinal cord injury and compare our findings with those of other studies.

Material and Method

A retrospective study was conducted in Rehabilitation department, university hospital center Sahloul, Sousse, Tunisia. Sixty-nine adults referred inpatients with NT/SCI (46.4% women; median age, 49 years). Patients requiring initial rehabilitation or readmission were included. Demographic characteristics, neurologic injury, etiology, comorbidities, and complications of NT/SCI were analysed.

Results

The most common cause of NT/SCI was degenerative disorders (50.5%): CSM and hernia , but several others etiologies had been identified . Tetraplegia occurred in 44.9% of patients, and 88.5% had motor incomplete injuries. Most patients (61.2%) had at least 1 complication, including neuropathic pain (19%), pressure ulcer (13.6%) and urinary tract infection (8.7%).

Conclusion

The number of NT/SCI patients increased annually in our center. NT/SCI rehabilitation patients have a particular demographic profile. Through our study, a large variety of complications had been detected and analyzed

Keywords

spinal cord injury ;epidemiology;complication

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2182

COMPLICATIONS OCCURRING IN PATIENTS AFTER SPINAL INJURIES DURING HOSPITAL REHABILITATION

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Introduction/Background

Life-threatening complications occur in patients after spinal cord injuries mainly in the early period after the injury. However, also in the subacute and chronic period, complications that may hinder the rehabilitation process are observed.

Objective of the work; the aim of the study was to analyze the complications in patients after spinal cord injuries during rehabilitation.

Material and Method

The study is based on the examination of 136 patients after spinal cord injury who were rehabilitated in the Rehabilitation Clinic of the University Hospital No. 1 in Bydgoszcz, Poland. The group consisted of 28 women and 108 men of the mean age of 36.4 years. The mean time since the injury was 8.75 months. Injury of the cervical spine was observed in 65 patients, thoracic trauma in 56 patients and L-S injury in 15 patients. We analyzed complications that were observed during rehabilitation, independent of neurological deficits.

Results

Among the analyzed patients we found: urinary tract infections in 52 patients (38.2%); extraskeletal ossifications in 21 patients (15.4%), deep vein thrombosis freshly diagnosed in 14 patients (10.3%), decubitus ulcers in 14 patients (10.3%); superficial vein thrombosis in 4 patients (2.9%), intramuscular haemorrhage in the paretic limb in 3 patients, and 3 patients suffered a low-energy fracture in the lower limb during rehabilitation (2.2%).

Conclusion

The most common complications in patients after SCI during rehabilitation include urinary tract infections, decubitus ulcers, deep lower limb thrombosis, and extraskeletal ossifications. The above complications may hinder and prolong the rehabilitation process.

Keywords

spinal cord injury; complications

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2206

NEUROLOGICAL RECOVERY AND FUNCTIONAL OUTCOME OF COMPLETE TRAUMATIC SPINAL CORD INJURY: AN OBSERVATION FROM BANGLADESH

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Introduction/Background

Neurological and functional recovery is the most important issue for the spinal cord injury patients. Less severe damaged cord which is known as incomplete and classified as AIS-B, C, D has shown different extent of neurological and functional improvement. Now a days some of the studies show that remarkable sensory –motor improvement is happened even for the complete injured patients. The purpose of the study is to find out the neurological recovery and functional outcome of complete traumatic Spinal cord injury patients.

Material and Method

Design: Retrospective study design were conducted to analysis AIS grade, neurological recovery and functional outcome.

Setting: Rehabilitation hospital CRP, Bangladesh.

Main Outcome Measures: AIS grade, Neurological recovery and functional outcome of complete SCI.

An initial neurological deficit was assessed during admission according to the American Spinal Injury Association (ASIA) standards done by medical Professionals with evaluation of right and left motor and sensory levels and ASIA Impairment Scale, and after completion of three months rehabilitation program during discharge time again AIS done by well-trained medical professionals as because of compare of their Neurological extent as well as Functional outcome.**Results**

Majority of the participants of this study had traumatic paraplegia (63.6%) and the principle cause was fall from height (51.3%). In these study initial AIS was A and during discharge twenty six (5.9%) were shifted into B, thirty eight (8.7%) were shifted into C, twenty eight (6.4%) were

shifted into D. Patient with AIS class B significantly increase SCIM during discharge (P=0.00) and AIS class C significantly increase SCIM during discharge (P=0.00)

Conclusion

Though neurological and functional recovery is very rare for the complete SCI, but there is a possibility in practical situation. Sufficient structural integrity for proper signal conduction in the spinal cord after injury and compensatory plastic changes in the cortex, both may essential for neurological and functional improvements.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2212

POLY-ARTICULAR HETEROTOPIC OSSIFICATION IN SPINAL CORD INJURY: A CASE REPORT FROM SAUDI ARABIA

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Introduction/Background

Heterotopic ossification (HO) is one of the common complication in traumatic spinal cord injury with wide range of prevalence from 10 %– 53 %. Additionally; it can be found in patients with TBI, post hip surgery, burns, stroke, encephalopathy, Cerebral Palsy (5) or hereditary like osteodystrophy (6). The most commonly affected joint is hip but other locations such as knee, elbow and shoulder can also be affected (7). Approximately 10% of those with HO develop significant restriction in ROM to interfere with mobility and ADLs.

Material and Method

We are reporting a 33-year-old male involved in MVA in July 2016. He sustained T12 burst fracture requiring ORIF from T10-L1. As a result of SCI (T11 AIS A) , he developed paraplegia, pressure injury and double incontinence.

Upon admission to rehabilitation hospital, he was found to have ischial pressure ulcer (stage II). X-ray Pelvis showed bilaterally symmetrical HO in both hips and knees. Subsequently, TC-99m MDP bone scintigraphy showed findings compatible with HO, around both knees and hip joints bilaterally .

Results

He was managed conservatively and commenced on indomethacin. Surgical referral was not considered as the HO was not affecting patient's transfers, lower body dressing, skin and other aspects of daily living.

Bisphosphonates role in management of HO in TBI and SCI patients is evident but it is less effective at suppressing HO once it has mineralized (i.e., detected radiographically), [18–20].

Conclusion

Heterotopic ossification in the bilateral hip and knee joints associated with spinal cord injury has never been reported previously. The pathogenesis of HO is unknown and there is lack of consensus on treatment modalities. Activities of daily living in patients with HO can be affected secondary to pain, reduced ROM of involved joint, poor posture and associated increase risk of

pressure injury. Hence, early diagnosis, prevention and consensus on treatment modalities are needed.

Keywords

Spinal cord injury ;Heterotopic Ossification

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2227

EVALUATION OF MEDICAL COMPLICATIONS, FUNCTIONAL STATUS AND QUALITY OF LIFE IN EARTHQUAKE SURVIVORS WITH SPINAL CORD INJURY AT THE HOSPITAL AND ONE YEAR DISCHARGE

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Introduction/Background

Characterize a spinal cord injury (SCI) population from the 2008 Sichuan earthquake in China; assess medical complications and management outcomes; evaluate functional outcomes of physical rehabilitation interventions; assess quality of life in the community.

Material and Method

51 earthquake victims with SCI were underwent rehabilitation programming at the hospital. Outcomes of medical complication management were determined by comparison of the incidence of respective complications at the beginning and end of rehabilitation. Functional rehabilitation outcomes included ambulation ability, wheelchair mobility and activities of daily living (ADL). One year later, Twenty-six subjects of them completed medical questionnaires and underwent medical examination at discharge from a hospital rehabilitation department in the community. Quality of life and community integration were assessed by appropriate instruments over this period.

Results

Medical complications were managed effectively in 63% (pressure ulcers) to 85% (deep vein thrombosis) of patients during rehabilitation. Ambulation, wheelchair mobility and ADL were significantly improved with rehabilitation programming. After discharge, nearly half of patients developed a new pressure sore and most patients had urinary complications. Self-reported quality of life, overall health, and satisfaction with social relationships increased significantly ($p < 0.05$), while the environment domain was reduced ($p < 0.05$). Social participation (i.e. community integration) results showed an improvement in physical independence and mobility ($p < 0.05$), but a decline in cognitive independence ($p < 0.05$). Only 15% of the population returned to work. Both earlier rescue and earlier onset of rehabilitation were significant positive predictors of rehabilitation effectiveness.

Conclusion

Earthquake victims with SCI may achieve significantly improved functional rehabilitation functional outcomes on a formal, institutional-based physical rehabilitation programme; Special attention should be paid to cognitive and emotional function, occupational training and social integration during community rehabilitation after discharge.

Keywords

Earthquake; Spinal Cord Injury; Physical Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2252

SPINAL CORD INJURIES IN UAE: RETROSPECTIVE, DEMOGRAPHIC AND OVERVIEW STUDY OF PATIENTS ADMITTED AND MANAGED IN NEURO-SPINAL HOSPITAL DUBAI DURING LAST 12 YEARS.

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Introduction/Background

Study Design: Retrospective Demographic study & Overview SCI Comprehensive Management & Rehabilitation in UAE.

Settings: Neuro -Spinal Hospital /Dubai UAE

Objectives:

1. Demographic study of 232 patients (age, gender, nationality, etiology /nationality: UAE locals, Expats: Arabs & Non Arabs, levels & types of injuries, surgical & conservative managements).
2. Overview of quality, concepts, status of comprehensive care, management & rehabilitation In UAE.

Material and Method

Patients: SCI patients admitted in Neuro-Spinal Hospital during the period December 2005 (joining date) till December 2017 were 232 patients.

Results

UAE locals were 114 (49%), expats 118 (51%). Males were 176(76%) and females 56(24%). Tetraplegia 66 (28%) and paraplegia 166 (71.5%). Age: 153 (66%) are below 40 years. Etiology: RTA 135 (58%), fall from heights 44 (19%), sport injuries 23 (10%), diseases 20 (8.5%). Surgical procedures were done on 140 patients (60%) while the rest were admitted for conservative treatment. These figures are as per total number of the group, however for demographic purposes, they were subdivided into three main subgroups: UAE Locals, Arab Expats & Non Arab Expats just to show the variations between them as far as etiology, age, gender, level & types of injuries. For example RTAs among local citizens were 71%, while Arab expats 47 % & 44% in non Arab expats, and accordingly there are differences in the other variables.

Conclusion

In spite of all modern life facilities, services & high standard health care whether governmental or private concept of SCI comprehensive care, is still lacking SCI center per se neither in the UAE

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2358

SPINAL CORD INJURY AND OSTEOPOROSIS

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Introduction/Background

Osteoporosis, a condition characterized by low bone mineral density (BMD) and deterioration of the skeletal microarchitecture, is a well-known complication of SCI, with increased fracture risk. Complications from fractures lead to an increase not only in the associated morbidity and mortality, but also in the health care costs that they generate and implication on functional independence and quality of life.

The purpose of this review is to provide an overview of pathophysiology, risk factors, diagnosis and possible treatment approaches in this population.

Material and Method

All published literature was obtained from MEDLINE/PubMed database with the search terms “spinal cord injury”, “osteoporosis”, “bone”, “density”, “treatment”. Data was retrieved from published articles in the last 5 years and selected according to their relevance.

Results

Although unloading is an important factor in the pathogenesis of osteoporosis, neural lesion and hormonal changes also play a role in SCI as it is shown by patient with paraplegia and upper extremities bone loss. The severity and time since injury are the main determinants for fractures. BMD assessment constitutes the best and easiest method for predicting its development. Bone formation markers, although increased, provides scarce additional benefits. Preventive treatment with bisphosphonates appears to be effective and a rehabilitation approach stimulating sublesional bone segments must be encouraged. Early-phase supported standing or assisted walking is recommended such as physical activities on the upper arms, regardless of the level of injury. Other approaches such as neuromuscular stimulation and low intensity pulsed ultrasound was reported.

Conclusion

The high incidence of osteoporosis development, affecting more than 50 % of patients indicates the need to evaluate and treat these patients shortly after injury. The “gold standard” diagnostic examination for osteoporosis in SCI patients is still bone densitometry. Further studies are needed regarding evaluation and treatment approaches.

Keywords

spinal cord injury;osteoporosis;bone mineral density

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2456

SPINAL CORD INJURY PER DIVE: RETROSPECTIVE REVIEW

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Introduction/Background

Portugal has an extensive coastline, where aquatic recreational activity is very popular, mainly in the summer. Apart from swimming, diving is a very usual activity. Injury per dive are a cause of devastating traumas, frequently affecting the cervical spine. This generally results from badly executed and careless headlong diving to unknown water depth. The more frequent injury mechanism is: after dive, the head reaches the ground or some obstacle forcing an abrupt stop and loading the body weight onto the cervical spine, leading to cervical hyperflexion or hyperextension and cervical vertebra fracture by compression.

Material and Method

A retrospective review of the patients with spinal cord injury per dive admitted at CMRRC - Rovisco Pais for the first time between 2003 and 2017 was conducted. The variables analysed were: age, gender, type of lesion, AIS classification, functional status, bladder and bowel functions, and walking. The data collection was obtained through clinical process and telephone interview, and data was analysed subsequently with Microsoft Office Excel ®.

Results

Spinal cord injury per dive was only registered in the male gender with a 25 years old age average. Portugal summer months was the season when most accidents happened, mostly on the beach/sea. The 6th cervical level was the neurological level mostly affected, predominantly with vertebral fracture-dislocation type lesion. MIF scale improved 21 points. Bladder and bowel functions, as well as walking achieved some kind of improvement.

Conclusion

Although spinal cord injury by dive prevalence is low (maybe because this study is limited to one hospital), the consequence are dramatic. Therefore it is necessary to establish some type of prevention program to avoid these catastrophic lesions.

Keywords

Diving; Spinal Cord Injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.03 Neurological and Mental Health Conditions - Spinal Cord Injury

ISPR8-2482

HOT WATER IMMERSION ELEVATES INTERLEUKIN-6 IN PERSONS WITH CERVICAL SPINAL CORD INJURY

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Introduction/Background

Core temperature elevations can impact positively on immunity, potentially due to increases of catecholamines acting on immune cells' adrenergic receptors. The dysfunctional sympathetic nervous system in individuals with cervical spinal cord injury (CSCI) impairs adrenergic responses and may contribute to depressed immunity and the occurrence of low grade systemic inflammation related disorders. However, some immune markers improve following exercise in CSCI, even though the positive effects are often blunted. Non-exercise induced body temperature manipulations have yet to be investigated in CSCI.

Material and Method

Seven male participants with a motor complete CSCI and 8 male able-bodied controls were immersed for 60 min in water set at a temperature 2 C above the individuals' resting oesophageal temperature. Blood was collected before, during, and every hour up to 4 h after immersion and analyzed for interleukin-6 (IL-6).

Results

Hot water immersion increased IL-6 in both groups ($P < 0.001$). IL-6 plasma concentrations were higher in CSCI, but it was not significant. Possibly, the reduced active muscle mass in CSCI does not allow for sufficient core temperature elevations during exercise to increase these cytokines. Together with the lower catecholamine levels usually found in CSCI, this may explain the blunted exercise response on some aspects of immunity. This seems especially concerning as higher average levels of IL-6 support the indication of chronic low grade systemic inflammation in CSCI.

Conclusion

This is the first study to show an acute cytokine response induced by hot water immersion in CSCI. Passive elevation of core temperature may help to improve the cytokine profile in CSCI.

Keywords

cytokine;cervical spinal cord injury;hot water immersion

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0033

THE NEED OF RECOVERY REHABILITATION FOR MILD CASE OF GUILLAIN-BARRE SYNDROME

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Introduction/Background

We often encounter Guillain-Barre syndrome (GBS) patients who are able to walk unaided and perform manual work but with perceived disturbance. But, Severity of GBS, Hughes functional grade scale (FG), is predominantly determined according to patient mobility.

Material and Method

Study design was Case series and retrospective review. Subjects were six GBS patients (FG 1) who underwent recovery rehabilitation in our hospital, 2016. Outcome Measure was Age, gender, hospitalization days (at previous hospital/at this hospital), FG (at worst period/at discharge), Functional Independence Measure (FIM) score total/each item (at admission/at discharge), Handgrip strength (at admission/at discharge).

Results

The average ages of subject was 68.0. All subjects were male. The worst FG of these patients had been grade 2 in 3 patients, grade 4 in 2, and grade 5 in 1. FG at discharge were all Grade 1. The average number of hospitalization days at acute hospital and this hospital was 30.3 and 41.7 days. The average score of FIM at admission and discharge was 115.7 and 124.4. The mean grip strength of dominant hand at admission was 14.8 and 17.5 kg at discharge.

Conclusion

In this study, We focused on FIM and grip strength to evaluate performance abilities other than mobility, but there may be other ADL-related problems that cannot be assessed on the conventional, mobility-based Hughes functional grading scale. We plan to further accumulate cases and make comprehensive assessments of ADLs, QOL and fine motor skills to consider long-term convalescence in GBS patients in terms of performance abilities other than gait ability.

Keywords

Guillain-Barre Syndrome; Prognosis; Activities of daily living

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-2589

STATINS MYOPATHY – A DIAGNOSIS TO BE AWARE

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Introduction/Background

Statins are considered to be safe, well tolerated and the primary class of medication used for the treatment of hypercholesterolemia. In approximately 1 of 10,000 treated persons per year, do statins cause serious muscle damage, with weakness and elevated levels of creatine kinase. Severe myonecrosis leading to clinical rhabdomyolysis is unusual, affecting 0.1 percent of patients. Full clinical recovery not always occurs after stopping statin therapy.

Material and Method

Our aim was to describe a patient diagnosed with statins myopathy, alert to a neglected diagnosis and enhance the role of rehabilitation in these patients that maintain symptoms.

Results

A 61-year-old man with history of dyslipidaemia, treated with statins (atorvastatin). Presented with 1-year of progressive muscle weakness, asthenia and myalgia. He reported difficulty in dressing, walking, climbing stairs and lift objects. Physical examination revealed symmetric muscle weakness (with grade 4 in the upper and lower limbs) associated with quadriceps atrophy. Laboratory studies showed elevated creatine phosphokinase. Electromyography described moderate muscle changes with inflammation. A muscle biopsy was performed and after exclusion of other causes the diagnosis of statin myopathy was made. His condition didn't improved after statin interruption and introduction of ezetimibe. With no clinical resolution he started corticotherapy, having temporarily benefits. Further after was sent to Physical and Rehabilitation Medicine to begin physical therapy in order to relieve muscle pain, recover strength and function.

Conclusion

The high volume of statin prescriptions means that these condition can be encountered in clinical practice. When a patient taking statins reports muscle pain or weakness, a detailed history and a physical examination should be taken to assess predisposition to myopathy. Therefore, this diagnosis should not be ignored. Severe myonecrosis with statin discontinuation is rare. But when it occurs, rehabilitation is essential to regain muscle strength, optimize function and improve quality of life.

Keywords

statin myopathy ;rehabilitation;myonecrosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0095

MANAGING PAROXYSMAL SYMPATHETIC HYPERACTIVITY (PSH) IN A CASE WITH OVARIAN TERATOMA ASSOCIATED ANTI-NMDA RECEPTOR ENCEPHALITIS

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Introduction/Background

Paroxysmal sympathetic hyperactivity (PSH) is a hyper-adrenergic clinical syndrome most frequently recognized in traumatic brain injury, but has also been seen in other acquired brain injuries such as hypoxic brain injuries, tumors, and intracranial hemorrhage. Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is an autoimmune disorder which is associated with ovarian teratoma.

Material and Method

We report an uncommon case of Anti-NMDAR encephalitis with PSH. This case report serves to expand the list of diagnoses associated with PSH, and provide experience of PSH management.

Results

A 32-year-old Chinese female presented with one day history of episodic involuntary choreiform movements and headache. Subsequently she developed episode of stiffening and jerking movement, confusion, as well as agitation. Lumbar puncture was done and both cerebral spinal fluid (CSF) and serum anti-NMDA receptors were positive. Further CT thorax abdomen pelvis revealed right ovarian tumor. She underwent right ovarian cystectomy and histology confirmed as mature ovarian teratoma. She was diagnosed as ovarian teratoma associated anti-NMDAR encephalitis and was treated with intravenous methylprednisolone, IVIG, IV cyclophosphamide, and Rituximab. With treatment her symptoms improved significantly.

After 2 weeks of symptoms onset, she was noted to have episodic fever, tachycardia, hypertension, diaphoresis, and dystonia. Infectious cause was excluded and she was diagnosed paroxysmal sympathetic hyperactivity (PSH). She was started on oral clonazepam, propranolol and gabapentin for PSH. Her fever, diaphoresis, tachycardia, and dystonia gradually resolved.

Conclusion

Recognition of PSH in Anti-NMDA receptor encephalitis is important. Successful management requires combination of different pharmacological agents to target different symptoms resulting from PSH.

Keywords

Anti-N-Methyl-D-Aspartate Receptor(NMDAR) Encephalitis;Paroxysmal Sympathetic Hyperactivity (PSH);Autoimmune encephalitis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0122

EFFECTIVENESS OF EXERCISE ON SPASTICITY IN PEOPLE WITH MULTIPLE SCLEROSIS. A META-ANALYSIS

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Introduction/Background

Spasticity is highly prevalent in people with multiple sclerosis (pwMS). Spasticity in MS can worsen quality of life and increase posture deficits and high risk of fall. Exercise interventions show promising findings in published clinical trials. The aim of this study is to conduct a meta-analysis that quantifies the effectiveness of exercise on spasticity in PwMS.

Material and Method

Methods: A systematic search was conducted using MEDLINE, CINAHL, Cochrane library, Scopus and PEDro databases. The included studies were randomised clinical trials (RCTs) that evaluate the effect of exercise on spasticity outcomes in comparison with no intervention or equivalent doses of antispastic medication or transcranial magnetic stimulation for PwMS. Meta-analyses were performed by calculating standardized mean difference (SMD) at 95% confidence interval. The significance level was set at $p \leq 0.05$. The RCTs were assessed by the physiotherapy evidence database.

Results

The meta-analysis included a total of 5 RCTs. The exercise improved significantly muscle tone measured by the modified Ashworth scale (SMD= 0.646, $p= 0.00$) but the improvement in self-reported spasticity outcomes was not significant (SMD= 0.839, $p= 0.083$), Figure 1. Three out of the 5 included articles did not fulfil powered sample size and quality criteria.

Conclusion

The meta-analysis results show positive effects on muscle tone and self-reported spasticity outcomes. Other aspects of spasticity such as spasm and clonus were not discussed in the included RCTs. Exercise can be a possible intervention for spasticity in PwMS. However, high quality clinical RCTs that study the effects on all aspects of spasticity are required.

Keywords

Multiple sclerosis; spasticity; exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0156

EFFECT OF ISCHEMIC PRECONDITIONING ON EXERCISE TOLERANCE IN PEOPLE WITH MULTIPLE SCLEROSIS: A DOUBLE BLIND RANDOMISED CONTROL FEASIBILITY STUDY

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Introduction/Background

Remote Ischemic Preconditioning; exposure of body parts to brief periods of circulatory occlusion and reperfusion has been found to increase exercise tolerance in healthy individuals. The current study aimed to look at feasibility of conducting a double blind randomised control trial of ischaemic preconditioning on exercise tolerance in patients with Multiple Sclerosis.

Material and Method

Twenty three Participants were randomly assigned to receive ischaemic preconditioning (12) or Sham intervention (11). The outcome measures were the 6-minute walking test and Borg's rating of perceived exertion.

Results

All patients tolerated the intervention without any serious adverse events. The active group performed better on the 6 minute walk after intervention (326.36m ±149.8) compared to baseline (316.82m± 162.76) (p=0.297). The sham group did not show any improvement in the distance walked (310.45m± 163.82) compared to baseline (301.45m± 147.32) (p=1.00). The Borg's rating of perceived exertion did not change in active group (before 10.09±2.57; after 10.45±2.97,p=0.357)and worsened in control group (before 10.91±3.60;) (after 12.36± 3.62, p=0.017) .

Conclusion

It is feasible to conduct a double blind RCT using ischaemic preconditioning in patients with multiple sclerosis. The results suggested that ischaemic preconditioning may increase exercise tolerance in MS patients.

Keywords

Multiple sclerosis;Gait

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0216

REFERENCE VALUES FOR JITTER IN STIMULATED SINGLE FIBER ELECTROMYOGRAPHY IN TIBIALIS ANTERIOR MUSCLES OF 25 NORMAL VOLUNTEER PEOPLE BY USING CONCENTRIC NEEDLE: A PROSPECTIVE STUDY

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Introduction/Background

Single fiber electromyography (SFEMG) and Stimulated SFEMG are diagnostic tests of neuromuscular junction disorders. Single-fiber needle electrodes were used originally for this examination. In recent years to avoid infection use of disposable needle electrodes was became obligatory; however, The SFEMG electrodes are too expensive for single use. A small facial concentric needle electrode (CNE) seems to be a reasonable replacement. Normal values for jitter obtained with stimulated *SFEMG* needle electrode have been published, but there are few publications for CNE.

Purpose: In this study, CNE has been used to gain reference values for stimulated SFEMG of Tibialis Anterior (TA) Muscle.

Material and Method

Study was conducted in 25 (19 men and 6 women) normal person between the ages 30-40 years. Built-in jitter analysis software was used. At least 50 consecutive discharges were recorded for each potential and 20 or more different potentials were collected in principle for each examination.

Results

Cut off values for Mean Consecutive Difference (MCD) of Individual potentials and Mean of 20 different MCD (MMCD) were conducted by adding 2.5 SD to the Mean of them. The cut off values for Individual MCD was 59.32 micro second and for MMCD was 35. 49 micro second.

Conclusion

These values seems to be lower than values that has been calculated by special needle of SFEMG.

Keywords

Neuromuscular junction disorders; Concentric needle; Single fiber electromyography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0225

EFFECTS OF 8-WEEK HOME - BASED YOGA AND RESISTANCE TRAINING ON MUSCLE STRENGTH, FUNCTIONAL CAPACITY AND BALANCE IN PATIENTS WITH MULTIPLE SCLEROSIS

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Introduction/Background

Muscle weakness, fatigue and balance disturbances contribute to the reduction of daily activity in multiple sclerosis (MS) patients.

Therapeutic strategies to promote improvements in muscle strength , functional capacity and balance are limited in individuals with MS. Yoga training (YT) is a most popular mind-body interventions and has been known to positively affect physical , mental and other symptoms of multiple sclerosis patients with moderate disability and other cases.

Material and Method

This study was designed to determine effect of 8-week home-based yoga (YT) and resistance training (RT) on muscle strength, functional capacity and balance in 26 patients with multiple sclerosis (MS) with mild to moderate disability.

26 male and female patients (Age: 31.3 ± 9.0749) with mild to moderate disability, were recruited and randomized into three groups randomly: Yoga training(n=9) with three-times weekly home based Hatha Yoga training for eight weeks, Resistance training (n=9) with three-times weekly home based resistance training program for eight weeks and control groups(n=8).

Results

The data analyzed using one way ANOVA showed; however, that Yoga Training(YT) had no significant effect on leg muscle strength, but home Resistance Training(RT) increased it. Also, functional capacity was not affected by any YT and RT, but the balance changed.

Conclusion

It seems that prescribing regular training programs with controlled intensity and time, particularly Resistance Training(RT) and Yoga Training(YT) can have a positive impact on the performance and improvement of MS patients' quality of life

Keywords

Resistance training;Functional capacity;Multiple sclerosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0417

THE BENEFITS OF RITUXIMAB FOR THE TREATMENT OF THE NEUROMYELITISOPTICA DEVIC SYNDROME

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Introduction/Background

The Devic syndrome or neuromyelitisoptica (NMO) of DEVIC is a inflammatory, demyelinating pathology affecting the spinal cord and optic nerves, purveying a major handicap.

The diagnosis is based on **Wingerchuk and al** criteria, RITUXIMAB® seems be efficient on this syndrome.

Material and Method

a retrospective study includes 04 female patients. It lasted from September 2015 to November 2017 with NMO, neurological charts between paraplegia and tetraplegia. The patients have benefited from rituximab in courses spaced 6 months and have been evaluated by EXPANDED DISABILITY STATUS SCALE (EDSS), mesure de l'indépendance fonctionnelle(MIF) ,walking parameters and the occurrence of thrusts.

Results

our patients tolerated the treatment ,the evolution was favorable in 3 patients as shown by the average of EDSS from 07,5 to 04.

The MIF from 56 to 100,

walking parameters: the test of 10 meters progressed from 00 to 20 seconds, 02 minutes

walking test passed from 00 to 70 meters.

No thrusts however have been noted.

Conclusion

The NMO is an inflammatory disease of the central nervous system, associating recurrent episodes of myelitis and opticneuritis.

Humoral mediated immunity at the center of the physiopathology of NMO has made it possible to retain RITUXIMAB (anticorps anti CD20) as a potential treatment in the prevention of thrusts.

The results are very interesting, but require larger studies.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0521

RESPIRATORY REHABILITATION IN MULTIPLE SCLEROSIS: A NARRATIVE REVIEW OF REHABILITATION TECHNIQUES

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Introduction/Background

Respiratory disorders in multiple sclerosis (MS) are an important issue. They can occur early during the course of the disease, are associated with the neurological impairment, and can lead to pneumonia and respiratory failure, which are the main causes of death in advanced MS. Prevailing impaired expiratory muscles and cough abilities has been demonstrated in this population and might constitute a specific target for rehabilitation interventions. However, international guidelines lack recommendations regarding respiratory rehabilitation in MS. We performed a systematic review of literature assessing respiratory rehabilitation in MS.

Material and Method

We searched the databases MEDLINE, PEDro and Cochrane Library for reports of clinical trials and well-designed cohorts published from inception to December 2016, by using the search terms “multiple sclerosis”, “respiratory rehabilitation”, “respiratory muscle training”, “lung volume recruitment”, “cough assistance”, and “mechanical in-exsufflation”. Literature reviews, case reports and physiological studies were excluded. The Maastricht criteria were used to assess the quality of trials. We followed the Oxford Centre for Evidence-Based Medicine guidelines to determine level of evidence and grade of recommendations.

Results

Among the 21 studies initially selected, 11 were retained for review. Seven studies were randomized controlled trials (RCTs), 2 were non-RCTs, and 2 were observational studies. Respiratory muscle training (inspiratory and/or expiratory) by use of a portable resistive mouthpiece was the most frequently evaluated technique, with 2 level-1 RCTs. Another level-1 RCT evaluated deep-breathing exercises. All reviewed studies evaluated home-based rehabilitation programs and focused on spirometric outcomes. The disparities in outcome measures among published studies did not allow for a meta-analysis. Cough assistance devices were not evaluated in this population.

Conclusion

Although respiratory muscle training can improve maximal respiratory pressure in MS and lung volume recruitment can slow the decline in vital capacity, evidence is lacking to recommend specific respiratory rehabilitation programs adapted to the level of disability induced by the disease.

Keywords

respiratory rehabilitation;multiple sclerosis;respiratory muscle training

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0552

AEROBIC TRAINING ENHANCES COGNITION AND FUNCTIONAL STATUS IN DEPRESSIVE MULTIPLE SCLEROSIS PATIENTS. A CASE-CONTROL STUDY.PILOT STUDY.

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Introduction/Background

Multiple sclerosis (MS) is a complex disease manifested by a wide range of symptoms. Depression is one of the most important problems in individuals with MS. Depressive symptoms are strictly associated with lower quality of their life. Recent studies suggest that aerobic training (AT) alleviates depressive symptoms. Therefore, the aims of this study were to study the effects of aerobic training (AT) on depression, cognition and functional status in 2 groups of multiple sclerosis (MS) patients: with depression syndrome (MS-D) and without depression (MS). Moreover, we analyzed the mean delta values with their confidence intervals and examined the changes in baseline values using covariance analysis.

Material and Method

A sample of 31 individuals with MS and 28 MS-D performed 30 minutes of AT using lower-extremity ergometer 3x10 min. per day with 60 min. break for 6 weeks. Both groups were matched for age and sex. All examined parameters were assessed before and after the series of AT using the Montreal Cognitive Assessment (MoCA), the Beck Depression Inventory (BDI), Activity Daily Living Scale (ADL) and the Expanded Disability Status Scale (EDSS). We analyzed the drop-out rate as a measure of feasibility.

Results

In both groups, the AT sessions induced a significant improvement in reducing depression (BDI) and cognition impairment (MoCA). However, the changes observed in MS-D patients were significantly greater than those observed in MS patients, especially in the BDI and MoCA. There were no statistically significant correlations of EDSS, MOCCA, BDI, ADL and age or gender.

Conclusion

AT appears to be effective easy tool in improving cognition and functional status in patients with MS. This study indicated that aerobic training is feasible and could be beneficial for patients with progressive MS.

Keywords

aerobic training; multiple sclerosis; mental status

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0562

VESICO-SPHINCTERIC DYSFUNCTIONS IN PATIENTS WITH MULTIPLE SCLEROSIS: AN UNDERESTIMATED PROBLEM IN MOROCCO

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Introduction/Background

Multiple sclerosis (MS) is a neurological demyelinating disease characterized by the existence of vesico-sphincteric disorders. These dysfunctions are still underestimated in Morocco.

The purpose of our study is to analyze vesico-sphincteric disorders among patients with MS in Morocco.

Material and Method

It's a prospective study spread over 1 year from January 2016 to January 2017, including all patients with MS. The patients were recruited at Physical Medecine and Functional Readaptation department of CHU IBN ROCHD of Casablanca for motor rehabilitation. All patients benefited from a systematic neuro-uro consult to detect Vesico-Sphincteric dysfunctions. USP questionnaire and EDSS scale were administered.

Results

Sixty patients were recruited. Thirty five patients of them had Vesico-Sphincteric dysfunctions with an incidence of 58%. The average age was 39,7 +/- 11,6 years, with a female predominance. The average duration of evolution was 6,8 +/- 5,8 years. The relapsing remitting form of MS was found in 58,4 % of the patients. The average EDSS was 4,8 +/- 2,2. The Vesico-Sphincteric dysfunctions found were: stress vesico-sphincteric incontinence 21,4%, overactive bladder (OAB) 78,6%, and low stream 50%.

Conclusion

Vesico-Sphincteric dysfunctions in multiple sclerosis can compromise functional and vital prognosis. They can cause a severe disability and a significant impairment of quality of life.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0563

MULTIPLE SCLEROSIS AND FATIGUE

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Introduction/Background

Fatigue is one of the most common symptoms of MS. It leads to a subjective loss of physical and / or mental energy leading to multiple consequences in the daily life of patients at the relational, social or professional levels. More than 90% of MS patients experience fatigue, and more than 75% consider it one of the three most bothersome symptoms. Definitions of fatigue are countless and refer to multifactorial concepts that increase the difficulties of the clinician confronted with this question. Their characteristics compared to normal fatigue are essentially rapid onset after minimal effort with increased recovery time. It is a chronic fatigue exacerbating the other symptoms of the disease.

Objectives: to determine clinical characteristics of fatigue during MS and its impact on physical, cognitive and social activities.

Material and Method

We conducted a descriptive analytical study in the Physical Medicine and Functional Rehabilitation Department of Ibn Rochd University Hospital in Casablanca. Patients followed for MS with a Barthel index greater than 40 were included. The socio-demographic data, the existence of fatigue as well as its characteristics, the data of the neurological examination were noted. The impact of fatigue was evaluated using the "Fatigue Impact Scale".

Results

We recruited 10 patients including 8 women. The average age was 30.56 years old. MS was remitting (7 cases), progressive remitting (2 cases) and progressive (1 case). The treatment consisted of immunosuppressants (6 cases) and interferon (1 case). Fatigue was noted in 100% of patients. The fatigue impact was greater on physical activities (8 cases), cognitive activities and the social role (10 cases). There was a repercussion on social relations only in 2 cases.

Conclusion

Fatigue is common during multiple sclerosis often aggravated by heat and physical exercises. It represents a major handicap given its physical, cognitive and social impact.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0569

RAPIDLY PROGRESSIVE ASCENDING WEAKNESS IN A 28 YEAR OLD MALE

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Introduction/Background

Neuromyelitis is a rare auto-immune disorder the diagnosis of which was ameliorated by the discovery of the NMO-IgG antibody.

Material and Method

Not applicable.

Results

Case Description: A 28 y.o. male with a history of SLE diagnosed at the age of 16 presented to the ED for pressure-like back pain which progressed to urinary retention, parasthesias, areflexia, and rapidly progressive paralysis. The patient was admitted to the medical ICU for possible respiratory compromise and underwent work up for possible Guillian Barre and Bacterial Meningitis. A full workup including a lumbar puncture, plasmapheresis, a rheumatological panel, and MRI of the brain and spine were done and a diagnosis of NMO was made. The patient was then transferred to acute rehabilitation for further management of his functional deficits. On admission, the patient had intact but diminished sensation to bilateral lower extremities up the level of L1 and a modified Ashworth Scale of 1+ with marked myoclonus present distally from the hips. Upper extremity strength was only mildly diminished (4+/5) secondary to a prolonged hospital stay. With continued treatment with prednisone and cyclophosphamide, the patient was able to regain continence to bladder and bowel. Therapy focused on bed mobility and transfers and the patient progressed to moderate assistance with bed mobility but still required maximal assistance for transfers by discharge.

Conclusion

With the discovery of the NMO antibody, early diagnosis and treatment of NMO has become more commonplace and more patients with this disorder are likely to require rehabilitation therapy. As such, it is important for the field of physiatry to be aware of the presentation, possible functional deficits, and outcomes that come with this diagnosis.

Keywords

Neuromyelitis Optica; Transverse Myelitis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0736

MEASUREMENT OF DISABILITY BY FIM (FUNCTIONAL INDEPENDENCE MEASURE) IN A HOSPITAL POPULATION WITH MULTIPLE SCLEROSIS

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Introduction/Background

Multiple sclerosis (MS) is the leading cause of disability in young adults. In the neurological environment specific scales are used for disability assessment, such as Expanded Disability Status Scale EDSS. The Functional Independence Measure (FIM) is used in a rehabilitation environment in multiple pathological settings in adults to specify disability situations. The aim of this work is to study the contribution of the MIF for the measurement of disability in 30 patients followed in the neurology department of Razi Hospital, taking into account the evolutionary form, seniority and clinical pictures.

Material and Method

Descriptive cross-sectional study of 30 patients with MS defined by MacDonald's criteria, seen at the Razi Hospital Neurology Day Hospital over a 5-month period.

Results

The average age of onset was 30.3 years, with a female predominance (23 women). The duration of evolution varied from 3 months to 25 years, with a majority for more than 10 years (37%). The EDSS score ranged from 0 to 8 with an average of 3.26. Regarding the MIF, the overall average was 104/126 with a minimum of 56 and maximum of 126. Four patients had a strongly limited autonomy, 9 were moderately dependent and 17 could be considered independent and autonomous. The MIF was lower depending on the duration of evolution and the number of relapses. The tasks for which our patients had the most difficulty are the control of the bladder then the social interactions and finally the rise of the stairs; walking and climbing stairs was a challenge for 11 patients. The higher the EDSS, the lower the MIF and vice versa.

Conclusion

The EDSS and the MIF have equivalent estimations of functional impact according to the age of the disease and the number of relapses. MIF appreciates better vesico-sphincterian disorders and cognitive disorders.

Keywords

multiple sclerosis;assessment; disability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-0970

GUILLAIN-BARRE SYNDROME AND RESPIRATORY FUNCTION, IN INTENSIVE REHABILITATION PROGRAM

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Introduction/Background

Guillain Barré syndrome (GBS) is a demyelinating inflammatory polyneuropathy and the most common cause of neuromuscular flaccid paralysis in developed countries. Prognosis is overall favorable, although a significant amount of patients presents permanent deficits that affect life quality.

Respiratory insufficiency occurs in up to 30% of patients due to involvement of the inspiratory and expiratory muscles. Aspiration pneumonia and atelectasis may also occur, due to compromise of the bulbar musculature. Respiratory complications may persist, with incomplete respiratory recovery. The literature is still sparse in the knowledge of the evolution of the respiratory function of these patients.

The authors designed a prospective observational study that aimed evaluation of respiratory function in GBS patients, in intensive rehabilitation program.

Material and Method

Patients were included with GBS diagnosis with less than 3 months, admitted consecutively in intensive rehabilitation program in a specialized center.

Pulmonary function was evaluated with spirometry, manometry, sleep study or nocturnal oximetry.

Results

Sample of 12 patients, with same gender ratio. Mean age at diagnosis was 56.7 years old. Mean time from the beginning of the clinical symptom to the diagnosis was 13.8 days. Half of the patients had a probable predisposing factor. Half of the patients presented facio-bulbar compromise and one patient needed invasive ventilation.

Seven patients had normal spirometry results. No patient presented obstructive pattern. Three patients had a restrictive pattern, one of which had a severe pattern. The patient who needed invasive ventilation had a slight restrictive pattern.

Four patients had PIM and PEM values lower than 60% of predicted, all of which had a normal spirometry pattern.

Conclusion

Results from this study reveal considerable prevalence of changes in respiratory function at admission, even in patients without previous mechanical ventilation. It seems that a systematic evaluation of respiratory function is important and necessary.

Keywords

Guillain-Barré syndrome ;Respiratory Function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1141

THE EFFECT OF TRAINING ON RESPIRATORY COMPLICATIONS, NUTRITIONAL STATE AND THE SWALLOWING-RELATED QUALITY OF LIFE IN MULTIPLE SCLEROSIS PATIENTS WITH DYSPHAGIA

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Introduction/Background

Dysphagia is an important health problem due to its morbidity, mortality and cost of care. The aim of this study was to determine the effect of training provided to multiple sclerosis (MS) patients with dysphagia on the respiratory complications, nutritional status and swallowing-related quality of life.

Material and Method

This randomized, controlled, semi-experimental study was performed at the neurology clinic and outpatients of a training hospital in Turkey. We included a total of 52 patients aged 18 years and older who had an MS diagnosis according to McDonald criteria, could communicate in Turkish and who volunteered to participate in the study. The patients were assigned to the intervention (n=26) and control (n=26) groups by block randomization. An information form, the Standardized Mini Mental Test, the Dysphagia in Multiple Sclerosis (DYMUS) questionnaire, the Eating Assessment Tool (EAT-10) and the Swallow Quality of Life Questionnaire (SWAL-QOL) were used to collect data. Training regarding swallowing difficulty and exercises was provided to the intervention group, and the patients were offered telephone follow-up 4 weeks later. The pre-test and post-test (at the 12th week of the study) results were evaluated. Descriptive statistics, the chi-square test, the t-test for independent and dependent groups, the Mann-Whitney U test and the Wilcoxon signed rank test were used to evaluate the results.

Results

We found that the mean DYMUS ($t=5.244$, $p<0.001$) and EAT-10 scores ($t=2.254$, $p=0.033$) decreased, while the SWAL-QOL general burden ($t=-3.000$, $p=0.006$), eating duration ($t=-2.656$, $p=0.006$), food selection ($t=-2.661$, $p=0.013$), communication ($t=-2.970$, $p=0.006$), fear of eating ($t=-4.635$, $p<0.001$), mental health ($t=-2.288$, $p=0.031$) and sleep ($t=-3.453$, $p=0.002$) subscale scores increased after the training in the intervention group.

Conclusion

We found that training provided to MS patients with dysphagia improved swallowing functions and swallowing-related quality of life. Further research on the subject with long-term follow-up is recommended to monitor the effect of training.

Keywords

Dysphagia;Multiple Sclerosis;Quality of Life

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1238

MICTURITION DISORDERS IN MULTIPLE SCLEROSIS PATIENTS: A TUNISIAN POPULATION

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Introduction/Background

It is well known that micturition disorders are invariably present in advanced cases of multiple sclerosis. Bladder symptoms usually arise as a result of spinal lesions. Our study reports the frequency of micturition disorders, urodynamic investigations of symptomatic patients and the correlation among urodynamic findings, disability and MRI findings in multiple sclerosis patients.

Material and Method

A prospective study was conducted. We included multiple sclerosis patients followed at the Neurology and Physical Medicine and Rehabilitation departments of the University Hospital of Monastir over six months.

Results

Forty patients with 12 men and 18 women were included. 42.5% patients reported urinary symptoms and underwent further neurourological investigation. Urgency was the most common symptom in 35%. In urodynamic investigations, 25 % presented detrusor hyperreflexia. All patients underwent a neurological examination corroborated by MRI investigation. Spinal lesions at MRI were found in 42.5%. Patients who resulted positive in urodynamic evaluation were strictly correlated to EDSS, pyramidal and cerebellar functional statuses.

Conclusion

Since urinary disorders are frequently the main cause for social withdrawal of the multiple sclerosis patient, the investigation and therapy of micturition dysfunction should play a central role in the management of these patients.

Keywords

urinary disorders;multiple sclerosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1307

FAMPRIDINE-PR (PROLONGED RELEASED 4-AMINOPYRIDINE) IMPROVES UPPER LIMB DYSFUNCTION IN MULTIPLE SCLEROSIS PATIENTS: CLINICAL AND KINEMATIC ANALYSIS

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Introduction/Background

Multiple Sclerosis often results in upper limb dysfunction which significantly affects patients' quality of life. However little support is currently proposed for this deficit. Fampridine-PR is validated to improve walking speed but only few studies indicate that this drug may also be effective on upper limb function, with no detailed functional movement analysis. The aim of this study is to assess efficacy of fampridine-PR on improving grasping abilities in persons with Multiple Sclerosis (PwMS) by using a global analysis including both clinical and kinematic criteria.

Material and Method

We included 14 consecutive PwMS with EDSS>5 and we performed Jebsen Hand Function Test (JHFT) before treatment and under treatment. Patients showing a consistent improvement at D14 (n=11 patients showing at least 12 % reduction between D0 and D14) continued the treatment and the JHFT score were measured after 30 and 90 days under treatment. We also quantified upper force using dynamometers after 14, 30 and 90 days of treatment. In addition 3D kinematic analyses (grasping a glass) were realized with each arm on each assessment.

Results

JHFT score dropped from day 0 to day 14 by more than 20% and remained stable up to day 90. Individual analysis highlighted that improvement of JHFT score varied from 12.4% to 59.3% from initial score. The evolution of testing score followed the same trend. The hand dynamometer score remained heterogeneous.

The kinematic analysis showed a better opening of the grip and a smoothing of the arm movement with less velocity peaks.

Conclusion

The results suggest that Fampridine-PR can significantly improve grasping function during at least the 90 days of our follow-up.

Keywords

fampridine;upper limb function;Jebsen Hand Function Test

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1482

COGNITIVE MOTOR INTERFERENCE IN PATIENTS WITH MULTIPLE SCLEROSIS

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Introduction/Background

Patients with Multiple Sclerosis (PwMS) present cognitive and motor dysfunction. The Cognitive Motor Interference (CMI) could have a negative impact in PwMS' daily-life activities especially in those situations when the concomitances of these two components are crucial (e.g., walking and talking with someone, cross a traffic light). CMI have been experimentally evaluated based on a dual task paradigm. Recent studies suggest that there is some inconsistency in the literature regarding whether dual task condition differs between PwMS and healthy peers. The objectives of this study were (i) to determine the impact of the CMI in the gait of PwMS by comparing with healthy peers and (ii) to determine which clinical, cognitive and motor, parameters were more associated with dual task gait.

Material and Method

49 PwMS and 15 healthy peers participated in this study. The evaluations were composed by a current clinical evaluation, SDMT cognitive test, visual analogue scale of fatigue and gait evaluated at self-selected and dual task (arithmetic calculations) conditions. Afterward, the dual task cost (DTC) which is the ratio between the velocities of the 2 gait conditions was calculated.

Results

Significant differences in the cognitive and motor performances were found between PwMS and healthy groups ($p= 10^{-5}$). However, in terms of DTC, no significant difference was found between groups ($p= 0.12$). EDSS score was the only significant parameter able to explain the DTC variance at 8%. The gait at self-selected condition could explain 92% of the variance of the gait at dual task condition.

Conclusion

The CMI occurs in the same proportion in both PwMS and healthy persons. Despite the preponderance of the motor component in the DTC and in gait dual task condition, a combined motor and cognitive rehabilitation approach may have better results than a rehabilitation programs based on separated components.

Keywords

Multiple sclerosis;Gait disorder;Dual task

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1511

NOT ONLY WALKING BUT ALSO ACTIVITIES OF DAILY LIVING ARE IMPROVED IN PATIENTS WITH MULTIPLE SCLEROSIS AFTER FAMPRIDINE TREATMENT.

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Introduction/Background

Fampridine improves walking in patients with multiple sclerosis (PwMS). There is however little evidence suggesting it also improves the performance of activities of daily living (ADL). Therefore, we aimed to evaluate the prevalence of ADL improvement after the initial fampridine trial in relation to the improvement of walking.

Material and Method

In this prospective study we included 102 consecutive PwMS who were referred for an assessment of walking before the initial prescription of fampridine. In addition to the routine 10 meter walk test (10MWT) performed by physiotherapists, the Canadian Occupational Performance Measure (COPM) was performed by occupational therapists. The tests were performed before and immediately after the initial 14 days fampridine trial. Patients were defined as responders on 10MWT if 20% improvement in time was recorded between the two measurements. Similarly we defined responders on COPM if the improvement in scores was 2 or more. Descriptive statistics and chi-square test to evaluate the distribution of responders and non-responders on COPM in relation to the responders on 10MWT were performed.

Results

In total, 100 PwMS (70 females, 30 males, mean age 51±11 years and EDSS 5.6±1) completed the study. The mean initial 10MWT time was 25.1±42.7, compared to 18.3±37.8 at reassessment which resulted in 78.4% response rate to fampridine. The average initial COPM performance score was 4.6 ± 1.5 while average reassessment score was 6.1± 1.8 (39.2% response rate). The average initial COPM satisfaction score was 6.1± 1.8 and the average reassessment score was 6.5±1.9 (44.1% response rate). Responders on 10MWT were very likely to improve also in COPM performance (Chi square p=0.01) and satisfaction (p=0.01).

Conclusion

Not only walking but also meaningful and self-chosen ADL improve in terms of PwMS' perception and satisfaction (COPM) after fampridine treatment. It is very likely that patients who improve in walking will show significant improvement in ADL.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1595

POST-ZIKA GUILLAIN-BARRE SYNDROM : DESCRIPTION OF CLINICAL, BIOLOGICAL, FUNCTIONAL AND ELECTROPHYSIOLOGICAL CHARACTERISTICS OBSERVED DURING THE ZIKA EPIDEMIC IN MARTINIQUE

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Introduction/Background

The objective is to carry out a descriptive study listing the clinical, biological, functional and electrophysiological characteristics observed in patients with post-ZIKA Guillain-Barre syndromes (SGB) during the ZIKA epidemic in Martinique, and hospitalized in a rehabilitation service.

Material and Method

A retrospective study of subjects with post-ZIKA SGB from December 2015 to September 2016 in Martinique diagnosed according to Brighton criteria associated with molecular biology techniques, serology, and electrophysiology. Collection of data at nadir and discharge from hospitalization.

Results

25 subjects were included with a sex ratio of 1.27 and a median age of 65 years. 13 patients were hospitalized in intensive care unit. At nadir, 21 patients (84%) were tetraparetic, 10 (40%) had facial diplegia, 15 (60%) had severe swallowing disorders, 12 (48%) were dysuric, 6 (24%) had acute urinary retention. 24 patients (96%) had paresthesias, 11 (44%) had severe constipation requiring repeated enemas, 8 (32%) had infectious pneumonia with 7 (28%) pneumopathies with mechanical ventilation, 2 (8%) had a cardiorespiratory arrest. The median for the duration of the extension phase was 8 days versus 4 days for the plateau phase. The median for the delay between the first signs of ZIKA infection and the first neurological signs was 2.5 days. 16 urine PCR returned positive for ZIKA and serum neutralization was required for 9 subjects. 21 acute inflammatory demyelinating polyradiculoneuritis were objectified. 13 patients (52%) required a nasogastric tube, 4 (16%) required percutaneous gastrostomy, 9 (36%) had orotracheal intubation, and 6 (24%) had tracheotomy. All the patients returned home with a quasi-complete autonomy.

Conclusion

The large number of disorders of swallowing and dysautonomia haemodynamic and vesicospincterian will be important elements to be favored in the acute management in the

event of new epidemics due to their therapeutic urgency and residual incapacities. Despite severe clinical forms, patients presented good functional recovery.

Keywords

Rehabilitation;Guillain-Barré;Zika

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1781

DOES FAMPRIDINE OVERPASS GAIT CUT-OFFS BASED ON MINIMAL DETECTABLE CHANGE?

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Introduction/Background

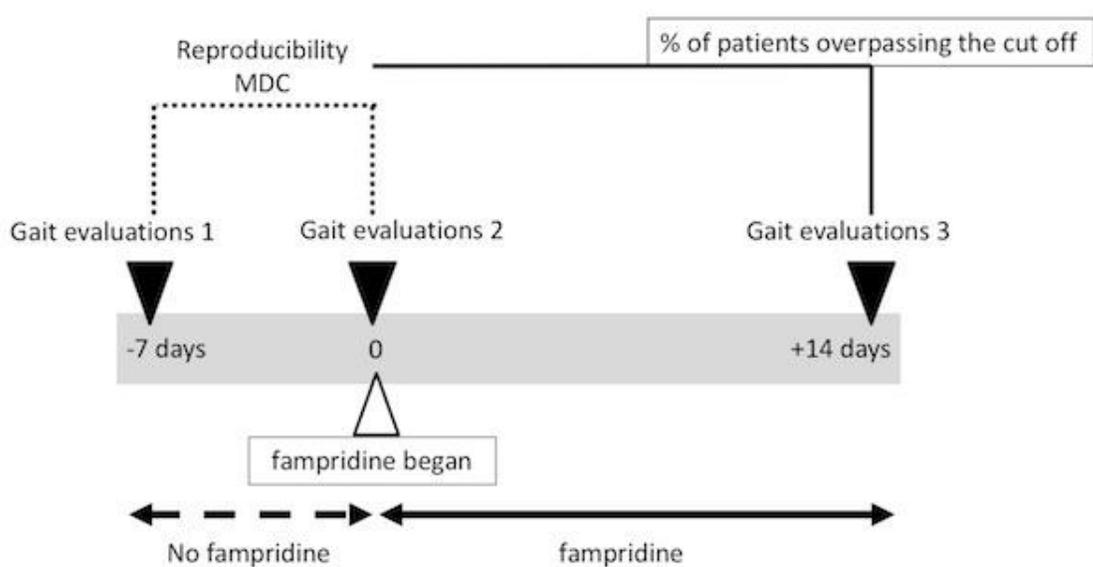
Gait disorder is one of the most frequent dysfunction reported by patients with multiple sclerosis (PwMS). Studies have shown that fampridine can improve gait velocity in 11.2 to 34.8% of them. The minimal important clinical difference (MICD) on a timed 25 foot test (T25FT) measured by anchor-based methods is around 20%. Considering a more conservative method based on reproducibility and minimal detectable change (MDC), the T25FT cut-off is comprised between 23% and 66%. The aim of this study was to evaluate whether fampridine can overpass PwMS's gait velocity cutoffs determined by a reproducibility approach.

Material and Method

Sixty-eight patients were included (EDSS 4.0 to 6.5) from FAMPISSEP (NCT02849782). Each patient was evaluated 3 times (Figure 1). Gait was evaluated with a GaitRite system and the variables considered were gait velocity on the T25FT under different conditions (comfortable speed, fast speed, dual task with calculation of dual task cost), the timed up and go test and the 6 minutes walk test (6MWT). The cut-offs for each variable were determined from the results of the first 2 visits and based on a reproducibility method using the MDC. The percentage of

patients under treatment overpassing those cut-offs was calculated.

Figure 1 : study design



Results

Table 1 shows the cut-offs of the aforementioned tests and the percentage of patients that overpass those cut-offs. Considering a composite analysis, the percentage of patient that overpass at least one of the cut-offs was 32.4%.

Tableau 1. Percentage of patients overpassing the cut off

	Comfortable	CMD95	CMD95 %	%
Fast speed		0,38	34,93	13,56
Dual task cost		20,53	158,59	9,52
6 minutes		86,10	31,68	17,65
TUG		7,88	51,50	0

MDC : minimal detectable change

Conclusion

Regarding previous studies, the cutoffs based on MDC are higher than those found with MICD and appear difficult to achieve. This study confirms previous results showing that a small percentage of patients overpass at least 1 cutoff. A recent study have suggested to use a composite criterion (using different gait tests). In this case, the percentages of improvement based on MDC are near to those found with the MICD.

Keywords

Gait disorders;Reproducibility;Fampridine

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1797

A CASE REPORT OF A 29-YEAR OLD WOMAN WITH A NECROTIZING SRP POSITIVE MYOPATHY

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Introduction/Background

Necrotizing myopathy (NAM) is a rare autoimmune disease, characterized by subacute proximal limb muscle weakness and a high creatinine-kinase level. It can be associated with use of statins or associated with cancer. Patients have no or minimal inflammation on muscle biopsy. The exact mechanism is not known, but many patients with NAM have autoantibodies directed against HMGCR or SRP. HMGCR is the enzyme targeted by statins, and it has been suggested that statins may trigger NAM, although many patients with NAM have never taken statin medications. The presence of the antibodies and the response to immunotherapy support the autoimmune nature of NAM. Proximal muscle weakness in the limbs, as well as weakness in other muscles, including breathing and swallowing muscles, can be present. Heart muscle involvement is rare. A case report of a 29-year old woman is reported.

Material and Method

She was diagnosed a necrotizing SRP positive myopathy after muscle biopsy. Treatment and rehabilitation were established.

Results

Aggressive early treatment with a combination of intravenous immunosuppressive therapy was indicated, including metilprednisolon, cyclosporin, methotrexat and intravenous immune globulin. Then she was included in a complex rehabilitation programme at a tertiary rehabilitation centre, and has regular controls at the rheumatologist.

Conclusion

In a patient with necrotising myopathy complex rehabilitation is very important, including physical therapy, occupational, vocational social and emotional support.

Keywords

Necrotizing myopathy; Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1811

EFFECTS OF CONSTRAINT-INDUCED MOVEMENT THERAPY IN A PATIENT WITH ACUTE MYELITIS : A CASE STUDY

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Introduction/Background

A 18 years old patient, with a history of uterine transfusion, obesity, recent right pulmonary embolism was admitted to the rehabilitation department for left hemiparesis and bilateral sensory disorders as part of acute transverse myelitis of etiology not yet determined. Patient ASIA D, level C4. A corticosteroid treatment with a degressive dose was instituted for 3 weeks followed by a transient improvement. Despite the absence of data on its efficacy in the context of myelitis, a movement-induced constraint therapy (CIMT) was introduced for this patient.

Material and Method

The CIMT lasted 5 weeks. An intensive training protocol of the paretic arm for 9 hours per day including 4 hours of rehabilitation (physio, occupational therapy), 5 days a week, was implemented. An evaluation (fugl Meyer, Box and block, Purdue pegboard, Minnesota and Baseline grip force in kg) at the initial phase (pre-test) and at the end (post-test) was carried out. Autonomy and quality of life were measured by Barthel Index and EQ-5D-5L respectively.

Results

The CIMT did not cause a drop in performance. On the contrary, we noticed an improvement in grip strength, manual dexterity, mobility of the paretic upper limb. Improvement in the ability to carry out daily activities enabled the patient to regain self-confidence and was a determining factor in the decision to return home.

Conclusion

We are not able to say that the results achieved are linked to the therapy because of the absence of imaging evidence showing a cortical reorganization induced by the motor drive of the paretic limb. However, this case suggests that the CIMT would provide good functional and motor recovery as well as improved independence and quality of life. Further studies on the

subject could enlighten us and allow us to validate a standard protocol of therapy and its evaluation.

Keywords

transverse myelitis;constraint-induced movement therapy;upper limb

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1839

MULTIPLE SCLEROSIS: BEATING FATIGUE WITH EXERCISE

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Introduction/Background

Multiple sclerosis (MS) is the leading cause of non-traumatic disability among young and middle-aged people, with fatigue being reported as the most disabling symptom with a prevalence of 75-95%. The aim of this study was to review the pathophysiological mechanisms underlying MS-fatigue, emphasizing the role of exercise therapy in fatigue management, available therapeutic strategies and recent relevant experimental findings.

Material and Method

We searched Medline, via PubMed, using the following key words: multiple sclerosis; fatigue; neuroinflammation; exercise therapy; rehabilitation.

Results

MS is an immune mediated disease of the central nervous system in which chronic neuroinflammation and neurodegeneration cause demyelination, giving rise to a great variety of symptoms, with fatigue being defined as a subjective lack of physical and/or mental energy that interferes with usual activities of the patient.

The physiopathology of fatigue in MS is still poorly understood with both immune-related processes (inflammation, neurodegeneration, endocrine dysfunction) and non-immune-mediated processes (sleep disturbances, depression, cognitive alterations, medication side effects) contributing. While chemical mediators of inflammation could not be unequivocally related to fatigue, modern immunotherapeutics that modulate neuroinflammation appear to minimize fatigue.

MS patients with fatigue show a significant diffusivity increase in left thalamo-frontal reconstructions. Fatigue seems to be associated with a disruption of brain networks involved in motor preparation processes, depending on several frontal-thalamic pathways.

Exercise therapy, particularly endurance training, isolated or combined with strength training, proved to reduce fatigue. Yoga and tai-chi can be helpful as well. Exercise therapy seems to be safe in MS patients as there seems to be no association with a significant risk of disease relapse.

Conclusion

With MS being a disabling medical condition through fatigue, exercise therapy seems to be a safe and valuable option to minimize the impact of the disease in day to day life of MS patients. More studies are needed.

Keywords

Multiple Sclerosis; Fatigue; Exercise therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-2014

REHABILITATIVE APPROACH IN EARLY STAGES OF MULTIPLE SCLEROSIS.

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Introduction/Background

Patients with multiple sclerosis (MS) since the earliest stages experiencing motor and cognitive problems, such as lower motor fluidity, reduced attention spans, memory impairments. The progressive loss of integration ability of the central nervous system resulting in a disconnection damage. First affected are fast systems with high level of integration. 'Dual tasking' often leads to a poorer performance.

Aim of the study is to verify the value of early rehabilitation in reducing the impact of these symptoms on daily living.

Material and Method

We conducted a case-control study including 15 patients with EDSS < 3, divided into three groups: 5 underwent 10 sessions of adapted physical activity (APA); 5 had 10 cognitive-motor training sessions (individual rehabilitation project-IRP), 5 not underwent rehabilitation treatment (Control).

Patients had initial and final motor-cognitive assessments using Berg Balance Scale (BBS), Ten Meter Walking Test (TMWT) at different speeds and performing a cognitive task (Word List Generation-WLG), Brief Repeatable Battery of Neuropsychological Tests (BRB-NT), Trail Making Test (TMT) and Digit Span.

Results

TMWT final evaluation showed variations in IRP and APA. The number of words generated in usual and quick speed, not changed in Control, was reduced in APA, increased in IRP. BBS score variation was statistically significant in IRP and APA (IRP initial median score: 52, final median score: 55). At BRB-NT, after cognitive training, results a significant improvement in IRP (T-Test: p 0,005).

Conclusion

IRP and APA show a greater ability in balance control and global fluidity; IRP has better performance in 'dual tasking', probably related to an exercise focused on individual specific impairments.

These data support the value of individualized rehabilitation treatment, since the early stage of the disease, moreover APA could represent a good tool in the maintenance phase.

Keywords

multiple sclerosis;early rehabilitation;dual tasking

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-2027

THE ROLE PHYSICAL AND REHABILITATION MEDICINE IN SUSAC SYNDROME: A CASE REPORT

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Introduction/Background

Susac's syndrome (SS) is an autoimmune disease characterized by the clinical triad of encephalopathy, neuro-sensorial hearing loss and blockage of the branch retinal artery. Symptoms include headaches, slurred speech, and trouble focusing. This condition is characterized by classic radiological features on magnetic resonance imaging (MRI). Treatment includes drugs that suppress the immune system. The diagnosis is based on radiological features together with clinical symptoms. This study aims to reflect on the role of physical and rehabilitation medicine in the management of SS.

Material and Method

A 41-year-old man, developed headaches, behavior changes (mainly depression and isolation) and progressive hearing loss with 3 months evolution. At the physical examination the patient revealed an ataxy and postural imbalance in orthostatic position. The clinical presentation, along with an audiogram and ophthalmologic examination and cerebral MRI revealed clinical findings compatible with SS. The patient was submitted to corticotherapy, monthly intravenous immunoglobulin and immunosuppressant therapy (mycophenolate mofetil).

Despite the treatment, the patient development visual deficits and showed hearing and cognitive deterioration. Concomitantly, he developed spastic paraparesis (Modified Ashworth Scale score: 3), with spastic gait.**Results**

An integrative rehabilitation program was implement. In this case, the patient initiated proprioceptive training and muscle strengthening. In order to provide some independence in locomotion, an ankle-foot orthosis and an auxiliary walking device were implemented. The patient also began cognitive therapy and speech-language therapy. The initial approach to spasticity was based on a physical and occupational therapy (sustained stretching, massage, vibration, functional electrical stimulation and heat modalities) in addition with a pharmacological approach. The failure to achieve significant results led to the implementation of Botulinum Toxin. This resulted in the improvement of overall spasticity.

Conclusion

SS is a debilitating disease which conditions daily life activities. The role Physical and Rehabilitation Medicine is determinant to the improvement of the patient's functional and psychological status.

Keywords

Susac's syndrome ;encephalopathy;rehabilitation program

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-2100

OUTCOMES OF INPATIENT REHABILITATION IN PATIENTS WITH MULTIPLE SCLEROSIS AT A NEUROREHABILITATION UNIT, A SAUDI ARABIAN EXPERIENCE

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Introduction/Background

To assess the impact of short term inpatient multidisciplinary rehabilitation in patients with Multiple Sclerosis in Saudi population and to identify the clinical predictors of functional outcomes

Material and Method

Retrospective study using medical charts (electronic and paper) . inclusion criteria : multiple sclerosis patients admitted for neurorehabilitation unit at king fahad medical city betwrrn 2009 to 2015

Results

A total of 24 patients were identified with 7 males and 17 females. The average age was around 36 years. FIM score at admission and discharge showed a mean of 77. 5 and 97. 25 respectively. The FIM gain varied between 2 and 51 with mean of 18. 58. FIM efficiency ranged from 0. 09 to 0. 95. There was no statistically significant difference in FIM efficiency between male and female. The ages of 9 patients were less than 30 years, while the remaining 15 patients were older than 30. **There was a significant association between those two age groups with the FIM efficiency. (p-value = 0. 043).** Most common type of MS was relapsing remitting type (45. 8%). Disease duration ranged from 1 to 20 years with mean of 7 years. . The average age of disease onset was 30. 75 years. Length of stay varied between 21 to 95 days with mean 37. 79 days There was no statistically significant correlation between LOS and FIM efficiency

Conclusion

Inpatient rehabilitation is an important intervention in patients with chronic multiple sclerosis which improves functional independence. Data regarding use of FIM efficiency as an outcome measure for patients with MS is scarce. Age has an impact on the functional outcomes in patients with Multiple Sclerosis. FIM efficiency may be used to demonstrate functional gains in relation to length of stay ; however, further studies on larger scale are needed to be carried out nationally and internationally

Keywords

MS Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-2177

WHAT CAN REHABILITATION DO FOR A PATIENT WITH MIASTENIA GRAVIS?

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Introduction/Background

Miastenia Gravis is a disease of the neuromuscular junction that courses with fatigue and proximal muscle weakness. In addition, it can course with restrictive respiratory insufficiency due to weakness in breathing muscles. Current evidence about the role of rehabilitation is scarce.

In this work we want to illustrate how we managed a patient with miastenia gravis considering the available evidence.

Material and Method

We have a 53 years old woman with miastenia gravis asking if we can do something for her. She has severe muscle fatigue, but what most limits her right now is dyspnea. According to her spirometry studies she has severe insufficiency with mixed pattern (obstructive due to bronchiolitis and restrictive due to miastenia itself). The state of our patient is precarious: she has muscle weakness, dyspnea with minimal efforts and needs oxygen therapy 4 hours/day.

According to the current evidence (we will disclose the available evidence on the poster), we choose a short home treatment with the goal of teaching her active breathing exercises, a simple strengthening table of exercises involving major muscles and giving her general recommendations (mostly about activity). All this with a BORG feeling of 11-13 out of 20.

Results

After only 6-8 sessions of treatment (2 per week) the patient continued doing the exercises by her own. Two month later the patient refers feeling more strong, less fatigued, with less dyspnea and coughing more effectively.

Conclusion

Some patients with miastenia present in addition functional deterioration due to disuse. A treatment based on moderate aerobic and strengthening exercises seems beneficial. Inspiratory muscles training could be helpful too. However, the current evidence is scarce and more studies are needed.

Keywords

myasthenia gravis; exercise; inspiratory muscle training

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-2397

A CASE REPORT OF A PATIENT WITH RECURRENT ACUTE INFLAMMATORY DEMYELINATING POLYRADICULONEUROPATHY IN THE SETTING OF HODGKIN'S DISEASE

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Introduction/Background

Setting: Inpatient academic rehabilitation hospital

Patient: 28-year-old female with Hodgkin's disease status post chemotherapy in consideration for stem cell transplant

Material and Method

Case Description: Prior to planned stem cell transplantation, the patient developed ascending weakness, which was found to be consistent with acute inflammatory demyelinating polyradiculoneuropathy (AIDP). She was treated with five cycles of plasma exchange and responded well enough to undergo stem cell transplantation. Within three weeks of plasma exchange and within two weeks of stem cell transplantation, the patient presented again with progressive weakness and was found to have albuminocytologic disassociation in the cerebrospinal fluid consistent with AIDP, and was treated with plasma exchange, intravenous immunoglobulins, and rituximab. She was found to have positive cytomegalovirus titers in the serum, and was started on valganciclovir. Afterwards, the patient underwent rehabilitation at an inpatient rehabilitation unit with positive results.

Results

Discussion: The pathogenesis of AIDP is thought to be rooted in molecular mimicry, in which antibodies made to target an infectious agent also attack the body's own tissues due to structural similarities between the two. In AIDP, myelin sheaths and Nodes of Ranvier starting at the level of the nerve root are attacked, resulting in progressive peripheral nerve dysfunction. Infectious agents known to precipitate this immune mediated reaction include *Campylobacter jejuni*, and less commonly, human immunodeficiency virus, cytomegalovirus, and Epstein Barr virus. In this case, possible etiologies include not only cytomegalovirus, but also stem cell transplantation and Hodgkin's disease itself, all of which may have contributed to the severity of the symptoms, including recurrence of disease.

Conclusion

Conclusion: AIDP is an immune mediated peripheral nerve disease often precipitated by several infectious agents via molecular mimicry and certain disease states. In this case, the patient developed AIDP both before and after stem cell transplantation and was found to have elevated cytomegalovirus titers.

Keywords

AIDP;stem cell transplant;CMV

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.04 Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

ISPR8-1849

THE RELATIONSHIP OF ALEXITHYMIA WITH FATIGUE IN MULTIPLE SCLEROSIS PATIENTS

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Introduction/Background

Alexithymia is a risk and aggravating factor for many problems both psychological and physical. Multiple sclerosis (MS) patients tend to exhibit high levels of alexithymia. Moreover, fatigue is a frequent and highly debilitating symptom of the quality of life of MS patients. There are scarce research findings concerning the correlation of alexithymia with fatigue while there hasn't been any relevant research in Greece. Our study aims in investigating this correlation

Material and Method

Two groups of 56 subjects each participated in the study, one of MS patients from the Neurological Clinic of the Navy Hospital of Athens and the other of healthy control group of corresponding age and gender. Alexithymia was assessed with Toronto Alexithymia Scale and Fatigue with Fatigue Severity Scale and Modified Fatigue Impact Scale. Pearson r coefficients were estimated and then hierarchical analyses of multiple regression were conducted with dependent variable the aspects of fatigue. Prediction factors were added in the analysis in three consecutive levels.

Results

The significant correlation coefficients ranged from 0,24 to 0,57. Fatigue was significantly higher in MS patients (R^2 0,11 to 0,33). Alexithymia contributed further in the prediction (R^2 0,14 έως 0,23). All the interactions were insignificant.

Conclusion

Our results confirm the effect of alexithymia on fatigue in MS. This confirmation was the first time that has been made in a Greek sample. In conclusion, alexithymia should be taken into consideration when assessing MS patients with fatigue as its effect could be ameliorated with appropriate interventions

Keywords

alexithymia;fatigue;multiple sclerosis

Document not received

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-2520

ASSOCIATION WITH PHYSICAL CONDITION AND THE FALLING RISK IN THE GROUP OF EARLY COGNITIVE IMPAIRMENT

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Introduction/Background

According to the previous studies, the falling risk was increased in dementia patients due to impaired cognition. However, even though there are studies revealed exercise can reduce the risk falling dementia group, few researches discusses the association of the falling risk and physical condition in dementia patients. The purpose of this study is to find the association of the falling risks and physical condition in the group of early cognitive impairment.

Material and Method

We conducted a screen in our hospitals for two months. FRAX, AD-8 questionnaires, and the grasp strength were checked. Then we analysis the association of FRAX, AD-8 questionnaires, and the grasp strength.

Results

In this study, 306 persons were included, with 71 men and 235 women. The average age is 67.66 ± 10.77 years old in men and 58.75 ± 10.52 years old. The result revealed significant differences between high risks of dementia group and low risks of dementia group in total fracture risk, hip fracture risk, and grasp strength. However, there is are no significant differences in BMI.

Conclusion

In our study found that increased fracture risk and decreased grasp strength in early cognitive impairment. Physical condition may play a role in falling risk in dementia patients, not only due to poor cognition. Grasp strength is an indicator of sarcopenia. In the study showed that higher prevalence of sarcopenia in suspected dementia patients. However, further studies of the association of sarcopenia and dementia are still needed. This study might be the pioneer of further study in dementia and sarcopenia.

Keywords

FRAX;Dementia;Sarcopenia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-2539

AMYOTROPHIC LATERAL SCLEROSIS – THE REALITY OF THE NORTHEAST REGION OF PORTUGAL

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Introduction/Background

Amyotrophic Lateral Sclerosis (ALS) is characterized by progressive loss of the upper and lower motor neurons at the spinal or bulbar level. The mean age of onset varies from 50 to 65 years. There's an increased risk in the males (M:F=1.5:1). Riluzole is currently the only pharmacological treatment (PT) that has positive impact in the survival of these patients. The aim of this study is to analyze ALS patients in Vila Real's district (the northeast of Portugal).

Material and Method

Retrospective descriptive study using data from the medical records of the patients diagnosed with ALS from 01/01/2005 to 31/12/2016 at Centro Hospitalar de Trás-os-Montes and Alto Douro. The statistical analysis was performed using *IBM SPSS Statistics 22.0* software. P values <0.05 were considered statistically significant.

Results

We identified 89 patients with ALS, 14 of whom were excluded due to insufficient data, remaining 75 patients: 31 cases of bulbar onset ALS (bALS) (13M:18F) and 44 cases of spinal onset ALS (sALS) (32M:12F). There was a significant association between gender and the form of presentation ($p=0.007$) - male gender associated with sALS and female with bALS. These patients had a mean age of 65 years (from 31 to 87) at symptoms onset (SO) and the M:F ratio was 45:30. The time between SO and PT was on average 526 days in bALS and 515 days in sALS, with mean survival of 941 days and 2297 days, respectively. There was a worse survival rate in female patients ($p = 0.02$), in bALS ($p = 0.003$) and in those with less than 365 days between SO and PT ($p <0.001$).

Conclusion

ALS is a progressive condition. More than a half of these patients don't survive within the first 30 months after SO. Older age of SO, female gender and bALS form of the disease are related with reduced survival.

Keywords

Amyotrophic Lateral Sclerosis;Portugal

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-2606

FUNCTIONAL ASSESSMENT OF THE PARKINSONIAN UPPER LIMB : VALIDITY AND INTRA- AND INTER-RELIABILITY OF THE MSPIR TEST

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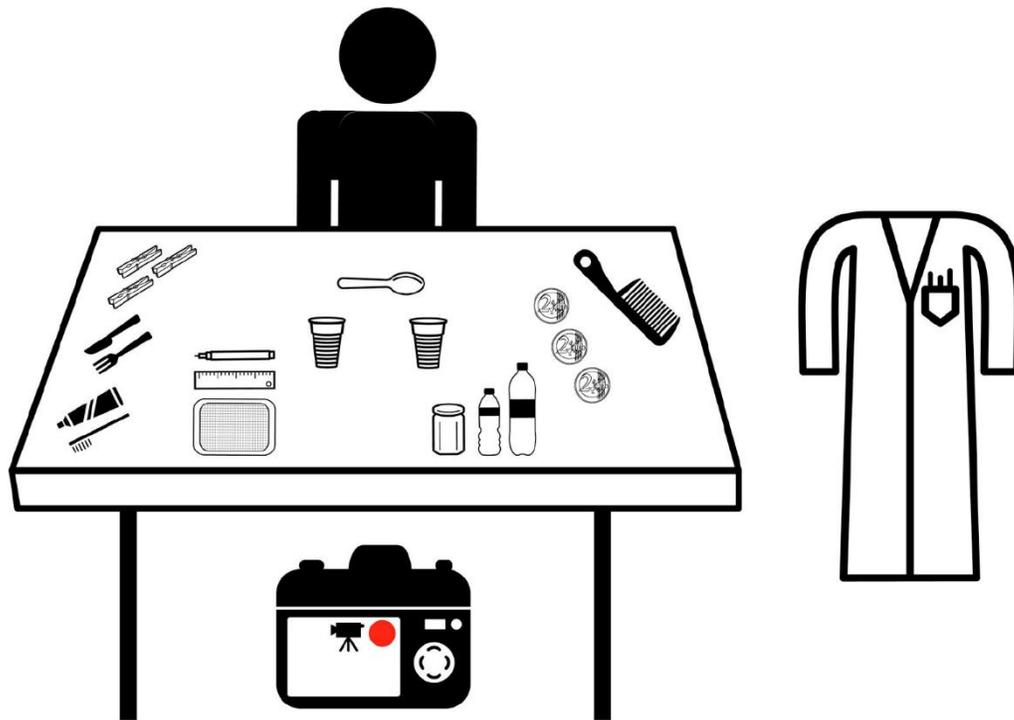
Introduction/Background

There is no valid functional scale to assess the parkinsonian upper limb. The MSPIR (Mount Sinai Parkinsonism Impairment Rating) test times 12 everyday living functional tasks (6 uni- and 6 bimanual). The aim of the study was to explore the inter- et intra-rater reliability and the correlations with clinical parameters (MDS-UPDRS-III, GMT) of the MSPIR test.

Material and Method

Twenty five subjects with parkinsonian syndromes were included (13 women); age $67,1 \pm 7,9$, mean MDS-UPDRS III $24,9 \pm 13,2$, mean seat-to-stand 15-second frequency $0,39 \pm 0,21$ Hz, mean delay since symptom onset $11,1 \pm 8,3$ years) based on the following inclusion criteria: parkinsonian syndrome for over a year, Hoehn & Yahr between I and III. Patients were filmed on the OFF state. Each task was timed on video-review by 9 raters, twice one week apart. Intra- and inter-rater reliability was analysed by intraclass correlation coefficients, standard deviations

and coefficients of variation.



Results

For the MSPIR total time, the mean inter- and intra-rater ICC were respectively 0,99 (0,98-1) and 1 (0,97-1) (mean, IC 95%). Standard intra-rater and inter-rater were 1,3 (0,1) and 15,7 (0,7) sec respectively. Inter-rater coefficient of variation was 6%. The time for each task was correlated with the total time. Total MSPIR time was positively correlated with UPDRS-III, the number of years since diagnosis, the levodopa daily equivalent dose, Hoehn & Yahr stage, GMT and negatively with seat-to-stand and large movement frequencies. Crohnbach's alpha coefficient was 0,99.

Conclusion

To assess rehabilitation, the MSPIR quantifies functional bradykinesia in the upper limb for mild parkinsonian patients. Its reliability and concurrent validity are excellent.

Keywords

Parkinsonism;Upper limb;Functional Assessment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-2610

REHABILITATION OF GAIT APRAXIA IN AN ELDERLY HEMIPARETIC FEMALE WITH BILATERAL FRONTAL LOBE LESIONS AND PARKINSON'S DISEASE

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Introduction/Background

Gait is a highly complex function involving interplay of the different anatomic systems. Disturbances in gait are very common and vary considerably in the presentation and underlying pathology. This report presents a case of gait apraxia in a patient with Parkinson's disease, frontal lobe lesions and history of stroke.

Material and Method

This is a case of 70-year old non-hypertensive female with progressive ambulation difficulty. Patient was a diagnosed case of Parkinson's disease, which presented with rest tremors and slow, shuffling gait and depressive features. Motor symptoms were responsive to Levodopa. Six months after diagnosis of Parkinson's disease, patient had an undocumented stroke with left sided hemiparesis and started to have frequent falls and ambulation problems. No consult done at that time due to lack of access to medical facility. Interval history revealed progression of gait dysfunction leading to patient becoming wheelchair-bound. Upon evaluation, patient was found to have good cognition, normal speech but with flat facial expression. Patient had short and shuffling steps with erect posture, retropulsion, ignition failure and freezing. Leg movements were clumsy when upright compared to when supine. Residual left sided weakness was minimal to explain the severity of the gait dysfunction. MRI of the brain showed non-specific periventricular white matter hyperintensities in both frontal lobes. Patient underwent an intensive 2-week inpatient rehabilitation program. Psychiatric intervention was done through psychotherapy and antidepressant medication.

Results

Patient was discharged ambulatory with a quad cane, with improved mood and disposition. Walking became more spontaneous with increased step length and cadence, and less freezing episodes.

Conclusion

This patient presented with a severe gait dysfunction on the background of different neurologic conditions. It is important to recognize that multiple pathologies can coexist in the same patient,

all contributing to gait problems and decrease in function. Management should be individualized and multidisciplinary to maximize patient outcome.

Keywords

gait apraxia;Parkinson's disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-2652

LATE-ONSET POMPE DISEASE: PARTICIPATION ASSESSMENT AND REHABILITATION ROLE

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Introduction/Background

Late-onset Pompe disease (LOPD) is a rare lysosomal storage disorder caused by a genetic deficiency in the enzyme acid α -glucosidase. LOPD patients usually present progressive muscle weakness leading to activities of daily living (ADLs) dependency and reduced mobility.

Material and Method

Descriptive study including all patients with LOPD treated with enzyme replacement therapy(ERT) at our department since 2011. Clinical files were analyzed and patients were assessed regarding their physical status and functional impairment through specific scales: Rotterdam 9-item Handicap Scale (R9HS), SF-36v2, MRC Scale and Walton & Gardner-Medwin Scale (WGS).

Results

4 female patients were evaluated. The age of diagnosis was 13(IS), 11(AS), 4(FR), 50(MS) years and the mean follow-up was 12,25y. AS presented a WGS 1 and R9HS 31 while FR presented a WGS 3 with a R9HS 30. All 4 patients presented decreased forced vital capacity and IS, AS and FR use non-invasive ventilation support – BiPAP and Cough Assist device. On MRC scale, all 4 patients presented with symmetrical hip muscle weakness and axial weakness and all but MS presented also symmetrical shoulder muscle weakness. IS also presented with neck, trunk and distal muscle weakness. IS and FR use an electric wheelchair and scored 8 in WGS, however on the R9HS IS scored 21, while FR scored 14. Regarding SF-36v2 survey, on vitality they scored average 13,75(std16) and on physical function they all scored 100. All patients were previously evaluated by Physical and Rehabilitation Medicine and integrated a rehabilitation program.

Conclusion

LOPD manifests as a clinical spectrum that varies regarding age at onset, disease severity and rate of disease progression. Rehabilitation management of LOPD should be comprehensive and preventive based on disease progression and on individual assessment. It should optimize

motor and physiological function, prevent or minimize secondary complications and maintain the maximum level of function, maximizing the benefits of ERT.

Keywords

Late-onset Pompe Disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-2657

IMPACT OF A REHABILITATION PROGRAM IN THE OVERALL SURVIVAL OF AMYOTROPHIC LATERAL SCLEROSIS PATIENTS.

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Introduction/Background

Amyotrophic lateral sclerosis' (ALS) survival ranges from a median of 37-49months. There's no cure for ALS, so the goal is to provide clinical support and rehabilitate patient's needs to prolong survival and improve quality of life. Exercise prescription has been controversial but some authors consider it can help improve function, slow disease progression and lessen caregiver burden.

This study's aim was to identify whether integrating a rehabilitation program (RP) has an impact on the survival of ALS patients.

Material and Method

Retrospective cohort study from medical records of 75 patients diagnosed with ALS between 01/01/2005 and 31/12/2016 at Centro Hospitalar de Trás-os-Montes e Alto Douro, Portugal. The variables were analyzed with *IBM SPSS Statistics 22.0* software. T-test for independent samples and Mann Whitney were used. All reported P value are two-tailed (0,05 indicating statistical significance).

Results

The median survival since ALS' diagnosis was significantly higher for patients integrated into a RP (786 days) rather for those who didn't undergo these treatments (450 days) ($p=0.006$). Patients with spinal onset ALS (sALS) took significantly longer to integrate a RP (median of 677,50 days) than patients with bulbar onset ALS (bALS) (median of 293,50 days) ($p=0,009$). Also, sALS patients who survived longer than 17 months started the RP later in the course of the disease (median of 858 days vs 271 days) ($p=0,007$). There was a moderate positive correlation ($r=0.53$; $p<0.001$) between the time to initiate the RP since the symptoms onset and the overall survival after diagnosis.

Conclusion

Integrating a RP can improve overall survival of ALS' patients. The sALS' patients who took longer to seek help (therefore, joined a RP later) had probably a slower progression of the disease, with longer survival. There's a lack of quality data to draw clear evidence-based conclusions about exercise's effect. Available evidence points toward mild-to-moderate exercise as beneficial.

Keywords

Rehabilitation; Amyotrophic Lateral Sclerosis; survival

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-2698

THE IMPACT OF PERCUTANEOUS ENDOSCOPIC GASTROSTOMY ON THE SURVIVAL OF PATIENTS WITH AMYOTROPHIC LATERAL SCLEROSIS

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Introduction/Background

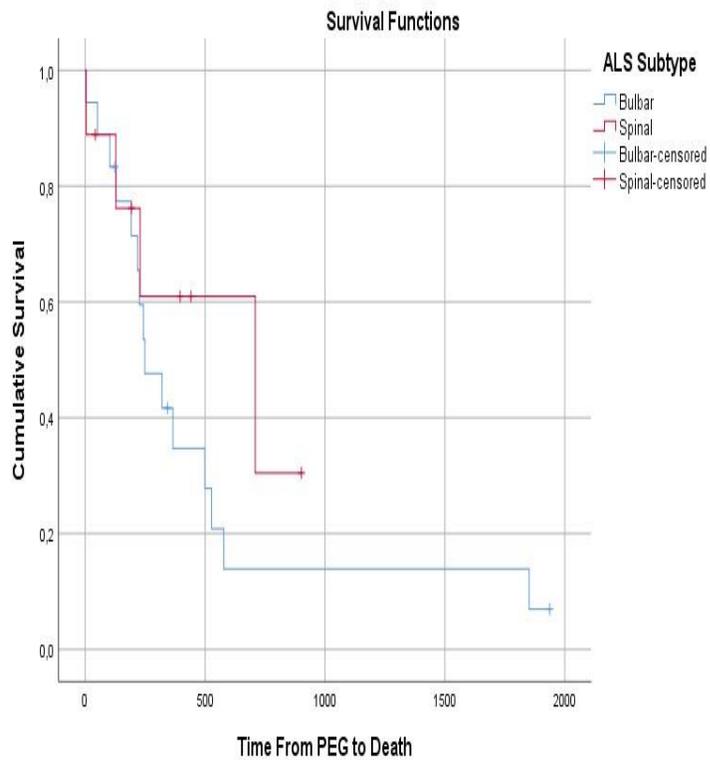
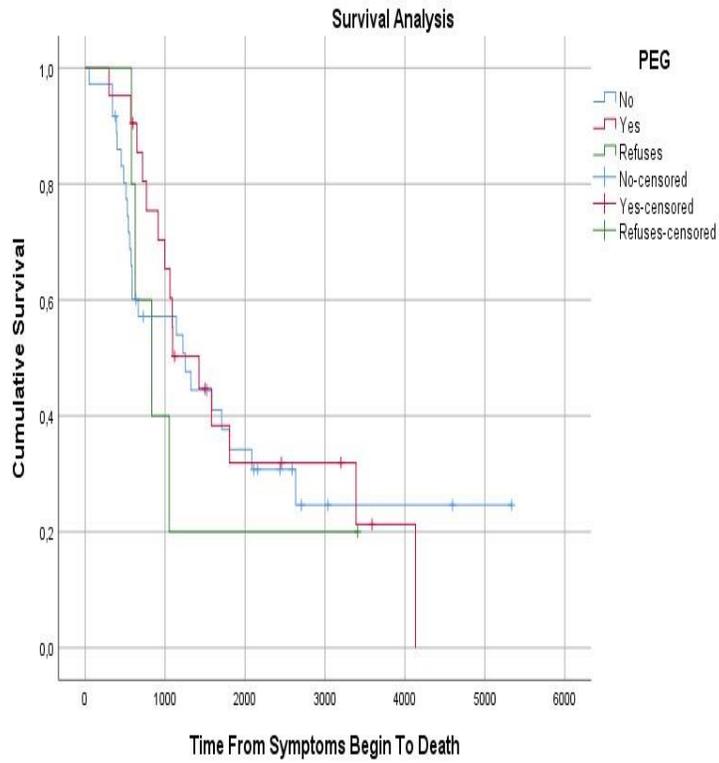
Amyotrophic lateral sclerosis (ALS) is a rapidly progressing degenerative motor neuron disease that leads to significant muscle weakness. Patients can present with severe dysphagia and require nutritional support. While percutaneous endoscopic gastrostomy (PEG) is a standard procedure for these patients, its effect on survival is not yet clear. Therefore, we aimed to evaluate the impact of PEG placement on ALS patients survival.

Material and Method

We retrospectively reviewed health records of ALS patients followed at a Neurological Department in the northeast region of Portugal for the 2005-2016 period. Potentially relevant clinical information was collected for survival analysis using Kaplan-Meier estimator and Mantel-Cox regression.

Results

In the studied period, seventy-five incident ALS cases were identified. Information regarding symptom onset was available for 62 (83%) patients, and PEG was placed after informed consent in 27 (36%) patients. The overall median survival from symptom onset was 1142 (95%CI:866-1418) days and did not differ between PEG and non-PEG groups (*figure 1*). In the PEG group (n=27), 19 (70%) died by the end of the follow-up period. Overall median survival post-PEG placement was 320 (95%CI:135-505) days. Bulbar ALS cases (n=18) had a median survival of 249 days while the remaining 9 Spinal cases had a median survival of 709 days (*figure 2*). Both LogRank test and Mantel-Cox regression using ALS subtype as covariate did not yield significant results regarding post-PEG survival (p=0.312; HR=0.566 [95%CI: 0.185-1.730], p=0.566; respectively).



Conclusion

In conclusion, PEG did not impact ALS survival in our study. Post-PEG survival was also similar in both bulbar- and spinal-onset groups. However, our analysis is limited by the small sample size. Studies with more participants are required to more effectively estimate the impact of PEG in overall and subgroups ALS survival.

Keywords

amyotrophic lateral sclerosis;percutaneous endoscopic gastrostomy;survival

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0214

"MAN IN BARREL" PHENOTYPE: DIFFERENTIAL FOR BRACHIAL AMYOTROPHIC DIPLEGIA (BAD)

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Introduction/Background

"Man in Barrel" phenotype shows atrophic, weak arms hanging by the sides and spares lower extremities. The differential includes the very rare BAD.

Material and Method

Case #1:

61 y.o. AA male with severe weakness in his hands after experiencing shooting pain down his arms.

Motor exam: 4/5 right upper arm, 0/5 distal. Left arm 4-5/5 except 0/5 wrist extension, APB and hand intrinsics.

Overall strength was 5/5 for legs.

Case #2:

46 y.o. Hispanic male fell from high ladder with left arm weakness. He presented one year later with right arm weakness. He denied swallowing or speech difficulties. On PE, motor strength of the left arm was mostly 0/5. On the right, deltoid 3/5, biceps 0/5, rest 5/5.

LE strength 5/5 bilaterally.

Results

Case #1:

Patient underwent electrodiagnostic testing and returned 6 years later. Results were consistent with amyotrophic lateral sclerosis (ALS) (variant BAD). Imaging revealed degenerative changes throughout the cervical spine.

Case #2:

Initial testing revealed multilevel monomelic involvement of left arm. One year later, NCV revealed normal sensory studies, decrease on right and unobtainable left arm motor responses. EMG had reduced interferential pattern, increased firing rate, large MUAPs, fibrillations and sharp waves in arms. Bulbar, thoracic, and lumbosacral regions were normal and no UMN signs.

Conclusion

BAD accounts for 2-11.4 % of patients presenting with MND. These are rare cases of an African American and Hispanic males not otherwise reported in the literature. The differential of "man in barrel" including cerebral infarctions, variant of ALS, motor myelopathies, cervical spondylosis, and post-radiation will be discussed.

Keywords

Brachial Amyotrophic Diplegia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0341

RELATIONSHIP BETWEEN COGNITIVE FUNCTION AND MOTOR IMPAIRMENT SEVERITY IN PARKINSON'S DISEASE

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Introduction/Background

Cognitive impairment is among the most frequent non-motor symptoms in Parkinson's disease (PD). To clear the characteristics of cognitive impairment in patient with PD may be critical for the planning of effective rehabilitation interventions. However, a few studies have sought to investigate relationship between cognitive impairment and motor functions. The purpose of this study was to compare cognitive impairment of PD patients in relation to the motor impairment severity according to Hoehn and Yahr (HY) stages.

Material and Method

The subjects of this study were 78 patients with PD (33 males and 45 females). The Cognitive function was assessed using the Wechsler Adult Intelligent Scale-III (WAIS-III) and Wechsler Memory Scale-Revised (WMS-R). The HY scale was used to evaluate the motor impairment severity as I (no disability, n=11), II (mild, n=34), III (moderate, n=26), or IV-V (severe, n=7). The Kruskal–Wallis test was used to compare the cognitive impairment the between HY groups.

Results

The difference in performance intelligence quotient (PIQ) of WAIS-III (I: 105.6±8.6, II: 94.9±17.7, III: 91.5±14.3, IV-V: 82.9±8.2) and general memory quotient (GMQ) of WMS-R (I: 105.5±14.4, II: 91.8±15.6, III: 90.0±18.2, IV-V: 86.1±13.0) between groups were significant, scores of IV-V stage were lowest. There were statistically significant differences in processing speed index and verbal memory quotient among the groups. The difference in other measurements was not significant the between groups.

Conclusion

Our present findings indicated that the cognitive impairment was observed in deterioration of the motor impairment in PD patients. Specifically, in the factor scale level, the low processing speed index and the low verbal memory quotient reduced each of the PIQ and GMQ in the lowest HY group patients. Therefore, we suggest that a careful assessment of cognitive impairments, especially processing speed and verbal memory, is important in identifying appropriate interventions for PD with severe stage.

Keywords

Parkinson's disease;cognitive function;motor impairment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0544

CORRELATION BETWEEN SUDOMOTOR DYSFUNCTION AND FUNCTIONAL STATUS IN PATIENTS WITH AMYOTROPHIC LATERAL SCLEROSIS

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Introduction/Background

Sudomotor dysfunction is known to be common in patients with amyotrophic lateral sclerosis (ALS). Q-Sweat (Quantitative Sweat Measurement System; WR Medical Electronics Co., Stillwater, Minnesota) is modeled on quantitative sudomotor axon reflex test which is estimated by the latency to the start of sweat secretion and the amount of sweat. The aim of this study is to find correlation between sudomotor dysfunction and functional status in patients with ALS.

Material and Method

Medical records of 17 patients with ALS were reviewed. Functional status of subjects was scored using ALS functional rating scale (ALS-FRS). Volume of sweat at 4 different points of body (i.e. both forearms and thighs) was detected at Q-Sweat. We obtained mean value of volume measured in both upper and lower limbs, respectively, and subtracted the age-adjusted normal lower limit from those values. The difference value was called 'SCORE' of upper limbs and lower limbs each. In case that the SCORE measured in a patient was in normal range, it

was recorded as 0 point, what means normal response of diaphoresis.

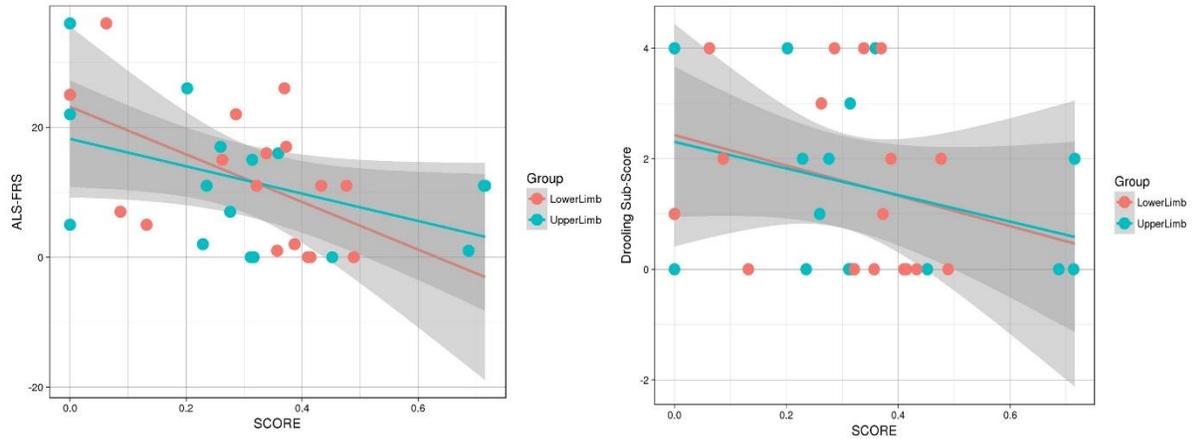


Results

Age, gender and duration from onset to the time of the test were not statistically associated with degree of sudomotor dysfunction. Negative linear correlation between ALS-FRS and SCOREs of upper ($r=-0.485$, $p=0.049$) and lower limbs ($r=-0.509$, $p=0.037$) were elicited. There was no significant difference between bulbar-dominant and limb-dominant type groups in 'SCORE' in both upper and lower limbs.

Variables	SCORE of upper limbs		SCORE of lower limbs	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Age	-0.218	0.401	-0.242	0.349
Gender	-0.356	0.160	0.087	0.741
Duration from onset to the time of the test	0.370	0.889	0.322	0.207
Type	-0.470	0.057	-0.113	0.167
ALS-FRS	-0.485	0.049*	-0.509	0.037*
Drizzling sub-score	-0.344	0.177	-0.246	0.342

* $p<0.05$



Conclusion

The study showed that the sudomotor dysfunction represented by Q-Sweat is statistically correlated with functional status of patients with ALS. Patients have decreased function of regulating sweat responses as the disease progresses and are susceptible to skin damage or aspiration by saliva. Sudomotor dysfunction can deteriorate functional status of patients and the degree of this issue can be easily quantified by Q-Sweat.

Keywords

Amyotrophic Lateral Sclerosis; Functional Status; Sudomotor Dysfunction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0607

THE EFFECT OF INTENSIVE PHYSICAL THERAPY WITH REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION IN PATIENTS WITH DEGENERATIVE CEREBELLAR DISEASE

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Introduction/Background

The studies of repetitive transcranial magnetic stimulation (rTMS) of the brain have demonstrated the modulation of cortical excitability. Combination of rTMS with physical therapy (PT) might affect the therapeutic effects for movement disorders. The aim of this study was to investigate the effect of combination of intensive PT with rTMS in patients with degenerative cerebellar disease.

Material and Method

Twelve patients with degenerative cerebellar disease participated in the study. The rTMS and PT were carried out five days a week for three weeks. The gait parameters were determined using a three-dimensional motion analysis system, and the total length and the velocity of the center of pressure (COP) in standing position using a stabilometer and the International Cooperative Ataxia Rating Scale (ICARS) were assessed in all patients before and after the intervention.

Results

The changes in the walking speed, step width, the total length of the COP and the velocity of the COP in standing position were not significant. The amplitude of the lateral head and body sway when walking were reduced after intervention ($p < 0.01$) and the ICARS was improved after the intervention ($p < 0.01$). The correlations between the duration of disease and the improvement of walking speed and step width were not significant (Fig. 1). The correlations between the disease severity and the improvement of walking speed and step width were significant (Fig. 2).

Conclusion

In our study, combination of intensive PT and rTMS conferred positive effects on the dynamic balance in patients with degenerative cerebellar disease in earlier stages of the disease.

Keywords

ataxia;physical therapy;repetitive transcranial magnetic stimulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0744

EFFECT OF A SPECIFIC INPATIENT MULTIDISCIPLINARY REHABILITATION PROGRAM ON POSTURAL AND GAIT STABILITY IN HUNTINGTON'S DISEASE - PILOT STUDY

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Introduction/Background

Postural and gait instability in Huntington's disease (HD) is an essential part of the motor symptomatology causing falls contributing to morbidity and mortality. Rehabilitation (Rhb) is considered beneficial in stability treatment. However, the number of studies is still limited. This is the first multidisciplinary inpatient study using a specific program aimed at postural and gait stability in HD.

We aimed to evaluate the short-and long-term effects of an inpatient multidisciplinary rehabilitation program on postural and gait instability in HD.

Material and Method

A sample of 16 HD subjects without severe cognitive deficit or depression were included, 13 subjects completed the full course. They underwent a 3 week specific inpatient rehabilitation focused on stability. The examination was at baseline, after the completion, 1 and 3 months after the rehabilitation. The testing included: gait stability examination (Dynamic Gait Index; DGI), posturography examination of postural stability Limits of Stability on a stable (PSS) and 20%

unstable (PSU) platform and the motor function evaluation by Unified Huntington's Disease Rating Scale (UHDRS-TMS).

Results

There was a significant improvement in DGI immediately after the Rhb and a significant 3 months lasting improvement in PSS. There was no significant improvement in PSU and UHDRS-TMS.

Conclusion

Specific Rhb methods improved postural and gait instability in early and mid-stage HD patients. The improvement in PSS persisted 3 months. We found no improvement in PSU, which is probably a too difficult test for this degree of stability impairment. The improvement in DGI does not persist after 1 month. This study offers a verified specific Rhb protocol for stability training in HD.

Keywords

Huntington's disease;postural and gait stability;multidisciplinary rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0748

EFFECTS OF TRANSCRANIAL DIRECT CURRENT STIMULATION ON THE MULTIPLE TASKS CONTINUOUSLY MONITORED BY WEARABLE INERTIAL SENSORS : A PILOT STUDY

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Introduction/Background

It has been known that the Parkinson's disease impacts both non-motor and motor function. Some researchers showed the effects of the transcranial direct current stimulation(tDCS) on non-motor symptoms or motor symptoms of parkinson's disease(PD). However, there has been little evidence to answer the question that which kind of task would be improved in the multiple task process. This study was to observe the effects of the treatment of tDCS on left primary motor cortex(L-M1) area on patients with PD.

Material and Method

Three male participants with PD, on-medication, aged 66, 70 and 72, received tDCS treatments for 20 times, 2mA for 20 minutes, anode on L-M1 area, cathode on right shoulders, 5 days of 4 weeks. Before the first, and after each daily treatment, the patients took 2-minutes walk test loaded by cognitive load of the oral calculation during the whole test, the calculation was filled with randomized addition and subtraction in which every number was less than 20. The calculation results and 50 characteristics of the patients' gait were assessed by wearable inertial sensors in the patients' homes.

Results

The study showed that the changes of gait speed, stride length and swing phase were statistically significant and all of these changes occurred in the first week. The following picture shows two patients' double support was increased and the other's was decreased, and all of the three lines trend to be getting closed to the normal standard. Whereas the oral calculation, during the 2-minutes walk test, neither of the changes of the patients' accuracies nor of the total quantities changed significantly.

Conclusion

tDCS on left M1 area may be effective for motor function, instead of the non-motor function, when the patients of PD perform multiple tasks at the same time, and all these changes could be observed from the first week.

Keywords

Transcranial Direct Current Stimulation; Parkinson's disease; multiple task

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0775

COMPARE THE EFFECTS OF TDCS ON LEFT PRIMARY MOTOR CORTEX AND LEFT DORSOLATERAL PREFRONTAL CORTEX ON PATIENTS WITH PARKINSON'S DISEASE : A CASE REPORT

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Introduction/Background

Some researches showed the effects of the anodal stimulation of transcranial direct current stimulation(tDCS) on left primary motor cortex(L-M1) area or the Left Dorsolateral Prefrontal Cortex(L-DLPFC). However, the differences of effects between the two parts of stimulus on motor symptoms and non-motor symptoms of parkinson's disease(PD) have not been identified. The present study was to compare the effects of anodal tDCS on L-M1 area with that on L-DLPFC on Parkinson's disease(PD)

Material and Method

One male patient with PD, aged 66, 4.5 years of course of disease. First phase, the anode stimulation was put on L-M1 area, cathode on right shoulders, for 20 times, 2mA for 20 minutes, 5 days of 4 weeks. And after 2 months' washout period followed the phase same as the former one except for the anodal stimulation was put on L-DLPFC. Before the first and after each daily treatment, the patient took 2-minutes walk test. A total of 50 characteristics of the patient's gait were assessed by wearable inertial sensors. Rating scales like Non-Motor Symptoms Scale for Parkinson's disease(NMSS), Activities-specific Balance Confidence(ABC) Scale, Montreal Cognitive Assessment (MoCA), and Pittsburgh sleep quality index(PSQI) were used to assess the symptoms.

Results

In the first phase of the therapies the hand writing skill, ABC scale, 9 characteristics of gait monitored have significantly improved, whereas the non-motor symptoms, better results in NMSS, constipation, MoCA, and PSQI, could be observed. In the second phase, improvements were only shown in hot and cold feeling of sleeping and 3 characteristics of cadence, toe off angle and stride length of both legs.

Conclusion

The case report showed that the location of tDCS influenced the effects on both the motor and non-motor symptoms of the same patient, and the effects of L-M1 area was better than L-DLPEC, no matter on the motor or the non-motor symptoms.

Keywords

Transcranial Direct Current Stimulation ;Parkinson's disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0878

EFFECTS OF PERSONALIZED TRANSCRANIAL ALTERNATING CURRENT STIMULATION ASSOCIATED WITH PHYSICAL THERAPY ON MOTOR AND COGNITIVE FUNCTIONS IN PEOPLE WITH PARKINSON'S DISEASE

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Introduction/Background

Hypersynchronization of oscillatory brain activity, prevalent in the beta band, is a neurophysiological signature of Parkinson's disease (PD). Transcranial alternating current stimulation (tACS) can entrain cortical activity at the stimulation frequency. The aim of this study was to provide a personalized neurostimulation treatment associated with physical therapy to improve motor and cognitive functions in PD.

Material and Method

17 persons with PD were recruited. 14 concluded the protocol (2 changes of diagnosis, 1 refusal to continue). A resting state EEG was acquired and analyzed with Fast Fourier Transform to obtain power spectral density maps. Comparison of a control group versus each patient was performed using a z-test. Statistical maps provided site and frequency of stimulation (stimulation frequency was set at 30 Hz in theta prevailing group and at 4 Hz in beta prevailing group). Stimulation site was identified as the scalp area in which the prevailing band was more represented. The experiment consisted of two-weeks sessions of randomized real tACS or transcranial random noise stimulation (sham) followed by a 1-hour physiotherapy session. EEG and clinical assessments with Unified Parkinson Disease Rating Scale (UPDRS III) and a neuropsychological battery were performed before stimulation (T_0), after stimulation (T_1) and 4 weeks follow-up (T_2).

Results

10 subjects showed a prevailing beta band and 4 a prevailing theta. A reduction of beta rhythm emerged at T_1 over the bilateral sensorimotor and right frontal area and at T_2 over the left frontal area in the real group. No significant modulation of EEG activity emerged in theta prevailing group. UPDRS III scores improved at T_1 and T_2 in the real group. A score reduction emerged at T_1 in both groups for Beck Depression Inventory and at T_2 in the real group for Geriatric Depression Scale.

Conclusion

Personalized tACS appears a valid add-on treatment for motor dysfunction and depressive symptoms in PD.

Keywords

Parkinson;tACS;oscillopathy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0897

EFFECTS OF EIGHT WEEKS HAND ERGOMETRY TRAINING PROGRAMME ON CARDIOVASCULAR VARIABLES AND GRIP STRENGTH OF NEUROLOGICAL PATIENTS

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Introduction/Background

The study investigated the effects of eight weeks hand ergometry training programme on cardiovascular variables and grip strength of neurological patients in the experimental and control groups.

Material and Method

The participants were sixteen neurological patients attending physical rehabilitation in Ageless Physiotherapy Clinic, Allen Avenue, Ikeja, Lagos State, Nigeria with age range of 50-74 years. Purposive sampling technique was used in selecting the participants. Informed consent forms were given to the participants. The participants in the experimental groups were subjected to ergometry training exercises lasting twenty minutes, performed three times a week, while those in the control group did not undergo any training programme. Data were collected on the cardiovascular and hand grip tests of the experimental and control groups. The data collected were analysed with descriptive statistics of mean, standard deviation and inferential statistics of Analysis of Covariance (ANCOVA)

Results

There were significant differences in the resting heart rates ($F_{1,13}=4.296$, $p<0.05$), cardiac output ($F_{1,13}=10.356$), stroke volume ($F_{1,13}=5.410$, $p<0.05$), right hand grip strength ($F_{1,13}=40.797$, $p<0.05$), left hand grip strength ($F_{1,13}=86.846$, $p<0.05$), of the experimental and control groups. To ascertain where the significant differences occur, estimated marginal mean was used. It was found that significant differences existed between experimental and control groups.

Conclusion

It is concluded that ergometry training programme have effect on the cardiovascular variables and grip strength of neurological patients. It is recommended that neurological patients should participate in hand ergometry upper limb exercises, two to three times a week.

Keywords

Neurological patients;Cardiac output;Ergometry exercises

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0923

VALIDATION OF THE FOOT FUNCTION INDEX FOR PATIENTS WITH CHARCOT-MARIE-TOOTH TYPE 1A

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Introduction/Background

Charcot Marie Tooth's disease (CMT) is the most common hereditary peripheral neuropathy. Type 1A (CMT1A) is the most frequent form, foot deformities are reported to 71% of CMT1A patients without consensus about foot related disability assessment. The Foot Function Index (FFI), a three subscale questionnaire (disability, activity restriction and pain) is a reference outcomes measures in foot deformities. FFI has already been validated in orthopedic and rheumatology diseases. The purpose of this study is to validate the FFI for CMT's patient to improve assessment of foot related disability.

Material and Method

First, we performed a quantitative walk analysis combined to the deliverance of FFI and SF-36 questionnaires, and a muscular strength evaluation; retest occurred two weeks later. All evaluations were performed by the same Physical Medicine and Rehabilitation physician. The statistical analysis was conform to COSMIN guidelines for scale validation: acceptability, internal consistency (Cronbach's alpha coefficient), reproducibility (Lin's concordance coefficient) and external consistency (correlation coefficient).

Results

Twenty-six patients were included. The acceptability was satisfactory with less than 5% missing data. The Cosmin criteria were respected with a Cronbach alpha coefficient at 0.95 and a Lin's concordance coefficient at 0.82. Gait parameters ($r=-0.45$; $r=-0.61$ respectively for speed and cadence), SF36 physical component ($r=-0.58$) were significantly correlated ($p<0.005$) to FFI disability sub-scale and not to FFI pain subscale ; muscular strength and SF-36 mental component were not correlated to FFI disability.

Conclusion

Even our sample could be considered as limited, the metrologics properties of the FFI are quite fair. By the way, in the absence of any validated scale to assess foot related disability for people with CMT, the FFI could be take in consideration as an interesting scale.

Keywords

Charcot Marie Tooth;Foot Function Index ;Disability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-0924

WALKING SPEED IS CORRELATED WITH THE ISOKINETIC MUSCULAR STRENGTH OF THE KNEE IN PATIENTS WITH CHARCOT-MARIE-TOOTH TYPE 1A

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Introduction/Background

Charcot-Marie-Tooth disease type 1A (CMT1A) is the most common hereditary neuropathy. Affected individuals have a distal motor deficit, initially affecting the the lower limbs and impairing walking performance. Many studies have investigated this distal defect and the pod-orthotic compensations that may result. The use of an isokinetic dynamometer is relevant for objectively assessing the muscle strength of patients with neuromuscular disorders. No studies evaluated the incidence of muscle strength deficits of knee extensors and flexors on walking parameters for CMT1A patients. The purpose of this study is to find correlations between the isokinetic muscular strength (IMS) of the knee flexors (KF) and extensors (KE) and CMT1A patient walk parameters.

Material and Method

IMS of the knee was evaluated at 3 angular velocities (120, 60°/s in concentric and 30°/s in eccentric) on an isokinetic dynamometer (Cybex®). The walk was evaluated by a gait analysis (GaitRite®).

Results

Thirty-three subjects were included (23 female, mean age 46.7±13.3years, mean body mass index 25.7±4.6kg/m²). Mean scores for physical and mental health on the Medical Outcomes Study Short Form 36 were 36.7±9.0 and 47.9±11.7. We found a correlation between the walking speed and the IMS of the KE for the entire population and between the walking speed and the IMS of the KE and KF for subjects under 50 years of age.

Conclusion

This study shows for the first time the correlation between the IMS of the knee and the walking speed. This highlights the value of the use of motion analysis devices for CMT1A patients.

Keywords

Charcot-Marie-Tooth;Muscle strength deficits;Walking parameters

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1034

FUNCTIONAL CHARACTERIZATION AND QUALITY OF LIFE IN PATIENTS WITH PARKINSON'S DISEASE AT THE CENTRAL MILITARY HOSPITAL OF COLOMBIA

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Introduction/Background

The functional commitment and quality of life of patients with Parkinson's Disease (PD) is related to motor and non-motor symptoms. **OBJECTIVE:** Characterize the functionality and quality of life of patients with PD Central Military Hospital – Bogotá, Colombia November 2015 - 30 June 2016.

Material and Method

Cross-sectional study with analytical component, the population were all patients who met inclusion criteria and no exclusion criteria who attended Movement Disorders Neurology consultation.

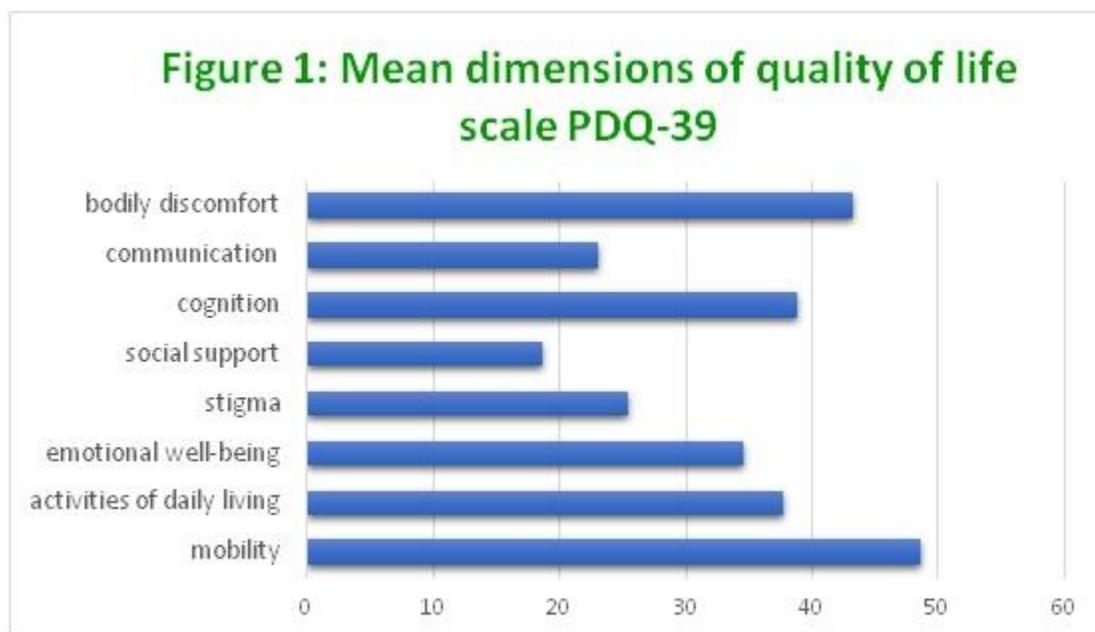
Informed consent was completed. The instruments for the collection of information used were a format of sociodemographic variables, the quality of life questionnaire PDQ-39 (Parkinson's Disease Quality of Life Questionnaire) and MDS-UPDRS (Unified Parkinson's Disease Rating Scale).

Results

55% were men and 45% women, with an average of 67 years, the majority of patients were socioeconomic status 3 (51%). The level of technical education 33% and professional 26% predominates. 76% were in the first decade of the disease

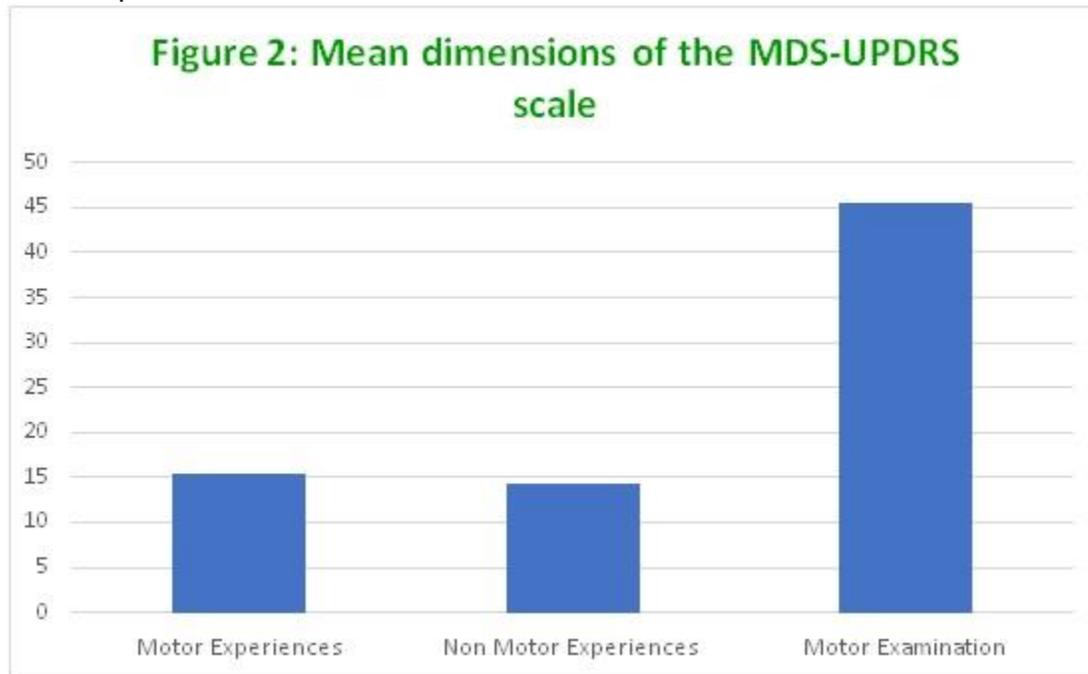
TABLE 1. SOCIO-DEMOGRAPHIC VARIABLES								
Variable	Number	Porcentage	Variable	Number	Porcentage	Variable	Number	Porcentage
Gender			Socioeconomic status			Scholarship		
Male	33	55	1	3	5	primaria	10	16,7
Female	27	45	2	17	28,3	secundaria	14	23,3
Age			3	31	51,7	técnico	20	33,3
40-50	4	6,7	4	6	10	profesional	16	26,7
51-60	10	16,7	5	2	3,3	Years with the disease		
61-70	18	30	6	1	1,7	1 to 10	46	76,7
71-80	24	40				11 to 20	10	16,7
81-90	4	6,7				21 to 30	3	5
						31 to 40	1	1,7

The general mean for the quality of life scale reported a mild to moderate commitment; greater affectation in the domains of mobility (48.6%), activities of daily living (37%), cognition (38.8%) and bodily discomfort (43%).



The general mean in the MDS-UPDRS scale reported a mild compromise in the motor and non-

motor experiences and a moderate commitment in the motor examination.



Conclusion

In the PDQ -39 quality of life scale, there was evidence of a mild to moderate compromise, with predominance of motor symptoms mainly in mobility, similar to that found in Mexico (1) and contrary to other studies that showed greater deterioration due to symptoms. no engines (2). In addition, the MDS-UPDRS scale shows moderate compromise in the motor objective examination, may be related with the results in the quality of life scale.

Keywords

FUNCTIONAL CHARACTERIZATION ;QUALITY OF LIFE ;PARKINSON'S DISEASE

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1074

INTRA- AND INTER-RATER RELIABILITY AND VALIDITY OF A CLINICAL AND QUANTIFYING TEST OF THE SIT-TO-STAND TASK IN PARKINSONIAN SYNDROMES

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Introduction/Background

Measuring sit-to-stand (STS) in Parkinson's disease is an important part of the clinical exam, that both reflects parkinsonian symptom severity and everyday life abilities. However, there is no quantified, specific, reliable measure that can be applied to all patients and tests their maximal performance. The present study aims to evaluate the intra- and inter-rater reliability and validity of Sit-To-Stand-15 (STS15), that measures the maximal number of sit-to-stand movements performed in 15 seconds.

Material and Method

30 participants with moderate Parkinson's disease (Hoehn and Yahr 2-3) performed, in the levodopa OFF-state, STS15 with 3 independent raters, on 2 occasions, 1 week apart; raters had to count the number of full sit-to-stand movements completed in 15 seconds. STS15 tests were separated by periods of 15 minutes of rest; the rotation order of the raters was randomized for each patient. Participants were also assessed by MDS-UPDRS part II and III, the 20-meter ambulation test (AT20), the Five Time Sit-To-Stand (FTSTS), the MoCA and the PDQ-8. Intra- and inter-rater reliability were assessed using intraclass correlation coefficients (ICC) and concurrent validity was assessed by Spearman's and Pearson's correlations.

Results

Preliminary findings show excellent intra- and inter-rater reliability of STS15, with mean ICC > 0,95. Correlations with FTSTS and AT20, were highly significant and present to a lesser degree with the MDS-UPDRS III score. The other correlations were not significant. The mean duration of the sit-to-stand movement with STS15 was lower than with FTSTS ($p < 0.01$).

Conclusion

STS15 is a reliable and valid test to assess sit-to-stand in moderate Parkinson's disease.

Keywords

Parkinson's disease;Sit-to-stand evaluation;Reliability and validity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1118

COGNITIVE AND BEHAVIORAL DISORDERS IN AMYOTROPHIC LATERAL SCLEROSIS: AN OVERVIEW.

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Introduction/Background

Amyotrophic lateral sclerosis (ALS) is a progressive neurodegenerative disease in which motor impairment has long been a prominent concern for therapeutic target and research. However, life expectancy has expanded in ALS and today's conceptualization is that ALS is a multisystem disorder in which non-motor manifestations including cognitive-behavioral disorders can also be observed.

Material and Method

The objective is to give an overview of what is currently known about cognitive-behavioral disorders in ALS in order to construct an observational study of apathy and executive dysfunction in a cohort of ALS patients.

Results

Cognitive disorders are found in 30-50% of the ALS patients in general, and are associated with Fronto-Temporal Dementia (FTD) in particular in 10-15% of ALS patients (ALS-DFT, or DFT-ALS including various behavioral and language FTD variants).

Cognitive changes in non-FTD patients with ALS include disorders of attention, working memory, language, social cognition and other frontal executive functions. Behavioral changes include essentially frontal impairment such as apathy, lack of empathy, disinhibition and impulsivity. Depression and anxiety are also reported. Previous report shows that cognitive-behavioral changes may interfere with decision making (particularly end-of-life decisions) and increase caregivers' burden.^[1]

Cognitive-behavioral deficiencies in the course of ALS are related to greater overall severity of disease and shorter survival after controlling for the motor severity.

These deficiencies are not well known and time-consuming. They might be underestimated and require greater investigation in clinical routine. An ALS-specific neuropsychological battery has been recently developed and validated in French, the ECAS (Edinburgh Cognitive and Behavioural ALS Screen) to screen patients more systematically.

Conclusion

The typology and temporality of cognitive-behavioral disorders in ALS are insufficiently well known. Cognitive and behavioral changes should be identified through specific screening tools and taken into account in the management of ALS patients and in the design of pharmacological trials.

Keywords

Amyotrophic Lateral Sclerosis;Cognitive;Behavioral impairments

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1248

RELAPSING FEVER IN A PATIENT WITH DYSPHAGIA SECONDARY TO HUNTINGTON'S DISEASE

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Introduction/Background

Huntington's disease (HD) is a genetic neurodegenerative disorder. Jerky movements (chorea), psychiatric disorders and cognitive impairments are observed in a wide spectrum of signs and symptoms. Dysphagia and dysarthria are common, and these signs are a frequent cause of morbidity and mortality due to bronchoaspiration. Our objective is to remark the importance of prevention and treatment of dysphagia in HD.

Material and Method

Case report.

Results

58 years-old man with diagnosis of HD. The patient was referred to the Speech and Language Unit in order to improve dysphagia and dysarthria, symptoms of recent onset. The physical examination showed intelligible dysarthria, shortness of breath with speech and occasional choking with liquids. The patient also informs about relapsing episodes of fever studied by the Infectious Disease Department without conclusive explanation.

Following the possibility of microaspiration, fiberscope study was fullfill, showing correct vocal chords closing, hypotonia at the base of tongue and bolus residues in valleculae. Videofluoroscopy study was also made, showing slowness in pharyngeal reflex with contrast media retention in pyriform sinus, which forced the patient to repeat swallowing, with penetration without aspiration. As a result of findings, speech and language therapy was started, emphasizing postural instructions and swallowing exercises, after that no fever episode appeared.

Conclusion

Swallowing disorders are prevalent symptoms of HD. It is due to choreiform and hypokinetic disturbances affecting swallowing muscles. As a result, choking and aspirations are common in HD patients, being one of the principal causes of mortality and hospital admissions.

Therefore, when first symptoms of dysphagia appear, it is important to begin as soon as possible with treatment. Speech and language therapy is useful to learn patterns and exercises to maintain and improve swallowing. In severe cases, avoid oral feeding and consider enteral nutrition must be evaluated.

Keywords

Huntington's disease;Dysphagia;Relapsing fever

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1316

ACTION OBSERVATION AND GAIT RECOVERY IN SUBJECT WITH PARKINSON'S DISEASE. A NEW MOTOR-COGNITIVE COMBINED APPROACH. A PRELIMINARY REPORT.

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Introduction/Background

Action Observation (AO) has been recently described as an effective strategy in stroke rehabilitation, since it can shape neural circuit reorganization, promote neural plasticity and motor learning. Very few evidences are available for rehabilitation of patients with Parkinson Disease trough AO.

Material and Method

AIM: The specific aim of this paper is to evaluate the effectiveness of action observation as an adjunctive rehabilitative tool to improve balance, gait and to reduce falls and to investigate the changes in EEG pattern duo to the treatment's effects.

DESIGN: Prospective quasi-experimental study, pre and post design

Five cognitively intact participants with mild Parkinson's disease and gait disturbance were enrolled in the study.

The subjects underwent a rehabilitation programme of action observation for gait and balance recovery for 30 minutes, 3 times a week for 4 weeks.

Main outcome measures. The assessments were performed at the beginning (T0) and at the end of the treatment (T1). The main outcome were: The Hoehn and Yahr scale; Unified Parkinson's Disease Rating Scale (UPDRS) motor section III, Mini Mental State Examination (MMSE), Freezing of gait Questionnaire (FOG-Q), Timed Up&Go Test (TUG), Ten meters walking test (steps and seconds) (10 MWT), Berg Balance Scale (BBS), The 39-items Parkinson's Disease Questionnaire (PDQ-39), Short form 12-items Healthy Survey (SF-12) and Functional Independence Measure (FIM)..

Results

RESULTS: Action Observation training was feasible, acceptable, safe, and the participants completed 100% of the prescribed training sessions. The statistical analysis performed by the t test of the T1 vs T0 showed statistically significant improvements for UPDRS motor section III $p=0,0082$, SF12 MCS $p=0,0007$, FOG Q $p=0,0030$, PDQ39 $p=0,100$ and for P300LD $p=0,0077$. No statistically significant improvements for other scales were found.

Conclusion

CONCLUSIONS: AO is a feasible and safe form of rehabilitative exercise for cognitively intact people with mild PD. Further investigation regarding the long-time effectiveness of robot training is warranted.

Keywords

Parkinson;Action Observation;mirror neuron systems

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1395

COGNITIVE DETERMINANTS OF VISUAL SEARCH IN PATIENTS WITH PARKINSON'S DISEASE

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Introduction/Background

Visual search impairments may negatively affect activities of daily living. Few studies explored the cognitive deficits that contribute to impaired visual search in Parkinson's disease (PD). The aim was to investigate the associations between visual search performance and cognitive functions in PD.

Material and Method

Twenty patients with PD (age: 69±8yo; sex (Men/Women): 16/4) and 15 controls (age: 61±11yo; sex: 8/7) performed a visual search task where they were instructed to search for a target stimulus (road sign) among distractor stimuli (other road signs). Neuropsychological tests were also administered. Partial correlations (r or r) were analyzed to investigate associations between correct detection times (cDT) of the visual search task with cognitive variables whilst controlling for age.

Results

In patients, significant partial correlations were found between cDT and Montreal Cognitive Assessment scores ($\rho = -0.65$, $p = 0.002$), divided attention of the Useful Field Of View test ($\rho = 0.60$, $p = 0.007$), interference condition of the Stroop test ($r = -0.58$, $p = 0.023$), Figure of Rey ($\rho = -0.74$, $p < 0.001$), errors and completion times on the dot cancellation test (errors: $\rho = 0.83$, $p < 0.001$; completion times: $r = 0.53$, $p = 0.018$), response times on Trail Making Test-part A ($\rho = 0.56$, $p = 0.013$) and part B ($r = 0.58$, $p = 0.015$). In controls, only one significant partial correlation was found, between cDT and completion times of dot cancellation test ($r = 0.88$, $p = 0.001$).

Conclusion

This study shows that visual search is affected by cognitive functions of individuals living with PD. Our findings may have implications for the assessment of cognitive functions and the development of training programs in patients with PD. Further study in PD will develop dynamic visual search task in driving conditions to better understand cognitive functions that may affect real-world activities.

Keywords

Parkinson's disease; Visual search; Cognitive functions

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1476

THE ROLE OF TRAINING INTENSITY IN OUTPATIENT REHABILITATION OF PEOPLE WITH PARKINSON'S DISEASE: A RETROSPECTIVE COHORT STUDY OF DISABILITY PROGRESSION WITH 4-MONTH FOLLOW-UP.

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Introduction/Background

Rehabilitation has been shown effective at improving functional abilities of people with Parkinson's disease (pwPD), through task-oriented and aerobic training, though the exact role of exercise intensity has not yet been determined. The study is aimed at evaluating the impact of different intensity rehabilitation protocols on the short and medium term progression of disability in pwPD.

Material and Method

Using a retrospective cohort study design, the medical records of pwPD who consecutively underwent task-oriented outpatient rehabilitation from 2008 to 2016 at a University Hospital were retrieved. Subjects were considered eligible if they: a) had undergone a single cycle/year of gait and balance training, b) had stable drug therapy during the whole study period, and c) the UPDRS II subscore was available both at the baseline, at the end of treatment and 4 + 2 months after. The UPDRS part-III, TUG test, 6MWT, FOG-Q, Falls Efficacy Scale (FES) and PDQ-39 were also looked for as secondary outcome measures.

Results

Eighty out of 420 records met the eligibility criteria. A Low-Intensity (LIT) (39 cases) and a High-Intensity Training (HIT) (41 cases) group were defined according to a total training duration of less or more than 1000 minutes, respectively. HIT group included a greater rate of responders than LIT (65% cases with a meaningful gain in the UPDRS II, vs 35%; Chi2:3.8;p=.04). At variance with the LIT group, HIT subjects also showed a persistent improvement in UPDRS scores (F:14.5;p<.0001) and in FES (F:6.7;p=.002) at the 4-month follow-up. No significant between-group differences were found comparing TUG, 6MWT and PDQ-39 changes.

Conclusion

A total training duration of 60/90 minute/session per 20 sessions of task-oriented and aerobic training is recommended in pwPD, in order to ensure a clinically meaningful and persistent reduction of their disease-related disability

Keywords

outpatient rehabilitation ;Parkinson's Disease;intensity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1493

SLOW OSCILLATIONS OF CEREBRAL HEMODYNAMICS CHANGES DURING LOW-LEVEL LIGHT THERAPY IN THE ELDERLY WITH AND WITHOUT MILD COGNITIVE IMPAIRMENT: AN FNIRS STUDY

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Introduction/Background

Low-level light therapy (LLLT) is used to stimulate cell function or reduce pain by applying light emitting diodes (LED) to the skin. LLLT is known to contribute to the neuronal recovery during the reconstruction of brain tissue for the treatment of degenerative disorders. This research aims to confirm the slow oscillations of cerebral hemodynamics changes when LLLT is applied to the elderly and patients with mild cognitive impairment (MCI).

Material and Method

Eight patients with MCI and 7 healthy elderly participated in this study. They were randomly divided into four groups; carotid artery stimulation, vertebral artery stimulation, simultaneous carotid and vertebral artery stimulation, or sham stimulation. The subjects received LLLT using Color DNA[®] (Color Seven Co.) with a LED light source for 30 minutes a day during 20 days. The hemodynamic responses were recorded by an fNIRS system (NIRScout[®]) with 74 channels at the first and the 20th intervention days, before, during, and after the LLLT. The spectral power density over the very low-frequency oscillations (VLFO) of cerebral hemodynamics was calculated using Welch technique.

Results

In both healthy and MCI patients, VLFO increased in the whole cerebral area during LLLT compared to the resting state, and these changes are more contrasting in the condition with simultaneous carotid and vertebral artery stimulation condition. These characteristics were observed in both the first and 20th intervention days however, VLFO in the 20th intervention day were more increased than the first day.

Conclusion

Increase of very low-frequency oscillations demonstrated increasing spontaneous activity of cerebrovascular tone and neuronal activation. These findings may suggest a possibility of modulating effect of LLLT on neuronal activity and blood vessel reconstruction (This work was supported by the Korea Evaluation Institute of Industrial Technology (No.10067221) and a grant from the NRF (NRF-2017R1A2A1A05000730) funded by the Korean government).

Keywords

Mild Cognitive Impairment;Low-level light therapy;Functional Near-infrared Spectroscopy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1533

CLINICAL RESEARCH PROGRESS OF ACUPUNCTURE THERAPY FOR PARKINSON'S DISEASE

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Introduction/Background

Parkinson's disease is a chronic degenerative disease of the central nervous system. The pathogenesis of the disease is not clear. There is no specific treatment for modern medicine. The main drug is levodopa, but after taking several years, there are many side effects such as decrease of curative effect and symptom fluctuation. Acupuncture treatment has obtained more accurate clinical efficacy and has certain advantages in improving clinical symptoms.

Material and Method

The main acupuncture treatments include: head acupuncture therapy, body acupuncture therapy, abdominal acupuncture therapy, plum-blossom needle therapy, acupoints penetration therapy, acupuncture and drug combination therapy etc. The mechanism of acupuncture treatment of PD is: acupuncture therapy can reduce the loss of DAT and improve the activity of DAT in the basal ganglia region of the patient which achieves the protective effect of dopamine neurons. Acupuncture is related to the improvement of local blood flow in the brain region. Acupuncture therapy can increase the activity of SOD and decrease the LPO which is helpful to eliminate the free radicals around the catecholamine neurons and to protect the catecholamine neurons.

Results

The clinical research of acupuncture therapy is mainly carried out with the combination of head acupuncture therapy, body acupuncture therapy and acupuncture and drug combination therapy.

Conclusion

Acupuncture therapy has certain advantages and potential in improving symptoms of PD. Acupuncture therapy can delay the progress of the disease to a certain extent and reduce the side reaction of medicine. However, the acupuncture treatment is diversified. The research on the mechanism of acupuncture treatment of Parkinson's disease is still in the exploratory stage, which needs to be further studied.

Keywords

Parkinson's disease;acupuncture;review

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1550

THE RELATIONSHIP OF CHRONOTYPE, OBJECTIVELY-MEASURED PHYSICAL ACTIVITY AND DEMENTIA IN OLDER ADULTS

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Introduction/Background

To examine overall relationships between chronotype, and objective measured physical activity pattern and dementia in older adults, focusing on potential interactions between the chronotype, volume timing of activity and/or sleep and dementia.

Material and Method

Subject were 192 female and 47 male community-dwelling healthy Korean individuals aged 70-85 years. Total volume of activity at an intensity over 3 metabolic equivalents (METs) and timing of activity and sleep pattern were measured by 3 axial accelerometer throughout each 24-h period for 1 month. Participants also completed the morningness-eveningness Questionnaire, which is a 19-item self-report scale with questions focusing on habitual waking and bed times. Partial correlation coefficients adjusted for age and sex were calculated between measurements. We used logistic regression analyses to determine odds ratios and 95% confidence intervals adjusted for potential confounders, and to assess independent associations between chronotype, physical activity pattern and the risk of dementia.

Results

The data were significantly described by partial correlation models which showed that in both sexes the chronotype score and physical activity associated with cognitive function. Multivariate-adjusted logistic regression analyses predicted who engaged in <12 to 13 min/day of moderate-intensity physical activity were, respectively, 2 and 3 times more likely to sustain dementia than those participating in >22 min/day of activity >3 METs. Moreover, participants who classified as high in eveningness were 2 times more likely to sustain dementia than those with morningness.

Conclusion

Causation cannot be inferred from a crosssectional study. Nevertheless, we suggest that from the viewpoint of cognitive health, older population should be encouraged to engage in low- and moderate-intensity habitual physical activity, taking a duration >12 to 13 min/day at >3

METs. Moreover, these results suggest that elderly with higher eveningness also have higher risks of dementia.

Keywords

Dementia;Chronotype;Physical activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1575

“THEY’VE BEEN FANTASTIC. ...IT’S JUST THAT TIME BETWEEN CLINICS”. EXPERIENCES OF ACCESSING SPECIALIST CARE BY PEOPLE LIVING WITH MOTOR NEURONE DISEASE. A QUALITATIVE STUDY

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Introduction/Background

Attendance at a specialist motor neurone disease multidisciplinary clinic is associated with improved survival. However, access to specialist services between hospital visits can be difficult, especially for people who find it hard to travel to hospital.

Material and Method

As part of a mixed methods controlled trial of telehealth we conducted semi-structured interviews and used thematic analysis to examine the experiences of patients with motor neurone disease/ amyotrophic lateral sclerosis, carers and specialist nurses. We explored their experiences of hospital and community care and care coordination.

Results

54 participant interviews were conducted. 36 patients and 32 carers were interviewed at least once. A community nurse was interviewed once and a hospital nurse interviewed twice.

The perceived value of the specialist hospital clinic was that it offered reliable and regular care and could rapidly and effectively deal with complex problems. However, travelling to clinic could be practically and emotionally difficult. Community services offered practical care and home adaptations but some found that they lacked the regular support and specialist knowledge of a specialist clinic. Participants experienced a lot of overlap between the care provided locally and that in the specialist clinic. Each patient described a different arrangement for receiving care and this depended on their needs, their relationship with health professionals and their attitude towards the disease. The primary person coordinating their care could be from different

backgrounds, but was usually a health care professional who was accessible, saw the patient regularly and who the patient felt sufficient specialist knowledge to address their problems.

Conclusion

Care coordination can be provided by any professional, who can draw services around the patient and their family. This “lynch-pin” needs to be accessible, reliable and have specialist expertise. Without care coordination the patient struggles to access the care they need in a timely fashion and experiences many unmet needs.

Keywords

Care coordination;Qualitative;Motor Neurone Disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1587

USE OF BOTULINUM TOXIN THERAPY IN PARKINSONIAN SYNDROMES

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Introduction/Background

Botulinum Toxin has become a multipurpose therapeutic agent with a large spectrum of clinical applications, especially in neurological diseases. If the place of botulinum toxin in the management of muscle overactivity is now well established, its uses in the management of specific parkinsonian motor symptoms (tremor, levodopa induced dystonia, freezing of gait) as well as non-motor symptoms (sialorrhea, bladder dysfunction) are not yet fully known and insufficiently developed.

Material and Method

We provide a systematic review of the current and potential uses of Botulinum Toxin in the management of motor and non-motor symptoms in parkinsonisms.

Results

Compared to classical systemic medications, Botulinum Toxin is a solid alternative to treat motor and non-motor disorders in parkinsonian syndroms. In sialorrhea and overactive bladder, Botulinum toxins A and B injections appear to be safe and efficient; considering rest tremor and dystonia, uses of botulinum toxin are quite promising, even though still investigational. Finally, Botulinum Toxin injections appear to be ineffective in freezing of gait and camptocornia.

Conclusion

There is a need for properly controlled, randomized studies to confirm the efficacy and improve the use of botulinum toxin injections on parkinsonian motor and non-motors symptoms, as there is yet currently no accepted consensus on the best ways to use Botulinum Toxin to treat those symptoms.

Keywords

parkinsonian syndroms;botulinum toxin

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1601

PHYSICAL PERFORMANCES AND RECONDITIONING OF PATIENTS SUFFERING FROM MILD TO MODERATE PARKINSON'S DISEASE

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Introduction/Background

Patients with Parkinson's disease (PD) have a reduced physical activity level, although exercise is especially recommended in this population.¹ Besides, motor and non-motor symptoms may also interfere with the ability to produce strenuous efforts. Yet, their baseline performances and the response to physical reconditioning have not been thoroughly investigated. The cross-sectional part of this study investigates different aspects of physical fitness of patients suffering from mild to moderate PD. The second part investigates the response to physical reconditioning.

¹van Nimwegen et al. Physical inactivity in Parkinson's disease. J Neurol., 2011.

Material and Method

Sixty PD patients and 47 healthy controls (HC) matched for demographic features were tested for aerobic performances and muscle strength. Peak work load (PWL) and peak oxygen consumption (VO₂peak) were assessed in both groups during an incremental cycle exercise test. Isokinetic knee muscle strength (IKMS) was also tested for the extensor and flexor muscles at 60° and 180°.s⁻¹. Subgroups of PD patients were also allocated to 12 weeks of strength training (ST, n=17), aerobic training (AE, n=20) or standard care control intervention (n=15).

Results

In comparison to HC, PD patients showed reduced PWL and VO₂peak (respectively -19% and -14%, p≤0.003). PD patients showed reduced IKMS of flexor muscles (from -17 to -24%, p≤0.001), and reduced IKMS only for the most affected side of extensor muscles (-13%, p≤0.015). Eighty-eight percent and 80% of the trained patients respectively completed the ST and the AE interventions. No major complication occurred during the interventions. The AE group improved PWL (+18%, p=0.001) and VO₂peak (+12%, p=0.033). The ST group improved IKMS of flexors (+22-25%, p≤0.02), IKMS of extensors only for the most affected side (+10-17%, p<0.05), and PWL (+16%, p<0.001).

Conclusion

Aerobic and strength performances are both affected by PD. However, physical reconditioning is feasible and improves fitness of PD patients.

Keywords

Parkinson's disease;physical fitness;physical training

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1676

TREATMENT OF CONTRACTURES WITH CLOSED HANDS WITH LIDOCAINE : A PILOT STUDY IN A LONG TERM GERIATRIC SETTING

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Introduction/Background

Joint contracture with restriction of range of movement is a very common condition in severe stages of Alzheimer's disease. Treatment is still not standardized but relies mainly on tenotomy. The objective of the study was the opening of closed or flexed hands after 10 days of lidocaine treatment.

Material and Method

The study was conducted in a long-term care hospital in Paris, France. Eight patients who had contractures with closed or flexed hands were included in the study. Distance between the most distal wrist line and the fingertips (DWF) was measured for the 4 fingers with passive opening of the hand before and 20 minutes after spraying of Lidocaine oral liquid 5% between fingers and into the palm. Local cares were applied with use of antiseptic and if needed dressing of the lesions. The procedure was repeated 5 times, every other day for 9 days. At 1 month the DWF was again measured without lidocaine application.

Results

Mean age was 86.3 (standard deviation=6.9) years old and 75% were women and 75% had vascular dementia. Two participants had contractures in both hands. All participants had lesions in the palm. Differences between DWF before and after lidocaine application were on average 2.02 (2.24) for index, 2.62 (2.16) for middle, 2.33 (1.88) for ring and 2.10 (1.41) for little finger (p difference < :0001 for all fingers). There were significant gains between baseline and the 5th procedure and after 1 month but not between the 5th procedure and after 1 month.

Conclusion

The use of local anesthesia to open closed or flexed hands by contractures seemed promising and calls for a control randomized versus placebo study.

Keywords

striatal hand;pain;treatment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1710

STUDY ON THE MECHANISM OF ACUPUNCTURE ON PARKINSON'S DISEASE IN RATS

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Introduction/Background

To explore the possible oxidative stress mechanism of acupuncture in the treatment of Parkinson's disease in rats.

Material and Method

The Lactacystin was injected into the rat's substantia nigra pars compacta to establish a Parkinson's disease model. The Rats were treated for 2 weeks of acupuncture therapy. Two weeks later SOD, GSH-PX and MDA were measured in rats' serum.

Results

Compared with the normal group, SOD activity increased after the rat model was successfully established, and the activity of GSH-PX decreased and MDA content increased. Compared with the model group, the acupuncture group and Medopa +acupuncture group can improve SOD activity and GSH-PX activity and reduce MDA. The acupuncture group has significant effect.

Conclusion

In Lactacystin induced Parkinson's disease model, acupuncture treatment significantly improved SOD activity and GSH-PX activity and reduced MDA content. Acupuncture may participate in the regulation of oxidative stress mechanism.

Keywords

Parkinson's disease;acupuncture;oxidative stress

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1796

PAIN IN AMYOTROPHIC LATERAL SCLEROSIS

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Introduction/Background

Amyotrophic lateral sclerosis (ALS) is a rare neurodegenerative disease, incurable and fatal, with median survival of 2-4 years. The ALS degenerative process involves upper and lower motor neurons causing loss of limb strength, dysarthria, dysphagia and respiratory failure.

Pain is also reported by most of these ALS patients, however is often overlooked. It can occur at all stages of the disease, and sometimes even precede the motor dysfunction and is usually related with deterioration in patient's quality of life.

The purpose of this work is to review the pathophysiology of the pain in ALS and the most adequate treatment strategies available.

Material and Method

Search of relevant literature in Medline, via PubMed, in the last 8 years, using the following key words: amyotrophic lateral sclerosis (ALS), pain.

Results

Pain associated with ALS is more frequent in patients with spinal presentation and has a multifactorial etiology, that can be either primary (neuropathic) or secondary to motor degeneration; location and clinical onset and evolution can also differ.

Depending on the cause and most prominent descriptors and location of symptoms different treatment have been suggested, including pharmacological and non-pharmacological interventions, from non-steroidal anti-inflammatory drugs, drugs for neuropathic pain, opioids, cannabinoids, physical agents and therapy. Pharmacological treatment and physical agents have a decisive role in some cases of primary pain, mainly neuropathic, while physical therapy has an intervention in the prevention and treatment of secondary pain.

Conclusion

Although ALS is incurable and fatal, treatment can extend the length and meaningful quality of life for patients.

Treatment of pain is frequently neglected in these patients, nevertheless it has a positive physical and psychological impact with repercussions on quality of life. So, ALS patients should be integrated into a rehabilitation program which must include evaluation and treatment of pain.

Keywords

amyotrophic lateral sclerosis;pain;motor neuron disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1887

SLEEP QUALITY ASSESSMENT IN PARKINSON'S DISEASE PATIENTS: PRELIMINARY RESULT

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Introduction/Background

As a multisystemic neurodegenerative disorder, Parkinson disease has a broad spectrum of symptoms including motor and non motor symptoms (NMS). As shown in studies, NMS can also impact patient's quality of sleep.

The aim of our study was to assess the quality of sleep in patients with Parkinson's disease in a Tunisian population.

Material and Method

This is a transversal and prospective study from January 2018 including all parkinsonian patients followed at the Neurology and Physical Medicine and Rehabilitation departments of the University hospital of Mahdia.

Patients were assessed using the Hoehn and Yahr's scale and filled out the following questionnaires: Parkinson's disease sleep scale (PDSS) and the Epworth Sleepiness Scale (ESS).

Results

Twenty patients were enrolled in our study (75% male and 25% female) whose mean age was 63 ± 6.4 years. The disease duration varied from 2 to 34 months with an average of 13 months.

Hoehn and Yahr staging was 2.8 ± 0.87 . The mean total PDSS score was 99.5 ± 22.1 and 65% of the patients had a poor quality of sleep (PDSS score < 82 or subscore < 5). Most frequent disorders were pain or cramps interrupting sleep, night waking to urinate and fatigue or sleepiness on waking.

The mean ESS score was 15.6 ± 0.78 and patients exhibited excessive diurnal sleepiness in 30% of the cases (ESS score > 10).

Both the total PDSS score and EDSS were correlated with disease stage, but not with age or disease duration.

Conclusion

Sleep disorders are common in Parkinson disease and future studies are needed to assess the effects of therapeutic options on sleep quality.

Keywords

Parkinson's disease ;sleep quality

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-1963

MULTIDISCIPLINARY SHORT-TERM DAY REHABILITATION PROGRAM CAN BE EFFECTIVE FOR PATIENTS WITH PARKINSON DISEASE

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Introduction/Background

Parkinson's disease (PD) is a neurodegenerative disorder that affects predominately dopaminergic neurons in substantia nigra, progresses slowly and in most cases, leads to severe motor impairment with decline in quality of life. Although there is no cure, treatment options vary and include medications and surgery. It was previously shown, that rehabilitation treatment programs can also be an important part of PD management. The aim of the study was to demonstrate the effectiveness of multidisciplinary short-term day rehabilitation program for patients with PD.

Material and Method

14 patients with diagnosed PD were admitted to the Multidisciplinary Center of Rehabilitation for 2 weeks (3 times a week – total 6 sessions) of specialized day rehabilitation program. Each treatment day combined minimum 3 hours of individual and group sessions, including aerobic, functional and cognitive training, speech and dance therapy, and Tai-chi session. Berg Balance Scale (BBS), 6 minutes' walk test (6MWT) and Timed Up & Go test (TUG) at the beginning and at the end of the program were measured for motor progress assessment.

Results

BBS score showed an insignificant, but positive trend from 52.4 ± 3.5 to 53.5 ± 2.4 points, 6MWT increased from 331.1 ± 127.8 meters at the beginning to 389.4 ± 122.5 meters at the end of the program and TUG dropped from 19.2 ± 7.7 to 14.7 ± 5.4 seconds. All patients reported that because of taking part in the program their quality of speech and communication was increased, and their psychological status was improved. High level of patient's satisfaction was recorded at the end of the program.

Conclusion

A multidisciplinary day rehabilitation program can be effective for patients with PD. Even a short-term 2-week treatment shows a positive trend in motor abilities according to well-known assessment scales' parameters.

Keywords

Parkinson disease;Day Rehabilitation;Multidisciplinary Approach

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.05 Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

ISPR8-2487

LESSONS LEARNED DEVELOPING A DIAGNOSTIC TOOL FOR HIV-ASSOCIATED DEMENTIA FEASIBLE TO IMPLEMENT IN RESOURCE-LIMITED SETTINGS: PILOT TESTING IN KENYA

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Introduction/Background

To conduct a preliminary evaluation of the utility and reliability of a diagnostic tool for HIV-associated dementia (HAD) for use by primary health care workers (HCW) which would be feasible to implement in resource-limited settings.

In resource-limited settings, HAD is an indication for anti-retroviral therapy regardless of CD4 T-cell count. Anti-retroviral therapy, the treatment for HAD, is now increasingly available in resource-limited settings. Nonetheless, HAD remains under-diagnosed likely because of limited clinical expertise and availability of diagnostic tests. Thus, a simple diagnostic tool which is practical to implement in resource-limited settings is an urgent need.

Material and Method

A convenience sample of 30 HIV-infected outpatients was enrolled in Western Kenya. We assessed the sensitivity and specificity of a diagnostic tool for HAD as administered by a primary HCW. This was compared to an expert clinical assessment which included examination by a physician, neuropsychological testing, and in selected cases, brain imaging. Agreement between HCW and an expert examiner on certain tool components was measured using Kappa statistic.

Results

The sample was 57% male, mean age was 38.6 years, mean CD4 T-cell count was 323 cells/ μ L, and 54% had less than a secondary school education. Six (20%) of the subjects were diagnosed with HAD by expert clinical assessment. The diagnostic tool was 63% sensitive and 67% specific for HAD. Agreement between HCW and expert examiners was poor for many individual items of the diagnostic tool ($K=.03-.65$). This diagnostic tool had moderate sensitivity and specificity for HAD. However, reliability was poor, suggesting that substantial training and formal evaluations of training adequacy will be critical to enable HCW to reliably administer a brief diagnostic tool for HAD

Conclusion

Pilot testing suggests substantial training, formal evaluations of training adequacy is critical enabling primary HCW to reliably administer brief diagnostic tool for HAD that contains cognitive tests and neurological examination.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-0135

CASE REPORT A RARE CASE OF DYSPHAGIA ASSOCIATED WITH PROXIMAL MUSCLE WEAKNESS: VIDEOENDOSCOPIC SWALLOWING STUDY AND LITERATURE REVIEW

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Introduction/Background

Background and aim: It is rare to find dysphagia associated with proximal muscle weakness for the literature. Thus, our aim was to evaluate of dysphagia by Volume-Viscosity Swallow Test (V-VST) and videoendoscopic study and to study the effect of treatment.

Material and Method

We present a case of oropharyngeal dysphagia with proximal muscle weakness and was treated with corticosteroid. Oropharyngeal dysphagia was evaluated by both Volume-Viscosity Swallow Test (V-VST) and videoendoscopic swallowing study.

Results

V-VST test and videoendoscopic swallowing study showed thin liquid aspiration and penetration into trachea and residue in pyriform sinus. While, there was no soft or solid food aspiration into trachea, but it showed residue in pyriform sinus and valleculae.

Conclusion

Conclusion: Oropharyngeal dysphagia and proximal muscle weakness were reversible with appropriate treatment with better outcomes and good function and quality of life. At 4 months after the onset of symptoms, the patient's clinical condition had improved on normal phonation and swallowing with regaining power in the proximal muscle limbs.

Keywords

Proximal muscle weakness, ; dysphagia,; videoendoscopic swallowing study.

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-2639

MOTOR EVOKED POTENTIAL OF UPPER-LIMBS IS PREDICTIVE OF APHASIA RECOVERY

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Introduction/Background

Recovery from aphasia remains difficult to predict. As motor cortex is strongly involved in language processes, both production and perception, the present study aimed to determine whether the integration of an electrophysiological measure of the motor network using Motor Evoked Potentials (MEPs) with an anatomical approach -diffusion-weighted MRI- in the acute phase of stroke can improve the prediction of recovery from post-stroke aphasia.

Material and Method

Fifteen aphasic patients were included in the post-stroke acute phase. Electrophysiological assessment exploring resting motor threshold ratio (rMTr) of the two upper-limbs and neuroanatomy exploration using MRI and diffusion tensor imaging were performed in the acute phase. Language impairment was assessed at the same stage and six months after the stroke. Multivariate regression analyses were carried out on aphasia severity score at M6, on recovery rates (change of severity) and on speech and language features as the dependent variables.

Results

A first-level model, including only clinical variables (i.e. initial severity) predicted severity at six months. When the rMTr of upper limbs was added in a second-level model, the predictive power significantly increased from 51% to 79%, as well as adding in a third-level model rMTr of upper-limbs and initial fibres number ratio of the corticospinal tracts (51% to 80%). With the changes of severity as the dependent variable, the same factors made a significant contribution and the predictive power of a second-level model increased from 23% to 50% to the same extent as in a third-level model (23% to 51%). A similar improvement when adding MEPs was noted for the prediction of articulatory agility and naming skills.

Conclusion

Our results suggest that MEPs of upper limbs measured within 15days post-stroke are strong determinants of the prediction of longitudinal severity of post-stroke aphasia as well as of changes in symptoms and that the combination of electrophysiological and anatomical biomarkers improve this prediction.

Keywords

aphasia;motor evoked potential;diffusion tensor imaging

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-0312

MULTI-MODAL REHABILITATION OF UNILATERAL OPERCULAR INFARCTION PRESENTING WITH FOIX-CHAVANY-MARIE SYNDROME: A CASE REPORT

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Introduction/Background

Foix-Chavany-Marie syndrome (FCMS) is a rare form of pseudobulbar palsy characterized by loss of voluntary control of the facial, glossal, pharyngeal, laryngeal, and masticatory muscles with preserved automatic, involuntary, emotion-related movements called “automatic-voluntary dissociation”. Dysfunctions related to FCMS are usually irreversible and the prognosis tends to be poor.

Material and Method

A 50-year-old female presented with FCMS following an acute right opercular infarction for 2 months. The patient had complete dysfunction of the above muscles with inability of opening mouth, oral phase of preparing food for swallowing involving tongue and mandible movement and chewing. The patient was able to swallow if food was placed at the posterior part of oral cavity near pharynx. The patient was only able to pronounce “uh”. The patient had previous history of hypertension and right peripheral facial nerve palsy with only mild residual asymmetry on facial expressions. Therapies included oral muscle exercises, sensory stimulation, breathholding and phonation technique, cough exercise, low frequency electric stimulation on bilateral mastoid and suprahyoid muscles. The patient received 20 minutes' 1Hz repetitive transcranial magnetic stimulation daily over the right motor cortex at an intensity of 100% for 10 days. The patient also received 30 minutes' acupuncture daily in a total of 15 days at bilateral Shàngyíngxiāng (EX-HN8), Dìcāng (ST4), Jiáchē (ST6), Tīnggōng (SI19), Tàiyáng (EX-HN4), Jīngmíng (BL1), Sīzhúkōng (TE23), Sibái (ST2) and Shǔigōu (GV26), Liánquán (CV23), Chéngjiāng (CV24). Assessments were performed before and after treatments.

Results

After 3 weeks of treatments, the patient had improvements in opening her mouth voluntarily from 2cm to 8cm, moving her mandible, chewing foods, protruding her tongue and pronouncing “a”, “i” and “u”. The modified Frenchay Dysarthria Assessment (Chinese version) was improved by 22 points and standardized swallowing assessment was improved by 1 point.

Conclusion

Intensive multi-modal rehabilitation therapy may be helpful in the recovery of disabilities associated with FCMS.

Keywords

Foix-Chavany-Marie syndrome;dysarthria;recovery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-0505

CONSTRAINT-INDUCED APHASIA THERAPY FOR POST-STROKE PATIENTS IN JAPAN

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Introduction/Background

Constraint-induced aphasia therapy (CIAT) has been widely applied as post-stroke aphasia rehabilitation to encourage intensive verbal practice with supported verbal cuing instead of previous habitual compensatory strategies (Pulvermuller et al., 2001). However, this therapy has not yet been reported in Japan; thus, we applied intensive CIAT training to three of our patients with chronic aphasia.

Material and Method

Participants Patient 1: Aged 72 years, female, three years after onset of Broca aphasia.

Patient 2: Aged 67 years, male, two years after onset of transcortical aphasia.

Patient 3: Aged 52 years, female, two years after onset of anomia.

Methods

The CIAT-II protocol (Johnson et al., 2015) was modified as the Japanese version, which consisted of intensive training using five expressive language exercises and methods of Shaping and Transfer Package for 5 × 3-h weekly sessions for 3 weeks. The Japanese version of the Aphasia Quotient (AQ) in the Western aphasia battery and the Amount Scale (AS) of the Verbal Activity Log (VAL) were also modified to assess aphasia before and after the protocol.

Results

The AS improved from 2.7 to 4.6, from 1.4 to 2.8, and from 2.2 to 3.8 in patients 1, 2, and 3, respectively. The AQ did not greatly change in any patient (from 70.8 to 72, from 70 to 73.1, and from 85.9 to 93.7, respectively).

Conclusion

The results indicated that the CIAT could improve aphasia assessed by the AS, which was consistent with previous study of CIAT (Johnson et al., 2015) and constraint-induced movement therapy (Taub et al., 2013). The Japanese version of CIAT might be effective as speech therapy for Japanese patients with chronic aphasia.

Keywords

Constraint-induced aphasia therapy;Stroke;chronic aphasia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-0732

PARIETO TEMPORO OCCIPITAL DAMAGES AFTER STROKE AND SPEECH AND LANGUAGE DISORDERS

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Introduction/Background

The stroke of the parieto temporooccipital lobe most often results in speech language disorders (SLD), expressed in misunderstanding speech and language.

Material and Method

We investigated the occurrence of SLD in relation to speech comprehension at 81 patients with parieto temporooccipital lesions after stroke. An auditory comprehension (AC) of the speech by subtests of Boston Diagnostic Aphasia Examination (BDAE) within the first 60 days after stroke was estimated.

Results

The average age of the sample was 65.91 (± 8.12 , M = 65.12 F = 66.91). Ischemic stroke was mostly present in the sample. All patients had left brain lesions with consequent aphasia. Patients were unsuccessful on subtests AC: Word Discrimination 27.16%, Body Part 25.92%, Command 33.33%, Complex Ideational Material (CIM) 45.67% of the sample. Successes of 80% and more in AC: Word Discrimination and Body Part had 24.69%, Command 19.75% and CIM had 7.40% patients.

Localization of brain lesions (left side of the brain)	An average score (points) on subtests AC of BDAE				
	N Total	Word Discrimination	Body Part	Command	CIM
	81				
Frontoparietal	13	22.77	9.76	5.07	2.96
Frontoparietotemporal	11	9.00	3.27	1.90	1.22
Frontotemporal	3	1.33	0.66	1.00	0.00
Irrigation MCA	12	23.08	7.58	4.75	2.41
Parijetal	14	52.50	14.35	10.28	6.71
Parietooccipital	2	49.50	13.00	7.50	5.75
Parietooccipitotemporal	1	60.00	14.00	6.00	5.50

Parietotemporal	13	23.38	7.84	5.30	3.19
Temporal	10	26.30	7.60	5.40	3.60
Temporooccipital	2	26.25	7.00	4.50	2.50
Avarage points		27.02	8.50	5.48	3.38
% of maximum points		37.53%	42.50%	36.53%	28.16%
Maximum points		72	20	15	12

Conclusion

Patients with parieto temporooccipital lesions after stroke had poor results on the BDAE subtests of auditory comprehension of speech and language.

Keywords

Aphasia;Auditory comprehension;Stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-1180

EFFICACY AND NEEDS OF SECONDARY DYSPHAGIA SCREENING IN POST ACUTE CARE FOR CHANGE IN DIET PROGRAM IN PATIENTS AFTER ACQUIRED BRAIN INJURIES

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Introduction/Background

Recent studies have shown the incidence of dysphagia in patients after traumatic brain injury up to 50% and in stroke patients between 35-40%. This paper presents the effectiveness and needs of secondary dysphagia screening in post acute care with consequent influence on the change in diet program. Current situation shown that not all patients with presence of dysphagia are adequately screened in acute hospital settings with concurrent safety and quality of life's compromise. We have placed issue whether secondary dysphagia screening will help identify another dysphagia patients in post acute care (rehab setting) and thus to improve patients safety and quality of life.

Material and Method

Patients with diagnosis acquired brain injury in subacute phase, who were hospitalized in Kladruba Rehabilitation Centre with primary dysphagia screening, were included. 124 patients were secondary GUSS screened and different types of dysphagia were diagnosed in 27 of them. Dysphagic patients were divided into 4 groups according to the dysphagic diet levels. 26 patients had specific speech therapist's intervention and electrostimulation therapy was applied in 13 of them.

Results

73,1% of 26 patients were improved. 57,7% patients were improved in one diet category, 2 patients changed from PEG to non-dysphagic diet program and one patient changed from PEG to advanced level. From all of 26 dysphagia patients were 61.5% without dysphagic diet program.

Conclusion

The effectiveness of secondary screening in 124 patients, when 27 dysphagic patients were determined, supported a need of secondary screening in post acute care (rehab setting) and led to set appropriate speech intervention using electrostimulation of the pharyngeal muscles and in 73,1% dysphagic patients the diet category was changed. The application of electrostimulation to the pharyngeal muscles under the leading of the speech therapist shows one of the very good ways how to improve quality of life in patients with acquired brain injury.

Keywords

Dysphagia;Secondary Screening

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-1349

THE CORRELATION BETWEEN SWAL-QOL OUTCOME AND FUNCTIONAL DYSPHAGIA SCALE IN STROKE PATIENTS

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Introduction/Background

There were some reports about Swallowing Quality of Life (SWAL-QOL), however still insufficient in stroke patients. This study is to evaluate the impact of dysphagia on quality of life in stroke patients by demonstrating the correlation between Swallowing Quality of Life questionnaire outcome and Functional Dysphagia Scale (FDS) score.

Material and Method

Sixty one stroke patients with dysphagia were enrolled. To evaluate for patients with cognitive impairment, we used the modified SWAL-QOL questionnaire for caregiver. We performed comparative analysis between the modified SWAL-QOL score of nasogastric tube feeding patients and that of oral feeding patients (table 1). The severity of dysphagia was assessed by FDS according to the result of VFSS. We investigated the correlation between the modified SWAL-QOL score and the FDS score.

Table 1. Characteristics of stroke patients (n = 61)

Characteristic	Tube feeding group (n = 27)	Oral feeding group (n = 34)	p-value
Age (years)	69.77±13.37 (38-91)	66.67±11.24 (43-91)	0.392
Gender (M/F)	15/12	22/12	0.476
Etiology (n)			0.404
Cerebral infarction	23	26	
Cerebral hemorrhage	4	8	
Location (n)			0.212
Basal ganglia or thalamus	6	7	
Middle cerebral artery territory	14	11	
Brain stem	4	9	
Multiple	3	7	
Days to study from onset (months)	6.18±8.50 (1-36)	25.17±44.64 (1-204)	0.034*

Age and onset values are mean±standard deviation

*P<0.05

Results

When using the modified SWAL-QOL, the mean score of tube feeding group was 107.59±17.04, which of oral feeding group score was 112.21±20.08 (table 2). A significant difference between two groups was showed in burden and sleep domains respectively (p=0.012, p=0.003). There was no significant difference in total score of modified SWAL - QOL between two groups (p= 0.345). There was a significant inverse correlation between the total score of SWAL-QOL outcome and that of total FDS score (r=-0.465, p= 0.000). The pharyngeal phase score of FDS was significantly correlated with Burden(r=-0.361, p=0.004), mental health (r=-0.364, p= 0.004), social functioning (r=-0.307, p= 0.016) and symptom frequency (r=-0.367, p=0.004) domains of SWAL-QOL (table 3).

Table 2. Comparison of modified SWAL-QOL between oral feeding group and nasogastric tube feeding group

	Tube feeding (n=27)	Oral feeding (n=34)	p-value
Food selection	5.96±2.37	6.76±1.95	0.154
Burden	4.56±1.98	5.94±2.14	0.012*
Mental health	15.15±3.69	16.88±3.64	0.072
Social functioning	15.19±5.20	15.82±4.95	0.627
Fear	14.85±2.82	14.65±3.07	0.790
Eating duration	5.36±1.85	6.46±1.76	0.138
Eating desire	9.82±3.37	12.31±1.84	0.065
Communication	5.04±2.42	5.85±2.24	0.179
Sleep	5.27±1.79	7.77±1.30	0.003*
Fatigue	8.09±2.06	10.23±1.92	0.063
Symptom frequency	46.85±7.33	46.29±7.09	0.765
Total	107.59±17.04	112.21±20.08	0.345

SWAL-QOL; swallowing quality of life

Values are mean±standard deviation

Table 3. Spearman's correlation coefficient between modified SWAL-QOL outcome and FDS score

SWAL-QOL domain	FDS score		
	Oral phase score	Pharyngeal phase score	Total
Food selection	-0.222	-0.179	-0.268*
Burden	-0.081	-0.361*	-0.388*
Mental health	-0.069	-0.364*	-0.386*
Social functioning	-0.124	-0.307*	-0.371*
Fear	-0.036	-0.249	-0.229
Eating duration	-0.058	-0.346	-0.386
Eating desire	-0.070	-0.252	-0.301
Communication	-0.174	-0.134	-0.220
Sleep	-0.195	-0.169	-0.290
Fatigue	-0.108	-0.346	-0.459*
Symptom frequency	0.025	-0.367*	-0.333*
Total	0.094	-0.432*	-0.465*

SWAL-QOL, swallowing quality of life; FDS, functional dysphagia scale.

Values are spearman's correlation coefficients

*p<0.05

Conclusion

We think it needs to assess the SWAL-QOL in stroke patients with dysphagia and should focus the rehabilitation of pharyngeal phase to promote better patient's quality of life.

Keywords

dysphagia;quality of life;stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-1641

REHABILITATION BASED ON THE NARRATIVE OF AN ALS PATIENT WITH SPIRITUAL PAIN

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Introduction/Background

Amendment of WHO definition of health to: "Health is a dynamic state of complete physical, mental, spiritual and social well-being and not merely the absence of disease or infirmity" was suggested to WHO in 1998. Although the definition of health has not changed, "spiritual" has become one of the important elements of holistic health. The aim of this study was to analyze the effect of interventions from the perspective of spiritual health for an ALS patient with spiritual pain.

Material and Method

The patient was a female in her 80's with ALS, showing independence in ADL, living with her husband who required care, with a life prognosis of less than 1 year. She had severe dysarthria and dysphagia. Her comments reflected her spiritual pain after diagnosis, such as: "why have I developed ALS?" Samples of her narrative were recorded in a free-talking session and analyzed to clarify her spiritual pain. Active listening was selected as the most effective method to provide support so that she could overcome her difficulties independently. Such active listening of her narrative was continued for about two months.

Results

Analysis indicated that her spiritual pain primarily involved three facets: temporality, relationship, and autonomy. During the continued active listening in parallel with standard rehabilitation, the contents of her narrative gradually changed. Her spiritual pain was mostly resolved, but that related to 'relationship' remained.

Conclusion

It is suggested that the application of speech therapy based on a patient's narrative can be effective to support their spiritual health. Therefore, speech therapists can support patients to resolve spiritual pain as well as functional disorders.

Keywords

spiritual pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-1657

A CASE OF UNDIFFERENTIATED JARGON APHASIA EVOLVING INTO NEOLOGISTIC JARGON APHASIA

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Introduction/Background

It has been established that there are three types of jargon aphasia: undifferentiated, neologistic, and semantic jargon. Undifferentiated jargon speech consists of meaningless syllabic sequences and there is no apparent differentiation of content word from function word. In contrast, neologistic jargon speech has a remarkable amount of neologism, and is grammatical. The aim of this study was to investigate the mechanism underlying jargon speech aphasia.

Material and Method

The patient was a 78-year-old, right-handed man. Brain MRI showed cerebral subcortical infarction extending from the left parietal to temporal lobes. His auditory comprehension and phonological analysis were poor. His speech was jargon speech. He presented difficulties in word finding, reading, and repetition. We analyzed his speech by error type and characteristic.

Results

At the acute stage, his speech was a fluent series of syllables without meanings, and lacked syntactic structures. There was no apparent differentiation of content word from function word. The jargon type was undifferentiated jargon aphasia. At one month post-onset, there were a few correct words, and syntactic structures appeared; however, most words were neologistic in his speech. The jargon type changed to neologistic jargon aphasia. At one year post-onset, he showed slight phonemic and semantic paraphasia, while neologistic jargon aphasia was persistent.

Conclusion

At the acute stage, undifferentiated aphasia was caused by a deficit in word retrieval, lemma level, lexeme level, and phonological encoding on lexical access in speech production. In the grammatical encoding process, dysfunction of functional processing and positional processing caused utterance without syntactic structures. It is suggested that during word selection, lemma

level, and processing recovery, undifferentiated jargon aphasia evolved into neologistic jargon aphasia. Persistent neologistic aphasia is considered to be due the severe lexeme level and phonological encoding disorders.

Keywords

undifferentiated jargon aphasia;neologistic jargon aphasia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-1854

PRE-VALIDATION OF THE COMMUNICATION INDEPENDENCE MEASUREMENT (CIM) SCALE. PRELIMINARY RESULTS AMONG 55 PATIENTS

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Introduction/Background

The assessment and rehabilitation of aphasia through a neurolinguistic approach is well known, so as its functional impairments to communicate, and its psycho-social consequences. We make the hypothesis that severe aphasia might leads gradually to a decrease of communication among inpatients whose needs are supplied by the institution.

We propose to evaluate a new tool, the Communication Independence Measurement (CIM) scale, built like the Functional Impairment Measurement (FIM) scale.

Material and Method

The CIM scale was used among aphasic's inpatients in a neuro-rehabilitation center, at baseline (M0) and 3 months (M3), by 4 different professionals (2 speech therapists and 2 nurses or carers). 4 subdomains were evaluated, from 1 to 7 (motivation to communicate, expression, understanding, interaction). Psychometric properties and correlation to the Boston Diagnostic Aphasia Examination (BDAE) severity grade were analysed.

Results

55 patients (mean age 48 ± 11.8 years old, sex ratio 0.83) were consequently included, at $0,91 \pm 1.49$ months from stroke. 17 of them were evaluated at M3.

Inter-rater validity was good, with no statistically difference between the 4 examiners at M0 (Kruskal-Wallis test $p=0.77$) and at M3 (Kruskal-Wallis test $p=0.96$). CIM was highly correlated to BDAE at M0 (Intra class correction ICC = 0.60-0.69) and at M3 (ICC = 0.82-0.85).

We founded that patients who obtained a score less than the cut off value of 35 had a bad daily communication.

Conclusion

The CIM scale seems to be a reliable tool to measure communication in aphasics in rehabilitation center. It might help identifying and thus helping patients with a negative prognosis of communication early during post-stroke rehabilitation time.

Keywords

scale;communication;aphasia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-2361

REVIEW ARTICLE TITLE: PHYSICAL MOTOR HANDLING OF PATIENTS WITH AUTISM SPECTRUM DISORDER (ASD).INTERNATIONAL CENTER FOR NEUROLOGICAL RESTORATION.CUBA

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Introduction/Background

Autism Spectrum disorder (ASD) is composed of a range of complex neurodevelopmental disorders characterized by difficulties in socialization, communication, and stereotypical, restricted and repetitive behavior patterns. They may be primary or secondary. We apply different therapies specific to proven value of evidence, pharmacological readjustment, psychological care with specialized methods for these disorders. However despite including Physical rehabilitation treatment There is still a need to expand the knowledge about the interventions to be performed to achieve a more comprehensive rehabilitation of these patients.

Material and Method

Methods: Published literature, theses and books on the subject were revised. Using the Pubmed database, and those and selected articles that address the subject matter of study, organizing according to background, management and main applied therapies, and our own institutional experiences. nsive rehabilitation of these patients

Results

The usual interventions are carried out in 10 children who are part of the control group, and 10 children with ASD, in which motor activities are reinforced, including the application of virtual reality media, which stimulate functionality.

Conclusion

Motor therapy influences child development by achieving the integration of movement, experience, thought, feeling and action, so it should always be included in the treatment programs of children with ASD. R-SA'>: Published literature, theses and books on the subject were revised. Using the Pubmed database, and those and selected articles that address the subject matter of study, organizing according to background, management and main applied

therapies, and our own institutional experiences. nsive rehabilitation of these patients.We found better results in the final evaluation of the patients in which several hours of physical therapy were used, added to the convention therapy used in our protocol of action, for the ASD.

Keywords

Autism spectrum disorders;physical motor therapy;neurological rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-2416

HIGH FREQUENCY REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION OF THE MOTOR CORTEX CAN ALLEVIATE NON-FLUENT APHASIA AFTER STROKE

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Introduction/Background

To investigate the effects of High frequency repetitive transcranial magnetic stimulation(rTMS)of the motor cortex on non-fluent aphasia in patients after stroke.

Material and Method

Six stroke patients displaying non-fluent aphasia were randomly assigned to an rTMS group and a control group using a random number table.Both groups were treated with conventional language therapy.while the rTMS group was additionally given 5 Hz rTMS over the motor cortex (M 1) of the affected hemisphere 5 days a week for 4 weeks.The patients were stimulated at 100% of the motor threshold(MT),with 2 second trains and intervals of 3 seconds 120 times(1200 pulses) in a session.Before and after the 4 weeks of treatment,the Western Aphasia Battery(WAB) and the Communicative Abilities in Daily Living(CADL) test were conducted in both groups to evaluate their language function and communication ability.

Results

Only spontaneous speech improved significantly($P<0.05$) in the control group after 4 weeks of treatment.In the rTMS group,the spontaneous speech,auditory comprehension,repitition,naming and aphasia quotient(AQ)had all improved signifcantly($P<0.05$).Moreover,after the treatment,the average score of the auditory comprehension,repitition,naming and AQ of the rTMS group were significantly higher than those of the control group($P<0.05$).

Conclusion

rTMS applied to the motor cortex of the affected hemisphere can significantly improve language function in those exhibiting non-fluent aphasia after stroke.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-2418

ENHANCING PHONOLOGICAL AWARENESS THROUGH VISUAL-AUDITORY SYSTEM

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Introduction/Background

According to a large-scale survey conducted in 2012, 6.5% of elementary and secondary students are diagnosed as having some kind of developmental disability. In the case of Japan, this corresponds to at least two or three students per class. One of the major learning disabilities that is directly affecting educators is dyslexia. Up until now, dyslexia had been an L1 issue, however, since 2011 when English became a mandatory subject in elementary schools in Japan, teachers now need to assess whether the learner is struggling with difficulty in L2 only or in both L1 and L2. If we follow the definition provided by the British Dyslexia Association or the Dyslexia Association of Ireland and define dyslexia as a “difficulty” rather than a “disability”, then the number of students who need special attention would be more than the two or three per class mentioned above. Therefore, it is of utmost importance that we find a systematic and effective way to support and instruct these individuals.

Material and Method

It has been pointed out in the literature that phonological processing ability and decoding skills are prerequisites for reading. The learning problems associated with dyslexia include difficulty in both these skills. Hence, in instructing individuals with reading difficulties, enhancing their phonological processing skills is crucial. In addition, problems associated with visual function can also cause difficulty for this type of learners.

Results

In this paper, we present the visual-auditory system that we have developed for enhancing phonological awareness. It is an easy-to-use system that can enhance autonomous learning and also employs visual data that learners with dyslexia can make good use of.

Conclusion

This is a practical and productive pronunciation software that should be enjoyable to use not only for the pathological population but also for foreign language learners of all ages as well.

Keywords

autonomous learning, dyslexia, phonological awareness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.06 Neurological and Mental Health Conditions - Language and Speech Disorders

ISPR8-2496

PRELIMINARY STUDY ON CAUSES OF ORAL REPETITION DEFICITS: EVIDENCE FROM CHINESE SPEAKERS WITH CONDUCTION APHASIA

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Introduction/Background

Impaired repetition is one of the major symptoms of several aphasias, especially conduction aphasia. Repetition deficit is distinct from other language disorders such as anomia and dyslexia. A deep understanding of the etiology of repetition impairment could potentially improve rehabilitation strategies for aphasia. There are many findings about repetition that have been obtained mainly in investigations of alphabetic languages (e.g. English and Italian). On the other hand, there have been few studies of non-alphabetic languages (e.g. Chinese). In this study, we tried to investigate the causes of repetition deficits by analyzing the performances of two Chinese speakers with conduction aphasia.

Material and Method

This study recruited two patients with conduction aphasia, with mild impairment of listening, understanding and articulation and disproportionate impairment of repetition function due to ischemic damage. For each patient, the following three aspects were assessed during the stable phase of the disease: phonological input, phonological output and short-term memory.

Results

The two patients performed normally in all speech input tasks. One patient exhibited difficulty with all speech production tasks (correct response rate, 54–75%) despite intact short-term memory capacity (memory span value, 3–8). The other patient had severe deficits in nonword repetition (correct response rate, 62%) and short-term memory (memory span value, 1–2), although he performed normally in other speech production tasks (correct response rate, 92–100%).

Conclusion

The repetition impairment of the two cases in this study had distinctive causes: disrupted phonological output processing and reduced short-term memory capacity. Our studies suggested there are many differences in the causes of repetition dysfunction in conduction aphasia between alphabetic and non-alphabetic languages.

Keywords

repetition defici;phonological output processing;short-term memory

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-0317

ISCHEMIC MONOMELIC NEUROPATHY PRESENTING AS AN ATYPICAL NEUROLOGIC CRISES.

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Introduction/Background

Introduction

Ischemic monomelic neuropathy (IMN) is a painful and little-known disorder arising from nerve damage within a single limb. Typically, it occurs in diabetics or after fistula creations, particularly brachial. Here we describe two cases of IMN in non-diabetics with no surgical history. Case 1 is a 42-year-old woman who developed severe significant left-sided leg pain and swelling following new-onset acute low back pain. Case 2 is a 68-year-old woman with spontaneous persistent left foot pain. Both presented with pain, weakness, and sensory loss, and displayed extensive denervation on electrodiagnostics.

Background

Ischemic monomelic neuropathy (IMN) is a lesser-known consequence of vascular compromise with heterogeneous etiology. It is characterized as a non-compressive occlusion of blood supply causing neurologic effects without compromising other systems.

Material and Method

Other case-studies have examined acute IMN secondary to vascular surgery, or more chronically in those with peripheral arterial disease (PAD) and/or diabetes.¹⁻⁵ However, reports of IMN presenting as nerve infarction from vascular occlusion in the absence of surgical intervention are sparse. We describe two such cases of IMN causing severe nerve injury with features mimicking complex regional pain syndrome type II (CRPS II).

Results

Both cases presented atypically for vascular ischemia. Both presented with pain in the leg with lower leg swelling and denervation on EMG studies. Both presentations were referred for management of complex regional pain syndrome as they mimicked the condition. Both were found to have extensive thromboembolic disease with atypical features. Patient in Case 1 resulted in an above knee amputation.

Conclusion

Intervention ultimately came too late for limb salvage in our first case—but enhanced pattern recognition heightened suspicion for the second, leading to a far more positive outcome. Together, these presentations serve to inform clinical judgement on investigating sudden-onset lower limb pain with acute denervation as IMN and nerve infarction.

Keywords

Ischemia; Amyotrophy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-0404

A SOUND SOLUTION FOR TRIGEMINAL NEURALGIA

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Introduction/Background

Trigeminal neuralgia (TN), a severe and progressive form of pain, is due to a tiny reversible lesion

Ultrasound delivered to injured nerves has been shown in animal studies, to have neuroregenerative capacities. Until the advent of readily clinically applicable surface acoustic ultrasound technology, there was no clinically available ultrasound device that could safely extend its therapeutic effect for a prolonged period intra-cranially where the lesion of the trigeminal nerve is located

Objectives: To determine the efficacy of Low Intensity Low Frequency Surface Acoustic Wave (LILF/SAW) ultrasound in the treatment of intractable Trigeminal Neuralgia (TN).

Material and Method

16 participants with refractory TN of at least six months duration, not responsive to pharmacotherapy, were recruited for a prospective, single-blind crossover study. LILF/SAW ultrasound treatment was provided overnight for up to eight hours of intermittent treatment using either an "active" Painshield® or a "sham" Painshield®. Patients initially given the "sham" Painshield® followed by one month of "active" treatment were blinded as to which intervention they were receiving.

Pain was assessed using the Barrow Neurological Institute – Pain Scale (BNI-PS) at two weekly intervals and the McGill Pain Questionnaire (MPQ) at monthly intervals. Quality of life was assessed monthly using the SF-36 index.

The "number needed to treat" (NNT) was used to demonstrate the effectiveness of the intervention.

Results

Nine patients completed the study. BNI at intake and post- sham treatment was comparable. All nine patients chose the “active” treatment for the third month and after two months demonstrated a favorable response (NNT=2.22). A positive correlation was seen between the “active” treatment and the BNI scores, although due to the effect size the results did not reach statistical significance $T(8) = 2$.

Conclusion

LILF/SAW ultrasound may be a useful modality in the treatment of patients with refractory TN. Larger studies are required in order to confirm these findings

Keywords

trigeminal;neuralgia;ultrasound

Conflict of interest

Disclosure statement:

I have < 1% share options in nanovibronix for consultation work

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-0558

FACTORS ASSOCIATED WITH GAIT OUTCOME IN PATIENTS WITH LUMBOSACRAL PLEXOPATHY AFTER PELVIC FRACTURES

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Introduction/Background

Lumbosacral plexus injuries usually occur in patients with severe trauma requiring intensive care. The purpose of this study was to identify the initial factors associated with gait outcome of lumbosacral plexopathy caused by pelvic fracture.

Material and Method

A total of 30 patients electrodiagnostically confirmed with lumbosacral plexopathy caused by pelvic fracture were included in this retrospective study. The demographic, injury-related, fracture-related and electrodiagnostic factors were compared between the patients with unassisted gait (UG) and assisted gait (AG) assessed in the out-patient clinic at an average of 641 days after the accident.

Results

Eleven patients (37%) remained AG during the follow-up period. The number of involved quadrant of pelvic fractures were larger ($P = 0.011$) and the proportion of unstable fracture were higher ($P = 0.022$) in the AG group than in the UG group. The initial muscle weakness was observed significantly more ($P = 0.004$) and the Dumitru and Wilbourn's scale (DWS) based on electrodiagnostic studies were significantly higher ($P < 0.001$) in the AG group than in the UG group. All of the patients with DWS 1 and 2 showed UG. Among the patients with DWS 3 ($n=17$), only 6 patients showed UG. The injury severity score was not different between the AG and UG group ($P = 0.092$).

Conclusion

The final gait outcome is associated with the severity of pelvic fracture and lumbosacral plexopathy rather than the general severity of trauma. The severity of plexus injury evaluated by electrodiagnostic study can predict the gait outcome.

Keywords

Pelvic fracture;Gait outcome;Electromyography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-0725

DEGREE OF PRAXIS OF COMMAND FOR FACIAL MUSCLES IN HEALTHY INDIVIDUALS TO DEVELOP A NEW CLINICAL SCALE FOR FACIAL MOTOR FUNCTION IN PERIPHERAL FACIAL PARESIS

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Introduction/Background

Clinical scales evaluating facial motor function in Peripheral Facial Paresis (PFP) have poor precision and evaluate only few muscle groups, making the assessment of the disorder and of potential therapeutic interventions difficult. It is likely that healthy subjects do not share the same degree of praxis for all facial movements. The main objective was to assess the degree of praxis for command to each muscle group innervated by the facial nerve (VII) in a healthy subject population, to select those to include in a new PFP clinical motor scale. Reliabilities of the praxis rating performance were also evaluated.

Material and Method

This monocentric prospective study included video-recordings of adult healthy subjects performing 23 bilateral facial movements, on both oral command and mime of the investigator. Primary endpoint was the degree of praxis rated ordinally with a 3-point scale (0: total apraxia; 0.5= partial praxis; 1= perfect praxis). Each video was assessed twice by each rater four days apart. Intra- and inter-rater reliabilities were evaluated via kappa coefficients. Facial muscles were selected through a threshold of perfect praxis set at 80% of the total praxis in the sample, also taking into account reliability findings and clinical relevance.

Results

Facial video recordings of 50 healthy subjects (13M; 37.1±14.6 yo) were rated on two occasions by 3 PMR specialists (experience in PFP: 24.6±31.0 months). Eleven muscle groups were characterized by a praxis greater than the 80% threshold; 4 muscle groups were between 70 and 80% and 8 below 70%. Intra- and inter-rater agreements were very strong (kappa coefficients>0.60) for 10 and 14 muscle groups respectively.

Conclusion

Healthy individuals do not have the same degree of praxis on all facial muscle groups. Ten muscle groups were selected to be included in a new PFP clinical motor scale.

Keywords

Peripheral facial paresis; Facial praxis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-0742

DOPPLER SONOGRAPHY FOR INTRANEURAL VASCULARIZATION OF ULNAR NEUROPATHY AT THE ELBOW -BEFORE AND AFTER SURGERY

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Introduction/Background

The finding of intraneural blood flow (IBF) signal by doppler sonography was interpreted in several ways at entrapment neuropathy. There is no report of IBF after surgery of ulnar neuropathy at the elbow (UNE). We investigated IBF in UNE before and after surgery.

Material and Method

Case series study. Subject: Nine arms (only Men) diagnosed and confirmed as UNE by surgery. All arms were performed grey scale sonography (GS) using an ultrasound machine (AprioXV; Toshiba) with 12MHz linear-array transducer and electrodiagnostic study(EDX) before and after surgery. We performed Doppler sonography (DS): 5 arms before surgery, 6 arms after surgery and 2 arms both. In EDX, diagnosis of UNE as follows: absolute motor CV from above elbow to below elbow of less than 50m/s and 1) or 2) 1) differential slowing (10m/s across elbow).2) conduction block across elbow. In GS, diagnosis of UNE as follows: cut-off value was the largest cross sectional area from 2 cm distal to 2cm proximal to the medial epicondyle >11mm².

Results

General findings before surgery: EDX diagnosed 8 arms as UNE but one. Seven arms were diagnosed as UNE by GS. General findings after surgery: All 9 arms were improved in clinical signs. EDX did not change. Eight were diagnosed as UNE by GS. DS findings before surgery: IBF signal was not detected in 3 arms and detected in 2 arms but absent pulse. DS findings of after surgery: Six arms were detected IBF signal and pulsatility. [Discussion] These findings may suggest that releasing entrapment site might decrease endoneurial fluid pressure and increase IBF.

Conclusion

About recovery from UNE after surgery, it may be useful to evaluate intraneural vascularity at the affected site with DS.

Keywords

Doppler sonography;intraneural vascularization;ulnar neuropathy at the elbow

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-0832

ELECTROMYOGRAPHIC EXAMINATION OF OBSTETRIC BRACHIAL PLEXUS PALSY

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Introduction/Background

The aim of this study was to show the contribution of electroneuromyography (ENMG) in topographic diagnosis and management of obstetric brachial plexus palsy through the illustration of 10 clinical cases.

Material and Method

We report 10 clinical cases of children with obstetric brachial plexus palsy who underwent ENMG in our department. The ENMG tests done were sensory, motor conduction and needle electromyography. The ENMG avulsion criteria (preganglionic lesions) were retained according to the Sensory nerve action potentials (SNAP). The SNAP remained unaffected in pre-ganglionic lesions (except when the dorsal root ganglion was also affected) and attenuated or absent in a post-ganglionic lesion. The needle EMG study assessed denervation and re-innervation of muscles, and recorded co-contraction. ENMG data were compared with acquired clinical and imaging data.

Results

The mean age was 53 months (range: 4 - 108 months). Four patients had radiculopathy C5C6C7 and six patients had radiculopathy C5T1. Root avulsion was observed in six patients. This topographic diagnosis was confirmed by MRI for two patients and by clinical evaluation in the other cases. Concerning the needle EMG, six patients had a co-contraction of the biceps / triceps brachii muscles and the teres major / deltoid muscles, and required injections of botulinum toxins.

Conclusion

The ENMG is helpful to specify the type of the obstetrical lesion of the brachial plexus, pre or post-ganglionic, its location and its gravity. It also contributes to record the muscular co-contractions and consequently to modify the therapeutic strategy.

The electromyographic examination is difficult to perform and to interpret in children, but remains of great medico-legal and prognostic importance in case of the absence of recovery (1).

1. S. Seria et al. Problématique de la prescription de l'électromyogramme dans la prise en charge des enfants présentant une paralysie obstétricale du plexus brachial (POPB) à Abidjan . Journal de rééducation médicale 2013;33:111-114

Keywords

Electromyographic examination ;obstetric brachial plexus palsy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-0853

CLINICAL EFFICACY OF TAPE FEEDBACK THERAPY ON OCULO-ORAL SYNKINESIS FOLLOWING SEVERE PERIPHERAL FACIAL NERVE PALSY

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Introduction/Background

Mirror feedback rehabilitation is effective in preventing the development of oro-ocular synkinesis following severe facial palsy. However, we do not have effective maneuvers to prevent the deterioration of orculo-oral synkinesis. We developed a new method of biofeedback rehabilitation using tape for the prevention of orculo-oral synkinesis. The aim of the present study was to investigate the efficacy of taping feedback rehabilitation.

Material and Method

Twelve consecutive patients with peripheral facial nerve palsy who developed synkinesis were divided into 2 groups. Six patients were treated with the new training method, and the remaining 6 patients were treated with conventional therapy as controls. In the experiment group, tape was placed around the mouth, and the patient was instructed to close the eyes so that no movements of the mouth would be perceived from sensations of the taped skin. After 4 weeks of training, facial movements were recorded and movie images were graded for mouth synkinesis using the revised Sunnybrook facial grading system by examiners blinded to patient grouping.

Results

Mouth corner contraction during eye closure was significantly weaker in the experimental group than in the control group.

Conclusion

Our new feedback method could help prevent the deterioration of orculo-oral synkinesis.

Keywords

facial nerve palsy;rehabilitation;biofeedback

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-0927

USE OF FLUOROSCOPIC-GUIDED TRANSSACRAL BLOCK FOR THE TREATMENT OF IATROGENIC POST-INJECTION SCIATIC NEUROPATHY IN ADULTS– CASE SERIES

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Introduction/Background

Post injection sciatic neuropathy (PISN) is a preventable iatrogenic distress with poor outcomes. Approximately half of the patients have incomplete peroneal or less often tibial nerve-related deficits, whereas approximately 20% of them have neuropathic pain without motor deficits. The following case series describes the treatment of conventional management-resistant neuropathic pain in PISN using fluoroscopy-guided transsacral block.

Material and Method

A 61, 75 and 56-year-old three male patients with conservative treatment-resistant neuropathic pain, numbness, and tingling due to PISN were admitted to the clinic. Under the fluoroscopic guidance, the patients were inserted through ipsilateral S1-S2-S3 neural foramina with a 10-cm, 22G Stimplex respectively. Then, 15 ml mixture of 80 mg methylprednisolone and 1% lidocaine injection were injected equally in each foramen. The patients' neuropathic pain severity in sciatic nerve distribution was evaluated according to a 10-point numbering rating scale (NRS) and confirmed via Turkish version of LANSS pain scale before and after intervention.

Results

Prior to intervention, the patients reported severe neuropathic pain in daily activities; NRS scores were 5/10, 8/10 and 10/10, and the LANSS scores 17/24, 24/24 and 17/24 respectively. At 3 months following intervention, Patient 1 and 3 reported significant improvement in NRS and LANSS scores decreased to 1/10 and 2/10 and 8/24 and 4/24 respectively. In Patient 2, there was no acceptable change in NRS and LANSS scores.

Conclusion

Based on the results of this study, it seems that fluoroscopy-guided ipsilateral transsacral block can be considered as a safe and alternative treatment option for conservative treatment-refractory PISN but that this intervention may not be effective in all patients.

Keywords

Peripheral nerve injury;Sciatic neuropathy;Injections;epidural

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1132

BILATERAL FOOT DROP AFTER UNACCUSTOMED PHYSICAL ACTIVITY: REPORT OF A CASE FROM OUR ELECTRODIAGNOSTIC CLINIC

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Introduction/Background

Isolated bilateral common peroneal neuropathy is a rare condition and has been reported following skeletal traction for bilateral femoral fractures, prolonged squatting, bariatric surgery, child birth, intermittent pneumatic compression, and external compressive wraps for a pelvic injury. We report here a case of bilateral common peroneal neuropathy subsequent to excessive unaccustomed physical activity in otherwise healthy individual

Material and Method

Case description

A 44-year-old obese male, educationist by profession, presented to us with complaints of bilateral foot drop after excessive unaccustomed physical activity. His body mass index was 31. He performed strenuous physical activity one day, followed by severe pain in his legs with swelling and redness and bilateral partial foot drop. The Doppler's study of his legs revealed inadequate blood flow in femoral and popliteal arteries and suggestive of cellulitis. On 20th day of his symptoms, his nerve conduction studies were done.

Results

The motor responses for common peroneal nerves were bilaterally unevokable. The tibial and sural nerves studies were within normal limits. On electromyography, there were few fibrillations and no voluntary activity in tibialis anterior, external hallucis longus, and peroneus longus muscles. The short head of biceps femoris, gluteus medius, quadriceps, medial gastrocnemius, and L₅ paraspinal muscles showed normal motor unit action potentials with normal recruitment pattern. Thus, a diagnosis of bilateral common peroneal neuropathy proximal to tibialis anterior was made.

Conclusion

A number of metabolic, neurological and neuromuscular diseases may present with bilateral foot drop. Nerve conduction and electromyographic studies with relevant clinical findings can play a supportive role in reaching the diagnosis

Keywords

common peroneal nerve; exertional syndrome; foot drop

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1192

UPPER LIMB ROBOTIC THERAPY AFTER SURGICALLY REPAIRED BRACHIAL PLEXUS INJURY: AN INNOVATIVE PARADIGM TO ENHANCE NERVE REGENERATION?

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Introduction/Background

Traumatic Brachial Plexus Injury (BPI) is an important cause of chronic disability and pain affecting mostly young people after vehicle accident. Surgery is the gold standard treatment and rehabilitation is only based on conservative approaches. Rehabilitation-induced motor recovery is an unexplored field. However, evidences from animal models suggest the effectiveness of activity-dependent interventions to enhance neurological recovery. The last three decades saw a growth of innovative techniques and strategies to enhance upper limb motor outcomes after central nervous system damages. This includes robot-assisted training that offers highly intensive, repeatable, adaptable, and flexible therapies with a valuable quantification of motor performance. The aim of this study is to present the design and outcomes of an innovative rehabilitative approach adding a robotic training to usual care after surgery in a C5-C6-C7 brachial plexus injured young patient.

Material and Method

A single case study describing a 18-month upper limb training consisting of more than 100 sessions combining usual care and shoulder and elbow assist-as-needed robotic therapy. A monthly evaluation used clinical outcome (MRC grading scale) and robot-derived kinematic measures.

Results

The training was safe and well tolerated. Low changes in the MRC scores (Table 1) during the first months after surgery reflected the slow process of motor recovery, while robot derived kinematic results showed a not negligible evolution of motor control (Figure 1, between 3.5 months after surgery and 5 months after surgery, smoothness and mean velocity increase respectively of 14% and 13%, path error decrease of 200% and range of movement gain 1%).

Table 1 : Clinical motor outcomes: MRC grading score

<i>Delay after surgery (months)</i>	<i>3.5</i>	<i>4.5</i>	<i>11</i>	<i>17</i>
<i>Lateral deltoid muscle</i>	2	2	2+	3-
<i>Biceps brachii muscle</i>	1+	2	2	3+
<i>Triceps brachii muscle</i>	2	2	2+	3
<i>Pronator muscles</i>	3	3	3+	3+
<i>Supinator muscles</i>	3	3	3	3+

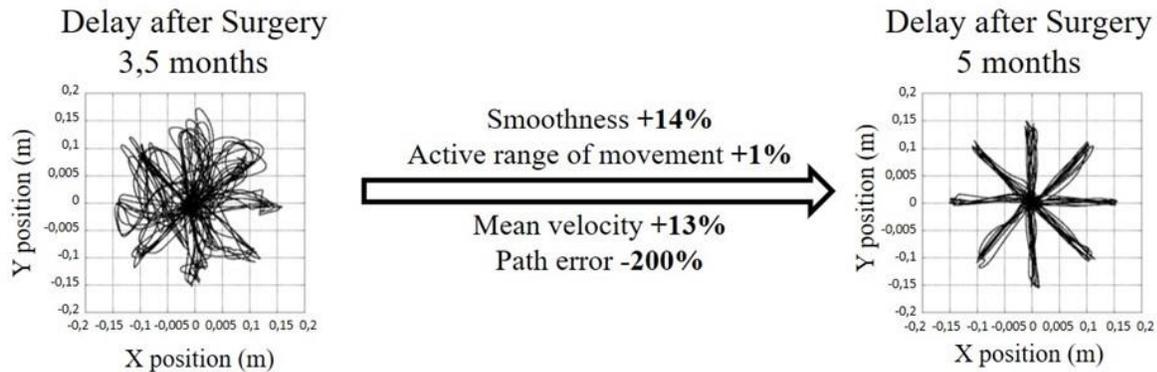


Figure 1: Robot kinematic outcomes between 3.5 months after surgery and 5 months after surgery during a Point to point (X, Y) horizontal planar exercise; smoothness = movement regularity

Conclusion

This report demonstrates that an exercise-based training using a robotic system as an adjunct to usual care can be applied safely after a surgery following a BPI. This paradigm can also provide some further objective assessment. The effects on motor outcomes are uncertain although the time for re-innervation might be shorter.

Keywords

Brachial plexus injury; Robotic; kinematic

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1227

SAFETY AND EFFICACY OF PLATELET-RICH PLASMA IN TREATMENT OF CARPAL TUNNEL SYNDROME; A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Carpal tunnel syndrome is the most common peripheral entrapment neuropathy, for which conservative treatments are the first measures taken. However, these measures are not usually sufficient. Recently major attention has been drawn to platelet-rich plasma for its possible effects on axon regeneration and neurological recovery.

Material and Method

In this randomized controlled trial, women with a diagnosis of mild and moderate idiopathic carpal tunnel syndrome were chosen. They were randomly assigned to two groups: (i) a control group using only a wrist splint, and (ii) a platelet-rich plasma group that received wrist splints along with a single local injection of platelet-rich plasma. The outcome measures were assessed via Visual Analogue Scale, the Boston Carpal Tunnel Syndrome Questionnaire and electrophysiological findings including the peak latency of sensory nerve action potential and the onset latency of the compound muscle action potential.

Results

A total of 41 women were included (20 wrists as control group) and (21 wrists as platelet-rich plasma group). Before treatment there were no significant differences between the two groups except for the median peak latency of sensory nerve action potential which was significantly higher among the patients in the platelet-rich plasma group ($p=0.03$). All the measured variables significantly decreased in both groups after 10 weeks of treatment except for the median onset latency of the compound muscle action potential ($p=0.472$). Finally, the changes in neither of the evaluated outcome measures were found to significantly differ between the two groups, even when the analyses were adjusted for age of the patients.

Conclusion

This study showed that in a relatively short period of time after treatment, a single injection of platelet-rich plasma in the wrist does not significantly add to the effects of conservative

treatment with wrist splints, in regards to the women pain and symptom severity, functional status and electrophysiological parameters.

Keywords

Carpal Tunnel Syndrome;Platelet-Rich Plasma;wrist splint

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1285

SPINAL NERVE INJURY AFTER PAROTID SURGERY

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Introduction/Background

A 77-year-old-man is referred from maxillofacial surgery because of "pain in the neck radiating to the shoulder".

Medical history: Stroke that required thrombectomy two years ago leaving clumsy gait and global force deficit 4/5 in the left hemi body; atrial fibrillation, hypertension and polyarthralgia assessed by rheumatology, in remission.

Surgical interventions of interest: Cervical adenopathies. Parotid node two years ago.

Material and Method

Physical examination showed great atrophy of the left trapezius, pain and functional impotence of the ipsilateral shoulder, with limitation for antepulsion and abduction of the left arm. Passive mobilization without articular limitations. Pain with the mobilization of the cervical spine.

An electromyogram was performed: severe axonotmesis of the cervical branch of the left spinal nerve, with signs of active reinnervation.

Differential diagnosis: Cervical radiculopathy. Brachial plexus injuries. Parsonage-Turner syndrome. Injury Accessory spinal nerve lesion (XI).

Results

Diagnostic impression: Nerve lesion of the cervical branch of the left spinal nerve in the context of parotid surgery.

Conclusion

The role of rehabilitation in these types of pathologies is based on pain relief, shoulder and cervical spine mobilization exercises as well as global strengthening of the affected limb (shoulder girdle muscles, deltoids, rotators, biceps ...), with the aim of recovering functionality and thus improve clinical manifestations.

Do not forget the possibility of nerve injuries in these types of surgeries, to refer and diagnose them promptly, as well as to establish treatment and prognosis.

Keywords

Espinal nerve;Shoulder pain;Parotid surgery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1297

LESION OF THE ACCESSORIUS NERVE IN EXTIRPATION OF THE LYMPHATIC GLAND OF THE NECK

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Introduction/Background

Accessorius nerve is the eleventh cranial nerve whose exterior branch innervates the sternocleidomastoid and trapezius muscles, but whose internal branch is added to vagus nerve. Radical neck dissection is a high risk for lesion of this nerve.

Material and Method

The purpose of work is to show the risk, by three different examples of sick women patients, for lesion of accessories nerve after the surgical intervention in the lateral neck region.

Results

Illustration of the cases: Three sick women (in a period of a year) came to complete their medical checkup in infirmary of the clinic for physical medicine and rehabilitation of the Clinical Center of Serbia with the referral diagnosis "shoulder impingement syndrome". They have already been cured in the local health centres. When they came for the first time their main troubles were: pain and impaired mobility in shoulder joint.

Objective checkup: depression of shoulders, hypotrophy trapezius muscle, limited side flexion of head in the area of lateral part of the neck, namely discreet scar line in the area of sternocleidomastoid muscle are noticed. The amplitude of movement in the shoulder joint during the abduction was limited to 90°.

After the objective checkup, it is determined, by extra anamnesis, that the troubles appeared after the operation.

The infective substrate was proved by pathohistological examination after the extirpated lymphatic glands had been examined.

It also should be done: RTG of the specific shoulder joint with the top of the lungs and EMNG examination which, at the same time, proves the lesion of the eleventh nerve.

Conclusion

The surgical interventions in the area of the lateral part of the neck are the factor of high risk for the lesion of the eleventh cranial nerve.

When we recognize the lesion of this nerve on time, the patient can be adequately treated and we can prevent further complications.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1520

CARPAL TUNNEL SYNDROME TREATMENT: THE EFFECT OF SCAPHOID AND HAMATE MOBILIZATION

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Introduction/Background

The aim of this study was to assess the effects of scaphoid and hamate bones mobilization on patients with carpal tunnel syndrome.

Material and Method

In this randomized clinical trial, 40 patients with mild and moderate carpal tunnel syndrome were randomly assigned in two groups. Intervention group received splinting with hamate and scaphoid mobilization, control group received splinting only. Outcome variables included pain (based on visual analogue scale), symptom severity and functional status (based on Boston questionnaire) and nerve conduction study measured before and 10 weeks after the treatments.

Results

At the end of study, both groups showed an improvement in pain and symptom severity, functional status as well as median nerve conduction study. Although there was no statistically significant difference between the groups regarding changes in median nerve sensory and motor distal latencies; the improvement was significantly higher in pain ($P<0.05$) and symptom severity as well as functional status in mobilization group ($P<0.05$).

Conclusion

Hamate and scaphoid mobilization can be used as an effective option in women with mild and moderate carpal tunnel syndrome. Further investigation is required for determining long-term effects and cost-effectiveness of this modality.

Keywords

carpal tunnel syndrome; Manipulation; splint

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1574

REFERENCE VALUE FOR INFRAPATELLAR BRANCH OF SAPHENOUS NERVE CONDUCTION STUDY: CADAVERIC AND CLINICAL STUDY

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Introduction/Background

There are numerous reports on infrapatellar branch of saphenous nerve (IPBSN) injury due to various surgical procedure on the medial aspect of knee. The aim of this study was to investigate relative location of the IPBSN based on anatomical landmarks through cadaveric study, and to identify the optimal stimulation and recording point for use in IPBSN nerve conduction study. In addition, we performed sensory nerve conduction study at the obtained optimal stimulation and recording site to confirm that the obtained location is clinically applicable, and to propose the reference value.

Material and Method

Twelve lower limbs from six cadavers were studied. We defined the optimal stimulation site as the point IPBSN exits the sartorius muscle and the distance or ratio were measured on the X- and Y- axis based on the line connecting the medial and lateral poles of the patella. We defined the optimal recording site as the point where the terminal branch met the line connecting inferior pole of patella and tibial tuberosity, and measured the distance from the inferior pole. Also, nerve conduction studies were performed with obtained location in healthy adults.

Results

In optimal stimulation site, the mean value of X-coordinate was 55.50 ± 6.10 mm, and the ratio of the Y-coordinate to the thigh length was $25.53 \pm 5.40\%$. The optimal recording site was located 15.92 ± 1.83 mm below the inferior pole of patella. In our sensory nerve conduction studies through this location, mean peak latency was 4.11 ± 0.30 ms and mean amplitude was 4.16 ± 1.49 μ V.

Conclusion

The optimal stimulation site was located 5.0-6.0 cm medial to medial pole of the patella and 25% of thigh length proximal to the X-axis. The optimal recording site was located 1.5-2.0 cm below inferior pole of patella. We have also confirmed that this location is clinically applicable.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1637

DESCRIPTIVE STUDY AND FUNCTIONAL RESULTS OF SMILE REANIMATION SURGERY IN PATIENTS WITH FACIAL PALSY WITH GRACILIS FLAP IN A TERTIARY HOSPITAL

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Introduction/Background

Surgery in facial palsy aims to restore the face's symmetry in rest as well as reanimation of the smile. Gracilis flap is a therapeutic option for patients with long term facial palsy.

Our objective is to describe evolution and functional results of patients treated surgically through gracilis transposition.

Material and Method

27 patients with chronic (>12months) unilateral facial palsy were treated with gracilis transposition to reanimate smile. Demographic information such as age, gender and personal history was gathered, as well as onset of facial palsy, affected side, etiology, date and kind of surgery, complications and initiation of movement. Functional results were evaluated with the Facial Disability Index and the smile item on the Sunnybrook Scale.

Results

Mean age was 50 years old and a slight prevalence of women over men and right sided palsy over left was observed. Most prevalent etiology was iatrogenic after acoustic neuroma surgery (33.3%). 59% of palsies were less than 5 years old in evolution.

Donor nerve most frequently used was the masseter (48%), followed by the cross-face sural nerve graft with masseter babysitter (33.4%) and lastly, cross face nerve graft (18.6%). Four patients required a second reanimation surgery. Most common complication was scar retraction at the angle of the mouth.

Majority of patients initiated smile around 2-4 months after surgery, being a complete or almost complete movement in 66.6% of patients. Facial Disability Index Global Score was less than 100/200 in 20% of patients and more than 150/200 in 44% of them.

Conclusion

Functional results were good in more than half the patients, with mild-moderate facial disability. There is a tendency to associate the use of masseter donor with better smile movements and facial disability indexes, even though results are not statistically significant was scar retraction at the angle of the mouth.

Keywords

Facial Palsy ;Smile Reanimation Surgery ;Functional Results post rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1680

FAMILIAL BELL'S PALSY: A CASE REPORT

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Introduction/Background

The etiology of Bell's palsy (BP) is still not defined. Familial inheritance has been found in 4–14% of cases. We describe a case of one such family affected by BP and review the current literature concerning hereditary influences.

Material and Method

The patient case history, clinical examination and detailed family history provided by the patient.

Results

We report the case of a ten-month-old female presented with acute onset of right-sided facial muscle weakness. BP is rare in children under the age of two years. Further questioning revealed she was one of seven members with a history of BP. One of those was another children (seven-months-old) affected by BP. (Figure 1)

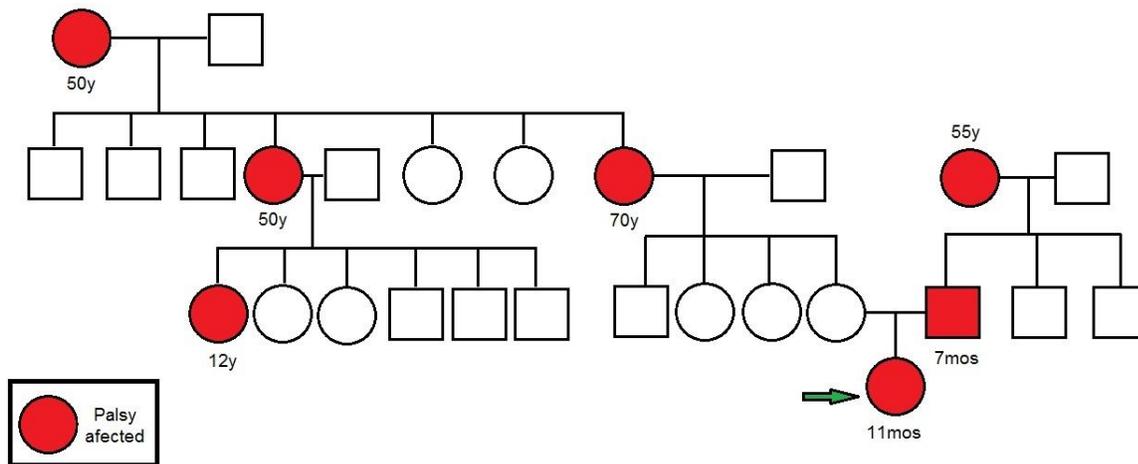


Figure 1. Family Tree; years (y), months (mos)

The manifestation is slightly greater in females at a 1.5 to 1 ratio. There are some described causes of facial nerve palsy in children, as it can be congenital or acquired.

The literature showed the association between HLA and BP. It was postulated that familial facial palsy is an autoimmune disease with genetic predisposition, suggesting autosomal dominant inheritance with low penetrance or variable penetrance. One study of 92 patients with BP found a significant decrease in the HLA class 2 DR antigen and severely decreased levels of CD3/CD4 T cells, suggesting that it may exist resistance HLA-DR gene. Furthermore, it is described in literature that a structural abnormality of the dimension of facial canal is the most common cause of the familial facial palsy.

Conclusion

There are few cases described about familial facial palsy in the literature. It's uncommon BP in children under two years. The familial clustering of BP is not an incidental happening, the number of related cases suggests the familial influence component. Familial facial palsy is an autoimmune disease with an HLA genetic association or anatomical abnormality of the facial canal.

Keywords

familial facial palsy;child facial palsy;Bell's palsy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1701

RESULTS OF A REHABILITATION PROGRAM IN PERIPHERAL FACIAL PALSY

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Introduction/Background

Peripheral facial palsy has usually multiple etiologies. Our patients have comorbidities like diabetes mellitus type 2, hypertension, dyslipidemia and obesity. The rehabilitation program includes a proper assessment and a well-designed recovery program. Our aim in this study is to observe the efficacy of rehabilitation programs in this type of pathology.

Material and Method

We have formed a group of 6 out-patients with peripheral facial paresis developed in August – October 2017 that followed a rehabilitation program including physical therapy, electric stimulation and manual therapy. The therapy started after a detailed clinical assessment including cardiologic, diabetologic, neurological evaluation, otoscopy and the patient's history aspects. One of the main points of interest regarding clinical evaluation was eyelid closure.

Results

After 1 month of intensive daily program we could measure an improvement of the eyelid closure for all our subjects.

Conclusion

Peripheral facial palsy severely affects the patient's quality of life, not only regarding the facial movement, but also from the social and psychological point of view. The associated rehabilitation programs consisting of safe therapy has shown it's significant efficacy on our patients. The first step of motor control management is the training of synthetic and analytic movement and then their inclusion in the activities of daily living in order to regain functionality and symmetry.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-1829

DEEP FOREARM LIPOMA: BRINGING A PATIENT'S HAND DOWN

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Introduction/Background

Lipomas are extremely common benign mesenchymal tumours, which can have a superficial or deep location. The latter are much less common, usually larger, and more prone to compression of the surrounding tissues, being asymptomatic until they compress neurovascular structures. Posterior interosseous nerve (PIN) is the deep branch of the radial nerve, after its emergence above the elbow. Paralysis of the PIN secondary to compression is a rare clinical condition, more commonly related to its pathway beneath the arcade of Fröhse. Tumours are a relatively rare but potential cause of neuropathy. The pattern of physical symptoms may be quite variable, but are more often manifested as a hand drop.

Material and Method

A 68 years-old female presented with a 7 months progressive right hand drop and a concomitant painless mass over the posterolateral aspect of the proximal forearm. No deficits on elbow flexion muscle strength or superficial sensation were found. Electrophysiological testing indicated a mixed, demyelinating and axonal lesion of the PIN of the radial nerve. MRI revealed a large deep capsulated mass on the lateral aspect of the proximal forearm suggestive of lipoma.

Results

The surgical exploration confirmed the compression of the PIN by the lipoma that was successfully excised. Histological examination confirmed the diagnosis. The patient began an occupational therapy program regaining almost complete motor function with residual deficits on finger extension.

Conclusion

This clinical report brings up the importance of thorough physical examination and a high level of suspicion when examining a patient with hand and wrist muscle extensor weakness which can prevent the deficit progression and hand function loss. Prognosis is related to the duration of symptoms with surgical excision and rehabilitation being essential for functional recovery of the upper extremity.

Keywords

Lipoma;Posterior interosseous nerve compression;Hand drop

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-2713

ATRAUMATIC CASE OF ACUTE FINGER EXTENSION LOSS: WHAT QUESTIONS BEHIND AN ISOLATED POSTERIOR INTEROSSEOUS NERVE PALSY?

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Introduction/Background

Compressive syndromes of the radial nerve present themselves in distinct ways, sensory, motor or mixed.

The specific interest about this topic was a Case Report of a 76-year-old man suffered from acute isolated unilateral extension loss of third to fifth fingers after a sudden back pain on bedtime sleeping, with no history of recent elbow trauma or progressive finger extension weakness. He has cervical degenerative pathology with bilateral hand parestesias and possible medular C5-C7 compromise.

Electromyographic study showed an isolated posterior interosseous mononeuropathy with significant axonal loss.

MRI scan revealed sequelae of radial head and coronoid fractures and possible Radial Collateral Ligament, Biceps brachii tendon and Common Extensor Tendon tears.

The aim of this study was to gain a better understanding of the possible etiologies of an isolated atraumatic posterior interosseous nerve (PIN) involvement and palsy.

Material and Method

The data were obtained from Pubmed database from 1980 to 2018, using keywords search combination of “posterior interosseous nerve”, “palsy”, “compression”, “syndrome”, “neuropathy”, and “entrapment”.

Results

Multiple etiologies exist of atraumatic PIN palsy including external compression (eg. anatomical structures, mass lesions), inflammatory or neuralgic amyotrophy, and spontaneous fascicular hourglass constriction of the nerve.

Conclusion

On the case report presented possible etiologic causes were a Frohse's Arcade entrapment, another anatomical overnight compression can't be excluded a late complication of an old elbow fracture.

The history of paralysis onset, predisposing factors, combined with the physical examination contribute to determining the pathophysiology involved.

Methods for diagnosing these injuries are based on clinical criteria but may also include imaging and electrophysiological studies to determine the severity of the nerve injury and to rule out mass lesions. Nerve ultrasound is evolving and should also be included.

Keywords

posterior interosseous nerve;palsy;compression

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-2167

USE OF BOTULINUM NEUROTOXIN TYPE A IN MANAGEMENT OF A RARE CASE OF SPINAL SEGMENTAL DYSTONIA FOLLOWING SCOLIOSIS SURGERY

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Introduction/Background

The pathogenesis of movement disorders due to peripheral lesions to neural structures has been controversial in the past, but has recently been accepted. There have been 6 reported cases of movement disorder following spinal disc surgery. We report a case of development of Thoracic spinal segmental dystonia in an adult patient following corrective scoliosis surgery.

Material and Method

A case study using patient's clinical presentation in out patient setting, review of clinical notes from Neurology and Spinal surgery, review of literature and feedback both written and video footage following treatment with Botulinum Neurotoxin injections were used.

56 years old lady with scoliosis from the age of 14 years was treated with corrective surgery in 20014. she developed spinal segmental movement disorder 3 months post surgery. This was associated with severe pain and spasms were relieved on lying supine and were aggravated in sitting and standing positions. She has had extensive neurological investigations to rule out other causes. She has had a trial with a number of oral analgesics and Clonazepam but without any success. She was given a trial with trigger point injections with steroids and local anaesthetics, but She responded exceptionally well to multiple injections and incremental doses of Botulinum Neurotoxin Type A(250units of xeomin).

Results

Botulinum Neurotoxin is an effective treatment in reducing pain and involuntary spasms of spinal segmental muscles as published in neurology 2008;70:1699

Conclusion

Botulinum Neurotoxin should be considered as a safe and effective first line treatment for patients with rare spinal segmental Dystonia

Keywords

post surgical;Spinal segmental

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-2197

THE CONTRIBUTION OF EARLY PROGRESSIVE VERTICALIZATION IN THE CARE OF SPINAL CORD INJURED PATIENTS

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Introduction/Background

Background and objective:

The prolonged bed rest observed in spinal cord injured persons, exposes to serious complications which hinder the rehabilitation and compromise the future of the latter, the aim of this case study was to verticalize them as early as possible, in order to limit the extension of the complications and to ensure a better quality of life.

Material and Method

This prospective study conducted at University Clinics in Kinshasa on 32 patients including 28 men and 4 women (sex ratio: 7). During the period from July 2009 to July 2010, having followed a progressive early verticalization protocol after immobilization under plastered or removable corset.

Results

Partial or total recovery: ASIA A, B, C to ASIA D and C: ASIA D to E was observed in 53.3% of all patients in our series. Neurological recovery (ASIA between 31 and 50) is observed in 25% of cases in trauma patients. Table 18: Evolution of ASIA score at the end of the study in non-traumatic patients. Neurological recovery (ASIA between 25 and 43 out of 50) is observed in 58% of cases.

Conclusion

Early progressive verticalization has improved management by reducing the length of hospital stay, improving functional recovery and reducing the frequency of complications.

Keywords

Spinal cord injury;

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-2260

ACTIVATION OF THE INTRACELLULAR Ca^{++} -AMPK PATHWAY AMELIORATES APOPTOSIS AND IMPROVES AUTOPHAGY IN DIABETIC PERIPHERAL NEUROPATHY

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Introduction/Background

A decrement of AMP-activated protein kinase-eNOS bioavailability is critical for the pathogenesis of diabetic peripheral neuropathy. We evaluated the neuro-protective effect of cinacalcet on DPN by activating the AMPK-eNOS pathway using db/db mice

Material and Method

The db/db mice and db/m controls at 8 weeks of age were divided to receive either a regular diet or a diet containing cinacalcet. Mice were evaluated sciatic motor nerve conduction and tactile response. We performed Mason's trichrome staining and immunohistochemistry for type IV collagen and 8-hydroxy-deoxyguanosine, an oxidative DNA damage marker. For immunofluorescence double staining, apoptosis was detected by ApopTag Fluorescein In Situ Apoptosis Detection Kit. The sciatic nerve specimens were double stained and we measured unmyelinated fiber areas and axonal areas using NIH Image J under a transmission electron microscope. Western blot assay was performed total protein of sciatic nerve with specific antibodies for CaSR, CaMKK, total LKB1, phospho-Ser428 LKB1, total AMPK, phospho-Thr172 AMPK, total eNOS, phospho-Ser1177 eNOS, PGC-1.

Results

The db/db mice showed sensorimotor impairment, nerve fibrosis and inflammation, apoptosis, disorganized myelin with axonal shrinkage and degeneration, and fewer unmyelinated fibers in the sciatic nerve(Fig. 1) compared to db/m mice. Cinacalcet administration, without causing any changes in blood glucose and Ca^{++} concentrations, significantly increased the paw withdrawal mechanical threshold and decreased the motor conduction latency(Fig 1), and ameliorated the deterioration of sciatic nerve pathology(Fig 2), accompanied by increases in the expressions of calcium-sensing receptor-CaMKK and phosphorylation of AMPK-eNOS(Fig 3) in diabetic mice.

Conclusion

Cinacalcet may play an important role in the prevention and amelioration of DPN by amplifying AMPK signaling.

Keywords

AMP-activated protein kinase; Cinacalcet ; Diabetic peripheral neuropathy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-2306

ARE THE NONPARALYTIC MUSCLES OF POLIO SURVIVORS FREE FROM THE RISK OF POST-POLIO SYNDROME?

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Introduction/Background

The aim of this study was to reveal the relation between the neurogenetic change in the nonparalytic muscles in upper and lower limbs of Polio survivors and the later muscle strength decline.

Material and Method

Retrospective study. We looked back the data of electromyography (EMG) of Polio survivors in our Polio clinic (average age: 58.9). Muscles whose strength at EMG had been normal were extracted. We looked up the muscle strength at EMG time and two years later from medical record.

Results

The subjects were 23 Deltoid (middle strand), 40 Biceps branchii, 36 Triceps branchii, 24 Vastus lateralis, 19 Tibialis anterior, and Gastrocnemius (medial head). The ratio of neurogenic change subject (giant spike or interference pattern reduction) was, 30.4%, 25.0%, 36.1%, 62.5%, 47.4%, and 73.7%, respectively. In neurogenic change group of Biceps, 50.0% showed decline in their muscle strength. In non-neurogenic change group of Deltoid, 25.0% showed decline in their muscle strength.

Conclusion

Present study suggested that some muscle strength decline may be caused by Post-polio syndrome (PPS), and that EMG might be the most useful tool for the risk detection of PPS, especially for Biceps branchii. On the other hand, the fact that 25% of Deltoid non-neurogenic change group showed muscle strength decline was not understood in this study. Pain or disuse from disorder in shoulder joint might possibly be as a cause.

Keywords

Polio;Post-polio syndrome;electromyography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-2375

SPINAL ACCESSORY NERVE INJURY AFTER CERVICAL LYMPH NODE RESECTION: REHABILITATION MANAGEMENT

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Introduction/Background

Spinal Accessory nerve (SAN) injury is a rare entity. Most common causes are iatrogenic surgical lesion, cervical trauma, inciso-contusive wounds and idiopathic closed traumatism. SAN injury leads to the paralysis of the trapezius muscle, manifested with pain and functional impotence. The diagnosis is fundamentally clinical and neurophysiological, allowing the precise location of the lesion, the degree of intensity and assesses the potential for regeneration.

Material and Method

A 33 year old man diagnosed with Large B-cell Lymphoma presented with a two month history of shoulder pain and weakness after lymph node resection in the posterior triangle of the neck (zone V). On physical examination, there was atrophy of trapezius muscle and impossibility to flex and abduct the right shoulder over 90 degrees, with anterior displacement of the humeral head (**Fig. 1**).

Neurophysiological study was requested: the result proved lesion of SAN with severely decreased amplitude of the motor action potential and abnormal spontaneous activity in the electromyography of trapezius, without affecting sternocleidomastoid muscle (**Fig. 2**).

The patient started a rehabilitation program including electrotherapy, active and passive exercises and muscle strengthening, with progressive recovery. Five months after the injury, there was a dramatic improvement of the trapezius muscle function, complete active mobility and the patient was pain free (**Fig. 3**). Nerve conduction studies and EMG revealed significant recovery of the axonal damage, while a demyelinating component was more evident (prolonged motor latency).

Results

The favorable clinical evolution of this patient and final EMG findings, demonstrated good prognosis.

Conclusion

Scapular winging is a rare condition that can cause pain and altered scapulohumeral rhythm, affecting the ability to perform activities of daily living. A thorough history and physical examination should be performed in patients presenting with shoulder pain in order to establish the correct diagnosis and select the early appropriate rehabilitation treatment.

Keywords

Shoulder pain;accessory nerve injury;conservative treatment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-2388

FACTORS THAT AFFECT AMBULATION IN CHARCOT MARIE TOOTH PATIENTS

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Introduction/Background

Charcot–Marie–Tooth (CMT) disease is the most common inherited peripheral neuropathy. Limited information on imaging in neuromuscular conditions is available and further less in Hispanic patients. Sonographic examination has been used to describe the pathology of the nerves in patients with CMT. The purpose of this study is to describe imaging of the nerves and muscles that affect ambulation using sonographic and evaluate their association with walking speed.

Material and Method

21 patients previously diagnosed with a demyelinating form of CMT via genetic testing and/or electrodiagnostic study with family history of CMT were evaluated. Ultrasound (US) measurements of the Common Peroneal Nerve (CPN), cross-sectional area (CSA) and Anterior Tibialis muscle (ATM) depth were performed. CPN Compound Motor Action Potential (CMAP) Amplitude recording at the ATM was recorded. Later a 10 meter walk test and a Stair climb test were performed.

Results

US evaluation showed significant increase in Median and CPN CSA average when compared to reference data. Although not statistically significance there was a positive association between CMAP amplitude recording at the ATM and ATM Depth in Axial plane or size and ambulation velocity w/o AFO. This could be related to the fact that CPN with less pathology nerve conduction should be able to adequately supply the ATM, therefore better Amplitude is obtained and less muscle atrophy is found. The negative association was found between CPN CSA and Ambulation velocity w/o AFO not statistically significant. As the CPN increases in size, ambulation dysfunction is further observed in this population.

Conclusion

To our knowledge no prior study has described the CPN and ATM with US which are important components for ambulation in CMT. US is a sensitive and relatively accessible tools for evaluating this population. Future correlation of US findings and functional test is a potential field of research for future projects.

Keywords

Charcot Marie Tooth;ambulation;ultrasound

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-2448

BILATERAL PARSONAGE-TURNER SYNDROME WITH GENETIC ETIOLOGY

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Introduction/Background

Female 31 years , presented pain in the left shoulder, continuous , incapacitating irradiated to the entire limb that progressively decreased then presented paresthesias, muscle weakness, hypotonia and areflexia. She was diagnosed with parsonage- Turner syndrome and received rehabilitation management with partial motor improvement. Six years later, she presented the same signs and symptoms in the right upper limb. Genetic confirmation of hereditary amyotrophic neuralgia is performed

Material and Method

She presented hypotonia of upper limbs with areflexia, muscle strength was proximal 3 + / 5 elbow and carpal extensor 3/5 flexor fingers 3 + / 5, thumb abductor 3/5. Magnetic resonance of right brachial plexus reported increased signal intensity of trunks and brachial plexus cords. Electrodiagnosis showed motor neuroconductions of right radial nerve absent and left with decrease in amplitude, comparative decrease greater than 50% in amplitude of the right median and ulnar nerves and absence of sensory potential of left median nerve. Stable neuropathic units in all muscle groups of the left upper limb and signs of membrane instability with active reinnervation in the right extremity, normally in cervical paraspinal. Genetic analysis reports a complete SEPT9 carrier gene sequence in variant c.s26cT heterozygosis.

Results

Motor and sensitive compromise without cervical root compromise is compatible with brachial plexopathy .Genetic analysis reported pathogenic variant associated with hereditary amyotrophic neuralgia, transmitted in an autosomal dominant fashion, only known gene related to this pathology is SEPT9, its analysis can detect up to 55% of the cases.

Conclusion

Patient presents typical clinical of parsonage-Turner syndrome, she is within 10 to 30% of cases with bilateral involvement .The hereditary etiology was determined although literature doesn't presented differences in management and prognosis.

Keywords

Parsonage-Turner;Bilateral;Genetic

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.07 Neurological and Mental Health Conditions - Nerve Injury

ISPR8-2460

POSTERIOR INTEROSSEOUS NERVE SYNDROME

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Introduction/Background

Posterior interosseous nerve (PIN) syndrome is a well-recognized, but uncommon entity caused by compression of the radial nerve. The most common site of compression is at the level of the supinator muscle. PIN syndrome can be caused by intrinsic as well as extrinsic lesions. Trauma, inflammatory processes such as rheumatoid arthritis, and space-occupying lesions may be causative.

Material and Method

A 57 year old male present himself at the hospital emergency with difficulty in extending his right hand and fingers, as well as finger paresthesia. He had previously fell over his elbow 5 days ago. He was evaluated by an orthopedic surgeon whom detected lack of strength of the hand extension (4/5) and metacarpophalangeal and interphalangeal extension (2/5) - an x-ray was requested. The x-ray did not show any fracture of the elbow region. Later, he was redirected to a physical and rehabilitation medicine appointment with a subsequent diagnosis of posttraumatic PIN palsy. He started to wear a position orthosis and initiated rehabilitation treatment. He underwent 2 months of treatment and is now asymptomatic.

Results

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Conclusion

Posterior interosseous nerve (PIN) syndrome is a well-recognized, but uncommon entity caused by compression of the radial nerve. Traumatic lesions are even more uncommon. In this case, no electromyography was made to demonstrate PIN palsy, due to the typical presentation. Conservative treatment is the gold standard and the result was satisfactory.

Keywords

Posterior interosseous nerve syndrome;Nerve injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.08 Neurological and Mental Health Conditions - Mental Disorders (e.g. Depression; Bipolar Disorders)

ISPR8-0539

SYMPATHETIC SKIN RESPONSE IN PATIENTS WITH MAJOR DEPRESSIVE DISORDER

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Introduction/Background

Major depressive disorder (MDD) is one of the most prevalent diseases of psychiatry. There is evidence that suggests the autonomic nervous system involvement in depression. Sympathetic Skin Response (SSR) is used to evaluate the autonomic system. Unlike Nerve Conduction Study (NCS) that evaluates large myelinated fibers; SSR evaluates thin unmyelinated fibers. The purpose of this study was to compare SSR in patients with MDD and a healthy control group.

Material and Method

SSR in 20 patients suffering from MDD was compared with 19 healthy subjects. SSR latency and amplitude of bilateral palmar (Median nerve) and plantar (Tibial nerve) were recorded.

Results

The data received from this study showed an increase in SSR amplitude in the upper extremities in patients ($P < 0.05$). In the lower extremities, difference in SSR amplitude was not observed. There was no difference in SSR latencies between the case and control group in upper and lower limbs.

Conclusion

The results of our study reveal that abnormality in SSR recorded from upper limbs reflects autonomic nervous system dysfunction in MDD patients.

Keywords

Sympathetic nervous system; Sympathetic Skin Response; Major depressive disorder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.08 Neurological and Mental Health Conditions - Mental Disorders (e.g. Depression; Bipolar Disorders)

ISPR8-1920

MANAGEMENT OF PHOBIA CONCERNING INTERMITTENT SELF-CATHETERIZATION IN A QUADRIPLÉGIC PATIENT

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Introduction/Background

The phobias (DSM 5) include three categories: agoraphobia, social phobia and specific phobia. The practice of self-catheterization greatly improves the quality of life in quadriplegic patients. We describe the case of a quadriplegic patient that have developed a phobia concerning self-catheterization, his diagnosis and care.

Material and Method

Mr. R. is a 33 years old patient with quadriplegia following a road accident. He has adequate upper limb motor skills to consider self-catheterization, but the phobia of invasive medical procedures makes this eventuality impossible. The evaluation includes Fear survey, FFS-III and I-CAT. The care took place into three parts: psycho-education, tension training to fight the specific physical symptoms of this type of phobia and graduated exposure reading brochures explaining the catheterization, material handling, visualization of videos and finally realization of a self catheterization.

Results

The evaluation of the therapy only includes some indices: "specific blood injury phobia" score of the Fear survey, "injury illness" scale of the FFS-III, psychological dimension of the I-CAT and anxiety score of the Fear survey. They shows a good effectiveness of the management after 20 sessions of therapy. The measuring tools and the daily functioning objective the efficiency. Mr. R. was able to practice self-catheterization.

Conclusion

Mr. R. can conduce his self-catheterization himself and enjoy the autonomy that this technique brings. This support, which took only three month, yielded a result with a major impact on quality of life, autonomy and health of the patient. It could be successfully applied to others people in the same situation of severe disability

Keywords

phobia;self-catheterization

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.08 Neurological and Mental Health Conditions - Mental Disorders (e.g. Depression; Bipolar Disorders)

ISPR8-2049

QUALITY OF LIFE AND DEPRESSION IN PATIENTS HOSPITALIZED WITH NEUROLOGICAL DISEASES OF THE UNIT OF PHYSICAL MEDICINE AND REHABILITATION CENTER

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Introduction/Background

Quality of life refers to the level of satisfaction or wellbeing derived from the objective evaluation, which the person performs in various domains of his life: physical, psychological, social and environmental. Neurological diseases generate a great impact that interrupts the abilities and resources of the people who suffer them, it leads to physical, mental and socioeconomic problems that affect social relationships, privacy and freedom, this is reflected in states of depression which is characterized by a deep sadness, mood decay, loss of interest and decrease in psychic functions, as well as in the quality of life. Our objective was to determine the level of quality of life in relation to depression in patients with neurological diseases.

Material and Method

Statistical-descriptive-transversal study, with 118 hospitalized patients, between 15 and 85 years of age, both sexes, with neurological diseases. The Whoqol-Bref (QOL) and Beck depression questionnaires were applied the analysis is made using the Student's T test.

Results

The mean quality of life was 83.32 ± 14.13 points that covers a medium level, that is, patients are dissatisfied with their quality of life in 53.2%. In this respect, higher quality is observed in their environment (25.3 ± 4.6), followed by psychological aspects (21.3 ± 4.3), later physical (20.49 ± 4.7) and the lowest in social relations (9.5 ± 2.5). Likewise, moderate-severe depression presents an average of 15 points less in QOL, compared to no or minimal depression.

Conclusion

Patients, who integrate a greater degree of depression, tend to show a lower quality of life sensation. The alteration of the quality of life occurs mainly in the breakdown of personal, family, social relationships, in sexual activity and inadaptation; as well as, in the physical limitations of

activity, pain and sleep difficulties. Low quality of life and severe depression restrict medical and rehabilitation processes.

Keywords

quality of life, depression, neurological patients.

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.08 Neurological and Mental Health Conditions - Mental Disorders (e.g. Depression; Bipolar Disorders)

ISPR8-2089

DIFFERENCES IN BRAIN DERIVES NEUROTROPHINS FACTOR (BDNF) SERUM LEVEL IN ELDERLY FROM HEALTHY PERSON WITH ACTIVE SPORTS ACTIVITY COMPARE WITH DEPRESSIVE PATIENT.

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Introduction/Background

Brain Derived Neurotrophin Factor (BDNF) is a protein abundant in brain and peripheral nerves, affecting neuronal development, growth and survival. A lot of research has been conducted into the possible involvement of brain-derived neurotrophic factor (BDNF) in the pathogenesis of human depression while on the other hand exercise prove to increase BDNF level in blood.

Material and Method

This study was an experimental studies to compare BDNF level from elderly with age from 65 years old and up with active physical exercises (HS) with elderly with the same aged with depression (DS). Setting : Healthy elderly person who joined Healthy Heart Club Exercises Program in Palembang and elderly patient with depression from ErnaldiBahar Psychiatrist Hospital in Palembang.

19 subjects with healthy elderly with active physical exercises and 19 subjects with depression where enrolled in this study and all subjects agreed to blood sampling to evaluate serum BDNF levels. Serum levels of BDNF were measured using an enzyme-linked immunosorbent assay (ELISA) method.

Results

Results: The HS group had higher BDNF levels of $391,959 \pm 56,855$ as compared to the DP group BDNF levels of $120,558 \pm 68,667$ ($p=0.00$).

Conclusion

In conclusion, healthy subject (HS) blood BDNF level was significantly higher than blood BDNF level in depression patient (DS). It's prove that a reduction in BDNF is directly involved in the pathophysiology of depression.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.08 Neurological and Mental Health Conditions - Mental Disorders (e.g. Depression; Bipolar Disorders)

ISPR8-2451

NON-UTILIZATION OF MEDICAL REHABILITATION BEFORE THE OCCURRENCE OF EARLY RETIREMENT DUE TO PSYCHOLOGICAL AND BEHAVIOURAL DISORDERS IN GERMANY – PREVALENCE AND SOCIODEMOGRAPHIC DETERMINANTS.

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Introduction/Background

In Germany the statutory pension insurance fund covers the cost of rehabilitation treatment for employees whose working capacity is endangered due to health problems. The underlying principle called “rehabilitation over retirement” is the concept to avoid early retirement due to health problems by rehabilitation. We aimed to describe the utilization of medical rehabilitation before the occurrence of early retirement due to psychological and behavioural disorders in Germany from 2003 to 2014 and to investigate potential sociodemographic determinants.

Material and Method

Analysis based on 20% random samples of administrative pension records from the Research Data Centre of the German Federal Pension Insurance. We used logistic regression models to investigate the risk for non-utilization of medical rehabilitation during five years before the occurrence of early retirement.

Results

Among all early-retired patients due to psychological and behavioural disorders 50.3% (60.380 out of 120.106) did not utilize medical rehabilitation. Risk factors for non-utilization were to be unmarried or widowed (vs. married, adjusted OR: 1.43; 95% CI: 1.40 – 1.47), non-German citizenship (vs. German citizenship, 1.19 [1.14 – 1.24]), unknown or low educational level (vs. median educational level, 1.58 [1.53 – 1.63]), as well as low annual income (1st quartile vs. 4th quartile; 4.09 [3.94 - 4.24]). Also, risk was higher among men compared to women (1.38; 95% CI: 1.34 – 1.41) and lower among older patients (60 - 64 years vs. ≤ 44 years; 0.86 [0.82 - 0.90]).

Conclusion

Among all early-retired patients due to psychological and behavioural disorders 50% obtained no medical rehabilitation. Worst affected were deprived persons.

Keywords

early retirement;psychological and behavioural disorders;Germany

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.09 Neurological and Mental Health Conditions - Learning Disabilities

ISPR8-2680

WECHSLER INTELLIGENCE SCALE FOR CHILDREN "WISC" INTEREST IN DIAGNOSIS OF DEVELOPMENTAL COORDINATION DISORDERS « DCD » ABOUT 106 CASES

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Introduction/Background

The diagnosis of DCD is based on the clinical signs, the absence of neurological lesion and the presence of a significant dissociation between one of "specific index " of DCD (Perceptual Reasoning Index (PRI) (WISC 4), Visual Spatial Index (VSI) and Fluid Reasoning Index (FRI) (WISC 5), and one of the other « WISC »'s index.

This work aims to analyze the relationship between clinical signs and the results of Wechsler Intelligence Scale for Children (WISC) in diagnosis of Developmental Coordination Disorders (DCD), commonly known as "dyspraxia" in France.

Material and Method

This work includes all the children evaluated in the "learning and development" unit of the Maison de Rééducation et Autonomie (France, Val d'Oise) from January 2015 to January 2018, with:

- Clinical and functional signs of DCD concerning both subtle motor skills, gross motor skills and visuospatial motor skills.
- Age between 6 and 14 years
- Absence of neurological lesion and global intellectual retardation
- Learning disorders

In total, 106 children fulfilled the inclusion conditions. They all had a clinical exam, a WISC IV or V and a quantified analysis of posture and walking (ZEBRIS system).

Results

The population was 53% girls and 47% boys, Awkwardness, difficulties of writing, in geometry, use of tools, practice of sports, exploration of space, transfer of theoretical knowledge in practice and automating patterns are almost constant.

Quantified analysis of posture and gait showed the presence of static equilibrium disorders, temporospatial or kinetic parameters (80%)

There was significant dissociation between PRI, VSI FRI, and one of the other «WISC»' index in only 77% of cases

Conclusion

This work demonstrates the limit of the selectivity of «WISC» in the diagnostic process of DCD. The diagnosis can be optimized by the sub-visual-spatial indexes, on the one hand, and specific assessments such as to occupational and psychomotrician assessments on the other hand.

Keywords

LEARNING DISORDERS;WISC;DEVELOPMENTAL COORDINATION DISORDERS

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.09 Neurological and Mental Health Conditions - Learning Disabilities

ISPR8-0550

DISSOCIATION BETWEEN DECLARATIVE AND PROCEDURAL MEMORY IN PATIENTS FOLLOWING HEAD INJURY - EVIDENCE FROM FINGER OPPOSITION SEQUENCE PARADIGM

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Introduction/Background

Many patients surviving traumatic brain injury (TBI) are left with significant disabilities, including memory impairment which can be declarative, procedural, or context-dependent. Dissociation between procedural and declarative learning has been described in a number of patients following focal brain injuries. Described below are two such cases involving diffuse axonal damage that demonstrated such dissociation

Material and Method

Description of two patients (out of ten) who participated in a study aimed to characterize procedural learning after TBI and presented with Implicit-Explicit memory dissociation. Subjects were tested using a series of finger opposition movements which they had to perform as rapidly and accurately as possible through several training sessions over two weeks and one month afterwards. The subjects underwent evaluation to characterize their cognitive impairments and subsequent impacts on learning ability.

Results

Both subjects demonstrated severe declarative memory deficits as demonstrated in the Rivermead Battery Memory Test (RBMT) but showed effective procedural learning of finger movement sequence as defined by improved performance speed across the training period without speed-accuracy trade-off. In addition, these findings were retained at the one month follow-up.

Conclusion

The findings from the examination of these two subjects coincide with the current paradigm that declarative and procedural memory are two separate processes that appear to occur in spatially segregated brain regions that utilize functionally distinct pathways and demonstrate that such dissociation might be evident in damage to white matter tracts. Consequently, severe injury to one may present in parallel with preservation of the other domain. The ability to maintain the ability for procedural learning after severe head injuries, even in the presence of a severe impairment of declarative memory, can be exploited in therapeutic strategies aimed at increasing the patient's daily functioning.

Keywords

memory;procedural;learnind

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.09 Neurological and Mental Health Conditions - Learning Disabilities

ISPR8-1815

ROLE OF OCCUPATIONAL THERAPY FOR DEVELOPING APPROPRIATE INDIVIDUAL EDUCATIONAL PLAN FOR STUDENTS WITH LEARNING DISABILITY

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Introduction/Background

Learning disabilities, or learning disorders, are an umbrella term for a wide variety of learning problems. A learning disability is not a problem with intelligence or motivation. Children with learning disabilities aren't lazy or dumb rather most are just as smart as everyone else. Their brains are simply wired differently. This difference affects how they receive and process information.

The Occupational Therapy evaluation and intervention are carried out in various environments, such as in a clinic and/or in the person's natural environment (at home, class, playground, work place, etc.)

Material and Method

The first stage of article evaluation and selection was conducted using abstracts alone. The second stage of inclusion and exclusion was conducted. The third stage of evaluation and selection was conducted on the entire article. The search was performed between August 2016 and February 2017 and then updated in February 2017. There were no constraints upon year of publication. During investigation investigator was able to search literature previous 18 year's information about individual educational plan and learning disability. Investigator was also clinically observed the clients and practiced with the individual clients how they maintain the IEP, how prepare the IEP and the all clients are students with learning disability

Results

IEP is very emergent for students with learning disability. If it made by follow its process it's seems very subsidiary for those students and academic session. Threateningly most of the institute can't follow the process because in Bangladesh maximum care giver can't find out their child limitation as early as possible

Conclusion

Occupational Therapy is a growing profession in Bangladesh serving for the person with disability and or the disabling condition. Learning Disability is one of the major disabling conditions where Occupational Therapists can play very important role to maximize daily living activities of the children with Learning Disability.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.10 Neurological and Mental Health Conditions - Vegetative States, Minimally Conscious and Low Awareness States

ISPR8-0863

CONSCIOUSNESS RECOVERY AFTER VARIOUS PERIODS IN VEGETATIVE STATE

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Introduction/Background

The odds of consciousness recovery are considered to be poor after several months in vegetative state (VS). The rate of recovery from VS, however, improved in the last 20 years. The present study examined the odds of consciousness recovery after various periods in VS.

Material and Method

Recovery from VS was monitored during several periods after admission to intensive care and consciousness rehabilitation (ICCR) in 206 patients in VS lasting more than 1 month. Recovery from VS was established when the ICCR physician and the multidisciplinary team observed that patients who previously were not able to create functional communication or use objects, established communication with the environment by obeying simple commands, but not complex commands that patients with locked-in syndrome can obey.

Results

Recovery of consciousness was recorded in 111 patients, of whom 24, 40, 24, 16, and 7 were discharged from ICCR within 3, 3-6, 6-9, 9-12, and 12-19 months, respectively. Additional patients, lost to follow-up, may have recovered consciousness after discharge from ICCR. The odds of recovery from VS was, therefore, at least 54% at admission to ICCR, 48% after 3 months, 33% after 6 months, 19% after 9 months, and 7% 12 months after admission (approximately 2, 5, 8, 11, and 14 months after injury or lesion onset). The difference in the odds of recovery from VS between the examined periods were significant ($p < 0.001$).

Conclusion

The odds of recovery from VS decrease significantly with time, but are not negligible even more than 6 months after admission to ICCR, and more than 8 months after injury. Future study of functional outcomes after VS recovery may help determine the optimal duration of the period from injury to ICCR, and the optimal length of stay in ICCR.

Keywords

VEGETATIVE STATE;CONSCIOUSNESS RECOVERY ;ODDS

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.10 Neurological and Mental Health Conditions - Vegetative States, Minimally Conscious and Low Awareness States

ISPR8-1001

INTENSIVE THERAPY AND REHABILITATION OF CHRONICALLY CRITICALLY ILL PATIENTS WITH BRAIN DAMAGE

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Introduction/Background

In patients with brain damage of various etiologies persist long-term disturbances of consciousness, which make them dependent on mechanical ventilation and other life support systems. This is a result of severe brain damage and/or the median structures of the brain dislocation development. We use integrated approach to rehabilitation of chronically critically ill patients. Aim of a pilot study the impact of a new approach to improving the results treatment and rehabilitation in chronically critically ill patients.

Material and Method

Was analyzed a comprehensive approach of rehabilitation in 30 chronically critically ill patients (more than 2 months after the cerebral injury). Each patient received position treatment, bedside recumbent cycling, transcranial magnetic stimulation, speech therapy exercises. During above mentioned activities there was bedside monitoring of:

- the resting energy expenditure by indirect calorimetry
- the external temperature of the brain
- the activity of sympathetic nervous system

Results

The study found that it is possible and necessary to start active rehabilitation in patients with chronically critical illness. Our study proved that there is no deterioration of the patients' conditions. Response to rehabilitation in the majority of the patients was observed as an increase in the level of consciousness (18 cases, 60%) increase in strength and amplitude of limbs movements and increased physical activity (12 cases, 40%), the recovery of swallowing. In addition, the patients had a decrease in the level of catabolism, in the number of infectious complications and in the duration of mechanical ventilation. Monitoring of metabolism, activity of the autonomic nervous system allowed us to increase the safety of activities.

Conclusion

The use of an integrated approach to the rehabilitation in chronically critically ill patients with brain damage leads to an effective and safe improvement in the treatment results.

Keywords

intensive care medicine;rehabilitation;integrated approach

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.10 Neurological and Mental Health Conditions - Vegetative States, Minimally Conscious and Low Awareness States

ISPR8-1121

EVALUATING CHANGES IN STIMULI RESPONSE IN THE SNOEZELEN ROOM ON MINIMALLY RESPONSIVE PATIENTS

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Introduction/Background

Background and aims: Findings of a previous study suggested that Snoezelen use and similar methods have calming effect such as reduced heartrate, on different patient population such as children with brain injury and people with dementia. To validate this suggestion, we examined differences in responses to various stimuli on Vegetative state (VS) and minimally responsive patients.

Material and Method

Methods: Session with 50 VS and minimally responsive patients were carried out at Loewenstein rehabilitation hospital snoezelen room where they were exposed to various stimuli involving the 5 senses (bubbles stand, music, lollypop, perfume, fibers). Baseline was recorded at the beginning and end of the session. Data collected using Loewenstein communicative scale (LCS) and Transcranial Doppler (TCS) and Heartrate measure.

Results

Results: LCS results show significant difference (t-test) between traumatic and non-traumatic patients in baseline measurement ($p < 0.05$) and the during session measurement ($p < 0.05$). Significant difference (ANOVA) was found between Bubbles TCS and LCS delta ($p < 0.05$) and Baseline TCS and LCS delta ($p < 0.05$) but not the other stimuli tested. Positive correlations were found in the different stimuli between TCS and Heartrate measure.

Conclusion

Conclusions: Preliminary results indicate that although there was change in response during sonezelen sessions only Bubbles had the most significant effect on patients' response however there is notable difference in patients' response at the end of the session.

Keywords

Sonezelen;Vegetative State;Minimally Conscious

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.10 Neurological and Mental Health Conditions - Vegetative States, Minimally Conscious and Low Awareness States

ISPR8-1972

TAKO-TSUBO SYNDROME: CASE REPORT.

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Introduction/Background

Hypoxic-ischemic brain injury is caused by imbalance between the supply of oxygen and decreased cerebral blood flow, results of situations such as systemic hypoxemia, alterations in the transport of oxygen or reduction of cerebral blood flow, such as cardiac arrest. We report a case of anoxic brain injury following a "Tako-Tsubo syndrome".

Material and Method

A 31 years old female, natural of Morocco, without medical history of interest, who suddenly presented cardiac arrest while she was in her house. After the arrival of the advance life support team, they started cardio-pulmonary resuscitation, recovering sinus rhythm and spontaneous breathing after 15 minutes of cardio-respiratory arrest. A 12 lead electrocardiogram was made, showing a supraventricular tachycardia at 140 beats per minute and a ST segment elevation in leads I and aVR. The patient was transferred to the referral hospital where a urgent coronary angiography was performed, which showed normal coronary arteries with a normal ejection fraction and hypokinesia of the apex and antero-lateral part of the left ventricle, highly suggestive of Tako-Tsubo cardiomyopathy o "broken heart syndrome".

Results

After stabilization in intensive care unit, the patient presents tetraparesis with weak head and trunk control, dysphagia, aphasia and cognitive disorder. Intensive physical, occupational and speech therapy are initiated, with recovery independent walking as well as the capacity to perform daily life activities with autonomy, although a important cognitive behavioural disorder persists.

Conclusion

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Keywords

Tako-Tsubo syndrome;anoxic brain injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.10 Neurological and Mental Health Conditions - Vegetative States, Minimally Conscious and Low Awareness States

ISPR8-2240

UNRESPONSIVE WAKEFULNESS SYNDROME DUE TO CARBON MONOXIDE POISONING

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Introduction/Background

Carbon monoxide poisoning is common in our environment due to toxic gases exposure. The effects of exposure are not limited to the acute phase. After an apparent recovery, neurological alterations may sometimes appear.

Material and Method

A 59-year-old woman was admitted to our hospital because of a probable carbon monoxide poisoning due to incomplete combustion of a brazier.

she had an initial Glasgow score of 10, hemodynamically stable without motor deficit. She showed only cognitive deficits. After 6 sessions of hyperbaric oxygen therapy (HBOT) with subsequent cognitive improvement, the patient was discharged from the hospital to outpatient care with HBOT.

After 14 days, she suffered acute progressive worsening. Her examination revealed gait problems, stiffness of the 4 limbs without any clear motor deficit and mutism, and a few days later she developed an unresponsive wakefulness syndrome despite of 9 new sessions of HBOT.

Results

Delayed neurological syndrome is a rare clinical entity that can be presented with clinical features of variable severity.

Magnetic resonance imaging is the technique of choice for the diagnosis of this pathology. With this technique, we can observed findings such an acute demyelination and diffuse white matter injury.

Our current objective is to prevent complications and perform a cognitive stimulation therapy (sensorineural and pharmacological). **Conclusion**

Currently, the optimal therapy for sequelae after carbon monoxide poisoning is not known. Hyperbaric oxygen therapy is a well-known treatment method, but its use for patients with CO poisoning is a controversial issue.

This systematic review has not found sufficient evidence to support or refute the effectiveness of HBOT for the the management of sequelae after carbon monoxide poisoning, so prevention is still the best protection.

Keywords

CARBON MONOXIDE POISONING

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.10 Neurological and Mental Health Conditions - Vegetative States, Minimally Conscious and Low Awareness States

ISPR8-2438

TREATMENT OF CHRONIC NORMAL PRESSURE HYDROCEPHALUS IMPROVED THE RECOVERY OF CONSCIOUSNESS ON PATIENTS FOLLOWING BRAIN INJURY

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Introduction/Background

Despite disorder of consciousness (DOS) being the cause of major disability after cerebral hemorrhage, aneurysmal Subarachnoid hemorrhage and traumatic brain injury (TBI), the clinical management options for these conditions are limited to drugs and nonpharmacological interventions with equivocal effectiveness. We investigate the impact of chronic normal pressure hydrocephalus (CNPH) on patients with DOS following those brain injuries.

Material and Method

Forty-six patients with DOS had undergone ventriculoperitoneal shunting (VPS) for CNPH were compared with 17 matched controls with no VPS. We measured consciousness with coma recovery scale (CRS) and Disability Rating Scale (DRS). The cella media index (CMI) was calculated as the change in size of the lateral ventricles. The short-term outcome of treatment was assessed at 3 months using the Glasgow Outcome Scale (GOS).

Results

Twenty- one out of 46 patients with DOS recovered gradually after VPS and rehabilitation. There was a significant difference in the CRS and DRS between VPS and control groups at both 1 and 3 months ($p < 0.01$). Significant differences were also observed between the 2 groups in CMI at 1 and 3 months ($p < 0.05$). The VPS group was significantly higher than that of the control at 3 months on GOS ($p < 0.01$).

Conclusion

Though lumbar puncture pressure of patients with CNPH is normal, the wall tension of ventricles increased because of ventricular enlargement that may severe affect the circulation and metabolism resulting in DOS. However, VPS could reverse this condition, which helps some patients with DOS to regain consciousness.

Keywords

disorder of consciousness;chronic normal pressure hydrocephalus;brain injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.10 Neurological and Mental Health Conditions - Vegetative States, Minimally Conscious and Low Awareness States

ISPR8-2447

SPASTICITY AND PAIN IN PATIENTS WITH DISORDERS OF CONSCIOUSNESS

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Introduction/Background

Spasticity is a common complication after a severe brain injury that hinders the rehabilitative process, reduces the patients' quality of life and is frequently responsible of pain (Thibaut et al, 2015). Here we investigate in a population of patients with disorders of consciousness the correlation between spasticity and pain during mobilization to better characterize the spastic profiles that are more prone to induce pain.

Material and Method

In this cross-sectional study 73 patients with chronic (>3 months post insult) disorders of consciousness were included (27 women; mean age: 40±13 y; 42 with traumatic etiology; 50 in minimally conscious state (MCS) and 23 in unresponsive wakefulness syndrome (UWS)). We evaluated the pain with the Nociceptive Coma Scale-Revised (NCS-R) and the spasticity with the Modified Ashworth Scale (MAS).

Results

Out of 73 patients, 70 demonstrated signs of spasticity (96%; MAS≥1), including 52 who showed severe spasticity (71%; MAS≥4 at least in one joint; 35 in MCS and 17 in UWS). Moreover, 13 patients in MCS (26%) and 5 in UWS (22%) showed severe pain during mobilization (NCS-R≥4 at least in one joint). Moreover, we found a strong correlation with the Spearman's rank correlation indicator between pain during mobilization and the spasticity of the wrist's and fingers' flexors and hip's adductors (respectively $\rho=0.254$, $P=0.03$; $\rho=0.269$, $P=0.02$; $\rho=0.277$, $P=0.02$), while the correlation was weaker for biceps, knee's and ankle's flexors

(respectively $p=0.195$, $P=0.1$; $p=0.176$, $P=0.14$; $p=0.115$, $P=0.36$).

	UWS	MCS	UWS+MCS
Mean Age	37	41	40
Gender (Males)	70% (n=16/23)	60% (n=30/50)	63% (n=46/73)
Etiology (Traumatic Brain Injury)	48% (n=11/23)	62% (n=31/50)	58% (n=42/73)
Mean Time Since Injury (Days)	1195	1183	1187
Median Spasticity Biceps	3,5	3	3
Median Spasticity Wrist Flexors	3	3	3
Median Spasticity Fingers Flexors	3	3	3
Median Spasticity Hip Adductors	2	2	2
Median Spasticity Knee Flexors	1,5	3	3
Median Spasticity Ankle Flexors	3	2,5	3
Median NCS-R	3	3	3

Conclusion

We confirm the high prevalence of spasticity and pain in patients with disorders of consciousness and the correlation between the degrees of spasticity and pain scores. We found that the peripheral joints of the upper limbs and the hip adductors are more prone to induce pain. These data highlight the need to prevent the onset of spasticity and the importance of the treatment of pain in patients with disorders of consciousness.

Keywords

Disorders of consciousness;Spasticity;Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-2532

NEUROGENIC HETEROTOPIC OSSIFICATION - WHAT TO DO?

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Introduction/Background

Heterotopic Ossification (HO) is defined as the presence of lamellar bone at locations where bone physiologically does not exist. Pain and limitation of mobility are associated to HO. Neurogenic HO (NHO) subtype is a frequent complication of central nervous system injury, with ossification often affecting major synovial joints. NHO has a significant impact on the activities of daily living, since these patients are usually disabled because of their original injury. The purpose of this presentation is to conduct a review of the NHO prevention and treatment interventions.

Material and Method

MEDLINE database was searched for articles addressing the treatment of NHO. The manuscripts selected for review of the full text were assessed by their relevance for inclusion in this review. Preference was given to systematic reviews.

Results

Five studies met inclusion criteria, four of which were reviews. Non steroidal anti-inflammatory drugs (NSAIDs), Bisphosphonates and Radiation were reviewed as prophylactic agents. For the treatment of full developed disease, Bisphosphonates, Extracorporeal Shock Wave therapy (ESWT), radiotherapy, Physical Therapy and Surgery were reviewed .

Conclusion

For the prevention of NHO, NSAIDS and Radiation were found to be effective; the use of Bisphosphonates is controversial. Despite the prophylactic strategies available, no current pharmacological treatment exist to address a developed disease. Surgical excision was the most effective mode of treatment, but is considered to be extremely invasive, with relevant recurrence and not possible in all patients with NHO. Physical Therapy, Radiotherapy and ESWT did not prove to be effective treatments, although the last two seem to allow some symptomatic improvement. When nothing seems to work in this patients and they are not candidates for surgery, what else can we do?

Keywords

Neurogenic Heterotopic Ossification;Treatment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-0128

NON-PHARMACOLOGICAL INTERVENTIONS FOR SPASTICITY IN ADULTS: AN OVERVIEW OF SYSTEMATIC REVIEWS

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Introduction/Background

Spasticity causes significant long-term disability-burden, requiring comprehensive management. This review evaluates evidence from published systematic reviews for effectiveness of non-pharmacological interventions for improved spasticity outcomes.

Material and Method

A literature search was conducted using medical and health science electronic databases for published systematic reviews up to 15th June 2017. Two reviewers applied inclusion criteria to select potential systematic reviews, independently extracted data for methodological quality using Assessment of Multiple Systematic Reviews (AMSTAR). Quality of evidence was critically appraised with Grades of Recommendation, Assessment, Development and Evaluation (GRADE).

Results

Overall 18 systematic reviews were evaluated for evidence for a range of non-pharmacological interventions currently used in managing spasticity in various neurological conditions. There is 'moderate' quality evidence for electro-neuromuscular stimulation and acupuncture as an adjunct therapy to conventional routine care in persons following stroke. 'Low' quality evidence for rehabilitation programs targeting spasticity (such as induced movement therapy, stretching, dynamic elbow-splinting, occupational therapy) in stroke and other neurological conditions; extracorporeal shock-wave therapy in brain injury; transcranial direct current stimulation in stroke; transcranial magnetic stimulation and transcutaneous electrical nerve stimulation for other neurological conditions; physical activity programs and repetitive magnetic stimulation in persons with multiple sclerosis, vibration therapy for spinal cord injury and stretching for other neurological condition. For other interventions, evidence was inconclusive.

Conclusion

Despite non-pharmacological interventions are used for various neurological conditions, there is still lack of high-quality evidence for many. Further research is needed to judge the effect with appropriate study designs and intensity and associate costs of these interventions.

Keywords

spasticity;non-pharmacological intervention;neurological conditions

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-0295

TITLE: DELAYED ENCEPHALOPATHY FOLLOWING CARBON MONOXIDE POISONING- A REVIEW OF THE LITERATURE WITH A LOCAL REHABILITATION PERSPECTIVE

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Introduction/Background

Delayed Encephalopathy following carbon monoxide poisoning is a known complication resulting in a myriad of neurological complications including Parkinson's like syndromes. It is rare in the Singapore setting and local clinicians may be unfamiliar with the clinical course and management of this condition.

Material and Method

Articles referenced were searched on pubmed using the words " carbon monoxide poisoning" and "delayed encephalopathy".

Results

There is little in the way of evidence that supports the routine use of Hyperbaric oxygen in the acute setting in reducing or preventing delayed encephalopathy. There is some evidence suggesting the use of acetylcholinesterase inhibitors and stimulant medication like methylphenidate to improve attention and memory, dopaminergic agents to treat symptoms of Parkinsonism.

Conclusion

We suggest a multidisciplinary approach in managing such patients and some pharmacological agents can be tried to remediate cognitive impairments, Parkinsonism and affective disorders that manifest. We await more research to be done to give us more clarity in the prevention and management of this condition.

Keywords

Carbon Monoxide;Rehabilitation;delayed encephalopathy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-0380

ADEQUACY OF CARE MANAGEMENT OF PATIENTS WITH POLYHANDICAP: THE FEATURES OF THE FRENCH HEALTH CARE SYSTEM

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Introduction/Background

The aims of this study were 1) to describe the health profiles and care management of polyhandicapped patients according to 3 modalities (specialized rehabilitation centers (SRC), residential facilities (RF), and home care (HC), and 2) to estimate the adequacy of care management of these patients.

Material and Method

This was an 18-month cross-sectional study including patients with a combination of severe motor deficiency and profound intellectual impairment. The patients were from 4 SRC, 9 RF, and a pediatric/neurologic department (HC). The following data were collected: sociodemographics, health status, care management, and adequacy of care management.

Results

A total of 875 patients were included: 410 (47%) were cared for in SRC, 372 (43%) in RF, and 84 (10%) in HC. Global objective adequacy (health severity and age category) was higher for patients cared for in SRC compared with patients cared for in RF (57 vs. 44%, $p \leq 10^{-3}$). Global subjective adequacy (self-perception of the referring physician and request of change in structure) was higher for patients cared for in SRC (98%) in comparison with patients cared for in RF and HC (92 and 87%).

Conclusion

This study provides key elements of adequacy of care management modalities for polyhandicapped patients in France.

Keywords

Polyhandicap;care management;specialized reeducation centre

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-0402

WHY AND HOW I INJECT BOTULINUM TOXIN TO TREAT SPASTICITY USING SIMULTANEOUSLY NEUROMUSCULAR ELECTRICAL STIMULATION AND ULTRASOUND?

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Introduction/Background

Inspired by the 2018 ISPRM's motto: "Share knowledge to reduced disability", in this poster the author intends to share why, when treating focal spasticity with intramuscular botulin toxin type A (BoNTA) injections, he uses systematically ultrasound and electrical neuromuscular stimulation to accurately target the implicated muscles.

Material and Method

The author used ultrasound simultaneously with muscle electrical stimulation in 189 sessions of BoNTA muscles injections to treat functional disabilities provoked by spasticity between January 2014 to December 2017. In this presentation the author analyses the trade-off between the advantages and disadvantages of this injection targeting technique.

Results

In this presentation we will underline the reasons why using simultaneously both ultrasound and neuromuscular electrical stimulation as targeting techniques is interesting, allowing to have a direct visualisation of anatomy and simulated physiology. Some of the advantages that will be explained in detail are: comfort and less pain to the patient; ability to accurately identify muscles even in patients with longstanding spasticity in whom using classic external anatomical references is misleading; ultrasound view of the muscle contraction (that sometimes does not cause a mechanical joint movement) allowing to finetune the place in the muscle where to inject, that should be where the lower intensity of stimulation provokes the greater degree of contraction.

The disadvantages were the increased price per session related to the use of aseptic equipment and the learning curve.

Conclusion

Considering the trade-off favouring advantages, the authors strongly advise using a combination of ultrasound and muscle electrical neurostimulation to target muscle for BoNTA injection.

Keywords

Botulinum toxin;spasticity;ultrasound

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-0409

HEALTH ISSUES IN POLYHANDICAPPED PATIENTS ACCORDING TO AGE: RESULTS OF A LARGE FRENCH SURVEY

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Introduction/Background

A better understanding of the natural course of the health status of patients with polyhandicap may optimize preventive and curative care management. From a large sample of patients aged from 3 to 25 years, we reported the description of their health status.

Material and Method

This was an 18-month cross-sectional study including patients aged from 3 to 25 years with a combination of severe motor deficiency and profound intellectual impairment. The patients were recruited from 4 specialized rehabilitation centers, 9 residential facilities, and a pediatric/neurological department. The following data were collected: polyhandicap etiology, health status (handicaps, comorbidities, and neurodevelopmental status), medical devices, and rehabilitation procedures.

Results

A total of 545 patients were included (N=80 [3-5 years], N=166 [6-11 y], N=155 [12-17 y], and N=144 [18-25 y]). The etiology of polyhandicap was unknown for 11% of the cases. Behavioral disorders and (orthopedic and digestive) comorbidities were more frequent in the oldest age classes. The neurodevelopmental status of the patients was close to those of a 5- to 7-month-old child without progression across age. Gastrostomy was the most frequent device needed by the patients.

Conclusion

Early detection and management of handicaps and comorbidities may improve the disease course of the patients.

Keywords

polyhandicap;comorbidities;severity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-0576

THE ASSESSMENT OF ACTIVITY OF DAILY LIVING AND MOOD IN ADULT JAPANESE PATIENTS WITH DUCHENNE MUSCULAR DYSTROPHY: A SINGLE-SITE STUDY

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Introduction/Background

Duchenne muscular dystrophy (DMD) is an x-linked rare disease characterized by progressive muscle wasting due to mutations in the dystrophin gene. In Japan, the estimated number of patients with this disease was about 3400 in 2015. Growth over time, the patients gradually lose physical independence with the declines of cardio-pulmonary functions. In the past, patients did not survive until becoming an adult. However, advanced treatment options, such as taking methylprednisolone, management of respiratory and cardiac organs, are enabling increases in their life expectancy. We hypothesized that the functional ability of adult DMD patients may affect their mood.

Material and Method

To evaluate the activities of daily living (ADL) in the adult DMD population in a hospital specializing in the treatment of neuromuscular diseases. To examine the correlation between ADL and the presence of mood disorders.

The adult DMD patients without intellectual disabilities who could give the consent for this study and who could answer the questionnaires were targeted. An investigator measured the patient's ADL and mood by using the Functional Independence Measure (FIM) and the Hospital Anxiety and Depression Scale (HADS).

Results

Results were provided from 34 patients (median age 26.5 years). The median scores of Total and Motor FIM were 53 (48-60) and 18.5 (13-25), respectively. The median HADS score of anxiety was 5 (0-14) and depression was 2 (0-8). The score of HADS did not show significant clinical signs of depression and anxiety. No correlation was found between FIM and HADS. Our patients showed a high level of ADL dependency without clinically meaningful depression and anxiety, whereas a previous study reported that adult DMD patients with the high rate of pain and fatigue showed 24% of anxiety and 19% of depression.

Conclusion

The presence of noticeable physical symptoms might affect the patient's mood.

Keywords

Duchenne muscular dystrophy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-0674

MEDICATION ADHERENCE OF HOSPITALIZED PARKINSON'S PATIENTS INCLUDED IN AN INTENSIVE REHABILITATION PROGRAM

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Introduction/Background

In order to improve the quality of life and symptomatology of Parkinson's patients, an intensive, multidisciplinary and collective rehabilitation program has been set up in our institution. This program, called SIROCCO, takes place over 5 weeks and offers to patients various rehabilitative activities realized outside the service. During the hospitalization, the patients are autonomous during the day in the management of their medications.

Parkinson's disease can cause cognitive impairment. This study has been set up to evaluate medication adherence in SIROCCO patients.

Material and Method

This is a 7-month observational study conducted in 2016. A pillbox containing the medication was provided to the patient each day. When the patients returned to the service, the pillboxes were checked and the remaining units counted. An 8-item Morisky questionnaire was completed for each patient. Compliance was measured by the Morisky score and by the ratio (R) of "number of drug intake/number of prepared drugs" ("Pill-Count" method). Also, a Kappa coefficient has been calculated.

Results

Thirty patients were included in the study. The average age was 64 years for a sex ratio between men and women = 2. On average, patients had to manage 3.5 drug intakes during the day. 80% of the patients had a Morisky score ≥ 6 (medium to high adherence) and 70% had a R=1. All patients who had a Morisky score = 8 (13 patients with a high compliance) never forgot medication. The Kappa coefficient measures the intensity of agreement between the two methods to estimate compliance at 0.44, a moderate agreement (Landis and Koch classification).

Conclusion

This study made it possible to draw up a first positive assessment of patients' adherence with the SIROCCO program. The Morisky questionnaire seems to have an excellent positive predictive value in the targeting of observant patients and can be left autonomous in the management of their treatment.

Keywords

Parkinson's disease;Intensive rehabilitation program;Medication adherence

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-0898

PLACE OF REHABILITATION IN THE MANAGEMENT OF SCHWANNOMA: A CASE REPORT

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Introduction/Background

The Schwannoma is a pathology that is specific to the peripheral nervous system, its diagnosis is often unknown or late, clinical signs are variable according to the anatomical seat. Its annual incidence is low, varying between 0.3 and 0.5 / 100 .000 inhabitants.

Rehabilitation is a very important component in the treatment of the neurological deficit; it improves the results of surgical treatment.

Material and Method

Observation: We report the case of a male patient aged 44, who presented a picture of slow spinal cord compression with clinical latency of six years, combining: a spinal syndrome with pain and stiffness of the cervical spine, a lesional syndrome with tingling paresthesia, motor and sensory deficit in the C6-C7 and C8 root canal territories with amyotrophy of the hand and ulnar claw of the 4th and 5th right fingers , and a late sublesional syndrome with spastic tetraplegia and urinary disorders.

Cervical Magnetic resonance imaging (MRI) shows an intradural and extramedullary tumor lesion process next to C6 and C7, realizing an hourglass appearance. A total surgical excision of the tumor was performed allowing the removal of spinal cord compression.

Results

Functional rehabilitation, which is essential and complementary to surgical treatment, has been recommended for several months.

The clinical evolution is marked by the almost total regression of the neurological symptomatology with progressive recovery of the gait.

Conclusion

Despite the poor prognostic factors that are the delay of the diagnosis and the total neurological deficit caused by the tumor, we note a clear recovery thanks to the joint action of appropriate rehabilitation to the surgical treatment.

Keywords

Schwannoma;Surgical treatment;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-0904

MULTI-DISCIPLINARY INPATIENT REHABILITATION FOR CONVERSIVE HEMIPLEGIA: A CASE-REPORT

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Introduction/Background

Conversion disorder (CD) is a psychological disorder, mostly characterized by neurological symptoms, without evidence of an organic etiology. CD raises major challenges to health systems, in both diagnosis and treatment. Previously, CD patients were seldom referred to an inpatient rehabilitation, and were referred instead to psychiatric units. Conversive hemiparesis is relatively rare, usually left-sided. Furthermore, patients are usually psychologically-invested in medical explanations, and are less engaged in insight-oriented therapy. As it is not usually the treatment-of-choice, and literature regarding rehabilitation-management in these cases is nonsystematic and inconclusive, the purpose of this case-report is to further our understanding of the rehabilitative-treatment approach, address and discuss ethical and professional dilemmas concerning the patient and rehabilitative-milieu.

Material and Method

A 16-year-old female patient presented severe-symptoms that partially-resembled right-CVA: Left hemiplegia, including loss of sensation, face-drooping on the right side, and difficulties speaking, without any evidence of abnormalities on imaging or neurophysiological studies. Although counseling-neurologist explicitly stated CD diagnosis to the patient, the approach chosen was to address the somatic difficulties in a multi-disciplinary inpatient rehabilitation-unit, and continue necessary examinations to rule-out neurological causes. The rehabilitative-milieu consisted of a rehabilitation physician, psychologist, social-worker, hospital-teachers, occupational, speech and physical therapists.

Results

Upon admission, the patient was immobile and showed difficulty in performing activities of daily leaving with FIM 82. Each week, the milieu set short-term, realistic goals. Physical and functional therapies combined with extensive psychological support to the patient and family,

helped the patient achieve significant improvement in global assessments of functioning and decreased dependence and FIM increase after 5 weeks to 95.

Conclusion

The case-report demonstrates distinct advantages, by validating the patients' experience and difficulties, focusing on functional and underlying psychodynamic factors. An inpatient multidisciplinary rehabilitation program for adolescents encourages the CD patient to take an active part in the process, and provides continuing support and feedback.

Keywords

Conversion disorder;Multidisciplinary Approach;Hemiplegia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-0995

EFFECT OF BOTULINUM TOXIN IN DISABLING ECTATOCORMIA

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Introduction/Background

Ectatocormia (severe, fixed truncal hyperextension exacerbated by movements of the trunk) is associated with pain and motor disability, and impide the patient to maintain a normal upright posture or to walk.

The aim of this report is to present the case of an adult with ectatocormia and the changes in pain and posture after botulinum toxin administration to paraspinal muscles.

Material and Method

A 28-year-old patient with congenital ataxia and trunk dystonia in hyperextension predominantly lumbar and left inclination. Presents pain, difficulty in sitting and walks with assistance from a person less than 10 meters indoors.

Prior informed consent is treated with botulinum toxin type A, that was obtained in 100 u vials as Botox (Allergan Pharmaceuticals) and reconstituted with 2 mL of normal saline. The patient was placed prone with a cushion under the pelvis. Muscles were injected with ultrasound guidance and convex probe in three sites on each side, using a spinal needle and administrating 60 u at each site: 20 u multifidus, 20 u longissimus and 20 u iliocostalis at the level of the eleventh thoracic vertebrae, second and fourth lumbar vertebrae. Left quadratus lumborum muscle also received 40 u.

Results



The score reported by the parents in the Global Dystonia Severity Rankin Scale went down from

10 (pre-injection) to 5 (post-injection). Pain reduction was recorded indirectly by reporting of the parents who perceived the patient more relaxed and more smiling. An upright sitting without dorsal support /with support on hands was achieved of more than 10 seconds and a decrease in left inclination. No adverse effects were reported.

Conclusion

The administration of botulinum toxin type A in the paraspinal muscles seems to be an effective treatment to reduce truncal hyperextension, besides the pain and disability that it produces.

Keywords

Truncal dystonia;Botulinum toxin;Congenital ataxia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1221

GAIT SPEED IMPROVEMENT WITH GAIT TRAINING USING ROBOT SUIT HYBRID ASSISTIVE LIMB(HAL) IN PATIENTS WITH INCLUSION BODY MYOSITIS: A CASE SERIES.

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Introduction/Background

Hybrid Assistive Limb (HAL) is a medical device especially for improving or preventing gait dysfunction of patients with rare neuromuscular disease.

The purpose of this study was to evaluate the effect of gait training using HAL in patients with Inclusion Body Myositis(IBM).

Material and Method

The participants were 5 patients with IBM(4 men and 1 female, mean age 74.6±8.3 years old), who admitted to our hospital. They took 4-9 sessions of HAL training program in 2-5 weeks, which consists of walking with HAL and hoist. During the training program, we changed training setting such as parameters of HAL, amount of body support and walking distance depends on participants' condition of gait. Before and after HAL training program, we measured 10 meters walking test without HAL 3 times as an indicator of gait performance and blood creatinine kinase(CK) value as an indicator of activator of myositis.

Results

The walking speed on 10 meters increased after training compared with before (56.78±34.7m/min to 63.98±29.96m/min :12.7% increased) and the blood CK value decreased after the training compared with before (520.8±278.48U/L to 318.4±189.11U/L :38.86% decreased).

Conclusion

On this study participants could walk faster without myositis worsening by the training. This result suggested that the repetitive gait training using HAL encouraged motor learning.

Keywords

Robot suit HAL; gait speed; inclusion body myositis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1243

COGNITIVE FUNCTION INVOLVED IN MOTOR PREPARATION RATHER THAN MOTOR EXECUTION: REVERSE REASONING FROM AN ERPS STUDY OF A HEMIPLEGIC PATIENT AFTER ENCEPHALOPYOSIS

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Introduction/Background

Movement-related potentials(MRPs) have been used to study movement planning, execution and imagining process. Movement preparation could play a crucial role in hemiparetic motor deficits. How does cognitive function play its role in the movement planning and execution procedure is of significant importance for understanding movement deficit from neuropsychological perspectives and might help future rehabilitation strategy for patient with motor deficits.

Material and Method

A hemiplegic patient recovered from encephalopyosis with merely motor function deficit was investigated in the present study. Event-related potential (ERP) experiments were performed in a shielded room with a visual instruction-response paradigm to study the MRPs during the patient's unilateral wrist movement, and a P300 paradigm with visual stimuli to investigate the patient's integrated cognitive function.

Results

Compared to unaffected arm, the movement of the paretic arm showed no prolonged latencies or increased value in readiness potential in the motor preparation process, while motor potential (MP) demonstrated an prolonged latency as well as increased peak value. Movement of the paretic arm also presented a phenomenon that after MP peak, the cortical potential remained on a high level instead of dropping back to the baseline, accompanying the arm spasm after voluntary movements. P300 ERP test of the patient was read normal latencies and peak values of P300 waves compared with our database of healthy subjects . Cognitive function was proved to be involved in motor process, while in this rear case with mere motor function deficit, the ERPs results might indicate that cognitive function is mainly involved in the motor preparation rather than execution process.

Conclusion

This study provides evidence from the reverse reasoning perspective that cognitive function is involved in motor preparation rather than motor execution stage. Hence for patients with

combined deficits of motor and cognitive function, cognitive rehabilitation interventions may be of benefit in the preparation process of movement.

Keywords

movement related potential;Cognitive Function;Motor Preparation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1262

IMPROVEMENT OF LUNG FUNCTION, HAND GRIP, AND MOBILIZATION AFTER USING INSPIRATORY MUSCLE TRAINING IN PATIENT WITH NEUROLOGICAL PROBLEM

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Introduction/Background

Respiratory muscle training (RMT) in patient with neurological problem has beneficial effect on respiratory function and also improve peripheral muscle strength and functional ability. This study investigated the effect of inspiratory muscle training (IMT) on lung function, mobility, balance and peripheral muscle strength on paretic side of post stroke sub-acute phase patient.

Material and Method

14 patients participate in this study. The intervention group gets IMT with intensity 40% of PI max while control group get 10% for 8 weeks. We evaluated pulmonary muscle strength with Micro RPM, quadricep strength with hand Held-dynamometer, grip strength with Jamar, walking speed by 10 meter walk test, functional mobilization with sit to stand test.

Results

Statistically significant improvements were measured in intervention group than control group after intervention.

Conclusion

IMT shows improvement on mobilization, balance, grip and quadriceps paretic side strength on sub-acute stroke patient, and improve functional status for patient back to community.

Keywords

Respiratory Muscle Training;neurological problem;lung function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1322

THE CONTRIBUTION OF THE USEFUL FIELD OF VIEW (UFOV PROCEDURE) TO ALLOW BRAIN-DAMAGED PATIENTS TO DRIVE AGAIN.

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Introduction/Background

Visual field disorders, frequently observed in brain-damaged patients, are associated with an adverse prognosis in outcome activities as car driving. In France, a prefectorial order contraindicates driving if the visual field is inferior to 120° on the meridian axis, inferior to 20° on a vertical axis and with defects in a 20° radius from the center. Our aim was to study patients' abilities to distribute their visual attention in space, in case of visual field disorders.

Material and Method

Thirty eight patients with a hemianopia and 49 with a visual defect in the central 20 degrees performed an Useful Field Of View procedure (UFOV). This computer-based assessment contains three attentional tasks: *a processing speed task* to detect a target in central vision, *a divided attention task* involving to detect simultaneously a central and a peripheral target, *a selective attention task* consisting in detection of a central and a peripheral target in attendance of visual distractors. Brain-damaged patient performance was compared to cut-off scores elaborated in a previous study with healthy neurological volunteers (Marks et al, 2015).

Results

Only one patient with hemianopia reached normal performance in UFOV tasks. All others patients with hemianopia could not distribute their visual attention in the amputee visual field. However, ten patients among the 49 with a visual defect in the central 20 degrees reached normal performance in UFOV tasks, proving their normal abilities to distribute visual attention in space despite the visual field disorder.

Conclusion

When the visual field disorder concerns the central 20 degrees, some patients could balance out it using their visual attentional abilities and maybe in these cases, a driving simulator try and/or an "on-road" try could be proposed before to examine the driving restriction.

Keywords

Driving; Visual field disorders; UFOV

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1380

PERIPHERAL NEUROPATHY INDUCED BY AMIODARONE CHLORHYDRATE: A CASE REPORT

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Introduction/Background

Amiodarone chlorhydrate is a diiodated benzofuran derivative. It is a drug used to treat refractory cardiac arrhythmias, produced a peripheral neuropathy in 10% of cases. Although the neuropathy may be severe, it tends to improve with lowering of the dosage or discontinuation of the medication.

Material and Method

We report the case to describe the clinical and para-clinical criteria of neuropathy induced by amiodarone.

Results

A 42-year-old and diabetic man, had a heart valve replacement by mechanical valves, for a Rheumatic Mitral Stenosis four months before. He was given amiodarone 200 mg by day. He reported progressive weakness of his arms and legs, associated to paraesthesiae and numbness in his legs since 4 months. Clinical examination found a distal symmetrical sensorimotor neuropathy with areflexia. Electromyographic study was performed 1 month after drug cessation and showed severe mixed sensory and motor peripheral neuropathy in the distal lower limb muscles. One month after stopping amiodarone, introducing prégabalin and physical rehabilitation, the motor symptoms had improved considerably, but there had been no significant improvement of sensory symptom and paraesthesiae in his legs.

Conclusion

Patients who take large doses of amiodarone for long periods should be monitored for the development of neuropathic symptoms or signs, especially when there are associated risk factors such as diabetes mellitus. The reduction of dose or withdrawal of treatment may be necessary to prevent significant morbidity.

Keywords

Amiodarone;Neuropathy;toxicity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1566

HOW STROKE AFFECTS QUALITY OF LIFE?

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Introduction/Background

The assessment of health-related quality of life (HRQoL) in Greek patients with a history of stroke.

Material and Method

A perspective study of HRQoL in 62 patients with stroke examined in the outpatient department of Physical Medicine and Rehabilitation, University General Hospital "Attikon", Athens using the general questionnaires SF-36 and EQ-5D. Barthel index was used for the evaluation of activities of daily living (ADL) and the severity of stroke was graded by National Institute of Health Stroke (NIHS) scale. Demographics and clinical characteristics of the patients were also recorded.

Results

Mean age of patients: 64.3 ± 15.9 years, mean duration of disease: 5.9 ± 5.1 years. 41.7% presented with uninhibited bladder and spasticity was detected in 58.3%. 25% of the patients were able for therapeutic ambulation with low mean scores on SF-36 in the domains: physical role ($p=0.002$), social role ($p=0.018$) and emotional role ($p=0.049$). Mean value of EQ-5D: 0.21 ± 0.4 , while the mean scores on SF-36 dimensions were found low, ranging from 23.5 (physical functioning) to 49.1(role emotional). 83.3 % had medium to severe problems with self-care, 97.2% with mobility,83.3% reported bodily pain and 91.7% presented with stress and depression. Patients with urinary disturbances were found to have lower scores in social role ($p=0.033$) and mental health ($p=0.044$).Subjects with spasticity were found with low scores in domain of mental health ($p=0.035$).Significantly low indices of HRQoL by means of EQ-5D were found in subjects with urinary disturbances ($p=0.002$) and spasticity ($p=0.018$). Negative correlation between Barthel index and NIHS was found, with correlation coefficients ranging between 0.37 and 0.72.

Conclusion

Stroke has a negative impact on HRQoL in patients with history of stroke and the factors associated with it should be appropriately managed by the rehabilitation specialist.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1572

OUTCOME AFTER POSTERIOR DECOMPRESSION IN CHIARI MALFORMATION: THE ROLE OF REHABILITATION

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Introduction/Background

Chiari malformation is defined as the prolapse of cerebellar tonsils under the foramen magnum. The prevalence of such disease is still not identified because of the importance of symptomatic forms. The onset of symptom is large (0 to 60 years). Diagnosis is based on CT and MRI to define the type of the malformation, and identify its consequences (syrinx, hydrocephalus). The surgery is based on posterior decompression. Outcomes after surgery, need a hard survey to reveal complications, nursing assistance and rehabilitation.

Material and Method

A retrospective study of 3 cases hospitalized in our rehabilitation unit between July 2014 to January 2017. A girl and 2 women aged respectively 11, 49, 43 years old. We revealed: the clinical signs, the type of malformation, type of surgery, post-operative complications, nutritional status, functional impairment.

Results

Tetraparesis with cerebellar syndrome were the common signs in the 3 patients. The 2 women presented paresis of IX and X cranial pair. MRI has revealed CHIARI type 2 for the 3 of them, syrinx and hydrocephalus for the last patient. Post operative outcome was simple for the girl. She was addressed for rehabilitation 3 days after surgery, and could walk alone after 2 weeks. The 2 women needed a stay in reanimation for 1 month and 5 months respectively. This was justified by respiratory depression and acute hydrocephalus respectively. In rehabilitation unit, they benefited of nursing, nutritional care and physiotherapy. The two first patients recuperated their autonomy. The third one still depends on others because of the long stay on reanimation and the complications of decubitus.

Conclusion

Diagnosis of Chiari malformation should be earlier than the occurrence of motor disorder to avoid postoperative complications. The role of rehabilitation consists on nutritional assistance, treatment of decubitus complications, physiotherapy to recover the most of autonomy.

Keywords

Chiari malformation;Posterior decompression;tetraparesia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1662

PROXIMAL MEDIAN NEUROPATHY THAT MIMICS CARPAL TUNNEL SYNDROME

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Introduction/Background

Proximal median neuropathy(PMN) due to nerve compression by mass lesion is a rare disorder. G. Martinez-Villen et al. reviewed 541 patients with nerve compression syndrome in the forearm and hand, and only 2 cases revealed a proximal forearm origin mass lesion.

Material and Method

A 68-year-old women of right handed presented with right fingers tingling sensation, hypoesthesia and weakness for several years. She had been taking care of her grandchildren for 5 years.

On physical examination, wrist (3+/5), thumb(3/5), index and middle finger(3+/5) flexor and thumb abductor(2/5) of right hand weakness was observed. Tinnel's sign was positive in right wrist. Right thenar muscle atrophy was prominent. There was a soft nodule on the volar side of the wrist. She denied discomfort above the wrist. The clinical diagnosis was compression median neuropathy at wrist.

Results

In electrodiagnostic study, right median nerve sensory response was absent and motor conduction revealed delayed latency (4.65ms) and reduced amplitude (0.3mV) at wrist (7cm proximal to recording site) stimulation with absent response at elbow. In needle electromyography, abnormal spontaneous activities were seen at pronator teres and flexor carpi radius muscles. Screening nerve ultrasonography at wrist revealed cross sectional area of median nerve at carpal tunnel inlet as 13mm² in right side (vs 8mm² in left side), and a 11mm²-sized nodule adjacent to median nerve at wrist.

MRI of forearm revealed hypertrophied transverse carpal ligament and lipomas at wrist and elbow. (Figure) Surgical removal of lipomas, median nerve decompression at wrist and forearm and carpal tunnel release operation was done. Her symptoms were improved after operation.

Conclusion

Clinical features of PMN can mimic distal lesions. When distal median neuropathy, commonly seen as carpal tunnel syndrome is suspected, it is important to keep in mind the possibility of proximal origin. Electrodiagnostic investigation is a valuable tool for screening and localizing the

proximal lesions.



Keywords

Proximal median neuropathy;electrodiagnostic study;lipoma

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1844

INTERDISCIPLINARY WORK FOR VESTIBULAR REHABILITATION

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Introduction/Background

A vestibular lesion has a vertiginous manifestations characterized by a sensation of body movement or objects that is not real. Objective: To implement a vestibular rehabilitation intervention plan through interdisciplinarity.

Material and Method

Quantitative study, descriptive with case study design. The case studied was about the an adult over 65 years old referred to the phonoaudiology service for diagnosis of vestibular lesion. Rutka vestibular screening was applied to identify endolymphatic pressure and signs associated with peripheral vertigo and the Romberg Test. An interdisciplinary intervention protocol was established that allowed work on the equipment and the reduction of the signs and symptoms evidenced.

Results

The user presented high endolymphatic pressure with exacerbated vertigo, blurred vision, aural fullness, difficulty in visual-manual coordination, test of Romberg positive. An intervention plan was proposed from phonoaudiology and physiotherapy to facilitate an integral rehabilitation. The intervention plan had nine (9) sessions with an hour of duration each one did it diarily. The sessions included supine, seated and bipedal activities of manual coordination training with therapheutic ball, endolymphatic exercises with sudden cephalic movements, follow visual of moving object and alternate decubitus changes. After the implementation of the treatment, was tolerance to postural changes, decreased vertigo, improved visual-manual coordination and better dynamic balance assessed through the test. Also the perception and performance of the user evidencedmodified favorable

Conclusion

The interdisciplinary work in the vestibular rehabilitation allows to integrate important areas of knowledge and beneficial experience to the user, in this case by the rigor, the integral vision of the disciplines and the contribution in cost-effectiveness by the reduction of the number of sessions required.

Keywords

Vestibular Rehabilitation; Interdisciplinary; Vertiginous Manifestations

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1958

PARKINSONISM SECONDARY TO WILSON DISEASE – CLINICAL CASE

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Introduction/Background

Wilson disease(WD) is rare autosomal recessive disorder characterized by the reduced biliary excretion of copper, resulting in the toxic accumulation in multiple organs. Early diagnosis and copper removal treatment significantly improve the prognosis. If patients adhere to lifelong maintenance therapy, the prognosis is generally good. In rare cases, liver transplantation is necessary and highly effective. WD can present with hepatic, neurologic, psychiatric, ophthalmologic, gynecologic abnormalities. Parkinsonian features can be present, which makes WD a possible aetiology of secondary parkinsonism.

Material and Method

We present a case of a 38-year-old caucasian male, followed in Gastroenterology for an hepatic cirrhosis since 18. He was completely functional, working as an informatics engineer till April2017, when he started to have some postural tremor, bradikynesia and poor balance, with several falls. He went to a Neurology appointment where it was suggested it might be WD. After clinical worsening, he was admitted in a central hospital to be studied e medicated. He started specific medication for Wilson disease, with a fast raise to a high dose of d-penicilamine. In some weeks his clinical condition got worse, which was assumed as a side effect of this drug. It was changed and started anti-parkinsonic agents.

Results

He came to our appointment in October 2017. At the time he was completely dependent, with marked bradikynesia and tremor, poor cooperative, with dysarthria, hypomimia and ataxic tetraparesis. He couldn't stand or move without wheelchair, pushed by others. He was admitted to interdisciplinary-rehabilitation-program in our centre.

Conclusion

WD is a rare cause of secondary parkinsonism. This is a case of a patient who wasn't diagnosed before, and as so, wasn't medicated properly. The literature isn't consensual about the reversibility of the symptoms. Some may disappear or improve with the normalization of copper levels, medication and rehabilitation. However others may persist.

Keywords

Wilson disease;Secondary parkinsonism;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1962

A CASE OF DRY BERI BERI WITH CENTRAL AND PERIPHERAL NEUROLOGIC DEFICITS FOLLOWING BARIATRIC SURGERY: FUNCTIONAL OUTCOMES AFTER REHABILITATION

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Introduction/Background

Neurologic syndromes secondary to Beriberi (thiamine deficiency), including Wernicke Encephalopathy and Peripheral neuropathy, have been historically related to alcoholism. However, more cases are now presenting in patients who underwent bariatric surgery and afterwards didn't follow nutrient supplementation. Dry Beriberi, characterized by a sensorimotor distal, axonal, peripheral neuropathy, is manifested as distal lower limb paresis and altered sensibility. Wernicke Encephalopathy is characterized by the triad of ocular palsies, confusion and gait ataxia. We present the functional results in a case of Peripheral neuropathy with Wernicke Encephalopathy secondary to Beriberi after Bariatric surgery, who was managed with an intensive rehabilitation program.

Material and Method

An 18-year-old woman, who 2 months prior had Bariatric surgery (losing 24kg since intervention) and who didn't follow up nutritional supplementation prescription, presented with progressive lower limb weakness, staggering gait, paresthesias and dysesthesias in L3-L4 regions. Clinical presentation and complementary tests including electromyography, led to diagnosis of Polyradiculopathy and Encephalopathy secondary to nutritional deficits. She was managed with thiamine supplementation and referred to Rehabilitation for evaluation and treatment. Initial assessment evinced horizontal nystagmus, muscle strength in lower limbs of 2-3/5 (proximal) and 1/5 (distal) in MRC scale, absence of deep tendon reflexes and inability to stand erect and ambulate. Sensibility was preserved.

Results

Patient started rehabilitation with intensive physiotherapy. After 3 months, lower limbs muscle strength level was of 3-4/5 (proximal) and 2-3/5 (distal), she walked with aid of 2 forearm crutches and had a left steppage gait pattern. At 6-month follow-up she was discharged, having achieved lower limbs muscle strength of 4/5 and autonomous gait without claudication.

Conclusion

Thiamine deficiency after bariatric surgery may manifest with central and peripheral neurological deficits. In these cases, it is important to emphasize the role of intensive rehabilitation of neurologic deficits in the recovery of previous functional status after acute management with thiamine supplementation.

Keywords

Dry beri beri;Bariatric surgery;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-1991

SAFETY OF EARLY REHABILITATION IN NEURO-INTENSIVE CARE UNITS: HOW FAR CAN WE GO? SCOPING REVIEW AND META-ANALYSIS OF ADVERSE EVENTS

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Introduction/Background

Background: Current evidence supports early mobilization (EM); rehabilitation of ICU patients, under mechanical ventilation or not, improves functional outcomes and is found to be safe. However, little is known about EM of neurocritical patients, especially because EM is still seen as a potential dangerous intervention in neurological ICU patients.

Objective: To review safety data regarding patient rehabilitation in the Neuro-ICU, and to compute incidence of adverse events such as hemodynamic changes, clinical deterioration, removal or dysfunction of respiratory tubes, intravascular catheters, other external disposals and falls.

Material and Method

Data Sources: Systematic literature review, including searches of 4 databases. Eligible studies for the statistical analysis evaluated adult patients who received an EM program in a Neuro-ICU at an early stage <7 days, and provided data to allow the computation of incidence of adverse events. A further scoping review on EM of neurocritical patients included studies assessing epidemiology, cerebral hemodynamics changes during exercises, description and efficacy of EM programs in Neuro-ICU.

Data Extraction: Number of patients, mobilization/rehabilitation sessions, type of intervention and session time, and potential safety events and adverse events with negative consequences (requiring intervention or additional therapy).

Results

Synthesis: Heterogeneity was assessed by I-square statistics, and bias assessed by the Newcastle-Ottawa Scale and Cochrane risk of bias assessment. The literature search identified 1134 titles. There were 4 eligible publications for the statistical analysis part, evaluating 195 patients, with 95 potential safety events (12%) and 3 safety events with consequence (0.4%),

occurring in 793 mobilization/rehabilitation sessions, with an average of 27.8 minutes/session. There was heterogeneity in the definition of these events. Most potential safety events were modifications of vital signs without any clinical or therapeutic consequence. 47 studies were used for scoping review.

Conclusion

Conclusions: Early rehabilitation in NICU appears to be safe with a low incidence of safety events, not having any consequences for patient management.

Keywords

Neuro-ICU;early rehabilitation;safety

No conflict of interest

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A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-2030

MOBILITY OF ADULTS WITH CEREBRAL PALSY

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Introduction/Background

Mobility in adults with cerebral palsy (CP) have a wide spectrum. It is necessary to determine whether there is any association between capacity and performance tests to categorize groups and define interventions.

Objective: To determine the characteristics of the mobility in adults with CP seen in a tertiary hospital and its correlation with different variables of capacity and performance.

Material and Method

233 patients with CP \geq 18 years with GMFCS I – IV, were assessed using the functional mobility scale (FMS). To determinate the capacity, 6-minute walk test (6MWT), Timed Up and Go (TUG) and a walking speed (WS) were assessed in a subgroup of patients

Results

The main features of the patients are shown in table 1. Most patients walk with assistance devices for long distances (500 m), but not for shorter distances (5- 50 m). The results of the capacity tests in our study are lower than in general population (Table2) and there are significant differences between of the FMS groups (Table 3 – Fig. 1). Very strong correlations were obtained between the 6MWT and the WS ($r= 0.83$; $p< 0.001$) (Fig. 2), the 6MWT and TUG ($r= -0.86$; $p< 0.001$) and strong correlation between FMS 500 and 6MWT ($r= 0.75$; $p< 0.001$) (Fig. 3).

Male ^a	117 (50,2)
Age ^b	22 (19-28)
Bilateral distribution ^a	189 (81,1)
Type ^a	
Spastic	208 (89,3)
Dyskinetic	18 (7,7)
Mixed	6 (2,6)
Hypotonic	1 (0,4)
GMFCS ^a	
I	57 (24,5)
II	92 (39,5)
III	69 (29,6)
IV	15 (6,4)

^a Number (%)

^b Median (interquartile range)

<i>FMS n= 203 patients ^a</i>	
5	5 (4-6)
50	5 (2-5)
500	4 (1-5)
<i>Walking speed (m/s) n= 205 patients ^a</i>	0,63 (0,44 – 0,85)
<i>6MWT (m) n= 98 patients ^a</i>	292 (168-372)
<i>Up and Go (sg) n= 84 patients ^a</i>	12 (9,0-17,6)

^a Median (interquartile range)

	1	2 [†]	3 ^{††}	4 ^{†††}	5-6 ^{††††}
<i>Walking speed n ^a</i>	58: 0,45 (0,26-0,55)	9: 0,26 (0,17-0,38)	9: 0,43 (0,37 -0,57)	21: 0,46 (0,39-0,61)	108: 0,82 (0,68-0,96)
<i>6MWT n ^a</i>	31: 136 (76-222)	3: 78 ^{**}	5: 245 (142-360)	12: 236 (212-274)	47: 370 (330-430)
<i>Up and Go n ^a</i>	24: 19,8 (13,5-33,3)	1: 52,4 ^{***}	5: 16 (10,5-22,7)	11: 14 (12,1-17,7)	43: 9,4 (7,5-11,34)

n: number of patients evaluated in each group

^a Median (interquartile range)

* No RIQ calculation was obtained, only 3 cases were observed

** No RIQ calculation was obtained, only 1 case was observed

† p<0,001 compared with 5-6

†† p<0,001 compared with 5

††† p<0,001 compared with 2 and 4

†††† p<0,001 compared with 2

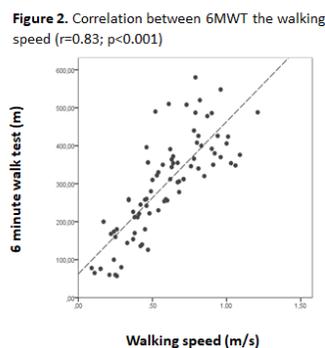
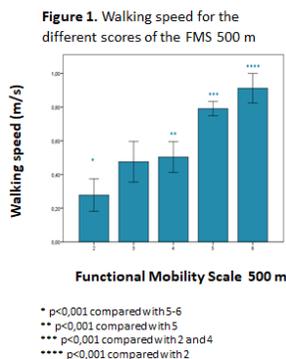
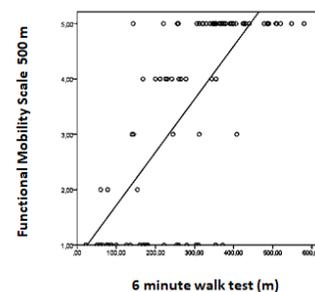


Figure 3. Correlation between FMS 500 and 6MWT (r=0.75; p<0.001)



Groups 5 and 6 were grouped in group 5, because they have independent motion.

Conclusion

The results indicate that the measures assess in a clinical setting correlate with the expected performances in the daily spaces for adults with cerebral palsy seen in reference center. The WS is easy to measure and have an excellent correlation with the 6MWT and the FMS tests.

Keywords

cerebral palsy; six minute walk test ; Timed up and go

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-2126

NSAIDS RELATED HYPONATREMIA IN BRAIN INJURY PATIENTS: A SILENT FACTOR FOR THEIR DETERIORATION

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Introduction/Background

Hyponatremia is the most common disorder of electrolytes encountered in clinical practice , occurring in 22% of hospitalized patients. Acute severe hyponatremia can cause severe morbidity and mortality. Adverse outcomes are higher in hyponatremic patients with a wide range of underlying conditions. There are different causes of hyponatremia but NSAID's used commonly in brain injury patients for managing pain can result in hyponatremia leading to complications such as lethargy, confusion, dizziness, gait disturbances, muscle cramps, seizures, coma and even death. **Too rapid correction** of hyponatremia in these patients can also lead to life threatening complications.

Material and Method

A case study was conducted on a brain injury inpatient who suffered from hyponatremia in our unit secondary from NSAID's which were started for her arthritis. Patient responded to the treatment initially very well but later on showed quick decline in her clinical status with varying signs and symptoms ranging from confusion, lethargy, speech and swallowing decline as well as seizures and gait disturbance.

Her blood tests showed gradual hyponatremia and this was co-related exactly with the time of starting NSAID's.

Results

Patient responded *slowly* but very well with stopping NSAID's and treating with fluid restriction for a time being although the clinical decline remained there for **sometime**.

Conclusion

Avoid the use of NSAID's in brain injury patients as their use can cause significant hyponatremia which could result in life threatening complications. Even the rapid correction of this hyponatremia can be too dangerous or fatal. NSAIDs related Hyponatremia in Brain Injury patients has been proven as a **silent** factor for their deterioration and thus needs careful monitoring and treatment.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-2179

HANDICAP IN ADULTS WITH ARTHROGRYPOSIS IS SEVERE, PARTLY INVISIBLE AND VARIES BY GENOTYPE

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Introduction/Background

To understand the nature of the handicap of adults with arthrogryposis multiplex congenita (AMC), a rare disease spectrum characterized by at least two joint contractures at birth in different body areas, and analyze its possible variation by genotypes.

Material and Method

Retrospective analysis of data for unselected persons with AMC referred to the French center for adults with AMC from 2010 to 2016. All underwent a pluri-professional systematic and comprehensive investigation of deficits, activity limitation, and participation restriction according to the International Classification of Functioning, Disability and Health and genetic analysis when indicated. Participants were divided by Amyoplasia and other AMC types.

Results

Mean (SD) age of the 43 participants (27 females) was 33.2 (13.4) years; 28 had Amyoplasia and 15 other types of AMC. Beyond joint stiffness, deformities and muscle weakness, the well-known core symptoms that we quantified and for which first-line treatment involved technical aids for 50% (wheelchair for 35%, electrical wheelchair 28%, manual wheelchair 7%, crutches or orthopedic shoes 14%) and human aid for 40%, requiring technical aids more frequent with Amyoplasia than other AMC types (61% vs 27%, $p=0.05$). Other less visible disorders that could contribute to severe participation restriction were particularly pain (91%) and psychological problems including anxiety, fatigue, difficulty in sexual life, altered self-esteem, and feelings of solitude. Severe respiratory disorders were infrequent and were linked to *PIEZO2* mutations (only in other AMC types), respiratory function was better with Amyoplasia than other AMC types (FVC 3.8 [3-4.3] vs 2.2 [1.4-2.7], $p<0.001$). Gait disorders were not due to respiratory impairment but to skeletal problems and were always associated with Amyoplasia when severe.

Conclusion

This study describes disability patterns of a cohort of adults with AMC by genotype. The handicap of adults with AMC is influenced by genotype, with an important invisible handicap.

Keywords

Arthrogryposis;Handicap;Genotype

No conflict of interest

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A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-2189

MARCUS-GUNN SYNDROME: CASE REPORT

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Introduction/Background

Marcus-Gunn syndrome is a syndrome that associates congenital ptosis and mandibulo-palpebral synchysis in certain mandibular movements. We report a case of Marcus-Gunn syndrome by emphasizing the clinical, aetiopathogenic and therapeutic aspects of this syndrome.

Material and Method

This is a child of 6 years and a half of which the parents consult for a left palpebral drop observed at the age of 2 year and which disappears during the mouth opening. The interrogation finds the notion of consanguinity of the first degree in parents. Examination of the appendages found a major left ptosis with a zero lift stroke associated with frontal muscle hyperaction (Figure 1). Retraction of the upper-left eyelid occurs during oral opening (Figure 2), the synchinesis is moderate.

Results

The first case of Marcus Gunn's syndrome is described by a Robert Marcus Gunn in 1883 as "Jaw-Winking Phenomenon". It represents 2 to 13% of congenital ptosis. The ptosis is corrected by the mouth opening or the mandibular diduction. The syndrome is usually unilateral. Most often on the left side, which is noted in our case. In our observation, this is the first case diagnosed in the family. The etiopathogenesis is poorly known, it results from an aberrant innervation of the levator muscle of the upper eyelid. The associated systemic abnormalities are: a bilateral hollow foot with genu varum, bilateral cryptorchidism, spina bifida and cleft lip. The treatment is twofold: surgical and rehabilitative. In our case, a section of the levator muscle of the upper eyelid was proposed.

Conclusion

Marcus Gunn syndrome is a rare condition that associates ptosis with mandibulopalpebral syncinesis. It is probably due to an erratic innervation of the levator muscle of the upper eyelid, by the branches of the trigeminal nerve. The re-educative treatment finds its place postoperatively.

Keywords

Marcus-Gunn Syndrome;Pathogeny;treatment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-2335

UNTREATED INTRACEREBRAL HEMATOMA COMPLICATED WITH A BRAIN ABSCESS: THE IMPORTANCE OF A MULTIDISCIPLINARY TEAM FOR BETTER RESULTS. CASE REPORT.

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Introduction/Background

Brain abscess is an infection of the brain parenchyma. The most common source of infection is by direct spread from a contiguous site but it can be also caused by a haematogenous spread.

Diabetes, immunodeficiency or age, are known as risk factors while; motor/sensory deficits and speech disorders, headache, confusion or nausea are the most common clinical signs

Material and Method

We report the case of a 73 year old woman, with medical history of type 2 diabetes and pyelonephritis caused by *Klebsiella Pneumoniae*, who consults for a sudden onset of aphasia and right hemiparesis. A Computed Tomography (CT) was performed, demonstrating a left front-parietal spontaneous intracerebral haemorrhage, that it was treated conservatively.

After an initial stabilization, she started physical and speech therapy.

Later on, her neurological condition worsened and she presented fever. Urinary infection, endocarditis and bacteraemia were excluded. As she suffered from complex and simple partial seizures a Head Magnetic Resonance (HMR) was made.

Results

HMR showed signs suspected for a brain abscess in the haemorrhage region. Head-CT angiogram with contrast excluded AVM/aneurysms.

A left frontal craniotomy was performed, to evacuate the abscess. *Klebsiella Pneumoniae* was isolated and IV Vancomycin was given for six weeks.

After all, she continued with physical therapy and occupational therapy.

She was discharged with minimal upper right limb weakness and complete motor aphasia

Conclusion

There are few cases of brain abscess developing in untreated intracerebral haemorrhage reported in the literature. Neuroradiological imaging, neurosurgical drainage, antibiotic therapy and rehabilitation, are, in our opinion, the best way to treat this type of condition; with multidisciplinary work to achieve patient's best functional state.

Keywords

Brain abscess;case report;multidisciplinary work

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-2387

ADULT PRESENTATION OF DYKE-DAVIDOFF-MASSON SYNDROME IN AN ADULT COMPLICATED BY COMMUNICATING HYDROCEPHALUS: A CASE REPORT.

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Introduction/Background

Study design:A case report.

Background and aims: To present an unusual cause of functional decline in an adult.

Material and Method

Methods: A 61 year old female with history of congenital right-sided weakness and epilepsy was admitted for headache. Prior to hospitalization, she was independent in her activities of daily living (ADLs) and ambulation and was working as a cleaner. Neurological examination showed no new weakness but worsening of her cognition which included slow processing speed and inconsistent following of one step commands. After a five month hospitalization inclusive of intensive inpatient rehabilitation, she was discharged and required maximal assistance in her

Results

CT brain showed left-sided cerebral hemiatrophy, ipsilateral calvarial hypertrophy and dilatation of the left frontal and sphenoid sinuses and a possible communicating hydrocephalus, raising the possibility of a complicated Dyke-Davidoff-Masson syndrome. Cerebrospinal fluid analysis for infection was unyielding. Participation in rehabilitation with mild functional improvement was noted following a diagnostic lumbar puncture. There are plans for lumbar puncture tap test in the outpatient setting.



Conclusion

Dyke-Davidoff-Masson syndrome is an extremely rare condition encountered in the rehabilitation setting and is a unique cause of functional decline in an adult

Keywords

DYKE- DAVIDOFF-MASSON SYNDROME;COMMUNICATING
HYDROCEPHALUS;FUNCTIONAL DECLINE

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-2420

THREE CASE STUDIES OF LATE DIAGNOSES OF POLIO IN AUSTRALIAN ADULTS

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Introduction/Background

Polio Services Victoria (PSV) is a publicly funded organization; anyone with a history of polio residing in Australia may be seen by the service. The majority of patients referred to the service were diagnosed with polio shortly after they were infected with the virus, for most this was in early childhood and ranges from two to eight decades ago.

In the past 18 months three patients were referred to PSV with untypically late diagnoses of polio, two of which were sisters. All were born in Australia between 1930 and 1950 and are considered to have acquired their infection in Australia during their early childhood.

The three were able to live relatively uneventful lives however their verbal histories indicate suspicion of polio during their childhood medical examinations in school, but ultimately no formal diagnosis was made at that time. In later life, symptoms characteristic of the late effects of polio emerged. In combination with imaging and nerve conduction studies these symptoms were diagnosed as being the result of a likely childhood infection of polio.

Their current and future management plans are typical of that seen regularly within the service with the patients reporting their main problems as being:

- Pain
- Fatigue
- Increasing muscle atrophy and associated weakness

These three cases highlight that although Australia, like most of the world, holds polio free status there may still be further undiagnosed cases. Polio should be considered as a differential diagnosis for patients presenting with any of the cardinal signs and symptoms of late effects of polio who have resided in a country during a time prior to polio eradication. Special consideration should be given where a sibling or close relative was diagnosed with polio.

Material and Method

See background

Results

See background

Conclusion

See background

Keywords

polio;late diagnosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A3.11 Neurological and Mental Health Conditions - Miscellaneous

ISPR8-2484

EMERY DREIFUSS MUSCULAR DYSTROPHY 1: CASE REPORT AND FUNCTIONAL PHENOTYPE OF A NOVEL MUTATION IN BOGOTÁ, COLOMBIA

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Introduction/Background

Emery Dreifuss muscular dystrophy (EDMD) is a rare disease, characterized by contractures, rigid spine, slowly progressive humeroperoneal atrophy, cardiomyopathy and fatal arrhythmias without treatment (Bonne, Leturcq, & Yaou, 2018; Koch & Holaska, 2014; Madej-pilarczyk & Kocharński, 2016). Until now have been seven genetic causes identified (Bonne et al., 2018; Madej-pilarczyk & Kocharński, 2016). EDMD functional phenotype literature is scarce, there is no detailed functional evaluations with gait analysis. We present a case of a 15 years old boy with EDMD 1, with a novel no-sense mutation in EDM gene c.123C>A (p.tyr41*).

Material and Method

We apply several test for describe the functional phenotype, and present the results of MFM, Box and block test, 6mWT, Timed Up&Go, 10mtWT, coin rotation task, monopodal stance test, five times sit to stand test, 4 steps stair climb test and gait computerized analysis

Results

Functional tests			
	2015	2016	2018
MFM standing	84,5	92,3	87,2
MFM axial motor	91,7	83,3	72,2
MFM distal motor	95,2	90,5	90,5
MFM total	89,6	88,5	82,3
Vignos	2	1	1
Brooke	2	2	2
6MWT ^a /gait velocity ^b	476/1,33	522/1,45	500/1,38

Table 2. Three years follow for functional test and scales without a significative change over evaluations. ^a Meters, ^b meters/second

Conclusion

Objective test follow for functional and structural deficiencies in neuromuscular diseases is overriding for determinate the adequate interventions, prognostic and stablish the functional impairment spectrum. In our patient we observe both elbow and spine contractures progression and change on gait kinematics and kinetics, but not reduction on his physical capacity.

Keywords

Emery Dreifuss Muscular Dystrophy;Gait Analysis;Funtional phenotype

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-0013

RATIONALE AND DEVELOPMENT OF CARDIAC REHABILITATION AT DIFFERENT STAGES OF CARDIOVASCULAR CONTINUUM

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Introduction/Background

To develop a new approach to cardiac rehabilitation for patients with different cardiovascular diseases based on novel theoretical principles in pathophysiology of decreasing and recovery of physical capacity in cardiovascular continuum.

Material and Method

We studied pathophysiological mechanisms of tolerance to physical loading and aerobic physical capacity reducing at 529 patients in different stages cardiovascular continuum: 74 pts with metabolic syndrome (MS), 113 pts with arterial hypertension, 229 pts with myocardial infarction (MI) and 32 pts with terminal stage of heart failure (HF) needed for heart transplantation. We used 24h Holter monitoring, blood pressure daily monitoring, echocardiography, spiro bicycle ergometry test (spiroBET), treadmill test, 6-minute walk test, and blood biochemistry were performed according to standard ways.

Results

Developed programs of cardiac rehabilitation were different at pts with MS, hypertension, MI and HF and depended on functional reserve revealed by spiroBET, treadmill test and 6-minute walk test. Under the influence of new approach to physical rehabilitation, a better tolerance to physical exercise and aerobic physical capacity has been observed. Improving in functional status of blood circulatory system reached due to development of mechanisms of short-term and long-term adaptation, switch of cardiovascular system to a more saving functioning mode, and less severe respiratory and metabolic disorders. We also established that developed approach to physical rehabilitation led to improving not only medical but also social and economic efficiency.

Conclusion

Cardiovascular rehabilitation should be continual and unbroken process starting from patient with risk factors (MS and hypertension) and not been interrupted at ending stages of cardiovascular continuum.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-2549

IS SCREENING FOR OCCULT LOWER EXTREMITY DEEP VEIN THROMBOSIS (DVT) UPON ADMISSION TO ACUTE INPATIENT REHABILITATION HOSPITALS CLINICALLY WARRANTED?

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Introduction/Background

Despite a high risk of venous thromboembolism (VTE) among patients admitted to acute inpatient rehabilitation hospitals, it is not currently standard of care in the United States to screen for them upon admission. In this study, we aimed to describe the prevalence of occult DVT and associated clinically relevant factors in an academic inpatient rehabilitation center.

Material and Method

This was a prospective observational cross-sectional study examining incidence of lower extremity DVT identified via duplex ultrasound within 48 hours of admission for patients without any prior active diagnosis of DVT.

Results

Among 127 patients admitted between October and December 2017, seven (5.5%) were excluded due to prior active DVT and twenty-one declined to participate (16.5%). Lower extremity duplex ultrasound was performed on 99 patients, however one patient was excluded due an inconclusive study without ability for follow up. Of the 98 remaining patients, 47 (48.0%) were male, 52 (53.1%) were female, and mean age was 61.4 years old (SD+14.2) (Table 1). Most common admission diagnoses included ischemic stroke (23%), debility/medical complexity (22%), and hemorrhagic stroke (11%). One of the 98 screened patients (1.02%) was positive for unilateral lower extremity DVT (Table 2). The total prevalence of DVT diagnosis among all admitted patients was 6.2%.

Table 1. Patient demographics and characteristics.

Gender (%)	
Male	47 (48.0)
Female	51 (52.0)
Mean age in years (SD)	
	61.4 (+14.2)
Body Mass Index (kg/m²) (%)	
Underweight (BMI <18.5)	3 (3.1)
Healthy (BMI 18.5 -24.9)	24 (24.4)
Overweight (BMI 25-29.9)	36 (36.7)
Obese (BMI >30)	35 (36.7)

Table 2. Clinical features

Total number of screened patients	98
Positive screening for DVT (%)	1 (1.02)
Negative screening for DVT (%)	97 (98.98)
Mean Length of Acute Hospital Stay (days)	16.4 (14.6)
Prior Mechanical Ventilation	30 (30.6)
Trauma (%)	9 (9.2)
Long bone fracture	6 (6.1)
Cancer	15 (15.3)
Type of prophylaxis	
Full anticoagulation	12 (12.2)
Prophylaxis (enoxaparin/Heparin)	72 (73.5)
None	1 (1.0)
Mechanical prophylaxis	12 (12.2)
ASA 81 bid	1 (1.0)
Admission Diagnosis (%)	
CVA, hemorrhagic	11 (11.2)
CVA, ischemic	22 (22.4)
Amputation	7 (7.1)
Spinal cord injury, non-traumatic	2 (2.0)
Spinal cord injury, traumatic	0 (0)
Spine surgery	9 (9.2)
Other neurological disorder	11 (11.2)
Multiple trauma	4 (4.1)
Brain surgery	3 (3.1)
Debility/medically complex	20 (20.4)
Transplant	7 (7.1)
Orthopedic injury	2 (2.0)

Conclusion

Our study suggests lower extremity DVT screening for all patients admitted to acute inpatient rehabilitation is not clinically warranted, however a much larger study with a more complete enrollment of the studied population is needed to confirm such recommendations.

Keywords

DVT screening;Acute inpatient rehabilitation;risk of deep vein thrombosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-0082

EFFECT OF OUTPATIENT CARDIAC REHABILITATION PROGRAM ON OUTCOME OF ELDERLY PATIENTS, ESPECIALLY IN FRAILTY STATUS.

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Introduction/Background

Cardiac rehabilitation improves exercise tolerance, QOL, reduces the risk of cardiovascular event and improves the prognosis. Frailty is the risk of hospital admission, and worsen prognosis.

Material and Method

Retrospective observational cohort study. Patients hospitalized with cardiovascular disease from January 2015 to March 2016. Study patients were matched for two groups who kept rehabilitation after discharge and who did not, with follow up until December 2016. Propensity analyses were used. The endpoint was death from any cause, cardiac death, hospitalization for heart failure, ACS, ER visit, TVR, and emergency admission for any cause. Analysis about the factor reduced the adverse event was done.

Results

In 2258 patients admitted, 104 got into the outpatient cardiac rehabilitation. Out of 554 study patients, 47 underwent rehabilitation. The frequency of emergency hospitalization tends to be few in rehabilitation group ($p=0.067$). Especially in elderly over 65, rehabilitation reduced the risk of emergency admission (2.8% vs 16.3%; $p=0.031$). After propensity score matching, emergency hospitalization was few in rehabilitation group ($p=0.088$). In rehabilitation group, CHS index significantly improved ($p<0.001$). Significant reduction of the emergency admission was shown ($p<0.001$). Frailty status was assessed in 31, 8 fell under the category of frailty. Through rehabilitation, 6 pulled out of category. Out of 23 patients whose score more than zero, 13 improved their score. Between the two groups in that emergency admission reduced, and in that did not, following data result are significantly different, LVEF, creatinine, uric acid, total protein, BNP level at start, and the amount of hemoglobin change during hospitalization. Age, gender, BMI, and CHS index at start, did not show a significant difference. In elderly, improvement of frailty certainly contribute to avoiding emergency hospitalization

Conclusion

Outpatient Cardiac rehabilitation reduces the risk of emergency hospital admission, especially in elderly people. Improvement of Frailty is one of the most important factors.

Keywords

Cardiac rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-0106

IMPLEMENTATION OF JACOBSON'S PROGRESSIVE RELAXATION IN CORONARY BYPASS SURGERY PATIENTS BEFORE CHEST TUBE REMOVAL

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Introduction/Background

Introduction: The purpose of this study was to determine whether the use of a Jacobson progressive muscle relaxation, when used without opioid analgesia, decreases pain during chest tube removal (CTR) after coronary bypass surgery.

Material and Method

Methodology: A two-group quasi-experimental posttest design was used. A convenience sample of 100 subjects was divided into an experimental group (n = 50), who received relaxation training 15 minutes before chest tube removal and a control group (n = 50), who did not receive relaxation. All patients received 500mg of paracetamol 30 minutes before relaxation. Pain was assessed with verbal pain score (0-5). Analysis of variance was used to analyze the data.

Results

Results: Significant decreases in pain were demonstrated as a result of implemented relaxation t-test: $2,63 \pm 0,725$ vs $3,62 \pm 0,725$, $p < 0,001$. All experimental subjects stated that the relaxation technique was simple to perform.

Conclusion

Conclusion: This study supports the use of Jacobson progressive muscle relaxation for pain management during CTR among patients who have undergone coronary bypass surgery.

Keywords

Jacobson's progressive relaxation ;coronary bypass surgery;chest tube removal

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-0107

ABSTRACT EDITED - THE EFFECT OF RESPIRATORY PHYSIOTHERAPY IN EARLY POSTOPERATIVE PERIOD AFTER CARDIAC SURGERY ON ARTERIAL BLOOD PARTIAL OXYGEN AND CARBON-DIOXID SATURATION

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The effect of respiratory physiotherapy in early postoperative period after cardiac surgery on arterial blood partial oxygen and carbon-dioxid saturation

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BACKGROUND:

Several investigations reported importance of respiratory physical therapy in clinical improvement of patients after cardiac surgery. The aim of our study was to assess the effects of respiratory physical therapy program on arterial blood partial oxygen and carbon-dioxid pressure concentrations in early post-operative period.

METHODS:

Our study included 69 patients (47 men and 22 women, mean age 64.1 +/-8 years) operated in Cardiovascular Institute Dedinje between January and July 2011. Thirty-four patients underwent CABG (Coronary artery bypass graft) procedure, 17 patients had valvular surgery and 18 patients had combined surgery. All patients had low arterial blood PO₂ and PCO₂ values on the first post-operative day. Intensive program of respiratory rehabilitation (combination of kinesiotherapy techniques, drainage methods and breathing exercises) was started in all patients on the first post-operative day. Partial pressure concentrations of oxygen and carbon-dioxid were determined on first and fifth postoperative day by analyzer.

RESULTS:

Partial pressure of oxygen in arterial blood was 86.24 +/-15% (mean +/- SD) on day 1 and 121 +/-28% on day 4 ($p<0.0001$). Partial pressure of carbon-dioxid in arterial blood was 40.41 +/-6.30% on day 1 and 39.47 +/-5.67% on day 4 ($p=0.1125$). Oxygen saturation in arterial blood was 95% +/-2% before physiotherapy program and 98%+/-1% on day 4 ($p<0.0001$) .

CONCLUSION:

Patients with intensive respiratory rehabilitation after cardiac surgrey exhibit a marked decrease in arterial blood partial pressure of oxygen and arterial blood oxygen saturation but not carbon dioxid partial pressure during early postoperative period . The clinical consequences and underlying mechanism require further investigation.

Keywords

respiratory physiotherapy;cardiac surgery;early postoperative period

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-0311

CARDIAC REHABILITATION IN PATIENTS WITH ACUTE HEART FAILURE CAUSED BY DILATED CARDIOMYOPATHY -CASE SERIES-

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Introduction/Background

Cardiac rehabilitation (CR) can improve the quality of life, exercise capacity and the activities of daily living in patients with chronic dilated cardiomyopathy. However, there are few studies on the effect of CR in acute heart failure (AHF) caused by dilated cardiomyopathy (DCMP). Therefore, we aimed to investigate the changes of cardiac function and exercise capacity after CR in patients with AHF caused by DCMP.

Material and Method

We performed a retrospective chart review of 4 patients with AHF due to DCMP. They had undergone at least 4 times of follow-up exercise tolerance test (ETT). In each case, we measured body mass index (BMI), maximal MET (MET_{max}) and maximal VO₂ (VO_{2max}) and checked left ventricular ejection fraction (LVEF) before and after CR. All patients were provided with education (during the admission and at every visit for ETTs), exercise prescription, and risk factor management and modification as a scheduled CR program.

Results

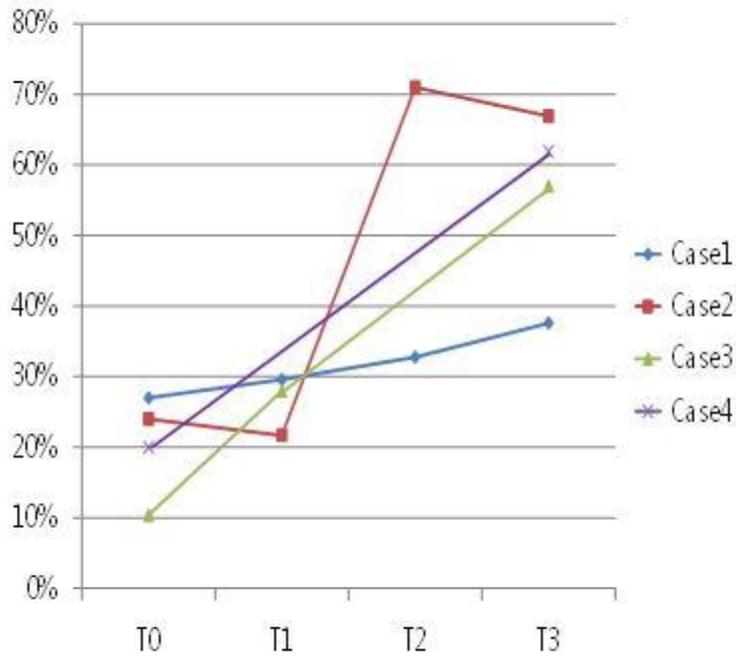
- 1) Among 4 patients, 2 were male and 2 were female. Mean age was 50.2 years (43-69 years). They were consulted for CR at 4.75 days (1 day-7 days) after hospitalization. The first visit after discharge was at 15.6 days (0 days-29 days) (Table 1).
- 2) LVEF in serial follow-up echocardiography was improved in all the patients (Fig. 1).
- 3) VO_{2max} was increased in 3 patients and decreased in 1 patient (Fig. 2). MET_{max} was increased in 2 patients and decreased in 2 patients.

	Case 1	Case 2	Case 3	Case 4
Age (years)	69	62	40	43
Gender	female	female	male	male
Chief complaints	dyspnea	dyspnea	dyspnea	dyspnea
Time of consultation	5 days	6 days	7 days	1 days
First visit after discharge	10 days	29 days	15 days	0 days
BMI (kg/m²)				
BMI0	18.13	23.71	32.37	33.3
BMI1	18.27	24.62	33.48	33.58
BMI2	18.67	25.63	33.78	33.58
BMI3	17.96	27.7	33.31	
Diseases				
Hypertension		√		√
DM				√
Dyslipidemia				√
Atrial fibrillation			√	
Medication				
ACEI	√		√	
BB	√	√	√	√
Statin	√	√		
Exercise				
Frequency (times a week)	Not reported	5~6	7	3
Duration	Not reported	15 min	180 min	60-120 min
Type	Not reported	Aerobic exercise	Aerobic & resistance exercise	Aerobic exercise

T0: at first ETT, T1: After six weeks from T0, T2: After 3 months from T0, T3: After 6 months from T0

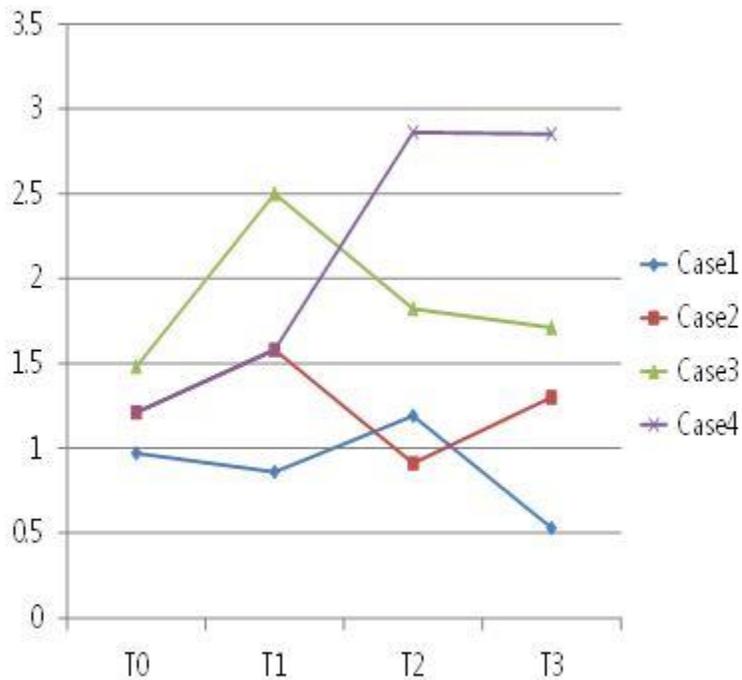
LVEF: Left ventricular ejection fraction (%), BMI : Body mass index, DM: Diabetes mellitus, ACEI: ACE inhibitor, BB: Beta blocker

LVEF



T0: at first ETT, T1: After six weeks from T0, T2: After 3 months from T0, T3: After 6 months from T0
LVEF: Left ventricular ejection fraction (%)

VO₂max



T0: at first ETT, T1: After six weeks from T0, T2: After 3 months from T0, T3: After 6 months from T0

VO_{2max}: Maximal VO₂

Conclusion

LVEF was improved in all the patients managed with medication and CR, while exercise capacity such as MET_{max} and VO_{2max}, showed various changes. Further studies about other factors affecting exercise capacity will be needed in patients with AHF caused by DCMP.

Keywords

Cardiac rehabilitation; Dilated cardiomyopathy; Acute heart failure

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-0318

CARDIAC REHABILITATION IN VENTRICULAR RUPTURE AS A CONSEQUENCE OF ACUTE MYOCARDIAL INFARCTION : CASE REPORT.

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Introduction/Background

The ventricular rupture after acute myocardial infarction (AMI) is a mechanic acute complication which has an estimate incidence of about 1%. This finding has been found relatively often in patients whom died due to this condition.

Once the complications are overcome in those survivors to ventricular rupture, the beginning of a cardiac rehabilitation program is recommended as an effective tool to reduce both mortality and morbidity associated to cardiovascular complications.

Material and Method

This case report describes the gained experience on the attention of a patient with ventricular rupture background after an AMI event by a cardiac rehabilitation service of the Central Military Hospital in Bogotá, Colombia. After the patient's departure from the hospital, he was addressed to begin the cardiac rehabilitation program – phase II.

The entry exercise test was performed in eight weeks following the modified Bruce protocol scoring 4.2 METS without either cardiovascular symptoms or electrocardiographic abnormalities. Based on the test results, physical exercise was prescribed and then the patient started 36 supervised exercise sessions. At the end of this phase, the control exercise test was performed reaching 7 METS.

Results

Until the monitoring date the patient was in the phase III of the cardiac rehabilitation program. The patient has not shown neither minor or major complications related to his initial entry condition.

Conclusion

Due to the low survival probability associated to a ventricular rupture event after an AMI, there are not specific available guidelines in order to define the entry time, type of physical training and activity progression in this kind of patients. The present report aims to briefly describe the gained experience on treating this cardiovascular complication by following the established

guidelines in our cardiac rehabilitation program and thus contributing on further understanding of it.

Keywords

mechanic complication;physical training

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-0568

IMPACT OF REHABILITATION IN SECONDARY PREVENTION OF CORONARY ARTERY DISEASE IN PATIENTS AFTER MYOCARDIAL INFARCTION

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Introduction/Background

Patients with previous myocardial infarction (MI) are on high risk of the new cardiac events. The risk of the new cardiac events is higher if the risk factors of the coronary artery disease are present. The aim of this study was to evaluate effect of rehabilitation on the risk factors of the coronary artery disease in patients after MI.

Material and Method

We have investigated 255 patients after MI average age 56.6 years. Patients were randomly divided into the physical training group (TG: 227 patients) and non-training group (NTG: 28 patients). Patients were of similar age and baseline stress test duration. In all subjects clinical examination, standard ECG and exercise test, were performed and after that TG patients were included in rehabilitation treatment for three weeks. TG of patients were instructed to follow a training program using the bicycle ergometer (10 min, 2 times a day). The patients continued to take the same medicaments in same doses. After 21 days patients had a second exercise stress test.

Results

After three weeks, in TG, we are found significant reduction of systolic blood pressure from 151.7 ± 18.3 to 128.7 ± 14.2 mmHg, $p < 0.001$, of diastolic blood pressure from 92.5 ± 8.3 to 78.6 ± 8.2 mmHg, $p < 0.001$, of heart rate from 78.5 ± 7.6 to 69.2 ± 4.6 beats/min, $p < 0.001$ and of serum cholesterol from 6.8 ± 1.2 to 6.1 ± 1.1 mmol/L, $p < 0.001$. On the second exercise stress test the patients achieved significantly longer time 15.2 ± 7.1 vs 9.8 ± 5.3 min, $p < 0.001$. In contrast, NTG showed no significant changes.

Conclusion

The study showed that rehabilitation has favourable effects on blood pressure, serum cholesterol and physical working capacity in patients after MI. Rehabilitation could be used in secondary prevention of coronary artery disease in patients after MI.

Keywords

rehabilitation;myocardial infarction ;prevention

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-0738

RELATIONSHIP BETWEEN LOWER LIMB SKELETAL MUSCLE ECHO INTENSITY AND OXYGEN UPTAKE IN CARDIAC REHABILITATION PATIENTS

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Introduction/Background

High echo intensity (EI) of rectus femoris muscle (RFM) reflecting increase in intramuscular fibrous and adipose tissue can be applied for qualitative assessment of leg muscle. We investigated the association between EI of RFM and oxygen uptake in patients undergoing cardiac rehabilitation (CR) and the effect of CR in improving EI.

Material and Method

Study design was prospective observational study. The study subjects were 26 patients (14 men, mean age 70.2 ± 11.8 years) who started outpatient CR between April 2016 and January 2017. Before CR, peak oxygen uptake (peak VO_2), and VO_2 at anaerobic threshold (AT), EI of RFM by echo, muscle thickness (MT), knee extension strength, whole-body muscle mass (MM) were measured as baseline data. All the measurements were repeated at 3 and 6 months in 20 patients. Correlation between EI and peak VO_2 at baseline and after 3 and 6 months in the patients who continued CR for 6 months.

Results

The patients were classified as high EI group and low EI group according to the baseline median value (58.2). Patients of the high EI group (67.2 ± 7.71) had significantly lower peak VO_2 ($p = 0.03$), MT ($p = 0.01$), and MM ($p = 0.002$) compared with those of the low EI group (47.8 ± 6.51). Knee extension strength in the high EI group tended to be lower ($p = 0.08$). EI was significantly correlated with peak VO_2 for members of the high EI group ($r = -0.36$, $p = 0.04$), but not in the low EI group ($r = -0.11$, $p = 0.54$). By 6 months CR, EI has significantly decreased and Peak VO_2 tended to increase in high EI group.

Conclusion

Measurement of RFM EI is feasible and valuable assessment of leg skeletal muscle in CR patients, especially frail patients showing high EI in leg muscle.

Keywords

skeletal muscle echo intensity;cardiac rehabilitation;oxygen uptake

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-0754

SAFETY AND EFFECTIVENESS OF BELT ELECTRODE SKELETAL MUSCLE ELECTRICAL STIMULATION AFTER CARDIOVASCULAR SURGERY: A SINGLE BLINDED, RANDOMIZED, SHAM-CONTROLLED, PILOT TRIAL

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Introduction/Background

Neuromuscular electrical stimulation has attracted attention as a means for preventing muscle weakness following cardiovascular surgery. Belt electrode skeletal muscle electrical stimulation (B-SES) (Homer Ion, Tokyo, Japan) can be used to stimulate a wide range of electrode areas, thereby providing painless and higher intensity stimulation than that provided by standard neuromuscular electrical stimulation. In this study, we investigate the safety and effectiveness of B-SES after cardiovascular surgery.

Material and Method

Twenty-one patients (age 75.7 ± 6.4 years; 32% women) post-cardiovascular surgery were randomized into either the intervention group (NMES; N=11) or the sham stimulation group (Sham; N=10). B-SES was carried out in combination with usual physical therapy (e.g., early mobilization, respiratory therapy), from the day after surgery until 14 days after surgery. In order to verify safety, we measured noninvasively the subject's blood pressure, heart rate, and level of arrhythmia during B-SES. The main objective was to verify muscle weakness, which was measured based on isometric knee extension force (IKEF), before and 14 days after surgery. Between-group and within-group comparisons for IKEF were performed using the t test and Tukey-Kramer test, respectively. A p value < 0.05 was considered statistically significant. This study was approved by a Research Ethics Committee of Kawasaki Medical School and Hospital.

Results

In the NMES group, there were no drop-outs due to discomfort or pain during B-SES. There were no excessive changes in blood pressure and heart rate, and no incidences of pacemaker malfunction or postoperative cardiac arrhythmias. Fourteen days after surgery, the IKEF of the Sham group was significantly lower than that of the NMES group ($p < 0.05$).

Conclusion

Our findings demonstrate the safety and effectiveness of B-SES in patients following cardiovascular surgery. Future studies are needed to determine long-term benefits of B-SES on physical performance (e.g., balance capacity, exercise tolerability).

Keywords

cardiovascular surgery;neuromuscular electrical stimulation;randomized controlled trial

Conflict of interest

Disclosure statement:

There is no conflict of interest disclosed in this research.

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A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1000

A LOOK FROM THE INSIDE OF THE CARDIOLOGY REHABILITATION

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Introduction/Background

Cardiac rehabilitation (CR) is the great unknown of cardiology. Spain must go still way to reach health care figures from other countries. We want to show the results of the rehabilitation program conducted to conclude that its application is very beneficial for the heart patient. I am a nurse. I suffered infarction water myocardium (IAM) in June - 2014. In September-October 2014 I went to rehabilitation. I started writing a personal diary which collects lived until today,

Material and Method

Retrospective descriptive study of cardiac rehabilitation does work from the inside, personal diary, personal experience and interviews with rest-based of colleagues who intervened, both patients and health care.

Results

Shown chronologically 3 phases R.C. The 1st phase from the day of the Ami, with admission to ICU (is dominated by fear and loneliness without understanding what happened).The cardiologist and nurse programmer (aid program and selection of patients) is described. The 2nd phase describes Physiatrist, physiotherapist and patients. As they have reached there, why, they expect from the program. The days of gym, daily progress, talks preventive and educational; how are they assimilated. Psychology sessions; how they help us. Here the figures they don't speak, speak patients (often forgotten). In the video we see reviews, their fears and their joys. In the phase 3 we show the completion of the rehabilitation program and the adaptation to a new life.

Conclusion

The R.C shown from a human and reflective point of view without forgetting the rigor of scientific, accompanied by the total success program with reintegration in their jobs of all patients treated. (I RETURN TO BE ALIVE!) .. .When you thought almost dead.

Keywords

programa rehabilitacion cardiologica

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1057

RANDOMIZED CONTROLLED TRIAL OF A HOME-BASED EXERCISE PROGRAM FOR CHILDREN WITH CONGENITAL HEART DISEASE FOLLOWING INTERVENTIONAL CARDIAC CATHETERIZATION: A PRELIMINARY STUDY

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Introduction/Background

It has been demonstrated that the majority of children with congenital heart disease (CHD) are at an increased risk of motor development problems. Studies identifying the efficacy of exercise therapy are rare in this field. The aims of this study are to identify the efficacy of a home-based exercise program to improve the motor function of children with CHD following interventional cardiac catheterization.

Material and Method

Evaluator-blinded randomized controlled trial: 87 children with CHD following interventional cardiac catheterization were recruited. Subjects were randomly allocated to either an intervention group (45 patients) or a control group (42 patients). The intervention group carried out home-based exercises, and the control group received education only. Motor quotient was assessed by the "Peabody Developmental Motor Scales-2nd Edition" as the primary outcomes.

Results

The mean age was 31.2±17.3 months in the control group (27 girls/15 boys) and 27.0±16.9 months in the intervention group (30 girls/15 boys). There was no significant difference in Gross Motor Quotient (GMQ), Fine Motor Quotient (FMQ) and Total Motor Quotient (TMQ) before the cardiac catheterization between two groups. The GMQ, FMQ and TMQ at 6 months after the cardiac catheterization in the control group was significantly lower than those in the intervention group.

	Intervention group (n=45)	Control group (n=42)	P value
GMQ before treatment	90.3±6.2	91.8±6.6	0.292
1 month later	91.8±6.8	91.7±6.8	0.939
3 months later	93.7±6.2	92.9±6.4	0.563
6 months later	96.2±6.0	92.1±6.7	0.0037

FMQ before treatment	95.8±6.3	97.9±8.5	0.200
1 month later	98.7±6.1	98.2±7.7	0.740
3 months later	100.4±5.1	98.5±7.6	0.189
6 months later	103.8±6.3	99.5±7.3	0.0038
TMQ before treatment	91.8±5.8	93.9±7.0	0.119
1 month later	94.0±6.6	93.7±6.6	0.853
3 months later	95.5±6.8	94.7±6.5	0.571
6 months later	99.0±5.8	94.7±6.4	0.0015

Conclusion

A home-based exercise program have the beneficial effect for children with CHD following interventional cardiac catheterization by promoting motor development.

Keywords

Randomized Controlled Trial;Home-based Exercise;Congenital Heart Disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1081

EXERCISE TRAINING IN ADULTS WITH CONGENITAL HEART DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS OF CONTROLLED TRIALS AND OBSERVATIONAL STUDIES

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Introduction/Background

As medical care and treatment have advanced, the longevity of patients with congenital heart disease(CHD) will continue to improve. Evidence from many scientific studies shows that regular exercise has a favorable effect on cardiovascular disease, but it is still not clear whether adults with congenital heart disease(ACHD) stand to benefit from exercise training. The aim of the study was to assess the effects of exercise training on ACHD, and outcomes, including cardiorespiratory fitness, neurohumoral activation, the rating of perceived exertion, and safety status were investigated.

Material and Method

Seven databases, including PubMed, EMBASE, the Cochrane Library, Web of Science, Cumulative Index to Nursing and Allied Health (CINAHL), SinoMed, and Wanfang Database were systematically searched. Differences were expressed using mean difference (MD) with 95% confidence interval (CI). The statistical analysis was performed using Review Manager (RevMan 5.3).

Results

Eight trials (including 5 controlled trials and 3 observational studies) with 385 ACHD were included, and the controlled ones provided data for the meta-analysis. Statistical significance was only reported in parameters according to cardiorespiratory fitness, such as peak VO_2 (MD 2.03, 95% CI, 0.51 to 3.55; $P = 0.009$), maximal workload (MD 11.46, 95% CI, 7.06 to 15.87; $P < 0.00001$), and maximal exercise duration (MD 2.04, 95% CI, 1.00 to 3.07; $P = 0.0001$), but no significant enhancement was reported regarding neurohumoral activation (NT-proBNP levels, MD 48.69, 95% CI, -285.95 to 383.34; $P = 0.78$) or the rating of perceived exertion (Borg RPE scale, MD -0.01, 95% CI, -0.75 to 0.72; $P = 0.97$). Furthermore, no major adverse events were reported in any of the included trials. The overall quality of evidence ranged from moderate to very low.

Conclusion

Therefore evidence is underpowered to suggest that exercise training is effective in the management of ACHD. Future studies with longer follow-up duration are needed.

Keywords

meta-analysis;Exercise;congenital heart disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1143

THE RELATIONSHIP BETWEEN CEREBRAL OXYGENATION DETECTED BY NEAR-INFRARED SPECTROSCOPY AND EXERCISE INTENSITY IN PATIENTS WITH CARDIAC DISEASES

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Introduction/Background

Studies using Near-Infrared spectroscopy(NIRS) have clearly shown an inverted U-shape relationship between cerebral oxygenation and exercise intensity in healthy adults. However, the pattern of cerebral oxygenation in patients during exercise has not been adequately established. The aim of this study was to investigate the correlation between cerebral oxygenation and exercise intensity in patients with cardiac diseases in order to find the optimal exercise intensity while prescribing cardiac rehabilitation.

Material and Method

This observational study included 18 patients with coronary artery disease(CAD) (N=9), mitral valve regurgitation(MVR) (N=4), congestive heart failure(CHF) (N=4) and atrial septal defect(ASD) (N=1). They performed incremental cardiopulmonary exercise test (CPET) using a cycle ergometer by the ramp 10W/min. The concentration of oxyhemoglobin (HbO₂), total hemoglobin (HbT) and tissue hemoglobin saturation (STO₂) were measured by two bands of non-invasive NIRS positioned on bilateral frontal area during the CPET. The exercise intensity related to highest STO₂ of the two hemispheres were determined.

Results

The mean \pm standard deviation(SD) age of the study cohort was 58.22 ± 10.12 years and was comprised predominantly of men (77.8%). 5 patients reached highest STO₂ during warm-up, 3 after anaerobic threshold, 4 after respiratory compensation point, 6 during recovery stage. The 5 patients with downsloping STO₂ were patients with MR (N=3), with ASD(N=1), and with CHF (N=1). Excluding the 5 patients of downsloping pattern, the mean highest STO₂ of right hemisphere was 49.6622 ± 1.8046 (mM) and left hemisphere was 50.5095 ± 1.7310 (mM). The mean percentage to peak oxygen consumption during highest STO₂ of right hemisphere was 76.27 ± 14.02 (%), left hemisphere was 72.14 ± 17.94 (%).

Conclusion

The relationship between cerebral oxygenation and exercise intensity in patients with cardiac diseases such as CAD and CHF revealed a trend as inverted U-shape, with the peak STO_2 located at moderate to high exercise intensity.

Keywords

cerebral oxygenation;exercise intensity;cardiac disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1186

FACTORS CONTRIBUTING TO INCREASED MUSCLE ECHO INTENSITY IN CARDIAC REHABILITATION PATIENTS

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Introduction/Background

Muscle echo intensity (EI) is a useful and feasible method for assessing skeletal muscle, specifically fibrous and adipose tissue in skeletal muscle. However, factors affecting EI are unclear. In this study, we examined how EI related to cardiac and renal function in cardiac rehabilitation (CR) patients in different age groups.

Material and Method

Study design was a cross sectional observational study. Study patients were 62 patients prescribed a CR intervention in our hospital (42 men, age 68 ± 11 years old). We measured EI of the rectus femoris, left ventricular ejection fraction (EF) by echocardiography, plasma levels of brain natriuretic peptide (BNP), estimated glomerular filtration rate (eGFR), body mass index (BMI) and extracellular fluid rate (ECFr). The patients were categorized into three groups according to age: a middle-aged group (<65 y, n = 19), an early-elderly group (65–74 y, n = 23), and a late-elderly group (≥ 75 y, n = 20). Group data were compared by means of stepwise multiple regression analysis using EI as the dependent variable and EF, BNP, eGFR, BMI, and ECFr as independent variables.

Results

Mean EI values were as follows: middle-aged, 46.1 ± 9.3 ; early-elderly, 55.9 ± 13.1 ; late-elderly, 59.2 ± 11.9 . BNP was identified as a significant predictor of EI in the middle-aged and early-elderly groups (respectively, $r=0.51$, $p=0.03$; $r=0.62$, $p=0.002$). EI in the late-elderly group was affected by ECFr ($r=0.57$, $p=0.01$). Neither EF, eGFR, nor BMI was identified as independent predictors in any of the groups. Moreover, multicollinearity was not observed between any of the variables.

Conclusion

EI in the middle-aged and early-elderly groups, suggesting that EI can be used to evaluate skeletal muscle catabolism resulting from both advanced age and heart failure. In the late-elderly group, on the other hand, EI can be used to evaluate ECFr.

Keywords

Cardiac rehabilitation; Skeletal muscle echo intensity; Aging

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1252

THE EFFECT OF CARDIOVASCULAR REHABILITATION ON GLYCEMIC AND LIPID STATUS IN CORONARY PATIENTS

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Introduction/Background

Physical activity has the most favorable influence on the level of glycemic and lipid status of coronary patients with pharmacological treatment.

To determine the effect of cardiovascular rehabilitation on the level of glycemic and lipid blood in corneal patients.

Material and Method

The research was carried out at the Institute for treatment and rehabilitation "Niska Banja". Covered 87 patients with a coronary event-a surviving heart attack, an average age of 58.6 ± 8.52 years. Patients of the tested groups of glycemic values, triglycerides, total cholesterol, HDL cholesterol, LDL cholesterol.

Results

By analyzing the obtained values at the beginning and end of the rehabilitation treatment for a period of 21 days, a statistically significant decrease in glycemic, triglyceride, total cholesterol, LDL and HDL cholesterol levels was recorded. Glycemic values at the beginning of the rehabilitation treatment: 7.26 ± 1.85 mmol / l at the end of 5.80 ± 1.46 mmol / l ($p < 0.001$). Total cholesterol values at the beginning of rehabilitation were 4.75 ± 0.62 mmol / l, at the end 4.34 ± 1.34 mmol / l ($p < 0.0005$). Triglyceride values at the beginning of rehabilitation 1.92 ± 0.27 mmol / l, at the end 1.68 ± 0.31 mmol / l ($p < 0.0005$). LDL cholesterol at the start of the rehabilitation 3.10 ± 0.28 mmol / l, at the end 2.7 ± 0.24 mmol / l ($p < 0.0005$). HDL cholesterol values at the beginning of the rehabilitation of 0.86 ± 0.12 mmol / l, at the end of 1.04 ± 0.25 mmol / l ($p < 0.0005$).

Conclusion

Physical activity, as a non-medical therapeutic procedure in treatment, is applied in the form of a specially programmed and repeated exercise. After the rehbitalization of the lipid parameters and glycemia values were significantly lower in the group of patients examined, the HDL cholesterol level showed a significant increase.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1315

PHYSICAL REHABILITATION OF PATIENTS WITH ISCHEMIC HEART DISEASE WITH AMPUTATION OF THE LOWER EXTREMITIES

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Introduction/Background

Combined lesions of coronary arteries (CA) and arteries of lower extremities (LE) are noted in 33.3-70.8% of patients with ischemic heart disease (IHD). Annually in the world amputations vary from 120 to 500 people per 1 million population due to the critical ischemia of the LE. Rehabilitation of patients with combined lesions of CA and arteries of the LE, including with amputation is not sufficiently studied. Evidence-based methods of physical rehabilitation (FR) are workouts with dynamic loads (55.6%), interval training (32.6%), therapeutic exercises with respiratory muscle training (6.6%). The aim: development of the main principles of the FR for patients with atherosclerosis of the CA and arteries of LE, who underwent amputation.

Material and Method

We examined 189 patients with IHD and 40 patients after amputation of LE due to obliterating atherosclerosis in combination with IHD: 74 women and 155 men aged 61 to 87 years. The rehabilitation complex included specially developed FE programs, as well as basic drug therapy. In the course of rehabilitation, the tolerance to physical activity, the class of motor activity (MA) was graded step by step. An analysis of the efficacy of FE in this category of patients using the scientific method was carried out.

Results

Data on mutual aggravation of the severity of patients with IHD after amputation were obtained, which determined the realistic setting of the goal and the final results of rehabilitation. It was found that the level of amputation affected the expected level of MA, the cost of walking energy, which caused lower levels of MA in patients with combined vascular lesions.

Conclusion

Patients with LE amputation are not adapted to the general principles of FR of patients with IHD, which determines the urgency of developing specialized rehabilitation programs for them.

Keywords

ischemic heart disease;amputation of the lower extremities;physical rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1437

MALNUTRITION IS ASSOCIATED WITH LOW PHYSICAL FUNCTION IN PATIENTS UNDERGOING CARDIAC REHABILITATION FOLLOWING HEART FAILURE

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Introduction/Background

Background and aims: Patients who experience heart failure are prone to malnutrition. The aim of this study was to determine the impact of malnutrition on physical function in patients undergoing cardiac rehabilitation following heart failure.

Material and Method

Methods: A cross-sectional study was performed in consecutive patients hospitalized for cardiac rehabilitation following heart failure. Nutritional status was evaluated using the Mini Nutritional Assessment-Short Form (MNA-SF). Physical function was evaluated using the Barthel index (BI). Univariate and multivariate analyses were used to determine whether nutritional status was associated with BI in these patients.

Results

Results: The present study included 105 patients (mean age of 77.3 years; 56 men and 49 women) for analysis. The median (interquartile range) scores of the MNA-SF and BI were 11 (9–13) and 75 (45–90), respectively. Patients with malnutrition (MNA-SF <7) were significantly older, had lower body mass index, exhibited lower muscle mass and strength, could walk shorter distances, and had lower BI scores (all, $p < 0.05$). In multivariate analysis, the MNA-SF score was independently associated with BI (beta=0.409, $p < 0.001$) after adjusting for age, sex, muscle mass and strength, brain natriuretic peptide levels, ejection fraction of the left ventricle, and main diseases.

Conclusion

Conclusion: Nutritional status is associated with physical function in patients undergoing cardiac rehabilitation following heart failure. Early detection of malnutrition can help promote nutritional support to improve functional recovery in these patients.

Keywords

No conflict of interest

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A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1696

OBSERVATIONAL STUDY OF MAXIMAL OXYGEN UPTAKE (VO₂ MAX) AND QUALITY OF HEALTH STATUS IN HEALTHY WORKERS OF TAMAN HUSADA GENERAL HOSPITAL

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Introduction/Background

Maximal oxygen uptake (VO₂ max) is known as the reliable index of cardiopulmonary fitness and functional aerobic capacity. Physical activity included exercise habits is one of the factors associated with VO₂ max value. Some trials showed that higher VO₂ max value related with good quality of health status. However, the study of VO₂ max and quality of health status still limited in Indonesia.

Material and Method

A cross sectional study. Sample was formed by 60 (20 males mean age 32.95 , 40 females mean age 35.56) healthy workers of Taman Husada general hospital who agreed to join this study. Participants were divided into 2 groups, exercised habits and non exercised habits groups. Cardiopulmonary functional capacity (VO₂ max) was obtained by 6 Minute Walk Test. The participants also completed Sort-Form Health Survey S F 36 to evaluate quality of health status. The correlation Cardiopulmonary functional capacity (VO₂ max) and quality of health status in 2 groups were analyzed and compared.

Results

In exercised habits group, mean VO₂ max were 38.60 ±3.44 ml/kg/min and 36.14 ± 3.29 ml/kg/min in non exercised habits group. There was significant correlation VO₂ max in exercised habits group with Physical Functional domain in SF 36 questionnaire (p= 0.046). No significant difference of VO₂ max in both groups nor quality of health status as evaluated using SF 36 questionnaire.

Conclusion

Our study found that exercised habits may improved physical functioning but not influenced the VO₂ max. Further study needed to confirm this result.

Keywords

VO₂ max, quality of health status, exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1720

LYMPHEDEMA : CLINICAL FEATURES AND MANAGEMENT TRENDS IN A REHABILITATION DEPARTMENT

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Introduction/Background

PMR allows a global approach of lymphedema. There is a current deficiency of the clinical research about this growing health problem. Thus, a retrospective review was conducted to determine clinical presentations and practice patterns of lymphedema in a rehabilitation department in Tunisia.

Material and Method

A retrospective study was developed based on the analysis of medical records of 24 patients hospitalized in the rehabilitation department of University Hospital Center Sahloul, Sousse, Tunisia, from 2012 to 2017.

Results

Among the 24 patients enrolled in this study, 20 patients were female (sex ratio = 0,2). The mean age (\pm SD) of patients was 50,9 (\pm 16,68). Half of patients were sent from outpatient department. Thirteen patients (54,2%) had a BMI \geq 30. The most common location of lymphedema was the lower limb (91,7%). Most of patients (66,7%) had a secondary lymphedema, six among them had a malignant tumor. Most two frequent tumors diagnosed were breast cancer and ovarian cancer (two out of six each). The other cause of secondary lymphedema was mainly infection (56,2%). Three patients received radiotherapy prior to lymphedema development. A venous insufficiency was found in five patients. Doppler ultrasound and lymphoscintigraphy were used in 37,5% and 16,7% of cases respectively.

Management of patients was based on manual lymphatic drainage, pressotherapy, compression bandaging and sleeves, and active exercises. All patients received an educational program to control lymphedema. A successful result was noticed in 45,8% of cases. Several complications were found, such as erysipelas (45,8%), lymphangitis (29,2%) and lymphorrea (8,3%). A recurrence of lymphedema occurred in 10 patients after a mean of 12 months with an incomplete adherence to management strategies in these patients.

Conclusion

Lymphedema occurs mainly in women. Patient education, timely diagnosis and the early initiation of treatment constitute the main targets for improvement.

Keywords

Lymphedema;rehabilitation;outcome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1778

PRIMARY LYMPHEDEMA IN KLIPPEL TRENAUNAY SYNDROME: A CASE REPORT

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Introduction/Background

Klippel Trenaunay syndrome (KTS) is a congenital angiodysplasia characterized by venous and lymphatic malformations, hypertrophy of the bone and soft tissues which, in most cases, involves the lower limb. One of the clinical features of this syndrome is lymphedema. This report describes the case of a 19-year-old female patient with primary lymphedema and KTS.

Material and Method

A 19-year-old girl was found to have an enlarged left leg at the time of birth. She was followed up by cardiothoracic and vascular surgery team in University Hospital Center Sahloul, Sousse, Tunisia. She was diagnosed with KTS. At the age of 19 years old, she was referred to rehabilitation department for persistent limb edema.

Results

On exam, the patient was a healthy girl whose BMI was 32. Her left leg was painful and larger than her right throughout, measuring 2,5 cm difference in circumference. There were neither port wine stains nor signs of cellulitis. No neurologic disorders were noted. A Doppler ultrasound was performed. It revealed a superficial venous malformation. For lymphedema treatment, a manual lymphatic drainage and a pressotherapy were prescribed. She was fitted with a thigh-high compression stocking with her complete adherence. A regression of lymphedema was noticed after 20 days of treatment. The patient was then followed up in outpatient department with no recurrence of lymphedema.

Conclusion

Lymphedema management in KTS is a clinical challenge to the physiatrist who can provide patients with adequate conservative measures to optimize and maintain function.

Keywords

Lymphedema; Klippel Trenaunay syndrome; physiotherapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1809

DOES NORDIC WALKING HELPS TO IMPROVE EXERCISE CAPACITY AND WEIGHT CONTROL IN PATIENTS WITH RESISTANT HYPERTENSION?

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Introduction/Background

Resistant high blood hypertension (HBPr) it's defined as arterial pressure that remains above goal in spite of concurrent use of three antihypertensive agents of different classes. HTAR is associated with an increased risk of cardiovascular disease, terminal chronic renal failure and mortality, compared to patients whose hypertension responds to treatment. The currently therapeutic pillar involves multidisciplinary management with pharmacotherapy, health education, nutritional control, psychological support and therapeutic physical exercise. The aim of this study it's to use therapeutic exercise to facilitate the control of the blood pressure to improve the aerobic resistance, the meters walked and the weight control.

Material and Method

Prospective, compared quasi-experimental study (pre and post intervention). 5 cases, all men, with a mean age 58.2 (SD 12.21) years and BMI 32.952 (SD 3.93) kg/m², who were included in a multidisciplinary study entitled: "*Study of biomarkers in patients with HBP resistance to antihypertensive treatment*", performed a Nordic walking training program. The principal outcome was the six minutes walking test (6'WT). Other outcomes were the functional capacity (VO₂peek and VO₂AT), weight control and the compliance of the program.

Results

The improvement of 6'WT was 16.4 meters (p>0.05). The initial VO₂peek was 14.22±2.64 ml/kg/min (64.6%), with an improved of 1.72ml/kg/min after the program. There was no improvement in VO₂AT. There was a significant improvement in weight and BMI after the intervention. The compliance of the program was 86.25%±9.27. The peak of TA at maximum effort improved in all cases after the program, improving even the hypertensive response of one of the patients.

Conclusion

Nordic walking is an excellent therapeutic exercise in patients with HBPr, because improves the blood pressure control, the weight control and the exercise capacity.

Keywords

exercise ;nordic walking;hypertension

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-1999

HEALTH SERVICES SAVINGS IN PATIENTS WITH CARDIAC VALVE REPLACEMENT AFTER A CARDIAC REHABILITATION PROGRAM

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Introduction/Background

In spite of the high prevalence of cardiac valvulopathies, the evidence of the effect of cardiac rehabilitation (CR) after surgical valve replacement (SVR) is scarce, but nevertheless CR is recommended for this group of patients.

We aimed to compare the health care services utilization when comparing patients after a valve surgery who completed a eight weeks phase II cardiac rehabilitation program to those who did not.

Material and Method

A descriptive retrospective study was conducted of CR eligible patients after SVR aged 18 or older between January 2014 and December 2017 with a follow-up of at least 12 months after surgery. We assessed the number of primary care consultations, emergency service utilization, number of hospital admissions and length of hospital stay because of cardiovascular reasons.

Results

A total of 124 patients had valve surgery. 58 (47%) completed CR phase I and II while 66 (53%) patients completed only phase 1 (hospitalization). The mean age was 60,19 years (SD 7,76). The most common type of surgery was aortic replacement (54=67,7%). Bioprosthesis (24,2%) and mechanical prosthesis (48,4%). Period of follow up: 33,54 months (SD 10,99). We found participation in phase II CR program is significantly associated with a lower number of visits to the emergency room (25.9% vs 33.4%, $p > 0,05$), less hospitalizations (15,5% vs 31,8%, $p = 0,016$) and shorter length of hospitalization stay (1,33 vs 4,24 days $p = 0,03$).

Conclusion

Participation in phase I and Phase II CR program after SVR significantly reduces health care services utilization when compared to those patients who don't attend to a phase II CR program. CR among all these kind of patients is long-term cost-effective so it should be encouraged.

Keywords

Health Services savings ;Cardiac valve replacement;Cardiac rehabilitation program

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-2016

ERECTILE DYSFUNCTION PRIOR TO ACUTE MYOCARDIAL INFARCTION: PREVALENCE, COMORBIDITIES AND ASSOCIATED RISK FACTORS.

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Introduction/Background

Recent studies correlate erectile dysfunction (ED) and cardiovascular disease. ED is considered a predictor of coronary disease in patients with certain comorbidities and risk factors.

To analyze the prevalence of previous ED in our population with acute myocardial infarction (AMI). To determine the association between comorbidities, cardiovascular risk factors and prior ED.

Material and Method

We included patients evaluated for Cardiac Rehabilitation program. The presence of ED before the infarction and the time of evolution were recorded.

The variables analyzed were age, comorbidities, abdominal perimeter, body mass index, smoking, diabetes mellitus (DM), dyslipidemia, arterial hypertension, sedentary lifestyle and number of coronary arteries affected.

Results

210 men, mean age 55.7 years (SD 9.6) were included. The prevalence of previous ED was 27%, mean time evolution was 35.5 months. The mean age of the group with ED was 57.79 years and 53.67 years in the group without ED ($p < 0.05$). 14.9% of patients with previous ED and 3.1% of patients without ED had COPD ($p < 0.05$). 10.6% of patients with previous ED and 3.1% of patients without ED had intermittent claudication ($p < 0.05$). 40.4% of patients with previous ED and 12.5% of patients without ED had DM. We did not find statistically significant differences in the rest of the variables.

Conclusion

Our study shows that erectile dysfunction is associated with age, COPD, intermittent claudication and diabetes mellitus.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-2026

SEX AFTER A HEART ATTACK

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Introduction/Background

After a myocardial infarction, cardiac patient should begin with rehabilitation Cardiology (RC) program both physical and psychic. Fear takes control of the patient and slowly everything must go progressing back to normalcy, assisted by a multidisciplinary team. It seems that life and sex is a taboo subject for these patients and they elude the direct coping with this problem. We want to show, and reassure patients that do not have to be concerned and can resume their usual sexual activity.

Material and Method

Descriptive study of literature review of guides of RC related to Sexual life.

Results

The resumption of sexual activity must be progressive, taking into account the physical conditions of each patient. In conditions close to the normality can be restarted the fanatic must 2 weeks of hospital discharge. You can return to having sex... You can return to have sex whenever, as noted, be able to raise two floors of stairs without notice from your previous angina-like chest pain or dyspnea. This is because that power needed by the heart during intercourse is approximately equivalent to the ascension of two floors of stairs, i.e. requires 3, 5-5 met energy.

Conclusion

The medication does not have to condition our sex life. Sexual intercourse is, as well as satisfactory, safe for those people who have suffered a heart attack

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-2135

ROLE OF PHYSIATRIC APPROACH IN THE REHABILITATION OF LYMPHEDEMA IN POST MASTECTOMY PATIENTS.

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Introduction/Background

Lymphedema is a common complication in the post mastectomy patients. The aim of this study is to observe the effect of physiatric approach in the rehabilitation of patients having lymphedema after radical mastectomy.

Material and Method

A prospective randomized clinical trial was conducted in the department of Physical Medicine and Rehabilitation of National Institute of Cancer Research and Hospital, Dhaka, Bangladesh from 1st July 2009 to 31st December 2009. A total of 60 patients having lymphedema after mastectomy were included in the study. They were divided into Group-A and Group-B. Group-A was treated with drug and physiatric approach and group-B was treated with drug only. The patients were followed up every Tuesday in lymphedema clinic for 8 weeks for supervised physical therapy. Assessment was done by VAS, FIM scale, tenderness grading, and swelling scales. The results were evaluated by assessment of the absolute mean variation of delta values, and by the clinical response accordingly. All the data were analysed in SPSS 17.0 (SPSS Intern, CA).

Results

Table: Distribution of total patient treated by group A and group B

Outcomes	Group A (n=30)	Group B(n=30)	p value
Recovery	4(13.3)	0(0.0)	0.001
Improvement	24(80.0)	8(26.7)	
Unchanged	2(6.7)	22(73.3)	
Total	30(100.0)	30(100.0)	

*Figure within parenthesis indicates percentage

Conclusion

From the result of the present study, it is conceivable that Lymphedema in post mastectomy patients can be successfully preventable and controllable by Physiatric rehabilitation.

Keywords

Lymphedema

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-2302

EFFECT OF EARLY CARDIAC REHABILITATION THERAPY ON PATIENTS AFTER CORONARY ARTERY BYPASS SURGERY: A THREE-ARMED RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Early cardiac rehabilitation (CR) including intensive care unit (ICU) and general ward is recommended for patients after coronary artery bypass surgery (CABG). This study examined the feasibility and practicality of early rehabilitation and tried to explore how important the rehabilitation in ICU.

Material and Method

A three-armed randomized controlled trial exploring the importance of rehabilitation in ICU was conducted in patients after CABG. One hundred and twenty-three patients were randomly assigned to control group (n=40); single general ward rehabilitation group (n=42); or combined ICU with general ward rehabilitation group (n=41). The rehabilitation therapy consisted of 6 steps including moving on the bed, sitting on the edge of bed, standing, walking along a bed, walking in the room, and walking outside the room. Therapists who undertook patient assessments were blinded to treatment assignment. The primary outcome measure was a composite of postoperative complications, length of hospital stay, quality of life (QoL) scores and 6-min walk distance (6-MWD).

Results

The groups were well balanced in terms of patient characteristics. The intention-to-treat analysis of the study revealed that, compared with the control group, the combined group had a significant increase in 6-MWD (by 34.36 m, p=0.002), global scores (by 3.6 d, p=0.001); and a lower pulmonary postoperative severity (grade II-IV). With regard to length of hospital stay, both of the general group and combined group had no significant difference comparing with the control group.

Conclusion

Our results strongly support national standards that recommend early CR for patients after CABG. We also find that ICU rehabilitation is an integral part of the early CR process.

Keywords

Early rehabilitation;Intensive care unit;Randomized controlled trial

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-2303

DIAGNOSTIC CRITERIA FOR DETECTION OF LYMPHOEDEMA BASED ON UPPER LIMB NORMATIVE BIOIMPEDANCE DATA IN CHINESE WOMEN

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Introduction/Background

Bioelectrical impedance analysis is a widely used technique for detection of lymphedema at early stage. The thresholds used for detection are currently based on impedance measurements obtained in Western populations. Considering the racial differences of body habitus, it is unknown whether these thresholds are applicable to a Chinese population.

Material and Method

Impedance was measured using a single low frequency impedance device (XCA; ImpediMed, Ltd.). A total of 391 women aged from 20 to 84 years underwent the measurements of impedance for both arms. Frequency distributions of interlimb impedance arm ratios for both dominant: non-dominant and non-dominant: dominant were used to determine thresholds at two and three standard deviations above the mean.

Results

Absolute value of impedance was significantly higher in the youngest group (20-39y) compared to other age groups. However, no significant effect of age on impedance ratios was found. Meanwhile, there was no significant difference between impedance ratios determined in this study and those from recent studies in Australia and the USA which used similar protocols. New two and three standard deviations above the mean thresholds, using a weighted average from the pooled data of these studies are 1.108 and 1.153 for use when the dominant limb is at risk and 1.072 and 1.116 when the non-dominant limb is at risk.

Conclusion

There was no effect of ethnicity on impedance ratios of upper extremity. Consequently, the proposed pooled thresholds can be used as a more convincing reference.

Keywords

Bioelectrical impedance;Reference ranges;Lymphedema

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-2362

CASE REVIEW: MANAGEMENT OF THE LEFT LOWER LEG EDEMA BY DIAGNOSING AND RESOLVING THE OBSTACLES OF VENOUS BLOOD FLOW

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Introduction/Background

Edema of the lower leg may be resistant to various physical and medical treatments, and may persist for years, and from a simple esthetic problem it may progress to health issue. Aim – to demonstrate on a particular case the significance of diagnosing etiology persistent lymph edema for its efficient management.

Material and Method

A female patient was enrolled into the project committed to central lymph drainage on the big toe of the right foot due to left lower leg edema which persisted for ten years.

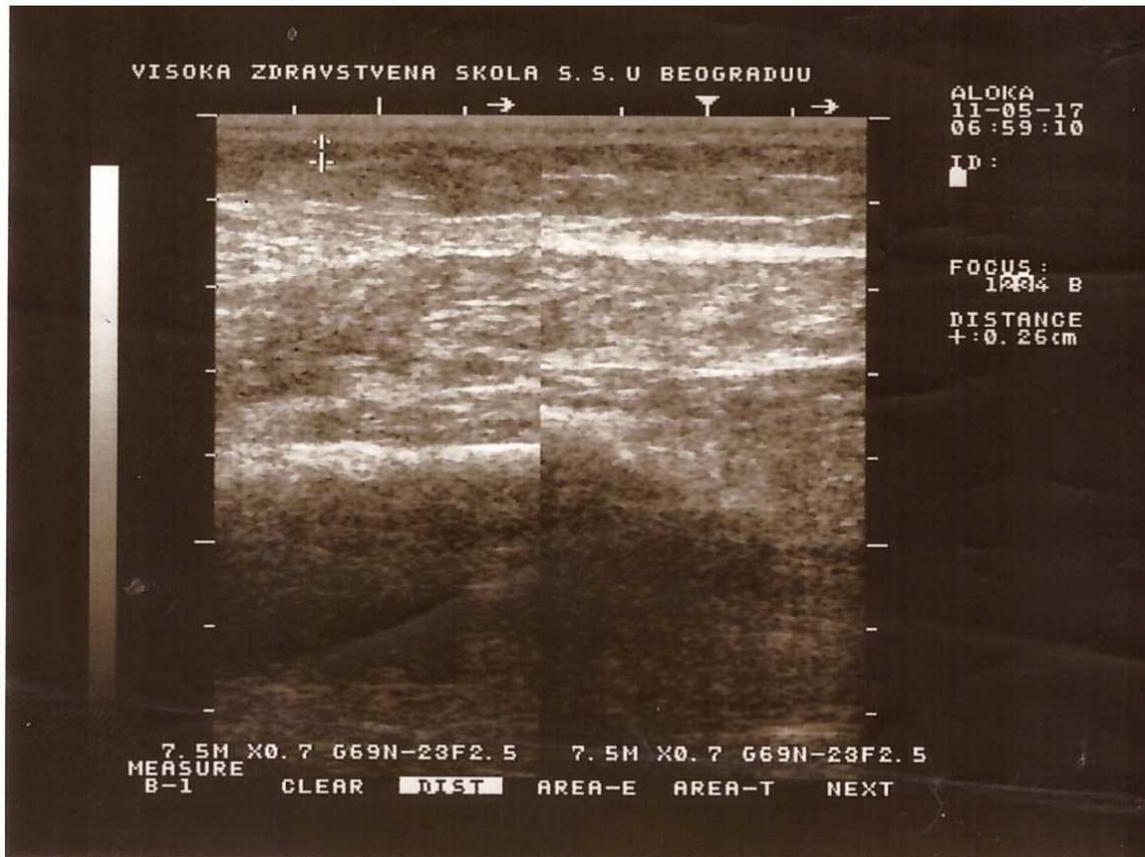
Results

Two prior attempts of central lymph drainage were inefficient. Following the ultrasound scan, performed by Professor Kalina Paunovic, on 27th April 2017 at 7:10 a.m., followed by a manual careful/tender/fine palpation examination of the left lower leg veins, both deep and superficial ones.



The same manual examination was applied to follow their path towards the right atrium. On that path, a slight compression was discovered in the left side *Lacuna vasorum* and inside the *Vena Cava inferior* foramen on the diaphragm. Both compressions were managed (removed) by the manual massage of the above sites, based on precise knowledge in anatomy and physiology of these structures. A follow-up ultrasound scan was performed on 11th May 2017 at 06:59 a.m. and demonstrated decrease of subcutaneous edema (edema between the skin and the

muscles) from 0.50 cm and 0.34 cm to 0.26 cm.



Conclusion

We demonstrated that a single manual examination, as well as removing the vein flow obstacle from the left lower leg by tender manual massage performed by a medical doctor specialist in PM, yield therapeutic effect.

Keywords

Lymph edema; Manual examination; Lacuna Vasorum and Foramen Vena Cava Inferior

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-2364

MANAGEMENT OF LYMPHODEMA OF THE CHILD IN PMR: ABOUT A CASE REPORT

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Introduction/Background

Lymphodema is the accumulation of lymphatic fluid in interstitial spaces related to dysfunction of the lymphatic system. Primitive forms are the main causes of lymphodema in children and adolescents. The usual treatment for controlling the progression of chronic forms is lymphatic drainage and The aim of this presentation is to show the interest of the management of idiopathic congenital lymphedema of the child in PMR.

Material and Method

We report the case of a 4-year-old girl received for swelling of the right lower limb noticed since J8 of life. She does not have a history of large congenital limb in the family. The examination found a non-painful swelling of the right lower limb, a left pelvic tilt as well as unequal limbs. The genetic survey did not find any risk factor, her female type karyotype was without abnormality.

Results

The treatment consisted of a physiotherapy, the wearing of compression stockings and a pressotherapy with the device of the upper limb of the adult. Congenital idiopathic lymphodema of the child is a rare entity and poses a problem of management because of the high risk of recurrence

Conclusion

Pressotherapy is rarely used in children because of the scarcity of adapting tools.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.01 Internal Medicine and Other Conditions -Heart, Cardiovascular and Lymph Diseases

ISPR8-2403

EMERGING INDICATION OF CARDIAC REHABILITATION. ELECTROCARDIOGRAPHIC BRUGADA PATTERN TYPE 1. DESIGNING CHALLENGES OF A PERSONALIZED PROGRAM BASED ON LITERATURE RESEARCH.

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Introduction/Background

Brugada's electrocardiographic (EKG) pattern Type 1 (B1) is a rare condition, could debut with sudden death due to genetic mutations causing severe arrhythmias. Patients should avoid exercise leading to a sedentary lifestyle.

Material and Method

A 48-year-old male patient, asymptomatic, on routine electrocardiogram showed a B1 and isolated ventricular extrasystolia in Holter. Myocardial perfusion. Cardiac Magnetic Resonance discards structural alteration. Conventional electrophysiological study and ventricular stimulation induced polymorphic ventricular tachycardia and fibrillation requiring defibrillation; Definitive uncameral cardio defibrillator was implanted. Genetic result showed heterozygous variant in DES gene: c.893C> T (p.Ser298Leu). Two family members died suddenly at early age.

Questions regarding Rehabilitation process were reviewed in literature until December 2017.

Results

Questions regarding B1	Papers Found / Relevant Clinical Studies	Answers
How should risk stratification be done?	12/4	Current Stratification insufficient, cannot accurately predict sudden cardiac death.
Is exercise testing useful to prescribe exercise?	23/0	Helpful determining exercise induced B1 and arrhythmias.
Is monitoring necessary during exercise sessions?	18/0	EKG necessary, studies needed.
Is the Borg scale useful?	0/0	No information whether Borg scale is useful. Monitoring low to moderate level of exercise.

Is it safe to perform clinically relevant exercise B1?	0/0	Vigorous exercise restricted.
Most relevant aspects to educate the patient	2/0	Dangerous Medication for B1. Genetic counseling
Does exercise produce a specific benefit?	0/0	No evidence that exercise produces direct benefits, changing arrhythmic burden or decreasing mortality, could prevent sedentarism.

Cardiac Rehabilitation program started without stress test after implantation of cardio-defibrillator, without monitoring. B1 risk was stratified as low but patient was prescribed with low intensity exercise in a Three day per week basis and progress to moderate in 24 sessions without presenting complications or cardiac defibrillator firing.

Conclusion

Cardiac Rehabilitation could play a role in patient education and prevention of deconditioning in B1 but information derived from specific research is needed.

Keywords

Cardiac Rehabilitation;Brugada Syndrome;Rehabilitation planning

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-2628

THE EFFECT OF BODY MASS INDEX ON PULMONARY RELATED DEBILITY REHABILITATION

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Introduction/Background

Overweight and obesity as a risk factor for pulmonary problems has been well established. Many studies have suggested that obesity may offer a clinical advantage as it relates to post cardiac intervention morbidity, length of stay, and mortality. There are few studies about the obesity paradox with regard to pulmonary debility. This study was designed to determine whether this obesity paradox is also reflected in the recovery of patients with debility secondary to a pulmonary event who were undergoing care in a rehabilitation hospital.

Material and Method

Retrospective cohort study included all patients admitted to the pulmonary unit of a rehabilitation hospital from January 2000 – April 2006.

Results

For the 381 patients admitted during the observation period, BMI was compared with FIM score changes per day (FIM efficiency). After adjusting for age, and sex, the FIM efficiency only slightly differed by BMI subgroups (P=0.12). The difference among FIM efficiency was not, however, large enough to be considered significant.

Conclusion

This study is not inconsistent with the findings of other medical subspecialties suggestive of a non-significant U shaped curve when comparing medical outcomes with BMI. In conclusion, we cannot expect inferior performance from patients with BMI in the obese category.

Keywords

Pulmonary Disease;Stroke;FIM Efficiency

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-0500

REHABILITATION CAN REDUCE MORTALITY RATE IN PATIENTS WHO WERE INTUBATED DUE TO PNEUMONIA

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Introduction/Background

Pneumonia is an infectious disease that causes acute lung inflammation. Those who suffer from pneumonia often present the symptoms of dyspnea, productive cough, chest pain, and fever. Furthermore, respiratory failure can arise due to acute respiratory distress syndrome (ARDS), and intubation with mechanical ventilation will be applied. On the other hand, pulmonary rehabilitation including chest percussion, breathing techniques have shown to improve the life of quality, daily function, and decrease the respiratory symptoms, but the effect on mortality has yet to been shown clearly. Thus, our study was designed to examine the effect of rehabilitation on mortality among intubated patients with pneumonia.

Material and Method

227 patients intubated due to pneumonia were selected retrospectively from 2016.1-2016.6 in Chi-Mei Medical Center, Taiwan. Gender, ages, Acute Physiology and Chronic Health Evaluation (APACHE) II score, in-hospital length, in-hospital expenditure, and mortality of the patients were recorded. The rehabilitation group received intervention included chest wall percussion, breathing exercise, ankle pumping, and joint mobilization, while control group received standard intubation treatment without rehabilitation.

Results

Among the 227 patients, 25 patients received rehabilitation. Comparing the rehabilitation and control groups, there was no significant difference in gender, ages, and APACHE II score. The mortality was higher in the control group. (96 [48%] vs 3[12%], $p < 0.01$). The in-hospital length (50.28±35.87 vs 24.87±18.20 days, $p < 0.001$) and the in-hospital expenditure (667823±568883 vs 394021±372185 NTD, $p = 0.002$) were higher in the rehabilitation group.

Conclusion

The data suggests that rehabilitation was associated with a lower in-hospital mortality rates, higher in-hospital length and expenditure in patients who were intubated due to pneumonia.

Keywords

Pneumonia;Mortality;Pulmonary Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-0926

VALIDATION OF A SIMPLE TEST, THE TIMED UP AND GO TEST, TO ASSESS THE RISK OF FALLING IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Introduction/Background

Risk of falling in patients with Chronic Obstructive Pulmonary Disease (COPD) is an emerging issue, but little studied. It could affect up to 50% of patients entering respiratory rehabilitation, with an increased prevalence in severe stages of the disease. Falling risk evaluation is usually carried out by the Berg Balance Scale (BBS score), which is difficult to use in current practice given a long realization time. Thus, validation of a simple and quicker screening test is essential. The Timed Up and Go test (TUG), validated in geriatrics, could be an interesting screening test for people with COPD.

Material and Method

We collected self-reported falls number in the previous year, assessed the fear falling (ABC-scale), the risk of falling (BBS score) and performed a TUG test. In addition, we measured predictive parameters of falling: muscle mass, quadriceps muscle strength, walking distance in 6min (TM6).

Results

Of the 50 COPD patients included, 23 patients (46%) had at least one fall during the last year; this percentage was higher in long-term oxygen therapy (LTOT) group (68 versus 24% for LTOT- group, $p < 0.005$). TUG correlates very well with BBS score ($r = -0.92$, $p < 0.0001$), and there is also a very good agreement between the two tests ($\kappa = 0.92$, $p < 0.0001$). Optimal diagnosis value for the TUG with the best sensitivity/specificity ratio is 10.9 seconds with a sensitivity of 100% and a specificity of 97%. Analysis of falling predictive factors regains severity of COPD evaluated by various pulmonary parameters, alteration of quadriceps muscular strength, TM6, as well as a possible proprioception impairment.

Conclusion

These results confirm the high prevalence of falls in a population of stable COPD subjects, especially since there is a chronic hypoxia. TUG represents a simple falling risk screening test in these patients to enable more specific rehabilitation by adding proprioceptive and neuromotor control work to respiratory rehabilitation programs.

Keywords

Chronic Obstructive Pulmonary Disease;Timed Up and Go test;Falls

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-1111

DOES NORDIC WALKING IMPROVE EXERCISE CAPACITY IN LUNG TRANSPLANT PATIENTS?

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Introduction/Background

A lung transplantation (LT) is the last therapeutic option for those who suffer from respiratory chronic diseases. Respiratory rehabilitation plays a crucial role in improving the functional capacity and the quality of life during the different stages of the transplant. After the LT, the pulmonary functions of the receptors are commonly improved, but some limitations in their capacity to exercise and to perform physical activity still remain.

The main objective of this study is to evaluate any improvement in effort capacity of patients with lung transplantation that follow a rehabilitation program based on Nordic walking.

Material and Method

Almost-experimental prospective study with comparison (before and after surgery).

Sample: 8 patients with one year evolution after LT with normal pulmonary function, 5 men (65,5%) and 3 women (37,5%). Medium age of 59.75 years old (DE 4.34 years). Six of the patients had received a double-lung transplant (75%) and the other two, a left lung transplant (25%).

The procedure consists in a rehabilitation program with Nordic walking (PRMN) as exercise type.

The main variable is the distance walked during the 6 minutes walking test (6'WT); the secondary ones will evaluate the strength of the respiratory muscles (PIM-PEM), the functional capacity (VO_{2pco} and VO_{2AT}), the strength of the peripheral muscles (in claw dynamometry and quadriceps) and the quality of life (SF-36 questionnaire).

Results

After 12 weeks of PRMN, significant differences have been found in: 6'WT (47m in mean $p < 0,05$ ($p = 0.035$)); in claw dynamometry (D: $p = 0.048$ / I: $p = 0.043$); VO_{2PICO} % ($p = 0,035$); VO_{2AT} ($p = 0.028$) and in the vitality variable of the SF-36 ($p = 0.033$). No significant differences have been observed in the rest of variables.

Conclusion

After a Nordic walking program the patients with LT improve the distances walked in the 6 minutes walking test and the aerobic capacity. Moreover, there is an improvement in the patient's vitality after the procedure.

Keywords

lung transplantation; exercise; nordic walking

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-1173

EFFECTS OF A HOME-BASED PULMONARY REHABILITATION PROGRAMME ON HEALTH-RELATED QUALITY OF LIFE IN COPD PATIENTS

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Introduction/Background

Pulmonary Rehabilitation Programme (PRP) is under-utilised worldwide. Home-based(HB) PRP has been shown to be comparable to centre-based(CB) PRP. It overcomes a major barrier to PRP adherence –need for frequent outpatient visits. We aimed to compare the effects of a HB PRP and CB PRP on health-related quality of life (HRQoL) in COPD patients. Primary outcome was change in St George's Respiratory Questionnaire (SGRQ) score. Secondary outcome was change in 6-minute-walk-test(6MWT) distance.

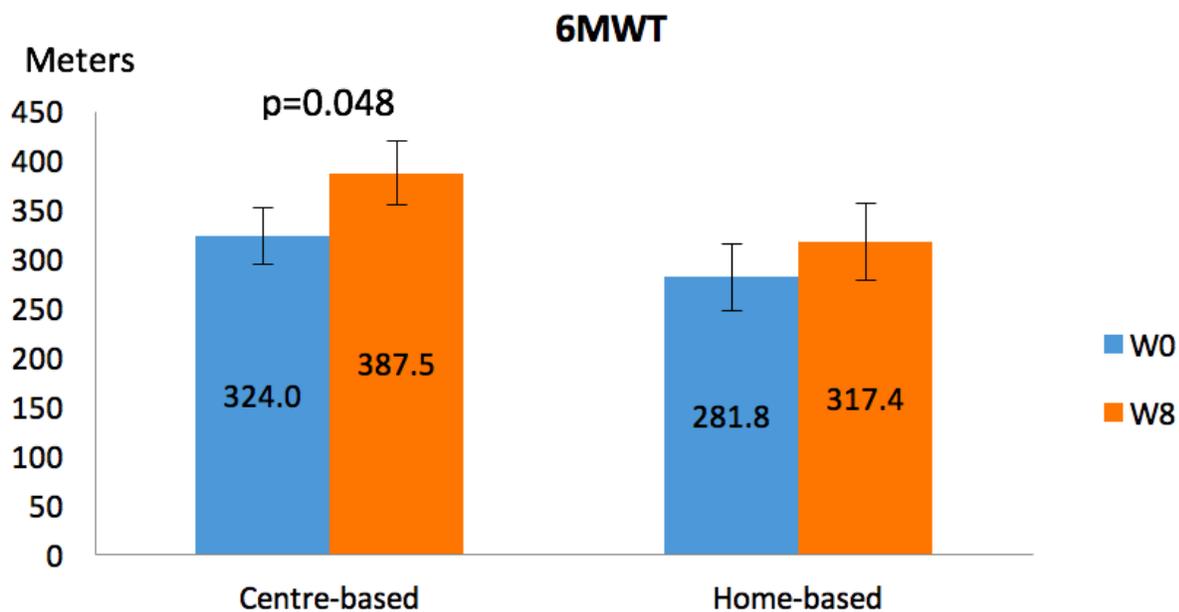
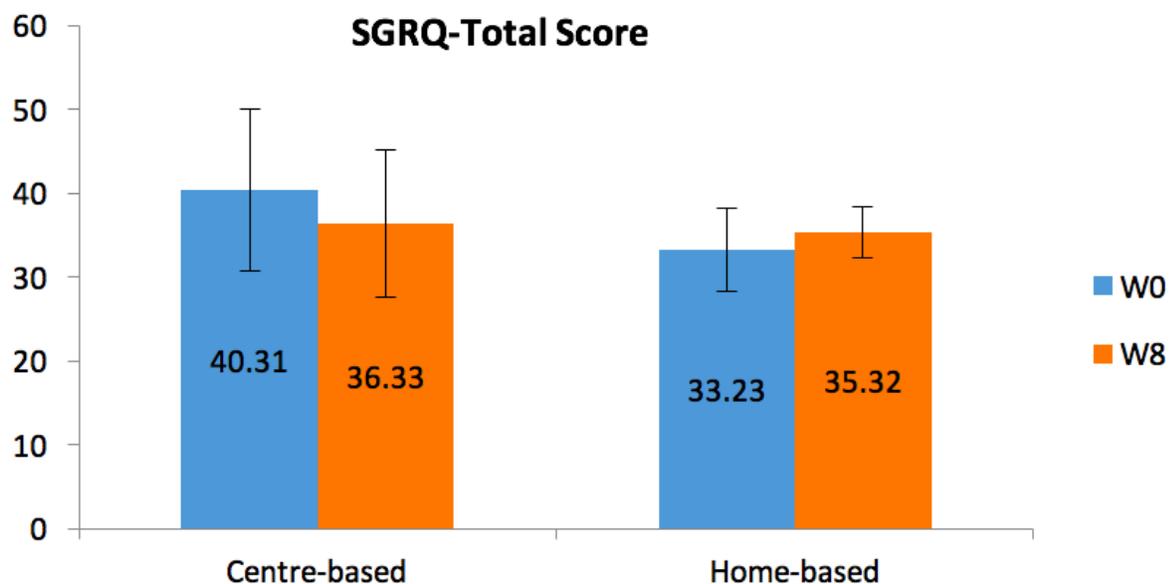
Material and Method

This was a prospective non-randomised controlled trial carried out in a tertiary institution. Intervention group was exposed to a HB PRP, while Control group underwent conventional care with CB PRP. Both were 8 weeks long with 2 sessions per week and included a structured education and exercise programme. SGRQ and 6MWT scores were measured at Week 0 and 8. Inclusion criteria were COPD GOLD Stages II or III, 21-80 years-old, current or previous smoker of at least 10 pack-years.

Results

100 eligible participants were approached. 33 participants consented to the study of whom 25(75.8%) were allocated to HB and 8(24%) to CB PRP, based on patient willingness. Participants who withdrew from the study after W0 (CB: 25% [n=2]; HB: 60% [n=15]) were excluded from final analysis. There was no significant difference in SGRQ-Total score in HB-group vs CB-group ($p>0.05$). There was a statistically significant improvement in 6MWT distance in CB-group($p=0.048$) vs HB-group($p>0.05$).

	Centre-based (n=6)	Home-based (n=10)	p-value
Age (years)	68.17±6.05	70.20±5.55	0.50
Male	6	9	
COPD Stage			
II (%)	1 (16.67)	4 (40)	
III (%)	5 (83.33)	5 (60)	



Conclusion

Despite removing the barrier of travel, majority of subjects who chose participation in HB PRP did not complete it. Our study showed no significant difference in HRQoL with HB and CB PRP

in our setting. Physical endurance improved in both groups, reaching minimal clinically important difference (MCID) and statistical significance in CB group but not HB group.

Keywords

Pulmonary;COPD;Home

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-1281

THE ROLE OF SIX MINUTE WALKING TEST IN PATIENTS WITH NON-SMALL CELL LUNG CANCER AFTER LUNG RESECTION

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Introduction/Background

Non-small cell lung cancer (NSCLC) it is connected with significant deconditioning and difficulties in daily functioning of the diseased. Lung resection (LR) is the most effective treatment for lung cancer. However, LR has a direct negative influence on pulmonary function and quality of life. The six-minute walk test (6MWT) is one of the commonly used field walking test which measure functional capacity (FC). The aim of this article was to determine the role of 6MWT in patient with NSCLC after LR.

Material and Method

Electronic database PubMed was searched for articles which were dealing with determining the role of six minute walking test in patients with non-small cell lung cancer after lung resection.

Results

6MWT is a simple, clinically feasible and objective assessment of FC. The strongest indication for the 6MWT is for measuring the response to medical interventions in patients with moderate to severe heart or lung disease.

Several articles of different design have been examined. Differences in characteristics of the sample population and the characteristics of conducting the test itself affect the 6MWT values. Also, consideration should be given to differences in the design of the study among different studies when making conclusions. LR has been shown to lead to loss of pulmonary function, but not to the deterioration of FC estimated by 6MWT. Recent researches are indicating that 6MWT is not adequate to show changes that occur after LR. More research is needed to establish the 6 MWT validity in relation to gold standard and other field walking tests.

Conclusion

When interpreting the role of 6MWT, the characteristics of the sample population, the parameters and method of conducting the test itself, the design of the study, the type of surgery, and the fact wheather the respiratory rehabilitation was performed preoperatively should be considered.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-1549

PERIOPERATIVE REHABILITATION FOR NON SMALL CELL LUNG CANCER PATIENTS SURGICALLY TREATED: PRELIMINARY DATA OF PREOPERATIVE PHASE

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Introduction/Background

Surgery is the gold standard treatment for Non-Small Cell Lung Cancer (NSCLC) in early stage, by increasing survival, nevertheless, it has a relevant impact in patients quality of life and functional conditioning. A recent review highlight the value of pre and post surgery physical training programmes aiming to improve patients' physical and mental condition. Literature suggests inclusion of both aerobic and strength training in an optimal perioperative PR programme. Aim of the project: to assess the efficacy of a perioperative rehabilitation for NSCLC patients.

Material and Method

Open label randomised controlled trial. Participants: suspected or diagnosed primary lung cancer eligible for surgical treatment not candidates for neoadjuvant/adjuvant therapy. We reported preoperative phase. Standard care (SC): one therapeutic educational session the day before surgery Intervention group (IG): preoperative pulmonary rehabilitation (14 sessions - 6 outpatients and 8 home based) based on aerobic, resistance and respiratory training, including an educational component in the first preoperative session. Preoperative outcomes: Six-Minutes Walk Test (6MWT), Pulmonary Function Tests (PFT), Hospital Anxiety and Depression Scale (HADS). Preoperative assessments T0 – baseline; T1 – one day before surgery. Adherence is registered by a home diary.

Results

At the moment we enrolled 55 patients in IG. 53 completed the preoperative phase. In table 1 we reported comparison between T0 and T1 for exercise capacity in IG.

Table 1	T0 (m)	T1 (m)	p-value
6-MWT (mean±SD)	450.3±82,6	474,5±91,8	0.0003

Regarding Anxiety and Depression there are no significant difference between T0 and T1 in both groups.

Regarding the feasibility of the experimental protocol 84% of patients adhered at outpatient programme and 78% at home-based programme.

Conclusion

Study is ongoing, preliminary data on exercise capacity and compliance in preoperative phase are encouraging.

Keywords

Pulmonary rehabilitation;lung surgery;lung cancer

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-1652

SYMPTOMS OF POST-TRAUMATIC STRESS DISORDER AND ASSOCIATED RISK FACTORS IN PATIENTS WITH LUNG CANCER: A LONGITUDINAL OBSERVATIONAL STUDY

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Introduction/Background

Purpose: This study aimed to measure symptoms of Post-Traumatic Stress Disorder (PTSD) in patients following a new diagnosis of lung cancer. Secondary aims were to explore factors at diagnosis that may predict PTSD symptoms at six months.

Material and Method

Methods: Prospective longitudinal observational study including 93 patients with newly diagnosed lung cancer. PTSD symptomology was assessed with the PTSD Checklist Civilian Version (PCL-C) and HRQoL was assessed with the European Organisation for the Research and Treatment of Cancer questionnaire. Measures were completed at diagnosis and 6 months.

Results

Results: No patients had PTSD at baseline or 6 months as measured by a score of ≥ 50 in the PCL-C. However, at diagnosis 44% of patients had 'mild' symptoms of PTSD. At 6 months, 64% of patients had 'mild' and 8% had 'moderate' PTSD symptoms. PTSD symptom scores significantly worsened over six months (mean difference 95% CI 7.2 [5.4 to 9.0]). Six months after diagnosis, higher PTSD scores were seen in people who at diagnosis were younger ($p=0.003$), had a lower smoking pack history ($p=0.012$), engaged in less sedentary behaviour ($p<0.005$), or initially had worse symptoms including fatigue ($p=0.001$) and poorer HRQoL ($p=0.004$).

Conclusion

Conclusions: Mild PTSD symptoms are common in patients with lung cancer six months after treatment, however a full diagnosis of PTSD is uncommon.

Implications for Cancer Survivors: Screening for PTSD symptoms in at-risk patients with

newly diagnosed lung cancer is an important aspect of assessment to identify patients who may benefit from further assessment and intervention.

Keywords

lung cancer;PTSD;health-related quality of life

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-1714

EFFECTS OF PHYSICAL EXERCISE ON THORACIC AND ABDOMINAL CONFIGURATION IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Introduction/Background

Chronic obstructive pulmonary disease (COPD) leads to changes in thoracoabdominal movements, airflow limitation and respiratory muscle overload, influencing the harmonious mechanism of pulmonary ventilation and promoting asynchronous thoracoabdominal movement. This dysfunction can lead to aggravating consequences in the ventilatory mechanics of these patients, mainly by physical effort, even in light effort as activities of daily living. The objective of this study was to evaluate how an exercise that simulates a daily activity can change the thoracoabdominal movements in patients with chronic obstructive pulmonary disease.

Material and Method

A non-controlled trial was conducted and COPD patients were evaluated by optoelectronic plethysmography (OEP) (BTS, Italy). This evaluation consisted in 89 reflexive markers that were positioned in the anteroposterior thorax, with 4 cameras positioned in front of the subject and 4 cameras behind. The captured signals were transmitted in real time, 60 frames per second synchronized with infrared light emitting diodes that were reflected by the markers and transmitted to the system for the specific software 1 to 1 to transform this capture into three-dimensional (3D) geometric information providing data on lung mechanics. This evaluation, along with spirometry, performed using an EasyOne NDD spirometer, was performed before and after performing an exercise simulating an activity of daily living.

Results

25 patients with COPD, mean age of 68.6 ± 17.9 years, were able to demonstrate a significant change in the T_i / T_{tot} index, which increased after physical exertion. Important changes were also observed in the thoracoabdominal pattern of these patients.

Conclusion

Our results allow us to conclude that the physical activity of daily living alters the fit and breathing pattern of patients with COPD.

Keywords

COPD;Opto electronic Pletismoghaphy;Physical activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-1740

EFFICACY OF NIV COMPARED TO ALBUTEROL IN LUNG FUNCTION AND ABDOMINAL THORACIC CONFIGURATION OF YOUNG ASTHMATIC PATIENTS AFTER BRONCHOPROVOCATION. CROSSOVER CLINICAL TRIAL

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Introduction/Background

Almost 30% of asthma patients exhibit reduced response to β_2 and there are some side effects of this therapy. The NIV improves lung function in patients and reduces the need for bronchodilator and has an additional important action not observed in drug therapy that is the reduction of the work of breath. Meet the mechanical effects of these therapies is of great importance and can modify clinical decisions.

To evaluate the effects of NIV compared to salbutamol on pulmonary function and respiratory mechanics of young asthmatic patients after bronchoprovocation

Material and Method

Randomized crossover trial, were included patients diagnosed asthmatics aged between 12 and 29 years. They were evaluated by optoelectronics plethysmography (OEP) and spirometry at baseline, after bronchial provocation test with saline solution 4.5% and after an intervention. Will be randomized the order of procedures (Bi-level or Salbutamol), and after a week of washout this patient was attended to another treatment. Binível was set IPAP 12 e EPAP 8 cmH₂O por 10 min e Salbutamol 400 μ g

Results

27 patients with a mean age of 21.6 ± 4 years, 18 women. FEV₁ recovery was 62% post NIV and post-BD 82.7%. The inspiratory capacity showed a reduction of 12 to 15% after bronchoprovocation and recovery of 105% in NIV and 125% in BD. As for plethysmography the TV has greater participation of the thoracic compartment the NIV increases the minute volume and there is a return to the baseline after application which does not occur with salbutamol.

Conclusion

NIV has a bronchodilator effect and can reduce of hyperinflation by improving inspiratory capacity and is earlier able to recover baseline minute volume compared to Salbutamol although the effects on lung function are more modest.

Keywords

Non invasive Ventilation;Albuterol;Optoelectronic Pletismography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-1880

SWALLOWING DYSFUNCTION IN COPD PATIENTS

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Introduction/Background

Chronic obstructive pulmonary disease (COPD) is a common problem associated with morbidity and mortality which is characterized by a progressive persistent airflow limitation. The World Health Organization estimates that in 10 years the number of total deaths related with COPD will increase at least 30%. Exacerbations leads to a worsening lung function and increase the risk of mortality. Therefore, decreasing the number of exacerbations is an important aim.

Factors that modify breathing and ventilation patterns may influence the precise coordination of breathing and swallowing.

The purpose of this review is to sensitize the medical population to the effects of COPD on swallowing function.

Material and Method

Literature searches were performed using the electronic database PubMed. Queries: COPD, swallowing dysfunction, oropharyngeal dysphagia. Articles between 2000 to 2017 were included.

Results

COPD patients have a disrupted coordination between breathing and swallowing. In fact, changing the ventilator pattern, like inducing hypercapnia or by modifying the respiratory mechanical or flow-resistive load, improved swallowing frequency and laryngeal irritation. Several abnormal aspects of respiratory timing during swallowing are described in patients with COPD resulting in an increased risk of aspiration pneumonia and malnutrition. Therefore, the presence of dysphagia in patients with chronic respiratory diseases can increased exacerbations, which are associated with a rapid deterioration of their ventilator function and admissions in hospital.

Conclusion

Although, the relative small number of studies, almost of that show a relationship between dysphagia and COPD patients, and emphasize that this condition may be underdiagnosed. An effective screening, made by a rehabilitation physician, to determine whether patients with

COPD are at risk of dysphagia is crucial for the individual and healthcare system and the first step is to aware the medical population and understanding the importance of a multidisciplinary approach.

Keywords

COPD;swallowing dysfunction;oropharyngeal dysphagia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-1924

AMBULATORY PULMONARY REHABILITATION PROGRAM FOR PATIENTS WITH COPD: RESULTS.

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Introduction/Background

Currently, the chronic obstructive pulmonary disease is the fourth cause of death in the world. Dyspnea is the main symptom in these patients, and it produces a progressive loss of autonomy and quality of life. This study was aimed to analyze the effectiveness of a structured respiratory rehabilitation program in COPD patients in terms of improving the health-related quality of life and perception of dyspnea.

Material and Method

Prospective longitudinal study of COPD patients with any degree of severity in the GOLD scale, clinically stable, who have completed the respiratory rehabilitation program between 2013-2017. Dyspnea was measured using the modified Medical Research Council scale, quality of life through self-administered version in Spanish of the chronic respiratory disease questionnaire (CRQ-SAS) and exercise capacity through six minutes walking test (6MWT); both of them were evaluated at baseline and at the end of the treatment.

Results

A total of 76 (88,37%) patients completed the program, of which 77,7% presented severe and very severe airflow limitation. Dyspnea decreased in 58% the patients after applied pulmonary rehabilitation. In terms of quality of life and exercise capacity, a significant improvement were found after finished rehabilitation program in all areas measured by means of the CRQ-SAS questionnaire as well as in the 6-minute walk test ($p < 0,05$).

Conclusion

These data presented reaffirm us again on the benefit and the important role of respiratory rehabilitation in the management of patients with COPD.

Keywords

RESPIRATORY REHABILITATION;DYSPNEA

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-2002

EARLY PULMONARY REHABILITATION PROGRAM (PRP) AFTER HOSPITAL ADMISSION DUE TO EXACERBATION IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD): RESULTS AND FOLLOW-UP.

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Introduction/Background

Pulmonary rehabilitation is effective in the management of stable COPD, however, its role following an exacerbation of COPD is less studied.

Material and Method

A prospective open observational study that included 91 patients with COPD hospitalized for exacerbation. Patients were randomized to intervention group (IG, early PRP) or control group (CG). The PRP included 4 weeks of supervised ambulatory daily aerobic exercise. The following variables were analyzed at 3 and 6 months: walking distance in the six-minute walking test (6MWT), hand grip, muscle mass percentage (MM), Saint George Respiratory Questionnaire (SGRQ), Modified Medical Research Council dyspnea scale (mMRC), COPD Assessment Test (CAT) and number of exacerbations.

The statistical analysis was performed using Mann-Whitney U test considering a statistically significant difference $p < 0.05$, SPSS (22.0).

Results

43 patients (39 men, mean age 71.4 years) were assigned to the IG and 47 (44 men, mean age 73.26 years) to the CG. The 6MWT distance in the IG at 3 and 6 months was 365.89 (SD 93.9) and 383.81 meters (SD 88.7); in the CG, 299.7 (SD 106.7) and 306.8 meters (SD 106.4), $p < 0.05$. Patients improved in terms of MM, SGRQ, mMRC, CAT and exacerbations at 3 and 6 months in the IG, although without statistical significance.

Conclusion

Early PRP improves exercise capacity at 3 and 6 months. To establish more conclusions, it is necessary to expand the sample size.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.02 Internal Medicine and Other Conditions -Pulmonary Diseases

ISPR8-2400

EXPERT CONSENSUS ON BRIEF ICF CORE SET FOR COPD IN CHINA

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Introduction/Background

The Brief ICF core set for Obstructive Pulmonary Disease is universally used on the evaluation of COPD in clinical practice. While, the ICF core sets makers are mainly experts from north American and Europe and may not suit the Asian.

Material and Method

A consensus-building, 3-round, face-to-face survey with medical experts using the modified Delphi technique was conducted. 52 experts in the PCCM project completed the consensus process. The “comprehensive ICF core set for Obstructive Pulmonary Disease” was used as the reference. Added categories by the experts were combined with categories in the “comprehensive ICF core set for Obstructive Pulmonary Disease” to make questionnaire 1 in the first round; categories with an agreement level over 50% were selected to make questionnaire 2 in the second round; categories with an agreement level over 70% in the third round were selected to make the brief ICF core set for COPD in China.

Results

The brief ICF core set for COPD in China contained 13 categories. Of these, 4 categories were from the component body functions, 2 from body structures, 4 from activities and participation, and 3 from environmental factors.

Conclusion

This is the first study in the world to assess ICF core set for Chinese COPD patient and develop the Brief ICF core set for COPD in China. Our results confirm that the existing “comprehensive ICF core set” can represent the situation of COPD patients in China and find the unique characteristic of Chinese COPD patients,

Keywords

COPD;ICF;China

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-2561

ASSESSMENT OF LOWER URINARY TRACT FUNCTION IN CHILDREN WITH HIRSCHSPRUNG'S DISEASE

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Introduction/Background

Usually, in Hirschsprung's disease (HD), long-term sequelae in children are related to abnormalities in defecation. However, some of these patients also develop lower urinary tract problems. The aim of this study was to assess and define the effects of transanal endorectal pull-through procedure in patients with HD on lower urinary tract function through urodynamic studies performed before and after surgery.

Material and Method

Twenty-eight patients with HD were subjected to urodynamic studies before and after the different definitive surgical procedures. They were all males with a mean age of 3 years. The main outcome measurements were maximum cystometric capacity, compliance, unstable detrusor contraction, and residual urinary volume.

Results

Urodynamic findings were normal in 23 (82%) children, and abnormal in five (18%) children. In the uroflowmetric study, dysuria with detrusor sphincter dyssynergia and significant postvoid urine residuals (>20 ml) were found in the three symptomatic children. In the cystometric study, five children had unstable detrusor contraction, low bladder compliance, and small-capacity bladder.

Conclusion

In HD, neurovesical dysfunction may exist preoperatively, and, although the incidence of postoperative changes in neurovesical function may appear high, children who present with urinary problems after surgery should be assessed urodynamically.

Keywords

Urodynamic study; Hirschsprung's Disease; Urinary dysfunction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-2580

THE INFLUENCE OF URINARY INCONTINENCE AND /OR FECAL INCONTINENCE ON THE QUALITY OF LIFE AMONG TUNISIAN PHYSICIANS AND NURSES

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Introduction/Background

The aim of this study is to evaluate the influence of urinary and /or fecal incontinence on the quality of life among Tunisian physicians and nurses.

Material and Method

From October 2015 to May 2016, a descriptive cross-sectional study was

conducted among female physicians and nurses in two Tunisian teaching Hospitals. Data collection was performed using a digital tablet that contains a self-administered questionnaire written in French.

Results

A total of 402 questionnaires were collected. The sample included 321

(80%) nurses and 81 (20%) female-physicians.

There were a significantly powerful positive association between sphincter dysfunctions and altered mental or physical scores. These results confirm that

being incontinent (having urinary incontinence and/or anal incontinence) had a negative impact on quality of life. 67.4% (n=126) of the participants who were incontinent were aware of their conditions and only 61.6% (n=115) of them have sought medical help.

The main reasons reported for the lack of consultation were the feeling of shyness, unavailability (lack of time) and finally those who considered these disorders as a normal result of ageing, pregnancy and childbirth.

Conclusion

In our study the participant having sphincter dysfunctions had respectively a significantly higher altered physical and mental health score percentage (8.4% Vs 40.1%; $p < 10^{-3}$) and (31.2% Vs

54%; $p < 10^{-3}$) thus a worse quality of life. In fact, our results are consistent with those of the literature.

Damon et al used the same questionnaire as ours (SF12) to assess the impact of

anal incontinence on the quality of life and found that 87% of incontinent women felt that their anal symptoms reduced their quality of life.

Keywords

urinary and fecal incontinence; quality of life; physicians and nurses

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-2587

PREVALENCE OF URINARY INCONTINENCE, ANAL INCONTINENCE, DOUBLE INCONTINENCE AND SPHINCTER DISORDERS AMONG TUNISIAN PHYSICIANS AND NURSES

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Introduction/Background

The aim of this study is to Identify the prevalence of urinary incontinence, anal incontinence, double incontinence and sphincter disorders among Tunisian physicians and nurses.

Material and Method

From October 2015 to May 2016, a descriptive cross-sectional study was conducted among female doctors and nurses in two Tunisian University Hospitals. Data collection was performed using a digital tablet (allowing an automatic importing data for analysis) that contains a self-administered questionnaire written in French.

Results

A total of 402 questionnaires were collected. The sample included 321

(80%) nurses and 81 (20%) female-physicians.

The respondents age ranged from 23 to 60 years, with a mean age of 36.8 ± 8.3 years. There were a significant difference in distribution of age, BMI, financial incomes, fruit and water consumption between nurses and physicians.

The most common medical conditions and surgeries were respectively systematic arterial blood hypertension and appendisectomy.

The overall prevalence of Urinary Incontinence in the present study was 45%. In fact, more than one quarter of the participants experienced Urge Urinary Incontinence (20.4%) versus 17.9% Mixed Urinary Incontinence and 6.7% Stress Urinary Incontinence.

Anal Incontinence was reported by 10.9% of the participants and the subjects who reported at least one episode of anal incontinence per week were: 4.4% for flatulence, 6.2% for liquid stool and 0.24% for solid stool.

In the present study the double Incontinence prevalence was 10%. Finally, sphincter dysfunctions were reported by 46.5% of the participants.

Conclusion

It is the first Tunisian study that has studied the prevalence, risk factors of urinary and/or anal incontinence and their impact on quality of life among Tunisian Women using international validated scales.

Keywords

Prevalence;sphincter disorders;physicians and nurses

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-2598

RISK FACTORS OF URINARY INCONTINENCE AND /OR FECAL INCONTINENCE AMONG TUNISIAN PHYSICIANS AND NURSES

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Introduction/Background

The aim of this study is to identify the risk factors of urinary and /or fecal incontinence among Tunisian doctors and nurses.

Material and Method

This descriptive cross-sectional study was conducted among female doctors and nurses in two Tunisian University Hospitals from October 2015 to May 2016. Data collection was performed using a digital tablet that contains a self-administered questionnaire written in French.

Results

In multivariate regression, age higher than or equal to 40 years was an independent risk factor for sphincter disorders and health provider with a higher or equal age to 40 years had up to two and a half times more risk to have sphincter disorders (SD).

The nursing profession was an associated factor with the occurrence of SD compared to physicians. Indeed, the risk of SD occurring in a nurse was multiplied by 2.4.

Blood hypertension was found to be an independent risk factor in the occurrence of SD with an odds ratio of 3.62. The use of oral contraceptives is associated to the occurrence of the SD with an odds ratio of 2.56. The occurrence of post-obstetric urinary leakage multiplied the risk of SD by 11.98. Menopause was found as an independent risk factor for SD with an odds ratio of 13.17

Conclusion

Obesity or having an overweight were significantly associated with incontinence. Married women, who gave birth at least one time or more, were more likely to have sphincter disorders as well as post-menopausal ones. The uses of forceps at least one time, having a post obstetric urinary leakage or perineal damage were found also to be associated to sphincter disorders.

An advanced age (≥ 40 years), nurses' profession, systematic blood hypertension, oral contraception drug use, post-obstetric urinary leakage, menopause status and altered physical score of SF-12 were strongly associated with sphincter disorders

Keywords

Risk factors ;urinary and fecal incontinence;physicians and nurses

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-2615

URODYNAMIC PROFILE AT CHILDREN WITH URINARY DISORDERS

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Introduction/Background

The urodynamic assessment in children is a difficult exam to perform and interpret, due to the absence of nomogram based on age, the need to consider the anxiety and the lack of cooperation especially in children multi-operated.

Material and Method

We studied the urodynamic assessments conducted over two years in children under 16 years.

Results

Of 200 patients referred for urodynamic assessment during the two-years period, 52 patients were aged less than 16 years (26%). There are 37 girls (71,1%) and 15 boys (28,8%). The most important clinical signs are urinary leakage and enuresis. We find these principal causes: the spina bifida in 7 cases (13,4%), malformations of the urinary tract in 6 cases (11,5%) and thoracolumbar scoliosis in 5 cases (9,6%). The neuro-perineal examination was normal in over 50% of cases. The flow measurement was dysuria in 22 children (42,3%). At cystometry, the bladder was hypersensitive in 28 cases (53,8%), hypo compliant in 18 cases (34,6%), overactive in 27 cases (51,9%) and hyper contractile in 18 cases. Profilometry was normal in 21 cases (40,3%), hypotonia and sphincter hypertension were identified in 11 (21,1%) and 20 (38,4%) cases respectively. We conclude with an overactive bladder in 24 cases (46,1%), immature bladder in 23 cases (44,2%) and normal test in 5 cases.

Conclusion

This invasive exploration is done in the context of an initial balance sheet or in the follow-up of congenital or acquired neurological bladders and malformations bladders. An imaging balance sheet and a urine culture generally precede this event. As in adults it is a valuable tool in the therapeutic choice.

Keywords

Urodynamic profile;Children;urinary disorders

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-0343

RETROSPECTIVE STUDY OF ENTERO-CYSTOPLASTY OF ENLARGEMENT IN NEUROVESIA ABOUT 16 CASES -HOPITAL OF PHYSICAL MEDICINE AND READAPTATION KASDI MERBAH-TIXERAINE-ALGIERS-ALGERIA

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Introduction/Background

In neurological diseases, vesico-sphincteric disorders may have repercussions on the kidneys and on the quality of life, and may be life-threatening. It is therefore necessary to identify the cases at risk and to know when to give the indication of the enlargement enterocystoplasty. The surgical principle: and establish a neo-bladder at low pressure and satisfactory capacity with tightness, In order to protect the upper urinary tract, and possibly; give comfort to the patient (cleanliness).

Material and Method

Retrospective study: 16 cases. ; Sex: 11 female and 05 male

Results

Etiologies: Spinal Dysraphism: 10 patients. Post-traumatic paraplegia: 3 patients. Complication of operated lumbar scoliosis: 1 patient. Spina and BMI: 1 patient. HINMAN syndrome: 1patient (non-neurological neurogenic bladder). 08 cases operated in France. 08 cases operated in AlgeriaDiscussion: The reasons that prompted us to surgery are:biological criteria: the risk of renal failure.radiological criteria: the impact on the top device.urodynamic criteria: - hyperpressure and hyperactive bladder.hypocompliant bladder (small capacity bladder with hypertonia).

Conclusion

After failure of medical treatment; the enlargement enterocystoplasty remains the only therapeutic solution in the neurological bladders at risk. It is necessary to know how to put the operative indication in time (before the repercussion on the upper urinary system).A small note of hope; the first operated patient in our series is currently 26 years old and leads, almost normal life, 17 years after the procedure.And we must know that the care of children with spinal dysraphism or sacred agenesis is complex, multidisciplinary, early and long term.It need regular monitoring, and we insist on the coordination of different specialists in the management and prevention of urological complications by identifying cases at risk (by bladder hyperpressure, hyper activity) .

Keywords

ENTERO-CYSTOPLASTY;NEUROVESIA ,NEUROLOGICAL BLADDERS AT RISK

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-0757

EFFECT OF URINARY INCONTINENCE ON QUALITY OF LIFE AMONG TUNISIAN WOMEN

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Introduction/Background

In order to improve the quality of medical care, an assessment of patients' quality of life (QOL) has been recognized to be important as well as an assessment of physical impairment. Urinary incontinence has a strong influence on patients' QOL. Our study aimed to evaluate the effects of non-neurological urinary incontinence on the QOL of Tunisian women.

Material and Method

This was a cross-sectional descriptive study evaluating symptoms and QOL among women with non-neurological urinary incontinence seen in the urodynamic unit at the Physical Medicine and Rehabilitation department of the University Hospital of Monastir over six months. We used a validated questionnaire for symptoms and QOL: Urinary symptom profile (USP) and the urinary incontinence-specific measure of QOL: CONTILIFE.

Results

Fifty women with an average age of 51 years were included. Women were diabetic in 24%. The most frequent symptom was urgency in 76%. Stress urinary incontinence was found in 64%. Women consulted after an average of 3 years because they were ashamed in 37%, they thought it was a normal condition for age in 30%. The median USP overactive bladder score was 9.3 out of a maximum of 21. The median USP stress urinary incontinence score was 2.6 out of 9. In Daily activities domain, the median CONTILIFE score was 23 out of a maximum 35 for the highest level of discomfort. In sexuality domain the median CONTILIFE score was 8.1 out of a maximum of 15.

Conclusion

Urinary incontinence can have a severe effect on the QOL at any age. It is essential that the symptoms and effects of incontinence be properly assessed and recorded.

Keywords

Urinary Incontinence;Quality of Life;women

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-0811

MANAGEMENT OF BLADDER -SPHINCTER DYSFUNCTION ASSOCIATED TO PELVIC ORGAN PROLAPSE IN REHABILITATION DEPARTMENT

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Introduction/Background

To describe epidemiological and clinical profile of patients with bladder -sphincter dysfunction related to pelvic organ prolapse (POP) and to determine management modalities through our experience in rehabilitation department with a review of literature.

Material and Method

Descriptive retrospective study involving patients with bladder disorders associated with POP referred to the Physical Medicine and Rehabilitation department of the University Hospital of Monastir. Studied parameters were: obstetric and gynecological history, bladder sphincter disorders, pelvic floor muscle evaluation, urodynamic findings and management modalities (medical treatment, perineal rehabilitation and surgery)

Results

Forty one patients with bladder disorders associated with POP were included. Average age was 54 years. The majority of our population had risk factors of POP. Clinical examination revealed a cystocele in 40 cases, hysterocele in 25 cases and rectocele in 16 cases. Pelvic floor muscle evaluation showed a deficit of levator anis muscles in 20 patients. Urinary disorders were: frequent daytime voiding (46%), urge (41%),nocturia(25%),urinay incontinence(12%),stress urinary incontinence(28%) , mixed urinary incontinence(44%) and dysuria (16%). BUD was performed in 29 patients. Flow measurement showed dysuria (41%). Cystomanometry revealed bladder hypersensitivity (31%), detrusor over activity (27%), a reduced bladder capacity (6%). Profilometry unveiled sphincter incompetence (4.7%) and urethral hypertonia (16.3%). Perineal rehabilitation was prescribed for 25 patients and only 4 patients were put under anticholinergic treatment. The follow up showed an improvement of symptoms in 19 patients (43%) and 17 cases were sent to surgeon for prolapse correction.

Conclusion

Urinary disorders and POP are widely prevalent problems in the elderly population and significantly affects quality of life. Care should be delivered with a multidisciplinary team-based approach. Rehabilitation through urodynamic testing and perineal rehabilitation plays a crucial

role in the management. Surgery is the definitive treatment; it must aim to restore vaginal function and any concomitant urinary incontinence.

Keywords

pelvic organ prolapse;epidemiological profile;bladder disorders

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-0815

EPIDEMIOLOGICAL PROFILE OF BLADDER-SPHINCTER AND ANORECTAL DISORDERS IN A TUNISIAN REHABILITATION DEPARTMENT: ABOUT 153 CASES

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Introduction/Background

The main objective of this study was to evaluate the epidemiological, clinical and therapeutic profile of bladder-sphincter and anorectal disorders in patients followed in a Rehabilitation department.

Material and Method

This is a descriptive retrospective study including patients followed for bladder-sphincter and anorectal disorders. Demographic, clinical and therapeutic modalities were studied.

Results

Our study includes 97 women and 56 men with an average age of 46.07 years. The history of pelvic surgery and pelvic tumor were found respectively in 4 and 3 women. Among the 70 women who delivered in our study, 12 women had a history of macrosomia and 7 had a history of dystocia. The history of benign prostatic hyperplasia was found in 4 men. Urinary problems were observed in 141 patients such as frequent daytime voiding (32.67%), urgency with (17.64%) or without urinary incontinence (14.37%), nocturia (16.33%), dysuria (15.03%), urinary retention (4.57%), stress urinary incontinence (16.99%), mixed urinary incontinence (20.26%) and incomplete bladder emptying (1.96%). The anorectal disorders (constipation and fecal incontinence) were found in 27 patients. The etiological investigation showed a predominance of neurological diseases (43.13%) and gynecological pathologies (35.94%). Urodynamic assessment was performed in 69 patients. Therapeutically, 31 patients received anticholinergic therapy and 55 patients underwent perineal rehabilitation sessions. Urinary catheterization was indicated in 23 patients. Hygiene and dietary rules were given in 17 patients. The evolution was marked by an improvement of the symptoms in 46.4% of cases and 21 of our patients were referred for surgery.

Conclusion

The bladder-sphincter and anorectal disorders are frequent but largely underestimated. Their support is based mainly on the pelvic floor muscle training which is beneficial in most cases.

Keywords

bladder-sphincter disorders; anorectal disorders; rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-1033

POSTSTROKE DETRUSOR HYPOREFLEXIA IN A PATIENT WITH POSTERIOR CIRCULATION STROKE

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Introduction/Background

Urinary retention occurs in about 50% of patients hospitalized in the context of stroke, with rapid improvement in the first 72 hours, however, in 15-20% it may persist up to 6 months. Bladder dysfunction in stroke is often undervalued insofar as neurogenic bladder symptoms are difficult to recognize during the acute phase. There is generally a decreased sensitivity by the attending physician to this symptomatology, although it is of significant importance in terms of prognosis as well as its social impact.

Material and Method

The authors describe the clinical case of a patient who developed a urinary retention after cerebral infarction. A search was made in the Pubmed database of the terms "poststroke urinary retention", "detrusor hyporeflexia" and "micturition center".

Results

A 59-year-old woman with multiple cardiovascular risk factors presented in the emergency room with acute imbalance in gait, nausea and vomiting. Neurological examination showed right grade 3 hemiparesis (MRC scale) associated with appendicular dysmetria. Acute urinary retention was diagnosed 10 days after stroke and urodynamic study revealed absence of sensation and voluntary contraction of the detrusor and brain MRI revealed foci of hypersignal in the subcortical and periventricular white matter of both hemispheres, devoid of mass effect. The patient started alpha-blocker which was not effective, and was followed by intermittent bladder catheterization. Reassessed in consultation at 6 months post-stroke with no improvement in her bladder status. It may be a case of detrusor hyporeflexia due to probable disruption of the fibers descending from the pontine center of micturition.

Conclusion

To our knowledge, there is scarce evidence in the literature that implies posterior circulation lacunar syndrome and detrusor hyporeflexia. We consider that more attention should be paid to the recognition of the neurogenic bladder in stroke, because of its importance in clinical and functional prognosis.

Keywords

detrusor hyporeflexia;micturition center;poststroke urinary retention

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-1133

URODYNAMIC PROFILE OF CHILDREN FOLLOWED FOR VESICoureTERAL REFLUX

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Introduction/Background

Vesico-ureteral reflux is a common abnormality of the urinary tract in children who can engage the nephrological prognosis.

The objective of this study is to establish the urodynamic particularity of children followed for vesico-ureteral reflux.**Material and Method**

Descriptive retrospective study carried out during the period between June 2012 and June 2017, including children referred to the department of Physical and Functional Rehabilitation of the Military Tunis Hospital for urodynamic investigation in the context of the exploration of a vesicoureteral reflux.

Results

25 patients were included in the study. The average age was 6.7 years old. The vesicoureteral reflux was bilateral in 15 children (60%) and unilateral in 10 children (40%). It was classified as low grade in 8 cases (40%) and high grade in 17 cases (65%). An aspect of diverticular bladder was observed for 4 patients. The combination of VUR and diverticular bladder was observed for 2 patients

The urodynamic profile of children with RVU was characterized by 5 main abnormalities: little bladder capacity in 80% of cases, vesical hypersensitivity in 66% of cases, detrusor overactivity in 57% of cases, and hypo compliance in 28% of cases.**Conclusion**

The urodynamic investigation takes a part in the management of the voiding disorders of the child especially when we have vesicoureteral reflux.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-1230

URODYNAMIC PARTICULARITY OF CHILDREN FOLLOWED FOR REPETITIVE URINARY TRACT INFECTIONS

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Introduction/Background

The occurrence of urinary tract infection (UTI) in a context of micturition disorders is common and it is always necessary to know how diagnose them specially if the infections are repeated. the consequences of micturition disorders can engage the nephrological prognosis. this work focuses on characterizing the urodynamic profile of children presenting repetitive urinary tract infection

Material and Method

Retrospective descriptive study during the period between June 2012 and June 2017 including children sent to the Physical Medicine and Functional Rehabilitation Department of the Military Hospital of Tunis for the exploration of repetitive urinary tract infections.

Results

130 patients were included in the study. The average age of the population was 8.8 years with [4 -15]. A clear female predominance was observed (Sex.Ratio 1.8). 73 children had at least one episode of pyelonephritis. 57 patients presented at least one episode of low urinary tract infection including 29 patients with a history of three or more cystitis.

The urodynamic profile of patients with UTI was characterized by -Vesical hypersensitivity in 74% of cases. -The detrusor overactivity in 56% of cases. -The small bladder capacity in 42% of cases. -The high permictionnal pressure regimen in 32% of cases. -Bladder hypo compliance in 24% of cases.

Conclusion

The urodynamic investigation has a prominent place in the management of voiding disorders of the child especially in the presence of repetitive urinary tract infections

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-1338

URINARY DISABILITY MEASURE OF PEDIATRIC NEUROGENIC BLADDER

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Introduction/Background

The pediatric neurogenic bladder is a heterogeneous entity that may result from a variety of conditions affecting the central or peripheral nervous systems. To our knowledge no validated instruments properly designed to evaluate the severity of urinary symptoms in pediatric Neurogenic bladder have been published to date. The purpose of our work is to measure urinary disability in a children with neurogenic bladder

Material and Method

Descriptive and analytical study of 37 children with neurogenic bladder followed in the department of physical medicine and rehabilitation of Casablanca for urodynamic exploration between January 2013 and September 2016. All the participants were evaluated by urinary disability measure (MHU) score and international consultation incontinence questionnaire urinary incontinence short form (ICIQ -UI-SF).

Results

The mean age was 9,6 years . There was a female predominance : 22 girls and 15 boys. Intermittent urinary incontinent was the major symptom found 27% , followed by dysuria in 24% ; urinary retention in 10,8% and jet abnormalities in 8,1%. The repercussion on the upper urinary tract was: reflux vesicoureteral in 35%; ureterhydronephrosis in 24,3% ; having as a consequence 10,8% of kidney insufficiency.The MHU score showed mean total score of urinary disability in our children to 8,5/28 and the assessment of the impact of urinary disability on the quality of life patients by the ICIQ showed a median value of 13,5/21.

Conclusion

The use of the MHU score allows a more reliable and quantifiable objectification of Neurogenic micturitionar disorders in children . This mean that the pediatric neurogenic bladder alters the quality of life of the patients

Keywords

neurogenic bladder;children; urinary disability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-1741

LOW LEVEL LASER THERAPY FOR TREATMENT OF DETRUSOR UNDERACTIVITY POST BENIGN PROSTATE HYPERPLASIA

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Introduction/Background

Lower urinary tract symptoms (LUTS) are one of the most common problems found in older male. Many condition can cause LUTS, but the most influential factor in older male is benign prostate hyperplasia (BPH). One of the common LUTS in late BPH is detrusor underactivity and incomplete voiding. Low-level laser therapy (LLLT) has been used extensively in the field of rehabilitation due its regeneration and anti-inflammatory properties.

Material and Method

Male patient, 65 years old, with BPH post transurethral resection of the prostate (TURP), came to the rehabilitation clinic due to inability to void. TURP was done on July 2015, and he had difficulty in voiding and has been using Foley catheter for the last 6 months before coming to rehabilitation department. Urodynamic results on July 2016 shows normal compliance, detrusor underactivity, prolong voiding, abdominal straining, and high post void residual urine (PVR) (>50%).

The patient was given a clean intermittent catheterization (CIC), voiding diary, along with a LLLT stimulation on suprapubic area, 3-4 spots, 6-9 J each spot. LLLT was given 5 sets of 6 session each, 2-3 times per week. Patients was evaluated at the end of every sets for voiding diary and PVR evaluation. At the end of the 5 sets, an urodynamic evaluation was done.

Results

After 5 sets of LLLT and CIC, patients has improvement in his bladder sensation, voided volume, his ability to hold urine, and reduction in PVR (<20%) and frequency. Despite improvement in symptoms, follow up urodynamic test didn't show significant difference from the previous one.

Conclusion

Low level laser therapy for LUT dysfunction in BPH patient show a promising results. But research regarding the effect of LLLT in bladder dysfunction is very limited. A reliable research needed to be done to prove the efficacy of LLLT in the management of bladder dysfunction.

Keywords

low level laser;LUTS;bladder dysfunction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-1925

THE EFFICIENCY OF THE POSTERIOR TIBIAL NERVE STIMULATION IN FECAL INCONTINENCE POST HIRSPRUNG DISEASE SURGERY: A CASE REPORT

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Introduction/Background

Hirschsprung disease (HD) is an anorectal malformation which causes constipation in children. Fecal incontinence (FI) can be caused by the malformation itself or as a consequence of its surgical repair. Different treatments are available for FI and can be more or less invasive. The posterior tibial nerve stimulation (PTNS) is an interesting alternative treatment which is very little used in the pediatric setting especially the transcutaneous way. The aim of our study is to evaluate the efficiency of PTNS in the management of FI postsurgery for HD.

Material and Method

This is an 8-years old child with poor school results. He was referred to our service for the management of a post-surgical FI for his HD. He received 2 months of PTNS at the rate of 3 sessions per week. Each session lasts 20 minutes. Jorge-Wexner score was evaluated at the beginning and the end of the protocol.

Results

After an 8 week period, the child showed significant improvement in his FI symptoms. He experienced a reduction in the number of incontinence episodes (5-6 episodes per day to 3-4 episodes per month) and an improvement in urgency (1 bowel per day). There was also an improvement in the Jorge–Wexner score between prePTNS and two months after (decrease from 16 to 4).

Conclusion

This case report shows preliminary results of the PTNS for the treatment of FI in children. It may hold promise as a treatment which patients can self-administer safely and effectively. However, its true role remains yet to be validated and time tested.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-2022

BLADDER DYSFUNCTION IN MYASTHENIA GRAVIS - A RARE MANIFESTATION OF DISEASE OR CONSEQUENCE OF TREATMENT?

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Introduction/Background

Myasthenia Gravis is an immune-mediated condition with production of autoantibodies against the acetylcholine receptors in the neuromuscular junction. This disorder is characterized by decreased muscle strength and fatigue that typically worsens with exercise. Neurogenic bladder dysfunction associated with the disease is rarely described, as well as the effects of anti-acetylcholinesterase medication at the bladder and urethral sphincter. The authors describe a case of a patient with Myasthenia Gravis and neurogenic bladder. A literature review published to the present on neurogenic bladder dysfunction and the effects of medication associated with the disease was also carried out.

Material and Method

Case report - A 56-year-old female with Myasthenia Gravis associated with thymoma. She started treatment with pyridostigmine and underwent thymectomy one month after diagnosis. Meanwhile, she started complaining of mixed urinary incontinence. Physical examination showed sphincter insufficiency with retention effort. Detrusor hyperactivity with small volumes, high pressures and subsequent loss was identified in the urodynamic study. In the voiding phase, she had an effective detrusor contraction, without residual volume.

Results

In this disease, due to the compromise of the nicotinic and muscarinic receptors, it is expected an alteration of the smooth and striated muscle.

In the literature, five cases of myasthenia gravis and neurogenic bladder dysfunction were described, four of whom had detrusor hypoactivity and in one case hyperactivity.

Regarding the effects of the medication, a single study was found in which the detrusor hyperactivity is associated with the anti-acetylcholinesterase therapy, probably what will explain the urodynamic findings of this patient.

Conclusion

There are few reported cases of neurogenic bladder in Myasthenia Gravis, and lesser on the effect of anti-acetylcholinesterases on the bladder and sphincter function.

Given its multiple alterations, the urinary symptoms should always be asked.

Further studies should be performed to better understanding bladder dysfunction in this pathology.

Keywords

Myasthenia Gravis;Bladder dysfunction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-2151

CLINICAL AND URODYNAMIC FINDINGS IN TUNISIAN CHILDREN: A SINGLE-CENTER REPORT OF 79 CASES

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Introduction/Background

Pediatric Voiding disorders are frequent. Urodynamic evaluations make it possible to describe bladder dysfunctions and to plan a therapeutic strategy for each patient. The aim of our study is to analyze different type of such symptom in childhood and describe therapeutic measures.

Material and Method

A retrospective study including 79 children (51 girls, 28boys) treated for voiding disorder from January 2013 to Mars 2017 in the

urodynamic unit of the physical medicine and rehabilitation Department in university Hospital center Sahloul, Sousse. The clinical history and urodynamic assessments as well as the neuroradiographic findings were recorded

Results
Mean age of our study population were 11 years [4- 16]. Clinical history and exam were normal in 60.7% of cases, revealed spina bifida in 6cases, multiple sclerosis in 4 cases and renal failure in 6 cases. the most common symptoms reported were Urgency urinary incontinence (35.4%), and enuresis (29.1%).

Urodynamic test was practiced and revealed an overactive detrusor in 57 % of cases associated to bladder sphincter dyssynergia in 15% of cases because of a poorly stabilized bladder.

Treatment was based on motivational therapy, bladder-training exercises in 73% of cases. Pharmacologic was based on anticholinergics in 60% of cases and Desmopressine was prescribed in isolated nocturnal enuresis. Clean intermittent catheterization was prescribed in 4 cases.

Conclusion

Voiding troubles in children are frequent including in most cases a poorly stabilised or non-neurogenic bladder. A careful clinical and urodynamic evaluation is necessary to eliminate a neurologic disorder, evaluate the risk on the upper urinary tract and define a management program for each trouble.

Keywords

voiding disorders;child;urodynamic test

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.03 Internal Medicine and Other Conditions -Bladder and Bowel Disorders

ISPR8-2223

THE IMPACT OF A PELVIC FLOOR REHABILITATION PROGRAM IN URINARY INCONTINENCE AT ONE YEAR

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Introduction/Background

Urinary incontinence (UI) is defined as the involuntary loss of urine. Pelvic floor rehabilitation (PFR) is preconized as the first line treatment of stress incontinence. The aim of this work was to determine the recurrence of IU after one year of a PFR program, its impact on the patient's life, and its relation to compliance of maintaining pelvic floor home exercises in a group of women with UI.

Material and Method

Retrospective analysis of computer records from physician evaluation, previously, afterwards and at 3 months after treatment and telephone interview at 1 year, of women diagnosed with UI that underwent PFR between January and December 2016. Demographic, VAS before, after and at 1 year from supervised treatment, subjective quantity of urine loss by a Likert scale at 3 and 12 months and compliance to home exercises were the main data obtained.

Results

54 women were followed with a mean age of 48. 57,40% had mixed and 42,59% stress UI. Mean VAS before treatment was 6,77, at the end 3,48 and at 1 year 5,18. At the end of treatment 48.15% of patients classified they're IU as "much better ". 3 months after 31.48% still had some grade of urine loss but 56,34% had fewer losses. At 12 months, 38,89% considered the losses equivalent, 25.93% worse, 18.51% much worse, 11.11 % better and 5.56% much better. 55.56% still had losses at 12 months and 50% of patients admitted not having complied with home exercises.

Conclusion

We demonstrated an improvement in reducing urine losses after PFR, with an important improvement in quality of life. However, the rate of worsening after one year is not negligible. Lack of compliance with home exercises may be an accountable factor. Further studies are needed as well as finding strategies to increase patient's participation in home care programs seems vital.

Keywords

Urinary Incontinence;Pelvic Floor Rehabilitation;Bladder Disorder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2627

IS AXILLARY WEB SYNDROME A RISK FACTOR FOR LYMPHEDEMA?

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Introduction/Background

Several risk factors have been associated with upper extremity lymphedema after breast cancer treatment (LABC). These include mastectomy, axillary lymph node dissection (ALND), number of dissected and metastatic lymph nodes (NDN and NMN, respectively) and obesity. Despite the ongoing advances in breast cancer treatment, the need to study the secondary causes of lymphedema still exists due to its severe comorbidities. This study aims to identify risk factors for LABC, in particular axillary web syndrome (AWS).

Material and Method

We conducted a prospective longitudinal study of women with unilateral breast cancer treated at our institution between 2011 and 2015. Lymphedema was diagnosed when there was a rise in upper limb circumference > 2 cm in comparison to the contralateral limb. Descriptive statistics were used to summarize and describe the data of independent variables. Survival analysis was used to analyse the time interval (days) between surgery and lymphedema diagnosis. We used the Kaplan-Meier method with log-rank test to compare survival curves between groups and *Cox regression* (proportional hazards regression) to analyze the effect of several risk factors on lymphedema diagnosis. An alpha of 0.05 was considered statistically significant. All statistical analyses were conducted using the Statistical Software SPSS version 24.

Results

Two hundred and thirty-one patients were included with a mean age of 56 years. Among patients, 18.6% had lymphedema, 65% underwent ALND, 26.4% had AWS and 13% had seroma. AWS was not associated with lymphedema ($p=0.501$). Variables significantly associated with lymphedema were Mastectomy (HR=3,752; 95% CI: 1,156-12,177), ALND (HR=0,025; 95%, CI: 0,02-0,368), higher NDN (HR=1,054; 95% CI: 1,019-1,091) and higher NMN (HR=1,063; 95% CI 1,014-1,115).

Conclusion

Based on our results, AWS was not a risk factor for LABC. Unexpectedly, nor was ALND. This was probably due to the low NDN in many ALND, since a higher NDN did constitute a risk factor for LABC.

Keywords

Breast Cancer Lymphedema;Risk Factors;Axillary Web Syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-0109

CHANGES IN HEART RATE AND BORG SCALE AFTER THE EXERCISE-TOLERANCE TEST IN ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION PATIENTS

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Introduction/Background

Currently, there are no reports showing changes in heart rate (HR) and Borg scale scores after the exercise-tolerance test in patients who had undergone allogeneic hematopoietic stem cell transplantation (allo-HSCT). We investigated the change in HR and Borg scale after the exercise-tolerance test in allo-HSCT patients.

Material and Method

Our study included 28 patients (19 men and 9 women) who had undergone allo-HSCT between May 2015 and March 2017. The patients performed the exercise-tolerance test on a bicycle up to 2 weeks before and 3 weeks after the transplantation. We investigated the tolerance time, HR, and Borg scale as well as the association between HR and Borg scale after the exercise-tolerance test, both before and after transplantation.

Results

The exercise-tolerance time was significantly decreased after allo-HSCT ($P < 0.05$). The changes in HR and Borg scale after the exercise-tolerance test were significantly lower after than before allo-HSCT ($P < 0.05$). Furthermore, the change in HR was positively correlated with the Borg scale of the patients before allo-HSCT ($\rho=0.6$: $P < 0.05$). However, there was no change in the relationship between HR and Borg scores of the patients after allo-HSCT.

Conclusion

The changes in HR and Borg scale after the exercise-tolerance test were significantly lower after than before allo-HSCT. Additionally, there was no change in the relationship between HR and Borg scale after the exercise-tolerance test post allo-HSCT. We believe that our findings will be relevant in the context of planning rehabilitation for allo-HSCT patients.

Keywords

cancer;exercise tolerance test;borg scale

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2689

BONE HEALTH AND QUALITY OF LIFE IN BREAST CANCER PATIENTS TREATED BY AROMATASE INHIBITORS

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Introduction/Background

Breast cancer (BC) is the most frequent malignant tumor in women in Europe and in North America. The use of the aromatase inhibitors (AIs) is recommended in women affected by (BC) with estrogen receptor-positive (ER+) tumors. The AIs, blocking the enzyme converting androgens into estrogens, induce a reduction in bone mineral density (BMD), with a resulting increased risk of fragility fractures in the women. Therefore, BC patients treated by AIs require an adequate anti-osteoporotic treatment (bisphosphonates or denosumab) and a supplementation of calcium and vitamin D. Aim of this observational study was to evaluate the bone health and the quality of life (QoL) in a cohort of BC patients treated by AIs.

Material and Method

We included ER+ BC adult women (aged >18 years), undergone surgical treatment, in treatment with AIs. For all patients we recorded comorbidities and anti-osteoporotic treatment. We assessed: BMD, using Dual X-ray Absorptiometry (DXA), fragility fracture rate, and QoL, using the 12-Item Short Form Health Survey (SF-12) and its components: Physical Composite Scale (PCS) and Mental Health (MCS).

Results

We assessed 118 patients, mean aged $68,80 \pm 10,18$ years with a mean BMI of 29.0 ± 2.8 kg/m². We prescribed bisphosphonates in 80 patients (67.8%), risedronate in 68 and alendronate in 12, denosumab in 38 (32.2%), and a supplementation with calcium and vitamin D in the entire cohort. Fragility fracture rate occurred in 17,79% of women included. Mean values of SF12 scores were: SF12 PCS = 43.6 ± 2.33 and MCS = 50.0 ± 2.12 .

Conclusion

In our cohort of BC patients treated by AIs, there was a fragility fracture rate of 17.8%, testifying the importance of an adequate anti-osteoporotic treatment in these patients.

Keywords

breast cancer;fracture;aromatase inhibitors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-0139

ADVANCE CARE PLANNING IN BRAIN TUMOUR SURVIVORS: A PROSPECTIVE STUDY

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Introduction/Background

ACP is the process of planning of planning for future healthcare to guide clinical decision making when one is unable to communicate decisions due to lack of capacity. This study explored the perspectives of brain tumour (BT) patients in discussing ACP, symptom profile, physical and functional status, quality of life (QoL), level of coping and carer burden.

Material and Method

A prospective cohort study with semi-structured interviews regarding ACP for BT patients in hospital and community was conducted. Validated assessment tools measured coping strategies, QoL and carer burden. Interview ACP transcripts were analyzed, coded and interpreted using qualitative analytic techniques for thematic analyses.

Results

Participants' (n=36) mean age was 47 years (range 20-69 years), with median time since diagnosis of 3.9 years, and majority (70%) had glioblastoma multiforme (GBM). Fatigue was the most common symptom reported by 89% participants, followed by pain (53%) and cognitive impairment (39%). Overall, participants indicated good QoL and used more problem-focused coping strategies including 'acceptance' and 'positive reframing'. There was a 'moderate' level of carer burden. Thematic analyses indicated participants had limited understanding of ACP, and lack of such discussions with healthcare professionals. Majority preferred dedicated sessions by trained healthcare professionals especially medical staff.

Conclusion

The low uptake of ACP amongst BT patients' highlights need for increased awareness of ACP in clinical practice as it has an important role in enhancing patient autonomy and delivery of quality end-of-life care. The neuropalliative-rehabilitation model of care integrates care with treating teams and can provide timely ACP information to BT patients, with the need for multifaceted system-wide interventions in implementing ACP.

Keywords

advance care planning;brain tumour;glioblastoma

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-0400

CARDIORESPIRATORY FITNESS AND HANDGRIP STRENGTH IN BREAST CANCER PATIENTS WITH LYMPHEDEMA: PRELIMINARY STUDY

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Introduction/Background

To investigate of the cardiorespiratory fitness of breast cancer patients with lymphedema and to understand the association between CRF and hand grip strength in breast cancer patients with lymphedema.

Material and Method

Patients with breast cancer who had treatment-related lymphedema were included retrospectively (n=20). The control group reviewed the medical records of females participating in health screening who had cardiopulmonary function test (n=33). CRF classified by aerobic capacity and cardiovascular response. To assess hand grip strength, by using aa hand dynamometer was used. , two attempts were made with each hand and the average of the two scores was used. Body mass index(BMI), Beck depression indexinventory(BDI), Montreal cognitive assessment-K(MOCA-K) were measured to investigate the association between hand grip strength and physical, psychological factors.

Results

In breast cancer patients with lymphedemaexperimental, metabolic equivalent tasks(METs), peak oxygen consumption(VO₂ peak), anaerobic threshold were significantly lower than control group. The hand grip strength of affected arm is lower than unaffected arm. Hand grip strength showed no significant association with age, BMI, difference of circumference, BDI, MOCA-K. Hand grip strength showed no strong correlation with cardiorespiratory fitness.

Conclusion

To improve of quality of life and survival rate of breast cancer patients with lymphedema, it is important to educate aerobic and strengthening exercise.

Keywords

lymphedema;breast cancer; cardiorespiratory fitness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-0618

LOWER LIMBS LYMPHEDEMA AFTER PROSTATE CANCER TREATMENT: A SCOPING REVIEW

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Introduction/Background

Lower limbs lymphedema (LLL) might be a long life complication of prostate cancer (PC) treatment: pelvic lymph node dissection (PLND) and radiation therapy (RT) are the major risk factors to develop lymphedema in PC patients. In literature this complication is still not well recognized, although in 2011 a previous review reported a rate of 0-10%. Aim of this scoping review was to investigate the incidence of LLL in patients affected by PC.

Material and Method

We planned a research on PubMed (Public MedLine) for all the relevant clinical trials published in medical literature in the last 10 years (up to December 2017), including only those in English language, performed on humans. Firstly, we used as Medical Subject Headings (MeSH) term "Lymphedema", adding as PubMed Search Builder the terms: "Prostate Cancer", "Prostatectomy", and "Lymph Node Excision" and "Prostate"; then we used as MeSH terms "Prostatic Neoplasms", "Prostatectomy", adding as PubMed Search Builder the term "Lymphedema"; furthermore, we used as MeSH term "Lymph Node Excision", adding as PubMed Search Builder the terms "Lymphedema" and "Prostate". We examined all these studies, including only those reporting lymphedema among the complications, and excluding the reviews.

Results

In our scoping review we found only 2 retrospective studies according to the research methods. In the first one, performed on 26 patients undergone ePLND (100%) and radiotherapy (84.6%), the 36% of patients showed LLL. The second study was performed on 43 patients firstly undergone radical prostatectomy (88.4%) and or radiotherapy (11.6%), all participants developed lymph node recurrence and secondly underwent choline-PET/CT guided salvage lymph node ablation plus adjuvant radiotherapy (ART). LLL was present in 10.9% before the ART, 13% during the ART, 13% after the ART, and 13.5% at the last follow up.

Conclusion

Lower limbs lymphedema is a relevant potential complication in PC patients that is worth to be better investigated.

Keywords

lower limbs lymphedema;prostatectomy;prostate cancer

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-0716

EFFECTIVENESS OF A YOGA PROGRAM IN THE TREATMENT OF DIAGNOSED PATIENTS WITH NON-METASTATIC BREAST CANCER ADJUVANCY WITH ANASTROZOL, LETROZOLE AND TAMOXIFEN

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Introduction/Background

Breast cancer is the most commonly diagnosed cancer in women worldwide, a mortality of 522,000 each year. Advances in prevention, diagnosis and treatment have led to increased survival. The treatment patients receive is multidisciplinary, involving clinical oncologists, surgeons, radiation oncologists, psychiatrists and physical therapists.

Aromatase inhibitors (AI) inhibit estrogen levels in plasma by inactivating aromatase, the enzyme responsible for the peripheral conversion of androgens into estrogens. The musculoskeletal syndrome associated with AI (AIMSS) can be severe and disabling in almost a third of patients, being this one responsible for the interruption of management in 10 to 20% of patients.

Many women with a diagnosis of breast cancer try yoga as a means to cope with their symptoms.

Material and Method

Clinical trial quasi-experimental (prospective, longitudinal, non-randomized, intra-hospital) where muscular contractures, presence of pain, were evaluated by validated clinical tests in 30 patients with breast cancer treated with IA. Treated with a program based on yoga exercises for 12 weeks from september to november 2017

Results

30 patients were studied, 24 took NSAIDs daily (80%) for pain associated with muscle contractures and joint pain and they had contractures in pectoralis major and latissimus dorsi, 6 (20%) did not take NSAIDs but presented joint pain, compared With the baseline assessment, a statistically significant improvement was observed in muscle contractures ($p = 0.015$), pain reduction ($p = 0.001$), all with a decrease in NSAID intake for pain associated with adjuvant treatment.

Conclusion

The yoga program positively impacts patients with non-metastatic breast cancer adjuvant with Anastrozol, letrozole and tamoxifen in reducing pain and increasing joint range

Keywords

YOGA;BREAST CANCER;PAIN

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-0787

COMPREHENSIVE APPROACH TO REHABILITATION OF PATIENTS WITH BREAST CANCER

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Introduction/Background

Rehabilitation of patients with oncological pathology is very actual problem of a modern medicine. Here is described an integrated program of rehabilitation of patients with breast cancer.

Material and Method

There were 32 patients under observation with a diagnosis of breast cancer. When prescribing physical therapeutic methods, an in-depth history of the disease, its duration, methods and volume of treatment received, its effectiveness have been collected preliminary. In the rehabilitation of the patients of the main group (17 patients), a basic complex was used, which included: general diet, motility activity, thalassotherapy, heliotherapy, swimming in the pool, sparing-training regime of the physical aerobic exercise. In addition, the patients of the main group were assigned the methods aimed at reducing symptoms of lymphedema, muscle weakness of the upper limb and increasing the nonspecific resistance of the organism to environmental factors. In the sanatorium rehabilitation of the patients of the main group, a team of specialists, consisting of oncologists, psychologists, art and dance therapists, took part. In the treatment of the control group (15 patients) the basic complex was used. Evaluation of the results of the rehabilitation was carried out according to the criteria for the effectiveness of the sanatorium treatment, taking into account the objective and subjective indicators of the patients' health status.

Results

The effectiveness of treatment of patients who received physical methods and consultations of doctors of oncologists, psychologists, art and dans-therapists in addition to the basic complex, was significantly higher in comparison to the control group.

Conclusion

This treatment complex can be included into the programs of rehabilitation treatment and rehabilitation of patients diagnosed with breast cancer in sanatorium-resort conditions.

Keywords

69nelli

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-0880

RANGE OF MOTION AND UPPER LIMB FUNCTION IN POSTOPERATIVE MASTECTOMY COMPARED TO QUADRANTECTOMY

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Introduction/Background

Background: Breast cancer is worldwide incident among women, whose surgery is frequent and associated with numerous functional changes. Objective: To assess the range of motion and upper limb function postoperatively before and after physiotherapy intervention of women who underwent mastectomy and quadrantectomy.

Material and Method

Methods: This is interventional study, descriptive and exploratory, quantitative approach, with 64 women undergoing conservative surgery and mastectomy with follow up at the gynecology outpatient clinic and referred for physical therapy at the Hospital das Clinicas, UNESP. Was performed goniometry of flexion / extension, abduction / adduction and internal rotation / side, measures performed before and three months after the therapy.

Results

Results: The chi square test with 0.005 significance level showed that quadrantectomy or mastectomy, not differentiated in relation to the variables; schooling, family income, color, marital status, religion, breast affected, clinical staging, menarche, body mass index and contraceptive methods. There was no association between type of surgery and the median age (type 1: 55 (37-57) x 2 type: 54 (37-82), $p = 0.331$ by Mann-Whitney).

Conclusion

Conclusion: After physiotherapy, the flexion of the homo- and contralateral arm, as well as the homolateral abduction and homolateral extension increased significantly in both surgeries. The contralateral abduction was maintained in both surgeries. The physiotherapeutic intervention provided a significant improvement in the range of movements.

Keywords

breast cancer;phsioterapheutic intervention;range of motion

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-0952

CLINICAL AND DEMOGRAPHIC PROFILE OF PATIENTS DERIVED FROM THE PALLIATIVE CARE UNIT TO THE PILOT PROGRAM OF ONCOLOGICAL REHABILITATION. HOSPITAL DEL SALVADOR

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Introduction/Background

The referral to rehabilitation programs of oncological patients with advanced disease is a controversy. **Aim:** To describe the demographic and clinical profile of adult patients derived from a palliative care unit who are candidates for a cancer rehabilitation program.

Material and Method

Observational, descriptive and retrospective study. We included 34 patients diagnosed with Stage IV cancer who were referred by a physiatrist from the Palliative Care Unit to an oncological rehabilitation program, between May 2016 and November 2017. The demographic and clinical background were obtained from a database and the review of the clinical records of the palliative care unit. Data were analyzed with descriptive statistics. **Criteria for inclusion** were autovalent patients, with the presence of fatigue, who needed analgesic pain management, without the use of powerful opioids.

Results

The average age was 60 years, 32.4% of them were men and 67.6% women. The diagnoses were: Multiple myeloma (20.6%), miscellaneous (47.4%) and digestive tract cancer (17.6%). The intensity of the pain evaluated with the visual analogue scale (VAS) was mild for 55.9% of the patients, moderate for 32.4% and severe for 11.7%, with characteristics of mixed in 50%. Performance status ECOG 1 (30 %) and ECOG 2 (70%).

Conclusion

A group of patients with advanced cancer who attended a palliative care unit who are fatigued, are independent and have a medical pain control, could obtain important benefits in their functionality and quality of life by being referred to an oncological rehabilitation.

Keywords

cancer rehabilitation;Palliative care rehabilitation

No conflict of interest

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A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-0964

EXERCISE INTERVENTION AMELIORATES EXERCISE RESPONSES AND BODY COMPOSITION IN PATIENTS WITH HEAD AND NECK CANCER RECEIVING CHEMOTHERAPY

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Introduction/Background

Studies have found that many chemotherapy drugs will produce multiple side effects and complications in cancer patients, especially in the case of the cardiovascular disease. This study was intended to investigate whether the exercise training intervention could improve the body composition and exercise responses of patients with head and neck (H&N) cancer who are receiving chemotherapy.

Material and Method

This is a randomized controlled trial. 84 H&N patients were assigned to sedentary group or exercise group. The data were collected pre-training and post-training, where the body composition, heart rate (HR), blood pressure (BP), rate-pressure product (RPP) and exercise capacity were measured.

Results

There was a significant difference found between the sedentary group's body weight and body mass index after exercise training. In addition, in the exercise group, the HR, HR recovery, BP, BP recovery, RPP, and minutes walking distance was better than the sedentary group. Results from this study suggested exercise training significantly improved exercise responses and body composition.

Conclusion

These findings suggested that exercise can help to promote cardiopulmonary fitness and exercise capacity for H&N cancer patients undergoing chemotherapy.

Keywords

Head and neck cancer;Chemotherapy;Exercise responses

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-1270

EFFECTS OF PHYSICAL EXERCISE AFTER ALLOGENIC STEM CELL TRANSPLANTATION : A FIVE YEARS RETROSPECTIVE STUDY

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Introduction/Background

In the last few years, the increase of the number of allogenic hematopoietic stem cell transplantation (HSCT) posed new issues in Physical Medicine and Rehabilitation. Many complications occur before, during and after conditioning and transplant, among others infectious and immunological complications, cytopenias, denutrition. These elements affect the back to a better quality of life, also, they slowdowns the rehabilitation.

Material and Method

We did a review of patient's folder being cared in our department between 2012 and 2017 (n=65). We proposed individual and personalized program, with physiotherapy, adapted physical activity and psychomotricity. We observed the benefit on their physical abilities and the limits of intervention, to bring out the best way to evolve the personalized rehabilitation program in the years to come.

Results

At the beginning of the support, the performances were very weak because of the physical deconditioning, especially during Six minutes' walk test and Sit to Stand Test. Length of stay was very varied, often because of some medical events. At the end of program, conducted one day per week to five day per week, scores were significantly improved, and opportunity to carry out dailies life activities has been ameliorated.

Conclusion

We were able to highlight the need to perform two levels of management for these patients according to their physical abilities : level one for patients with major deconditioning, based on individual support with physiotherapy and psychomotricity ; level two for patients with better physical ability and with less fatigue, based on collective activities, with adapted physical activity and psychomotricity. All patients should benefit from psychological and dietetic follow-up program. This global and functional approach aims at improving physical and psychological well-being as well as achievement of activities of daily living.

Keywords

stem cell transplantation;cancer;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-1441

THE ASSOCIATION BETWEEN CARDIOPULMONARY FUNCTION AND MUSCLE MASS AFTER THORACOSCOPIC LOBECTOMY IN PATIENTS WITH LUNG CANCER: A PRELIMINARY RESULT

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Introduction/Background

Few studies have investigated that related to cardiopulmonary function and body composition in patients with lung cancer. The purpose of this study was to determine whether muscle mass could be used to predict cardiopulmonary function after thoracoscopic lobectomy in patients with lung cancer.

Material and Method

A total fifteen lung cancer patients (aged 61.92±7.49 years, mean±SD; 5 female and 10 male) were selected in hospital. Dual-energy X-ray absorptiometry data were recorded using appendicular skeletal muscle mass (Lunar; GE Medical Systems, Madison, WI) at baseline and after 4weeks. Patients performed an incremental exercise test to exhaustion on a treadmill to determine the maximal oxygen uptake (Cosmed, Quark CPET, Italy). The 6-minute walk test, handgrip strength and pulmonary function tests were performed before surgery, 1 and 4 weeks after surgery respectively.

Results

Patients in the lowest appendicular muscle mass were more likely to have significant maximal oxygen uptake decreasing in the lowest group. The higher appendicular muscle mass at baseline and 2 weeks after surgery correlated significantly with the preoperative FEV₁/FVC%. A significant association was observed between handgrip strength and 6-minute walk distance after surgery.

Conclusion

Our results expand the knowledge that high skeletal muscle mass and cardiopulmonary functions are associated with functional recovery after surgery on the lung cancer patients. Nevertheless, future studies should be aimed at testing the possible benefits produced by interventions on lung cancer. Higher level of 6-minute walk distance and appendicular muscle

mass may be able to be used to predict cardiopulmonary after thoracoscopic lobectomy in patients with lung cancer.

Keywords

6-minute walk test;appendicular skeletal muscle mass;lung cancer

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-1492

FUNCTIONAL ASSESSMENT AT ONCOLOGIC REHABILITATION SCENARIO; A COMPREHENSIVE APPROACH FOR KNOW FUNCTIONAL RISKS AND PREVENTION OF DISABILITY RELATED TO CANCER AND ITS TREATMENTS

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Introduction/Background

Background

Cancer is a prevalent chronic non transmissible disease; whose risk increases with aging and in some cases with exposure to determinated risk factors. The Functional Assessment at Oncologic Rehabilitation Scenario, is an important issue at the comprehensive approach, that is extrapolated from geriatric rehabilitation strategies. In wich seeks to know both the functional status of the performance components and the identification of the functional risks derived from the disease and the treatment. The objective is to guide rehabilitation strategies according to the needs, the functional capacity of the patient, their prognosis and stage of the life cycle, along oncological treatment

Objective

To define a reference framework for the functional evaluation of oncological patients, Accord with their stage of life cycle and the definition of functional risk derived from personal status, oncological disease and their propoused oncologic treatment

Material and Method

Methods

Criteria and guidelines had been developed from literature review and teamwork experience during the last years in a rehabilitation service of a national reference center for cancer in Colombia. As a result we are building rehabilitation interventions for patients across differents stages of the disease (diagnosis, active treatment, palliative treatment, end of life), that have a correspondence with de moment in the cycle of life, the functional risks detected and their functional prognosis and living prognosis.

Results

Patient Related



- Age
- Nutritional Status
- Comorbidities
- Previous disability
- Social support
- Access to health services

Disease Related



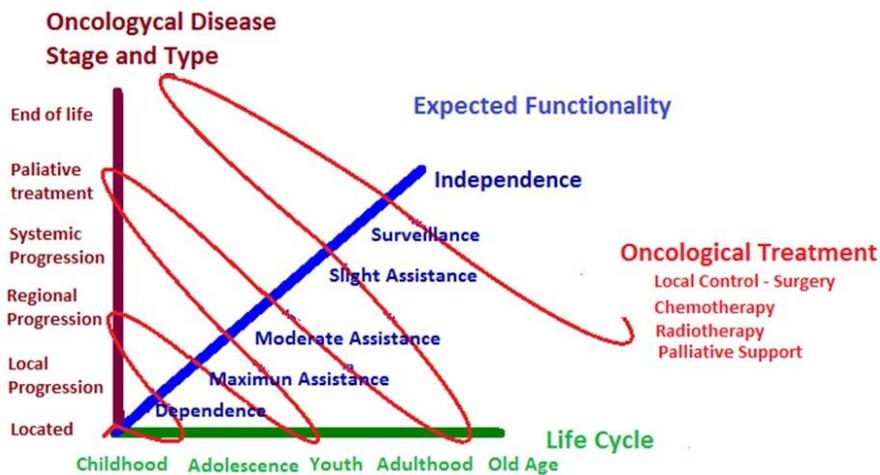
- Location at diagnosis and treatment
- Stage
- Type
- Treatment response

Treatment Related



- Surgery
- Chemotherapy
- Radiotherapy
- Multimodal Strategies

Conclusion



Keywords

Comprehensive approach;Oncologic Rehabilitation;Functional Risk

No conflict of interest

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A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-1512

A RARE CASE OF DYSPHAGIA PATIENT AS A CONSEQUENCE OF PARANEOPLASTIC SYNDROME SUPERIMPOSED BY VASCULITIS

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Introduction/Background

Dysphagia can result from a variety of disorders such as neurodegenerative disorders, structural lesions and medication effects. Yet, there are cases of dysphagia of unknown origin which are rather rare and difficult to reveal the etiology. We report a unique case of debilitating dysphagia refractory to conventional dysphagia therapy who represented findings of both solid tumor and vasculitis.

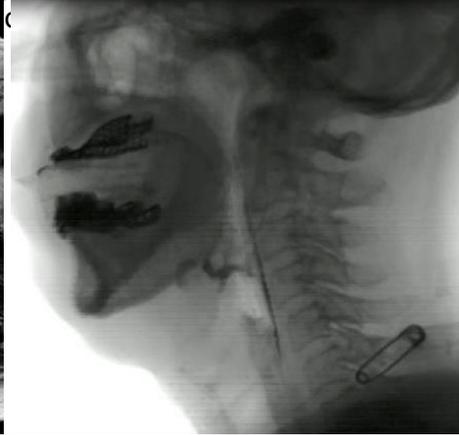
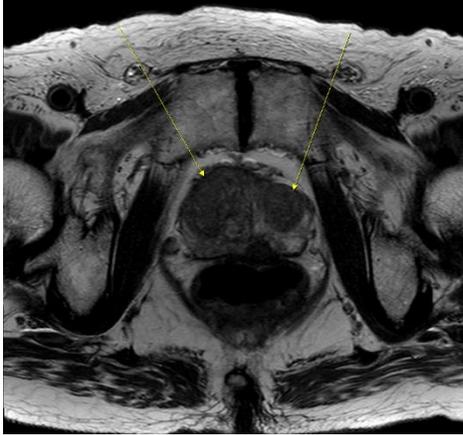
Material and Method

A 81-year-old man, without any prior medical history of interest was admitted to dermatology department with a multiple erythema. He developed insidious aspiration pneumonia during admission. Laboratory studies showed leukocytosis and high titer of rheumatoid factors. Additionally, results of nerve conduction study and needle electromyography were compatible with asymmetric sensory-motor polyneuropathy, clinically mononeuritis multiplex. Considering patient's age, PSA titer were evaluated and showed markedly elevated. Patient was referred to our department for dysphagia. Videofluoroscopic swallowing study(VFSS) revealed penetration aspiration scale of 8 and functional oral intake scale(FOIS) of 1 (Figure 1).



Results

The patient received conventional dysphagia therapy which gave no such improvement. At the same time, multidisciplinary approach was undergone. The patient received steroid therapy as diagnostic purpose of vasculitis, which dramatically improved patient's FOIS of 3. To exclude underlying malignancy related to elevated PSA titer, we performed prostate magnetic resonance imaging (MRI) study and prostate biopsy. MRI(Figure 2) and biopsy confirmed adenocarcinoma, gleason's score 7. Hormonal therapy was started, which even further improved patients



feeding. (Figure 3)

Conclusion

Dysphagia combined with vasculitis could be presenting manifestations of paraneoplastic syndrome. In such cases, evaluations for hidden malignancy are warranted.

Keywords

paraneoplastic syndrome; vasculitis; dysphagia

No conflict of interest

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A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-1521

FEASIBILITY AND EFFICACY OF MULTIDISCIPLINARY BREAST CANCER REHABILITATION PROGRAM DURING ACTIVE CANCER TREATMENT

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Introduction/Background

Breast cancer and its treatment causes issues such as fatigue, stress, depression, pain, lymphedema and peripheral neuropathy, sequelae that are closely related to physical decline and decreased quality of life (QoL). Consequently, there is an increased need among women with breast cancer for supportive care to manage the cancer –related sequelae and improve the QoL. However, studies suggested that the need for supportive care is often unmet due to underutilization as well as the lack of comprehensive rehabilitation programs.

Material and Method

This is a non-randomized controlled trial to explore the feasibility and efficacy of a comprehensive rehabilitation programme in improving the physical function and quality of life of breast cancer patients during active cancer treatment. Participants in the intervention group undertook twice weekly supervised exercise classes and weekly patient education session on topics such as side effects management, social-psychological factors and diet over a period of 12 weeks. The control group on the other hand, did home-based exercises for 12 weeks. Thereafter, participants from both groups attended a transitional class targeted at reintegrating them into work and society.

Results

As the study is still ongoing, results will be updated. However, preliminary results showed that the intervention group (n= 10) had statistically significant improvement in pain levels ($p= 0.011$), loss of appetite ($p = 0.03$) compared to the control group (n= 5). In addition, both the

intervention group ($p= 0.012$) and control group ($p= 0.035$) demonstrated improvement in the engagement of instrumental activities of daily living.

Conclusion

Early rehabilitation for breast cancer patients during active cancer treatment is helpful in reducing pain, loss of appetite and the engagement of instrumental activities of daily living.

Keywords

Breast cancer;Multidisciplinary rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-1532

ASSESSMENT OF SECONDARY LIMB LYMPHEDEMA AFTER CANCER SURGERY WITH ELECTRICAL IMPEDANCE MYOGRAPHY AND ULTRASONOGRAPHY: CASE REPORTS OF PRE-AND-POST COMPLEX DECONGESTIVE THERAPY (CDT)

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Introduction/Background

The aim of this study was to evaluate whether Electrical impedance myography (EIM) is a useful method to assess the efficacy of complex decongestive therapy (CDT) in secondary lymphedema of cancer surgery. EIM is a kind of bioimpedance measurement targeting on muscle health condition. The commonly used EIM parameters include resistance (R), reactance (X) and phase angle (θ). Super sonic shear wave elastography (SWE) was also applied to assess the tissue stiffness and to validate the EIM results.

Material and Method

A 57-year-old lady(patient A) who developed upper limb lymphedema after operation and radiotherapy for the cancer of her right breast and a 71-year-old lady(patient B) developed lower limb lymphedema after endometrial carcinoma surgery. The patients accepted 20 times of CDT, included manual lymphatic drainage (MLD), short stretch bandaging, exercise, pressure therapy and skin care, about 1 hour per day and lasts 4 weeks. Before and after the treatment, EIM and ultrasonographic evaluations (skin and subcutaneous tissue' thickness and modulus of elasticity) were performed at biceps brachii in the upper limb and rectus femoris in the lower limb at both sides.

Results

The EIM result showed that increase of R value(A=69%;B=30%) and reactance(X) value(A=70%;B=58%) appeared in both the affected side, when R and X value is slightly decreased or increase in unaffected side. In patient A, subcutaneous tissue' modulus of elasticity in affected arm is reduced from 25.1kPa to 21.7kPa, while the unaffected side is 16.0kPa. In patient B, skin tissue' modulus of elasticity decreased too.

Conclusion

The results suggested that EIM has the potential to be a noninvasive tool to assess the tissue condition in patient with secondary lymphedema. Change in R value of the affected lymphedema limb may be related to the subcutaneous tissue's structural and componential modifications caused by the decrease of protein-rich extracellular fluid and the rearrangement of fat.

Keywords

Electrical impedance myography;secondary limb lymphedema;complex decongestive therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-1754

THE EFFECT OF EARLY INTERVENTION OF MANUAL LYMPHATIC DRAINAGE AND REHABILITATION EXERCISE IN MORBIDITY AND LYMPHEDEMA IN ADVANCED ORAL CANCER PATIENTS AFTER SURGERY

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Introduction/Background

The morbidities of lymphedema and post-radiation fibrosis syndrome are frequently noted in the head-neck cancer patients receiving radiation and surgery. The complete decongestive physiotherapy (CDP) is the main stream conservative therapy for lymphedema. The manual lymphatic drainage (MLD) is one of the major component of CDP. The aim of this study is focused on the effect of early intervention rehabilitation exercise and MLD in Pain, trismus, ROM and lymphedema in advanced oral cancer patients after surgery.

Material and Method

32 advanced oral cancer patients who received surgery in the department of oral and maxillofacial surgery, Changhua Christian Hospital between Oct, 2014 and Sep, 2016 were enrolled. The patients were randomized to 2 groups, each group included 16 patients. One group patients received rehabilitation exercise alone (neck-shoulder stretch exercise and posture training), and the other group patients received MLD and rehabilitation exercise. Every patient received the evaluations including cervical and shoulder range of motion, shoulder constant score, pain scale, sonographic and lymphedema score, face distance score for lymphedema when patient before surgery, before and after intervention.

Results

The mean age was 55 years old and BMI was 24.8. Pain scale, neck and shoulder ROM, shoulder constant score, lymphedema scale, face distance score showed significant difference before and after intervention, but no difference between groups. The pain scale and neck left side-bending improved more in MLD and exercise group.

Conclusion

The pain scale, trismus, ROM and lymphedema were improved after early intervention rehabilitation exercise. The early intervention of MLD in addition to rehabilitation exercise might have more improvement in pain and neck ROM after surgery.

Keywords

oral cancer;lymphedema;manual lymphatic drainage

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2069

MULTI-STAKEHOLDER ATTITUDES REGARDING RISK-BASED THRESHOLDS FOR INITIATING IMPAIRMENT-DIRECTED INTERVENTIONS AMONG PATIENTS WITH BREAST CANCER

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Introduction/Background

Physical impairments are prevalent following breast cancer (BC) treatment and associated with poor outcomes. Predictive models permit estimation of impairment risk, and can be the basis for directing screening and validated risk reduction measures. At present few BC survivors receive anticipatory treatment for their impairments. The objective of this study was to characterize diverse clinical stakeholders' risk thresholds for initiating BC impairment-directed education, screening, preventive activities, and specialist referrals.

Material and Method

A purposive sample of 40 breast cancer survivors, as well as 10 Breast Clinic physicians, 10 breast surgeons, 10 radiation oncologists, 10 medical oncologists, 10 Breast Clinic nurses, and 10 cancer rehabilitation therapists from academic and community settings were queried about their thresholds for initiating "More frequent and sensitive screening," "Education," "Instruction in preventive activities," and "Referral to a physical or occupational therapist." Participants indicated on numerical rating scales the risk level (0-1.0) at which they would start activities for lymphedema, upper quadrant pain, functionally limiting chemotherapy-induced peripheral neuropathy, shoulder contracture, and fatigue.

Results

Across impairments, mean risk thresholds were consistently ordered as follows: education (.07-.12), prevention (.14-.25), screening (.25-.31), and therapist referral (.37-.45). BC Survivors had the lowest thresholds for initiating education; lymphedema .02, pain .04, neuropathy .02, contracture .03, and fatigue .03, while therapists had the lowest thresholds for screening and referrals. Among physicians, risk thresholds varied widely across impairments, interventions, and disciplines, however breast surgeons had significantly higher thresholds for screening, prevention, and therapist referral, $p < 0.03$.

Conclusion

Risk thresholds for initiating BC impairment-directed activities are inconsistent across stakeholder groups. BC survivors, however, had the lowest thresholds for initiating impairment-directed education.

Keywords

impairment;breast cancer;risk reduction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2124

THE EFFECTIVENESS OF BOTULINUM TOXIN A FOR PERSISTENT PAIN AT THE PECTORAL REGION AFTER BREAST CANCER TREATMENT: RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Upper limb pain after breast cancer treatment is a common and difficult to treat problem. The aim of the present study was to investigate the effect of a single Botulinum Toxin A infiltration in the pectoralis major muscle in addition to a standard physical therapy program for treatment of persistent upper limb pain in breast cancer survivors.

Material and Method

Fifty breast cancer patients with pain participated in a double-blinded randomized controlled trial. The intervention group received a single Botulinum Toxin A (BTX-A) infiltration. The control group received a placebo (saline) infiltration. Within one week after the infiltration, all patients attended an individual physical therapy program (12 sessions) during the first 3 months and a home exercise program up to 6 months after infiltration. The primary outcome was change in pain intensity at the upper limb (Visual Analogue Scale (VAS) (0-100)) after 3 months. Secondary outcomes were prevalence rate of pain, pressure hypersensitivity, pain quality, shoulder function and quality of life. Measures were taken before the intervention and at 1, 3 and 6 months follow-up.

Results

No significant difference in change in pain intensity after 3 months was found (mean difference in change of 3/100; 95% CI -13 to 19). From baseline up to 6 months, a significantly different change in upper limb pain intensity was found between groups in favor of the intervention group (mean difference in change of 16/100; 95% CI 1 to 31).

Conclusion

A single Botulinum Toxin A infiltration in combination with an individual physical therapy program has been found to significantly decrease pain intensity at the upper limb in breast cancer survivors up to 6 months. However, the effect size was not clinically relevant and no other beneficial effects were found.

Keywords

Breast cancer;Upper limb pain;Botulinum Toxin

Conflict of interest

Disclosure statement:

This study was funded by the MSD OncoAward. The funding source had no role in study design, data collection, data analysis, data interpretation, or writing of the report. No support from any organisation for the submitted work no financial relationships with any organisations that might have an interest in the submitted work in the previous three years no other relationships or activities that could appear to have influenced the submitted work. We have full control of all primary data and we agree to allow the journal to review the data if requested. The authors have no further conflicts of interest.

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2195

REHABILITATION IN THE EARLY POSTOPERATIVE PERIOD IN PATIENTS WITH MALIGNANT NEOPLASMS OF THE ABDOMINAL CAVITY

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Introduction/Background

For cancer patients physical therapy methods are not pathognomonic; they are used for surgical patients to reduce pain, prevent stagnation and motor-evacuation disorders, or to improve reparative processes. We would like to share with you our rehabilitation programs in the early recovery period of cancer patients after surgical interventions in the abdominal cavity.

The purpose of our work: analysis of our rehabilitation programs in the early postoperative period in patients with malignant neoplasms (according to the concept of ERAS). Impact of rehabilitation programmes on the number of complications according to the Dindo-Clavien classification). Impact of the application of rehabilitation programs on the length of stay of patients in the hospital.

Material and Method

Materials and methods: Subjects (main group, n= 58), aged from 36 up to 84 years, who were diagnosed intestinal cancer. In complex therapy we used methods of physical therapy (breathing exercises, general health-improving exercises, early virtualization, chest massage). We also used physical therapy methods (inhalation, stimulation of magnetic pulses). We used special equipment. "Neb-aid by Flame", "AMIT-01", "Hivamat-2000". The control group consisted of 60 patients aged from 35 up to 83 years who did not receive rehabilitation.

Results

The results of the study: We found that the improvement of motor-evacuation of bowel function in patients who received pulsed magnetic therapy, was achieved in 3 days compared to the control group. The reduction in the number of complications in the main group was 25.1 against 52 in the control group. The duration of hospital stay was 15 days in the main group compared to 21.6 days in the control group.

Conclusion

Conclusion: early rehabilitation of patients after surgical removal of malignant neoplasms can help to increase motor evacuation function and reduce both the number of postoperative complications and the length of hospital stay.

Keywords

1rehabilitation ;2 Cancer

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2211

INCIDENCE AND RISK OF FALLS AMONG ADULT PATIENTS TREATED FOR HEMATOLOGICAL NEOPLASMS DURING HOSPITALIZATION IN AN INTENSIVE HEMATOLOGY UNIT

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Introduction/Background

Patient falls are still the most common adverse event reported during hospitalization. Patients hospitalized for cancer treatment have higher rates of falls in relation to those hospitalized for another diagnosis. In patients treated for hematological malignancies, falls during periods of hospitalization can be related to multiple factors. **Aim:** To determine the incidence and risk of falls in adult patients treated for hematological malignancies during hospitalization in the intensive hematology unit of the Hospital del Salvador, Chile, between January 2016 and June 2017.

Material and Method

Observational study with retrospective and longitudinal design that included 101 patients with hematological cancers. Information was collected retrospectively from reports of adverse events, clinical records and the daily record of risk assessments of falls according Hendrich II model for predicting falls among hospitalized patients. The unit routinely applies strategies for falls prevention.

Results

The average age was 35.6 (SD = 13.6) years, 64.7% men and 34.3% women. Two events of falls were reported in 101 patients, with an incidence rate of 1.98%. Using the cutoff point of 5 of the Hendrich II model, that corresponds to the instrument used in the unit to assess the risk of falls, it was identified that 30 patients (29.7%) had risk of falling at hospital admission, 41 patients (40, 6%) in half of their hospitalization and 38 patients (37.6%) at hospital discharge.

Conclusion

People treated for hematological malignancies present a low incidence and a high risk of

falls during
suggested.

hospitalization. A fall prevention program with an interdisciplinary approach is

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2224

EFFECTS OF REHABILITATION IN MALE PATIENTS AFTER THORACOTOMY DUE TO LUNG CANCER

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Introduction/Background

The aim of the study was to investigate the effect of preoperative rehabilitation program in patients with lung cancer who are preparing for surgery.

Material and Method

A group of 40 men with mean age of 61 years, who had proven lung cancer and are intended for lung resection. As part of the preoperative preparation was carried out in all patients, respiratory rehabilitation and physical training on the bike and treadmill for a period of 11 days. 6-minute walk test in these patients was measured in three time periods: at the beginning of rehabilitation, then immediately prior to surgery and one month after surgery. In addition to the distance traveled in meters, we measured O₂ Sat%, degree of dyspnea using the modified Borg scale, as well as cardiac and respiratory frequency

Results

The results showed that there was a statistically significant improvement in distance traveled on 6mwt after performing rehabilitation, but also to decrease the distance 6mwt after lung resection, as well as to increase Sat% O₂. All other parameters showed a significant reduction.

Conclusion

For the success of pulmonary rehabilitation, but also to determine the training, we use as a measure of value 6MTH and parameters that tell us about the degree of dyspnea that is a true indicator of improvement or deterioration in patients

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2297

INVESTIGATION OF THE INCIDENCE OF UPPER LIMB LYMPHEDEMA AFTER BREAST CANCER IN CHINA

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Introduction/Background

To investigate the incidence of upper limb lymphedema after operation in Chinese women with breast cancer and to analyze the related risk factors.

Material and Method

268 female patients who were diagnosed as breast cancer and received radical mastectomy in the department of general surgery of our hospital from January 2012 to January 2017 were randomly selected. The methods of questionnaire, examination, and arm circumference were used to screen the lymphedema. And SPSS software Logistic regression analysis of related risk factors.

Results

The incidence of lymphedema in upper extremity was 35%. 83.7% of the patients with lymphedema began from 3 months to 2 years after the operation. 73.5% of the patients have obvious inducements before the onset of the disease. There are many causes of lymphedema, including upper limb infection, weight bearing, continuous force and so on. Different inducement causes different swelling part. The swelling of radiotherapy, chemotherapy, bacterial infection, and no-obvious inducement begins from the upper arm, and after a sudden move heavy objects, like hand weeding weight plurality swelling starts from the hand. The percussion keyboard, weight-bearing yoga and other chronic sustained forearm force and herpes zoster virus infection more swelling from the forearm began. The maximum arm circumference difference between the affected side and the healthy side of the upper extremities was below 10cm, and 2~3cm occupied 75.5%. Only 6.1% of the swollen patients had the maximum arm circumference difference of 10cm.

Conclusion

There are many incentives for the occurrence of upper extremity lymphedema, and there are many risk factors. Patients with risk factors should be highly regarded. Attention should be paid to avoid inducements and do timely rehabilitation treatment, so as to prevent and reduce the occurrence of upper limb lymphedema.

Keywords

breast cancer;incidence of upper limb lymphedema;China

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2323

A CASE OF METASTATIC BRACHIAL PLEXUS TUMOR WITH LIMITED UPPER LIMB MOVEMENT AND PAIN AS THE MAIN CLINICAL MANIFESTATION

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Introduction/Background

To investigate the differential diagnosis and treatment of limited upper limb movement in patients with breast cancer.

Material and Method

The diagnosis and treatment process of 1 patients with limited upper limb movement and severe pain after breast cancer surgery were reported.





复旦大学附属华山医院

肌电图报告单

门诊号/住院号：*****

姓名： 性别：女 年龄：75 科别：康复科

肌电号：

检查者：

检查日期：2015-11-30



检查肌肉	左/右	插入电位	放松				轻收缩			重收缩		
			纤颤	正锐	束颤	肌强直	多相电位	短棘波多相	时限ms	峰值mv	募集相	峰值电位
	左											
小指展肌			+	+							无 MUP, 无 CMAP	
拇短展肌			+	+							无 MUP, 无 CMAP	
尺侧屈腕肌			+	+							无 MUP, 无 CMAP	
桡侧屈腕肌			+	+							偶见 MUP	
伸指总肌			+	+							无 MUP, 无 CMAP	
桡侧伸腕肌			+	+							偶见 MUP	
肱桡肌			+	+							单纯混合相	
肱三头肌外侧头			+	+							少量 MUP	
肱三头肌长头			+	+							无 MUP, 无 CMAP	
肱二头肌			+	+							单纯混合相	
三角肌			+	+							单纯混合相	
胸大肌 (锁骨)			缺如									
背阔肌			+	+								
冈下肌			+	+							单纯混合相	
斜方肌			+	+							单纯混合相	

运动传导测定

神经名称	自一至	刺激	记录	传导速度 m/s		潜伏期 ms		波幅 mv	
				左	右	左	右	左	右
正中神经		肘	桡侧腕屈肌			无			
尺神经		腕	小指展肌			无			
桡神经		上臂	肱桡肌			5.5		4.9	
肌皮神经		锁骨	二头肌			6.5		0.9	
腋神经			三角肌			3.9		6.7	
肩胛上神经			冈下肌			3.5		11.4	
胸背神经			背阔肌			无			
副神经		颈部	斜方肌			6.2		0.7	

诊断意见：

印象：左臂丛 C6-T1 神经损伤之电生理表现，C6 神经部分损害表现，副神经功能部分损伤。

Results

32 years ago, the patients underwent radical mastectomy and local radiotherapy for left breast cancer. In October 2014, the left shoulder was discomfort, and the left upper limb was weak with hand numbness, the left eye fissure narrowed, and the left half of the face was less sweaty. And gradually aggravate the appearance of swelling and ankylosis in the left hand, with sharp knife cut and needle like pain. After the onset of the disease, he had visited many hospitals. He underwent cervical MRI, electromyography and B-mode ultrasound. He had been diagnosed as "cervical spondylosis" and "radiation brachial plexus injury". He had been rehabilitative and had no improvement. He could only control pain by tramadol. In June 2016, in our hospital, the comprehensive examination was still considered as "radioactive brachial plexus nerve injury" and was discharged from the hospital after nutritional nerve and rehabilitation treatment. In December, the family members told them that he had died in October. The cause of death was "pulmonary embolism and respiratory failure".

Conclusion

In the case of limited movement of upper limb with severe pain after breast cancer surgery, it is necessary to be vigilant and identify tumor metastasis.

Keywords

breast cancer;rehabilitation;upper limb

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2327

ASSOCIATION BETWEEN PREOPERATIVE SLEEP DISTURBANCE AND LOW MUSCLE MASS IN PATIENTS WITH GASTROINTESTINAL CANCER

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Introduction/Background

Sleep disturbance has received little attention from the oncology community. It is necessary to examine the relationship between sleep disturbance and low muscle mass, which affects prognosis. However, such associations have been unclear in patients with cancer. The aim of the present study was to investigate the relationship between preoperative sleep disturbance and low muscle mass in patients with gastrointestinal cancer.

Material and Method

A cross-sectional survey of 86 patients with gastrointestinal cancer who were scheduled for curative surgery was conducted. Low preoperative muscle mass was indicated by a skeletal muscle mass index of <7.0 and <5.7 kg/m² for men and women, respectively, according to the criteria of the Asian Working Group for Sarcopenia. Sleep disturbance was assessed using the Japanese version of the Pittsburgh Sleep Quality Index (PSQI) through the following subscales: Time in bed, Time asleep, Sleep quality, Sleep efficiency, and Consumption of sleep-inducing drugs. Multiple logistic regression analyses were performed to determine the association between sleep disturbance and muscle mass. Independent variables included sleep factors univariately associated with the outcome ($p < 0.05$). Covariate factors univariately associated with the outcome ($p < 0.05$) were extracted as candidate confounding variables to be used during multivariate analysis.

Results

The mean age (and standard deviation) of the patients was 70.5 ± 7.08 years old, the majority of whom were men (84%) and had colorectal (40%) and gastric (38%) cancers. A total of 27 patients (31%) were identified as having low muscle mass. Multiple logistic regression analysis adjusted for C-reactive protein and Geriatric Depression Scale revealed that bad sleep quality assessed using PSQI subscales was significantly associated with low muscle mass (odds ratio, 4.15; 95% confidence interval, 1.02–16.9).

Conclusion

The present study suggests that bad preoperative sleep quality was associated with low muscle mass in patients with gastrointestinal cancer.

Keywords

Gastrointestinal cancer; Sleep disturbance; Low muscle mass

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2342

PHYSIOTHERAPY IN THE MANAGEMENT OF PATIENTS WITH PERITONEAL CARCINOMATOSIS RECEIVING CYTOREDUCTIVE SURGERY.

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Introduction/Background

The development of multidisciplinary work around patients receiving cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (HIPEC) with thoracic epidural analgesia led us to articulate our reciprocal skills in a care program. Since 2012, a preoperative consultation of physiotherapy has been set up for these patients. Between 2009 and 2013, 124 patient's files have been analysed, comparing "Patient Controlled Epidural Analgesia (PCEA) with physiotherapy" (67 patients) and "PCEA without physiotherapy" (57 patients). The reduction of the patient's apprehension of physiotherapy and mobilization contributed to the reduction of the length of stay in intensive care unit (on average 5 days instead of 7) and an early out of bed mobilization (one day gained).

Material and Method

After 4 years of operation, we conducted a retrospective study of patient's files in order to evaluate the efficiency of this first step programme about the role of physiotherapy in this patient's care pathway. We estimated the length of stay and the way to go back home.

Results

366 files had been analysed. Patient' pathway had been systematically organized including this physiotherapy consultation during the month before surgery. The content of the consultation has been adapted including 3 parts leading to a real therapeutic educational program.

Information on the physiotherapy that will begin the day after the surgery: respiratory mechanics, interest of early mobilization to warn the post-operative complications.

Education of the patient with teaching of techniques of respiratory physiotherapy.

A notebook containing advice for improving the physical condition is given to the patient by adjusting the dosage and the intensity according to his basic state.

Conclusion

Physiotherapy included in preoperative management is part of improving the quality of care provided to patients, allowing them a better participation in the postoperative care. This preoperative consultation had been adapted to better support the patient and his family.

Keywords

Digestive cancer;Preoperative physiotherapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.04 Internal Medicine and Other Conditions -Cancer

ISPR8-2390

PREOPERATIVE PREVALENCE OF MULTIDIMENSIONAL FRAILITY AND THE ASSOCIATIONS WITH HEALTH-RELATED QUALITY OF LIFE IN ELDERLY CANCER PATIENTS

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Introduction/Background

The frailty has been based on only physical in the previous studies, and neither cognitive and social frailty are clear in elderly cancer patients. The aims of this study are to estimate the preoperative prevalence of physical frailty, cognitive frailty, and social frailty and to determine the cross-sectional associations with health-related quality of life (HRQOL) in elderly cancer patients.

Material and Method

We examined 190 cancer patients (≥ 60 years; mean age: 71.9 ± 7.0 years; 43 females) with esophageal, gastric, colorectal, oral, or pharyngeal cancers, who were scheduled to undergo the radical surgery. Physical frailty was defined as ≥ 3 out of the following criteria: slow walking speed, muscle weakness, exhaustion, low physical activity and weight loss. We used the validated tool assessed for cognitive impairments, which includes tests of word list memory, attention, and executive function, and processing speed to screen for cognitive impairments. Cognitive frailty was defined by the presences of ≥ 2 cognitive impairments and physical frailty. Social frailty was defined by ≥ 2 signs (going out less frequently, rarely visiting friends, feeling unhelpful to friends or family, living alone, and not talking with someone every day). HRQOL was measured using the EORTC QLQ-C30. The prevalence of each frailty was presented using a multiple imputation method. Associations between multidimensional frailty and the EORTC QLQ-C30 subscales were studied using multivariable regression analyses among complete cases.

Results

The prevalence of physical frailty, cognitive frailty, and social frailty were 32.9%, 4.7%, and 50.8%, respectively. Only social frailty was associated with the worse EORTC QLQ-C30 subscales (global QOL, physical functioning, role functioning, emotional functioning, cognitive functioning, fatigue and insomnia) after adjusting for covariates.

Conclusion

Our results showed that the prevalence of frailty in elderly cancer patients were much more than that in population based elderly, and preoperative HRQOL was especially affected by social frailty.

Keywords

Elderly cancer;Frailty;HRQOL

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-2568

SEXUAL FUNCTION ASSESSMENT IN WOMEN WITH TYPE 2 DIABETES

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Introduction/Background

Less visible and more insidious than those of male subjects, the sexual dysfunctions of diabetic women have been studied, particularly in the Maghreb socio-cultural context. The objectives of this work are to compare the dimensions of the different dimensions of sexual function of women with type 2 diabetes to those of control women and to determine the factors associated with sexual dysfunction in women with diabetes.

Material and Method

This is a descriptive and analytical case-control study of 50 patients with type 2 diabetes. They were compared to 50 age-matched control women. The evaluation focused on socio-demographic characteristics, diabetes data, and standardized measurement of female sexuality using the female sexual function index (FSFI).

Results

The diabetic women recruited have an average age of 47.82 years. The evaluation by the FSFI found a sexual dysfunction in 84% of the cases. The comparative study found that women with diabetes were significantly less satisfied in their sexual life, in all areas of FSFI, and had significantly more sexual dysfunction than female controls ($p = 0.038$). The total FSFI score was negatively correlated with age ($p < 10^{-3}$, $r = -0.763$) and age of diabetes ($p = 0.002$, $r = -0.431$). Diabetic women with more advanced sexual dysfunction ($p < 10^{-3}$) and longer duration of disease ($p = 0.017$) than women with diabetes do not have sexual dysfunction.

Conclusion

Our results have allowed us to highlight, in a standardized and comparative way, the importance of sexual dysfunction in diabetic women. Taking this aspect into account in the evaluation improves the quality of life and well-being of these women.

Keywords

Type 2 diabetes; Sexual Dysfunction; women

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-0055

EFFECT OF DIABETES ON POSTOPERATIVE AMBULATION FOLLOWING BELOW KNEE AMPUTATION

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Introduction/Background

Ambulation forms an important part of rehabilitation program after lower limb amputations. Diabetes Mellitus and its complications are commonly associated with below knee amputation. In spite of this, there is an absence of studies on the effect of diabetes on the post operative ambulation of an amputee. This study analysed the role of diabetes as an independent factor affecting post operative ambulation and compared it with non diabetics in below knee amputation.

Material and Method

In this study a total of 105 below knee amputation patients were followed. Out of them, 48 amputees were diabetics and 57 non diabetic. Their post operative ambulatory level was compared by using Pinzur et al ambulation scale. Both groups were age, sex and BMI matched.

Level	Walking capacity
6	Independent community ambulator
5	Limited community ambulator
4	Unlimited household ambulator
3	Limited household ambulator
2	Supervised household ambulator
1/0	Transfer- bedridden

Pinzur et al scale

Results

There was a worsening of ambulatory level in 33.3% diabetics as compared to 10.7% in non diabetics postoperatively. Of the prosthetic users, 78.4% were in non diabetic group and 21.6% were in diabetic group. 17.6% of prosthetic users required additional support, of whom 66.7% were diabetics.

Conclusion

Diabetes Mellitus is an independent factor which has an adverse effect on the functional outcome of a patient after below knee amputation.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-2685

EFFECTS OF WHOLE BODY VIBRATION EXERCISE ON THE GAIT TIME OF INDIVIDUALS WITH METABOLIC SYNDROME: A PSEUDO RANDOMIZED CONTROLLED CLINICAL STUDY.

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¹-

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Introduction/Background

Background and aim: Individuals with metabolic syndrome (MetS) might present low muscle performance resulting in a decrease of the functional capacity interfering in the gait time. Whole body vibration exercise (WBVe) has been considered in the management of MetS individuals promoting a better functional performance. The aim of this study was to evaluate the effects of WBVe on the gait time of the MetS individuals.

Material and Method

Methods: CAAE 19826413.8.0000.5259. UTN: U1111-1181-1177; Brazilian Registry of Clinical Trials- ReBEC RBR – 2bghmh. A pseudo randomized controlled trial study with thirty-nine individuals with MetS (according International Diabetes Federation) was performed. The side-to-side alternating oscillating/vibratory platform was used. The individuals were allocated in WBVe group (WBVeG = 22) and in control group (CG =17). The WBVeG was in squat static position for 1 minute of intervention and 1 minute of rest in 3 different peak-to-peak displacements (2.5, 5.0 and 7.5 mm) 3 times. In the first session was used 5 Hz and increasing 1 Hz in each session up to 14 Hz in the tenth session. In the CG was used the same position and time but the platform was turned off. Before the first and after the tenth session were collected the data about the gait time of 3 meters (in seconds). The statistical analysis was performed using the Graph Pad Prism 5.01 Program ($p \leq 0.05$).

Results

Results: The gait time (Mean \pm SD) showed a significant difference intergroups.

Conclusion

Conclusion: WBVe is a modality of physical activity that can improve the functional capacity of the MetS individuals, at least, considering the time of the gait.

Keywords

Metabolic syndrome;physical activity;whole body vibration exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-2693

EFFECTS OF WHOLE BODY VIBRATION EXERCISE ON BLOOD PRESSURE OF INDIVIDUALS WITH METABOLIC SYNDROME

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Introduction/Background

Background and aim: The hypertension is a condition that can be present in individuals with metabolic syndrome (MetS), increasing the cardiovascular risks of these individuals. A limited numbers of studies has investigated the effect of whole body vibration (WBV) exercise on blood pressure, particularly in individuals with MetS. The purpose of this study was to examine the impact of WBV exercise on systolic, diastolic e mean blood pressure (SBP, DBP and MBP, respectively) and heart rate (HR) in MetS individuals.

Material and Method

Methods: Eighteen individuals both sexes (61.1±8.3 years; 83.6±16.2kg; 31.1±5.3kg/m²; 103.0±11.0 cm of waist circumference) with MetS (according International Diabetes Federation) were evaluated and the data before the first and after 48 hours of the ninth session was analyzed. These parameters (SBP, DPB, MBP and HR) were collected 3 times and the mean were considered. The side-to-side alternating oscillating/vibratory platform was used. The parameters used were 5 to 14 Hz (frequency), 2.5, 5 and 7.5 mm (peak-to-peak displacement), 1 minute of work time and 1 minute of rest. This protocol was performed in squat static position per 5 weeks, twice a week. **(CAAE 19826413.8.0000.5259 and ReBEC RBR-2bghmh)**. Paired Student t- tests were applied to compare baseline vs. post-training. The GraphPad Prism 5.01 was used and $P \leq 0.05$ was adopted for statistical significance.

Results

Results: Significant reductions in baseline (before first session) vs. post-WBV exercise (before nine session) were detected for SBP (130.2±15.9 vs. 112.9±11.6; $P=0.013$) and MAP

(109.8±13.0 vs. 103.8±9.4; $P=0.014$), but not DPB (69.0±10.7 vs. 65.6±7.6; $P=0.073$) and HR (70.9±15.5 vs. 71.2±13.0; $P=0.589$).

Conclusion

Conclusion: The reduction of the blood pressure is important in management of MetS individuals and would interfere positively in the reduction of cardiovascular risk. Thus, the use of WBV exercise could be a convenient intervention in MetS individuals due the low cost, feasible and easy application.

Keywords

whole body vibration exercise;metabolic syndrome;blood pressure

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-0238

AN INTERNATIONAL REHABILITATION PERSPECTIVE ON DISABLING OBESITY

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Introduction/Background

Obesity is a clinical condition characterised by significant clinical implications, such as co-morbidities and somatic fragility, which seriously affect independence, psychological well being and overall quality of life. The most frequent approach to obesity is based on a nutritional perspective but, given the figures of obesity worldwide, there is a need to develop a proper rehabilitative approach originating from the functional limitation, disability and clinical needs of obese patients

Material and Method

The lecture will first provide an up-to-date vision on the aetiology (environment, genetics) and epidemiology of obesity and then a current vision on obesity from a rehabilitative perspective based on the recently published Position Paper of the ESPRM. Cutting-edge research on the physiological determinants of functional limitation in obesity will be presented and the biomechanics of basic activities in obesity will be described.

Results

Disability associated with obesity may be predominantly due to a combination of motor or cardio-respiratory complications according to the coexistence of a range of related conditions (i.e. osteoarthritis, cardio-respiratory disorders, etc.).

Conclusion

The lecture will also discuss feasible care models for disabling obesity, illustrating current protocols in musculoskeletal, cardio-respiratory and psychological rehabilitation and reviewing the existent evidence on effective rehabilitation treatments.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-0483

EFFECT OF REBOUND EXERCISES AND CIRCUIT TRAINING ON MUSCULOSKELETAL PAIN, HEMATOLOGICAL AND PSYCHOSOCIAL VARIABLE IN PATIENTS WITH TYPE 2 DIABETES: A RANDOMIZED CONTROL TRIAL PROTOCOL

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Introduction/Background

The incidence of type 2 diabetes mellitus (DM), a chronic lifestyle disease, and its complications are on the increase. However, there is no consensus regarding the types of exercise that reduce musculoskeletal pain (MSKP) and depression and improve quality of life (QoL) as well as respiratory function among individuals with type 2 diabetes. The objective of this study are to determine the effects of rebound and circuit training on MSKP, blood glucose level, cholesterol level, QoL, depression and respiratory parameters in patients with type 2 DM.

Material and Method

Seventy participants are expected to be recruited in this single blind randomized control trial. Computer-generated random numbers will be used to randomize the participants into 3 groups, namely the rebound exercise group, the circuit exercise group, and the control group. Measurements will be taken at baseline and at the end of the 8 weeks of the study. Data will be analyzed using descriptive statistics and inferential statistics of multivariate analysis of variance (MANOVA) between the groups and paired t-test within the group. Alpha will be set at 0.05.

Results

The results of this study will identify the effectiveness of rebound exercise and circuit training, compared to the control, in the management of type 2 DM and on QoL, MSKP, depression, glycemic control, cholesterol level as well as improvement in respiratory function.

Conclusion

No strategies have been identified for the control of complications associated with diabetes such as MSKP, depression and reduction in QoL.

Keywords

Musculoskeletal pain;Type 2 diabetes mellitus ;Exercises

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-0503

ELEKTROACUPUNCTURE FOR WEIGHT LOSS- A NARRATIVE LITERATURE REVIEW

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Introduction/Background

The prevalence of obesity and its consequences are increasing all over the world. That's why the treatment of obesity is not only of interest for the patient but for the society. In this review we want to give an overview of current studies of electroacupuncture as treatment of obesity.

Material and Method

The research was performed in the electronic database pubmed. We searched for the keywords: „electroacupuncture“, „obesity“, „weight“, „weight loss“, „BMI“. For determination of the studies we combined the keywords and evaluated the data afterwards. 33 studies with different study designs, published between 1993 and 2014, were analyzed. 11 animal studies and 22 clinical trials have been included.

Results

The majority of the studies showed that electroacupuncture is an effective treatment for obesity. On the one hand most of the studies used the direct markers body weight and BMI, on the other hand surrogate parameters such as leptin, food intake and body fat level have been analyzed. Only one animal study did not recognize a significant reduction of body weight. In the other studies a significant positive effect of electroacupuncture has been measured. Most of the studies have been randomized and controlled but only four studies have been blinded.

Conclusion

Overall the studies showed good results for treating obesity with the help of electroacupuncture. A big randomized controlled trial of the ethnic groups in the Central European region or the Anglo-American sphere would be interesting, because of the heterogeneity of the studies, the partly small number of cases and the mainly Asian patient collective.

Keywords

obesity;Elektroacupuncture;Acupuncture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-0837

BMI OVER 40 NEED NEW CHANCE

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Introduction/Background

Obesity affects increasingly numbers of people (36% in the United States in 2009-2010), as well surgery for obesity is also increasing, but the rate of weight regain is large and the patient needs to change lifestyle after surgery too, thus surgery indications should be reviewed.

Material and Method

Focus more on changing the patient's lifestyle from the beginning through gradual behavior modification method with positive support and avoid negative pressure to reach weight reduction and maintain it and avoid surgery and its complications.

Results

By applying this method to 387 obese patients in my clinic aged 20 - 74 years, to whom Body Mass Index exceed 40 with a number of 672 courses and 4852 sessions, resulted to 10.15 kg average weight loss per patient, with an average of 10.5 sessions per patient in each therapy course.

Note: that the largest weight was treated 250 kg with Body Mass Index 101.4

Conclusion

Therefore, should focus on behavior modification programs and give more time to application before making a surgical decision.

Attention should also be given to obesity in children in schools and kindergartens through behavior modification programs combined with play and positive support.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-0928

A COMPARATIVE STUDY OF MORPHO-FUNCTIONAL DISORDERS OF FOOT IN DIABETIC AND NOT DIABETIC SUBJECTS

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Introduction/Background

The foot disorders at diabetic are frequent, grave and very costly. This gravity is underlined by the frequency of the amputations of lower limbs. Thus, a care in pedicurist podiatry turns out to be necessary to detect the disorders in time and treat them before the installation of the complications.

The objective of our work is to identify, from a podiatric examination, the morpho-functional characteristics of the foot at the diabetic patients to compare them to not diabetic subjects.

Material and Method

This is a multicentre, descriptive and analytical study. It includes 96 subjects divided into two groups: 31 not diabetic subjects and 65 diabetics. The data obtained were developed from an entire specific podiatric examination which contains demographic data, balance sheets and tests to estimate the biomechanical and structural disorders of the foot.

Results

Our study shows a significant difference of certain anomalies of the foot at the diabetics as compared to not diabetics. These anomalies are Xerosis, muscle weakness and joint limitations. The Foot Posture Index reveals that pronation of the foot is more frequent at the diabetics .

Conclusion

The management of diabetics is a major public and economic health issue. The complications of the diabetic foot constitute important spending regarding healthcare in the diabetics, which makes of their prevention a must key point.

Keywords

diabetic foot;pedicurist podiatry

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-0959

DEMOGRAPHIC AND CLINICAL PROFILE OF PATIENTS INCLUDED IN A METABOLIC REHABILITATION PROGRAM FROM CLINICA INDISA, SANTIAGO, CHILE.

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Introduction/Background

In Chile, 71% of the population is overweight or obese, and 3.2% morbidity obese. A metabolic rehabilitation program is effective maintaining weight loss and muscle strength, specially for bariatric surgery patients, which in turn are involved in regaining weight. **Aims:** To describe the clinical and demographic profile of patients included in a metabolic and rehabilitation program.

Material and Method

We retrospectively obtained the clinical and demographic data from 311 patients enrolled in the program in a period of 16 months between 2016 and 2017 with the diagnosis of overweight, having or not the indications of bariatric surgery.

Results

The proportion of male/female was 94/217 (30%/70%), averaging 37,6 and 36,4 y/o (ns). Body weight and BMI at the time of enrolment for males and females was 108.5 kg (BMI: 35.2) and 85.8 kg (BMI: 33) ($p < 0.0001$) respectively. From the total, 236 (75%) patients had any degree of obesity (male/female = 79 (84%)/157 (72%)), of which 14% were morbidly obese (male/female = 13 (16%)/20 (13%)). The comorbidities were insulin resistance (66%), dyslipidemia (30,8%), hypertension (20.6%), depression (18.3%) and diabetes mellitus (6,4%). Depression was more frequent in women (88%), of which 70% were obese. Bariatric surgery was performed to 79% of the patients, being the sleeve gastrectomy the most frequent procedure (86%). Global adherence (> 10 physical therapy sessions) was 37,9% (male/female = 38,3% vs 37,8%).

Conclusion

Knowing the demographic and clinical profile of the patients starting a metabolic rehabilitation program may help in planning specific strategies to improve the weight loss, muscle strength and reduction of comorbidities.

Keywords

metabolic rehabilitation;rehabilitation in obesity;rehabilitation in bariatric surgery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-1130

THE RELATIONSHIP BETWEEN ILLNESS PERCEPTION, GLYCEMIC CONTROL, AND FAMILY SUPPORT IN TURKISH ADULTS WITH TYPE 2 DIABETES

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Introduction/Background

Few studies have investigated the factors associated with illness perceptions among patients with type 2 diabetes. The purpose of this study was to determine the relationship between illness perception, glycemic control, and family support in Turkish adults with type 2 diabetes.

Material and Method

The study was designed as a cross-sectional survey. A total of 193 patients with type 2 diabetes who were followed in a diabetes outpatient clinic of a tertiary hospital in Turkey were enrolled in this study. The sample included 155 patients (57.4% female). Data were collected by using a questionnaire form, the Illness Perception Questionnaire-Revised (IPQ-R) and the Perceived Social Support from Family Scale (PSS-Fa). Glycemic control was evaluated by measuring HbA1c levels. Data analysis were performed using descriptive statistics and Pearson's correlation coefficients. A p value of less than 0.05 was considered as statistically significant.

Results

The mean age of the study group was 57.5±15.8 years, and the median duration of disease was 10 years. A significant positive correlation was found between HbA1c value and the identity subscale score ($r=0.21$, $p=0.009$), as well as a negative correlation with the timeline (acute/chronic) subscale score ($r=-0.18$, $p=0.029$). There were positive correlations between the PSS-Fa score and the personal control ($r=0.28$, $p=0.001$), the treatment control ($r=0.19$, $p=0.021$), and the illness coherence subscale scores ($r=0.39$, $p < 0.001$). Negative correlations were found between the PSS-Fa score and the timeline (acute/chronic) ($r=-0.23$, $p=0.005$), the timeline cyclical ($r=-0.25$, $p=0.002$), and the emotional representations subscale scores ($r=-0.30$, $p<0.001$). There were significant negative correlations between the PSS-Fa scores and the causes subscales of the IPQ-R ($p<0.05$).

Conclusion

The results of this study highlighted the importance of the perceptions of illness in glycemic control for patients with type 2 diabetes. Perceived family support was generally associated with improvements in beliefs about type 2 diabetes.

Keywords

glycemic control;illness perception;type 2 diabetes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-1201

THE INFLUENCE OF BODY WEIGHT LOSS ON GAIT AND STABILITY FUNCTIONING IN OBESE PATIENTS

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Introduction/Background

In our research we studied changes of gait and balance parameters and the falls frequency in obese patients during weight loss

Material and Method

We examined 37 patients aged 23 to 69 years (average age 53.6 ± 11.1 years) with body mass index (BMI) ≥ 35 kg/m² (average BMI 40.9 ± 9.3 kg/m²). All patients received recommendations to adhere low-calorie diet and to do physical exercises in order to reduce body weight. We evaluated body weight, the number of falls for 3 months, 10 meters walk test along a flat surface and stabilometry in Romberg test at baseline and after 3 months of weight loss programm's start.

Results

The average body weight decreased from 124.1 ± 26.6 to 118.1 ± 23.4 kg ($p=0.022$; 95% CI: 2.78, 9.22) in the study group in 3 months. The body weight loss was accompanied by the reduction of the fall's number for last 3 months from 0.14 ± 0.34 to 0,0 ($p=0.023$; 95% CI: 0.02; 0.25) and the speed of 10 m walk from 113.0 ± 8.82 to 105.5 ± 3.03 sec ($p=0.005$; 95% CI: 2.86, 12.14). According to the stabilometry data the coefficient of stability improved from 113.5 ± 9.11 to 104.0 ± 2.16 % ($p=0.012$; 95% CI: 3.035, 16.10) and the movement speed of the pressure center - from 113.4 ± 8.9 to 104.0 ± 2.2 mm/sec ($p=0.01$; 95% CI: 3.04; 15.81). Deviation of the pressure center in the sagittal and frontal plane decreased from 113.6 ± 9.1 to 104.0 ± 2.2 mm ($p=0.01$; 95% CI: 3.03, 16.1), speed index changed from 113.0 ± 9.1 to 104.0 ± 2.2 ($p=0.01$, 95% CI: 3.0, 16.1) and overall rating movement reduced from 109.9 ± 6.8 to 104.0 ± 2.0 ($p=0.0037$, 95% CI: 0.5; 11.2) after 3 months of weight loss programm's start .

Conclusion

The weight loss in obese patients is associated with the decline of falls frequency, improvement of gait speed, static and balance functioning.

Keywords

Obesity;stability functioning

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-1228

THE EFFECT OF 12 WEEKS AEROBIC EXERCISE AND VITAMIN D SUPPLEMENTATION ON BLOOD LIPIDS AND METABOLIC SYNDROME MARKERS IN ELDERLY MEN WITH TYPE 2 DIABETIC

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Introduction/Background

Type 2 diabetes mellitus (T2DM) is a multifactorial disease characterized by chronic hyperglycemia, altered insulin secretion, and insulin resistance. However, the effects of vitamin D and exercise training in treatment and prevention of metabolic syndrome in patients with T2DM is yet unknown. The purpose of this study was to evaluate the effect of 12 weeks aerobic exercise and Vitamin D supplementation on blood lipids and metabolic syndrome markers in elderly men with type 2 diabetic.

Material and Method

Forty elderly men with type 2 diabetic aged 30-50 years were randomly assigned to either the vitamin D supplementation plus aerobic training group (VD+AT: n=10), the aerobic training group (AT: n=10), the vitamin D supplementation group (VD: n =10), or the control group (CON: n=10). AT group performed a supervised aerobic exercise training program 3 times in week for 30-90 minutes at 50-75% of MHRR for 12 weeks. Vitamin D supplementation group also received vitamin D supplements at 1,200 IU per day for 12 weeks, whereas CON group were asked to maintain normal daily life pattern. Serum of 25-hydroxyvitamin D, blood lipid (TC, TG, HDL-C, LDL-C), as well as Fasting glucose, insulin, and HOMA-IR were measured before and after the intervention.

Results

Serum 25-hydroxyvitamin D levels significantly increased in the VD and VD+AT groups ($P<0.05$). Significant decreases in BW, BMI, WC, BFP were observed in the AT and VD+AT groups ($P<0.05$). TC, TG, HDL-C, and LDL-C showed improvements in AT and VD+AT groups ($P<0.05$), whereas there were no significant changes in the variables in AD and CON groups. Fasting glucose, fasting insulin, and HOMA-IR tended to be lower in AT and VD+AT groups ($P<0.05$).

Conclusion

These results suggest that Vitamin D supplementation combined aerobic training could be employed as a novel preventive measure for T2DM.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-1370

CLINICAL AND EPIDEMIOLOGICAL PROFILE OF DIABETIC FOOT IN A TUNISIAN DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION

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Introduction/Background

The damage of foot is frequent in diabetes patients. The systematic research of diabetic foot allows revealing neuropathy and/or arteriopathy with their multiple consequences (deformities, ulcer foot...).

The aim of this study is to determine the clinical and epidemiological profile of diabetic foot in a physical medicine and rehabilitation department.

Material and Method

A prospective study included diabetic patients who consulted for various reasons from June 2017 until September 2017 in the Physical Medicine and Rehabilitation Department at the National Institute of Orthopaedy M. Kassab in Tunisia.. We excluded patients who had neurological damage with no direct rapport with diabetes (sciatica, hemiplegia...).

For each patient: we determined age, sex, treatment of diabetes, degenerative complications of diabetes, BMI (Body Mass Index), clinical examination of foot and evaluation of neuropathic pain with score DN4.

Results

We collected 40 patients with middle age 55.1 years and sex ratio 0.37, diabetes type 2 in 80% whose duration of evolution was 13.6 years, insulin therapy alone in 37.5% and associated with oral anti diabetic drugs in 22.5%, degenerative complications were present in 65% of cases. Patients were addressed for orthotic foot equipment in 35% of cases. We noticed ulcer foot in 37.5% and Charcot Foot in 12.5%. Clinical examination revealed BMI32.5, diabetic neuropathy in 80% and arteriopathy in 55%. The middle DN4 was 3.13 with a score $\leq 4/10$ in 35% of cases. Only 42.85% patients were treated. Preventive orthotic equipment for foot was already prescribed in 10% and curative in 2.5%.

Conclusion

Epidemiology is necessary to assess the situation of diabetic foot and to adopt interventions. The research of diabetic foot damage must be as precocious as possible to detect abnormalities

and avoid severe complications. The coordination between the different physicians: physical medicine, endocrinologist, general physician... is necessary in order to optimize the prognosis.

Keywords

Diabetic foot;Physical medicine and rehabilitation;complication

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-1577

EXTENDED SEDENTARY TIME IN DIABETIC NEPHROPATHY INCREASES THE RISK OF ALL-CAUSE DEATH AND NEW CARDIOVASCULAR EVENTS

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Introduction/Background

The study aimed to clarify the effects of extended sedentary time in diabetic nephropathy (DMN) on the risks of all-cause death and new cardiovascular events.

Material and Method

This was a prospective cohort study carried out over 39 months beginning in September 2013. Subjects analyzed were 173 DMN outpatients who responded to the International Physical Activity Questionnaire (IPAQ) (101 men; mean age = 71±11 y; CKD Stage I: 42, II: 93, III: 30, IV: 7, V: 2). New events were defined as all-cause death, cerebral stroke or cardiovascular disease (CVD) requiring hospitalization, or starting on hemodialysis (HD). ROC curves were used to calculate cut-off values for sedentary time (from the IPAQ) versus event incidence. Data were analyzed using multivariate Cox proportional hazard regression analysis, using measurements taken at the start of the observation period as independent variables: age, HbA1c, estimated glomerular filtration rate (eGFR), Alb/Cre ratio, sedentary time, and past history of stroke or CVD. Independent variables predictive of new cardiovascular events as well as all-cause death were identified, along with their corresponding HR and 95% CI.

Results

The new events observed during the follow-up period were as follows: stroke (n=4), CVD (20), HD (4), and all-cause death (6). The cut-off value for sedentary time for predicting new events and all-cause death was 525 min/day (AUC: 0.74, sensitivity: 0.71, specificity: 0.67, $p<0.001$). Independent variables identified as significant predictors of new event incidence were HbA1c (g/dl) (HR: 0.697, 95% CI: 0.53-0.91, $p=0.008$) and sedentary time (60 min/day) (HR : 1.26, 95% CI: 1.00-1.59, $p=0.049$).

Conclusion

Extended sedentary time increases the risk of cardiovascular events in DMN patients. An increase in sedentary time of 60 min per day can increase the risk of cardiovascular events. It

will be necessary to evaluate factors that contribute to sedentary time in patients, and to examine how to improve them by physiotherapist interventions.

Keywords

diabetic nephropathy;sedentary time;cardiovascular events

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-1859

EFFECTS OF AEROBIC EXERCISE COMBINED WITH METFORMIN ON VASCULAR ENDOTHELIAL FUNCTION OF SKELETAL MUSCLE IN RATS WITH TYPE II DIABETIC MELLITUS

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Introduction/Background

To observe the effects of aerobic exercise combined with metformin on fasting blood glucose (FBG), serum insulin (FINS), plasma endothelin-1 (ET-1), serum nitric oxide (NO), skeletal vascular endothelial growth factor (VEGF), compare the difference between diabetes mellitus and normal control group and analyze the correlation between aerobic exercise combined with metformin to treat diabetes mellitus with synergistic effect.

Material and Method

Forty rats of 6-week-old male SD rats were randomly divided into the control group (DC, n = 10), diabetes mellitus group (DCE, n = 10), diabetic metformin group (DCM, n = 10), diabetic aerobic exercise + Metformin group (DCEM, n = 10). FBG, FINS, ET-1, NO and skeletal muscle were measured after 6 weeks.

Results

1. After 6 weeks of aerobic exercise and metformin, the FBG, FINS and insulin resistance index of T2D rats were significantly correlated ($P < 0.01$).
2. The changes of plasma ET-1 and serum NO in rats were significantly higher than those in NC group ($P < 0.01$). The ET-1 content and ET / NO in DCM group were significantly decreased ($P < 0.01$, $P < 0.05$), and the content of NO was significantly increased ($P < 0.05$).
3. Compared with NC group, VEGF was significantly overexpressed in skeletal muscle of DC group ($P < 0.01$). After 6 weeks of metformin ($P < 0.05$). After 6 weeks of aerobic exercise and metformin, the expression of VEGF protein in skeletal muscle of DCE group was significantly lower than that of DCEM group ($P < 0.05$).

Conclusion

Aerobic exercise combined with metformin can effectively reduce the level of ET-1, increase the level of NO and decrease the expression of VEGF protein in rat skeletal muscle.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-2715

A CASE REPORT OF LEUCINE SUPPLEMENTATION TO REVERSE CACHEXIA AND INCREASE BMI IN A BEDRIDDEN PATIENT

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Introduction/Background

Amino acids are precursors for protein synthesis and are also involved in regulating multiple cellular processes. In particular, leucine has been shown to significantly increase protein synthesis and stimulate muscle mass accretion via the mammalian target of rapamycin (mTOR) signaling pathway. Several studies have shown leucine and its metabolite HMB to be useful in the treatment and prevention of sarcopenia in active individuals by maintaining muscle mass in conjunction with resistance training. There is debate, however, regarding the optimal supplementation dose. One recent study noted a 20% protein synthesis increase in the elderly with 2.8 grams (g). To our knowledge, no data exists regarding immobile patients and leucine supplementation. Our goal was to investigate supplementation as a means of preventing cachexia and maintaining weight in individuals unable to perform resistance training.

Material and Method

We present a 31-year-old bedridden, disorders of consciousness male with contractures who suffered a severe traumatic brain injury at age 29. He presented to our facility on enteral feeding for a skin flap weighing 116 pounds (lbs.), though was 181 lbs. one-year prior. The patient was started on 3 g of leucine twice a day and over a four-month period daily weights with a standing or bed scale were obtained.

Results

The patient had a significant weight gain of 36.2 lbs. and a 24% change in his BMI from 15.0 to 19.8, despite continued immobility. Furthermore, Figure 1 displays a strong correlation of weight

gain over time with leucine supplementation.



Conclusion

It is common for bedridden patients to develop cachexia, muscle atrophy, and sarcopenia. These results suggest that one useful and cost-effective way to prevent and even reverse this process is with leucine supplementation.

Keywords

leucine; cachexia; immobility

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.05 Internal Medicine and Other Conditions -Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

ISPR8-2405

OBSERVED RESEARCH PARTICIPATION DOES NOT SIGNIFICANTLY CHANGE ACTIVITY SCORES, PHYSICAL PERFORMANCE OR CARDIAC MEASURES IN HEPATITIS C (HCV) AND NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD)

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Introduction/Background

Awareness of observation influences human behavior. For those participating in observational research, behavior change may occur from towards the stated research focus without prompting or intervention. This study sought to determine the consistency of activity and performance in Hepatitis C (HCV) and non-alcoholic fatty liver disease (NAFLD) subjects over one year (positively or negatively) with observation sans intervention, and to determine the consistency of the Human Activity Profile (HAP) in this population.

Material and Method

HCV and NAFLD subjects participated in a one year observational study. Baseline data including anthropometric measures, diagnoses of relevance (diabetes, cirrhosis etc), vital signs, and laboratory values were examined. Six minute walk time grip strength, and pre and post walk time cardiac output (CO) were available at baseline and follow-up. The Human Activity Profile (HAP) was used to estimate current activity level (AAS) and maximum activity level (MAS). Paired sample t-test of baseline and one-year follow-up activity and performance data was run.

Results

67 subjects (age 51.5±9.3 years, 31.3% NAFLD, 68.7% HCV, 72.7% Caucasian, 50.7% obese (BMI 30.8±5.6), 29.9% hypertension, 29.9% hyperlipidemia, 23.9% diabetes, 49.5±33.5 AST, 58.5±7.4 ALT, 81.1±8.7 MAS, 76.1±10.8 AAS) participated in a year-long observational study that consisted of a baseline and a one-year follow-up visit. 57.6% returned for the one year follow-up visit. Paired sample t-test showed that none of the activity metrics (HAP MAS or AAS, lifetime MAS) or grip strength differed significantly between time points. CO, heart rate pre and post exercise, heart rate change during exercise, and blood pressure measures pre and post also did not differ significantly within a year (p-values .103-.659).

Conclusion

HAP scores are consistent at one year retest, consistent with lack of performance and cardiac metric changes. Participation in an observational study has no significant effect on activity level and performance in HCV and NAFLD subjects at one year.

Keywords

Activity;Performance;Liver Disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.06 Internal Medicine and Other Conditions -Burns

ISPR8-0711

REHABILITATION FOR HIGH-VOLTAGE ELECTRICAL INJURY ON BOTH UPPER EXTREMITIES: A CASE REPORT

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Introduction/Background

We report a case with extensive burns on the face and both upper limbs. Function improvement of the injured fingers was achieved through early rehabilitation intervention aimed at prognosis prediction.

Material and Method

A 22-year-old male railway electric worker accidentally touched a distribution board with his dominant (left) hand during work. On admission at another hospital, second and third-degree burns were present on both upper limbs, face, chest, and neck. His burn index was 13.5. He was transferred to our hospital for systemic management and function reconstruction.

Results

Rehabilitation was started from the day of transfer. Initially, rehabilitation aimed at preventing contractures of the upper limbs and face. As the upper limb burns were severe, a cock-up wrist splint was applied to maintain upper limb position. During hospitalization, skin grafting and debridement were performed on the upper limbs and his left index finger was amputated; the patient was discharged 100 days after admission. Although nerve conduction examination showed a conduction block in the wrist joint, the electromyogram showed muscle activity of the right abductor pollicis brevis, opponens pollicis, and abductor digiti minimi. These electrophysiological findings suggested that muscle function could improve. After discharge, range of motion exercises to prevent contractures and activities of daily life (ADL) training using self-help devices were continued in an outpatient setting. Three months after discharge, he could oppose the right thumb to the ring finger. Finally, the dominant hand was exchanged on the right hand and his ADL became independent.

Conclusion

High quality rehabilitation aimed at appropriate prognostic prediction and target setting enabled the patient to achieve significant functional improvement in this case.

Keywords

electrical injury;case report

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.06 Internal Medicine and Other Conditions -Burns

ISPR8-0973

THE BURN REHABILITATION CENTER POST FORMOSA FUN COAST DUST EXPLOSION DISASTER--A PILOT REPORT FROM CHANG GUNG MEMORIAL HOSPITAL-TAOYUAN IN TAIWAN

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Introduction/Background

Chang Gung Memorial Hospital (CGMH) at Linkou is the largest burn center in Taiwan and treated one in every five victims (total 499 victims) in the Formosa Fun Coast Dust Explosion Disaster since June 27, 2015. In response to meet the social and medical needs for post burn issues, a Burn Rehabilitation Center was established in CGMH-Taoyuan on November 10, 2015 as a continuation of burn care and social support after this grand-scale tragic in Taiwan.

Material and Method

A Burn Rehabilitation Center for post acute care completed with multidisciplinary expertise including the plastic surgeon, physiatrist, psychiatrist, physical and occupational therapist were organized. Weekly clinic with rehabilitation exercises and on-site medical discussions were targeted on burn survivors and their family concerns.

Results

Since November 10, 2015 to December 25, 2017, the Burn Rehabilitation Center of CGMH-Taoyuan had received over two thousand patient visits in over two hundred clinics. Patients whom endured from different burn injuries (explosive flames, scald, chemical and electric burns) and post reconstruction surgery visited. Overall, the center had provided 1588 and 1688 physical and occupational rehabilitation sessions respectively.

Conclusion

Although we were acknowledged internationally for the capacity and ability to manage major burn victims in the acute stage, the challenges and medical attention persisted and remained high even two years after the insults. Despite social modernization, sporadic burn insults persisted. The Burn Rehabilitation Center in CGMH-Taoyuan served an important ground and

anchor in burn care and reflect a societal need to have effective treatment from acute, subacute to chronic stage.

Keywords

Formosa Fun Coast Dust Explosion Disaster;Chang Gung Memorial Hospital-Taoyuan;Burn Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.06 Internal Medicine and Other Conditions -Burns

ISPR8-1182

ANALYSIS OF PATIENTS OVER 80 YEARS OLD WITH BURN INJURY WHO WERE ADMITTED

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Introduction/Background

In my town, the rate of elderly people is getting higher and the number of elderly patients with burn injury is also increasing. So we report the tendency of burn injury patients over 80 years old and discuss it with literatures.

Material and Method

We examine patients over 80 years old with burn injury who were admitted from January 2008 to December 2016. And we picked up about causes of the accident, term of hospitalization, age, gender, past history, term from admission to operation, term of starting rehabilitation.

Results

The total number of patients were 31 (male is 9 and female is 22). The patients who died were 4. The age range is between 80 to 92 (average 84.1). Burn Index is between 3 to 90 (average 15.6) and Prognostic Burn Index is between 84 to 179 (average 94.5). Past history is diabetes (9 cases). The days of hospitalization range is between 2 to 290 (average 58.7 days). The main causes of burn injury are the following: flame burn (19 cases), boiling water burn (7 cases) and other reasons (5 cases).

Conclusion

Elder patients with severe burn injury tend to die. The reports show that the severity of the burn injury is a great determiner of the length of stay of the patient in the hospital. If a patient undergoes rehabilitation earlier, the length of stay in hospital tends to be shorter and daily activities progress much better.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.06 Internal Medicine and Other Conditions -Burns

ISPR8-1414

DIAPHRAGMATIC MOBILITY MEASUREMENT IN PATIENTS WITH BURN INJURY ON CHEST AND NECK

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Introduction/Background

Lung complications caused by large surface burns. Evaluating the mobility of the diaphragm is important for understanding and diagnostic possible alterations in the muscles, which can be compromised in several ways due to central or peripheral dysfunction, muscular disease and thoracic or abdominal diseases. The aim of this study was to evaluate the diaphragmatic mobility in patients with large chest and neck burn injury.

Material and Method

Ten patients with chest and neck burn injury were included. Spirometer was done to evaluate pulmonary function. Pulmonary function tests including forced vital capacity(FVC), 1 second forced expiratory volume(FEV1), forced expiratory flow rate between 25 and 75% of the FVC (FEF 25-75) FEV1/FVC ratio and peak expiratory flow(PEF). Maximum voluntary ventilation(MVV) and respiratory muscles strength (maximal expiratory pressure, MEP; maximal inspiratory pressure, MIP) were measured by mouth pressure-meter in sitting position. Diaphragmatic mobility was measured by calculating the distance between the diaphragmatic dome in expiration and inspiration for the right and left hemidiaphragms by fluoroscopy.

Results

The values of FVC, FEV1, FEF25-75, MIP and MEP are 76.5%, 75.2%, 69.1%, 68.4% and 61.8% of predicted values. The values of MVV and PEF are 68.85 L/min and 10.92 L/sec. The mean values of diaphragmatic mobility in patients with chest and neck burns were 44.00 mm.

Conclusion

This study demonstrated that diaphragmatic mobility was decreased in patients with chest and neck burn injury. A reduction in diaphragmatic mobility in patients with burn has been associated with a decline in pulmonary function parameters.

Keywords

burn

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.06 Internal Medicine and Other Conditions -Burns

ISPR8-1434

A MEDICAL-SURGICAL CHALLENGE, REHABILITATION AFTER COMPLICATED NECROTIZING FASCIITIS OF THE NECK. CASE REPORT

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Introduction/Background

Necrotizing fasciitis is a severe soft-tissue infection. Causative factors are numerous and include peritonsillar infection. Rehabilitation teams should be aware of potentially sequelae and treat them.

Material and Method

We report a case of necrotizing fasciitis with severe anatomical and functional sequelae, who improved considerably after long-term rehabilitation program.

19 years old male diagnosed with infectious mononucleosis, presented unfavorable course with right lateral cervical thickening. Cervical-thoracic CT confirmed necrotizing fasciitis migrated to brachial plexus, anterosuperior mediastinum and shoulder and dorsal musculature.

Debridement of infected tissue was performed with resection of latissimus dorsi, inferior trapezius, infraspinatus, supraspinatus, pectoralis major, rhomboid, and minor teres muscles. Methylene blue extravasation in left leg caused necrosis that also required debridement. Tissue defects were treated with negative pressure wound therapy and partial thickness skin autografting. Neurophysiological exam showed denervation of right radial nerve, bilateral common peroneal and tibial nerves, and signs of critical illness myopathy.

Physical examination revealed severe physical deconditioning, limitation for wrist and fingers extension and shoulder mobility, and bilateral foot drop.

Rehabilitation treatment started at inpatient care and continued with long-term ambulatory program for 12 months after discharge. Interventions included positioning, joint mobilizations, antiedema massaging, tissue stretching, progressively intense active exercises, daily living activities (ADL's) reeducation and gait with anti-equinus orthosis.

Results

Follow-up physical examination showed almost complete recovery of shoulder mobility, recovery of wrist and fingers extension, normal gait without orthosis, and total autonomy for ADL's.

Weakness of right tibialis anterior muscle (MRC 4/5) and bilateral extensor hallucis longus (MRC 1/5) remained as sequelae. Reconditioning rehabilitation program will be possibly performed because of exercise intolerance.

Conclusion

Rehabilitation intervention should be always considered in severe necrotizing fasciitis cases, since long term rehabilitation programs show positive functional outcomes.

Keywords

necrotizing fasciitis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.06 Internal Medicine and Other Conditions -Burns

ISPR8-1435

BENEFITS OF EARLY AND INTENSIVE REHABILITATION PROGRAM IN A MAJOR BURN PATIENT

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Introduction/Background

The affection of the upper extremities, thorax and neck by a deep burn imply a severe functional loss. Likewise, the possible inhalation of smoke and burn of the airway, forces the orotracheal intubation, this increase the time of admission and reduce the patient's capacities.

An intensive rehabilitation program is essential to avoid or minimize the sequels, improving the functionality, the aesthetics and the quality of life. This clinical case explains a rehabilitation program in a major burn patient with predominant involvement of the upper body, the evolution and the functional gains obtained

Material and Method

Woman with second degree and third degree burns with 25% of TBSA on face, neck, thorax, right arm and forearm, both hands, with airway involvement requiring orotracheal intubation.

The patient was taken emergently to the operating room for escharotomy and debridement with subsequent neck split thickness skin graft, patient needed scar tissue release.

The patient has been doing acute rehabilitation program with PT and OT during admission to maintain range of motion, reduce the possibility of microstomia, palpebral and labial commissure retractions, avoid myopathies, reeducate BADL, improve ventilatory capacity.

Later, performed rehabilitative treatment in the ambulatory phase, where physiotherapy and silicone garments were prescribed in order to control hypertrophic scars, for 12 months.

Results

Currently the patient presents a complete range of motion except hands, with preserved global muscle strength, independent for BADL and functional hands. Limitation of movement on thorax and neck for flange at these areas. Improvement of the microstomy and the palpebral and neck retraction has been corrected.

Conclusion

The intensive and early initiation of rehabilitation program improves the functional prognosis in a major burn patient, decreases the need for corrective surgical procedures in the future as well.

Keywords

Major burn;Intensive rehabilitation;Functional capacity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.07 Internal Medicine and Other Conditions -Organ Transplantation

ISPR8-1305

SAFETY AND EFFICIENCY OF SUPERVISED AEROBIC EXERCISE TRAINING, USING CARDIOVASCULAR MACHINES, FOR PATIENTS WITH TERMINAL HEART FAILURE, INCLUDED IN HEART TRANSPLANT WAITING LIST

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Introduction/Background

Purpose of research is to assess safety and efficiency of controlled aerobic training for patients with terminal heart failure (HF) and to develop methodology of interval training using treadmill and cycle for HF patients, included in heart transplant waiting list (HTWL).

Material and Method

19 males with terminal HF, included in HTWL, aged 22-64, with left ventricular ejection fraction 11-33% were assessed. Initially, 6-minute walk (6MW) and cardiopulmonary test (CPT) were performed, and the type of aerobic training was selected in accordance to individual cardiorespiratory fitness level and personal cardiovascular machine preference. Study group included HF patients with stable hemodynamic data, without inotropic therapy, with 6MW distance from 100 to 427m, and CPT results from 5.4 to 13.4ml/kg/min. All patients participated in long-term (2-12 months) 4-5 days a week interval training. The duration of training session was 6-30min according to patient's individual working capacity and subjective condition. Heart rate reserve for study group was calculated: $HRR=(190-age)-HR_{rest}$, and the $HR_{training}$ was determined as 30-40% of HRR. Training speed (V) on treadmill=50% of V (6MW-test)km/hour.

Results

After 2-12 months of training sessions all patients demonstrated increase: training duration from 13.1min at baseline to 25min (av. 11.9 ± 0.4 min) $p<0.05$; treadmill walking distance from 356m at baseline to 742m (av. 386 ± 16 m) $p<0.01$; treadmill walking speed from 1.58km/hour at baseline to 2.37km/hour (av. 0.78 ± 0.01 km/hour) $p<0.001$. The number of training sessions was associated with growth of treadmill walking distance ($r=0.38$) and overall session duration ($r=0.6$). All patients well tolerated individualized physical training sessions with intensity regulated by the proposed formula. No complications were registered. 77.7% of patients self-selected cardiovascular machine: 42.1% preferred treadmill, but 31.6% used both treadmill and cycle.

Conclusion

Controlled training, using cardiovascular machines, are safe, well-tolerated and effective for patients with terminal HF, included in HTWL, in case of self-selection of the machine and individualised training intensity level.

Keywords

Interval training;Terminal heart failure;Cardiovascular machine

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.07 Internal Medicine and Other Conditions -Organ Transplantation

ISPR8-1589

RELIABILITY OF THE SIX MINUTES WALK TEST AFTER LUNG TRANSPLANTATION

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Introduction/Background

The six minutes walk test (6MWT), a surrogate measure of bodily deconditioning and exercise tolerance, serves as a function category of utmost importance within the assessment of functional health and for outcome monitoring after lung transplantation (LuTX). The 6MWT is further one of the major decision criteria relevant to the timing of LuTX. As data on the reliability of this test in LuTX recipients seem lacking, this study for the first time sought to investigate the precision and relative reliability of the 6MWT in patients undergoing subacute rehabilitation after LuTX surgery.

Material and Method

This prospective observational test re-test study recruited 50 LuTX recipients (28 females) who performed the 6MWT in a standardized way before discharge from the acute hospital stay, shortly thereafter, and two months later, after the end of rehabilitation. In addition functional outcome variables including maximum isometric back extension, hand grip strength, the chair rise test and the Biering Soerensen test were taken. Statistics explored for changes in the mean of the 6MWT distance between the first and second test day, and calculated all, the measurement error (SEM), the smallest detectable difference (SDD), and the intraclass correlation coefficient (ICC_{2,1}).

Results

Absolute walking distance was 372m (± 101) at baseline and 397m (± 106) 1.6 days later. As at the end of rehabilitation, the 6MWT distance was increased by 142m (95%CI:97;187) if the longitudinal changes relative to the second test day had been considered. The SEM was 40m, the SDD 112m, and the ICC_(2,1) was 0.9 (95%CI:0.82;0.94), respectively. Relevant correlations were found between walking distance and all, hand grip and back extension strength and the chair rise test.

Conclusion

In lung transplant recipients early after surgery, the 6MWT can be expected to enable an acceptable level of detection of expected changes in bodily conditioning and exercise tolerance as a result of planned medical rehabilitation interventions.

Keywords

lung transplantation; six minutes walk test

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.07 Internal Medicine and Other Conditions -Organ Transplantation

ISPR8-1622

FUNCTIONAL CAPACITY TO EFFORT IN LONG-SURVIVING LUNG TRANSPLANT PATIENTS WITH NORMAL SPIROMETRY

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Introduction/Background

The long-term survival after lung transplant (TP) is limited by the appearance of the graft chronic dysfunction (DCI). However, there is a small percentage of patients with long-term survival (SLP) (>10 years) that do not have DCI. The goal of this study is to evaluate the functional capacity to effort in those lung transplant receptors SLP, with normal spirometry and without DCI.

Material and Method

Transversal study in 29 Spanish SLP patients after LT with normal spirometry and without DCI diagnosed. The clinical histories were revised retrospectively. The daily physical activity and the health condition were measured with the "international physical activity questionnaire" and the "EUROQUOL-5D", respectively. The lean body mass was determined with a device for electrical bioimpedance (50 Hz). A spirometry, static pulmonary volumes, a progressive effort test and a CO transfer test were performed with a cycle ergometer measuring the ventilatory and cardio circulatory parameters.

Results

The mean age (SD) of the included patients was 48,66 (13,6) years and 15 of them (51,72%) were women. The mean age (SD) at the transplant date was 34,7 (14,0) years old. The mean of the forced vital capacity (FVC) and the forced expiratory volume in the first second (FEV1) was 92,59% (15,66) and 97,86% (14,55), respectively. The VO₂ peak mean was 21,49 (6,68) ml/kg/min, that corresponds to the 75,24 %(15,6) of the expected value. The average of watts obtained in VO₂ max was 111,14 (37,13) w and the median (p25-75) of respiratory exchange ratio (RER) in VO₂ max was 1,35 (1,25-1,4). The test for measuring the quality of life Euroquol 5D revealed a median (p25-75) of 1 (0,95-1)

Conclusion

LT receptors that do not present DCI, maintain a normal spirometry and are SLP show values of functional capacity to effort very similar to the normal ones and a good health condition.

Keywords

lung transplantation;exercise testing;physical activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.07 Internal Medicine and Other Conditions -Organ Transplantation

ISPR8-1821

FUNCTIONAL RESULTS AFTER A CHILDREN'S CARDIAC REHABILITATION PROGRAM AFTER A HEART TRANSPLANT

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Introduction/Background

Heart transplantation (HT) is the treatment indicated in those patients who are in the final phase of their heart disease. It is known that heart transplant improves their ability to exercise, although this capacity for effort is diminished. After transplantation, the physiological response of exercise is altered, with its multifactorial etiology (decreased chronotropic activity and musculoskeletal dysfunction), cardiac rehabilitation is recommended in adults and in children, as it improves exercise capacity. The implementation of these programs in pediatric age is scarce in our country.

The aim was evaluate the functional results after cardiac rehabilitation program (CRP) in child heart transplantation in our hospital.

Material and Method

Retrospective study with series cases: 10 patients HT between 2015 and 2017.

CRP consists:

- Phase entered: where the rehabilitation treatment begins before the transplant if it is admitted and/or after the transplant.
- Ambulatory phase: at hospital discharge.

Assessment: six-minute walking test (6MWT) and determination of the maximum inspiratory pressure at the beginning of the treatment and after its completion.

Results

10 children with an average age of 13.5 years (SD 3.74). The mean time from the inclusion in the cardiac transplant waiting list was 74.90 days (SD 100.82). The average stay in the ICU was 37.30 days (SD 21.66) and the total time of admission was 60.70 days (SD 37.44).

5 cases started rehabilitation before transplantation and all of them underwent rehabilitation in the ICU, continuing in the ward. At discharge, the ambulatory phase continued with an average of 17.90 sessions (SD 6.15). After the program, they have improved of average 175.70 meters (SD 170.31) in the 6MWT ($p < 0.010$). The rest of the parameters analyzed did not show statistically significant differences.

Conclusion

CRP after heart transplantation has helped improve functional capacity demonstrated in the improvement in the 6MWT. All the patients continued to perform physical activity after completing the CRP.

Keywords

heart transplantation;cardiac rehabilitation;pediatrics

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.07 Internal Medicine and Other Conditions -Organ Transplantation

ISPR8-2394

OUTCOMES OF MULTIDISCIPLINARY INPATIENT REHABILITATION FOLLOWING HEART AND/OR LUNG TRANSPLANTATION

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Introduction/Background

Heart and lung transplantation is becoming a more common treatment option for patients with end-stage cardiopulmonary disease. Both the incidence and survival of transplant operations are increasing, resulting in heightened interest in optimising long-term patient outcomes, functional ability and quality-of-life following transplant. Specialist rehabilitation can help to promote recovery and enhance functional ability following transplant surgery, particularly for frail and debilitated patients.

Material and Method

A retrospective file audit was conducted to review all admissions for multidisciplinary inpatient rehabilitation following heart and/or lung transplant between 2009-2016, at St Vincent's Hospital Sydney, Australia. This is the largest and oldest heart and lung transplant centre in Australia.

Results

Between 2009-2016, 603 heart/lung transplant surgeries were performed at St Vincent's Hospital Sydney. Of these patients, 116 (19.2%) were admitted for inpatient rehabilitation: 49 heart, 65 lung and 2 combined heart-lung recipients. The rehabilitation cohort was comprised of 63 men and 53 women, mean age 53.4±12.2 years. Average rehabilitation length-of-stay was 26.9±2.0 days. Functional Independence Measure (FIM) scores improved significantly with rehabilitation, from 79.8±1.9 on admission to 101.8±2.8 at discharge ($p<0.001$), resulting in a mean FIM efficiency of 0.9±0.1. Physical measures of mobility and balance also showed significant improvements, including the 6 Minute Walk Test ($p<0.001$), Timed Up and Go ($p<0.001$) and Berg Balance Scale ($p<0.001$). 33.6% of admissions were interrupted by an acute medical complication, however this did not prevent completion of rehabilitation or attainment of functional gains for the majority of cases. 109 patients (94%) were discharged to a private residence following rehabilitation, 2 were transferred to a regional hospital and 5 died in hospital.

Conclusion

Multidisciplinary inpatient rehabilitation resulted in significant functional improvements for debilitated patients following heart and/or lung transplantation. These results support a role for

specialist inpatient rehabilitation in optimising functional capacity and independence post-transplant.

Keywords

transplant rehabilitation;heart and lung transplant

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.08 Internal Medicine and Other Conditions -Miscellaneous

ISPR8-2631

THE EFFECT OF HIV ON FUNCTIONAL OUTCOME IN STROKE PATIENTS ADMITTED TO A REHABILITATION HOSPITAL

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Introduction/Background

Recent studies have concluded that HIV patients live with an increased risk of stroke. Our study investigated the association between HIV and the functional progress of patients admitted for rehabilitation after suffering a stroke.

Material and Method

This retrospective chart review included data from patients admitted to rehabilitation hospitals after suffering a stroke from 2002-2017. The data included demographic information as well as functional independence scores and length of stay.

Results

During the 15-year timeframe, 688,006 patients were admitted to rehabilitation hospitals after suffering a stroke. FIM efficiency and LOS did not significantly differ between the HIV and non-HIV patients. The data indicated that FIM efficiency was slightly higher for HIV patients (1.78 vs. 1.75). On average, HIV patients had a 1-day difference in in LOS (17 days vs. 16 days).

Conclusion

Despite being a risk factor, HIV status does not appear to significantly affect functional improvement or LOS for patients suffering after a stroke.

Keywords

HIV;Stroke;FIM Efficiency

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.08 Internal Medicine and Other Conditions -Miscellaneous

ISPR8-0567

FACTORS ASSOCIATED WITH RETURN TO ACUTE (RTA) HOSPITAL CARE FROM INPATIENT REHABILITATION FACILITY (IRF)

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Introduction/Background

A retrospective chart review was conducted for patients requiring transfer from our 40 bed IRF to higher-level hospital care due to medical or surgical complications.

Material and Method

We identified 66 patients transferred from IRF to acute care hospital due to change of medical status requiring higher level of care over a 12 month period from 1/1/16 through 12/31/16.

Results

Compared to our general population, patients returning to acute care were more likely to be male (70% versus 59%) and older (70 years versus 65.39 years). A higher percentage of patients who were admitted from outside facilities returned to acute care (36% versus 20%). Lower admission FIM scores (39 versus 50.87) was associated with return to acute care.

Patient with RIC categories stroke and medically complex had the highest rate of return to acute care (30% and 24%)

The primary reasons for transfer to acute care were change in mental status (29%), hypoxia (24%), other (18%), hypotension (12%), fever (6%), seizures/cardiac arrhythmia/melena (3% each) and chest pain (1%).

The most common diagnoses related to the reason for transfer were sepsis (17%), pneumonia (9%), acute on chronic respiratory failure (8%), congestive heart failure/CO2 narcosis/stroke/TIA (6% each), seizure/cardiac arrhythmia/GI bleed (5%each), myocardial infarction (3%) and other (30%). In patients who diagnosed with sepsis, the most common infections were urinary tract (45%) and pneumonia (27%).

Conclusion

Primary diagnoses made after transfer to acute care were sepsis, pneumonia and acute on chronic respiratory failure. Urinary tract infection and pneumonia were found to be the 2 most common etiologies of sepsis.

Diligence with regard to careful monitoring of infection, particularly related to urinary tract infection and pneumonia and respiratory compromise in this medically fragile population, especially those that have an admitting RIC of stroke or medically complex appears to be warranted.

Keywords

Readmission;Sepsis

Conflict of interest

Disclosure statement:

Dr Geis has received research grants, consultant fees and speaker honorarium from Allergan.

E-Poster Session - July 9-12 - Exhibition Area

A4.08 Internal Medicine and Other Conditions -Miscellaneous

ISPR8-0680

EFFECTS OF EXERCISE TRAINING DURING HEMODIALYSIS ON LOWER LIMB SKELETAL MUSCLE FUNCTION AND SHORT PHYSICAL PERFORMANCE BATTERY IN PATIENTS WITH END STAGE RENAL FAILURE

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Introduction/Background

End stage renal failure (ESRF) patients on hemodialysis (HD) are relatively inactive. This low activity in daily life leads to poor lower limb skeletal muscle function and progression of atherosclerosis. High echo intensity (EI) of rectus femoris muscle (RFM) reflecting increase in intramuscular fibrous and adipose tissue can be applied for qualitative assessment of leg muscle. The aims of this study were to investigate the association among knee extension strength, EI of RFM, muscle thickness (MT) and short physical performance battery (SPPB) in ESRF patients and to explore the effects of exercise training during HD on EI of RFM and SPPB.

Material and Method

Study design was a prospective one arm interventional study. The study subjects were ten ESRF patients on HD (four men, mean age 72.5±11.0 years). The exercise training program consisting of a bicycle ergometer with strength of Borg scale 11-13 and low-intensity resistance training for 30 min during HD (three times a week) for three months. We serially measured EI and MT of RFM, knee extension strength and SPPB.

Results

Knee extension strength, EI of RFM, MT and SPPB in patients with ESRF were lower than those of age-matched healthy subjects. Exercise training during HD for three months decreased EI of RFM in eight patients (80%) out of ten. Mean±SD of EI significantly decreased from 67.87±16.6 to 59.3±16.5 (p<0.046 vs. baseline). MT of RFM, knee extension strength and SPPB tended to increase in comparison with the baseline data.

Conclusion

Echo intensity of RFM serves useful additional information regarding assessment of leg muscle in patients with ESRF on HD. Significant improvements in EI were observed after three-month-training during HD. Improvements of knee extension strength and SPPB may follow after improvement of EI.

Keywords

Hemodialysis patients; Exercise training; Lower limb skeletal muscle function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.08 Internal Medicine and Other Conditions -Miscellaneous

ISPR8-0770

DIFFICULTIES WITH ACTIVITIES OF DAILY LIVING AND ALL-CAUSE MORTALITY IN PATIENTS ON MAINTENANCE HEMODIALYSIS

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Introduction/Background

Difficulties with activities of daily living (ADL) not only limit ADL, but also increase the risk of mortality in community-dwelling older people. While most patients undergoing maintenance hemodialysis (HD) perceive difficulties with performing ADL related to mobility, few studies have examined the association between ADL difficulties and mortality risk in HD patients. To this end, we aimed to prospectively assess the association between ADL difficulties and mortality in HD patients.

Material and Method

A total of 300 outpatients (178 men, 122 women; mean age, 64.1±10.9 years) undergoing maintenance HD therapy 3 times a week at a HD center were recruited in this study. Clinical characteristics including age, sex, body mass index, primary cause of end-stage renal disease, time on HD, comorbid conditions, hemoglobin, and serum albumin were collected at baseline. ADL difficulties were assessed with the Questionnaire on Perceived Mobility Difficulty for HD patients (Kutsuna et al., 2011; Watanabe et al., 2018). The ADL difficulty score ranged from 12 to 60 points, with lower scores indicating greater ADL difficulties. Patients were classified into three groups by tertiles of ADL difficulty score (low difficulty group, middle difficulty group, and high difficulty group). Kaplan-Meier analysis of survival and Cox proportional hazards regression were used to assess the contribution of ADL difficulties to all-cause mortality.

Results

During the follow-up period (median, 50 months), 71 patients died. Cumulative survival rates at endpoint were 63.9% in the low difficulty group, 59.8% in the middle difficulty group, and 32.5% in the high difficulty group. After adjusting for the effects of clinical characteristics, ADL difficulties were a significant predictor of all-cause mortality. The hazard ratio of the high difficulty group to the low difficulty group was 3.44 (95% confidence interval, 1.75-7.11; p<0.01).

Conclusion

ADL difficulties were strongly associated with survival in clinically-stable HD patients.

Keywords

Chronic kidney disease;Activities of daily living;mortality

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.08 Internal Medicine and Other Conditions -Miscellaneous

ISPR8-1294

FEMORAL HEAD AVASCULAR NECROSIS DURING PREGNANCY: A CASE REPORT

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Introduction/Background

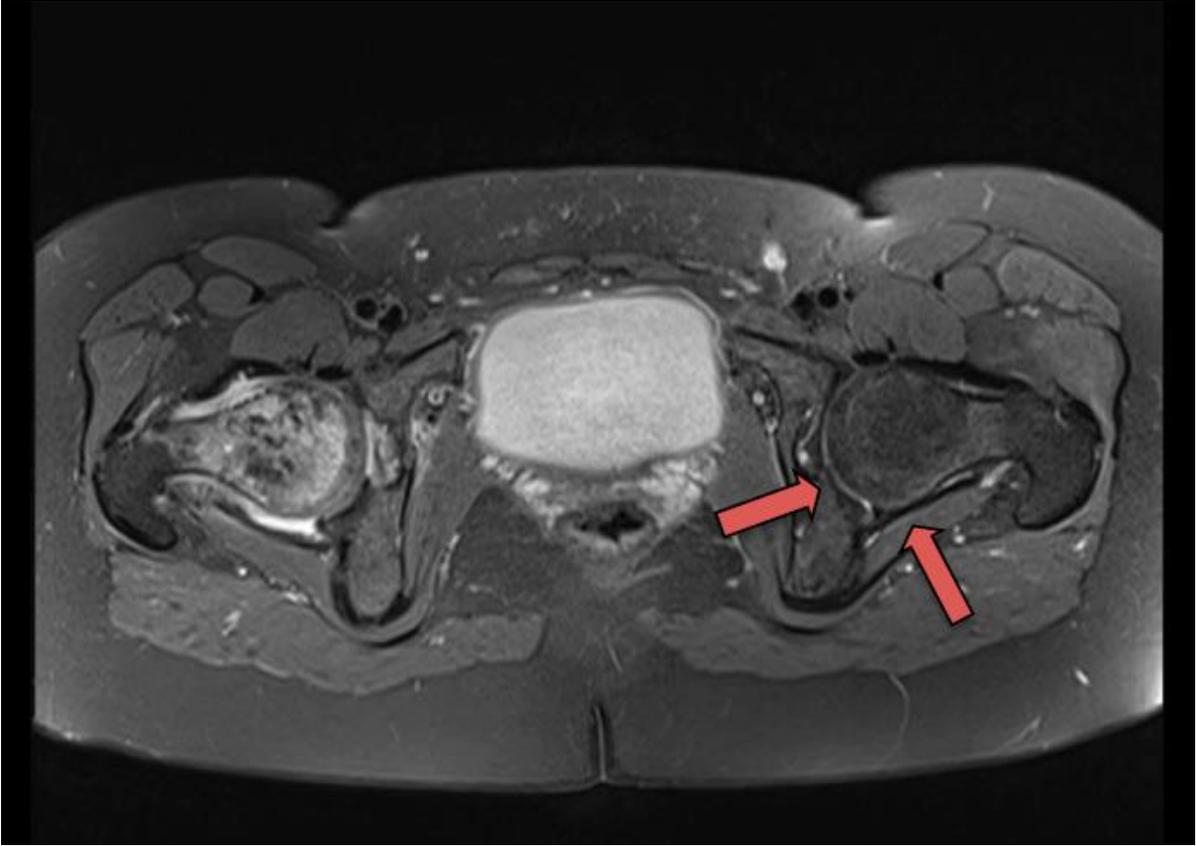
Osteonecrosis is caused by impaired blood supply to the affected bone. It results with destruction of bone structure, which leads to joint pain and loss of function. There are very few published cases about pregnancy as single etiological factor for femoral head osteonecrosis in healthy women.

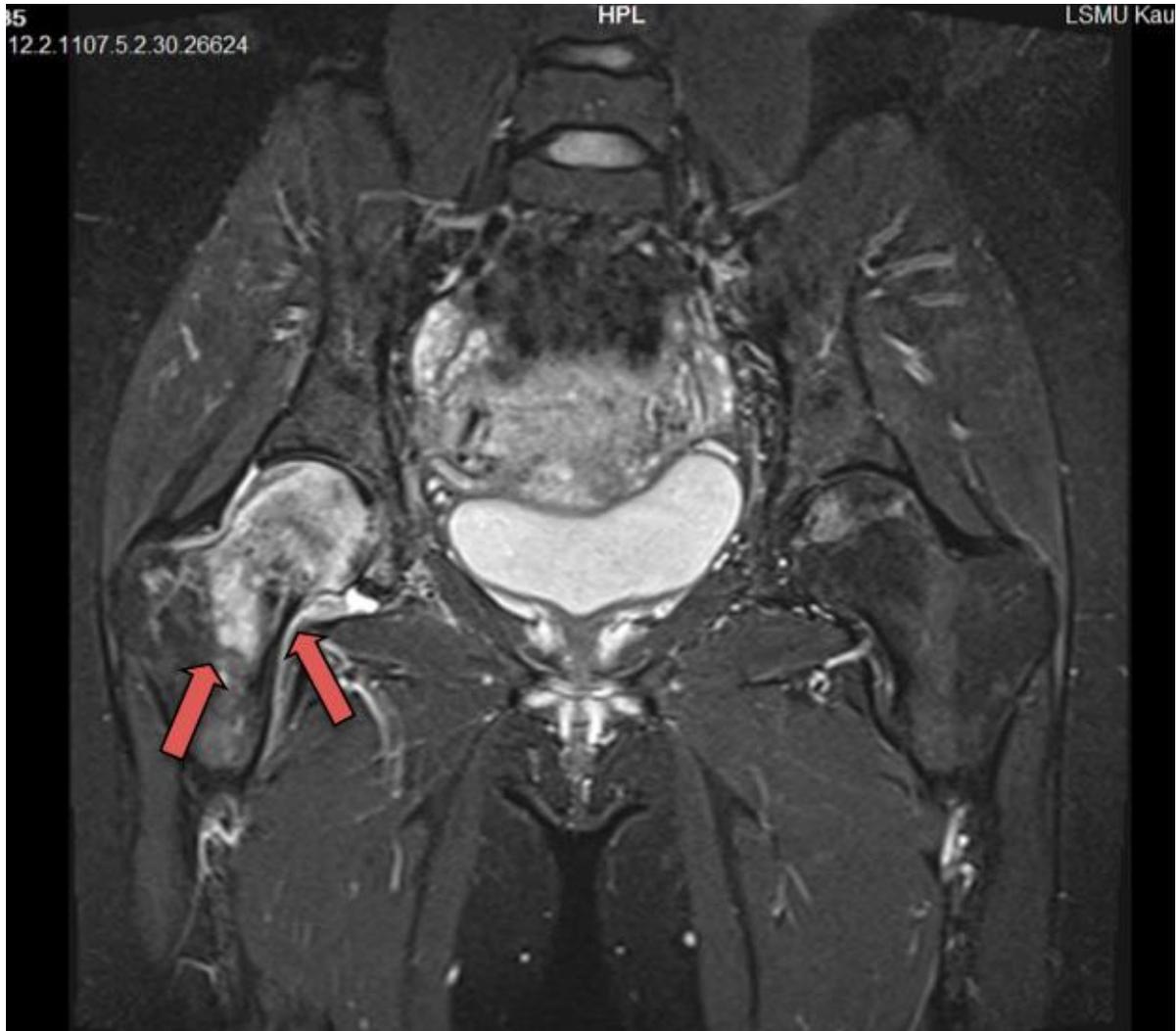
Material and Method

A healthy 26-year-old at the 32nd weeks of pregnancy presented with suddenly developed sharp, constant pain (VAS 5-7) in the right hip area. Pain decreased in two weeks, after physiotherapy in a vertical bath and water trail. However, due to eczema, hydrotherapy was discontinued. Pain reoccurred and was evaluated up to 6-8 VAS points. After delivery at 41st week of gestation, the pain intensified (VAS 10 points), the patient was unable to walk. MRI indicated the right hip osteonecrosis. Patient was treated by allowing walking with crutches without stepping on the right foot for at least 2 months, NSAIDs (colexib 100mg 1/d), calcium, passive physiotherapy, TENS, MT, EF with calcium chloride, HILT therapy, hip joint massage.

Results

After 2 months of rest, patient started to actively use the right foot, using 50% of body weight, increasing to 100% within 4 weeks. After inpatient rehabilitation she began to fully step on the right foot, pain decreased, range of motion of both hip joints became equal, right thigh and gluteal muscles strengthened.





Conclusion

Although osteonecrosis is a rare condition, it should be included as a possible differential diagnosis for any new, sudden hip joint pain developed during pregnancy. It is crucial to identify disease at an early stage before femoral head collapse occurs, which allows to preserve joint as opposed to replacement.

Keywords

Pregnancy;Osteonecrosis;Physical medicine

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.08 Internal Medicine and Other Conditions -Miscellaneous

ISPR8-1327

IMPROVING CONTINUITY OF CARE ON A STEP DOWN AND REHABILITATION WARD: AN ADMISSION SUMMARY PROFORMA

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Introduction/Background

Simpson Ward is a 21 bed step down and rehabilitation unit which provides a discharge to assess service for patients no longer requiring acute care at Watford General Hospital. As a ward with high turnover of doctors, often locums, continuity of care is key to delivering safe and effective treatment. This is especially important given the often prolonged stays. The aim of this audit was to identify key areas where admission clerkings may lack information and create a simple proforma to ensure these areas are included.

Material and Method

We identified key areas of information needed to guide clinicians about the patients' admission. 10 points were identified as important, including reason for admission, past medical history, escalation plans, and specific requirements e.g. communication or mobility difficulties. We looked at a total of 22 patients over a two day period and assessed whether these areas were identified in the admission clerking. Information from the clerkings was used alongside the acute discharge summary to detect any key areas overlooked.

Results

Admission clerkings were generally successful at outlining basic elements of patient information including reason for initial admission, reason for step down to Simpson ward and past medical history. However other areas were not clearly outlined in the admission clerking with clear documentation in less than 35%. In particular CPR/escalation plans were not documented in

any clerkings despite DNACPR forms being present. Additionally patient follow up was not highlighted despite being requested in the discharge summary.

Conclusion

It is clear from our results that admission clerkings often lack important information key to continuity of care and smooth transition from acute to step down care. Based on these 10 areas we created a clear table to use as a 'patient factsheet' tool that can easily be referred back to when a new doctor takes over patient care.

Keywords

Improving;Continuity;Proforma

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.08 Internal Medicine and Other Conditions -Miscellaneous

ISPR8-1399

CURRENT SITUATION OF REHABILITATION BEFORE THE IMPLEMENTATION OF A PROGRAM OF EARLY MOBILIZATION IN A POLYVALENT ICU

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Introduction/Background

Survivors of critical illness frequently experience muscle weakness and relevant functional impairment after intensive care unit (ICU) discharge. This study aimed to evaluate currently mobilization practice in ICU patients with more than 72 hours of mechanical ventilation (MV).

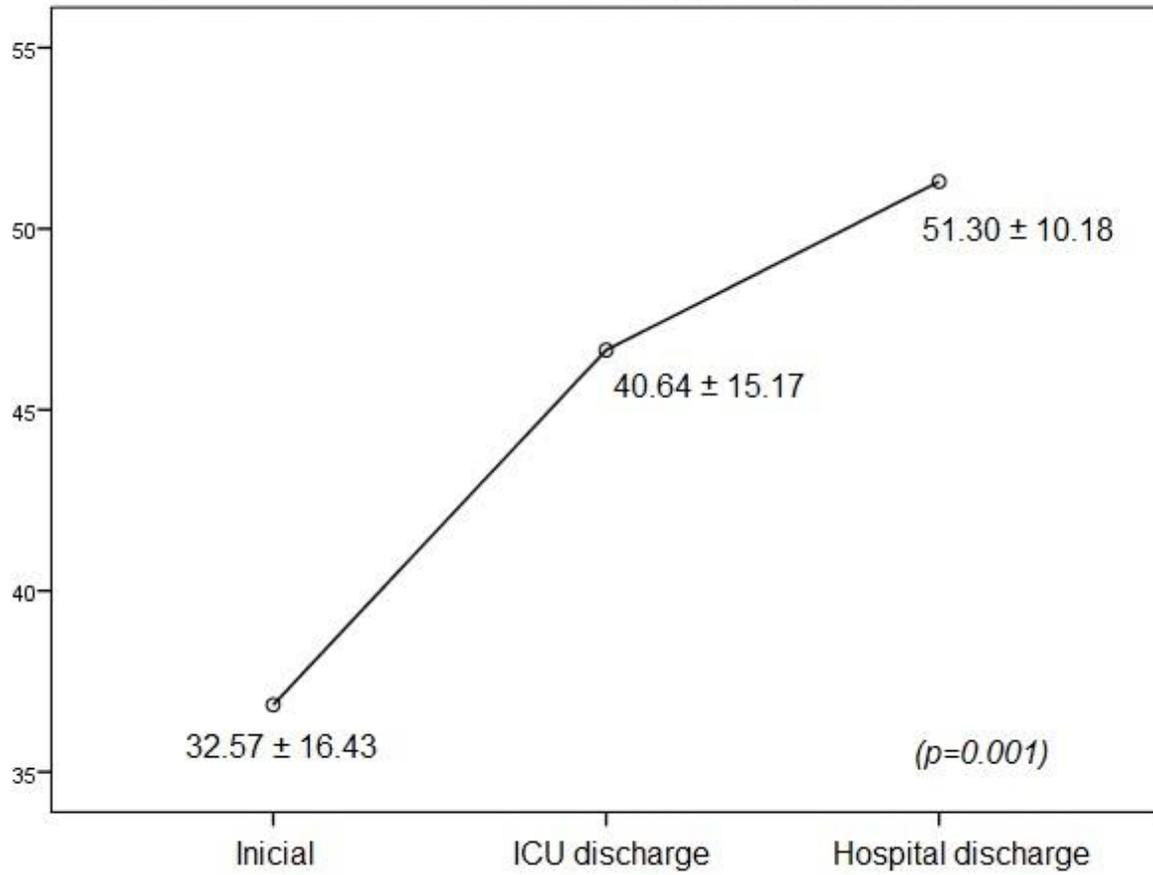
Material and Method

Unicenter prospective observational study from September 2016 to July 2017. We enrolled patients under MV longer than 12h and measure the baseline functional level, ICU-acquired weakness (ICUAW) and functional status at hospital discharge. We recorded the mobilization related adverse events.

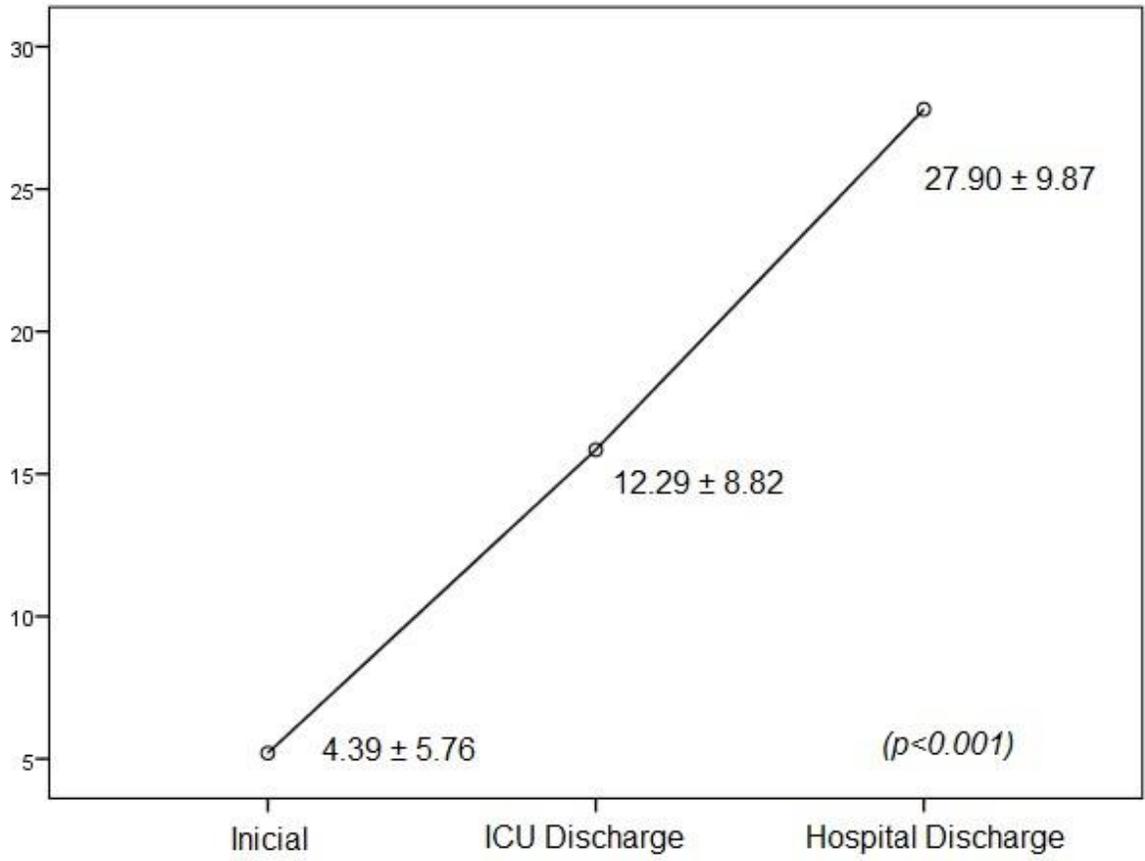
Results

We recruited 30 patients (63±12 years; 70% men), mean Acute Physiology and Chronic Health Evaluation II (APACHE II) 16±5. Mean time of ICU stay and hospital stay were 23 and 32 days respectively. Mean time to ask for rehabilitation evaluation was 8±4 days after ICU admission and finally rehabilitation began 10±5 days after admission to the ICU. 11 (37%) patients were mobilized with an endotracheal tube and 19 (63%) with endotracheal tube initially and after with tracheostomy tube. Strength was assessed at ICU discharge and 23 patients (80%) had ICU-acquired weakness (Medical research Council Manual Muscle Test Sum Score (MRC-SS) score 48<60).

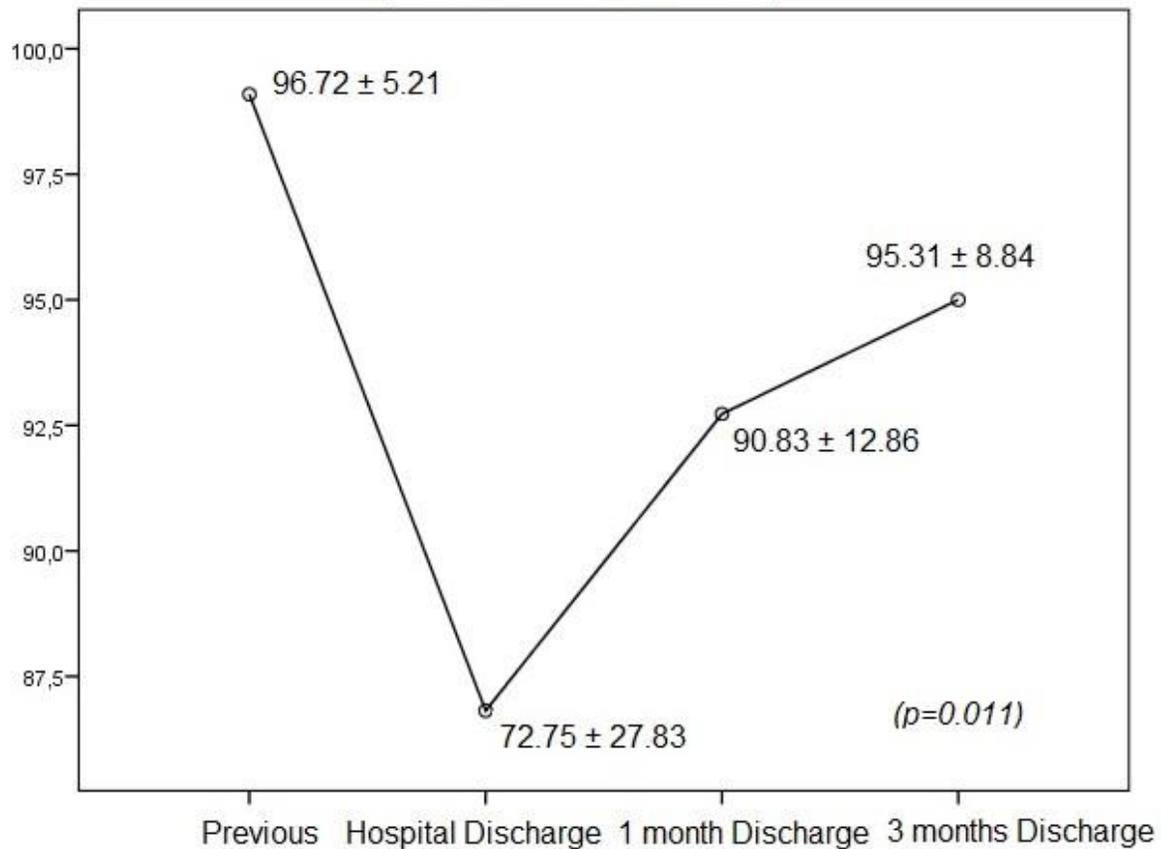
Medical Research Council (MRC) Progression



Functional Status Scale (FSS-ICU) Progression



Barthel Progression



The functional level obtained during sessions was sitting at the edge of the bed (n= 24, 80%), standing at the bedside (n=10, 33%) and walking (n=5, 17%). Not adverse effects during rehabilitation therapy were reported. ICU and hospital mortality were 27% and 33% respectively. The myopathic patients discharged from the ICU had higher mortality at day 90 (p= 0.002).

Conclusion

Early mobilization was uncommon in our ICU. Most of our patients discharged from the ICU had developed ICU-acquired weakness with higher mortality at day-90 in most severe myopathic ones. Implementation of an early mobilization program is urgent and requires a cultural change.

Keywords

early mobilization, ICU, rehabilitation, critically ill, physical therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A4.08 Internal Medicine and Other Conditions -Miscellaneous

ISPR8-1891

INPATIENT CARE VITAMIN D STATUS IN A PHYSICAL AND REHABILITATION MEDICINE DEPARTMENT

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Introduction/Background

Vitamin D is a prohormone whose two main inactive biological forms are cholecalciferol and ergocalciferol.

Serum 25 (OH) D is a reliable biomarker considered the best determinant of vitamin D status.

Adequate levels of vitamin D are essential for innumerable organic functions, namely: muscle function, prevention of stress fractures, prevention of infectious diseases and may even contribute to the secretion of insulin in type 1 and 2 diabetics.

Material and Method

The study was carried out in all patients admitted to the Physical Medicine and Rehabilitation Service in 2017. Serum 25(OH)D and skin type (Fitzpatrick Scale) were evaluated at admission.

Results

27 patients were evaluated (16 males and 11 females). Patients were aged between 38 and 84 years (60.37 ± 13.85). All patients had a Fitzpatrick scale of 3. Serum vitamin D levels ranged from 4.4 ng / mL to 24.6 ng / mL (11.54 ± 5.87 ng / mL). Thus, none of the patients had adequate levels of vitamin D. Spearman correlation was used for comparison of vitamin D levels and age, with a statistically significant correlation between age and vitamin D levels ($p = 0.004$).

Conclusion

None of the patients admitted to inpatient care of a Physical Medicine and Rehabilitation had adequate levels of vitamin D. Vitamin D deficiency may contribute to the onset of complications such as infections, myopathy and stress fractures ultimately leading to a greater delay in the functional recovery of patients and failure to achieve the full recovery potential. Younger patients had higher vitamin D deficits, indicating the importance of assessing serum vitamin D levels in this population. Given the effectiveness and safety of cholecalciferol in increasing serum 25 (OH) D levels, we may consider supplementation or even fortification of all hospitalized patients in order to prevent complications and enhance their functionality.

Keywords

Vitamin D; Inpatient Care Rehabilitation; Cholecalciferol

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.01 Paediatrics - Developmental Disorders

ISPR8-0009

VARIETY OF ACTIVITY PARTICIPATION INFLUENCES LEG BONE MINERAL CONTENT OF PRE-PUBERTAL CHILDREN WITH DEVELOPMENTAL COORDINATION DISORDER

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Introduction/Background

Limited participation in activities in children with developmental coordination disorder (DCD) may have a negative impact on bone mineral accrual. This study aimed to compare bone mineralization and activity participation patterns of pre-pubertal children with DCD and those with typical development, and to determine the relationship between activity participation patterns and bone mineralization in children with DCD.

Material and Method

Fifty-two children with DCD (mean age = 7.5 years) and 61 children with typical development (mean age = 7.2 years) participated in the study voluntarily. Appendicular and total body bone mineral content (BMC) and bone mineral density (BMD) were assessed by a whole-body dual-energy X-ray absorptiometry scan. Activity participation patterns were assessed using the Children's Assessment of Participation and Enjoyment (CAPE).

Results

Children with DCD had lower appendicular and total body BMCs and BMDs than children with typical development ($p < 0.05$). Additionally, they had lower CAPE total activity and physical activity diversity and intensity scores ($p < 0.05$). After accounting for the effects of bone age, sex, lean mass and fat mass, the total activity diversity score remained independently associated with leg BMC in children with DCD, explaining 5.5% of the variance ($p < 0.001$). However, the physical activity diversity score was no longer associated with leg BMC ($p = 0.084$).

Conclusion

Diversity (variety) and intensity of activity participation and bone mineralization were lower in pre-pubertal children with DCD. Decreased total activity participation variety was a contributing factor to lower BMC in the legs of children with DCD.

Keywords

Clumsy children; Skeletal development; Activity participation

Conflict of interest

Disclosure statement:

This study was supported by a Health and Medical Research Fund (13142081) from the Food and Health Bureau of Hong Kong and an Early Career Scheme Grant (27100614) from the Research Grants Council of Hong Kong.

E-Poster Session - July 9-12 - Exhibition Area

A5.01 Paediatrics - Developmental Disorders

ISPR8-2565

FOOT DEFORMITY IN CHILDREN WITH LINEAR SCLERODERMA: CASE REPORT

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Introduction/Background

Localized scleroderma or morphea is confined to the skin and/or underlying tissues. It is a rare disease of unknown etiology. Linear scleroderma is a subtype of localized scleroderma generally observed in children, and may produce secondary bone and joint deformities. Its localization at the foot or ankle is rarely reported.

Material and Method

A complete review of the literature reveals 22 cases of foot or ankle deformity due to linear scleroderma to which we added one case.

Results

An 8 years old boy consulted for oval-shaped plaques of skin in the right thigh and foot. The clinical diagnosis of linear scleroderma was made. Two years later, he came to us for an evolutionary and painful deformation of the right foot, interfering with footing. The physical examination found: A short amyotrophic right lower limb; Monoparesia grade 4/5 and Stiffness of the right ankle. Treatment consisted of corticosteroid, physical therapy in association with prescription of orthopedic soles. With an 8-month follow-up, walking was done without lameness or pain. Ankle mobility was 30 degrees in dorsal flexion and 40 degrees in plantar flexion.

Conclusion

Treatment should be started very early, before complications occur due to the high morbidity rate of individuals with localized scleroderma.

Keywords

Linear scleroderma; morphea; foot deformity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.01 Paediatrics - Developmental Disorders

ISPR8-0136

ABSTRACT NEED TO BE EDITED - TRANSLATION, FACE AND CONTENT VALIDITY ON "CHILD INITIATED PRETEND PLAY ASSESSMENT" FOR 4-7 YEARS CHILDREN

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Introduction/Background

Background and Aim: although play seems to be a simple concept, but is complex and varies according to individual experience. Play is a process happen with no law. The play is a spontaneous, funny, without goal, flexible, completely attractive, vital and challenging behavior. Pretend play starts in childhood than 18 months. The play is a potential source for the assessment of academic skills. Pretend play is more related to preacademic skills. The purpose of this study was translation and examining face and content validity of Persian version of the Child Initiated Pretend Play Assessment (CHIPPA).

Material and Method

The translation of the test carried out based on International Quality of Life Assessment. Then face validity determined by five and content validity investigated by ten specialists in occupational therapy profession .then content validity ratio (CVR) and content validity index (CVI) calculated.

Results

In the process of translation, some phrases were changed depending on the culture. CVI was 1 and CVR was 0.8 to 1 in all items.

Conclusion

the Persian version of "Child Initiated Pretend Play Assessment" has an appropriate face and content validity

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.01 Paediatrics - Developmental Disorders

ISPR8-0137

DISTRIBUTION OF SENSORY PROCESSING DISORDER IN CHILDREN 5 TO 11 YEARS IN TEHRAN CITY

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Introduction/Background

Sensory Processing Disorder as defined by difficulties in setting up and organizing the variety and intensity of responses to sensory input for compliance with environmental requirements. This study was designed to investigate the distribution of sensory processing disorder in children 5 to 11 years in Tehran city based on sensory profile questionnaire.

Material and Method

This study was a descriptive and cross sectional study that performed in children who have 5 to 11 years old. Data collection included a demographic questionnaire and a sensory profile questionnaire

Results

In this study 2191 cases were evaluated in terms of sensory processing factors. According to this study morbidity from sensory processing disorder in boys is higher than for girls. Also the most common disorder was observed in sensory sensitivity factor and the lowest was fine movement and perception.

Conclusion

Different sensory processing function in these children may explain their abnormal behaviors. These sensory processing dysfunction effects on child's daily life in areas such as play, academic skills and peer relationships, self-help activities. Therapists should consider the child's sensory processing functions when they set therapeutic plans. Declaration of Interest: None

Keywords

No conflict of interest

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ISPR8-0370

RELIABILITY OF OTOACUSTIC EMISSIONS AS SCREENING TEST IN CHILDREN WITH HIGH RISK OF HYPOACUSIA

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Introduction/Background

Otoacoustic emissions (OE) allow the early detection of hearing loss in neonates, they have few limitations and have been used for screening and early detection of hearing loss in newborns, especially those with risk factors for hearing loss, however, they require diagnostic confirmation with evoked auditory brainstem potentials. The objective of the study was to measure the reliability of auditory screening results through otoacoustic emissions with the gold standard in high-risk children treated in two hospitals in Bogotá.

Material and Method

A longitudinal, ambispective study. We collected both brainstem auditory evoked potentials and Transient OE to high-risk newborns with hearing loss suspicion in two tertiary care centers in Bogotá from 2008 to 2016. For the purposes of reliability analysis, each ear was considered an analytical unit.

Results

From 147 newborns with risk factors evaluated with otoacoustic during study period it was possible to perform evoked auditory brainstem potentials in 41 cases (82 ears), which we analyzed. With this comparative data we found that OE have a sensitivity and specificity values of 82,5% and 57,1% respectively. About to the safety of OE, we obtained positive and negative predictive values of 64.7% and 77.4%. With all this, we determine the positive and negative likelihood ratios, obtaining the values 1.93 and 0.31 respectively. With which we obtain a diagnostic 'odds ratio' (DOR) of 6,22.

Conclusion

OE showed an unsatisfactory diagnostic performance, with a good sensitivity value but low specificity, showing a DOR with discriminatory value. For this reason their use as screening test could not be discouraged. It is necessary to carry out further studies with greater statistical power to be able to define indications and recommendations in relation to the application of this type of tests.

Keywords

Otoacoustic emissions;neonatal screening;hearing loss

No conflict of interest

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ISPR8-0441

LOWER LIMB MUSCLE KINETICS DURING Y-BALANCE TEST BETWEEN CHILDREN WITH AND WITHOUT DEVELOPMENTAL COORDINATION DISORDER

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Introduction/Background

Despite the atypical muscle activation patterns exhibited in children with developmental coordination disorder (DCD) during static postural control tasks, no studies to date have investigated if this pattern is shown in dynamic postural control conditions. This study aimed to evaluate the leg muscle patterns during the Lower Quarter Y-Balance Test (YBT-LQ) between children with and without DCD.

Material and Method

Forty-eight children with DCD (mean age \pm SD = 8.03 \pm 1.10 years; 37 males and 11 females) and fifty-one children with typical development (mean age \pm SD = 7.82 \pm 1.06 years; 32 males and 19 females) were allocated to the DCD group and control group, respectively, after screening by two physiotherapists. Rectus femoris, biceps femoris, tibialis anterior and gastrocnemius medialis muscle activations (of the weight-bearing leg) were measured by surface electromyography and foot contact switches during the YBT-LQ anterior, posteromedial and posterolateral reaches.

Results

Children with DCD revealed a lower YBT-LQ score ($p < 0.001$) when compared to the control group for all reach directions. Moreover, the posteromedial and anterior reach directions revealed different muscle activation patterns with a lower gastrocnemius medialis peak activation ($p = 0.029$) and a shorter gastrocnemius medialis muscle time-to-peak duration ($p < 0.05$), respectively, in children with DCD compared with the controls.

Conclusion

Children with DCD exhibited a less competent YBT-LQ performance and dissimilar leg muscle activation patterns in dynamic balance situations. They may adopt a different lower limb neuromuscular control than typically developing children to compensate for the balance deficits. Rehabilitation interventions for children with DCD should therefore incorporate dynamic postural control elements with an emphasis on phasic neuromuscular control of the weight-bearing leg.

Keywords

developmental coordination disorder;dynamic balance;postural stability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-0645

CASE REPORT: 3-YEARS-OLD CHILD WITH SYNGAP1 GENE DEFECT – A RARE DISEASE AND A REHABILITATION CHALLENGE

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Introduction/Background

Normal development of brain is imperative for performing essential executive functions. Abnormal dendritic spine morphology and function, such as SYNGAP1 (synaptic Ras-GTPase-activating protein 1) mutations, can lead to disruption of neuronal circuits and consequently can result in various neurodevelopmental disorders.

Material and Method

Collection of patient data was made through the clinical process.

Results

Case Report: This 3-year-old boy was referred to PMR department at the 6-month-old for hypotonia. Faced with the difficulty in feeding, hypotonia and lack of trunk stability and strength in lower limbs, he began a psychomotor rehabilitation plan. After that a pathogenic variant c.3583-6G>A(p.7) was detected in heterozygosity of the *SYNGAP1* gene.

At this time, he is in follow-up by the PMR department, with physiotherapy and occupational therapy plan with improvement of the axial tonus and better trunk stability in the sitting position but hypotonia is still evident. He is also performing Speech Therapy, and at this time he says only 4 meaningful words and is starting to introduce solid food.

With the institution of the rehabilitation plan it did not have regressions in the psychomotor development and presents some more notorious gains in the feeding and motor function once already he tries to crawl.

Conclusion

Given the rarity of these case report (described in the literature in only two patients), it is not easy for the physician to establish the goals to be achieved in the rehabilitation program because they are not known. The management of these patients goes through the discussion of each case with all medical specialties involved and with the therapists who work with the patients in order to adjust the plans to the needs of the child in each moment.

It's important to share the rehabilitation experience of these rare case in order to help other physicians to understand the natural evolution of these patients.

Keywords

SYNGAP1 gene defect;Neurodevelopmental disorders;Rehabilitation

No conflict of interest

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ISPR8-0718

A CASE OF 16P11.2 DUPLICATION SYNDROME WITH CORTICAL VISUAL IMPAIRMENT.

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Introduction/Background

The 16p11.2 duplication syndrome are related intellectual disability, delayed motor development, speech disability, brain structure and function; enlarged ventricles, cerebellar hypoplasia, vision problem and other medical problems. We present a child showed delayed development and cortical visual impairment with 16p11.2 duplication occurred as de novo mutation.

Material and Method

A 16 months-old male visited rehabilitation clinic with delayed development. He had small head and motor milestones were delayed. In Bayley Scales of Infant Development at 17 months, he had 7 months gross motor, 9 months cognitive functions, 5 months receptive communication, 7 months expressive communication, and 9 months fine motor. His cortical visual impairment assessed by using array-based comparative genomic hybridization, evoked potential, diffusion tensor tractography, Preverbal Visual Assessment questionnaire.

Results

His VEP showed delayed P100 latency of left and disturbed or absent wave pattern of right. Array-CGH revealed 11.7Mb duplication of chromosome 16p12.3 – 16p.11.2. Brain MRI revealed periventricular leukomalacia with unclear cause and thinning of corpus callosum for patient's age. On DTT, the callosal fibers in mid-body of corpus callosum showed focal defect. Left frontotemporal tract in arcuate fasciculus was not reconstructed. Inferior fronto-occipital fasciculus had reduced volume in right hemisphere and diminished projection to occipital lobe. Right optic radiation was not reconstructed. On assessment to visual integrative abilities using PreViAs questionnaire reported by his parents. He got a global score 19 out of 30(Table 1).

Conclusion

The 15 percent of patient with 16p11.2 duplication syndrome is known for having visual problem. The METTL9 gene located in 16p12.3 – 16p11.2 would be related with this patient's visual impairment. But there are no reports yet to distinguish peripheral and cortical visual impairment. By using specific tools, it would be useful to evaluate and to start early intervention the patients with cortical visual impairment. It is worth to plan rehabilitative strategies for individual based approach.

Keywords

cortical visual impairment

No conflict of interest

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ISPR8-0771

MEALTIME BEHAVIORS IN TYPICALLY DEVELOPING CHILDREN AND CHILDREN WITH AUTISM SPECTRUM DISORDER (ASD)

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Introduction/Background

Mealtime behaviors are influenced by one's cultural and social context. In India, patterns, foods and ways of eating are different than western countries. Literature shows evidence of the presence of problematic mealtime behaviors in both typically developing children and children with ASD and it's a major concern for parents. **Objective:** To explore mealtime behaviors in typically developing children in Indian context and compare it with children with ASD.

Material and Method

A cross sectional survey using Children's Eating Behavior Inventory (CEBI), a parent report measure assessed eating and mealtime behavior issues in 150 typically developing children and 30 children with ASD in the age range of 2 to 12 years. CEBI consists of 40 items, rated on a 5- point scale. Problematic behavior is also rated on a 2-point scale. Analysis included descriptive statistics, Pearson's Correlation coefficient test and Chi square test of independence.

Results

Results proved the presence of problematic mealtime behaviors in both the groups but more in children with ASD. Independent t-test was found to be significant $t(178) = 3.041, p < 0.003$ indicating a difference between mealtime behaviors in both the groups. Pearson's chi-square was found to be $X^2(2, N= 180) = 18.83, p < 0.001$ showing a statistically significant association between problematic mealtime behaviors (Mealtime behaviors > 16% cut off) and the two groups

Conclusion

Mealtime behaviors are present in typically developing children and children with ASD. However, these behaviors occur more frequently in children with ASD and are more problematic for their parents. Findings of the present study support the existing evidence on mealtime behaviors. Further studies can emphasize on evaluating more mealtime behaviors and type of food preferences in typically developing children

Keywords

Mealtime Behaviors;Autism Spectrum Disorder;Typically Developing Children

No conflict of interest

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ISPR8-0800

ASSOCIATION BETWEEN SPINE STRUCTURAL DEFORMITIES AND HYPOTONIA IN CHILDREN UP TO 3 YEARS OF LIFE

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Introduction/Background

In children up to one year of life with hypotonia of muscles, lumbal kyphosis is characteristic sign in sitting position due to the weakness of body muscles, and is corrected in lying and standing position. Follow-up of these children with increasing in muscle strength up to 3 years of life leads to correction of such deformity. In cases where lumbar kyphosis is persistent and is not corrected in both lying and standing positions it should be assumed for structural spine deformities. The study aim is early diagnostics of structural spine deformity and proper orthopedic-physiatric treatment inclusion.

Material and Method

Clinical examination and radiological evaluations were performed along with exercises and orthoses.

Results

3 cases treated due to the muscle hypotonia and delay in motoric development with expected persistent lumbal kyphosis over the first year of life. Such deformity was treated by knesiotherapy along with stimulation of motoric development. On control follow-up within first 3 years of life, kyphotic deformity was present with in lying and standing position without neurological pathology and is confirmed by X ray and CT (nonsegmentacio vertebre).

Conclusion

It is recommended that in these cases, patients should be referred to exercises along with corrective plasters and follow-up during growth and development.

Keywords

kyphosis;hypotonia;children

No conflict of interest

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ISPR8-0806

A 12-WEEK GROUP INTERVENTION FOR SELECTED CHILDREN DIAGNOSED WITH AUTISM SPECTRUM DISORDER

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Introduction/Background

Gross motor skills contribute to a child's overall wellbeing, and therefore, these skills are important. Children diagnosed with Autism Spectrum Disorder (ASD) are recognised as being clumsy and uncoordinated in their gross and fine motor skills and for these reasons show signs of atypical development. Intervention programs are, therefore, necessary to provide children with ASD opportunities to learn the essential gross motor skills, leading to increased participation in physical activity. The aim of the study was to implement a 12-week specialised group intervention to improve the gross motor skills of selected children diagnosed with ASD. The age of the participants ranged between 8 and 13 years.

Material and Method

In the Cape Town area (Western Cape Province, South Africa), a governmental school for autistic learners was recruited to participate in this study, because the school divided learners into classes based on their level of autistic function. Therefore, the study made use of a sample of convenience. Two classes (N=7) at the school participated; one formed the experimental group (n=4) and the other the control group (n=3). The children completed the Movement Assessment Battery for Children-2 (MABC-2). A 12-week group intervention focussing on gross motor proficiency was designed and implemented.

Results

Descriptive statistics and summary results are reported as means and standard deviations. The main findings showed significant improvements in the total motor proficiency of the MABC-2 in children with ASD. A statistically significant difference was found over time between the experimental and control groups ($p=0.05$), suggesting that the intervention had a positive effect on the children's total motor proficiency.

Conclusion

The current study demonstrated the effectiveness of a 12-week group intervention programme on the gross motor skills of children with ASD, and therefore, future studies are encouraged.

Keywords

Autism Spectrum Disorder;Children;Gross motor skills

No conflict of interest

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ISPR8-1011

QUALITY OF LIFE IN PRETERM WITH CONGENITAL HEART DISEASE

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Introduction/Background

Earlier studies have demonstrated that the gestational age has an influence in the survival of the children with Congenital Heart Disease (CHD), being lower in those born preterm. Moreover, it is known that the neurodevelopmental disorders that affect both Preterm (PT) children and those with CHD are a result of the underlying pathophysiology, comorbidities and associated treatments or interventions.

The objective of this study is to evaluate the Quality of Life (QoL) in PT with complex CHD and to compare it with children with CHD born at term (AT).

Material and Method

Data was collected prospectively in patients from 7 to 18 years old who attended a CPET cardiopulmonary exercise testing at the General University Hospital Gregorio Marañón from 07/01/17 to 12/31/2017. QoL was evaluated using the PedsqL cardiac module, a validated questionnaire that assesses the areas of heart problems, treatment, physical appearance, treatment anxiety, cognitive problems and communication. The questionnaire was answered by both parents and children.

Results

4 of 67 children who took the test were PT. The description of PT heart disease is shown in Table 1. All areas appeared to be more affected in PT compared to children born AT as shown in Table 2.

Table 1: Preterm patients characteristics

Week	Date of birth	Gender	Heart Disease	Nº of surgeries	Treatment
37	12/12/2006	F	CAVC	3	SAA, Sildenafil, Spironolactone
33	29/09/2006	M	Pulmonary Atresia	1	no
35	07/07/2002	F	Subaortic Stenosis	0	no
28	26/08/2001	M	Aortic Stenosis	1	Enalapril

F: female, M: male, CAVC: Complete Atrioventricular Canal Defect, SAA: Salicylic Acetic Acid

Table 2:
PedsQL CHILDREN

	Heart problems	Treatment	Physical Appearance	Treatment Anxiety	Cognitive Problems	Communication
CAVC	25	70	50	75	50	91,7
Pulmonary Atresia	89,3		50	12,5	40	25
SubAortic Stenosis	100		100	100	80	91,7
Aortic Stenosis	75	95	58,3	50	30	0
Preterm average	72,3	82,5	64,4	59,4	50	52
At Term average	75,1	92,6	74,1	77,2	73	72,1

PedsQL PARENTS

	Heart problems	Treatment	Physical Appearance	Treatment Anxiety	Cognitive Problems	Communication
CAVC	25	60	33,3	62,5	40	83,3
Pulmonary Atresia	89,3		37,5	18,8	40	33,3
SubAortic Stenosis	89,3		100	93,8	85	100
Aortic Stenosis	75	100	83,3	50	10	0
Preterm average	69,6	80	63,5	56,3	43,8	54,2
At Term average	74,6	94	81,4	72	67,9	73,1

Conclusion

With the exception of the patient with Subaortic Stenosis, PT patients presented a lower score in the sections of physical appearance, anxiety and knowledge; being, in general, the perception of the parents more negative than the children's. These findings coincide with the results of previous studies. The number of patients is limited and our data preliminary. The real impact of prematurity on the QoL of patients with CHD should be further investigated.

Keywords

Preterm;Quality of life;Congenital Heart Disease

No conflict of interest

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ISPR8-1041

CHARACTERISTICS OF MOTOR DEVELOPMENT OF AUTISM SPECTRUM DISORDER CHILDREN UNTIL UNASSISTED WALKING STAGE

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Introduction/Background

There have been few reports on the aspects of the motor function development of autism spectrum disorder (ASD) infants in infancy. In the present study, we investigated the motor development characteristics of ASD infants before the stage at which they acquired the ability to walk unassisted.

Material and Method

The subjects were 150 ASD infants (112 males and 38 females), who did not have any clear underlying disease, and based on their charts we retrospectively selected motor function acquisition ages until acquiring the ability to walk unassisted. We assessed six parameters: head control, roll over, sitting, crawling, standing up, and walking unassisted and calculated the numbers of infants classified according to whether within the normal range and early or late outside the normal range, by using Japanese edition Denver style development screening test. We also investigated the sequence of motor function acquisition.

Results

The mean ages of the ASD infants when they acquired the motor functions were within their normal ranges, but the standard deviations of the ages of acquisition successively widened. Although 122 infants (81%) were within the normal range for the turnover, 83 infants (55%) were within the normal range for walking unassisted. The sequence of motor function acquisition was normal in 54 infants (36%) and irregular in 96 infants (64%), and a tendency was also seen for irregularities in the sequence of acquisition to become greater.

Conclusion

Motor development in typically developing children progresses stepwise. However, when motor development delay or a course of motor development outside the normal range in terms of age in months at the time of acquisition is observed despite the absence of any clear underlying disease, it is necessary to bear the possibility of ASD in mind and intervene early, while monitoring the course of the child's interpersonal relations, social skills, behavior, and motor development.

Keywords

Autism Spectrum Disorder; Motor Development; Infancy

No conflict of interest

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ISPR8-1051

HIGH RISK OF MOTOR DEVELOPMENT DELAY IN CHILDREN WITH CONGENITAL MUSCULAR TORTICOLLIS

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Introduction/Background

Congenital muscular torticollis (CMT) is one of the most common congenital cervical deformities in children. CMT is a result of excessive shortening of the sternocleidomastoid muscle, which leads to an imbalance of muscle function around the neck. Previous studies found that postural torticollis may lead to motor development delay. However, few studies have been carried out on the study of CMT concurrent motor development delay. The purpose of this study was to investigate the prevalence of motor development delay in children with CMT.

Material and Method

Peabody Developmental Motor Scales-Second Edition (PDMS-2) was used to evaluate motor developmental levels in 54 children with CMT, whose average age was 8.50 ± 6.76 months (2~27 months). PDMS-2 is an assessment tool to evaluate children motor development, consisting of 6 subscales, including reflection, posture, movement, object manipulation, grasping and visual motor integration, a total of 249 items. The final results were expressed by gross motor development quotient (GMQ), fine motor development quotient (FMQ). The higher the quotient, the better the motor development. The normal value of the developmental quotient is 90~110, while below 90 representing motor development delay.

Results

The average GMQ and FMQ were 94.48 ± 9.69 , 98.70 ± 8.26 respectively, and the GMQ was significantly lower than FMQ in children with CMT ($P<0.01$). Among them, 24 patients (37%) existed motor development delay, while 18 patients (33%) in gross motor development delay, and 6 patients (11%) in fine motor development delay. There was no significant difference of GMQ, FMQ in gender or different affected sides of CMT.

Conclusion

37% of children with CMT have motor development delay. Children with CMT have the separation of gross motor development and fine motor development. The gross motor of children with CMT may fall behind the fine motor. Therefore, physicians and physiotherapists should pay more attention to the motor development of children with CMT.

Keywords

Congenital muscular torticollis;Peabody developmental motor scale;motor development delay

No conflict of interest

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ISPR8-1072

MOTIVATION-DRIVEN IMPROVEMENT IN SCHOOL ATTENDANCE VIA INDIRECT STAFF SUPPORT

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Introduction/Background

Independent living group homes are residential options for 15-20-year-old adolescents and young adults who are without a family or who have to live away from home. According to a survey 24.5% residents of the independent living group homes were diagnosed with developmental disorder. Occupational therapy can improve the lives of these residents who seek occupational independence despite the. However, there are no reports of occupational therapy practices in Japanese independent living group homes.

Material and Method

We carried out three separate consultations with the group home staff. In the initial interview, we discussed how Ms. A (17-year-old) could attend high school without absentees. She was diagnosed with attention deficit hyperactivity disorder. She attended high school, but was at a risk of being withdrawn secondary education due to excessive absentees. As she worked hard at her part-time job, she had difficulty waking up early. Although she understood the importance of attending high school, she seemed unmotivated to regularly attend it. Therefore, we proposed the use of a calendar sticker and a comment reinforcement system to assist Ms. A with visualization and motivation to attend school.

Results

At the second session, the staff reported that the use of the calendar sticker and reinforcement system was effective and Ms. A successfully attended high school; she adjusted the amount of time spent at her job according to the school hours. By the third session, the staff reported that she was beginning to notice her physical condition.

Conclusion

A previous report stated that if a behavior is established via external reinforcement stimuli, the behavior itself should eventually be used as a reinforcement stimulus. As Ms. A continued to attend high school, the habit of regular attendance was reinforced. Encouragement by the staff

through the use of the calendar gradually became internalized, and she exhibited internalized motivation to maintain regular attendance.

Keywords

school attendance;developmental disorder;motivation

No conflict of interest

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ISPR8-1392

WIEDEMANN-STEINER SYNDROME FROM REHABILITATION PERSPECTIVE

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Introduction/Background

Wiedemann-Steiner syndrome (WSS) is a rare genetic disorder resulting from mutation in the MLL gene (also known as KMT2A) located on chromosome 11q23.3 that encodes a histone with modulating action on genes. The features in detail are psychomotor developmental delay, pre and postnatal growth deficiency, hypotonia, hypertrichosis cubiti (excessive hair on the elbows), mild to moderate mental retardation, speech delay, and craniofacial abnormalities with facial features such as downslanting narrow palpebral fissures, thick or arched eyebrows with a lateral flare, long eyelashes, and broad nasal bridge.

Our aim is to submit an infrequent but possibly important case to be considered in the differential diagnosis of developmental delay.

Material and Method

We report the case of a two-year-eleven-month-old child who has been followed up in our Rehabilitation Service since she was eight months for psychomotor developmental delay. She presented IUGR that required admission, PDA, and growth deficiency requiring hormone substitution. No family history. Her first review exploration highlighted hypotonia with little general muscular consistency, gross motor skills delay, distinctive facial features such as hypertelorism and broad nasal bridge, no facial asymmetries or cephalometric alterations. She started a treatment program based on neuro-developmental physical therapy and occupational therapy with cognitive and motor achievement stimulation.

Results

The successive revisions emphasize global hypotonia, rotational alterations in her feet, and psychomotor developmental delay, with assessment in the Brunet-Lezine of a delay of twenty-two months. She achieved independent gait at nineteen months old, being able to run, go up and downstairs at twenty-five.

Conclusion

Despite the fact that the cases of Wiedemann-Steiner syndrome are rare, it must be taken into consideration in a patient presenting any of the features mentioned above in order to get the benefits of an early neuro-developmental and stimulation treatment.

Keywords

rehabilitation;hypertrichosis cubiti;psychomotor developmental delay

No conflict of interest

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ISPR8-1525

LONG-TERM PHYSIOTHERAPY FOLLOW-UP ON A NONSENSE POINT MUTATION DUCHENNE MUSCULAR DYSTROPHY CASE USING ATALUREN

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Introduction/Background

Approximately 13% of Duchenne Muscular Dystrophy (DMD) cases occur due to nonsense point mutations, also known as early stop codons. The drug Ataluren has been shown to have the potential to treat the underlying cause of the disorder by producing a protein that replaces the nonsense mutation and functions as a cell mechanism. The aim of this study was to determine the effects of Ataluren on the 56th exon, a nonsense point mutated DMD, following 3 years of physiotherapy.

Material and Method

The case, which was followed between December 2015 and December 2017, was initially assessed at 5 and the final assessment at 7 years. The case was taken to the physiotherapy program immediately after the initial evaluation and started using Ataluren. A 6-Minute Walk Test, a North Star Ambulatory Assessment, a Timed Gower's Sign Test, a 10-Meter Walk Test, and a Four-Step Stair Climbing Test were administered to the case every year.

Results

Test results of the 3-year follow-up period of the case are given in Table-1. The case showed improvement in all parameters over the years.

Table-1 Three-year follow-up test results

	Year 5	Year 6	Year 7
6-Min Walk Test	355m	393m	402m
North Star Ambulatory Assessment	19pts	22pts	25pts
Timed Gower's Sign Test	6,37sec	5sec	3,78sec
10-Meter Walk Test	8,35sec	7,89sec	7,63sec
Four-Step Stair Climbing Up	4,5sec	3,63sec	3,5sec
Four-Step Stair Climbing Down	3,2sec	2,7sec	2,06sec

Conclusion

According to the results obtained in the study, the use of Ataluren type drugs in the case of DMD with a nonsense point mutation positively affects the walking speed, ambulatory skills, climbing the stairs -up and down- ability, and ability to stand up from supine position. We think that early initiation of early DMD patients who are able to use Ataluren will increase the physical performance and quality of life of patients.

Keywords

Duchenne Muscular Dystrophy;Physiotherapy;Ataluren

No conflict of interest

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ISPR8-1536

DEVELOPMENTAL EVALUATION IN THE PATIENTS WITH XERODERMA PIGMENTOSUM GROUP A, USING ENJOJI DEVELOPMENT EXAMINATION.

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Introduction/Background

The patients with xeroderma pigmentosum group A (XP-A) have severe neurological abnormalities, the peak of their developmental curve is around their babyhood, and the curve declines with age. However, there were few studies which performed developmental examinations in the patients with XP-A. In this study, we performed developmental examination in the patients with XP-A using Enjoji developmental test.

Material and Method

7 patients with XP-A were enrolled in this study. (12 males and 15 females. Average age:163 months old, all patients had homozygous IVS3-1G>C in the XPA gene.) The Enjoji developmental examinations were performed in the patients. The average of follow-up duration was 842 months. All patients were performed Enjoji developmental test several times in their follow-up.

Results

The peaks of the developmental curve were almost 60-80 months. The physical abilities of the whole body, skilled hand motor activities, behaviour, interpersonal skills and speech ability were decline linearly with age. Negative correlations of male patients were higher than those of female patients.

Conclusion

In this study, we reported the developmental examination of the patients with XPA using Enjoji developmental test. From our results, language comprehension was retained after the patients become bed-bound. Therefore, we should treat their hearing impairment appropriately in all their lives, and we should attempt to communicate using substitutes of speech when they have a difficulty of the treatment of hearing impairment. Decreasing in ADL of male patients progresses

faster than that of female patients. Thus, we should intervene in male patients earlier than female patients.

Keywords

xeroderma pigmentosum

No conflict of interest

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ISPR8-1733

BENEFITS OF OCCUPATIONAL THERAPY FOR CHILDREN WITH INTELLECTUAL DISABILITIES IN THE ASPECTS OF VOCATIONAL ACTIVITIES AND INSTRUMENTAL ACTIVITIES OF DAILY LIFE

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Introduction/Background

Intellectual disability is a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior, which cover many everyday social and practical skills. Vocational education is “a multi-professional approach that is provided to individuals of working age with health related impairments, limitations, or restrictions with work functioning and whose primary aim is to optimize work participation. Instrumental Activities of Daily Living activities to support daily life within the home and community. Like as community mobility, financial management, meal preparation and clean-up, shopping.

Material and Method

Electronic searches of Medline, PubMed, Google scholar, OT Seeker literature using the key terms of intellectual disability, vocational rehabilitation, instrumental activities of daily living and Occupational Therapy as well as a thorough manual search for relevant literature.

Results

There were 13 articles, all qualitative and quantitative which are included in this review. All studies were mixed methods in design. To take the Occupational Therapy services there are significant improvement about their children various areas like as sensory issues, cognitive abilities, perceptual skills, visual, motor planning and group therapy. After take the vocational and instrumental activities of daily living training children with intellectual disabilities participate their daily activities and work as an employee different company or organizations.

Conclusion

The persons with intellectual disability are the integral part of our society who deserves social support and opportunities like other human beings. From the result section of the project papers it is found that the significant benefits of Occupational Therapy services in the aspects of vocational and instrumental activities of daily living.

Keywords

No conflict of interest

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ISPR8-1841

EARLY REHABILITATION TREATMENT OF THE CONGENITAL HYPOTONIC SYNDROME SECONDARY TO NEMALINE MYOPATHY: A CASE REPORT

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Introduction/Background

Nemaline Myopathy (NM) is a primary myopathy that affects striated muscles. Produces proximal muscular weakness some with facial involvement, hypotonia, absence of deep tendon reflexes, respiratory and esophageal alterations. 20% are autosomal recessive, 30% autosomal dominant and 50% *de novo*. Usually diagnosed during the postnatal period through clinic, muscle biopsy (nemaline bodies) and genetic study. Multiples genes have been detected, being ACTA1 mutation responsible of 50% of lethal forms. Of the six clinical forms, the congenital is the most frequent. Independent walking before 18 months of age is the main survival factor.

Material and Method

We present the case of a 21-day girl with severe hypotonic syndrome. No family history of myopathy. Normal pregnancy and delivery. A genetic study was carried out on suspicion of glycogenosis, finding ACTA-1 gene mutation. Physical examination (PE): soft consistency tone with global hypotonia without activity of any muscle group, traction maneuver with predominance of flexor muscles and kyphosis. The patient was treated with two hours of physiotherapy and occupational therapy (OT) twice a week; postural and stimulation guidelines were given to parents.

Results

PE 6 months: improvement of proximal weakness, hand-foot-mouth coordination, performing flips; head control with three-point support, unstable sitting position. PE 12 months: flips chains, stable sitting position with kyphosis correction, poor access to standing. PE 23 months: march released at 22 months, standing access without support from squat position; manipulation: makes over 6 cubes tower, string balls with good bimanual coordination and bilateral terminal clamp. Given the good evolution is discharged in OT maintaining physiotherapy and guidelines at home.

Conclusion

Recognizing the association between hypotonia and PDR let us establish an early treatment focused on each milestone of fine and gross motor development. Family support and guidelines

at home have improved functional performance, mobility as well as participation in daily activities lines were given to parents.

Keywords

Nemaline myopathy; Congenital hypotonic syndrome; Psychomotor development retard

No conflict of interest

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ISPR8-2711

RELATIONSHIP BETWEEN A SUBSCRIPTION OF ORTHOSES FOR LOWER EXTREMITY AND A DEVELOPMENTAL QUOTIENT OF THE KYOTO SCALE OF PSYCHOLOGICAL DEVELOPMENT IN POPULATION WITH DOWN'S SYNDROME

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Introduction/Background

To retrospectively investigate the relationship between a prescription of orthoses for lower extremity and a Developmental Quotient (DQ) of an examination in people with Down's syndrome (DS).

Material and Method

Children with DS who had a developmental examination and who were 4.1 to 6.0 years were retrospectively investigated. Investigated parameters were: age, mean age of subjects who underwent the Kyoto Scale of Psychological Development (KSPD) in 4.1 to 6.0 years, number of subjects who made an orthosis or an insole, and the mean DQ of Postural-Motor (P-M), Cognitive-Adaptive (C-A), and Language-Social (L-S).

Results

78 subjects were detected. The mean age was 14.0 years old. The mean age of subjects who were tested with KSPD in 4.1 to 6.0 years was 4.9 years old. A total of 20 subjects underwent the exam and made an orthosis. 18 made an insole as a first orthosis. The mean DQ of P-M was significantly lower in the both population with DS who made some kind of orthoses than those who did not make anything.

Conclusion

People with DS who made some kind of orthoses indicated a lower mean DQ in the P-M area. DS patients with lower DQ on P-M area can need orthosis or an insole.

Keywords

Down's Syndrome;the Kyoto Scale of Psychological Development (KSPD);Orthosis

No conflict of interest

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ISPR8-2082

INCOORDINATED SUCKING PATTERN IS ASSOCIATED WITH LONGER TRANSITION TIME TO FULL ORAL FEEDING IN PREMATURE INFANTS

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Introduction/Background

Several treatments have been proposed in order to shorten the time to the attainment of full oral feeding (FOF) for pre-term infants, but there are only a few evaluation methods useful in estimating predictors of this period. We investigated whether specific items within the disorganized sucking patterns described by the Neonatal Oral-Motor Assessment Scale (NOMAS) could estimate the time to FOF in preterm infants with sucking difficulty.

Material and Method

Video recordings of at least 2 minutes of oral feeding were analyzed by two assessors, and the premature infants observed to exhibit disorganized sucking patterns (n=109) were divided into three clusters (cluster 2, 3, and 4), and further divided into incoordination positive (cluster 4) and incoordination negative groups (clusters 2, 3).

Results

Premature infants in the incoordination positive group showed a median transition time of 22 days (range: 4-121 days) which was longer than that in the incoordination negative group (arrhythmic and/or unable to sustain sucking pattern, median 6 days; range: 1-25 days). Univariate analysis revealed that the presence of incoordination among disorganized sucking patterns (NOMAS cluster 4 vs. clusters 2, 3), birth weight, TPN duration, NIPPV duration, the presence of moderate to severe BPD, pulmonary hypertension, sepsis, SGA, and NEC, are associated with the transition time to FOF.

Conclusion

When selecting premature infants to be treated with swallowing therapy, it is reasonable to perform treatment with the incoordination positive group described in the NOMAS, that is, premature infants with stress signals to shorten the time to attain full oral feeding.

Keywords

sucking difficulty;NOMAS;stress signal

No conflict of interest

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A5.01 Paediatrics - Developmental Disorders

ISPR8-2725

SAFETY AND IMMEDIATE EFFECTS OF GAIT TRAINING USING HYBRID ASSISTIVE LIMB FOR CEREBRAL PALSY

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Introduction/Background

The purpose of this study was to examine the safety and immediate effect of gait training using Hybrid Assistive Limb (HAL®, CYBERDYNE) for participants with cerebral palsy (CP).

Material and Method

Twenty CP patients participated in this study (15 males and 5 females, mean age: 15.0±6.3 years, 19 spastic CP; 1 athetosis CP. Gross Motor Function Classification System (GMFCS) levels of I : 4, II : 3, III: 9, and IV: 4). A single time gait training for 20 minutes using HAL were performed. The safety and the immediate effect of walking training using HAL were evaluated. The outcome of the immediate effect was gait speed and mean step length, cadence before and after the training.

Results

Two participants were too short stature and excluded because they were not in size with HAL. Eighteen participants performed gait training using HAL, and there were no serious adverse events during gait training using HAL. Fourteen participants were able to walk on the ground, and walk evaluation was performed before and after gait training using HAL. Statistically significant improvement in gait speed (0.71±0.35 m/s; before vs 0.83±0.45 m/s; after, $p < 0.05$) and mean step length (0.44±0.12 m; before vs 0.47±0.13 m; after, $p < 0.05$) were observed.

Conclusion

The gait training using HAL to CP can be safe and immediate effects admitted.

Keywords

gait training using HAL;safety and immediate effects;cerebral palsy

No conflict of interest

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ISPR8-2122

EFFECT OF THE SENSORY INTEGRATION THERAPY FOR CHILDREN WITH DEVELOPMENTAL DISORDERS -USING THE ASSESSMENT OF COMMUNICATION AND INTERACTION SKILLS (ACIS)-

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Introduction/Background

In recent years the sensory integration therapy (SIT) is used to treat children with developmental disorders in Japan. The play that is the occupational form with the meaning for children is offered in SIT and its aim is the solution to the problem of children. Often children with developmental disorders have problem on communication with other people. Therefore we measured changes in the state of communication and interaction skills in children with developmental disorders before and after SIT using the Assessment of Communication and Interaction Skills (ACIS).

Material and Method

The participants were 19 boys with developmental disorders from 4 to 6 years old. The intervention frequency was from once a week to once a month and intervention period was six or three months. 10-minutes treatment scene was observed and ACIS was marked by more than three occupational therapists. Statistical analysis was performed Wilcoxon signed-ranks test by using SPSS Statistics Ver.20. This study was carried out with approval of the Tokyo Metropolitan University Arakawa Campus Institutional Review Board (#13075).

Results

As for the ACIS % value before SIT was 80.4%±10.1SD, and the after SIT was 86.1%±8.5SD. There was meaningful improvement (p=.028). Also in each area of ACIS, "exchange of information" % value before SIT was 80.4%±10.1SD, and the after SIT was 86.1%±8.5SD. It was meaningful improvement (p=.041).

Conclusion

It was shown that the meaningful improvement in "ACIS total % value" and "exchange of information % value" at before and after SIT intervention. It was suggest that SIT has potential

improved the state of the communication and interaction skills in children with developmental disorders. This study was partially supported by JSPS Grant in Aid for Scientific Research (#26350629).

Keywords

Sensory Integration Therapy;effect;communication

No conflict of interest

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A5.01 Paediatrics - Developmental Disorders

ISPR8-2248

APPROVAL OF STUDENTS WITH DEVELOPMENTAL DISORDERS INTO AN AFTER-SCHOOL CHILDCARE PROGRAM AND OF OCCUPATIONAL THERAPIST SUPPORT SERVICES: THE 2017 MIYAGI PREFECTURE SURVEY

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Introduction/Background

We conducted a survey regarding the after-school childcare acceptance rate of elementary school students with developmental disorders and the support needs of occupational therapists who could serve them.

Material and Method

Subjects comprised 261 after-school childcare facilities in the Miyagi prefecture, including disaster areas following the 2011 earthquake that occurred off the Pacific coast of Tohoku. Of these, only 140 facilities (54%) responded. Numerical data are presented using descriptive statistics. We used a text mining approach for free description. This study was supported by the Welfare and Medical Service Network System. The author declares no conflicts of interest.

Results

There were 7764 enrolled subjects (age, 7–12). Of these, 287 (3.4%) subjects had diagnosed developmental disorder. On an average, there were 2.1 students with developmental disorders per facility. Breakdown by diagnosis revealed the following: physical disability (0.7%), mental retardation (0.4%), attention deficit hyperactivity disorder (1.3%), learning disorder (0.3%), Autism spectrum disorder (0.7%), and disaster-related post-traumatic stress disorder (0.01%).

In tsunami disaster areas, 3.5% students had developmental disorders, which is a closely identical rate compared with that of inland areas. Approximately, 24% of the after-school childcare facilities had care workers trained in disability care procedures, 50% provided consultation services, and 15% provided on-site guidance through rehabilitation specialists. Many of the facilities sought some practical guidance on care.

Conclusion

Our results suggested a clear need for occupational therapy support services within after-school childcare facilities in the Miyagi prefecture.

Keywords

after-school childcare program;developmental disorders

No conflict of interest

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A5.01 Paediatrics - Developmental Disorders

ISPR8-2263

CURRENT SITUATION OF EDUCATIONAL GUIDANCE FOR STUDENTS WITH DEVELOPMENTAL DISORDERS IN ORDINARY CLASS OF JUNIOR HIGH SCHOOL - SURVEY OF DIFFICULTIES OF TEACHERS -

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Introduction/Background

[backgrounds]

The Ministry of Education, Culture, Sports, Science and Technology have mentioned of necessity to positively respond to students who need special educational support. Intervention by medical professionals is considered necessary for junior high school students who have developmental disabilities (or are supposed to be) (hereinafter referred to as junior high school students with characteristics of developmental disorders), while intervention in junior high school students with characteristics of developmental disorders There are very few previous studies of focused occupational therapy intervention. Therefore, in this research, we concretely conducted a questionnaire survey on what teachers felt by teaching the learning and behavioral aspects of junior high school students with characteristics of developmental disability.

Material and Method

[Methods]

Recruitment was carried out two public junior high school locate in Tokyo through authors' networks. The data was gathered by questionnaire which had four questions; 1)years of experience as a junior high school teacher,2) experience of engaging in special support education, 3)experiences in teaching students with developmental disorders, 4) difficulties felt on teaching students with developmental disorders by freedom describe.

Results

[Results]

18 teachers participated voluntary. 6 teachers had worked over twenty years. 10 teachers used to work at special support education facilities. 13 teachers had not experienced teaching for students with characteristics of developmental disorders. Difficulties felt on teaching students have been divided into 9 categories such as difficulties to communicate, difficulties to proceed education.

Conclusion

[Conclusion]

These findings suggested the needs of assistance for teachers by health profession.

Keywords

Developmental Disorders;Education;junior high school

No conflict of interest

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A5.01 Paediatrics - Developmental Disorders

ISPR8-2291

EARLY DEVELOPMENTAL THERAPY FOR VERY LOW BIRTH WEIGHT (<1500G) PREMATURE BABIES ACCORDING THE RESULTS OF BAYLEY III

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Introduction/Background

In our hospital are the premature and risk new born babies by the Bayley-III test monitored and the therapeutic needs and trends are defined by the results of this test.

After monitoring over 40 very low birthweight premature babies, we came to the conclusion, that in this population almost all of the children had shown quantitative and/or qualitative developmental delay despite the age correction, for examples: attention deficit, motor skill disorders, fine motoric clumsiness delayed speech development.

Material and Method

We started a half-year pilot program in advance of these babies. Our goal was to observe how much does a “complex intensive interval” therapy helps the development of such babies.

Over the course of the project we have monitored the development of 23 children between the age of 6 to 30 months. To define the overall progress they made, we used the Bayley-III test both in the beginning and at the end of the program.

Based on the detected diseases, we have set up a complex personal developmental program that includes elementary coordination and sensomotoric therapies in individual, special education and small group sessions. As far as the parents are concerned, we provided the possibility of psychological counselling. During this half-year period, the children participated in two-week long daily trainings twice.

Results

x

Conclusion

The complex intensive interval therapies proved to be more efficient: out of 65 percent of all the participants, we experienced a surprising progress concerning several fields. Many of the children who were non-cooperative due to their attention deficit disorder became objectively examinable. Another hypothesis was successfully proven: it is advisable to use educational and sensomotoric therapies besides coordination therapies even from the age of 6 months.

Nevertheless, it can clearly be seen, that a disadvantageous social-economic status slows down the development of these risk new born babies.

Keywords

No conflict of interest

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A5.01 Paediatrics - Developmental Disorders

ISPR8-2489

THE PREVALENCE OF EPILEPSY IN A MALARIA ENDEMIC REGION OF KENYA

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Introduction/Background

Epilepsy is the most common chronic neurological disorder and is one of the world's most prevalent non-communicable disorders.

There are few studies in Kenya. Epilepsy is thought to be more prevalent in Africa, because causes such as birth trauma and infections are common.

Material and Method

However, there are few reports examining the relationship between malaria and epilepsy in endemic areas. My colleagues and I conducted a cross-sectional survey to detect active convulsive epilepsy in an area, with differing malaria transmission in the Kilifi District on the Coast of Kenya. I set out to determine the prevalence and risk factors of active convulsive epilepsy and examine the association between the epilepsy and malaria transmission in this area. Active convulsive epilepsy (ACE) was defined as 2 or more unprovoked convulsions, or which one occurred within the last year, whether or not treatment was being given, since this is the criterion for treatment in Kenya.

Results

The prevalence of epilepsy was 3.5 per 1000 inhabitants at risk, 3.8 per 1000 for males 3.3 per 1000 for females. The highest age-specific prevalence was found in the 11-20 years age group. Generalized tonic-clonic seizures were the predominant seizure type and occurred in 70.4% of subjects. However focal seizures accounted for 75.5% of the seizures when second and third seizures were included. History of head trauma, intrapartum and perinatal complications, family history of febrile seizures, history of a widowed mother and family history of seizures in first-degree relatives and also extended family were associated with a risk of developing epilepsy.

Conclusion

The study indicates that the prevalence rate of active epilepsy in our study is comparable to that in other well conducted community based studies in Africa and in the western countries. Strongly independent association between five factors and the risk of epilepsy was noted.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2572

INFLUENCING WALKING SPEED AND ENERGY EFFICIENCY WITH AFO-FC TUNED IN THE CLINIC, IN CHILDREN DIAGNOSED WITH CEREBRAL PALSY

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Introduction/Background

Ankle Foot Orthoses (AFO) are common in cases of gait abnormalities. Research has shown that AFO-footwear combinations (AFO-FC) improve kinetics and kinematics. Heel height increment aims to change shank inclination in order to improve stability. Tuning of AFO-FC is recommended but is not routine, due in part to lack of access to gait laboratories. **Aims-** To introduce a reproducible method for tuning AFO-FC in the clinic and to assess the effect of these AFO-FC on walking speed and energy efficiency following two months of daily walking, in children with cerebral palsy (CP).

Material and Method

Patients- Eight children diagnosed with CP, 3-7 years old, walking with or without aids, using fixed AFO.

Tools- Pulse sensor watch and strip, digital camera, 6 Minute Walk Test (6MWT).

Tuned shoes were made. At baseline, the children underwent a 6MWT with their regular AFO and shoes. In the following month, they practiced a daily walk with their regular shoes and AFO. At the end of the first month, 6MWT was done with regular shoes and AFO and with the AFO-FC. In the second month, the children practiced daily walk with their AFO-FC. At the end of the second month, they performed the 6MWT in both sets of shoes.

Results

At baseline, median walking distance in 6MWT was 100 meters [range- 58-245], median physiologic cost index (PCI) value of 1.8 heart-beat/meter [range 0.4-2.6]. Walking with AFO-FC as compared to walking with AFO and regular shoes, showed significantly increased distance (mean difference of 17 meters, confidence interval (95%) 2-32 meters). All but one patient showed significant improvement in PCI values (mean values 0.82 times lower than baseline, confidence interval (95%) 0.72-0.92). Improvement in PCI values - between 4% to 45%.

Conclusion

AFO-FC tuned in the clinic, can significantly improve walking speed and energy efficiency in some cases following training.

Keywords

AFO-FC;Cerebral Palsy;Energy Efficiency

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2588

CEREBRAL PALSY: ABOUT 105 CASES IN IMP MUTWENZI AND AKAMURI PEDIATRIC REHABILITATION CENTERS (BURUNDI).

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Introduction/Background

Describe epidemiological, clinical and therapeutic aspects of cerebral palsy in children undergoing rehabilitation in a country with low income.

Material and Method

This descriptive study concerns patients with cerebral palsy aged from 0 to 15 years who received rehabilitation care in the two main pediatric rehabilitation centers in Burundi (IMP Mutwenzi and Akamuri) from March 1, 2016 to February 28, 2017.

Results

During the study period, 105 cases of children with cerebral palsy out of 559 patients were reported (54 cases from IMP Mutwenzi and 51 from Akamuri), representing 18.78%. The mean age was 49.49 months, with a sex ratio of 1.14 (males representing 53.33%). Firstborns children were the most represented (31.43%). A high number of children with cerebral palsy (70.47%) were brought to rehabilitation centers without any medical reference. At the time of admission, 39.04% were aged from 1 to 2 years, 30.47% from 2 to 3 years and 20.95% from 3 to 5 years. The most present clinical signs were spastic tetraplegia (42.85%), hypotonia (20.00%), spastic diplegia (19.04%), athetotic hemiplegia (15.23%), quadriplegia athetosis (13.33%) and ataxia most associated to athetosis and diplegia (8.57%). Associated disorders mainly concerned language disorders (70.48%) followed by epileptic disorders at 11.43%. The care protocol was mainly based on physiotherapy (all patients), occupational therapy (59.05%), orthopedic treatment (15.24%), speech therapy (37.14%), anti-epileptic treatment (64,76%) and education (25.93%).

Conclusion

Cerebral palsy (CP) is a public health problem with a high predominance of several cases. A number of difficulties linked in part to the late detection of deficiencies and the lack of medical reference in rehabilitation structures, are among the main factors limiting access to care for children with cerebral palsy in these centers.

Keywords

Cerebral palsy, child, rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0089

THE EFFICACY AND SAFETY OF BOTULINUM TOXIN TYPE A INJECTION FOR CERVICAL DYSTONIA IN ADULTS WITH ATHETOID CEREBRAL PALSY

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Introduction/Background

The main purpose of this study is to evaluate the efficacy and safety of injecting Botulinum toxin A (BoNT-A) into the neck muscles to treat cervical dystonia (CD) in patients with dyskinetic cerebral palsy (CP).

Material and Method

This is a randomized, double-blinded, placebo-controlled trial with cross-over design. We prospectively enrolled adults with dyskinetic CP who were over 20 years old and had been clinically diagnosed with CD for more than one year. Patients were assessed using the Toronto Western Spasmodic Torticollis Rating Scale (TWSTRS) and the Numerical Rating Scale (NRS).

Results

Seventeen patients were initially enrolled, but one patient was excluded after the final evaluation because of a violation of the study protocol. At 4 weeks, the BoNT-A injections showed significant improvement in TWSTRS total scores compared to the saline injections ($p=0.0286$ for ANCOVA). At 12 weeks, the BoNT-A injections resulted in greater improvements in TWSTRS total scores than the saline injections but this difference was not statistically significant ($p=0.0783$ for ANCOVA). Dysphagia occurred in 3 out of 16 patients; 2 after BoNT-A and 1 after saline. The dysphagia was transient and improved naturally within 2 weeks without any special treatment.

Conclusion

Botulinum toxin injection for cervical dystonia in adults with dyskinetic cerebral palsy is relatively safe and improves pain and disability.

Keywords

cerebral palsy;athetoid;cervical dystonia

Conflict of interest

Disclosure statement:

Conflict of interest

The authors declare that he/she has no conflict of interest.

Funding

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2687

SPASTIC CEREBRAL PALSY: A LEVEL 2 HOSPITAL'S PMR DEPARTMENT EXPERIENCE

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Introduction/Background

Cerebral palsy (CP) is the most common cause of physical disability in early childhood, rating between 2 and 3 per 1000 live births. The treatment of spasticity in children with spastic CP (SCP) is central in the clinical management of these patients. The botulinum toxin serotype A (BTX-A) application together with other conservative therapies have several advantages over invasive treatments in the management of younger patients. The authors aimed to characterize all pediatric patients followed in their level 2 hospital's PMR department.

Material and Method

Review of all clinical processes of all children born between 01/01/2001 and 31/12/2010 who were diagnosed with CP in the authors' hospital. There were excluded all patients without sufficient clinical information to categorize the CP and/or who were not being accompanied in the authors' hospital.

Results

There were identified 54 patients diagnosed with CP in the 10 years span, remaining 47 patients after exclusion criteria. Of these, 24 are females and 23 are males. Of total of 85% (n=40) patients have SPC, of which 52.5% (n=21) are quadriplegic, 27.5% (n= 11) are diplegic and 20% (n=8) are unilateral. Regarding function 10% (n=4) of patients belong to the GMFCS grade I and 20% (n=8) to the GMFCS grade V. A total of 42 patients are followed in the authors PMR department, of which 93% (n=39) are complying in rehabilitation programs and 86% (n=36) patients are submitted to BTX-A administration.

Conclusion

Regular characterization of patients with CP in any department is of critical importance, as it allows an objective evaluation of their clinical management and therapeutic modalities (including BTX-A) as compared to the literature and other centers.

Keywords

Cerebral palsy;botolinum toxin;spasticity

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

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NEONATAL RISK FACTORS IN CEREBRAL PALSY

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Introduction/Background

Cerebral palsy (CP) is a movement disorder caused by damage to the developing brain. It affects patient self-help, creates family problems, and increases care costs. CP has many risk factors, although the trigger is often unclear, resulting in treatment delays and permanent complications. To improve monitoring and early diagnosis, a study to establish total risk factors for predicting cerebral palsy in the neonate is a useful study especially for patients in small hospitals who do not have specialized doctors.

Material and Method

A case-control study of CP risk factors in neonate, born at Thammasat University Hospital, Thailand from 2005 to 2014. Using multivariable logistic regression, neonatal and maternal characteristics, as well as prenatal, perinatal and postnatal risks, were compared in normal children (control) and patients diagnosed with CP (case).

Results

These risks and evidence of difference (p-value) are in Table 1 and 2; CP independent risk is in Table 3. Cerebral and non-cerebral malformation, small for gestational age, preterm, multifetal gestation, neonatal jaundice, and non-congenital infections of neonatal infants were risks, with odds ratio (OR) = 313.03, 16.45, 5.67, 8.45, 11.39, 10.99 and 147.87, respectively.

Table 1. Maternal, neonatal characteristics and prenatal risk factors of cases vs non-case, evidence of difference (p-value), and AuROC (95%CI)

Characteristics	Cases (n=50)	Non-case (n=565)	p-value	AuROC (95%CI)
Maternal complications during pregnancy	3(6.00)	13(2.30)	0.152	0.52(0.48-0.56)
Uterine and cord abnormalities	3(6.00)	0	0.001	0.53(0.49-0.57)
Maternal bleeding in 3rd trimester	3(6)	10(1.77)	0.142	0.52(0.48-0.56)
Maternal infections during labor	9(18.00)	2(0.35)	<0.001	0.59(0.55-0.63)
Multifetal pregnancy	10(20.00)	6(1.06)	<0.001	0.59(0.56-0.63)
Small for gestational age	11(22.45)	42(7.68)	0.002	0.57(0.53-0.61)
Cerebral malformation	7(14.29)	1(0.18)	<0.001	0.57(0.53-0.61)
Non- cerebral malformation	14(28.57)	5(0.89)	<0.001	0.64(0.60-0.68)

Table 2. Perinatal and postnatal risk factors of cases vs non-cases, evidence of difference (p-value), and AuROC (95%CI)

Characteristics	Cases (n=50)	Non-case (n=565)	p-value	AuROC (95%CI)
Preterm	24 (48.98)	11(1.98)	<0.001	0.74(0.70-0.77)
Fetal distress	5(10.00)	15(2.65)	0.018	0.54(0.50-0.58)
Apgar score 5min; score <5	5(10.64)	0	<0.001	0.55(0.51-0.59)
Apgar score 10min; score <5	3(6.38)	0	<0.001	0.53(0.49-0.57)
Neonatal jaundice	12(24.00)	4(0.71)	<0.001	0.62(0.58-0.65)
Neonatal seizure	3(6.00)	0	0.001	0.53(0.49-0.57)
Neonatal encephalopathy	3(6.00)	0	0.001	0.53(0.49-0.57)
Congenital infection	3(6.38)	0	<0.001	0.53(0.49-0.57)
Perinatal infection (not congenital)	24(48.00)	1(0.18)	<0.001	0.74(0.70-0.77)
Using mechanical ventilator	14(29.17)	0	<0.001	0.65(0.61-0.68)

Table3. Independent risk of cerebral palsy by multivariable analysis (mOR)

Risk factor	mOR	95% CI of OR	p-value
Cerebral malformation	313.03	31.55-3105.33	<0.001
Non- cerebral malformation	16.45	2.67-101.43	0.003
Small for gestational age	5.67	1.61-19.99	0.007
Preterm	8.45	1.57-45.459	0.013
Multifetal gestation	11.39	1.63-79.49	0.014
Fetal distress	4.20	0.64- 27.37	0.133
Maternal infection	5.35	0.09-313.47	0.419
Neonatal jaundice	10.99	1.00-120.42	0.050
Perinatal infection (not congenital)	147.87	13.57-1611.35	<0.001

Conclusion

Cerebral and non-cerebral malformation, small for gestational age, preterm, multifetal gestation, neonatal jaundice, and non-congenital infections of the neonatal infants were predictive risks. However, low Apgar score, uterine and cord anomalies, neonatal seizure, neonatal encephalopathy, congenital infections, and ventilator use remain questionable with low incidence. Multicenter research to enhance data scope would be useful.

Keywords

cerebral palsy;risk factors;neonates

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

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EFFECT OF EXTRACORPOREAL SHOCK WAVE ON MUSCLE SPASTICITY IN PATIENTS WITH CEREBRAL PALSY : META-ANALYSIS AND SYSTEMATIC REVIEW.

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Introduction/Background

Background and aims : Recently, clinical trials have been performed to evaluate the efficacy of extracorporeal shock wave therapy (ESWT) in patients with cerebral palsy (CP). However, each study adopted different clinical scales that were insufficient to draw a definite conclusion about the efficacy of ESWT in reducing spasticity after cerebral palsy. The purpose of this meta-analysis was to assess the effects of ESWT on reducing spasticity after application of ESWT in patients with CP.

Material and Method

Methods : We searched MEDLINE, EMBASE, Web of Science, Cochrane Central Register of Controlled Trials and Scopus from their inception dates through December 11th 2017. The key words “muscle hypertonia OR spasticity” were used for spasticity, and the key words “shock wave OR ESWT” were used for ESWT.

Results

Results : Five studies were ultimately included in the meta-analysis. The Modified Ashworth Scale (MAS) grade, primary outcome was significantly improved immediately after ESWT compared with the baseline values (mean difference [MD], -0.64; 95% confidence interval [CI], -1.00 to -0.27). The ROM after ESWT was also significantly improved compared with the baseline values (MD, 17.91; 95% CI, 8.22 to 27.60). The pedobarometric measures, secondary outcome showed significant increases in the peak pressure under the heel (MD, 27.93; 95% CI, 9.90 to 45.96), and of the foot contact area (SMD, 8.83; 95% CI], 0.95 to 16.71) immediately after treatment.

Conclusion

Conclusions : ESWT may be a valid alternative to existing treatment options targeted at spasticity diminishment and ROM improvement in CP patients. Further standardization of treatment protocols including treatment intervals and intensities needs to be established and long-term follow up studies are needed.

Keywords

Spasticity; Extracorporeal shock wave therapy; Cerebral palsy

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0286

FASCICULAR MOTOR NEUROTOMY ASSOCIATED TO SINGLE EVENT MULTILEVEL SURGERY IN CEREBRAL PALSY. A LONG-TERM REVIEW WITH GAIT ANALYSIS

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Introduction/Background

The aim of this study is assessment of functional benefits after multilevel surgery associated with selective partial neurotomies, focusing on rectus femoris (RF), semitendinosus and semimembranosus muscles (medial hamstring MH) and the function of hip and knee joints

Material and Method

This is a series of patients who had multilevel surgery associated with selective neurotomy on RF, MH between 2009 and 2016. Clinical data were knee range of motion and Modified Ashworth Scale for RF and MH, energy expenditure index and Gross Motor Function Measure. Gait analysis data were speed, cadence, step length, time of stance phase, articular range of motion and articular moment on hip and knee flexion. Gait deviation index (GDI) and gait profile score (GPS) were calculated. All data were collected before surgery, and at last gait analysis follow-up available for each patient

Results

34 patients were included. The average time assessment after surgery was 33.35 months +/- 13.8. There is significant improvement of GDI and GPS, respectively from 74.2 +/- 11.6 to 79.7 +/- 8.2 ($p = 0.010$) and from 11.54 +/- 4.1 to 9.5 +/- 2.5 ($p = 0.005$). Knee flexion decreased at body weight acceptance phase: 30.8 +/- 9.9° to 24.7 +/- 6.6° ($p = 0.006$). Maximum joint moments were closer toward normality at knee on 55% of gait cycle: 0.2118 +/- 0.25Nm/kg to 0.1119 +/- 0.14Nm/kg ($p = 0.003$), at hip on 10% of gait cycle: 0.1261 +/- 0.39Nm/kg to 0.4419 +/- 0.32 Nm/kg ($p = 0.004$) and for knee flexion at 95% of gait cycle: 0.1340 +/- 0.45Nm/kg to 0.1883 +/- 0.068Nm/kg ($p = 0.005$). GMFM (E item) increased from 75.39 +/- 30.3% to 78.84 +/- 27.8% ($p = 0.009$)

Conclusion

There is clinical and functional benefits. GDI and GPS were improved after procedure combining single event multilevel surgery with neurotomy. Moreover, kinematics of gait cycle is improved particularly at the beginning of gait cycle.

Keywords

Selective neurotomy;multilevel surgery;gait analysis

No conflict of interest

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ISPR8-0296

SURVEYING A DECADE OF PREVALENCE, CHARACTERISTICS, AND MANAGEMENT OF CEREBRAL PALSY IN THAILAND

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Introduction/Background

Cerebral palsy (CP) is a movement disorder caused by damage to the developing brain. It affects self-help, family dynamics and care costs. Data is lacking on its characteristics and management in Thailand and may help in improving care and awareness of consequences in treatment delay.

Material and Method

Prevalence, characteristics, management, and rehabilitation data were collected from a total of 50 CP patients, born at Thammasat University Hospital, Thailand from 2005-2014.

Results

CP incidence was 1:1000 live births with levels rising (Figure 1). There was no significant difference in gender (52% male) or in full-term versus preterm birth (48.8% preterm). Among the preterm, 22.45% had a gestational age of 32-36 6/7 weeks; 89.58% had spasticity as the most common motor control abnormality, while 72.34% showed diplegia most affecting limbs (Table 1). Age at first diagnosis averaged 11.79 months with 33.33% ranked at high level IV (Table 2), using the Gross Motor Function Classification System (GMFCS); 50% of diagnoses were from hypertonia, followed by 23.17% from delayed development. Time post-diagnosis to first treatment averaged 4.12 weeks, and time after diagnosis before rehabilitation was 7.66 weeks, with 6.09 weeks before visiting a rehabilitation team (Table 2).

Figure 1. Prevalence of cerebral palsy per 1000 live births in Thammasat University Hospital from 2005 to 2014

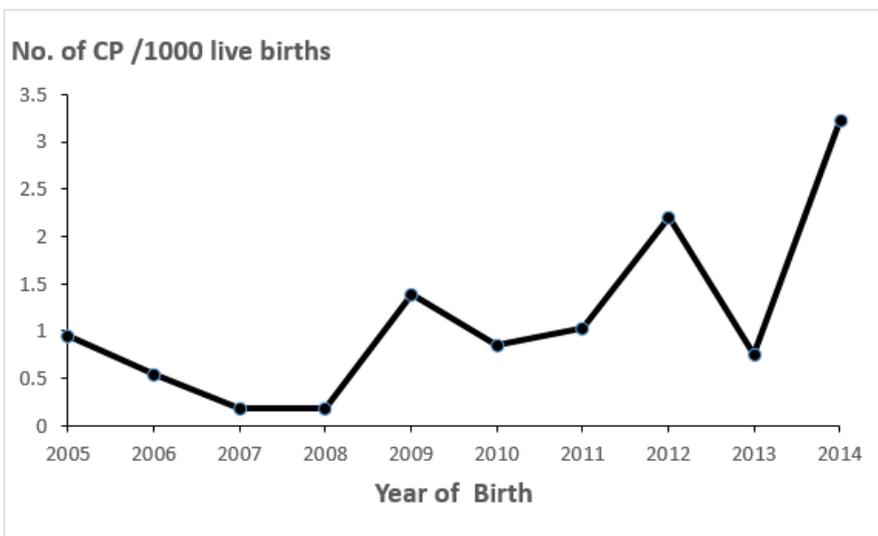


Table 1. Characteristics of 50 cerebral palsy patients born at Thammasat University Hospital from 2005 to 2014

Characteristics	N(%)
Sex (male)	26(52)
Gestational age	
≥ 37 weeks	25(51.02)
32-36 6/7 weeks	11(22.45)
28-31 6/7 weeks	6(12.24)
<28 weeks	7(14.29)
Tone abnormality	
Spasticity	43(89.58)
Ataxic-Hypotonic	5(10.42)
Dyskinetic	0
Mixed	0
Limb involvement	
Quadriplegia	9(19.15)
Triplegia	0
Diplegia	34(72.34)
Hemiplegia	3(6.38)
Monoplegia	1(2.13)

Table 2. Diagnosis characteristics and management of 50 cerebral palsy patients born at Thammasat University Hospital from 2005 to 2014

	Mean±SD
Age of first diagnosis (in months)	11.79±1.04
Gross Motor Function Classification System (GMFCS) at diagnosis	
I	6(12.50)
II	9(18.75)
III	14(29.17)
IV	16(33.33)
V	3(6.25)
Findings leading to the diagnosis (frequency)	
Hypertonia	41(50.00)
Hypotonia	3(3.66)
Delayed development	19(23.17)
Toe walking	3(3.66)
Hyperreflexia/clonus positive	16(19.51)
Duration to first treatment (in weeks)*	4.12±2.59
Duration to consult rehabilitation (weeks)*	7.66±3.04
Duration to first meet rehabilitation team (weeks)†	6.09±2.49

*from the diagnosis date

†from the rehabilitation consultation date

Conclusion

With the CP rate rising steadily annually, diplegic spasticity remains the most common symptom. Age for diagnosis was around one year, with GMFCS reflexes showing high disability, hypertonia being the major diagnostic clue. Delays hindered the start of rehabilitation treatments. To improve treatment and outcome, early surveillance and multidisciplinary team management are indicated.

Keywords

Cerebral palsy;Prevalence;GMFCS

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0325

INTEREST OF MEDICAL TREATMENT IN SEVERAL ORTHOPEDICS DISORDERS OF LOWER LIMBS FOR CHILDREN WITH SPASTIC CEREBRAL PALSY

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Introduction/Background

The main objective of this study is to show the interest of medical treatment in several orthopedics disorders of lower limbs for children with spastic cerebral palsy.

Material and Method

Descriptive study, from June 2012 until March 2017, n=18 children with spastic cerebral palsy and several deformities of lower limbs. All the cases received 3 injections (1 injection/ trimester) of botulinum toxin A, associated with stretching exercises, and prescription if necessary of lower limb orthosis. The time of follow-up was 2 years/patient. Evaluated by: Ashworth scale, functional assessment, moving from bed to chair and from chair to standing position, and a 6-minute-walk test.

Results

Initially, all the cases presented lower limbs spasticity and without any autonomy, 60% with diplegia, 30% tetraparesis, 10% with hemiparesis form. After two years of follow-up, 70% improved their functional autonomy (p=0.01) and showed the best performance in moving from bed to chair and from chair to standing position. In the other hand, 50% of them, walked an average of 71 meters in the 6-minute-walk test.

Conclusion

The medical treatment of children with several orthopedics disorders of lower limbs and spastic cerebral palsy, provide a satisfy clinical and functional results. However, some cases had a difficulty to access the surgery, and to receive their orthosis. In conclusion, interdisciplinary treatment is pre-requisite, to complete the effect of botulinum toxin and physical treatment.

Keywords

Cerebral palsy; Spasticity; Botulinum toxin

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

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CLINICAL EFFECT EVALUATION AND EXPERIENCE OF MOTOMED VIRTUAL SCENE TRAINING COMBINED WITH ELECTROMYOGRAPHIC BIOFEEDBACK THERAPY IN THE TREATMENT OF SPASTIC CEREBRAL PALSY

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Introduction/Background

Substantial evidence from clinical reports has established that most cerebral palsy (CP) patients benefit from a comprehensive rehabilitation exercise training programme. Such advances are enhanced when Motomed virtual scene training combined with electromyographic biofeedback therapy in the treatment of spastic cerebral palsy. However, little information exists regarding these effects.

Material and Method

Forty-eight children with spastic cerebral palsy were collected from 2014 to 2016 in children's rehabilitation department of Huaian maternal and child health hospital. Among them, 25 cases were treated with MOTomed virtual scene training combined with electromyographic biofeedback therapy, and 23 cases with single electromyographic biofeedback therapy. Before and after treatment, the Gross Motor Function Measure-88 (GMFM-88) was used to evaluate the gross motor function of all children, and Activities of Daily Living Scale (ADL) was used to evaluate and observe the activities of daily living of children.

Results

The scores of GMFM and ADL in the treatment and control groups were significantly higher than those before treatment ($p < 0.05$). Before treatment, GMFM and ADL scores in the treatment groups were significantly higher than those in the control groups ($p < 0.05$).

Conclusion

MOTomed virtual scene training combined with electromyographic biofeedback therapy can effectively improve the gross motor function and activities of daily living of children with spastic cerebral palsy, which is obviously superior to electromyographic biofeedback therapy alone.

Keywords

MOTomed virtual scene training; Electromyographic biofeedback therapy; Spastic cerebral palsy

No conflict of interest

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ISPR8-0433

3D LOWER LIMB BONE MORPHOLOGY IN AMBULANT CHILDREN WITH CEREBRAL PALSY AND ITS RELATION TO GAIT

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Introduction/Background

This study aimed to describe the three-dimensional lower limb bone morphology of ambulant children with CP according to the type of CP and to evaluate their relation to gait kinematics

Material and Method

105 ambulant children with CP (3–17 years old) underwent a biplanar X-Rays (EOS system) from which was extracted a full 3D bone model of their lower limbs. Moreover each child underwent a quantitative gait analysis from which was extracted the Gait Deviation Index (GDI). The limbs were divided into 3 groups: the more impaired side of the bilateral CP children (Bilat-CP, n=48), the affected limb (Unilat-CP, n=57) and the non affected limb of the unilateral CP children (Control, n=57). The statistical analysis included a 2-factor analysis of variance (bone parameters and population), Principal Component Analysis (PCA) and focused PCA (fPCA)

Results

Growth parameters (length) were most prominent factors of bone morphology compared to other morphological characteristics. The Neck-Shaft Angle (NSA) was significantly greater (+3.6°) in the Unilat-CP group in comparison with the Control group and the Femoral Torsion (FT) was significantly greater in the Bilat-CP group (+ 10.4°) in comparison with the Control group. Other 3D parameters were not significantly different among the 3 groups. fPCA centered on GDI showed no strong correlation between GDI and lower limb bone parameters, regardless of CP Type

morphology of ambulant children with CP is the bone size in relation to growth. The poor relation between bone morphology and GDI incites to explore the link between specific bone parameters and specific gait parameters

Keywords

Cerebral Palsy;Bone morphology;Gait

No conflict of interest

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ISPR8-0445

IMPACT OF LOWER URINARY TRACT DYSFUNCTION AND ANORECTAL DISORDERS ON QUALITY OF LIFE IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

The objective is to describe lower urinary tract and anorectal disorders in children with cerebral palsy (CP) and evaluate their impact on quality of life (QoL).

Material and Method

Ten months monocentric prospective study about 5 to 17 years old children with CP. Datas collected were : CP type, GMF-CS level, Wee-FIM, MACS level, voiding and defecation diary, standard questionnaire, Akbal questionnaire, WPPSI-3 or WISC-4, parents and children Kidscreen-52 scale.

Results

Between October 2014 and July 2015, 24 children from 5 to 17 years old were included.

23 children (89%) had lower urinary tract dysfunction. 21 from those 23 were in normal school. 6 had a pollakiuria, 5 a nycturia, 20 an urgenturia (in which 11 had urinary incontinence (UI)), 9 a dysuria, 2 a urinary infection, 12 a UI (6 day and night UI, others only day UI).

7 children going in normal school had a fecal incontinence (3 day and night, others only day). Urinary incontinent children Wee-FIM scores were lower than non-urinary incontinent ones ($p=0,007$).

7 children with a low GMF-CS level and going in normal school had an impact of their lower urinary tract disorders on their QoL. All had an overactive bladder syndrome, 3 a dysuria, 2 a nycturia, 1 a pollakiuria. Kidscreen-52 QoL score estimated by children with UI were significantly different than non-urinary incontinent ones ($p=0,0264$). **Conclusion**

This study shows the importance of lower urinary tract and anorectal disorders impact on children with CP QoL. Most of those children are in normal school. Detection is not systematic enough during follow up consultations and parents often underestimate those troubles. Questioning and flow measurement seem to be important first steps to detect them.

Keywords

Cerebral palsy;lower urinary tract dysfunction;Anorectal disorders

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0467

ASSESSMENT OF HEALTH RELATED QUALITY OF LIFE IN CHILDREN WITH PHYSICALLY AND MENTALLY DISABLED CEREBRAL PALSY

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Introduction/Background

Health-related quality of life (HRQOL) is especially relevant to conditions that are chronic and disabling such as cerebral palsy (CP) and in children, it includes concepts of illness, functional status, mental health, comfort, parental impact and family functioning. This study was conducted to assess the HRQOL in children with physically and mentally disabled cerebral palsy and to determine the factors which is affecting it.

Material and Method

The demographic data of the children were recorded (cause of CP, type, frequency of seizures, caregiving, etc.). Participants were classified using the Gross Motor Functional Classification System scores (GMFCS). Resistance during passive soft-tissue stretching (The Modified Ashworth scale-MAS) and health-related quality of life (The Pediatric Quality of Life Inventory-PedsQL) were evaluated.

Results

A total of 50 (25 girls, 25 boys) participants, with a mean age of 15,08±2,07 year (range:12-18) and mean body mass index 19,72±3,84 kg/m² (range: 11,43-28,13) were enrolled the study. Forty-eight per cent (24/50) had quadriplegic CP, 18% (9/50) hemiplegic, 22% (11/50) diplegic, 4% (2/50) dyskinetic, and 8% (4/50) ataxic-hypotonic CP. GMFCS levels was as follows: 10% (5/50) Level I, 18% (9/50) Level II, 26% (13/50) Level III, 20% (10/50) Level IV and 26% (13/50) Level V. The increase in GMFCS level and MAS score negatively affects PedsQL score. Quality of life declined as the frequencies of seizures increased (p<0.05).

Conclusion

Present abilities and limitations of the child in gross motor function, spasticity level, cause of CP, presence of epileptic seizure are affect the HRQOL negatively. Also, the increase in total daily caregiving time is associated with decline in HRQOL of this children. We think that integrated multidisciplinary approach can be used to improve quality of life of children with cerebral palsy.

Keywords

Cerebral Palsy;Health Related Quality Of Life;Disabled Children

No conflict of interest

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UNMET NEEDS AND EXPECTATIONS ABOUT MOTOR REHABILITATION REPORTED BY CHILDREN, YOUTH AND ADULTS WITH CEREBRAL PALSY AND THEIR FAMILIES: A NATIONAL SURVEY IN FRANCE, 2016-2017

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Introduction/Background

Cerebral Palsy (CP) describes a group of permanent disorders of the development of movement and posture, causing activity limitation, attributed to non-progressive disturbances that occurred in the development of fetal or infant brain. Motor rehabilitation (MR) constitutes a base to the management of people with CP.

In the absence of French reference guidelines, advocacy groups have reported difficulties with access to convenient and quality physiotherapy services. The aim of this study was to identify perceived unmet needs and expectations about motor habilitation/rehabilitation of children, adolescents and adults with cerebral palsy.

Material and Method

A collaborative survey was designed and led by advocacy groups with the support of scientific societies in France. Persons with cerebral palsy or their families, reached through local and national associations and professional networks, compiled a web-based or mail-in questionnaire (June/2016-June/2017) and 1010 responses were collated on 354 children, 145 adolescents and 511 adults, (46% females).

Results

52% were ambulant (GMFCS I-III) and 91% had physiotherapy at time of completing the questionnaire. The most highly perceived unmet needs were to improve communication between professionals for appropriate follow-up (79%), to feel free to ask questions (78%), and to be involved in the decision-making process regarding therapies (61%). The most important reported difficulties were to find a physiotherapist trained in CP (51%) or available (39%), and to integrate physiotherapy sessions in the personal/family schedule (34%). The most frequent expectations were about physiotherapist training (79%), information on health care and recommended exercises (75%), and access to rehabilitation centres/physiotherapists (70%); 50% reported high to very high expectations regarding motor rehabilitation methods different from those currently received

Conclusion

Persons with cerebral palsy and their families identified unmet needs and expectations regarding motor rehabilitation that should be taken-up by practitioners, health care managers and policy makers, and practice guidelines developers.

Keywords

ESPaCe; Motor Rehabilitation; ;Cerebral Palsy, Unmet needs, Priorities in rehabilitation care

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0545

CORRELATION BETWEEN THERAPEUTIC INTENSITY OF REHABILITATION AND FUNCTIONAL IMPROVEMENT IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

In clinically, rehabilitation therapy is focused on functional improvement in mild to moderate cerebral palsy (CP) patients. In severe cases, postural management is one of the target goals. Therapeutic intensity is various in each patients and optimal intensity is still unclear. The aim of this study is to assess relation between therapeutic intensity of rehabilitation therapy and functional improvement in CP patients.

Material and Method

Participants were 39 children with spastic CP. We divided participants into two groups based on initial Gross Motor Function Classification System (GMFCS) level, as mild to moderate groups with GMFCS 1 to 3, and severe groups with GMFCS 4 and 5. We also divided subjects into three groups based on intensity of therapy. We defined low intensity as less than 7 sessions (30 minutes of therapy per session) per week, intermediate intensity as 7 to 14 sessions per week and high intensity as over 14 sessions per week. Gross Motor Function Measure (GMFM) and Pediatric Evaluation of Disability Inventory (PEDI) (three domains of Self-care, Mobility and Social) were measured at initial and 6 months by qualified investigators.

Results

Statistically significant improvement was observed in GMFM scores and mobility scores of PEDI in mild to moderate group ($p < 0.05$), self-care and social function sub-scores of PEDI in severe group ($p < 0.05$) for 6 months. Rehabilitation therapy with high intensity showed gross motor function improvement in mild to moderate group. In severe group, high intensity therapy showed improvement of self-care and social function than gross motor function in same duration.

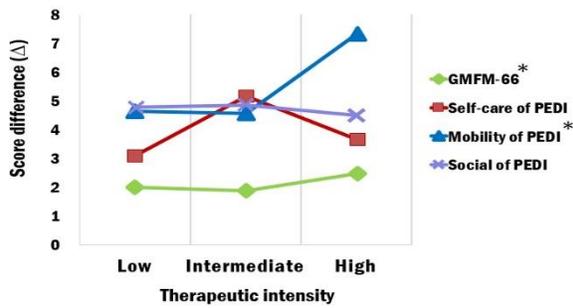
Characteristics	Value	
Age in months	24-72 (mean 42.8)	
Gender		
Male : Female	23:16	
Total	39	
Rehabilitation therapy	Mild to moderate CP	Severe CP
Sessions of therapy (/week)	11 ± 15.21 (4.21-16.21)	13 ± 14.47 (1.47-27.47)
Therapeutic intensity		
Low	8	3
Intermediate	7	6
High	9	6
Total	24	15

CP: cerebral palsy

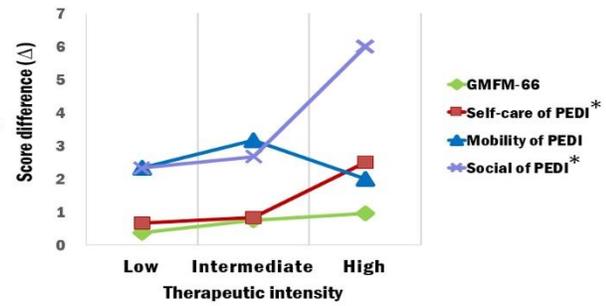
Therapeutic intensity	Low	Intermediate	High	p-value
Mild to moderate CP				
△ GMFM	1.99	1.87	2.48	0.001*
PEDI				
△ Self-care	3.09	5.17	3.67	0.548
△ Mobility	4.64	4.57	7.33	0.001*
△ Social	4.73	4.86	4.5	0.144
Severe CP				
△ GMFM	0.37	0.75	0.97	0.168
PEDI				
△ Self-care	0.67	0.83	2.5	0.018*
△ Mobility	2.33	3.17	2	0.059
△ Social	2.33	2.67	6	0.049*

CP: cerebral palsy; GMFM: Gross Motor Function Measure; PEDI: Pediatric Evaluation of Disability Inventory, $p < 0.05$ *

(A) **Mild to moderate group**



(B) **Severe group**



PEDI includes three domains of self-care, mobility and social function. GMFM: Gross Motor Function Measure; PEDI: Pediatric Evaluation of Disability Inventory, $p < 0.05^*$

Conclusion

To our knowledge, high intensity rehabilitation could make more functional and postural improvement in CP patients. However, there are many variables such as age, GMFCS level, type of CP, medical condition, comorbidities and etc. Consideration about optimal intensity of rehabilitation therapy according to severity of disease is needed in further study.

Keywords

Cerebral palsy; Therapeutic intensity; Functional improvement

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2702

EFFECTS OF BOTULINUM TOXIN AND/OR ETHANOL INJECTIONS ON BALANCE AND WALKING IN CHILDREN WITH CEREBRAL PALSY: A PROSPECTIVE STUDY

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Introduction/Background

Muscle spasticity in children with Cerebral Palsy (CP) is a major cause of disability and leads to a decrease in physical function due to contractures, muscle weakness, and limited joint range of motion. Single event multi-level chemoneurolysis (SEMLC) with botulinum toxin and/or ethanol has been shown to decrease muscle spasticity, however there is a concern for muscle weakness and decrease in muscular endurance after injection. Therefore we aimed to examine the effects of SEMLC with botulinum toxin and/or ethanol on static balance and several walking tasks in children with CP.

Material and Method

Timed Up and Go (TUG), 6 Minute Walk (6MW), timed up and down four steps, and three static balance tests were measured in nine children (33% female, 44% diplegia, 56% hemiplegia) with CP [mean \pm SD; age, 10.1 \pm 4.6 yr; Gross Motor Function Classification System (GMFCS), 1.6 \pm 0.5] pre- and four weeks post SEMLC injection to target muscles determined by pediatric physiatrists. Paired samples t-tests evaluated differences in all walking and balance tasks pre- to post- SEMLC injection.

Results

There was no difference in pre- to four weeks post SEMLC injection in mean TUG (8.8 \pm 1.9 seconds; 8.5 \pm 1.6 seconds, $p=0.605$), 6MW distance (338.9 \pm 54.2 meters; 336.7 \pm 63.0 meters, $p=0.908$), stair climbing (11.5 \pm 6.4 seconds; 10.9 \pm 5.6 seconds, $p=0.195$), or static balance scores for feet together ($p=1.000$), tandem stance ($p=0.466$), and one-leg stance ($p=0.195$), respectively.

Conclusion

Even though physical function did not improve, we saw no deterioration in endurance or functional muscular strength four weeks after receiving SEMLC with botulinum toxin and/or ethanol in children with CP. Due to the increased popularity of chemoneurolysis, we must have ongoing clinical monitoring including test measures of balance and walking function to best understand the full scope of efficacy of SEMLC.

Keywords

Cerebral Palsy;Pediatrics;Chemoneurolysis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0615

UPPER LIMB AND HAND PATTERNS IN CEREBRAL PALSY: RELIABILITY OF TWO NEW CLASSIFICATIONS

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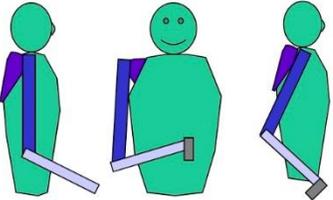
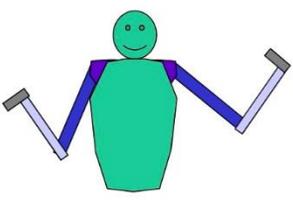
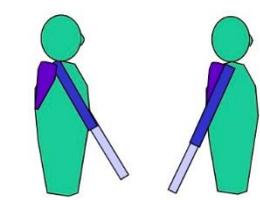
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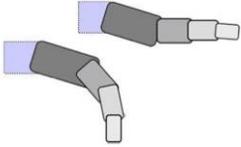
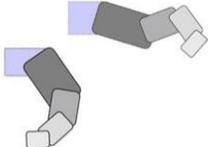
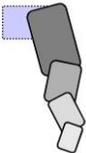
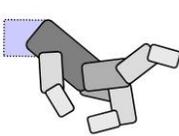
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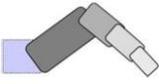
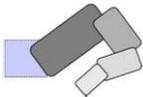
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Introduction/Background

To describe two classifications, one for the general pattern of the upper limb (Figure 1) and one for the type of hands (Figure 2) in Cerebral Palsy (CP), and to provide evidence of its reliability.

ELBOW FLEXION						ELBOW EXTENSION (+/- 20°)	
TYPE I : no external rotation			TYPE II : external rotation			TYPE III	
Elbow flexor pattern			Candelabra pattern			Elbow extension pattern	
Type I a	Type I b	Type I c	Type II a	Type II b	Type II c	Type III a	Type III b
Neutral shoulder rotation Without extension	Internal shoulder rotation Without extension	Shoulder extension and internal rotation	Forearm Pronation	Forearm Neutral	Forearm Supination	Shoulder flexion	Shoulder extension
			ABDuction very common			ABD / ADD variable	
							
Type I a Hypertonia Brachialis Biceps brachii Brachioradialis, Pronator teres ± Deltoidus	Type I b Hypertonia Pectoralis major Subscapularis Teres major Brachialis Biceps brachii Brachioradialis ± Pronator teres	Type I c Hypertonia Deltoidus posterior Teres major Latissimus dorsi Biceps brachii Triceps brachii Pronator teres	Type II a Hypertonia Deltoidus ± Pectoralis major Teres minor Infraspinatus Biceps brachii Brachialis Pronator teres	Type II b Hypertonia Deltoidus ± Pectoralis major Teres minor Infraspinatus Biceps brachii Brachioradialis	Type II c Hypertonia Deltoidus ± Pectoralis major Teres minor Infraspinatus Biceps brachii	Type III a Hypertonia Deltoidus anterior ± Deltoidus medialis Pectoralis major Triceps brachii Pronator teres	Type III b Hypertonia Deltoidus posterior ± Deltoidus medialis ± Latissimus Dorsi Triceps brachii Pronator teres
							

FLEX HANDS (wrist flexion pattern)			
Simple Flex Wrist collapse, finger extension		Total Flex Wrist and finger flexion	
<p>Fingers may be slightly passively flexed, and/or MCP joints may hyperextend on approach to object</p> 	<p>PIP and DIP joints are flexed, MCP joints may extend on approach to object</p> 		
<p>Hypertonia No hypertonia... or FCU/ Palmar/ FCR, FDS/FDP ?</p> 	<p>Hypertonia FDS/FPD Palmar, FCU, FCR FPL ?</p> 		
Simple Flex Plus		Total Flex Plus	
<p>Wrist flexion associated with swan neck deformity or dinosaur hand (exclusion of index during grasping)</p> 	<p>Wrist and finger flexion associated with swan neck deformity or dinosaur hand (exclusion of index during grasping)</p> 		
<p>Hypertonia No hypertonia... or FCU/ Palmar/ FCR, FDS/FDP ? + Lumbricales / IO</p> 	<p>Hypertonia FDS/FPD Palmar, FCU, FCR FPL ? + Lumbricales / IO</p> 		

PUNCHING HANDS (Wrist extension pattern)					
Intrinsic Punching Hand		Superficialis Punching Hand		Profundus Punching Hand	
<p>Wrist extension MCP flexion, PIP and DIP extension</p> 	<p>Wrist extension MCP and PIP flexion, DIP extension</p> 	<p>Wrist extension MCP, PIP and DIP flexion</p> 			
<p>Hypertonia ECRB – ECRL – Lumbricales - IO</p> 	<p>Hypertonia ECRB – ECRL - FDS</p> 	<p>Hypertonia ECRB – ECRL - FDP</p> 			

Material and Method

2 classifications were developed and 212 videos of CP-patients (118 for UL patterns and 94 for hands; median age 14, 3-46 years) were viewed by 19 examiners of 2 different rehabilitation centers, who identified the UL pattern (Type Ia, Ib, Ic; Type IIa, IIb, IIc; Type IIIa, IIIb) or the kind of hand (Flex simple, total or evolved; Punching intrinsic, superficialis or profundus), and twice by 18 examiners at 2 months interval.

Results

There was a very high intra-rater and inter-raters reliability for types ($0.87 < k < 0.92$), and a substantial agreement also for subtypes ($0.58 < k < 0.68$), for both classifications. Some specific errors of quotation could be explained. Examiners involved in the study found both classifications useful and feasible.

Conclusion

Examiners had been only shortly trained to using classifications, and both novice and experienced raters had good to high agreement, which confirms that these classifications are easy to use reliably. Details of disagreement can be used to improve further both classifications.

Keywords

Cerebral palsy;Upper limb;Classification

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0617

PAIN COPING STRATEGIES IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

To describe coping strategies in children and adolescents with CP, and determine the effect of age on choice of strategy.

Material and Method

Patients were recruited from two pediatric rehabilitation centers in France. The PPCI-F (Pediatric Pain and Coping Inventory – french) and SPQ (Structured Pain questionnaire) were completed by an experienced professional with each child.

Results

142 patients were included (median age: 12, 5-19 years; 57% boys). Comparison of the means from the 4 factorial scales showed that children with CP generally used fewer coping strategies than TD children (seeking social support: 12.47 versus 12.85; cognitive self instruction: 9.28 vs 10.90; distraction: 4.89 vs 7.00; seeking effectiveness: 4.43 vs 5.19). Some coping strategies used by the children with CP depended on age (decrease in seeking social support and increase in cognitive self-instruction with age), while others did not (seeking effectiveness and distraction). The strategies were also influenced by GMFCS level ($p=0.01$), history of surgery ($p<0.01$), sibling rank ($p<0.05$), and pain reported in the SPQ ($p<0.05$).

Conclusion

Children with CP generally use fewer coping strategies than TD children although similarly to TD children, they mostly look for social support to cope with pain. Even if past experiences of pain suggest that coping strategies need to be changed, active coping strategies were only used in older children and remained less used than by TD children of the same age.

Keywords

Cerebral Palsy;Pain;Coping strategies

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0662

DIFFICULTY AND INDEPENDENCE IN PARTICIPATION OF EMERGING ADULTS WITH CEREBRAL PALSY

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Introduction/Background

Adults with cerebral palsy (CP) experience difficulties in their participation. Knowledge on the course of difficulties in participation of individuals with CP emerging into adulthood could provide insight in this stage of participation development. We aim to describe the course of difficulty and independence in participation of individuals with CP from adolescence into the early thirties.

Material and Method

151 individuals with CP (63% male, Gross Motor Function Classification System [GMFCS] levels I-IV, without Intellectual Disability [ID]), of whom 98 completed a 13-year follow-up measurement, were included (379 observations, age range 16-34 years). Six domains of the Life Habits questionnaire were used up to three times biyearly and at 13-year follow-up. Scores (range 0-10) reflect difficulty and assistance in participation in housing, education & employment, interpersonal relationships, recreation, community life, and responsibilities. Multilevel models were used to determine the course of difficulty in participation by GMFCS level.

Results

Despite high average participation levels, 41 to 95% of adolescents and young adults with CP experienced difficulty. Difficulty in participation increased in most life areas in the mid- and late twenties, and for housing and interpersonal relationships from age 16 years onwards. In adolescents with GMFCS III and IV, difficulty in recreation and community life decreased up to age 23 years. Mean category scores reflected independent functioning (score >5.56) in all GMFCS levels over age 23 years.

Conclusion

Difficulty in participation of individuals with CP without ID increases in their mid- and late twenties. Notwithstanding high participation levels on average, a substantial part of individuals with CP emerging into adulthood experience difficulty in participation. Systematic screening and timely support may improve the development of optimal participation of young adults with CP.

Keywords

Cerebral palsy;Participation;Lifespan expectations

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0741

LOADED SIT-TO-STAND EXERCISE OF GROSS MOTOR FUNCTION MEASURE (GMFM-88) DIMENTION (E), RUNNING AND JUMPING FOR SPASTIC DIPLEGIC CEREBRAL PALSY.

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Introduction/Background

Cerebral Palsy is a non progressive disorder of movement and posture on immature brain. Children with cerebral palsy will present selective loss of motor control, spasticity and muscle weakness. Standard protocol in this area is passive range of motion which is not a strengthening exercise

Material and Method

Strenghteing muscles is by giving periodization loaded sit-to stand exercise of Gross Motor Function Measure (GMFM-88) for spastic diplegic cerebral palsy. walking.

Results

The result showed an increase of motor ability in intervention group in dimension(E) running and jumping of Gross Motor Function Measure higher than to control group (dimension E scoring: 14,14 vs 1,01).

Conclusion

Periodization of loaded sit-to-stand strenghtening exercise are able to improve running and jumping Dimention (E) on GMFM in cerebral palsy spastic diplegic are better than control group.

Keywords

1

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0759

IMPACT OF COGNITIVE DISORDERS ON SCHOOLING AND SOCIO-PROFESSIONAL INTEGRATIONS IN ADULTS WITH CEREBRAL PALSY

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Introduction/Background

Few data are available in the literature on cognitive impairment in adults with cerebral palsy. The aim of this work is to analyze the cognitive profile of adults with moderate impairment and their repercussions on educational and socio-professional pathways

Material and Method

The records of 36 patients were analyzed. 11 people have the college certificate, 13 the baccalaureate and 12 a level of 2 years after the baccalaureate. 22 are inactive, 8 have part-time work, 3 are full-time, 3 are still in school. All benefited from a complete neuropsychological assessment. The scores of the different tests were analyzed according to schooling and socio-professional background.

Results

36 patients were included with an average age of 27.8 +/- 8 years, 83% are single. The PC is bilateral spastic in 27 cases, spastic unilateral in 5 cases and dyskinetic in 4 cases.

Visuoperceptive disorders are the most frequent, with a significant impact on schooling and professional integration.

Executive disorders is also observed, the intelligence quotient is within the limit of normal.

Conclusion

Cognitive disorders presented by the patients in our study are consistent with those described in the literature in adult cerebral palsy with a predominance of visuoperceptive disorders, associated with executive disorders.

These disorders have repercussions on schooling and professional integration. Routine screening of cognitive disorders must allow the establishment of a specific support at the time of transition.

The accompaniment of adolescents with cerebral palsy should continue after the acquisition of diploma to promote their social and professional integrations.

Keywords

cerebral palsy;cognitive disorders;transition

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0844

REPEATED BOTULINUM TOXIN INJECTIONS EFFECTS ON CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

The main aim of this study was to show the efficiency of botulinum toxin A (BT-A) injections not only on spasticity and functional capacities but also on the quality of life in children with cerebral palsy, and to describe their long-term evolutivity profile while précising our developing country particularities.

Material and Method

Sixty children were included in this study aged from 2 to 18 years old; who received repeated injections of BT-A (Dysport®). An evaluation was done before and after these injections. It included an evaluation of the spasticity using the Modified Ashworth Scale (MAS), the functional evaluation using the Gross Motor Function Classification System (GMFCS) and the Manual Ability Classification System (MACS), an evaluation of satisfaction (Visual analogical Scale) and an evaluation of the quality of life using the Child Health Questionnaire Parent Form 50 (CHQ-PF50).

Results

The change from baseline of MAS ranged from 2.25 to 3 for the muscles of the lower limbs and ranged from 2 to 2.86 for the upper limb muscles. The average number of injection sessions was of 3.18 (1 to 6). The percentage of children improved (in GMFCS and MACS) and the average of the visual analogical satisfaction scale as well, increased from one injection to another reaching a constant level in the last two injections ($p < 0.001$).

Conclusion

Our study proved the efficiency of repeated BT-A injections on the spasticity. It also revealed an improvement in both the gross function and the motor skills of children suffering from cerebral palsy. The quality of life of these children was significantly enhanced after injections.

Keywords

cerebral palsy; Botulinum Toxin

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0879

PARTICIPATION CHANGES IN VARIOUS ACTIVITIES FOR SCHOOL CHILDREN WITH CEREBRAL PALSY OF DIFFERENT MOTOR SEVERITIES

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Introduction/Background

Cerebral palsy (CP) not only affects movement and posture, but also is accompanied with cognition, speech, or social problems. These problems further cause limitation in participation in life activities in children with CP. This study aims to investigate the changes in participation outcomes in various activities for children with CP of different motor severities.

Material and Method

Sixty-five parents of schoolchildren with CP (6-18 years) were enrolled and classified into two groups based on the Gross Motor Function Classification System (GMFCS) levels: mild (GMFCS levels I-III, n= 41) and severe group (GMFCS level IV-V, n=24). Participation outcome was assessed by the Children's Assessment of Participation and Enjoyment (CAPE) at baseline and 6-month follow-up. CAPE measures participation diversity and intensity in five activities (recreational, active physical, social, skill-based, and self-improvement), ANCOVA was used to compare the participation changes in various domains between two groups.

Results

At baseline and follow-up, mild groups had better participation diversity and intensity in all activities except the intensity in social activities at follow-up than severe groups ($p < 0.05$). ANCOVA results showed mild groups had better changes in the participation diversities for total and all activities except the social and skill-based activities than severe groups ($p < 0.05$). Furthermore, mild groups had better changes in the participation intensities for total, active physical, and self-improvement activities, than severe groups ($p < 0.05$).

Conclusion

The GMFCS levels were associated with participation changes in the diversities and intensities for various activities in children with CP. Mild groups had better changes in the participation diversities and intensities for some activities than severe groups. These findings may allow clinicians early predict the changes in the participation outcomes for these children based on simple GMFCS levels.

Keywords

Cerebral palsy;Participation;Children

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0918

APPLICATION OF MAGNETIC STIMULATION NEUROMODULATION THERAPY TO PROMOTE THE STABILITY OF CORE MUSCLE GROUP IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

The core strength of children with cerebral palsy decreased. To investigate the application of magnetic stimulation treatment to stimulate spinal nerve root to strengthen the core muscles in the children with cerebral palsy

Material and Method

Children with cerebral palsy in our hospital during January 2016 to January 2017 were divided into the treatment group and the control group in accordance with random number table. Two groups of data have no significant difference before treatment. The control group was treated with traditional rehabilitation method, the treatment group was treated with transcranial magnetic stimulation plus traditional way. Compare the effects of two groups before treatment and 1- month and 2- month treatment later.

Results

Analyzing the effects between the treatment group and the control group after 1- month treatment, there existed significant differences: GMFM recumbent position and can roll over sitting position and ICF-CY ($P < 0.05$); Analyzing the effects between the treatment group and the control group after 2- months treatment, there existed significant differences: recumbent position and can roll over and in ICF-CY limit ($P > 0.05$). In the treatment group, compared itself after the treatment 3-months and 2-months later, Rehabilitation treatment progress is slow. there existed significant differences in the Recumbent position and can roll over sitting position ($P < 0.05$). but there was no significant differences in ICF-CY limit ($P > 0.05$).

Conclusion

Treatment of magnetic stimulation has positive clinic effect to strengthen the core muscles in children with cerebral palsy, and it is the most effective when the first course of treatment.

Keywords

Cerebral palsy; Transcranial magnetic stimulation; Core muscles

No conflict of interest

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ISPR8-0933

COMMUNICATION IMPAIRMENT IN CEREBRAL PALSY: A STUDY FROM TUNISIAN POPULATION

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Introduction/Background

Communication impairment (CI) is one of the most common dysfunctions associated with cerebral palsy (CP). The objective of this study was to describe types of CI and the relationship between the Gross Motor Function Classification System (GMFCS), CP subtype, and neuroimaging findings in the Tunisian CP children.

Material and Method

Eighty children (35 girls and 45 boys) with CP followed in the department of Physical Medicine and Rehabilitation of Fattouma Bourguiba Hospital in Monastir-Tunisia. The type of CI, The GMFCS levels, associated disorders and neuroimaging findings were recorded.

Results

The mean age was 8.6 ± 5 years and the sex ratio was 1.28. Out of 80 children with cerebral palsy, 69 were identified to have CI (86%). Of these, 33 were unable to communicate verbally (41.3%), 12 had difficulties with verbal expression (15%), one had difficulties with verbal comprehension (1,3%) and 23 had difficulties with both verbal and comprehension difficulties (28,8%). Associated disorders were found in 67 children (97%) of children with CI. Thirty-five children (51%) were epileptic. Neuro-visual and language disorders were noted in 88% of cases. Autistic behavior disorders were noted in 9 children (13%). These children were significantly more likely to have a more severe motor deficit (Gross Motor Function Classification System levels IV and V and Manual Ability Classification System levels IV and V), and to have spastic quadriplegia. CI were associated with cerebral malformation (23.5%), diffuse gray matter lesions (20.3%) and periventricular lesions (19.1%).

Conclusion

Communication impairment is a common comorbidity in cerebral palsy and is associated with a more severe motor deficit, spastic quadriplegic subtype of CP, and cerebral malformation and gray matter injury on neuroimaging. To target services effectively, subgroups of individuals with CP at greatest risk for language impairment need to be identified.

Keywords

cerebral palsy, communication, neuroimaging

No conflict of interest

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ISPR8-0937

EFFECT OF ANKLE-FOOT ORTHOSES ON GAIT, BALANCE AND GROSS MOTOR FUNCTIONS IN CHILDREN WITH CEREBRAL PALSY : A SYSTEMATIC REVIEW AND META-ANALYSIS.

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Introduction/Background

Ankle-foot orthoses are often prescribed to correct abnormal gait, facilitate gait training and reduce the impact on functional ability in children with cerebral palsy who present neuro-motor deficits of the lower limb. The aim of this study systematic review and meta analysis was to determine the effects of Ankle-foot Orthoses (AFOs) on gait, balance, Gross Motor Function and activities of daily living in children with cerebral palsy (CP).

Material and Method

Five databases were searched (Pubmed, Psycinfo, Web of Science, Academic Search Premier, Cochrane Library) before Januar 2018. Studies of the effect of AFOs on gait, balance, gross motor function and activities of daily living in children with CP were included. Articles with a modified PEDRO score $\geq 5/9$ were selected. Data regarding population, AFO, interventions and outcomes were extracted. When possible, standardized mean differences (SMDs) were calculated from the outcomes.

Results

Thirty-two articles, corresponding to 56 studies (884 children) were included. In 51 studies children with spastic CP were included. AFOs increased stride length (SMD=0.88, $p<0.001$) and gait speed (SMD=0.28, $p<0.001$), decreased cadence (SMD=-0.72, $p<0.001$). Gross motor function scores improved (GMFM D (SMD= 0.30, $p=0.004$), E (SMD= 0.28, $p=0.02$), PEDI (SMD=0.57, $p<0.001$)). Data relating to balance and activities of daily living were insufficient to conclude. Posterior AFOs (solid, hinged, supramalleolar, dynamic) increased ankle dorsiflexion at initial contact (SMD=1.52, $p<0.001$) and during swing (SMD= 0.81, $p<0.001$), and decreased ankle power generation in stance (SMD=-0.72, $p<0.001$) in children with equinus gait.

Conclusion

In children with spastic CP, there is strong evidence that AFOs induce small improvements in gait speed and moderate evidence that AFOs have a small to moderate effect on gross motor

function. In children with equinus gait, there is strong evidence that posterior AFOs induce large changes in distal kinematics.

Keywords

ankle foot orthosis;cerebral palsy;children

No conflict of interest

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ISPR8-0947

DIFFERENCE IN MEDIAL GASTROCNEMIUS MECHANICAL PROPERTIES BETWEEN PARETIC AND NON-PARETIC LEGS IN CHILDREN WITH UNILATERAL CEREBRAL PALSY.

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Introduction/Background

Children with spastic unilateral cerebral palsy (CP) present very early in childhood alterations in gastrocnemius muscle structural and mechanical properties that can be non-invasively investigated through 2D ultrasonography (US). To gain knowledge about spastic muscle properties during ankle mobilization, the purpose of this study was to assess gastrocnemius medialis (GM) muscle passive stiffness and strain during ankle mobilization in both paretic and non-paretic legs in children with unilateral CP.

Material and Method

13 children (6 to 12-year old) with unilateral spastic CP, participated in two sessions of measurements with a one-week interval. Children were installed prone on an isokinetic dynamometer while their ankle was passively mobilized from 25° plantarflexion to maximal dorsiflexion at 2°/s. EMG activity was monitored to ensure complete relaxation. Displacement of the musculo-tendinous junction (MTJ) was recorded with US during mobilization and was synchronized with passive torque. GM stiffness was then calculated as the slope of the torque/MTJ displacement relationship (fig 1). GM strain was calculated as the GM excursion divided by GM resting length (measured at neutral position with simple US tape method). Inter-session reliability was assessed with the measurement of coefficient of variation (CV) between both experimental sessions.

Results

GM stiffness was higher for the paretic leg than for the non-paretic one (4,2 vs 3 Nm/cm ; $p=0,025$). When considered on the same angular range (i.e. -25° plantarflexion to maximal dorsiflexion angle on paretic leg), GM strain was similar between both legs ($p=0,43$).

Inter-session reliability of GM stiffness ($9,75\% \leq CV \leq 10,67\%$), strain ($CV \leq 9,97\%$) and length ($CV \leq 7,5\%$) were good.

Conclusion

Spastic GM muscle lengthening during ankle mobilization was characterized by an increased stretch resistance when compared to non-paretic muscle despite similar passive GM strain between both legs. This may be due to altered spastic GM growth during childhood, characterized by reduced GM paretic length.

Keywords

stiffness;gastrocnemius muscle;cerebral palsy

No conflict of interest

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ISPR8-0955

PASSIVE STIFFNESS OF PLANTARFLEXOR MUSCULOTENDINOUS UNIT IN CHILDREN WITH SPASTIC CEREBRAL PALSY: A REVIEW

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Introduction/Background

increase of passive stiffness plantarflexors muscles in children with spastic Cerebral Palsy (CP) is a consequence of structural muscular properties impairment and is classically considered as a precursor of contracture appearance during growth. Muscle stiffness is measured from the passive torque-angle relationship. However, some studies using different methodologies had shown variables results. Since few years, Shear Wave Elastography (SWE) was used to assess passive muscle stiffness specifically.

Material and Method

We performed a review of literature and selected studies which 1) described passive stiffness in plantarflexors muscles, 2) assessed therapeutics modalities whose goal was to decrease passive stiffness on plantarflexors muscles in children with spastic CP.

Results

20 studies were included in this review. 12 described passive stiffness on plantarflexors muscles using torque-angle relationship or SWE method. Others studies assessed impact of botulinum toxin injection (n=4), casting or surgery (n=1), stretching program (n=1), stretching and active exercises (n=1) and gait training (n=1).

Plantarflexors muscle passive stiffness was increased in children with spastic CP compare to healthy children whatever the assessment method used. There was a lack of data's on relationship between passive stiffness at rest and clinical or gait parameters. Several therapeutics modalities could decrease passive stiffness at rest but impact on structural properties and gait pattern remained unknown.

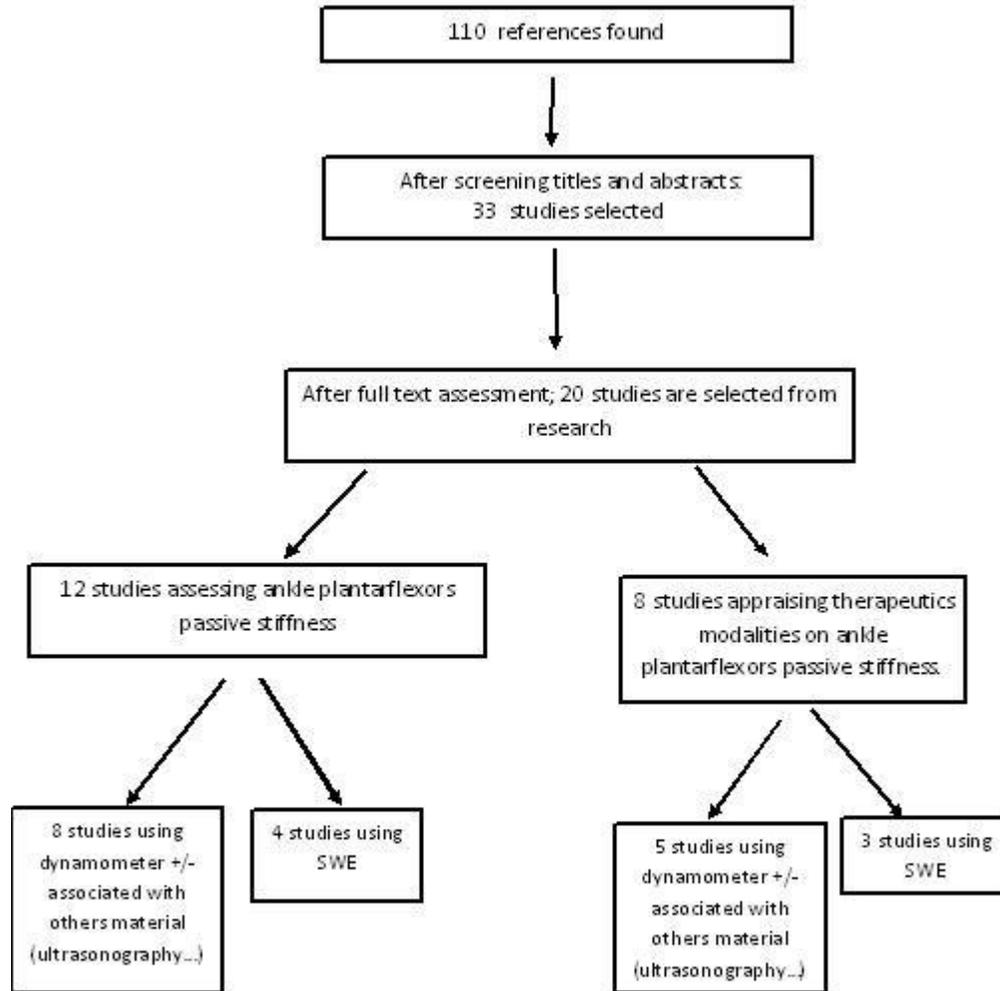


Fig 1: flow diagram of the literature search (SWE: Shear wave Elastography)

Conclusion

Increase of plantarflexors muscles passive stiffness in children with spastic CP was well established. However, more studies are needed to precise relationship of passive stiffness with clinical or gait parameters and therapeutics modalities which are indicate to improve them. Relationships between passive stiffness and structural properties remain unknown and must be investigated.

Keywords

stiffness;plantarflexors muscles;cerebral palsy

No conflict of interest

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ISPR8-0967

GAIT IMPROVEMENT WITH DECREASED TIBIALIS ANTERIOR RECRUITMENT AFTER BOTULINUM TOXIN INJECTIONS INTO PERONEUS LONGUS IN VERY YOUNG CHILDREN WITH HEMIPARETIC CEREBRAL PALSY

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Introduction/Background

In very young cerebral palsy(CP) children, peroneus longus(PL) overactivity by spastic cocontraction is a major contributor to dynamic equinovalgus during swing phase(SW) and at initial contact(IC). This study assessed the effects of abobotulinumtoxinA injections into PL.

Material and Method

Eleven male children with hemiparesis(7 right; age 3.1 ± 0.6 yo) were injected once in PL, without GastroSoleusComplex(GSC)injection. GSC was assessed for functional length(X_{V1}) and spasticity(X_{V3}). Gait analysis videos were evaluated using the Edinburgh Visual Gait Score(EVGS-validated in CP): pre vs post-injection values were compared using paired *t*-tests. EMG monitored tibialis-anterior(TA), gastrocnemius-medialis(GM) and PL during gait. Swing phase was divided into three periods(SW1,SW2,SW3) to measured, using EMG: GM and PL cocontractions and TA recruitment during SW(SW,SW1,SW2,SW3), during standing on tiptoes(EMGmaxPL, EMGmaxGM), standing on heels(EMGmaxTA). For each measured EMG variable, efficacy indices was assessed using the ratio

$$(EMG_{VARIABLE-X_POST} - EMG_{VARIABLE-X_PRE}) / (EMG_{VARIABLE-X_POST} + EMG_{VARIABLE-X_PRE})$$

and compared with an inefficacy theoretical index of 0.

Results

Comparison involved 1937 pre-toxin strides (mean per child 176 ± 114) vs 1231 post-toxin strides (mean 112 ± 79). There were no difference in X_{V1-GSC} ($X_{V1-GSC-pre} 103^\circ(6)$; $X_{V1-GSC-post} 103^\circ(6)$) or in X_{V3-GSC} ($X_{V3-GSC-pre} 89^\circ(8)$; $X_{V3-GSC-post} 96^\circ(4.5)$). EVGS-global-score was improved ($p=0.007$) with better clearance in SW ($p=0.07$), increased knee re-extension in terminal SW ($p=0.04$) and decreased hindfoot valgus at IC ($p=0.02$). The normalised-EMGmax was unchanged for PL ($-0.06(0.16)$) but increased for GM ($0.18(0.20)$, $p=0.007$) and TA ($0.28(0.19)$, $p<0.001$). There were reductions of Cocontraction in PL ($p<0.0001$; SW, $-0.26(0.14)$; SW1, $-0.22(0.14)$; SW2, $-0.27(0.14)$; SW3, $-0.26(0.18)$) and in GM (SW, $-0.26(0.14)$, $p=0.06$; SW1, $-0.21(0.18)$, $p<0.001$; SW2, $-0.25(0.20)$, $p<0.01$; SW3, $-0.21(0.25)$, $p=0.06$). TA recruitment was decreased: SW, $-0.08(0.18)$, $p=0.06$; SW1, $-0.11(0.20)$, $p<0.001$; SW2, $-0.07(0.17)$ NS; SW3, $-0.07(0.24)$, NS.

Conclusion

In this retrospective study, PL injections in very young CP children improved foot clearance and decreased hindfoot valgus, which was associated with reductions of PL and GM cocontractions and of TA recruitment. This constitutes an argument supporting that increased TA recruitment in children with hemiparesis may be an attempt by the nervous system to compensate for plantar flexor cocontraction rather than the opposite (increased cocontraction due to increased TA recruitment). We can discuss a central action of abobotulinumtoxinA.

Keywords

hemiparesis; equinus; peroneus longus

No conflict of interest

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ISPR8-0974

FEEDING PROBLEMS, GROWTH AND NUTRITIONAL STATUS IN CHILDREN WITH SEVERE NEUROLOGIC IMPAIRMENT AND INTELLECTUAL DISABILITY

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Introduction/Background

Feeding difficulties, common among children with cerebral palsy (CP), are currently lacking in children with severe neurologic impairment and intellectual disability. The aim was to estimate the prevalence of feeding and nutritional problems in children with severe cerebral palsy (CP) in Tunisia.

Material and Method

This was a cross-sectional study of 40 children with severe CP. The inclusion criteria were the following: age 2–19 y, proven or estimated IQ<55 y, and with Gross Motor Function Classification System (GMFCS) GMFCS levels 4 or 5. Anthropometric measurements (body weight, knee height, mid-upper arm circumference, and triceps skin-fold thickness) were taken. In addition, all the participants had a thorough evaluation of the feeding times, and the presence of gastrointestinal problems (drooling of saliva, vomiting, dysphagia, etc...).

Results

Oromotor dysfunction affected 70% of children, drooling of saliva were noted in 30 of cases and gastroesophageal reflux in 14 of cases. The meal was given in most cases by the mother and lasted on average 40 minutes. No children with gastrostomy tube feeding. The average skinfold value was 6.5 ± 3.5 mm and the mid-arm circumference was 16.1 ± 3.4 cm. The weight was on average 15Kg.

Conclusion

Feeding problems in children with CP were common and associated with poor linear growth. A high proportion of the children were undernourished. Moreover, our results suggest that gastrostomy tube feeding may have been introduced too late in some children.

Keywords

Cerebral palsy, Feeding problems, Growth

No conflict of interest

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ISPR8-0976

SWITCHING FROM ONABOTULINUMTOXINA TO ABOBOTULINUMTOXINA IN CHILDREN WITH CEREBRAL PALSY TREATED FOR SPASTICITY: A RETROSPECTIVE SAFETY EVALUATION

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Introduction/Background

Botulinum neurotoxin-A (BoNT-A) is an important treatment in the management of hypertonia in children with cerebral palsy (CP). To date, there are no controlled head-to-head clinical trials comparing the efficacy and safety of different BoNT-A formulations in CP. The main aims of this study were to explore whether switching from onabotulinumtoxinA (OnaBoNT-A) to abobotulinumtoxinA (AboBoNT-A) is safe and whether therapeutic efficacy is maintained.

Material and Method

This retrospective observational study included 118 children with CP (mean age: 81.4 ± 38.9 months) who had switched from OnaBoNT-A to AboBoNT-A injections into their lower extremities due to a change in hospital policy. Analysis was limited to the final OnaBoNT-A treatment cycle (TC) prior to switch, and the first AboBoNT-A TC following switch. The primary objective was to document safety in children switched from OnaBoNT-A to AboBoNT-A. Efficacy endpoints included muscle tone, spasticity, and gait function based on Modified Ashworth Scale (MAS), Tardieu Scale (TS), and Observational Gait Scale (OGS) scores. A sub-analysis was performed to investigate the time to retreatment for patients attending their follow-up visits for efficacy assessments (n=52).

Results

Treatment emergent adverse events were recorded in 41 (34.7%) and 31 (26.3%) patients during the OnaBoNT-A and AboBoNT-A TCs, respectively. Treatment related adverse events were reported in 5 patients in OnaBoNT-A TC versus 7 in AboBoNT-A (p=0.774). Treatment efficacy, (4-6 weeks post-treatment) was found to be similar in the OnaBoNT-A and AboBoNT-A TCs for all variables (MAS, TS, OGS). The sub-analysis of 52 patients revealed a significantly longer retreatment interval with AboBoNT-A (27.6 ± 11.8 weeks) versus OnaBoNT-A (23.3 ± 8.7 weeks) (p=0.004).

Conclusion

In children with CP, switching from OnaBoNT-A to AboBoNT-A was safe and efficacy was maintained. In a subgroup analysis AboBoNT-A appeared to have a longer retreatment interval than OnaBoNT-A.

Keywords

cerebral palsy;botulinum toxin-A

Conflict of interest

Disclosure statement:

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-0984

RETROSPECTIVE STUDY AMONG 25 CHILDREN AFTER INTRATHECAL BACLOFEN THERAPY IMPLANTATION

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Introduction/Background

Children suffering from generalized spasticity may experience pain and discomfort. The use of intrathecal baclofen therapy (ITB) had already proved its efficiency in case of diffuse and severe spasticity. Injections of intramuscular botulinum toxin can be associated with this treatment. To our knowledge, there's no study specifically devote to analyze the use of botulinum toxin among children receiving ITB.

Material and Method

Retrospective study (median follow-up = 3.06 years before and after the pump implantation).

Results

Twenty-five children were included : 19 with cerebral-palsy (CP) (n = 1 GMFCS III, n = 7 GMFCS IV and n = 11 GMFCS V), 5 with acquired brain injury and 1 with hereditary spastic paraplegia. After adjusting posology, 24 children (96%) had reached their identified a-priori goal concerning treatment of lower pain, daily activity help needed and seat and positioning. Fourteen children received toxin injections before the pump implantation, whereas only 6 after. When we compared each patient to himself before and after implantation, there is a significant decrease of number of toxin injection sessions ($p = 0.013$) for our whole sample. This remain valid in children with CP ($p = 0.040$).

We showed also that there is a modification of injections localizations. Before the implantation 50% of injections were realized on lower limbs, 14% on upper limbs and 36% at both sites. After pump 50% are realized on upper limbs, 17% on lower limbs and 33% at both sites ($p = 0.232$).

Conclusion

This study confirms that ITB pump is useful to treat diffuse and severe spasticity in children and enables to significantly reduce the number of botulinum toxin injections. There is a trend of modification of the localization of injections' sites after implementation reflecting indirectly a better efficiency of the ITB pump on lower limbs spasticity compared to upper limbs.

Keywords

spasticity;cerebral palsy;baclofen

No conflict of interest

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ISPR8-1064

IMPROVEMENT OF WALKING ABILITY USING HYBRID ASSISTIVE LIMB TRAINING IN A PATIENT WITH CEREBRAL PALSY: CASE REPORT

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Introduction/Background

Cerebral palsy (CP) is the most common cause of physical disability in childhood and secondary provides joint contractures and loss of opportunity of social activities. Patients with CP, in adolescence, lose motor function further even if typical physical therapy was done. The objective of this study was to report the improvement of walking ability using hybrid assistive limb (HAL) training in a patient with CP who were diminished the gross motor function through puberty over a half year after the training.

Material and Method

A 17-year-old male with spastic diplegic cerebral palsy performed 12 sessions (40 minute, 4 weeks) of walking training using HAL. He was assessed by 10-meter walking test (10MWT) in each HAL session, and also evaluated by motion analyses including joint kinematics and electromyography in 9 time points: before, after and monthly until 7 months after the end of the intervention.

Results

No adverse events during the intervention were observed or reported by the patient. The gait speed (23.0 in the first session to 26.5 m/min in the last session) and step length (41.7 in the first session to 47.6 cm in the last session) were improved in 10MWT. Improvement of knee extension in stance phase was found and the electromyography showed improve muscle activations in rectus femoris and semitendinosus at the final follow-up evaluation.

Conclusion

Because learning correct walking pattern led improvement of knee extension and muscle activations, it seems that gait speed and step length were improved and continued even after 7 months. The intervention techniques using HAL can be considered to be effective on the walking ability in the patient with CP.

Keywords

Cerebral Palsy;Hybrid Assistive Limb;Motion Analysis

No conflict of interest

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ISPR8-1084

BIOFEEDBACK INTERVENTION EFFECTS FOR PEOPLE WITH CEREBRAL PALSY: INSIGHTS FROM A SYSTEMATIC REVIEW

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Introduction/Background

Cerebral Palsy (CP) is a neuromuscular condition affecting 1 in 400 children that limits activities of daily living. Essential elements to improving function are feedback and repetition. Feedback about a motor performance communicated back to the individual (e.g. Biofeedback) can be a powerful tool for improving autonomy and self-efficacy. However, the most effective mechanisms of biofeedback, particularly for people with CP remain unknown. This study aimed to identify the qualities of biofeedback interventions most effective for people with Cerebral Palsy (CP) through systematic review.

Material and Method

Eight databases and references from relevant articles were searched. Included studies had participants diagnosed with CP and any quantitative study design with N>3. Studies were evaluated using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) framework. Interventions needed to provide external feedback about the movement or performance. For available studies, effect sizes were compared to study characteristics (intervention duration/intensity, and feedback type).

Results

Fifty-seven of the 205 full-texts reviewed were included. Overall, 79% of studies and 63% of measures showed post-intervention improvement. Studies with positive effects ($r=0.47 \pm 0.26$) were longer, averaging 8 weeks and 150 minutes/week compared to studies with no changes ($r=0.28 \pm 0.26$), which were 3 weeks and 80 minutes/week (Figure 1). These studies also used multi-modal feedback (audio and visual) more commonly than unimodal feedback.

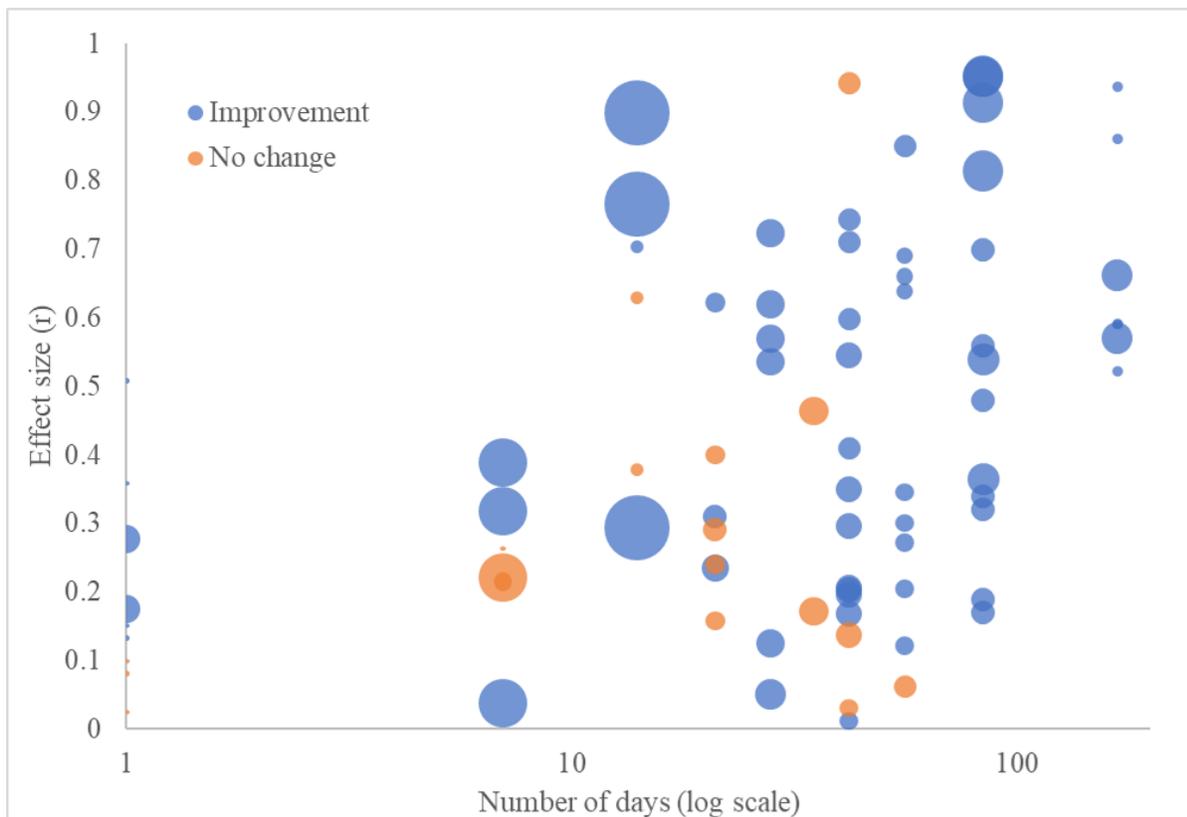


Figure 1. Effect size by intervention duration (in days). Minutes/week indicated by bubble size, ranging from 5-750. Blue circles are measures with author indicated positive changes. Orange circles are measures with author indicated non-significant change. Time and effect size were retrievable for 81/152 measures.

Conclusion

This study shows that biofeedback interventions can be effective for people with CP. The confidence in the effect would be strengthened by a thoughtful paradigm, a standardized outcome toolbox, and adequate practice intensity. These insights could raise intervention efficacy to help people with CP improve motor activities.

Keywords

Cerebral Palsy;Biofeedback;Treatment Outcome Review

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1179

LONGITUDINAL ANALYSIS OF THE APPLICATION OF THE THERASUIT METHODOLOGY AS A PROGRAM OF INTENSIVE PHYSIOTHERAPY FOR PATIENTS WITH CEREBRAL PALSY AND BIFIDA SPINE.

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Introduction/Background

The study analyzed the perpetuation of the functional gains provided by Therasuit Method Intensive Rehabilitation programs, with ten ECI / Spina Bifida patients aged 3 to 18 years. The research methodology used was the Non-Randomized Clinical Study. The analysis was performed on a history of 4 to 12 consecutive programs for the longitudinal studies of functional motor gains.

Material and Method

The patients were evaluated according to the GMFM 66 protocol, before participating in the intensive program, and evaluated after the four-week treatment with daily activities of 3 hours duration. The treatment used the Therasuit Methodology, with use of the suit, Spider system, Pulleys and cage. This procedure was repeated in four annual modules, with minimum intervals of five weeks and maximums of sixteen weeks.

Results

The GMFM scores obtained over 3 years of application of the Therasuit Method were distributed per patient and their level of GMFCS, GMFCS II (2 patients) averaged 25.4 points; GMFCS III (1 patient) 9 points; GMFCS IV (4 patients) averaged 9.58 points and GMFCS V (3 patients) averaged 5.99 points.

Conclusion

The results indicate that the application of the intensive treatment method Therasuita produced an improvement of the GMFM score in the first year of a minimum value of 3.11, with an average value of 11.74. In the second year minimum value of 11 points, with an average value of 15.9. and in the third year 9.3, with an average value of 9.9. According to Hong 2017, gains above 4 points re considered a clinically significant change. The three-year longitudinal analysis showed that continuity of treatment leads to increases in functional gains, with no case of regression to pre-treatment baseline levels, indicating a perpetuation of treatment gain.

Keywords

Therasuit;Cerebral Palsy;GMFM

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1193

CARDIOVASCULAR DISEASE AND RELATED RISK FACTORS IN ADULTS WITH CEREBRAL PALSY: A SYSTEMATIC REVIEW

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Introduction/Background

Cerebral palsy (CP) is the most common pediatric-onset *physical* disability. Individuals with mild to moderate CP can expect life expectancies similar to the general population; however recent evidence has shown that individuals with CP have progressive functional declines, as well as increased physical inactivity and sedentary behaviour- each of which increases with age. These factors likely place individuals with CP at a greater risk for secondary chronic conditions, such as cardiovascular disease (CVD). The aim of this study is to summarize the literature on the prevalence of CVD, risk factors of CVD, and CVD-related mortality in adults with CP.

Material and Method

A systematic review was conducted across the PubMed, Ovid, Cochrane and CINAHL databases. Selection criteria included adults with CP ≥ 18 years. Outcomes were grouped into two classes of interest: (1) CVD and CVD risk factors; and (2) CVD-related mortality.

Results

Nineteen studies met the inclusion criteria. Only one study reported directly on the prevalence of CVD in adults with CP, where adults with CP reported greater CVD conditions than adults without CP (15.1 vs. 9.1%, $p < 0.001$). Overweight and obesity were the most commonly reported risk factors of CVD. Five studies included data on CVD-related mortality in persons with CP, where CVD- and circulatory system-related deaths were elevated and more common at a younger age in adults with CP than in the general population. Heterogeneity in results prevented quantitative analysis.

Conclusion

Our understanding of the prevalence of CVD in this population is fragmented by studies that are small in size and geographically isolated thus preventing definitive conclusions. Of the CVD risk factors identified in this review, it appears that overweight/obesity may be elevated in adults with CP, identifying an important health characteristic that could be managed during clinical encounters early on in this population.

Keywords

Cerebral palsy;Cardiovascular disease;Systematic review

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1240

THE EVALUATION OF MUSCLE TONE, ELASTICITY AND STIFFNESS OF GASTROCNEMIUS MUSCLE IN CHILDREN WITH SPASTIC CEREBRAL PALSY

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Introduction/Background

The aim of this study was to evaluate the biomechanical properties (tone, elasticity and stiffness) of gastrocnemius muscle using myotonometry in children with spastic cerebral palsy.

Material and Method

Forty patients with spastic cerebral palsy (11 diplegic, 16 quadriplegic and 13 hemiplegic) and 20 age, gender and BMI matched healthy controls were evaluated. Biomechanical measurements of gastrocnemius muscle were performed using a myotonometry. The MyotonPro was used to measure the muscle tone, elasticity and stiffness of the medial and lateral gastrocnemius muscles on bilateral sides of the patients with diplegic/quadruplegic cerebral palsy and the healthy controls. Measurements were done only from the paretic side of the patients with hemiplegic cerebral palsy.

Results

The patient and control groups were similar in terms of age, gender and BMI. The measurements of 40 extremities of 20 controls were compared with 66 extremities of 40 patients. The tone and stiffness values of medial gastrocnemius muscle were found to be significantly higher in patients with spastic cerebral palsy than those in controls ($p=0,027$ and $p=0,015$, respectively). Although the measurements of lateral gastrocnemius muscle were higher than controls, it was not statistically significant. Besides, the elasticity values of both medial and lateral gastrocnemius were lower in patients with spastic cerebral palsy, but the values did not reach statistical significance level.

Conclusion

Myotonometric evaluations suggest that muscle tone and stiffness, which are intrinsic biomechanical properties, are higher in patients with spastic cerebral palsy compared to healthy controls.

Keywords

spasticity;myotonometry;cerebral palsy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1247

THE EFFECTIVENESS OF ELECTRICAL STIMULATION ON MUSCLE TONE, ELASTICITY AND STIFFNESS OF GASTROCNEMIUS MUSCLE IN CHILDREN WITH SPASTIC CEREBRAL PALSY

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Introduction/Background

The aim of this study was to demonstrate the therapeutic effectiveness of electrical stimulation on muscle tone, elasticity and stiffness in children with spastic cerebral palsy.

Material and Method

Thirty one lower extremities of 18 patients with spastic cerebral palsy (5 diplegic, 8 quadriplegic and 5 hemiplegic) were evaluated. Biomechanical measurements of gastrocnemius muscle were performed using a myotonometry device. The MyotonPro was used to measure the muscle tone, elasticity and stiffness of the gastrocnemius muscle (medial and lateral parts) on bilateral sides of the patients with diplegic/quadruplegic cerebral palsy and from the paretic side of the patients with hemiplegic cerebral palsy. Patients were treated for five days of electrical stimulation (frequency of 50 Hz, pulse duration 300ms, ramp of 0,5 ms, on:off time 5s:5s, session time of 30 minutes) which was applied on the gastrocnemius muscle aiming for the management of spasticity. The measurements were repeated after the fifth session.

Results

The mean age of the patients were $6,44 \pm 3,6$ (2,5-13). The mean Gross Motor Function Classification System level of the patients were $3,11 \pm 1,6$ (1-5) and Ashworth scale were $2,06 \pm 0,75$ (1-3). The muscle tone and stiffness of medial and lateral gastrocnemius muscle decreased significantly ($p < 0,01$) after the intervention, whereas the elasticity values increased significantly ($p < 0,01$). Ashworth score of the patients were also decreased after the intervention. However no correlations between Ashworth scores and myotonometric values were detected.

Conclusion

Our results suggest that electrical stimulation for the treatment of spasticity had improvements on muscle tone, elasticity and stiffness of spastic cerebral palsy patients. And MyotonPro can be used to measure the effects of treatment in spasticity.

Keywords

spastic cerebral palsy;electrical stimulation;myotonometry

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1263

MANAGEMENT OF DROOLING IN CHILDREN WITH CEREBRAL PALSY: A FRENCH SURVEY

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Introduction/Background

After the age of 4 years, drooling becomes pathological and impacts the quality of life of children with cerebral palsy. The aim of the communication is to characterise children with cerebral palsy and pathological drooling in France, and to describe care pathways, assessment and treatment.

Material and Method

A transversal, observational, descriptive survey of the practices and opinions of 400 health professionals potentially involved in the care of children with cerebral palsy, was carried out nationally across France in 2013.

Results

The response rate was 36%. Seventy-five questionnaires were returned and analysed (52%). A small proportion of children were specifically treated for drooling (<25%). Assessments were carried out in 75% of cases and 91% of professionals prescribed treatments. Use of assessment tools varied widely. The most common treatment was oro-facial rehabilitation (95% of professionals), followed by anticholinergic drugs (Scopolamine®) (94%) botulinum toxin injections (66%) and surgery (34%). Scopolamine was considered to be less effective than botulinum toxin and to have more side effects. Regarding the protocol, Botox® is the most commonly used, with a median dose of 1U/Kg/gland, injected both in parotid and sub-mandibular glands. The period between two injections is from 3 to 6 months. Glands are located by ultrasound examination. The analgesic method differs from injection centers.

Conclusion

The rate of pathological drooling in children with cerebral palsy is likely underestimated and under treated in France. There is a lack of knowledge regarding assessment tools. Aside from rehabilitation, current practice is to prescribe medication as the first-line treatment, however professionals consider that botulinum toxin is more effective and has less side effects. For now there is no general agreement for the protocol of toxin injection. Further studies should be conducted to define a standardized protocol for injections.

Keywords

drooling;children;cerebral palsy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1272

INVESTIGATIONS OF THE EFFECTS OF MIRROR THERAPY IN CHILDREN WITH UNILATERAL CEREBRAL PALSY

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Introduction/Background

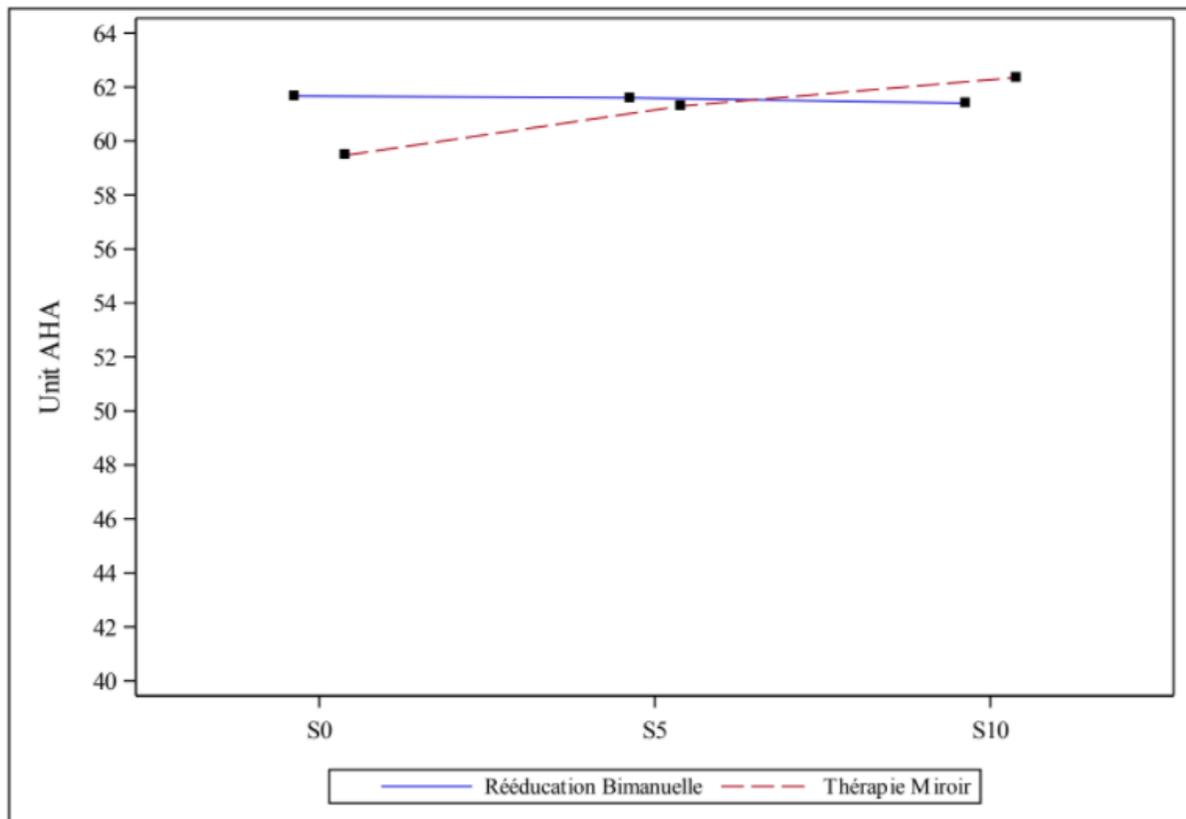
Cerebral palsy (CP) is the first cause of children motor disability. In unilateral CP, upper limb dysfunctions are the main cause of dependence and participation restriction. Effects of Mirror therapy are well known in others disorders, especially in adult population but its benefit is not yet determined in children with cerebral palsy. The aim of this study is to determine the efficacy of mirror therapy in children with unilateral cerebral palsy on bimanual activity.

Material and Method

This study was a prospective, randomized, single-center, controlled, single-blind study. The primary efficacy variable was the Assisting Hand Assessment (AHA). 32 hemiparesis (17 in mirror therapy group and 15 in control group) children aged over 7 were evaluated using the AHA to score functional activity performance. The mirror therapy group used a mirror, the comparison group used an opaque partition between their arms. Each participant had 5 rehabilitation sessions for 5 weeks. Each child was evaluated initially (S0), at 5 weeks (S5) and 10 (S10) weeks.

Results

AHA score at 5 weeks were 61.44 ± 11.99 for the 32 patients, 61.60 ± 11.72 in control group, 61.29 ± 12.58 in mirror therapy group ($p = 0.9440$). At 10 weeks, scores were 61.9 ± 11.4 for the entire population, 61.4 ± 11.8 in control group and 62.4 ± 11.4 in mirror therapy group ($p = 0.8178$).



Conclusion

There were no significant differences in outcomes and their progression S5 and S10 between the mirror therapy group and control group. Neither primary nor secondary efficacy variables have shown significant differences. Even though our study did not show improvement in AHA score after 5 weeks of mirror therapy, we can observe an improvement tendency that could be statically significant with a larger population.

Keywords

cerebral palsy ;mirror therapy;AHA

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1295

EFFECTS OF A CLOWN'S PRESENCE ON PAIN AND ANXIETY DURING BOTULINUM TOXIN INJECTIONS IN CHILDREN WITH MOTOR DISABILITIES

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Introduction/Background

Botulinum toxin injections (BTI) in children often involve several sites of injections and repetitions of the procedure. Reducing pain and anxiety during this procedure is a high priority but remains a challenge. The aims of this study were to evaluate the effectiveness of medical clown presence on pain and anxiety during BTI with premedication (Nitrous Oxyde, EMLA) compared to usual distraction procedures.

Material and Method

Children with motor disabilities, mostly cerebral palsy (1-18 years old) were recruited from the pediatric rehabilitation department of the Brest University Hospital. Children were randomized into the usual distraction group (music, movies,...) or the clown distraction group. Pain was evaluated using the Face Legs Activity Cry Consolability (FLACC) scale by an independent observer and using the visual analogic scale (VAS) by the child and his parents. Anxiety before and during the BTI was evaluated using a VAS by the child and his parents. Proceeding of BTI was evaluated by the physician and child's parent, and benefit of distraction was evaluated by child's parent using a 4 point Likert scale.

Results

87 children were included (55 males, mean age=8.2 years (SD 3.6)); 40 children in the clown group and 47 in the usual distraction. The two groups were comparable on the main sample characteristics and in term of procedures. There were no significant differences between groups on the FLACC and VAS anxiety and pain. Both distractions were considered beneficial by the parents but the result was significantly higher in the clown group ($p=0.002$). No differences were found between groups for the different subgroups.

Conclusion

The clown presence during BTI does not seem to reduce significantly pain or anxiety in children/parents compared to usual distraction. However the presence of the clowns likely

improves the level of distraction as evaluated by the parents which is a key result for such a repetitive procedure.

Keywords

botulinum toxin;cerebral palsy;clown

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1345

APPLICATION OF ICF CORE SETS FOR CHILDREN AND YOUTH WITH CEREBRAL PALSY TO ELABORATE INDIVIDUAL REHABILITATION PROGRAMMES IN RUSSIA

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Introduction/Background

In 2016, the core sets for children and youth with cerebral palsy selected from the International Classification of Functioning, Disability and Health (ICF) were translated into the Russian language. The work was carried out to determine the area of responsibility of specialists (pediatrician, neurologist, orthopedist, otolaryngologist, ophthalmologist, psychologist, psychiatrist, social worker and teacher) who defined methods and tools for standardizing the assessment of impairment severity.

Material and Method

The approach was tested in rehabilitation centres and the State Bureaus of Medical and Social Expertise in St. Petersburg and the Voronezh Oblast in 2016 and 2017. 112 children and youth from 1.5 to 18 years old were examined in the rehabilitation center and 78 children were examined in the State Bureaus of Medical and Social Expertise.

Results

The results of the testing made it possible to compose a list of the most probable rehabilitation interventions and assistive technologies according to the severity of the impairments and categories of activity and participation. It appeared that in the rehabilitation centre it is rational to use the comprehensive ICF core sets.

Conclusion

In case of the State Bureau of Medical and Social Expertise, it was impossible to implement the comprehensive ICF core set in the conditions of the time limit and high workload for the specialists. Therefore, the brief ICF core sets for children and youth with cerebral palsy were used according to the age gradation.

Keywords

rehabilitation;cerebral palsy;ICF

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1347

MID FOOT DEFORMITIES IN CHILDREN WITH UNILATERAL CEREBRAL PALSY

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Introduction/Background

Foot deformations occur in 93% of children with cerebral palsy (CP) leading to disabilities. Forefoot and backfoot deformations are well described, but data regarding midfoot deformation are lacking. This study aim (1) to quantify prevalence of midfoot deformation in the impaired and non-impaired foot of walking children with unilateral CP, (2) to evaluate correlations between Mid-foot and backfoot deformation, lower limb torsionnal disturbance, distal selective motor control, or lower limb spasticity.

Material and Method

A retrospective study was conducted on children with unilateral CP who benefited from a 3D motion analysis in Brest (France) between 2006 and 2017. Clinical data regarding midfoot deformation were collected and classified as typical axis, Metatarsus adductus (MAdd) or metatarsus abductus (MAbd). Data regarding backfoot and ankle deformation; Modified Ashworth Scale of lower limb muscles; leg length discrepancy; tibial torsion and femoral anteversion; distal selective motor control were also collected.

Results

Data from 70 children (GMFCS I, II, III) with unilateral CP were analyzed. Mean age was 10.13 years (SD=0.51). 35 males were included. 35 (50%) impaired feet presented a MAdd, 5 (7.2%) a MAbd and 30 (42.8%) had a typical axis. 24 (34.3%) non impaired feet had a MAdd, 4 (5.7%) had a MAbd and 42 (60%) had a typical axis. Prevalences[h1] were statistically different between groups. In the impaired side, significant correlations between MAdd and poor foot dorsiflexion control (Boyd scale) ($p=0,01$) and between MAdd and tibialis posterior spasticity ($p=0,04$) were found.

Conclusion

MAdd seems to be the most frequent midfoot deformation in children with unilateral CP. If prospectives studies confirm the role of tibialis anterior and posterior in the mid-foot deformities then prevention strategy should focus on these two targets.

Keywords

Mid foot deformities;cerebral palsy

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1368

FINDINGS REGARDING RELATIONSHIPS BETWEEN AMBULATION CAPABILITY AND SOME BONE STRUCTURE, RESPECTIVELY RELATED METABOLIC PARAMETERS IN PUBERTAL AND ADOLESCENT PATIENTS - PRELIMINARY RESULTS

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Introduction/Background

Children with cerebral palsy (CP) who cannot walk seem more prone to have low bone density than ambulatory ones and respectively, walking non neurologic (scoliosis) patients, of the same age category.

Yet, such relationships may be more complex; therefore we aimed to perform a preliminary analysis of them.

Material and Method

We evaluated 58 children, 11-18 years old, divided in 3 groups: non-ambulatory CP (15), ambulatory CP (21) and with scoliosis (22) in the NRNCCNRC.

To discriminate ambulation/non-ambulation capability in patients within this study we used a Functional Ambulation Categories inspired paradigm: non-ambulatory patients assimilated to 0 score and the ambulatory children would have achieved either independent or in different degrees of personal and/or device assisted, gait.

Bone paraclinic parameters assessed: DEXA (Z-Scores), total serum Calcium and 25-OH vitamin D.

Descriptive statistical analysis, ANOVA, medians test and χ^2 tests, were performed using SPSS v.24.

Results

Regarding DEXA, concerning Z-Scores distribution, the 3 diagnosis groups differed both in averages and in medians, respectively values of low bone density showed significant differences only between the scoliosis and the non-ambulatory CP groups (more cases in the latter, $p=0.004$).

For total serum calcium and 25-OH vitamin D concentrations there were not distribution differences between the diagnosis groups.

As for total serum calcium, most of our patients had normal values corresponding to their age, except: - 4 with hypocalcaemia (1 with scoliosis, 3 ambulatory CP),

- 2 with hypercalcaemia (1 with scoliosis and 1 non-ambulatory CP).

For 25-OH vitamin D serum concentrations, around 60% of the patients were deficient in each group (not sufficient available data to draw genuine statistical objectifications of differences in between).

Conclusion

DEXA findings confirm significant differences between non-ambulatory CP children and ambulatory, and scoliosis ones; for the other paraclinic parameters larger groups are needed for enhanced statistical power.

Keywords

cerebral palsy;scoliosis;DEXA

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1376

THE USE OF INCOBOTULINUMTOXINA AS A SAFE OPTION FOR THE MANAGEMENT OF SPASTICITY IN CHILDREN WITH CEREBRAL PALSY: OUR EXPERIENCE

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Introduction/Background

Cerebral palsy (CP) is the most common developmental disorder associated with disability and permanent motor disability. Spasticity is an important limitation in children with cerebral palsy, which affects approximately two thirds of this population. Several products of botulinumtoxin-A (BoNT-A) have been shown to be effective in the treatment of spasticity. The purpose of the study is to present our experience with treatment with incobotulinumtoxinA (Xeomin) for children with cerebral palsy.

Material and Method

We analyzed the data of 75 children with cerebral palsy, who received a total of 351 sessions of infiltration with incobotulinumtoxinA. We recorded the dose, the infiltrated muscles, the side effects, the Gross Motor Function Classification System (GMFCS I-V) the Manual Skill Classification System (MACS) and the Manual Capacity.

Results

Children's mean (standard deviation; SD) age was 9.2 (3.3) years; mean weight was 26.7 (12.7) kg;. Participants received a mean dose of 217 (144) U per session with a maximum of 600 units. GMFCS Level was I for 15.1% of patients, II for 41.9%, III for 10.3%, IV for 13.4% and V for 19.4%; MACS level was I for 33.3% of patients, II for 22.8%, III for 16.8%, IV for 6% and V for 15.4%. 43% of patients were hemiplegic, 24% diplegic, and 32% tetraplegic.

The most frequently injected muscles were gastrocnemius (24,7% of patients), hamstrings (13,4%), adductor longus (14,3%), flexor carpi radialis (6.4%), adductor magnus (6.2%), pronator teres (6%) and biceps brachii (5,4%). Six adverse effects were reported (6% of patients, 1,7% of injections); adverse events assessed as treatment related were muscle weakness, generalized weakness, and fever.

Conclusion

The results suggest that the use of incobotulinumtoxinA is a safe option in the management of spasticity in children with cerebral palsy.

Keywords

Cerebral palsy;IncobotulinumtoxinA;Spasticity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1514

SPASTIC MUSCLE INJECTIONS WITH BOTULINUM TOXIN TYPE A MAY BE HELPFUL FOR THE TREATMENT OF SIALORRHEA IN CASES OF CEREBRAL PALSY

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Introduction/Background

In cases of cerebral palsy (CP) large majority of cases have associated deficits with movement and coordination problems and drooling is one of them. Sialorrhea can be an important clinical, social, educational, and emotional issue for children and their parents in CP. It is reported to occur in 10 to 37% of cases. Oral medications, behaviour management, oral motor therapy, intraglandular delivery of Botulinum Toxin Type A (BoNT-A) and surgery are used for the treatment of sialorrhoe. Much of childhood therapy is aimed at improving movement and coordination. BoNT-A is used for spasticity management. Dry mouth is one of the side effects of BoNT-A treatment. But this side effect may be a favorable effect on drooling in children with CP.

Material and Method

Here we present a diplegic spastic CP case having sialorrhoe who underwent a total three sessions of repeated BoNT-A injection for lower extremity muscles. A total dose of 200 IU BoNT-A were used in each injection and 13 IU/kg in the last one. According to the mothers declaration the patient had less sialorrhoe after muscle injections when the effect begins in the first week and lasts approximately in the fourth month simultaneously with increasing spasticity. So we evaluated the patient's drooling by the Drooling Severity and Frequency Scales (DSFS) in the third injection.

Results

Drooling Frequency decreased from 4 to 2 and Drooling Severity decreased from 5 to 3 and DSFS decreased from 9 to 5 after the last injection's third month control.

Conclusion

The treatment of spasticity with BoNT-A injection may have a favorable effect on drooling in children with CP. A side effect may turn into an beneficial effect. Further studies are warranted.

Keywords

cerebral palsy;botulinum toxin type A;sialorrhoe

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1665

MANAGEMENT OF CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

The management of the paralyzed cerebral child requires a multifunctional and multidisciplinary approach aimed to preserve the neuro-orthopedic capital and to optimize the functional ability for a better family and social integration. In this work we report on the particularities of management of cerebral palsy in the Department of Physical Medicine and Functional Rehabilitation at Tunis Military Hospital.

Material and Method

Retrospective study conducted at the Physical Medicine and Functional Rehabilitation Department of the Military Tunis Hospital, focusing on children being followed for cerebral palsy during the period between January 2012 and December 2017. Data concerning clinical, neurological and neuro-orthopedic evaluation were listed as well as the different Therapeutic management methods introduced during the follow-up.

Results

35 children were included in this study, 13 girls (37%) and 22 boys (63%), with an average age of 10.7 years [5-18]. Clinical presentation was spastic tetraparesis in 19 children, spastic hemiparesis in 12 patients and 4 cases of spastic diplegia. 80% of patients were walking alone or with technical assistance. 3 patients had non-functional upper limbs. The most common neuro-orthopedic deformities were foot equines (70%).

The most injected botulinum toxin sites were triceps sural, hamstrings and adductors. Mean dose injected was 15UI/kg onabotulium. The most frequently prescribed equipment was Ankle-foot orthosis (90%) and Hip-knee-ankle-foot orthosis (75%). 7 patients had orthopedic surgery to correct deformities

Conclusion

Management of the children with cerebral palsy requires a multidisciplinary approach and a long-term follow-up to overcome the various deficiencies and complications. This management

remains heavy and depends on the degree of involvement of the family and their adherence to the therapeutic program.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1747

EFFET DE LA TOXINE BOTULIQUE SUR LE MUSCLE SPASTIQUE DE L'ENFANT AVEC PARALYSIE CEREBRALE

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Introduction/Background

Botulinum toxin (BoNT-A) is considered as an effective therapy for children with cerebral palsy (CP). The target of BoNT-A is the neuromuscular junction (NMJ). Mechanism of action is based on the inhibition of acetylcholine neurotransmitter release at presynaptic nerve terminals, which results in reduction of muscle fiber activity. However, the long-term effect of repeated toxin injections on muscle structure remains unknown. We hypothesize that repeated injections of BoNT-A would have a structural effect on the muscle.

Material and Method

We are conducting an observational, monocentric, cross-sectional anatomophysiological study on multi BoNT-A injected muscle of children with CP. The main objective is to evaluate the effect of long-term toxin injections on the NMJ fragmentation and axonal sprouting. All eligible patients are enrolling over a 2-year period with a sample of a muscle taken during a scheduled surgery from the lower limb of spastic CP in children previously treated by BoNT-A. The sample size is estimated to 30.

Results

To date, 10 patients have been included. These preliminary analyses found the great majority of NMJs are unaffected. Indeed, they have a normal appearance with a low fragmentation (66% of NMJ have a number of fragments ≤ 3) and a well-marked primary gutter. Expected axonal sprouting after repeated toxin injections was not observed except for a single NMJ in one of the patients. On the other hand, some partial denervation and partial reinnervations were observed in 6 out of 10 samples where we find the presence of JNM.

Conclusion

These preliminary results will be further studied in the up-coming year.

Keywords

cerebral palsy;botulinium toxin;neuromuscular junction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1840

CHILD'S QUALITY OF LIFE AND MOTHER'S BURDEN IN SPASTIC CEREBRAL PALSY: A TOPOGRAPHICAL CLASSIFICATION PERSPECTIVE

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Introduction/Background

To evaluate child's quality of life (QoL), mother's burden and correlation between these parameters in spastic cerebral palsy (CP).

Material and Method

Children with spastic CP (n=120; mean age 8.64±3.45; range 2 to 17 years) were classified into three groups including diplegia, hemiplegia, and quadriplegia based on the topographical classification. The Pediatric Quality of Life Inventory and Zarit Burden Interview were used to determine the child's QoL and the mother's burden scores.

Results

The child's QoL scores were decreased in quadriplegia group than those in hemiplegia group (for all, $p \leq 0.016$) and in diplegia (except emotional functioning, $p=0.864$) group (for all, $p \leq 0.002$). The mother's burden was increased in quadriplegia group compared to other groups (for all, $p < 0.001$), and it was increased in diplegia group compared to hemiplegia group ($p=0.001$). Increases in the child's QoL scores were associated with decreases in the mother's burden scores (for all, $p < 0.001$).

Conclusion

Child's QoL is associated with mother's burden in spastic CP, and quadriplegic children and their mothers are more affected. The burden of mothers ranked the highest in quadriplegia group, followed by diplegia group, then hemiplegia group. The topographical classification is a good indicator for the child's QoL and the mother's burden in spastic CP.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1845

THE EFFECT OF SITTING AND STANDING POSTURES ON BALANCE AND MOTOR FUNCTIONS IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

This study aimed to research the effect of supported- unsupported sitting and standing postures over the balance and motor functions in children with cerebral palsy.

Material and Method

Twenty-five(9 girls ; 16 boys) children with hemiparetic cerebral palsy with mean age $3,4 \pm 1,13$ years were participated in the study. Children with cerebral palsy (SP) were divided into two groups according to KMFSS: Level I and Level III. The System of Classification Gross Motor Functions and Gross Motor Function Measure-88 to evaluate children with CP was used. Balance ability was assessed using by a 1-Min. Walking Test (1MWT) and Early Clinical Assesment of Balance(ECAB). Functional Independence Measure for Children (WeeFIM) was used to evaluate the independence in terms of daily living activities of the children with CP. Mini-Manual Ability Classification System (Mini-MACS) in children was used to evaluate the manipulative skills of children in 3 different postures supported-unsupported sitting and standing.

Results

According to GMFCS levels of all participants between level 1 and level 3 GMFM, ECAB 2, 1 MWT, total Wee-FIM and all subsections statistically meaningful differences were found ($p < 0,05$). According to the results of Mini-MACS, KMFSS Level I and Level III, in both groups, hand skills in assisted supported sitting is better than the ones in unsupported sitting and standing.

Conclusion

In conclusion, researchers and clinicians working with cases of hemiparetic SP, can use ECAB balance test to assess the balance of these cases, also by our study taking as a whole not only lower extremite functions but also focusing on hand functions,it shows that supported sitting sholud be emphasized to use hand functions beter.

Keywords

Cerebral Palsy;Posture;Balance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1874

SIX-MINUTE WALK TEST (6MWT) IN CHILDREN WITH CEREBRAL PALSY. SYSTEMATIC REVIEW AND PROPOSAL OF AN ADAPTED VERSION

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Introduction/Background

The six-minute walk test (6MWT) is an objective evaluation of functional exercise capacity in adults with cardiovascular diseases, obesity, or respiratory disorders. The 6MWT is increasingly used in paediatrics, and especially for children with cerebral palsy (CP) to define their capacities and to evaluate therapeutic interventions. The aim of this study is to report the validity of the 6MWT in children with CP and to propose an adapted-6MWT.

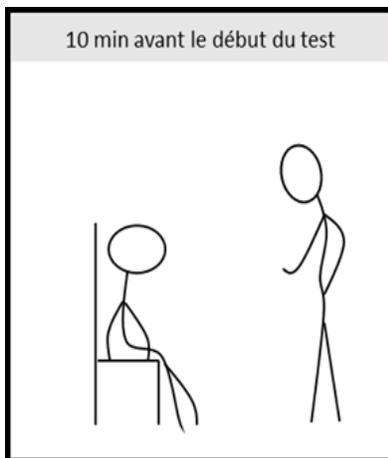
Material and Method

A systematic review was performed following the EQUATOR network guideline. The primary search strategy screened online databases (PubMed (MEDLINE), CINAHL, Embase, Pascal, Cochrane Library, Google Scholar) and grey literature in October 2017. The key terms were 'Six-minutes walk test', 'cerebral palsy', AND 'reliability', 'validity', 'responsiveness', 'reference value'.

Results

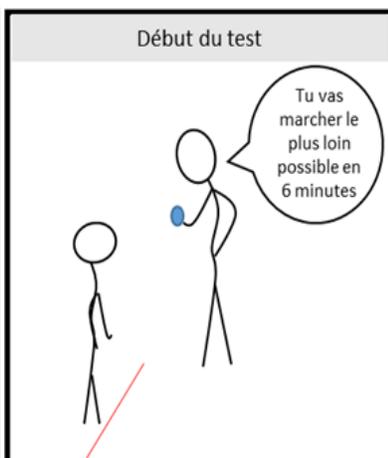
After adjusting for duplicates and applying the search filter, 26 articles over 146 articles were included in this review. Walking speed must be self-selected. Reference value for healthy and CP children are classified by age. This allow comparisons. The distance travelled during the 6MWT is significantly lower for children with CP. There is a significant difference in the 6MWT results between children with GMFCS I/II and GMFCS III. The reliability test-retest is excellent (ICC 0.87-0.98). The 6MWT isn't correlated with the VO₂ peak recorded on a cyclo ergometer. The 6MWT is correlated with ABILOCO-kids test, which evaluates the locomotor capacities of children with CP (r=0.70). We introduce an adapted-6MWT for children with cerebral palsy

(Figure) adapted on the basis of the comments and suggestions identified in the studies.



Instructions :

- Vérification des recommandations et des contre-indications
- Relevé du rythme cardiaque par un cardiofréquence mètre portable
- Relevé de la saturation en oxygène (SpO₂)
- Relevé de la fatigue et de la dyspnée avec l'échelle de Borg



Instructions :

- Le thérapeute donne à l'enfant les consignes précises de début de test : « L'objectif de ce test est de marcher le plus loin possible sur une durée de 6 minutes. Tu vas faire des allers et retours dans ce couloir. Tu auras le droit de ralentir, de t'arrêter, et de te reposer si nécessaire. ».
- (Consignes complètes à communiquer -Tableau 1)



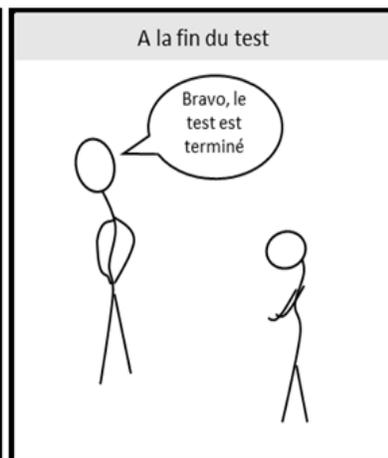
Instructions :

- Le thérapeute reste au niveau de la ligne de départ, il ne marche pas à côté de l'enfant
- Le thérapeute ne doit pas se laisser distraire et compte les A/R effectués
- Il relève le rythme cardiaque toutes les minutes
- Il encourage l'enfant d'une voix neutre et lui indique le temps toutes les 30 secondes



Instructions en cas d'arrêt :

- Le thérapeute propose à l'enfant de s'adosser au mur et de repartir quand il s'en sent capable ; il n'arrête pas le chronomètre
- En cas d'arrêt définitif, le thérapeute note la distance parcourue, le temps et la raison de l'arrêt



Instructions :

- Relever de la fatigue et de la dyspnée avec l'échelle de Borg ; demander ce qui l'a empêché d'aller plus loin
- Relever le rythme cardiaque et la SpO₂
- Calculer la distance parcourue
- Féliciter l'enfant

Consignes générales :

Les aides techniques usuelles sont autorisées ;
Aucune période d'échauffement n'est nécessaire

Adaptation aux enfants atteints de paralysie cérébrale :

Parcours de 20 mètres ;
Instructions délivrées toutes les 30 secondes ;
Tutoiement de l'enfant ;
Pour les enfants GMFCS III : rester à côté d'eux pendant le test

Figure. French version of the adapted-6MWT for children with cerebral palsy.

Conclusion

The 6MWT is a simple test of the locomotor capacities, easy to access, inexpensive, and quickly achievable. The 6MWT is not a measurement of physical condition or aerobic fitness, in children with PC. We propose a standardized use of this version, adapted for children with CP.

Keywords

six-minute walk test;walking capacity;cerebral palsy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1900

HYPNOANALGESIA INCREASES ELECTROSTIMULATION ACCEPTABILITY IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

In cerebral palsy, electrostimulation increases muscular strength and joint amplitudes while decreasing spasticity and muscular co-contractions.

However, electrostimulation is seldom used in children, mainly because of its actual or assumed poor tolerability.

Electrostimulation is an integral part of the therapies used in children at Marc Sautelet SSR. Furthermore, we are developing the use of hypnoanalgesia in our pediatric population and using it frequently to complete botulinic toxin injection, postoperative mobilizations or electrostimulation.

Material and Method

We compared the tolerance of two tibialis anterior electrostimulation sessions, at least one week apart : the only difference was that the second session was performed under hypnoanalgesia.

Three items were used to assess tolerability, namely session duration, age-adapted self-assessed pain scales (VAS, Faces Pain Scale) and other pain scales (FLACC Face Legs Activity Cry).

Eleven children (7 with hemiplegia, 3 with diplegia and 1 with quadriplegia), aged 4 to 12 years old, were included.

The Wilcoxon test was used to determine statistical significance.

Results

The 20 minutes electrostimulation session under hypnoanalgesia was completed in all children, Only 4 children when it was performed without hypnoanalgesia. (p=0,018)

Pain, as assessed by every scale used in this study, was significantly lower when hypnoanalgesia was used.(p=0,005)

Conclusion

These results are in favor of a wider use of electrostimulation, in association with hypnosis and distraction techniques.

Keywords

electrical stimulation;hypnoanalgesia;cerebral palsy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-1953

FUNCTIONAL STATUS IN TUNISIAN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

Cerebral palsy (CP) is one of the most common causes of disability in childhood leading to functional limitations. Assessment of the functional limitations is important to determine the severity of the disability in CP and to evaluate the benefit of the rehabilitation programme. However, functional status in CP show variation according to sociocultural care characteristics. The aims of this study were to evaluate the functional disability of Tunisian children with CP by using the Gross Motor Function Classification System (GMFCS) and to investigate a possible correlation between intellectual functioning and parental socio-economic status.

Material and Method

Eighty children with CP (independently ambulant, marginally ambulant, and nonambulant) followed in the department of physical medicine of Fattouma Bourguiba Hospital in Monastir were included in the study. Motor function was rated by the GMFCS which classifies children into five severity levels (Level V being the most severe).

Results

The mean age was 8.6±5 years and the sex ratio was 1.28. Spastic CP (88.7%) and bilateral spastic CP (70%) were the most common type of CP. The distribution of GMFCS levels was mostly altered: level V in 28.7% of cases (Transported in a Manual Wheelchair) and level IV in 25% of cases (Self-Mobility with Limitations). A strong correlation was found between GMFCS level and intellectual functioning (IQ). The parental socio-economic status does not appear to affect functional profiles.

Conclusion

The children with CP had altered GMGCS level. The systematic evaluation of the IQ can provide useful information about a possible future outcome for every functional level. However, studies with wider series are needed to generalize our results.

Keywords

cerebral palsy, disability, GMFCS

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2015

SIALORRHEA: DESCRIBING DIFFERENT TREATMENT APPROACHES IN PORTUGAL

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Introduction/Background

Sialorrhea has severe clinical and social consequences as well as a great impact on the QoL of Cerebral Palsy and other motor disease patients, their families and caretakers. There are different therapeutic approaches in the control of sialorrhea and our aim was to characterize it in Portugal.

Material and Method

Eighty-one questionnaires were sent to all Neuropediatric and PMR departments in Portugal in order to characterize the treatment of sialorrhea at a national level in terms of behavioural therapy, oral pharmacology, BTX-A injection and ultrasound guidance, and surgery referrals.

Results

Twenty-five responses: 9 (36%) Neuropediatric, 15 (60%) PMR and 1 (4%) Pediatric department. From all answers: 6 (24%) from the north of the country, 3 (12%) from the center and 16 (64%) from the south. One answer was not included in the study. Of the total, 23 follow patients with sialorrhea and only 1 doesn't. Of all, 83% (19) resort to behavioural treatment, 13% (3) do not and 4% (1) did not answer. As for prescription of oral drugs, 44% (10) resort to this type of treatment, 17% (4) rarely, 22% (5) never and 17% (4) did not respond. Of those prescribing oral drugs: 57% trihexyphenidyl, 43% others (amitriptyline, scopolamine, atropine). BTX-A injection in the salivary glands: 13 do it in their departments, 7 refer to other departments or hospitals, 2 do not. Of the applications, 76% (16) have ultrasound guidance. Surgery: 8 perform it in the hospital of origin, 9 refer to other hospitals and 5 do not treat surgically.

Conclusion

Our study reflects the great therapeutic diversity in sialorrhea and its complexity. There is a need for a greater number of studies that follow quality criteria and precise and quantitative methods of evaluation in order to reach a definitive conclusion about the most effective and safer treatment.

Keywords

Sialorrhea;Cerebral Palsy;botulinum toxin type A

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2025

MANAGEMENT OF MOTOR PROBLEMS IN CEREBRAL PALSY AT CANASTEL PEDIATRIC HOSPITAL

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Introduction/Background

Cerebral palsy is defined as motor impairment caused by non-progressive brain injury in an immature brain. This injury is stable and not progressive but the orthopedic deformations will progress. The management of cerebral palsy requires a team approach.
purpose: The aim of our work: evaluate functional aspects and appreciate results of orthopedic disorders treatments in lower limbs after introducing the use of stretching splint in association with toxin and physiotherapy.

Material and Method

Cross sectional study October 2016 - December 2017. Recruit all patients with cerebral palsy. Assessment: measurement of joint amplitudes and popliteal angle, spasticity evaluation by the modified Ashwort scale. GMFCS score. Gait video before and after treatment. Treatments: physiotherapy, toxin, progressive lengthening technique using plaster, walking boots and orthotic device for knees and ankles and in some cases surgery.

Results

72 children with cerebral palsy were recruited, 28 paraplegics. 35 children had botulinum toxin injections. 12 children had surgery (adductor tenotomy, lengthening of the hamstrings, vulpius or Achilles tendon lengthening). Initial mean popliteal angle $90^{\circ} + 43,60^{\circ}$; after physiotherapy: $90^{\circ} + 56^{\circ}$; after physiotherapy and plaster $90^{\circ} + 65^{\circ}$. Mean gain obtained for dorsal flexion angle: 10° knee flexed. There is an improvement of at least one level of the GMFCS score.

Conclusion

good results are obtained with association: toxin injections, plaster and physiotherapy. Need of quantitative gait analysis for better appreciations.

Keywords

cerebral palsy;orthopedic disorders;management

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2029

BOTULINUM TOXIN TYPE A IN THE TREATMENT OF SIALORRHEA - OUR EXPERIENCE

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Introduction/Background

Sialorrhea consists of an involuntary loss of saliva, and is considered pathological after 4YO. The aim of this study is to describe our methodology and evaluate the efficacy and safety of Botulinum Toxin Type A (BTX-A) in sialorrhea in children and adults with Cerebral Palsy (CP) or cognitive deficit, referenced to PMR consultation between 2002-2017.

Material and Method

Longitudinal descriptive study with clinical records analysis and consultation of Drooling Rate Scale (DRS) and Teacher Drool Scale (TDS) prior to BTX-A injections and 1-month after. Injection of BTX-A performed with ultrasound and sedation.

Results

Total of 104 patients, 86 patients selected, 32 female (37.21%), 54 male (62.79%), current ages 7-29YO (mean 18), age of the 1st application 3-22YO (mean 9.76), age of last application 4-23YO (mean 11.83). Fifty patients (58.14%) diagnosed with CP. Two-hundred-and-three total applications (average 2.36), maximum 10 applications. Parotids (55.56%), submandibular (9.09%) or both (35.35%), mean periodicity of 11.81 months. Sedation: 49.38% midazolam, 41.36% nitrogen protoxide, 0.62% Chloral-Hydrate and 8.64% without. Surveys: mean pre-application-DRS of 33.98 (minimum 19, maximum 58), mean post-application-DRS of 28.46 (min 15, max 54), with $p = 6.48 \cdot 10^{-5}$, average difference 4.28 points in DRS (min -27, max 22). Mean pre-application-TDS of 4.04 (min 2, max 5), mean post-application-TDS of 3.38 (min 1, max 4), with $p = 2.80 \cdot 10^{-5}$, a average difference of 0.69 points in TDS (min -1, max 3). Difference in DRS and TDS of 0.76 and 0.24 respectively in the parotids, 6.33 and 0.83 in the submandibular and 8.52 and 1.43 in both. Improvements were statistically significant. Surgery: 6 (6.98%). Side-effects: 5 children (5.81%) insomnia/vomiting. No complications related to the administration technique.

Conclusion

The application of BTX-A in the treatment of sialorrhea is a safe, easy-to-apply technique, with statistically significant improvement in QoL and severity. Benefit in the application of BTX-A in both glands treatment is shown.

Keywords

Sialorrhea; Botulinum Toxin Type A; Cerebral Palsy

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2041

ANALYSIS OF FACTORS AFFECTING THE EFFICACY OF HIPPOThERAPY IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

Hippotherapy has been reported to improve gross motor function and balance in children with cerebral palsy. However, clinical factors related with improvement of gross motor function have not been studied. In this study, we retrospectively reviewed 146 prospective collected data and analyzed the predictive factors for the effectiveness of hippotherapy.

Material and Method

146 children with CP, aged 3–10 years, presenting variable function (Gross Motor Function Classification System [GMFCS] levels I–IV) participated in this study. Participants received 30 minutes of hippotherapy twice a week for 8 weeks (16 sessions) in addition to conventional physiotherapy. GMFM-88 and PBS score were checked by pediatric physical therapists before and after hippotherapy in all cases. And data such as GMFCS level, age, sex, CP distribution and CP type were collected. We arbitrary set a clinically meaningful change in gross motor function after hippotherapy (good response) as 2 point change in GMFM-66 in 2 months. Data were analyzed by using paired t-tests or Wilcoxon signed-rank tests to confirm whether there were significant differences between before and after intervention according to the normality of data determined by the Shapiro-Wilk and Kolmogorov-Smirnov test. And multivariate logistic regression test was used to analyze the factors affecting the efficacy of hippotherapy.

Results

GMFM-66, GMFM-88 total, all dimensions of GMFM and PBS were significantly increased in all levels, all neuromotor types and all distributions. ($p < 0.05$). Positive prognostic factors for the therapeutic effect of hippotherapy is a poor sitting function (lower GMFM B score) and a better mobility function (higher GMFCS level).

Conclusion

This results support that Hippotherapy is a task oriented therapy to improve sitting balance. In addition, children with CP who can walk but still have room for improvement in sitting balance could get more benefit from hippotherapy.

Keywords

Cerebral palsy;Hippotherapy;Gross motor function

No conflict of interest

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A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2057

DIFFERENT PHYSIOLOGICAL RESPONSE FROM 30 MINUTES BOUTS OF STATIC AND DYNAMIC SUPPORTED STANDING AMONG CHILDREN WITH SEVERE CEREBRAL PALSY. A PILOT STUDY

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Introduction/Background

Children with severe cerebral palsy (CP), (GMFCS level IV and V), are little physically active and have much sedentary time which implies significant health risks. The standard care in Sweden includes static standing training (StS) in standing frames for 60-90 minutes daily, which affect the family life significantly. The motorised medical device Innowalk gives children with severe CP an opportunity to experience walking movement in an upright weight-bearing position. We have earlier had reports from parents of children with severe CP performing dynamic standing (DyS) with the Innowalk noticing effects not seen during StS. Therefore, the aim of this study was to elucidate if there were any differences in the response to one acute bout of StS and DyS in respiratory function, circulation, blood lipids, blood glucose, blood pressure, gastrointestinal function, pain, muscle tone and joint mobility among children with severe CP.

Material and Method

Seven children with severe CP were recruited by the National association for disabled children in Sweden for this pilot study. The measurements were performed one day in their standing frame and another day in the Innowalk at the Health Sciences Lab, Lund University. The results were analysed by descriptive, comparative and related statistics.

Results

The study design was feasible and the measurements could be performed. StS and DyS gave different physiological response among children with severe CP. During DyS deeper breathing with increased gas exchange at the alveolus was demonstrated, and the children were able to maintain and even increase the temperature at their shanks and feet. Additionally, the results showed a trend for a reduction of muscle tone during DyS.

Conclusion

DyS in the Innowalk showed positive acute effects. Our findings need to be confirmed in a larger population for the best training recommendations.

Keywords

severe cerebral palsy;dynamic supported standing;physiological response

No conflict of interest

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ISPR8-2077

THE IMPORTANCE OF MUSCULATION IN THE MANAGEMENT OF CEREBRAL PALSY

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Introduction/Background

Cerebral palsy is the main cause of disability in children. It can engender major disorders that can deteriorate the physical conditions of the patient.

The aim of our study is to show that a physiotherapy rehabilitation of cerebral palsy, based on physical activity specifically adapted to bodybuilding, is beneficial on the physical level in order to improve the muscular strength, the balance, the posture, functional abilities, autonomy and physical performance.

Material and Method

Prospective, transversal, descriptive study of 12 children with cerebral palsy was performed in the general association of motor deficiency (AGIM), during a period of 3 months. Neurological, neuromotor and neuro-orthopedic evaluation as well as functional skills, postural balance, autonomy, fatigue and pain were assessed by validated scales. Our work, part of the care of children with cerebral palsy through the integration of a fitness program is adapted from two protocols "TABATA Method" and "CrossFit" that can meet the expectations of children with cerebral palsy.

Results

The average age was 11.16. At the end of a program of 12 sessions of bodybuilding, there was an improvement at the level of neuro-orthopedic balance, evolution of functional skills. The Tinetti test reveals a score optimization with a mean difference of 1. The monopodal support test showed a progress in postural balance with a mean difference of 1.09. A marked improvement in mean FIM score from 94.92 to 100 was noted. The most impaired dimensions were personal care, mobility-transfer and locomotion. The physical performance test, when performing a TABATA type reinforcement protocol (4 min' duration), showed that the number of repetitions has doubled.

Conclusion

Bodybuilding is a recent field and is very effective in the management of subjects with cerebral palsy. Our intervention has beneficial effects on the improvement of the different physical aspects, whether postural or functional.

Keywords

Cerebral Palsy;Musculature;High Intensity Training

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2717

THE QUALITY OF LIFE OF CHILDREN WITH CEREBRAL PALSY AFTER INTENSIVE REHABILITATION

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Introduction/Background

The abnormalities found in children with cerebral spastic paralysis have an impact on the quality of life even that of ambulant children.

Our goal was to evaluate the quality of life of children with active spastic PC after an intensive rehabilitation program.

Evaluate the rank in the siblings of these children, and the age of the mother during childbirth.

Material and Method

72 PC children classified as GMFCSI to GMFCS III were included in the spastic muscles and lower limb ambulation. An intensive rehabilitation program was followed by all patients. A measure of quality of life was done before and 6 months after the program.

Results

22 hemiplegic, 30 diplegic, 11 triplegic and 9 quadriplegic were included in the study. 40% GMFCS I, 14% GMFCS II, 46% GMFCS III; AVERAGE AGE 8 ± 3 years. Sex: 51% female and 49% male. The age of the mother at the birth of the child was 29 YEARS [19-45 years], the rank in the siblings was: the first in the siblings 72%, 11% the 2nd. The average quality of life before rehabilitation was 41 on the PedsQL, of 37 After rehabilitation.

Conclusion

In our sample, the age of the mother during delivery was lower than that cited in the literature. Rank in the siblings was rarely mentioned; the quality of life of children with PC after 6 months of intensive rehabilitation was not significant.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2730

CEREBRAL PALSY - NEW PATIENTS IN A REFERENCE INSTITUTION

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Introduction/Background

Cerebral Palsy (CP) is a group of multifactorial clinical syndromes characterized by motor deficit, sometimes with postural dysfunction.

Material and Method

METHODS: Retrospective study. A total of 743 electronic medical records of patients attended in initial PC consultations were evaluated, with 614 cases being eligible.

Results

RESULTS: Sex: female = 47.4%, male = 52.6%. Age in years: 29.5% under 2; 34% from 2 to 4; 15.5% from 4 to 6; 16.3% from 6 to 12; 4.6% 12 to 18; 0.2% ≥ 18 years. Natural and provenance: 55.4% and 62.7%, respectively, of the city of São Paulo (SP). At birth 50.7% were preterm and 45% term. Weight: 9.1% classified as extreme low weight, 16.8% very low weight, 21.8% low weight, 43.6% adequate weight, 2.3% macrosomic. Predominant type of delivery: cesarean section (56.5%). Clinical and topographic classification of patients: 13.4% Spastic hemiparetic, 33.9% Spastic diparesia, 0.5% Spastic tri paresia, 12.2% Spastic tetraparesia, 0.5% Spastic monoparesia, 5.9% Dyskinetic / ataxic, 5.7% mixed PC, 1% hypotonic. In 55.5% of the families they did not receive disease aid. Regarding specialized care, it was observed that for 97.7% of the patients the first consultation with a Physiatrist was the first consultation.

Conclusion

CONCLUSION: Most pregnant women were submitted to the appropriate number of prenatal consultations. Cesarean delivery predominated. Preterm births were slightly higher compared to term. The classification of PC that predominated was the spastic diparetic, with GMFCS in the ranges from 1 to 5 equivalent. More than half of families didn't have access to social benefits.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2169

THE EFFECTS OF ADAPTED CYCLING INTERVENTION IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

Children with cerebral palsy (CP) have subnormal aerobic and anaerobic capacity, decreased muscle strength and endurance compared with typical developing children. Children with disabilities reported 'dependency on others' as a barrier to participate in sport. Dynamic cycling could be a solution to move independently in community settings along with the benefits of exercise and improvements in strength, endurance and function. The aim of this study was to evaluate the effects of a dynamic cycling program for children with CP on the 3 levels of the International Classification of Functioning, Disability and Health framework.

Material and Method

Nine ambulatory children with spastic diplegia, between 4 and 12 years old and Gross Motor Function Classification System levels II to III, followed a home-based individualised outdoor cycling training program for 6 weeks. The most suitable bike for each participant was chosen at the bicycle advice centre of University Hospital Pellenberg. Primary outcomes were strength in m. quadriceps femoris and hamstring muscles, cycling skills, the life-H questionnaire and the Cerebral Palsy Quality of Life Questionnaire. The outcomes were measured 6 weeks before the intervention, at the start and at the end of the intervention.

Results

Significant pre-post intervention improvements were found for hamstrings and m. quadriceps femoris strength and cycling skills. There were no clinically significant improvements in participation and quality of life.

Conclusion

This study showed that a relatively short training program on an adapted dynamic bicycle was associated with a clinically relevant improvement in m. quadriceps femoris and hamstring muscles strength and cycling skills in children with moderate levels of CP. These results suggest that adapted cycling could be an effective and safe treatment for children with CP, for whom there are few other exercise opportunities, and can be considered as a useful additional tool for clinical practice.

Keywords

Cerebral palsy;Adapted cycling

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2278

EFFECTIVENESS OF TELE-REHABILITATION INTERVENTION TO IMPROVE ACTIVITY, PARTICIPATION AND QUALITY OF LIFE IN ADOLESCENTS AND YOUNG ADULTS WITH SPINA BIFIDA- A PILOT STUDY

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Introduction/Background

While telerehabilitation can be used as a means to promote function and participation in individuals with various disabilities, no studies were found which investigated this method of treatment in adolescents and young adults with Spina bifida

Objectives: to examine the feasibility and effectiveness of telerehabilitation with adolescents with Spina bifida.

Material and Method

Study design: A pilot study with mixed methods of qualitative and quantitative (pre-post and 3 month follow-up) design.

Participants: 4 adolescents (ages 14-18) with Spina bifida

Outcome Measures:

(1) The Canadian Occupational Performance Measure (COPM) –participants' performance and satisfaction concerning their self-identified occupational goals.

(2) Wee- Functional Independence Measure (FIM) – Independence in activity of daily life.

(3) Pediatric Quality of Life Inventory (Peds QOL)

The intervention: Telerehabilitation through videoconferencing using Cognitive Orientation to daily Occupational Performance (CO-OP) approach. The participants identified 5 personal goals, three goals were trained directly and the addition goals were not trained to evaluate the transfer possibility.

Results

Four participants were evaluated post intervention (case 1- 15 year-old male ,case 2-18 year old male case 3-16 year old female and case 4- 18 year old male. After 10 sessions, the four participants indicated self-reported improvement in both trained and untrained goals from pre- to post-intervention. Case 1 made significant gains in 2/3 trained and 1/2 untrained goals, including a 12 point gain in the WeeFIM. Case 2 made significant gains in all trained and 1/2

untrained goals including a 6 point gain in the WeeFIM. Cases 3 and 4 made gains in all trained goals but not in the untrained goals. No improvements were reported regard to QOL.

Conclusion

Based on these initial results, telerehabilitation shows promise as a way to deliver the CO-OP approach and may help promote participation and independence of individuals living with MMC.

Keywords

Telerehabilitation; Myelomeningocele; participation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2475

ALCOHOL USE DISORDERS AMONG HIV AND AIDS PATIENTS AT KENYATTA NATIONAL HOSPITAL (KNH) COMPREHENSIVE CARE CENTRE, NAIROBI, KENYA

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Introduction/Background

Alcohol has particularly harmful health effects in HIV-infected patients; therefore, HIV clinics are an important setting for integration of routine alcohol screening as an integral component of HIV care. In sub-Saharan Africa, little is known about AUDs among people attending HIV services. Objective: To estimate the prevalence of alcohol use disorder in patients attending CCC at KNH Design: A descriptive cross-sectional study Setting: Comprehensive Care Center, Kenyatta National Hospital, Kenya carried out in the months of August to October 2016

Material and Method

: Two hundred and seventy three participants were recruited for this study and interviewed about their socio-demographic characteristics. The World Health Organization's Alcohol Use Disorders Identification Tool (AUDIT) was used to measure probable hazardous, harmful and dependent use of alcohol ('alcohol use disorders'). Associations between AUDs and other variables were explored using logistic regression analysis. All variables associated with AUDs with a value <0.05 were included in the final multivariable model.

Results

The overall prevalence of AUD was 14% (38) broken as follows; 5.5% (15) had Hazardous/harmful drinking behavior with a cut off score of ≥ 8 or more. Those dependent on alcohol were 8.5% (23), with AUDIT score cut off point of ≥ 13 or more for women, ≥ 15 or more for men.

Conclusion

This study demonstrated that men are more vulnerable to AUDs and need special services to address the problem. The high prevalence of AUDs detected in our study highlights the need to integrate routine alcohol screening, AUD treatment and rehabilitation as part of HIV/AIDS intervention practices to better address alcohol use disorders in patients attending HIV/AIDS comprehensive care.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.02 Paediatrics - Cerebral Palsy and Spina Bifida

ISPR8-2495

THE PREVALENCE OF ACTIVE CONVULSIVE EPILEPSY IN CHILDREN IN KILIFI, KENYA

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Introduction/Background

Epilepsy is a common neurological disorder affecting 50 million people globally, 80% of them living in resource poor countries. Children below 15 years account for 25% of those affected and 40% of new epilepsy cases annually. The incidence of epilepsy is 3 times higher in first year of life compared to mid-adulthood. Median prevalence of epilepsy in Africa is 15/1000, 2-3 times more than in the Western countries. In Kenya the prevalence is 4-18.211000 in older children and adults. Active convulsive epilepsy (ACE) is defined as having two unprovoked seizures in a lifetime, with at least one in the last year.

Material and Method

In Kenya the prevalence is 4-18.211000 in older children and adults. Active convulsive epilepsy (ACE) is defined as having two unprovoked seizures in a lifetime, with at least one in the last year. To determine the prevalence of active convulsive epilepsy (ACE) in children in Kilifi and to determine the treatment gap in children with ACE. Study setting: Kilifi, a rural district in the coastal area of Kenya.

Results

Study subjects: Children aged 4 months to 13 years residing in the study area. Methods: A cross-sectional survey was conducted in a demarcated area of Kilifi District with a total population of 260,000, using a questionnaire to identify children with history of seizures. A second team of fieldworkers administered a more detailed questionnaire to those selected in Stage one to identify children with epilepsy, and referred them for clinical evaluation at the neurological assessment centre at the Kilifi District hospital.

Conclusion

The treatment gap among those diagnosed to have ACE was 78.5%. : The prevalence of ACE among children in Kilifi is 211 000. Although there is a significant reduction in seizures among those using the MOR recommended treatment, majority of children with ACE are not on appropriate treatment.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.03 Paediatrics - Traumatic Brain Injury in Children

ISPR8-0442

FREQUENCIES OF OCCURRENCES OF VIOLENCE PRIOR TO A DIAGNOSIS OF SHAKING

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Introduction/Background

The SBS constitutes one of the most severe paediatric head traumas.

Objective: when an SBS diagnosis is confirmed, take up a survey of how many children showed previous signs suggesting violence.

Material and Method

The study spanned over 50 legal cases on child abuse from 2011 to 2015.

For each case, from all medical and legal information, we established if there were previous signs of violence, which they were and when they appeared.

Results

The average age at the date of diagnosis was 5 months.

Signs of previous violence were found among 80% of children; 42.5% had been admitted to emergency services and 67.5% had been examined by a General Practitioner or a paediatrician when signs could already been noticed.

The signs were: unusual vomiting without fever or diarrhoea in 64% of cases (isolated in ¼ of cases), a break in the growth chart of head circumference (45%) or in the growth chart of weight (25%), bruises (34%), an occurrence of faintness (17%).

The mean age of these signs related to the occurrence of the episode leading to the diagnosis was 30 days (SD 32 days; median line 20 days) It was of at least 45 days in 25% of cases.

Conclusion

these results are evocative of a very frequent reiteration of violence; it is not in this case “a clap of thunder in a calm sky”. They also show the great difficulty most professionals run into when they want to speak of violence and set its diagnosis, above all when the signs are not obvious. Yet the earliest possible detection of the first signs of violence is the best to prevent reiteration and to protect the child. Lack of knowledge in this field may be an explanation and is detrimental to children. Better training for everyone is the key.

Keywords

prevention;shaken baby syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.03 Paediatrics - Traumatic Brain Injury in Children

ISPR8-2298

EARLY AUTOLOGOUS BONE FLAP CRANIOPLASTY FOLLOWING DECOMPRESSIVE CRANIECTOMY IN RECOVERY TREATMENT OF CHILDREN WITH SEVERE TBI .

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Introduction/Background

DC is one of the options in the staged therapy of refractory intracranial hypertension. A significant drawback of this technique is the formation of a complicated complex of pathophysiological disorders which develops due to an extended defect in the calvarium (disorders of brain perfusion, venous outflow, CSF-circulation, etc.).

Aim: assess the effectiveness of early calvarium reconstruction with cryopreserved bone in children after decompressive craniotomy.

Material and Method

51 patients had cranioplasty with cryopreserved bone after decompressive craniotomy during 2005-2016.

The autobone was stored in the freezer at the temperature – 40C. Before and after the surgery patients had CT-perfusion and MRI examination.

Results

In 70% of cases cranioplasty was made during the first two months.

In 30% of followed cases the restoration of skull integrity took place up to 65 days.

Late cranioplasty was caused by trophic disorders in soft tissues as well as by intracranial and extracranial infective–inflammatory complications. After the defect closure one could see restored brain perfusion, venous outflow.

At the early postoperative period the auto transplant infectioning was seen in 5,5%.

More than 75 % of patients had clinical improvement, and 30% improved their outcome.

The follow-up period lasted from 3 months until 10 years.

Complete bone resorption was registered in one patient.

Conclusion

Early closure defects of the calvarium should be regarded as a surgical intervention which provides maximally possible conditions for the early restoration of cerebral functions. Despite the higher risk of infection and resorption of the autobone remains the effective material for early cranioplasty in children

Keywords

children;severe TBI

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.03 Paediatrics - Traumatic Brain Injury in Children

ISPR8-2334

DYNAMIC OF MENTAL RECOVERY IN CHILDREN AFTER SEVERE TRAUMATIC BRAIN INJURY WITH MEDICAL TREATMENT BY SELECTIVE SEROTONIN REUPTAKE INHIBITORS.

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Introduction/Background

The neurotransmitters involved in the process of recovery of consciousness after TBI. In this regard, the use of selective serotonin reuptake inhibitors (SSRIs) for the treatment after brain injury is possible. Data on the use of antidepressants in the treatment of traumatic brain injury are contradictory; children are not studied enough.

Aim: To investigate the efficacy of SSRIs (Sertraline) in the mental recovery in the early period of the neurorehabilitation after TBI in children.

Material and Method

40 children (5-18 years) with severe TBI (GCS≤ 8). All children had interdisciplinary approach and standard medications in early rehabilitation. Group 1 (23 children) - in the early period additionally administered sertraline. Group 2 (17 children) - without sertraline. Methods: psychiatric and neurological; data of neuropsychological, radiological and scales.

Results

Group 1: a vegetative state (VS) - 4 (children), minimal consciousness (MC) “-“ - 6, minimal consciousness (MC) «+» - 7, amnestic confusion - 3, cognitive and emotional deficits - 3. Sertraline administered 12.5 mg/day in the morning, with increasing dose over 3 days to 25-50 mg/day. Duration of reception - an average of 3-4 months. Group 2: a VS - 4 (children), MC«-» - 5, MC«+» - 3, amnestic confusion - 3, cognitive and emotional deficits - 2.

In 3 months mental recovery to a stage of emotional and cognitive deficits was in 48% of children with sTBI during treatment with Sertraline, compared with 35% in the control group. Positive dynamics was diagnosed by neuropsychological scales.

Conclusion

Selective serotonin reuptake inhibitors have a positive effect on recovery from traumatic brain injury in children. SSRIs (Sertraline) improves mental functions - to increases the motor activity and emotional activity, motivation, cognitive functions. Early rehabilitation after severe traumatic brain injury becomes more effective in children with medical treatment by selective serotonin reuptake inhibitors.

Keywords

children;severe traumatic brain injury ;medical treatment by selective serotonin reuptake inhibitors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-2538

THE IMPORTANCE OF PRM IN PEDIATRIC CHRONIC PAIN: THE EXPERIENCE OF THE FIRST MULTIDISCIPLINARY CONSULTATION IN PORTUGAL

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Introduction/Background

Pediatric chronic pain (PCP) treatment has improved recently, largely because of the recognition that pain is a complex experience resulting from the interaction of biological, cognitive, emotional, behavioral and social factors. There is a consensus that the treatment of PCP requires a multidisciplinary approach, however, programs are very variable between centers, and there are no standard structure or protocols, mainly in what refers to rehabilitation.

The aim of this study was to show the results obtained after the first year of activity of our multidisciplinary consultation and the importance of the presence of a physiatrist and rehabilitation intervention.

Material and Method

All the clinical processes were consulted, and clinical data were collected.

Results

The consultation occurs weakly with the presence of different medical specialities (pediatrics, neurology, psychiatry, physiatry, psychology).

During the last year, 26 children (9 male; 17 female) were observed, with a mean age of 13.6 years and mean clinical evolution time until the first consultation of 19.66 months.

There was clinical improvement in 80,76% of cases. In 71,428%, a rehab program was established with good results, mainly in what refers to pain control, function and participation.

It is interesting to observe that all patients had a past of exhausting studies, polimedication, lack of exercise and that in a few months of rehab program (with hospital, home based and school intervention), we were able to reduce pain, medication, improve function, behavior and social integration. With the results of this pilot study we were also able to identify the points that need to be improved, like the application of functionality scales besides the pain ones.

Conclusion

No single formula can be applied to all hospitals, as well as health care systems vary from country to country, however the results of this study may be useful for those planning to develop a multidisciplinary pain program with focus on rehabilitation.

Keywords

Pediatric Chronic pain;Multidisciplinary;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0083

THE CORRELATION AND PREDICTOR FOR THE LENGTH OF PHYSICAL THERAPY IN INFANTS WITH CONGENITAL MUSCULAR TORTICOLLIS

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Introduction/Background

Congenital muscular torticollis(CMT) is the most common musculoskeletal disorder in infancy. The ultrasonography is widely used to evaluate infants with CMT because of the low cost, greater patient comfort and does not expose patients to radiation. Physical therapy (PT) including stretching exercise is the first line therapy. The aim of this study is to find the factors including ultrasonographic results which could affect the length of PT.

Material and Method

We performed a retrospective analysis of 76 CMT infants who were referred for ultrasonographic investigation and PT program between January 2014 and May 2017.

Results

Type	N(%)	Age(d/o)	Difference(mm)	Ratio	Rotation	Side bending
Pseudo tumor	48(63)	37.1*	5.65*	2.11*	46.67*	38.49*
Hypertrophy	7(9)	103.1*&	2.47*&	1.51*	55	50
Fibrosis	2(3)	163.5	1.45	1.27		
Posture	19(25)	135.5*&	0.34*&	1.06*	69.33*	52*

*:pseudo tumor group compared with posture & hypertrophy group; &:hypertrophy group compared with postural group

76 infants who had received ultrasonographic study were enrolled. The mean age was 71.1 days old, 47(64.5%) patients were boys. The infants were separated to four groups by ultrasonographic results (Table 1). The age, difference and ratio of bilateral SCM thickness, and side bending of neck were significantly different in pseudo tumor group compared with hypertrophy and postural groups. After therapy, forty three infants reached full range of motion, 2 infants received surgery, 4 children were diagnosed with developmental delay. The PT duration is 152±97 days, and most infants received PT 2 times/week. The ratio and depth difference of bilateral SCM, neck rotation and side-bending were significantly improved after PT. The duration of PT was found to be correlated with age when referred ($p=0.011$), thickness difference of bilateral SCM ($p=0.034$) and initial neck rotation ($p=0.004$). In linear regression, the initial neck rotation was the most strong predictive factor for duration of PT.

Conclusion

The muscular torticollis could be almost completely treated by traditional PT. The more limitation in neck rotation needs longer duration of PT to treat.

Keywords

torticollis;ultrasonography;physical therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-2624

POSSIBILITIES OF IMMEDIATE ENCOURAGEMENT OF SPINE DEFORMATION THERAPY THROUGH RASTERSTEREOGRAPHIC EVALUATION

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Introduction/Background

The efficiency of the spine distortions treatment from the growth period is often difficult to measure, because the radiography highlights only the changes in skeletal order. The treatment is overall reported at long periods of time, regarding explosive anthropometric changes during the time of the growth period which makes the interest for continuing the therapy to decrease.

Rasterstereography offers an immediate feedback, through the reproduction of the back form, as a result of the deformation of parallel lightened lines designed on the body's surface after a certain algorithm, assigning this way convex and concave graphic areas which could highlight the changes of aesthetic order with immediate visualisations on the screen.

Material and Method

The study included 35 children during 10 days of therapy, 2 sessions/day, with ages between 9-15 years, diagnosed with spine deformation.

Rasterstereography has been done at the beginning and at the end of therapeutic cure, aiming to emphasize/alleviate the relief of predominant/depressed areas (respectively convex/concave), on the back's surface.

Subsequent, the patients had completed a questionnaire of motivation's evaluation, in order to continue the therapy.

Results

At the rasterstereographic re-evaluation of 26 patients, there were registered changes of intensity and expansion of concave - respectively convex areas - in the sense of improving the aesthetic appearance of the trunk, 9 patients – stationary aspect.

The possibility of viewing the results has registered the motivation's growth for proceeding the therapy of 23 of the patients, 7 patients have recorded only the tendency of the motivation's growth, 5 patients have recorded the lack of the effect upon their motivation.

Conclusion

Rasterstereography is a method of immediate appraisal with appliances which could highlight with succes the changes in aesthetic order after therapy, changes hardly to be remarked radiologically, and also in order to maintain the motivation of continuing therapy, due to easy graphic mode of viewing.

Keywords

rasterstereography;therapy;motivation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0113

LOWER EXTREMITY JOINT CONTRACTURES IN PATIENTS WITH DUCHENNE MUSCULAR DYSTROPHY TAKING CORTICOSTEROIDS

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Background and aims: This study investigated the profile of hip, knee, and ankle joint contractures based on ambulatory status in patients with Duchenne muscular dystrophy (DMD). The difference in major joint contractures depending on intervention, including passive stretching exercises and assisted standing using standing frames, in ambulatory and non-ambulatory groups were also evaluated.

Methods: A cross-sectional study was conducted in 128 boys with DMD treated with corticosteroid therapy. Passive range of motion of the hip, knee, and ankle joints were measured using a goniometer and the Vignos scale was used to grade ambulatory function. Those who underwent more than three sessions of interventions a week were categorized as the stretching group or passive standing frame users.

Results: Hip flexion (HF), knee flexion (KF), and ankle plantarflexion (APF) contractures were more common and severe with deterioration of ambulatory function. APF contractures were observed more frequently early even during the ambulatory period. Passive stretching exercises more than three sessions a week were not associated with the degree of lower extremity joint contractures in the ambulatory or non-ambulatory group. However, assisted standing via standing frames was associated with lower degree of the HF, KF, and APF contractures in the non-ambulatory group.

Conclusions: We showed the lower extremity joint contracture status in patients with DMD who are taking corticosteroid based on ambulatory function. APF contractures were observed more frequently, even early in the ambulatory period. Assisted standing using standing frames was associated with a lower degree of HF, KF, and APF contracture angle in the non-ambulatory group.

Keywords

Duchenne muscular dystrophy;Corticosteroid;Stretching

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-2653

INTEREST OF NEEDLE ELECTROMYOGRAPHY IN THE EXPLORATION OF NEUROLOGICAL WALKING DISORDERS

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Introduction/Background

Gait and balance disorders are a frequent complaint in neurology, especially in the elderly, and can even be the cause of a real public health problem.

The objectives of this study are :

To study the neuromuscular lesions revealed by adults gait disorders and to highlight the role of needle electromyography (EMG) in the exploration of these disorders.

Material and Method

This is a retrospective study during three years [2015-2017] and collecting 11 adults complaining of gait disorders and explored in the service of functional explorations at the Habib Bourguiba University Hospital.

A collection of health problems and a neurological examination were carried out with evaluation of the sensory, motor and sensory nerve conduction, and concentric needle muscle detection.

Results

The mean age of the patients was 63 ± 13.1 years [40-91], with the participation of 10 men and one woman. The most common walking disorder was steppage, with mostly bilateral involvement. Four patients were diabetic and two hypertensive. Clinical examination revealed abolished osteotendinous reflexes in 4 cases and weak in 2 cases, muscle amyotrophy in 2 cases, sensory and motor disorders in 5 cases. The EMG examination found axonal sensory impairment in 4 patients and demyelinating in 1 patient. Motor impairment, whether axonal or demyelinating, was noted in most cases. A neurogenic pattern was found in most cases during needle detection. The most common diagnosis was lumbar radicular pain (7 patients), severe sensory-motor axonal neuropathy was retained in only one case.

Conclusion

Gait disorders present an atypical presentation of radiculopathy, and EMG needle detection has high specificity and sensitivity in exploring radiculopathy. That's why EMG needle detection is important in exploring gait disorders.

Keywords

gait disorders;needle electromyography;lumbar radiculopathy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0170

THE INVOLVEMENT OF MUSCULOSKELETAL SYSTEM AND ITS INFLUENCE ON POSTURAL STABILITY IN CHILDREN AND YOUNG ADULTS WITH CYSTIC FIBROSIS

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Introduction/Background

Cystic fibrosis (CF) affects the musculoskeletal system via a multifactorial pathway that includes vitamin D deficiency and involvement of respiratory muscles such as intercostals due to recurrent upper and lower respiratory tract infections. Eventual result is the deterioration of musculoskeletal health and posture in CF patients. Postural stability is directly affected by posture and can be compromised in every musculoskeletal problem. The aim of this study is to evaluate musculoskeletal system and postural stability in patients with CF.

Material and Method

Patients with CF over six years of age and age and sex-matched control groups were included in the study. Cobb angle and thoracic kyphosis angles were measured on the spine radiographs. Both patients and control group were examined with pediatric gait, arms, legs and spine scale (pGALS). They also were evaluated with a NeuroCom Balance Master for their postural stability.

Results

Fifty-one patients with CF and 94 healthy controls participated in the study. In results of the pGALS examination, CF group had significantly more pathological findings than the control group in lower extremity appearance and movement ($p = 0.006$ and $p = 0.01$) and spine appearance and movement ($p = 0.001$ and $p = 0.022$) domains. The tandem walking speed was significantly higher in controls with a mean of 24.45 ± 7.79 while it was 20.47 ± 6.95 in the CF group ($p = 0.03$). Various limits of stability parameters also showed significant differences. Medium correlations were found between musculoskeletal examination and postural stability parameters.

Conclusion

In patients with CF, a systematic but simple musculoskeletal examination can detect pathologies, which are more frequent than the normal population. These pathologies show a medium correlation with the involvement of postural stability.

Keywords

cystic fibrosis;posture;postural stability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0175

THE EFFECTS OF A POSTURAL EXERCISE PROGRAM ADDED TO CONVENTIONAL PULMONARY REHABILITATION IN PATIENTS WITH CYSTIC FIBROSIS

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Introduction/Background

The objective of this study is to investigate the effect of postural exercises addition to pulmonary rehabilitation in children with cystic fibrosis (CF) on pain, exercise tolerance, respiratory function, quality of life, balance and spinal deformities.

Material and Method

Patients diagnosed with CF between the ages of 6 and 14 were included in the study. They were randomised into two groups. The first group received pulmonary rehabilitation and posture exercises once a week for six weeks while the second group received only pulmonary rehabilitation. Both groups were followed by phone calls weekly for six months. Patients were evaluated for respiratory function with FEV1, pain level with VAS, exercise tolerance with Modified Shuttle Test (MST), postural stability with Limits of Stability Test (SLT), and Cystic Fibrosis Questionnaire- Revised Application (CFQR). Cobb and Modified Cobb angles were measured for spinal deformities. The assessments were made before the treatment, at the sixth week, the third month and the sixth month after the treatment.

Results

Nineteen patients (%36,8 female, %63,3 male) with the mean age $9,37 \pm 2,17$ and mean body mass index (VKI) $16,16 \pm 2,36$ included into the study. 10 of them were involved to pulmonary rehabilitation and exercise group. Age, VKI, gender and baseline assessment parameters were similar in both groups ($p > 0,05$). FEV1 and MST were increased in both groups after treatment; while emotional state ($p = 0,012$) and treatment burden ($p = 0,041$) subgroups of CFQR were increased only in the group with postural exercises. VAS, SLT, Cobb and modified Cobb inter-group and intra-group values were not shown any difference by treatment ($p > 0,05$).

Conclusion

It has been observed that adding postural exercises to pulmonary rehabilitation in pediatric CF patients whose postural changes have not yet taken place does not cause significant changes in pain, exercise tolerance, posture and balance; however, it affected the emotional state well and improved the compliance with the treatment.

Keywords

cystic fibrosis;posture;pulmonary rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0191

THE RELATIONSHIPS BETWEEN GENOTYPES, MYOPATHOLOGICAL CHANGES AND PHENOTYPES OF DYSTROPHINOPATHY

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Introduction/Background

According to the variable clinical manifestations, the phenotypes of dystrophinopathy were classified as Duchenne muscular dystrophy (DMD) and Becker muscular dystrophy (BMD). The aim of this study was to summarize the characteristics of genotypes and the expression of dystrophin in patients with dystrophinopathy, to investigate the relationships between them and phenotypes.

Material and Method

204 male patients with dystrophinopathy who presented to the Peking University First Hospital between August 2013 and August 2017 were enrolled. Their diagnosis were confirmed by gene tests, and the out-of-frame mutations were analyzed by means of the Leiden Dystrophin genetic database. Muscle biopsies were performed in 78 patients, and the levels of expression of dystrophin were assigned by a 0-5 scale. All the values were calculated and processed using the SPSS 17.0 statistical package. Descriptive statistics were carried out when appropriate. The rank sum test was used to make difference analysis of the expression of dystrophin between DMD and BMD. $P < 0.05$ means statistically significant.

Results

In all the patients, 181 were DMD and 23 were BMD. Genetic analysis revealed that 162 (79.4%) were deletions, 23 (11.3%) were duplications and 19 (9.3%) were small mutations. Among the 185 deletion/duplication mutations, 89.1% patients were in coincidence with the reading-frame hypothesis. With immunohistochemical staining, the median scores of the expression of dystrophin-N, R and C were 0, 2 and 1 respectively in DMD, while they were 3, 4 and 4 respectively in BMD. The difference of the scores between DMD and BMD is statistically significant, with N ($P=0.010$), R ($P=0.031$), C ($P=0.000$) and the total scores ($P=0.001$) respectively.

Conclusion

The genotypes overlapped between different phenotypes of dystrophinopathy. There were significant differences between the expressions of dystrophin of DMD and BMD. These findings may be beneficial for the selection of therapeutic regimens and rehabilitation therapy of patients with dystrophinopathy.

Keywords

dystrophinopathy;phenotypes;genotypes and myopathological changes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0232

EFFECT OF LATERAL SINGLE BAR KNEE ORTHOSES IN CORRECTION OF GENU VARUM IN NUTRITIONAL RICKETS

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Introduction/Background

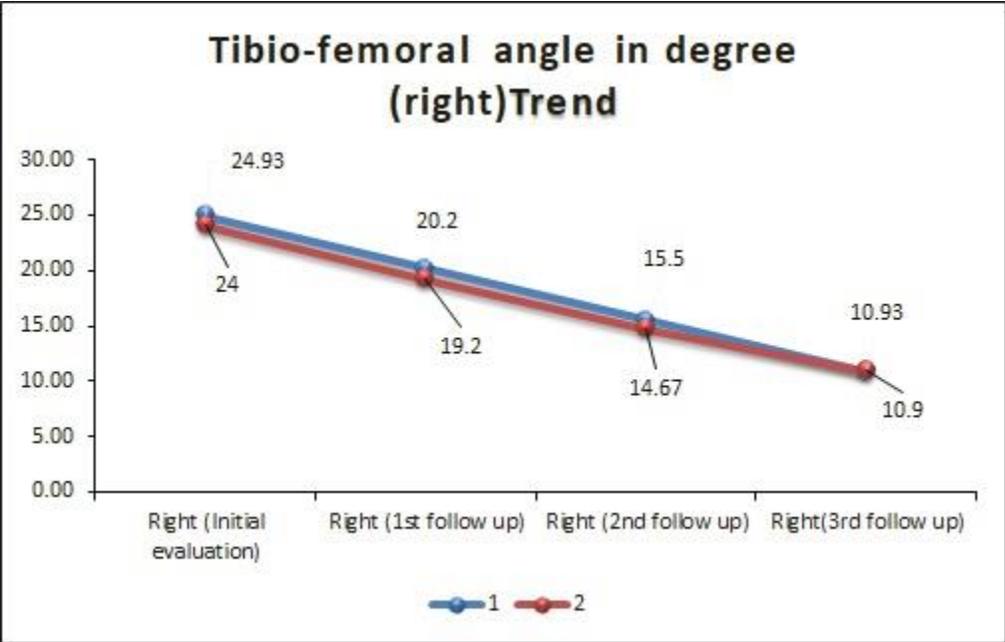
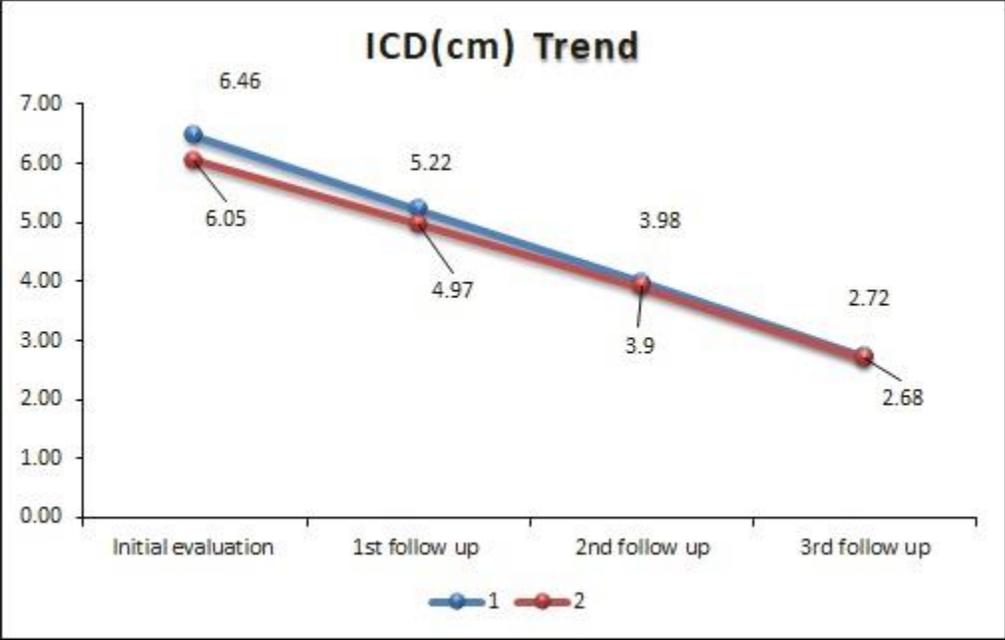
Genu varum (bowlegs) is a common paediatric deformity of knee presenting as physiological variation in growth pattern. Rickets leads to more pathological bowing if occurs during the phase of physiological bowing. Apart from vitamin D restoration orthotic management doesn't form a part of standard treatment protocol for deformities due to rickets.

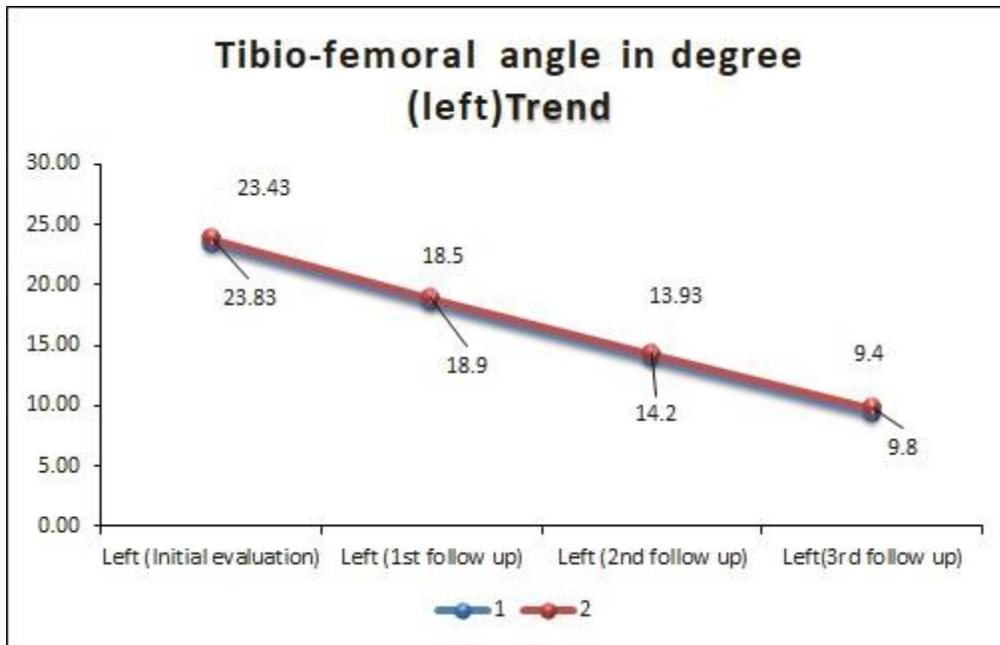
Material and Method

It is a prospective & interventional randomised comparative study conducted at department of Physical Medicine & Rehabilitation at A.I.I.P.M.R. Mumbai. Patients presenting with clinical features of rickets with bilateral genu varum were screened. 60 participants were enrolled in the study based on inclusion & exclusion criteria and divided into 2 groups (30 each) by lottery system. Group 1 received Stoss therapy for vitamin D restoration & bilateral lateral single bar knee orthosis. Group 2 received Stoss therapy only. Participants were assessed at initial visit and 2nd, 4th & 6th month after initiation of treatment with biochemical parameters, intercondylar distance (ICD) & radiographic tibio-femoral angle.

Results

Statistically significant decrease observed in intercondylar distance & tibio-femoral angle in both groups in subsequent follow ups.





Percentage change in intercondylar distance (58.75 vs 56.59, $p=0.457$) & tibio-femoral angle (right 56.74 vs 55.49, $p=0.599$; left 60.7 vs 59.38, $p= 0.666$) at the end of 3rd follow up on comparing both groups was statistically insignificant.

Conclusion

Vitamin D restoration by Stoss therapy can be effectively used in treatment of genu varum in nutritional rickets with or without lateral single bar knee orthoses.

Keywords

Genu Varum;Stoss therapy;Lateral single bar knee orthosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0324

THE ROLE OF HABILITATION IN INFANTS WITH CONGENITAL BRACHIAL PALSY

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Introduction/Background

Background: Congenital brachial palsy (CBP) can have long-term consequences such as deformities, contractures, and growth imbalance that can lead to severe handicap. Aim: to determine the effectiveness of habilitation in infants with CBP.

Material and Method

Retrospective clinical study included 34 infants who were habilitated in the Clinic of Physical and Rehabilitation Medicine during the period from 2000 to 2017. The protocol consisted of passive and active assisted range of motion exercises for affected arm, neurodevelopmental treatment, warm packs, and electrotherapy starting from the III week of life. 20 sessions were conducted at the Clinic, and parents were educated with handling and home exercise program. The infants were re-evaluated each month during the first year of life. The modification of the Medical Research Council scale was used to assess muscle strength (grades 0-3). At 6 and 12 months of age, the outcome was defined as full recovery (grade 3 of affected muscles) and partial recovery (grades 1-2).

Results

Male sex predominated (56%). The right arm was more commonly affected (64.7%). Birth weight was over 4000g in 22 infants (64.7%). The mode of delivery was spontaneous in 70.6%, assisted in 20.6% and breech in 5.9%. 59% of infants were in Narakas group I, 26.5% in group II and 14.7% in group III. Associated injuries were noted in 10 infants: 7 clavicular and 1 humeral fracture, 2 cases with myogenic torticollis and 1 with cephalhaematoma. The habilitation started in the first month of life in 64.7% of infants. At 6 months of age, there were 33 cases with partial recovery. At 12 months of age, full recovery was noted in 19 children (56%) and partial in 15.

Conclusion

Early habilitation program is effective in infants with CBP.

Keywords

brachial palsy;habilitation

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0362

EFFECT OF EVERYDAY PHYSICAL ACTIVITY ON BONE MINERAL DENSITY IN THE ADOLESCENT GROWTH PHASE

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Introduction/Background

We investigated the effect of different daily physical activity levels (PAL) on bone health in the adolescent growth phase to obtain data on healthy bone formation.

Material and Method

The subjects were healthy young teenagers, who had consented to take part in the study, as had their parents or guardians. Their osteo-sono assessment index (OSI) was measured with an AOS-100SA, and subjects were divided into three groups (High / Middle / Low). The HJA-750C and activity meter data collection software installer Ver2.0 were used for the measurement of PAL. PAL was measured over the period of 1 week. Then, the intensity levels (in METs) were rated on a scale from PAL-1 (1 METs), to PAL-8 (8 METs), and the execution time per intensity level was calculated. Differences between these groups were investigated using analysis of covariance, with $p < 0.05$ regarded as statistically significant.

Results

OSI ranged from 2.004 to 3.039, and Z-scores were between 83–124%. There were no differences between the three groups in PAL at all levels from PAL1 to PAL8.

Conclusion

The level of everyday physical activity during the adolescent growth phase may have only a limited effect on bone development. Our results suggest that nutrition, growth hormones, and other factors directly associated with physical growth may have a greater effect on bone health than the external load on the bones during the adolescent growth phase.

Keywords

Bone Mineral Density;Physical Activity;Adolescent Growth phase

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0363

EFFECT OF BODY COMPOSITION AND PHYSICAL FITNESS ON RESPIRATORY FUNCTION DURING THE ADOLESCENT GROWTH PHASE

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Introduction/Background

We investigated the effect of body composition and stamina on respiratory function, during the adolescent growth phase, with the aim of obtaining data needed to enhance or improve children's health.

Material and Method

The subjects were healthy young teenage boys and girls, who had consented to take part in the study, as had their parents or guardians. The correlation between respiratory function, body composition, and physical fitness was calculated, with $p < 0.05$ regarded as statistically significant.

Results

Vital capacity was significantly correlated with muscle mass ($r = .759$), height ($r = .713$), leg muscle mass ($r = .710$), trunk muscle mass ($r = .710$), and weight ($r = .567$) ($p < 0.001$, in each). Forced vital capacity was significantly correlated with height ($r = .645$), muscle mass and leg muscle mass ($r = .599$), trunk muscle mass ($r = .519$), and weight ($r = .473$). In terms of the relationship between physical fitness and respiratory function, grip strength was significantly correlated with vital capacity ($r = .402$) and forced vital capacity ($r = .352$) ($p < 0.001$, in each). However, there were no significant correlations between FEV1 and body composition or physical fitness.

Conclusion

Our results showed that body composition, particularly leg muscle mass, has a greater effect on respiratory function during the adolescent growth phase than does physical fitness. Rather than increasing specific muscle strength, whole-body physical activity, associated with increased leg muscle mass, is required to improve respiratory function in adolescence.

Keywords

Body Composition;Respiratory Function;Adolescent Growth Phase

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0416

DIAGNOSIS, FOLLOW-UP AND MANAGEMENT OF SLEEP DISORDERED BREATHING IN CHILDREN WITH OSTEOGENESIS IMPERFECTA

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Introduction/Background

Osteogenesis imperfecta (OI) is the most common genetic skeletal disorder. Extra skeletal findings are common but association with sleep disordered breathing (SDB) have never been described. The aim of this study was to investigate clinical features of children with OI and suspicion of SDB.

Material and Method

A retrospective study of patient's clinical records, signs of SDB and polysomnographic recordings was performed. We paid particular attention to symptoms which could be associated with SDB in this population; scoliosis, kyphosis, vertebral arthrodesis, chest wall deformities, basilar impression, autonomy; and data already known to be associated with obstructive sleep apnea such as body mass index and upper airway impairment.

Results

We reviewed the clinical charts of 188 patients referred to our genetic skeletal disorders reference center for OI. Among the 15 patients (8%) with polysomnographic recording, 12 (6.4%) had sleep disorder breathing. We found a negative correlation between Brief Assessment of Motor Function (BAMF) and Apnea Hypopnea Index (AHI) ($r = - 0.68$; $p=0.01$) and Desaturation Index ($r = - 0.62$; $p=0.02$). AHI tended to be higher in non-walkers (6.5 ± 3.6 versus 2.4 ± 1.5 ; $p=0.02$), and in type III OI compared to type IV. Two patients were started on continuous positive airway pressure ventilation with clinical improvement.

Conclusion

For OI children, symptoms suggestive of obstructive sleep disorders should be searched for systematically, especially when autonomy is compromised, body mass index is high, trunk deformations are identified, and in case of severe type of OI.

Keywords

Osteogenesis imperfecta; Sleep disorder breathing; Predictive factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0443

EFFECT OF KINESIO TAPING ON LOWER LIMB MUSCLE ACTIVATION PATTERNS DURING WALKING IN CHILDREN: A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Kinesio Tape (KT) claims to have the effect of facilitating muscle activations. Immature gait pattern and neuromuscular control in children might be facilitated by KT but no study has proven it so far. This randomized controlled study aimed to investigate the effects of KT on leg muscle activations in children during treadmill walking.

Material and Method

A total of 48 children participated in the study. Twenty-five of them were randomized to the KT group (mean age \pm SD = 7.86 \pm 0.78 years; 16 males and 9 females) and 23 to the control group (mean age \pm SD = 8.29 \pm 1.25 years; 13 males and 10 females). KT was applied with moderate tension (50%) to the gastrocnemius and quadriceps muscles for the KT group. The control group did not receive any KT. Rectus femoris, biceps femoris, tibialis anterior and gastrocnemius medialis peak muscle activations (dominant leg) were measured by surface electromyography, an electrogoniometer attached to the knee joint and foot contact switches before and after the application of KT.

Results

Two-way repeated measures analysis of covariance (covariate: body mass index) revealed a significant group-by-time interaction effect in the peak muscle activation of biceps femoris ($p=0.005$) and gastrocnemius medialis ($p<0.001$) during the mid-stance phase of gait. Post hoc analyses indicated that biceps femoris and gastrocnemius medialis muscle peak activations in the KT group had 51.64% ($p=0.025$) and 122.18% ($p<0.001$) increments, respectively, when compared to the baseline values. When compared with the control group, the KT group exhibited higher peak activations for biceps femoris (94.26%, $p=0.013$) and gastrocnemius medialis (140.52%, $p<0.001$) at post-test.

Conclusion

The application of KT improved peak muscle activations in the leg during walking in growing children. Therefore, KT may be useful to speed up the maturation of gait and neuromuscular control in the legs among children.

Keywords

kinesio tape;gait;kinetics

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0768

TRANSIENT HYPERTROPHIC SYNOVIUM AFTER RADIOSYNOVIORTHESIS IN HEMOPHILIC ANKLE ARTHROPATHY: A CASE REPORT

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Introduction/Background

Individuals with hemophilia A presents defects in coagulant factor VIII and spontaneous intra-articular hemorrhages, mainly in the ankles, knees, and elbows. Radionuclide synoviorthesis can be used to treat chronic hemophilic synovitis. Both magnetic resonance imaging (MRI) and ultrasound can provide detailed information on soft tissues for evaluating chronic synovitis. However, MRI is not cost-effective, limited to joint per time, and requires sedation when used in young children. The use of ultrasound results in acquisition of real-time images and development of portable techniques, retaining high-resolution for soft tissues, effusion, and osteochondral changes. Currently, no or several studies reported using ultrasonography during serial follow-up for the response during post-radiosynoviorthesis. We report the serial changes in radionuclide reaction on ankle synovium by ultrasonography.

Material and Method

This case involves a 21-year-old hemophilic A patient whose both ankles experience hemophilic arthropathy resulting from repeatedly joint hemorrhage. After applying radionuclide synoviorthesis to both ankles at age 17, we use the Haemophilia Early Arthropathy Detection with Ultrasound for serial evaluation of the status of both ankles.

Results

Observations included hypertrophy of synovium in the first three days accompanied by shrinkage of the synovium after radionuclide synoviorthesis and the range of motion and pain scale.

Conclusion

After radiosynoviorthesis, hypertrophy of synovium was observed within 1 week and accompanied by gradual reduction in thickness in months. Further series of ultrasonography evaluation is needed to clarify the radiosynoviorthesis effects on synovium.

Keywords

hemophilia;radiosynoviorthesis;ultrasound

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-0788

HAND FUNCTION IN PATIENTS WITH PRADER-WILLI SYNDROME

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Introduction/Background

Background and aims. Prader-Willi syndrome (PWS) is a complex neurogenetic disorder associated with a wide variety of physical, cognitive, and behavioral problems. Due to abnormal body composition and certain neuromuscular abnormalities, many motor problems such as hypotonia, muscle weakness, delayed motor development and gait disorders have been reported, but little attention has been paid to hand functions in patients with PWS. Therefore, the aim of this study was to examine the functional hand performance of patients with PWS.

Material and Method

Methods. Six patients with PWS (two females and four males; mean age was 26.14 years, range 20-32 years; body mass index 20.7-38.4 kg/m²) were recruited for the study to undertake the following hand functional tests: (1) hand grip, tip pinch, and lateral pinch tests for hand strength, (2) Box and Block test for gross manual dexterity, and (3) Purdue Pegboard test for finger dexterity.

Results

Results. Every patient with PWS showed lower hand grip, tip pinch, and lateral pinch strength by scoring well below the normal range of normative data for healthy adults. Poor manual and finger dexterity performance were also found in all our patients with PWS. When compared to the normative data, their scores approached the data of the elderly population.

Conclusion

Conclusions. All patients with PWS showed decreased hand strength and poor manual/ finger dexterity compared to healthy adults. As hand grip strength is associated with functional limitations and manual dexterity is required for executing activities of daily living, the inclusion of both hand strength and dexterity training in the physical training programs for patients with PWS should be considered.

Keywords

Prader-Willi Syndrome; Hand Function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1013

BOTULINUM TOXINE INJECTIONS IN THE MANAGEMENT OF OBSTETRICAL BRACHIAL PLEXUS PALSY

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Introduction/Background

Electrical stimulation, physical therapy and occupational therapy are the main treatments for obstetrical brachial plexus palsy before resorting to surgery. But these therapies remain insufficient when it comes to management of muscles co-contractions. The aim of this study is to evaluate the efficiency of Botulinum toxin injections in the management of co-contractions in children with obstetrical brachial plexus palsy.

Material and Method

Children with obstetrical brachial plexus palsy were enrolled in this study. ENMG was used to highlight muscle co-contractions. Intramuscular injections of Abobotulinum toxin were made with a total dose of five to 10 UI per kg and a maximal dose of 150 units per muscle. Children who had biceps - triceps co-contractions were injected in the triceps and those with deltoid - teres major co-contractions were injected in the teres major. A clinical evaluation including shoulder and elbow active and passive range of motion was conducted before the injection and one month after.

Results

This study included six children. Their mean age was 61 month (from three to 108 months). Four children had complete brachial plexus lesion including one with a Bernard - Horner syndrome. All children were injected in the teres major and three were injected in the triceps. A mean gain of 16.6° in shoulder abduction and flexion and of 37.8° in elbow flexion was noted.

Conclusion

The addition of botulinum toxin injection targeting muscle co-contractions to a continuous physiotherapy can help to better manage obstetrical brachial plexus palsy.

Keywords

botulinum toxin injection ;co-contractions;obstetrical brachial plexus palsy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1053

LOW BONE STRENGTH IN CHILDREN WITH DEVELOPMENTAL DELAY

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Introduction/Background

Children with developmental delay used to be affected by mixed factors, leading to growth problems, especially for motor function. Thus, the skeletal development of these children will also be affected by the lack of stimulation and weight-bearing of the bones. However, there are few studies on the bone health for children with developmental delay measuring by the non-invasive quantitative ultrasound. The aim of our study was to investigate the bone strength of children with developmental delay by QUS measurements.

Material and Method

Subjects were 100 children with developmental delay as developmental delay group (DD group), among whom 65 were boys, and 35 were girls with mean age 54 ± 12.3 months. Controls were 50 healthy children from a normal kindergarten as control group, among whom 28 were boys, 22 were girls with mean age 55 ± 10.8 months. Bone strength was measured on the distal third of left radius, and expressed as SOS (speed of sound) in m/s, Z scores, and percentile.

Results

There was no difference of gender ratio, age, height, and weight between two groups. In DD group, 38 patients (38%) had normal bone strength, while 62 (62%) had abnormal bone strength. For control group, 27 children (54%) were normal bone strength, and the rest of them were abnormal bone strength (46%). The mean SOS, Z scores, and percentile of DD group were 3514 m/s, -0.32 ± 1.2 , 42 ± 30.9 respectively, were significantly lower than control group, which were 3600m/s, 0.1 ± 0.7 , 52 ± 24.5 (SOS: $P=0<0.05$; Z scores: $P=0.02<0.05$; percentile: $P=0.03<0.05$). There was no significant gender difference of SOS in DD group ($P=0.28>0.05$), and the SOS in DD group was significantly correlated to age, height and weight (age: $r=0.361$, $P=0<0.01$; height: $r=0.204$, $P=0.04<0.05$; weight: $r=0.381$, $P<0.01$).

Conclusion

Children with developmental delay have low bone strength generally, and the bone strength has a positive correlation with the age, height and weight.

Keywords

bone strength;developmental delay;quantitative ultrasound

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1070

ESTABLISHING A CARE PATHWAY FOR CHILDREN WITH LONG-TERM NEUROLOGICAL CONDITION

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Introduction/Background

Children with long-term neurological condition (LTNC) have complex health, educational and social needs. The team looking after this group of children is usually large, comprising of members across different subspecialties, both at the tertiary hospital and in the community. Care for children with LTNC is often uncoordinated and inconsistent, leading to secondary complications and affecting functional outcomes.

We aim to establish a care pathway for children with LTNC to provide anticipatory care for this group of children through a long term, multi-disciplinary follow-up with a tight community network. This in turn will improve utilization of resources, reduce burden of care and promote health.

Material and Method

We conducted a literature search of PubMed, EMBASE, and Cochrane databases using a combination of keywords and MESH terms including “cerebral palsy”, “acquired brain injury”, “motor disorder”, “hip surveillance”, “bone health”, “nutrition” and “functional outcome”. All recommendations describing different aspects of care for children with LTNC were included. A team of doctors, nurses and allied health professionals critiqued and reviewed the guidelines to ensure agreement. After the initial review, revisions were made according to local feasibility and practicality. All recommendations were then incorporated into a care pathway and circulated to the department for final review and endorsement.

Results

Key recommendations include screening our local children with LTNC for hip subluxation, pain, bowel and bladder issues; and optimization of bone health, sleep and nutrition. Following the establishment of care pathway, staff education is implemented.

Conclusion

The developed care pathway provides a basis for the systematic management of children with LTNC. It also bridges service gaps between tertiary and community institutions and ensures continuity of care for this group of patients with complex needs.

Keywords

Pediatric Rehabilitation;Neurorehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1197

INDICATORS OF THE HEALTH OF PREMATURE INFANTS BORN WITH VERY LOW AND LOW BODY WEIGHT

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Introduction/Background

A health state study of premature babies' development born with very low (VLBW) and low body weight (LBW) is necessary, because in this contingent the infant mortality and disability are high. Purpose of the study is to analyze the health status and structure of the incidence of premature infants born with VLBW and LBW.

Material and Method

The observation group consisted of 110 children who were observed in the department of pathology of newborn and premature children of the Krasnoyarsk Perinatal Center for the period from 2014 to 2015: 50 newborns with VLBW (1001-1500 grams) and 60 - LBW (1501-2000 grams).

Results

Mean gestational age in Group 1 was 30.1 ± 1.7 weeks, in Group 2 32.2 ± 1.6 weeks. According to our data, the leading pathology of the early neonatal period in children was a syndrome of respiratory disorders, revealed in more than 60% of premature infants, cerebral ischemia of different severity - 8% and 13%, intrauterine infections 4% and sepsis 2% which were diagnosed only in the group with VLBW. Among the concomitant diseases, conjunctive jaundice was found with the greatest frequency of 44% and 68% in the groups, retinopathy 12% against 3%, osteopenia of prematurity 10% (only in the group with VLW). According to the neurosonogram data, it was found that children had pronounced periventricular edema 66% and 68%, intraventricular hemorrhages 18% and 3% in the groups, periventricular leukomalacia, which was registered in 7 cases (6.3%), as a consequence of hypoxia at birth.

Conclusion

In the structure of diseases of premature infants, the respiratory distress syndrome prevails (76%), as a result of the immaturity of the lung tissue and the deficit of the surfactant. The pathology of the central nervous system, especially occupies the second place, prevails in

infants with VLBW and is characterized by periventricular edema, intraventricular hemorrhage and leukomalacia.

Keywords

LOW BODY WEIGHT.;premature ;newborn

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1210

GROUP WORKSHOP FOR CHILDREN AND TEENAGERS THAT PRACTICE CONTINENCE CARE: URINARY INTERMITTENT CATHETERIZATION OR/AND TRANSANAL IRRIGATIONS

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Introduction/Background

Intermittent urinary catheterization is used by patients that have a neurological or malformative bladder for the purpose of renal salvage and urinary continence.

Transanal irrigation is used by patient that have neurological or malformative colon for the purpose of fecal continence.

The goal of these group workshops is to respond to the feeling of isolation of patients that practice continence care (self or hetero care) by sharing a common experience.

Material and Method

Animation: nurse and psychologist

1h workshop of roughly 4 patients

Single-sex group broken down by age (7/10, 11/14, 15/18)

Main tools:

- discussions on care organization in everyday situations
- written personal remarks that are read anonymously and discussed
- brainstorming about care
- other tools depending on patients' age

Results

9 groups since January 2017

37 patients

Average age: 12 years old

age	7 to 10	11 to 14	15 to 18
girls	8	3	5
boys	5	13	3

Sharing a common experience allows easy and smooth exchanges. The results are not distinct according to the type of care because it is the "group encounter" effect that is significant.

Beneficial effects noticed from post-group interviews:

- Self-esteem: the workshop enables to ensure with others whether it's possible to have a normal life even with care
- Relief to speak freely about patient's experience outside family and social circles, feeling that personal experience is understood by the group
- Decrease of the shame to practice care and isolation feeling: sense of being part of a group
- Sociability: free discussions enables to unlock some social fears
- Better acceptance of care

Conclusion

The group allows peer identification that make possible to face living with the feeling of "being different from others". This has beneficial effects on self-confidence, which is essential for the psychic development of the child and the teenager.

"When I saw the other girls, I told myself that it was not possible that they also practice care, they seemed so normal"

Keywords

workshop;pediatrics;continence care

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1255

REGRESSION OF MILESTONES: PRESENTATION OF SPACE OCCUPYING LESION (SOL) IN BRAIN AT REHABILITATION CLINIC

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Introduction/Background

SOL brain can present in a variety of ways especially in children. The findings can at times be subtle for a considerable period of time before the final diagnosis. We present a two years old child with unusual presentation.

Material and Method

Two years old child was brought to rehabilitation clinic with complaints of weakness lower limbs for the past 08 months. Child attained normal developmental milestones till 16 months of age when parents noticed some clumsiness in the child gait and mood instability. There was no history of fever, fits, headache, protracted vomiting or trauma. Child was taken to various general physicians and was treated for rickets. The clumsiness increased and the child was unable to stand or walk. On examination he was fully conscious and oriented but irritable and restless and unable to stand. There was some frontal bossing with prominent anterior fontenella and head circumference of 52cm. His gaze was normal and there was no sunseting sign. Power in lower limbs was 3+/5 , reflexes were brisk and plantars were upgoing. Neurological examination in upper limbs was normal. Systemic examination was unremarkable. His base line blood workup was normal.

Results

His X ray skull revealed copper beaten appearance. CT Brain revealed a large rounded midline mass 6 by 5 cm located in the pineal fossa causing obstructive hydrocephalus and compression of brain matter. He was referred to neurosurgeon for further management. He was lost to follow up.

Conclusion

SOL brain can present in a variety of ways in pediatric population, it can vary from subtle irritability, mood changes, poor feeding to obvious protracted vomiting, fits, and focal neurological deficit. High index of suspicion is required for timely diagnosis and prevention of complications.

Keywords

space occupying lesion;unusual presentation;pediatrics

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1296

FUNCTIONAL EVALUATION AND MYOTONOMETRIC MEASUREMENTS OF MUSCLE TONE, STIFFNESS AND ELASTICITY IN PATIENTS WITH DUCHENNE MUSCULAR DYSTROPHY

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Introduction/Background

The aim of this study was to measure the biomechanical properties of the muscle using myotonometry in patients with Duchenne Muscular Dystrophy (DMD) and to evaluate the correlation with functional parameters.

Material and Method

Twenty one ambulant DMD boys and 21 age matched healthy boys underwent measurements from their dominant sides. Muscle tone, elasticity and stiffness were measured from gastrocnemius medialis (GM), tibialis anterior and vastus medialis in resting state and in contracted state by MyotonPro.

MicroFET2 was used for manual muscle testing (MMT) of plantar flexion, foot dorsiflexion and knee extension. 6 minute walk test (6MWT) and 10 meter walk tests were performed in both groups. DMD boys were also assessed by North Star Ambulatory Assessment (NSAA).

Results

The mean age of the patients were 8.5 ± 3.2 (5-18) years, median NSAA score was 26 (17-33) and 6MWT was 361 meters (77-562). Compared to healthy boys, there were significant decrements in MMT, walking speed and 6MWT ($p < 0.001$). The biomechanical results also differed significantly in resting and contraction states but only resting tone of medial gastrocnemius was higher in DMD patients ($p = 0.014$). The measurements of muscle tone, stiffness or elasticity did not correlate with functional measures.

Conclusion

Our preliminary results suggest that myotonometric evaluations can be used easily in DMD and resting muscle tone of gastrocnemius medialis is found to be increased in patients. Clinical meaningfulness of the MyotonPro device should be tested in follow-up studies.

This study was funded by Cukurova University Project no: TTU-2017-9506

Keywords

Duchenne Muscular Dystrophy;Myotonometry;Muscle tone

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1341

THERAPEUTIC HORSE RIDING: A CONTEXT FACILITATING LEARNING AND FLOURISHING FOR CHILDREN WITH DISABILITY

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Introduction/Background

Therapeutic horse riding (THR) is a complex intervention which aims to positively influence health in people who experience disability. Evaluating the effectiveness of THR interventions is made complex by a lack of clarity about the ingredients, mechanisms of treatment effect, and intended treatment targets. This research aimed to evaluate the effectiveness of a THR intervention – what works for which riders, in what contexts, to what extent and how.

Material and Method

Within a critical realist framework, three phases of research using a mix of methods (Thematic Analysis [$n=36$ participants], Grounded Theory [$n=38$ participants] and Single-Case Experimental Design [$n=12$ participants]) were undertaken. Findings from all phases were synthesised and interpreted to provide an integrated evaluation of THR intervention effectiveness. Using context-mechanism-outcome configurations as a framework, specific attention was paid to contextual factors and mechanisms of change which impacted on health outcome change for riders.

Results

Riders and caregivers prioritised THR as an accessible activity allowing meaningful participation in valued leisure roles. A positive intervention effect was also observed in occupational performance in settings other than THR. Riders experienced the THR therapeutic landscape as a context that promoted their capacities and strengths, rather than their deficits and difficulties. THR provided opportunities for a broad range of learning experiences with the child as active agent within the intervention, contributing to riders' enlarged self-concept in response to learning to move, succeed, connect and adapt within the THR therapeutic landscape.

Conclusion

THR may contribute to improved participation outcomes for children with disabilities, regardless of their diagnosis. The context in which THR is provided plays a central role in activating and optimising changes in health outcomes. Greater understanding of contextual factors and mechanisms of change could guide the development of a shared understanding of THR

programme development, improve provider training, rider outcome assessment and ongoing programme evaluation.

Keywords

Therapeutic Horse Riding;Mixed Methods;Intervention effectiveness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1377

NUTRITIONAL STATUS OF 50 DISABLED CHILDREN IN A TUNISIAN PHYSICAL MEDICINE AND REHABILITATION DEPARTMENT

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Introduction/Background

Disabled children can develop nutritional problems due to multiple factors: neuromotor disorders, swallowing troubles, difficulty in positioning, dependence to a third person for alimentation...

The aim of this study is to assess nutritional status of disabled children.

Material and Method

This study is prospective and monocentric in the physical medicine and rehabilitation department of National Institute of Orthopaedy M.Kassab in Tunisia. We included inpatients children between 3 and 10 years with motor disabilities and we excluded children whose parents were not cooperating.

For each patient: we determined age, sex, etiology, neurological status, neuromotor development, swallowing disorders, anthropometric parameters (weight, height, brachial parameter and cranial parameter) and nutritional investigation with parents using the 24-hour dietary recall.

Data was analysed by BULNIT software for the 24 hour dietary recall and by SPSS 20 for the other datas.

Results

We collected 50 patients with middle age 6.5 years and sex ratio 0.92. Etiology was cerebral palsy in 46%, trauma brain injury in 34% and other etiologies in the rest of cases. Neurological status was tetraparesia in 70% cases. According to neuromotor deficiencies, 12% hadn't head holding and 26% didn't have sitting position. Swallowing disorders in 86% cases (facial oral praxy, mastication...). Body Mass Index was normal in 54%, underweight in 30% and overweight in 16%. Protein intake was higher than necessary in all male and female children and lipid intake lower than necessary. A significant correlation was shown between underweight and swallowing disorders.

Conclusion

Nutritional disorders are frequent in disabled children and must be assessed to adopt preventive and corrective measures. Improvement of positioning, management of swallowing disorders and parents' nutritional education are the main goals.

Keywords

disabled children;swallowing disorder;nutrition

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1403

MEROSINE-DEFICIENT CONGENITAL MUSCULAR DYSTROPHY AND COMPLICATIONS: A CASE REPORT

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Introduction/Background

Congenital muscular dystrophy type 1A (MDC1A) is a rare disease, characterized by hypotonia, muscle weakness and atrophy. Diagnosis is based on clinical presentation, elevated creatine kinase levels, muscle biopsy, and genetic testing (LAMA2 mutation). Patients have severe motor and respiratory limitations. We present a long followed-up case and the management of complications.

Material and Method

A thirteen-year-old girl with MDC1A was referred to our Rehabilitation Service at birth. She presented hypotonia, muscular hypotrophy, slow psychomotor development, elevated creatine kinase, myotonia in electromiography and severe muscular dystrophy with absence of merosine on anatomopathology. Genetic study and MRI were normal.

Since twelve, she had a history of repetitive respiratory infections, failure to thrive and double-curve scoliosis. She was partially autonomous for daily life activities, FIM scale was 106. Management included physical therapy. Patient evolved with respiratory exacerbations, lumbar pain secondary to progression of scoliosis with right thoracic curve increasing from 12° to 29°, and left lumbar curve 20°, with elevated Riser. Therefore, we prescribed a Boston Soft Brace and Cough Assist. Physical examination demonstrated proximal weakness of limbs and abdominal flexors, lumbar pain and muscle atrophy. Motor skills were measured as 14 points in North Star Ambulatory Assessment (NSAA), 288 meters in the six-minute walk test (6MWT), and dyspnea and fatigue perceptions as 5 and 6 in Borg Scale.

Results

In the last revision she reported relief of lumbar pain, NSAA punctuation of 17, 235 meters in 6MWT, dyspnea and fatigue as 8 and 9 in Borg scale.

Conclusion

As MDC1A is associated with poor prognosis, the management from a physiatrist is fundamental. After brace prescription, our patient presented pain relief, although walking pattern

and dyspnea worsened. Nevertheless, she maintains the same partial-autonomy in daily activities, which is the important goal for our optimal treatment.

Keywords

Congenital muscular dystrophy;North Star Ambulatory Assessment;scoliosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1538

DETERMINATION OF WALKING PROGNOSIS IN DUCHENNE MUSCULAR DYSTROPHY PATIENTS BY USING ULTRASONOGRAPHY : A PILOT STUDY

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Introduction/Background

Muscle ultrasound is a convenient technique to visualize normal and pathological muscle tissue. In Duchenne Muscular Dystrophy (DMD), the structural muscle changes can be visualized with ultrasound: infiltration of fat and fibrous tissue increases muscle echo intensity. It will lead to muscle weakness. If it occurs in lower limb can result in decreased walking ability of the child. The aim of this study is to know the muscle profile in lower extremities to predict functional walking in DMD children.

Material and Method

This research use case series method. There were 2 boys with walking and non walking ambulatory. We used Ultrasonography to examine the muscle profile. There are several muscles that are examined ie. gluteus maximus, gluteus medius, rectus femoris, gastrocnemius, and tibialis anterior. Muscular profile is divided into 3 categories; more or less than 50% muscle fibers on the muscular cross section, and not found muscle fibers. Loss of muscle fibers is characterized by hyperechoic on muscle features and loss of muscle boundaries. We compared the muscle profile in both subjects.

Results

Subjects are 8 and 13 years old. We found different muscle profile in both subjects. The ambulatory subject, still had distal muscle (gastrocnemius and tibialis anterior) that contain muscle fibers > 50%, Whereas in non ambulation, no muscle has fiber > 50%. Although in both subjects we got the same image of gluteus maximus that shown no muscle fibers.

Conclusion

The presence of dominant muscle fibers in distal muscles of lower extremities allows the child with DMD to perform walking activity, although there has been muscle damage in the proximal. With ultrasound examination we can see the real picture of muscle condition, so we can predict how far the muscle can work. Ultrasound is a non invasive, inexpensive, and safe examination tool to evaluate muscle condition in DMD.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1651

ORTHOTIC TREATMENT FOR HIP AND KNEE PATHOLOGIES IN PATIENTS WITH CONGENITAL INSENSITIVITY TO PAIN WITH ANHIDROSIS

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Introduction/Background

Congenital insensitivity to pain with anhidrosis (CIPA), also called hereditary sensory and autonomic neuropathy type IV, is an autosomal recessive disorder manifesting in a generalized loss of pain and thermal sensation, a lack of sweating, and is associated with variable degrees of intellectual disability and/or learning deficits. In patients with CIPA, musculoskeletal complications are frequent including repeated fractures and joint dislocations, avascular bone necrosis, and Charcot arthropathy, mainly in the lower extremities. Though complications in hip and knee joints may eventually lead to difficulty in ambulation, prevention and management of hip/knee pathologies are difficult and scarcely reported so far.

Material and Method

We retrospectively reviewed the medical records of 19 patients (ten males and nine females) who visited our department since 2006. The age at final visit ranged from four to 64 years (mean 20).

Results

Hip pathologies were identified in 14 joints in eight patients, excluding mild acetabular dysplasia. Six joints in three patients had already been destroyed at initial visit. Two joints in a patient developed fixed dislocations without any treatment. Orthoses were prescribed in four patients (six joints), three hip-action braces and one HKAFO, and three patients obtained relatively good results. Knee pathologies existed in seven joints in seven patients, excluding mild joint instability or genu varum. Two joints had already been destroyed at initial visit. One joint developed a severe Charcot joint without any treatment. KAFO was prescribed for four joints, but they all led to Charcot joints and three of them underwent surgery.

Conclusion

Hip and knee pathologies are frequent in CIPA and difficult to manage. Orthotic treatment for hip pathologies may be beneficial for maintaining reduction. On the contrary, KAFO can hardly prevent developing Charcot knee joints.

Keywords

insensitivity to pain;orthosis;Charcot joint

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1684

THE IMPACT OF HOSPITALIZATION IN A PEDIATRIC REHABILITATION CENTER ON SCHOOLING IN THE NORD AND PAS-DE-CALAIS DEPARTMENT

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Introduction/Background

In 2016, 36,000 children were hospitalized in a Pediatric rehabilitation center in France. In the Nord and Pas-de-Calais, four Pediatric rehabilitation center host children, and each center has a different school system.

Material and Method

Its objective is to evaluate the impact of a hospitalization of more than three weeks in Pediatric rehabilitation center on the schooling of children free of cognitive deficits from primary school to senior year, who are hospitalized for orthopaedic disorders or chronic pain. The secondary objective is to assess the socio-educational and care factors affecting the schooling of these hospitalized children.

This is a multi-centric descriptive prospective study.

The primary judgment criterion is the pre-post hospitalization gap for the overall mean (OM). It was calculated from the last pre-hospitalization report card and the first post-hospitalization report card. Questionnaires were completed by parents and educational teams, and a final assessment to collect qualitative data was conducted by telephone after the child's return to class.

Results

47 patients were included. Calculations do not show any significant difference between pre- and post-hospitalization for the OM ($p=0.361$).

Qualitatively speaking, parents would like to see more hours of instruction. The children were affected by their separation from their class, and the stress of falling behind the school curriculum. They enjoyed keeping student status. The grades have dropped with real gaps for some of the group. Good students had to do more work than they used to do before.

Conclusion

Comprehensive care of children cannot be provided without assessing the impact of hospitalization on their schooling. Not all existing resources have been exploited. They would allow for more hours of instruction and subjects to be taught. The possibility of direct contact between the child and his or her class is one of the areas to be developed further.

Keywords

Pediatric rehabilitation ;schooling

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1743

INTERPRETATION OF PEDIATRIC VIDEOFLUOROSCOPIC SWALLOWING STUDY

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Introduction/Background

Swallowing physiology in children is different from adults and also it is difficult to cooperate during videofluoroscopic swallowing study(VFSS). In addition test cannot be performed sufficient time because of the concerns of radiation exposure. So it is essential to set up well-built test protocols and interpretation methods to improve reliability and validity of the study.

Material and Method

In Pubmed, using search related terms and MeSH terms we could get 128 studies. We analysed these about indications, methods, interpretations and reporting of VFSS.

Results

Many of the children referred for dysphagia or unexplained respiratory symptoms showed aspiration or penetration in VFSS and most of those were silent aspiration. So when dysphagia is suspected or if children have signs like coughing during meals, tests like VFSS to confirm aspiration is essential. In most of the studies, VFSS was done in sitting position with tumbleform seat or chair. Recordings were done sufficient enough to examine the whole swallowing phases multiple times but within 2 minutes to prevent potential radiation hazard. VFSS was usually done in lateral projection view to observe aspiration and penetration as well as to measure timings and residue. Examiners analyzed the recorded video and check various swallowing events and measured timings. In normal children pulling of the bolus in vallecula before swallowing seems to be normal. Unlike adults, pooling after swallowing is not related to aspiration but pooling in the pyriform sinus before swallowing is associated with aspiration and is frequently preceded to aspiration. Nasogastric or orogastric intubation did not interfere swallowing but tracheostomy seems to affect respiratory physiology.

Conclusion

Major measures and descriptions about VFSS as well as contents and format of the reports are not unified and the definition of the terms were not clearly defined, so standardization of those mentioned above were needed.

Keywords

dysphagia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1772

RETROSPECTIVE ON THE EXPERIENCE OF THE ANTENATAL CONSULTATION OF THE REFERENCE CENTER OF LIMB DEFORMITIES OF SAINT-MAURICE HOSPITALS

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Introduction/Background

Congenital malformations are one of the leading causes of infant mortality, morbidity and disability in industrialized countries. Congenital limb malformations, which are rare, they represent approximately 1.3 to 1.9 cases per 1,000 births.

Saint-Maurice Hospitals have set up an antenatal consultation dedicated to limb malformations since 1985. Since the official approval of its Reference Center in 2007, the team has developed a comprehensive expertise allowing the establishment of a specific pluriprofessional team.

In 2011, Dr. Pillard's team carried out a retrospective study based on the antenatal consultation files conducted during this year in order to make an inventory of the antenatal consultation activity.

We completed this preliminary work in conducting a retrospective study of the consultation files that took place from 2012 to 2017.

Material and Method

We have chosen the following data collection criteria:

- Family history
- Screening date of the malformation
- Antenatal diagnosis
- Continuation of pregnancy and post-natal diagnosis

These data were collected from the medical records of antenatal consultation records.

Results

The data representing the number of cases / year / location of malformations are listed in the table below.

Year	Malformation	2012	2013	2014	2015	2016	2017
	Lower limb only	17	23	6	11	4	5
	Upper limb only	9	7	5	9	7	8
	Upper and lower limb	9	5	1	4	1	2
	Upper limb and other abnormalities	1	0	1	0	0	3
	Spine	2	1	0	1	0	0
	TOTAL	39	36	13	25	12	18

All antenatal consultation records completed since 2012 have been analyzed: a total of 143 files in the last 6 years.

Conclusion

The clubfoot is the most representative malformation.

The first cause of multiple malformations is linked to the presence of Amniotic Band Syndrome

Keywords

antenatal consultation ;limb deformities ;Congenital malformations

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1790

HOME BASED AIR STACKING EXERCISE IN DUCHENE MUSCULAR DYSTROPHY: A CASE REPORT

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Introduction/Background

Background: respiratory problems, including short of breath, difficulties to take deep breath, difficulties in cough, pneumonia even fall to respiratory failure are the main causes of mortality in duchene muscular dystrophy (DMD) patients. We perform air stacking exercise as a home based exercise to prevent further respiratory complications.

Material and Method

Methods: Case report of a 11 years old boys diagnosed with DMD, we evaluated spirometry test, Peak flow rate (PFR), Peak Cough Flow (PCF), Maximum inspiratory pressure (MIP) and maximum expiratory pressure (MEP) before and after the exercise program. We trained the mother to do the air stacking at home with prescription 10 series a day, each includes 3 consecutive manual insufflations, deep breath, held the breath, and patient instructed to held the total volume for 5 second, increase as patient tolerated till can hold for 8 seconds. This exercise divided to 3 sessions per day, done in the sitting positions, with the mother from behind.

Results

Results: After 8 Weeks of home based exercise we evaluated again all the respiratory parameter as follow:

	Pre	Post 8 weeks
VC	0.63 (32%)	1.14 (58%)
FEV1	0.63 (40%)	0.94 (59%)
FVC	0.69 (37%)	1.11 (59%)
FEV1/FVC	91 (108)	85 (100)
PFR	120	140
PCF	80	180
MIP	33	41
MEP	17	32

Conclusion

Conclusions: Air stacking exercise is a save and effective excersice to perform at home as an modality to prevent furter respiratory complications in DMD patient.

Keywords

air stacking;respiratory rehabilitation;DMD

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1818

POSTUROGRAPHIC STUDY OF 4 CHILDREN WITH OSTEOGENESIS IMPERFECTA

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Introduction/Background

Osteogenesis imperfecta (OI) is a rare disease characterized by bone fragility with variable severity. In the medium to severe types, spontaneous or side-effect repeated bone deformities are responsible for difficulties in the learning process and the ability to walk. Falls prevention in its clinical form was not specifically studied. The aim of this work is to describe walking statistical posturographic parameters as well as spacio-temporal parameters within this population. We will also measure benefits of footwear management as well as the use of equipment for static and dynamic balance.

Material and Method

The sample population of this study is made of children with medium to severe types of osteogenesis imperfecta. They were able to stand up without any support for a minimum of 30 seconds. Measurements were carried out on Zebris platform from Zebris Medical GmbH. Our main measurement criteria was the area of the center of mass and foot pressure.

Results

two boys, two girls with an average age of 13 years and 3 months, with 2 medium and two severe types of OI. Areas of the centre of mass and foot pressure increased for all patients by 1.8 times versus the norm (min=1.2N; max=2.8N). Footwear management alone did not improve stabilographic parameters but footwear with length compensation of lower limbs, even partial, enabled a reduction of the area of the center of mass and foot pressure. These results seem to be confirmed by the improvement of dynamic balance in the same environment.

Conclusion

The stabilographic assessment results seem interesting from an individual stand point to detect visual side-effects and measure the effectiveness of equipment used to in the stabilographic assessment results seem interesting from an individual stand point to detect visual side-effects and measure the effectiveness of equipment used to improve patients' balance.

Keywords

osteogenesis imperfecta;posturographic parameters;spacio-temporal parameters

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1831

THERAPEUTIC EDUCATION PROGRAM IN CHILDREN OSTEOGENESIS IMPERFECTA : THE EXPERIENCE OF THE TEAM OF SAINT-MAURICE

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Introduction/Background

Osteogenesis imperfecta is a disease characterized by high fracture risk and frequent pain. From the very beginning, caregivers must acquire skills to manage these episodes at home. To this end, we have set up a therapeutic education program (ETOI).

Material and Method

- Caregivers of children from 0 to 12 years old with osteogenesis imperfecta,
- Teenagers with osteogenesis imperfecta (to come).

Objectives:

- * Assessment and management of pain, without using any drugs, and the handling of different levels of analgesics.
- * Immobilization techniques and a customized kit built for each family.
- * Criteria for deciding when they should go to the hospital.
- * Verbalization of emotions related to acute situations for managing them better at home
- * Discussions on different everyday issues related to the disease
- * Identification of possible external resources.

Results

One-on-one sessions will be offered, focusing on coping skills and customization of treatments.

Depending on the needs assessed in a shared educational assessment, two to five groups can be offered. These sessions use adapted and various teaching methods, in the form of workshops and focus groups. At the end of the program, a booklet is given to each participant, with a customization of behavior guidelines.

The last session consists of an exchange with the Association of Osteogenesis Imperfecta (AOI).

Introduced by:

- Ten members of the RREAL service team: physiotherapists, occupational therapist, nurse, childcare assistant, psychologist, early childhood educator, health manager, social worker, doctor.

- Representatives of the AOI.

Conclusion

Strong mobilization of the team around this project, for two and a half years

Very positive feedback of the first group of parents who started in March 2017

Keywords

therapeutic education program;osteogenesis imperfecta;children

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1850

SPATIO-TEMPORAL GAIT PARAMETERS EVOLUTION IN CHILDREN WITH ORTHOTIC DEVICES

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Introduction/Background

The study highlights spatio-temporal gait parameters changes in children with posture and gait disorders, wearing corrective orthosis.

Material and Method

Our study included 200 inpatients in the NTCNRC, aged between 5-17 years, with posture and gait disorders, able to walk independently. 50 of them were assessed 2 times: first time wearing the orthotic devices and second time without corrective posture and gait orthoses.

The children were assessed using a spatio-temporal gait parameters evaluation system based on an inertial sensor.

It was used a comparative observational method for: gait cycle duration, step length, stance phase duration, double support duration, single support duration and stride length normalized over the height of the subject.

Results

Children with posture and gait disorders improved their walking parameters after wearing the orthosis, in more than 90% of cases showing improvement in gait symmetry. This improvement is statistically significant ($p < 0.001$).

Conclusion

We found that in posture and gait disorders, orthotic devices improve spatio-temporal parameters of walking.

Keywords

gait assessment;spatio-temporal gait parameters;orthosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-2707

SLEEP DISORDERS IN CHILDREN WITH OSTEOGENESIS IMPERFECTA: A PROSPECTIVE STUDY OF PREDICTIVE FACTORS AND FREQUENCY

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Introduction/Background

Osteogenesis imperfecta (OI) is the most common genetic skeletal disorder. Extra skeletal findings are common but association with sleep disordered breathing (SDB) are poorly described. For OI children, symptoms suggestive of obstructive sleep disorders (OSD) should be searched for systematically, especially when autonomy is compromised, body mass index is high, trunk deformations are identified, and in case of severe type of OI.

The aims of this study are: to estimate prospectively prevalence of OSD, and to identify clinical risk factors of OSD in OI children.

Material and Method

Every OI children who consults in the physical rehabilitation department is proposed to participate to this study. The following clinical features were searched for: sex, age, OI type, Body Mass Index (BMI), scoliosis, kyphosis, vertebral settlement, chest deformity, history of vertebral surgery, basilar impression, muscular weakness, evaluation of walking autonomy and history of bisphosphonate therapy.

After written consent, major and minor clinical criterions of OSD are searched for. If clinical suspicion is found, an Ear-Nose-Throat consultation is assessed and polysomnography (PSG). Overnight sleep PSG with the recording of nasal flow, respiratory movements, tracheal sound, body position, SpO₂ and heart rate were performed in room air. The Apnea Hypopnea Index (AHI) was calculated as the sum of apnea and hypopnea events per hour of total sleep

Results

Incomplete results (inclusion under process).

33 OI children are recruited already. 15 of these children have a clinical suspicion of OSD and are waiting for their PSG.

Conclusion

The results are actually under study. The conclusion can not be given already.

Keywords

osteogenesis imperfecta;sleep disordered breathing;polysomnography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1919

TREATMENT OF THE CLUBFOOT BY THE PONSETI METHOD COUPLED TO REHABILITATION: A SHORT AND MEDIUM-TERM FOLLOW-UP STUDY

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Introduction/Background

Clubfoot is a complex deformity that is difficult to correct and which has four components: equinus, hindfoot varus, forefoot adductus, and cavus.

There is nearly universal agreement that the initial treatment of idiopathic congenital clubfoot should be non operative, regardless of the severity of the deformity.

The purpose of this study is to evaluate the short and medium-term results of Ponseti technique associated to rehabilitation.

Material and Method

This is a retrospective study of 5 years (2012-2016), including 40 children with 62 clubfeet, referred to the Physical and Rehabilitation department of Mahdia during the period from 2012 to 2016 and treated with Ponseti technique coupled to rehabilitation.

Demographic data, the initial clinical examination, treatment and outcomes were determined. The clinical evaluation was based on Pirani and Dimeglio scores that were assessed initially, after a series of corrective casts, then at 3 months, 6 months and 12 months.

Results

Forty children with a mean age of 33 days and a male predominance (75%) were evaluated. Twenty-two children (55%) had bilateral involvement. The initial mean Pirani score was 5.3 (2.5-6), with an initial score of 6 in 45.2% of the cases. The initial mean score of Dimeglio was 15(6.5-20), and 53.2% of feet were grade IV. The average number of casts made was 6.92. Tenotomy of the Achilles tendon was performed in 74.2% of the cases. During follow-up, there were clinical improvement with a significant reduction of Pirani and Dimeglio scores ($p < 0,001$). Improvements of the deformities were observed in 54 feet (87%). Recurrence was observed in 8 cases (12.9%) whom underwent surgery.

Conclusion

The Ponseti method coupled with rehabilitation allows a rapid correction of clubfoot. This correction is maintained over time and reduces significantly the need for surgery.

Keywords

clubfoot; Ponseti method ; rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1980

USE AND INTEREST OF ADJUSTABLE PASSIVE PROSTHESIS (MECHANICAL WITHOUT CONTROL) IN CHILDREN

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Introduction/Background

Mechanical prosthesis without control offer functional opportunity to practice activities requiring stably holding (i.e cycling) while being using friendly.

However, as far as we know, there are only a very limited amount of studies and publications available to date on that topic.

The goal of our retrospective study was to identify benefits and interests of the use of mechanical prosthesis without control for children with agenesis or amputated forearm.

Material and Method

The data were collected on medical files of 288 children born between 1965 and 2016. They all had unilateral agenesis or traumatic amputation of forearm.

We only took into account patients using mechanical prosthesis without control.

The statement outlines the statistical ages of wearing, years of establishment, wearing time and the activities carried out.

Results

137 out of 288 children (49%) have used a mechanical prosthesis without control. 32 out of these 137 patients are still wearing one in 2014. Between 2000 and 2014, 20 to 32 mechanical prosthesis without control were prescribed per year. The use of this prosthesis was between 1 and 15 years. The duration of the use of the mechanical prosthesis did not exceed 2 years for half of the patients. This prosthesis was usually worn between 3 and 7 years old, period during which the child is improving his psychomotor development.

Children mainly use this prosthesis for cycling activity, followed by school handlings (hold a sheet of paper to cut, hold a ruler).

Conclusion

This new study confirms and refines results found in our previous study dated from 2007. If it seems inappropriate to wear it before 3 years old, the use of a mechanical prosthesis without control seems to help children to practice some well-targeted activities

Keywords

mechanical prosthesis;agenesia forearm;amputated forearm

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-1983

RETROSPECTIVE EXPERIENCE OF THE EFFECT OF BOTULINUM TOXIN INJECTIONS IN OBSTETRICAL BRACHIAL PLEXUS PALSY AFTER CO-CONTRACTIONS

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Introduction/Background

Obstetrical brachial plexus palsy (OBPP) is often complicated by contractures of the shoulder internal rotators and/or co-contractions of the biceps/triceps brachii muscles. They are responsible of early limitations of the upper limb movements and thus limit children at the activity and participation level.

To evaluate the effect of botulinum toxin injections (BTI) on the active movements of the upper limb.

Material and Method

A database search was conducted. Children with OBPP who received BTI in the shoulder internal rotators (IR) and in the triceps brachii (TB) in Saint Maurice hospital, a national center of reference in OBPP management, were included. The primary outcome measure collected was the Mallet scale at baseline, 3 months and 6 months after BTI. Comparisons using paired t-test were used to assess the statistical significance of the between-group differences.

Results

83 children (mean age : 4,4 years) with C5-D1 injuries were included. 45 children had IR and 38 had TB injections For the IR group, the total Mallet score increased significantly at 3 months (+ 4,4 on average out of a maximum score of 25) and remained significantly greater at 6 months (+2,9) compared to baseline with a greater improvement on the abduction and latéral rotations tasks. For the TB group, the total Mallet score increased significantly at 3 months (+3,8) and remained significantly greater at 6 months (+3,1) compared to baseline.

Conclusion

This study suggests that BTI are likely to improve the active movements and the motor function of the upper limb of children with OBPP as it has been previously suggested in studies involving smaller groups. It also suggests a specific functional effect depending on the site of the injections and a prolonged effect until 6 months. Randomized controlled trials are needed to definitely confirm these preliminary results.

Keywords

Obstetrical brachial plexus palsy;co-contractions;botulinum toxin

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-2239

PEDIATRIC EXTENSOR TRUNCAL DYSTONIA TREATMENT WITH BOTULINUM TOXIN

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Introduction/Background

Axial dystonia resulting in opisthotonus is observed in some children and adults with cerebral palsy and other brain disorders. This motor disorder results from involuntary activation of the trunk and cervical muscles and is associated with motor disability and pain. Usually opisthotonus does not respond to oral medications. The aim of this study is to examine the effect of botulinum toxin treatment in opisthotonus, and to objectify the patient's response and satisfaction.

Material and Method

Six patients with opisthotonus were included in the study, the causes of dystonia being cerebral palsy (2 cases), traumatic brain injury (1 case), neurometabolic disease (2 cases) and autoimmune encephalitis (1 case). Interview with the patients and their caregivers determined the main problems in daily living resulting from opisthotonus and helped to define the goals of botulinum toxin therapy. The clinical examination performed by the injector identified the type of opisthotonus and the muscles to be injected in order to obtain the optimum effect. A set of goals by the patient, caregiver and rehabilitation team was decided for each patient. Each goal was rated on a five-point scale. Botulinum toxin was injected under electromyographic guidance into the chosen muscles of the neck and trunk (posterior and anterior muscles as needed). The Goal Attainment Scale (GAS) was used to evaluate treatment outcome.

Results

All individual baseline GAS scores were below 40. After BTX-A treatment, outcome GAS scores were above 60 in 5 cases and above 50 in one case. All individual GAS changes were positive, with a greater than 10 point-difference, which is considered to be of clinical importance.

Conclusion

Botulinum toxin treatment of selected muscles of the neck and trunk is a promising solution in pediatric dystonic opisthotonus. The GAS instrument can depict the positive changes for the patient provided by this treatment.

Keywords

BOTULINUM TOXIN;CHILDREN;OPISTHOTONUS

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-2267

INFANT PAIN SCALE AND LOCAL HEAT AT THE TIME OF LOCAL INJECTION.

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Introduction/Background

The absence of pain relief in infants can lead to harmful effects; so, the aim of study was to investigate of the infant pain scale and local heat at the time of local injection.

Material and Method

This randomized clinical trial was conducted on 80 healthy infants. For the control group, 1 mg vitamin K was injected into the vastus lateralis muscle by a nurse. In the 3 intervention groups, respectively 5, 10 and 15 minutes before the injection, hot-water bag at 37 °C was placed on the quadriceps muscle and then injection was done with the same condition as in the control group. Immediately after the injection, the Neonatal Infant Pain Scale (NIPS) was completed. Data analysis was done using SPSS version 21.0 software

Results

41(51.25%) girls and 39 (48.75%) boys were participated. First-minute Apgar of all samples were 8.64 ± 0.557 . Birth weight was 3335.37 ± 339.51 grams and the minimum gestational age 36.37 ± 1.01 weeks. The mean pain score in the first minute in the control group was 3.6 ± 2.136 , which was 3.3 ± 1.976 in the 5-minute warm-up group, and this amount was reached to 1.6 ± 1.569 in 10-minute warm up group, and 0.6 ± 0.821 in 15 minute warm-up group ($P=0.008$). The mean pain scores in the control group for the second minute was 1.0 ± 1.835 , which was reduced to 0.25 ± 0.716 in the 10-minute and 15-minute warm-up group ($P=0.023$).

Conclusion

Local heating before the injection procedure can be effective in reducing pain in infants and the pain will reduce by increasing the local heating time (15 minutes).

Keywords

Hot Temperature;Infant;Pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-2268

THE EFFECTS OF KANGAROO MOTHER CARE (KMC) ON THE FUSS AND CRYING TIME OF COLICKY INFANTS

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Introduction/Background

Infantile colic is a common complaint in the first few weeks of the neonate's life. Due to its unknown etiology, there is not a specific therapy for this disease. However, various therapeutic options are recommended for reducing the pain and restlessness in the affected infants. Skin-to-skin contact via Kangaroo Mother Care (KMC) is known to increase the pain threshold and it seems to be a proper method for the care of these infants. This study aimed to evaluate the effect of KMC on infantile colic.

Material and Method

This case-control study was performed from March 2012 to March 2013. Subjects consisted of 55 exclusively breastfed infants ageing between 15-60 days with excessive fuss and crying who were referred to the Children's Clinic of Ayatollah Rohani Hospital in Babol, North of Iran. The neonates who weighed less than 2500 grams or had been diagnosed with genetic or clinical disorders were excluded from this study. The studied infants were subjected to KMC for at least 2 hours a day. Standard questionnaires were completed through interviews and Barr Scale was also conducted. The collected data were analyzed by SPSS software V.11.5 and T-test and a P-value of less than 0.05 was considered as significant

Results

According to the results of this study, the fuss and crying time of the infants before the KMC was 2.21 ± 1.54 hours per day while it reduced to 1.16 ± 1.3 hours per day after the implementation of KMC ($p=0.001$).

Conclusion

KMC could be practiced at home as a simple and safe method of diminishing the fussiness and crying time in colicky infants.

Keywords

Colic; Colicky Infants; Mother Care

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-2299

CLINICAL REMISSION OF MYOPATHY WITH MYH2 MUTATIONS AFTER REHABILITATION TREATMENT: A CASE REPORT

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Introduction/Background

Myosin myopathies consist of a set of inherited diseases caused by mutations in myosin heavy chain (*MyHC*) genes. Among them, *MYH2* mutations have been reported to lead myopathy with ophthalmoplegia, mild to moderate muscle weakness characterized by lack of type 2A muscle fibers. To date, there is still no specific treatment for *MYH2* mutated patients.

Material and Method

A 35-month-old girl was admitted for her motor developmental disorder associated with intellectual disability. A physical examination revealed the decreased muscle strength and muscle tone of her lower limbs and facial muscles combined with poor function of sitting and standing balance. Based on the primary assessment, a general rehabilitation therapy plan for the girl was set up, which involved balance training, muscle strength training in low extremity, walking training, gross and fine motor function training, as well as family education. However, after the first phase of training, her motor skills were only improved mildly as well as her balance function. In the meantime, whole-exome sequencing was performed, and a novel heterozygous mutation was discovered in her *MYH2* gene. These two mutations were predicted to be pathogenic, which can lead to proximal myopathy and extraocular muscle paralysis, mainly involved in type 2A muscle fibers. After her accurate diagnosis, active exercise and endurance exercise were added in addition to original rehabilitation training program and aim to shift the expression of myosin heavy chain isoform from fast to slow.

Results

Twelve weeks after the optimized rehabilitation training, the function of her gross and fine motor was improved notably. In addition, her ability of standing, walking and jumping was enhanced significantly as well.

Conclusion

In this study, we described for the first time the clinical remission of myopathy with *MYH2* missense mutations after effective rehabilitation. Precision medicine is incredibly helpful for patients with unexplained myopathies to develop a suitable rehabilitation program.

Keywords

MYH2 Mutations; Myopathy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-2363

PNEUMOTHORAX IN NEUROMUSCULAR DISEASES – A CASE REPORT AND LITERATURE REVIEW

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Introduction/Background

Neuromuscular diseases are a well known cause of chronic respiratory failure. The loss of respiratory muscle strength leads to cough inefficacy, inadequate ventilation and nocturnal hypoventilation which may require ventilatory support and cough assistance. Pneumothorax is a rare and potentially life-threatening complication that can occur in those patients.

Material and Method

We present a case of a patient with nemaline myopathy who developed a recurrent pneumothorax. A literature review was also performed regarding case reports of pneumothorax in neuromuscular diseases with highlight the major conclusions and recommendations.

Results

Case report:

14-year-old girl with nemaline myopathy under noninvasive positive-pressure ventilation (NIPPV) since age seven and cough assistance with Mechanical Insufflator-Exsufflator (MI-E), pressures of +40/-40 cm H₂O.

In May/2016 she was admitted to our hospital because of a sudden-onset worsening dyspnea and chest pain. Thoracic X-Ray (figure 1) showed a right pneumothorax that was solved with chest tube drainage. In February 2018 she was readmitted due to intolerance to NIPPV and chest pain. A large right pneumothorax was diagnosed (figure 2). CT scan revealed some apical pulmonary blebs. The ventilation pressure parameters were reduced, MI-E and all the maneuvers that potentially increases airway pressures were withheld during the stay until pleurodesis was performed. Chronic use of NIPPV, MI-E and the presence of pulmonary blebs could all have contributed to recurrence of pneumothorax.

Literature review:

2 cases of pneumothoraces were reported in nemaline myopathy, other few cases were reported on other neuromuscular diseases with patients doing NIPPV and MI-E (table 1).



Figure 1: Chest X-ray in first episode evidencing a right pneumothorax.

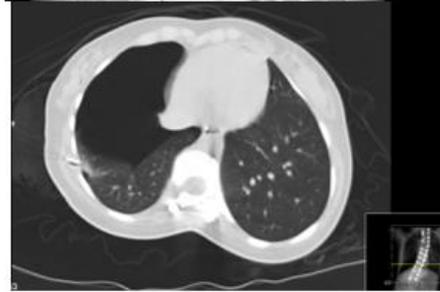


Figure 2: Chest X-ray and chest computed tomography in second episode.

Table 1: Case reports of pneumothoraces in neuromuscular diseases found on Pubmed database using the terms "neuromuscular pneumothorax" and "nemaline myopathy pneumothorax". PTX – Pneumothorax; MI-E - Mechanical Insufflator-Exsufflator; NIPPV - noninvasive positive-pressure ventilation.

Reference	Case description	Major conclusions	Recommendations
Yamamoto, T. et al. [1]	9 of 50 Duchenne muscular dystrophy developed spontaneous PTX; relapse occurred in 4 cases.	Major risk factors of spontaneous of PTX was age > 20 years old) and body weight < below 30 kg). Thoracic deformity, and artificial ventilation were not major risk factors.	
Choo-Kang, L.R., et al.[2]	26-year old man with unclassified neuromuscular condition with numerous subpleural blebs undergoing NIPPV suffered four separate episodes of spontaneous PTX over a 12-month period.	Authors suggest a possible association between long-term NIPPV and the development of pleural bullous disease in certain neuromuscular disorders.	
Suri, P., et al. [3]	26-yr-old male with Duchenne muscular dystrophy that had undergone continuous NIPPV ventilation and MI-E multiple times daily at a pressure of 40 cm H ₂ O, along with abdominal thrusts for 6 years developed a left PTX.	Despite causative link cannot be shown, PTX can occur in MI-E users without other risk factors for barotrauma such as concomitant ventilator use.	MI-E may not be contraindicated but it is prudent to limit insufflation pressures to those of ventilator generated airway pressures. It might be prudent to withhold the abdominal thrusts in the post-PTX. period. It is recommended to provide exsufflation-timed abdominal thrust later during the exsufflation phase to avoid significantly increase airway pressures. The institution of MI-E after resolution of ventilator associated PTX may not be contraindicated but it may be prudent to limit insufflation pressures to those of ventilator-generated airway pressures.
Fraser, K.L, et al. [4]	Two cohorts with collagen VI-related dystrophy: 2 neonates and 1 children with a single pneumothorax in the setting of large intrathoracic pressure changes and 2 adult patients with recurrent PTX, with evidence of parenchymal lung disease.	Additional studies are needed to determine the prevalence of parenchymal lung disease and pneumothorax in patients with collagen VI-RD.	Practitioners should have a low threshold for ordering a chest computed tomography when the history suggests pneumothorax. It is recommended investigation into the parenchymal changes in collagen VI-related dystrophy. Placement of the chest tube under image guidance will reduce the risk of complications, including inadvertent tube insertion into lung parenchyma if pleural space adhesions are present. Pressure-limited ventilation is preferable to volume cycled modes for minimizing peak airway pressure and intrathoracic pressure swings. It is recommended early surgical consultation for definitive intervention.
Hino, H, et al. [5]	11-year-old boy with nemaline myopathy undergoing NIPPV developed complicated tension PTX. He had persistent air leak after chemical pleurodesis that solved by switching NIPPV to biphasic cuirass ventilation (BCV).	BCV was an alternative respiratory support system for patients having pneumothorax with persistent air leak.	BCV can be a useful alternative to NIPPV to avoid barotrauma by positive airway pressure in patients with neuromuscular disease.
Sasaki, M., et al. [6]	8-year-old boy with nemaline myopathy who developed severe respiratory failure and recurrent pneumothorax and underwent thoracic surgery.	The preferential damage to the respiratory muscles was probably responsible for the sudden onset of severe respiratory failure.	

Conclusion

Decline in respiratory status or chest pain patients with neuromuscular disorders can be a manifestation of a pneumothorax. A low threshold for investigating and appropriate management are recommended. Case reports and series suggest that sensible modification of

ventilatory management and prudence in the use of assistive coughing with manual techniques or MI-E may prevent its occurrence.

Keywords

pneumothorax;neuromuscular diseases;nemaline myopathy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A5.05 Paediatrics - Miscellaneous

ISPR8-2395

DEEP BRAIN STIMULATION AND TETRABENAZINE AN EFFECTIVE TREATMENT IN NEURODEGENERATION ASSOCIATED WITH PANTOTHENATE KINASE

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Introduction/Background

The neurodegeneration associated with pantothenate kinase (PKAN) also called Hallervorden Spatz syndrome is a rare neurodegenerative disease, difficult diagnosis and treatment, being often recognized after several years of onset of symptoms. In most cases, dystonic symptoms have little response to pharmacological management, so in recent years, deep brain stimulation (neurostimulator) has been shown to be effective in controlling symptoms and improving quality of life from the patients

Material and Method

Case report for an outpatient clinic.

Results

A child from the south west of Colombia with a diagnosis of PKAN confirmed with genetic testing had been diagnosed and mishandled until age 11 as sequelae of cerebral palsy presented generalized dystonic movements that led to deterioration in speech, chewing, swallowing and walking, significantly affecting his quality of life. After being evaluated in a medical board, it was decided to undergo a **Deep brain stimulation** in combination with tetrabenazine with a favorable result.

Conclusion

So far, there is no literature to support this indication and this combination, so it could be considered in the management of dystonia caused by neurodegeneration associated with pantothenate kinase and clinical trials should be done to assess its effectiveness and efficiency.

Keywords

neurodegeneration associated with Pantothenate Kinasa.;Hallervorden Spatz;Deep brain stimulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.01 Geriatrics - Dementia

ISPR8-2515

ABNORMAL INTRINSIC BRAIN ACTIVITY PATTERNS IN LEUKOARAIOSIS PATIENTS WITH COGNITIVE IMPAIRMENT: A RESTING STATE FMRI STUDY

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Introduction/Background

Amplitude of low-frequency fluctuations (ALFF) represents the intensity of low-frequency oscillations. It has been proven to be a valuable parameter to reflect the intensity of spontaneous neural activity. Previous studies have shown the strength of the ALFF in some areas are abnormally altered in cognitive impairment. Considering the pattern of intrinsic brain activity is sensitive to specific frequency bands, we tried to explore the alter of ALFF in leukoaraiosis (LA) patients with cognitive impairment in the study.

Material and Method

We selected subjects used MRI , and then gave them the Montreal Cognitive Assessment and Clinical Dementia Rating tests, divided them into three groups: LA with vascular mild cognitive impairment (LA-VaMCI), LA with vascular dementia (LA-VaD) and normal controls (NC). We used the Stroop Test and Trail Making Test (TMT) to analyze the executive of LA-VaMCI and LA-VaD groups, and used resting-state functional MRI (rs-fMRI) to measure the change of ALFF.

Results

The study showed the LA groups had increased ALFF in the right inferior temporal gyrus (ITG) and decreased ALFF in the left posterior cingulate precuneus (Pcu) compared with NC; the LA- VaMCI group had significantly increased ALFF in the right ITG compared with LA-VaD group and the LA-VaD group had decreased ALFF in the posterior cingulate cortex (PCC) /PCu and increased ALFF in temporal regions compared with NC group. We also found the positive correlations between the Stroop scores and the average ALFF of the left PCu , and positive correlation between the TMT scores and the average ALFF of the left PCu.

Conclusion

Our study suggested that LA patients have abnormalities in intrinsic brain activity, the more serious of cognitive impairment, the larger changed ALFF. Moreover, we found the relationship between altered ALFF and executive function scores.

Keywords

Amplitude of low-frequency fluctuation;Leukoaraiosis with cognitive impairment;alter

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.01 Geriatrics - Dementia

ISPR8-2519

IMPACT OF GRONINGEN MEANDER WALKING TEST SCORES TO BERG BALANCE TEST RESULT OF OLDER ADULTS WITH DEMENTIA

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Introduction/Background

This study aims to explore the relationship of Groningen Meander Walking Test (GMWT) and Berg Balance Test (BBT) in order to initiate a claim if Groningen Meander Walking Test (GMWT) can be used as an indicator for assessing the balance ability of older adults with dementia.

Material and Method

This study used correlational method of research to determine the impact of Groningen Meander Walking Test scores to Berg Balance Test result of older adults with dementia. Selection criteria include: ages 60 years and above, able to understand Visayan, Montreal Cognitive Assessment (MoCA) score <26, ambulatory with or without assistive support but without physical assistance. Exclusion criteria include: mental disorder, use of wheelchair for mobility, difficulty in speaking or unable to talk, difficulty hearing sounds, history of head injury, problem in vision that could affect the performance. Research instrument includes Groningen Meander Walking Test (GMWT), Berg Balance Scale (BBS), Montreal Cognitive Assessment (MoCA).

Results

Only the number of oversteps walk on the first trial had the significant relationship with Berg Balance Test while the rest of the variables such as the walk duration on the first and second trial and the number of oversteps walk on the second trial did not have direct relationship with the Berg Balance Test.

The Groningen Meander Walking Test Profile of the Patients

Order of Trials	Walk Duration	Average	Over-all Average	Variance	p-value	alpha	Interpretation	Remarks
First Trial	Forth	29.30	29.37	10.01	0.83	0.05	Not Significant	Valid
	Back	29.43						
Second Trial	Forth	29.17	29.22	9.60	.			
	Back	29.26						
Order of Trials (after 1 week)	Oversteps Walk	Average	Over-all Average	Variance	p-value	alpha	Interpretation	Remarks
First Trial	Forth	20.68	21.03	14.04	0.82	0.05	Not Significant	Valid
	Back	21.38						
Second Trial	Forth	20.83	21.22	12.93				
	Back	21.6						

The Distribution of Berg Balance Test Profile of the Patients

Berg Balance Test Scores Bracket	Interpretation	f	Percent
0-20	High Fall Risk	25	62.50
21-40	Medium Fall Risk	15	37.50
41-56	Low Fall Risk	0	0.00
Total		40	100.00

The Test of Significant Relationship of Groningen Meander Walking Test and Berg Balance Test

Paired Variables	r	p-value	alpha	Interpretation
First Trial-Walk Duration and Berg Balance Test	-0.076	0.641	0.05	Not Significant
Second Trial-Walk Duration and Berg Balance Test	-0.110	0.497	0.05	Not Significant
First Trial-Oversteps Walk and Berg Balance Test	-0.324	0.041	0.05	Significant
Second Trial-Oversteps Walk and Berg Balance Test	-0.269	0.093	0.05	Not Significant

Conclusion

Groningen Meander Walking Test (GMWT) scores had no significant relationship with Berg Balance Test (BBT) results in assessing the balance ability of older adults with dementia.

Keywords

dementia;walking test;balance test

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.01 Geriatrics - Dementia

ISPR8-0103

FEASIBILITY OF ELASTIC BAND EXERCISES IN DISABLED OR DEMENTED OLDER ADULTS IN WHEELCHAIRS

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Introduction/Background

Low adherence and difficult long-term maintenance of exercise programs for cognitively impaired older adults have been reported. Older adults' perception of having benefits from an exercise program is the key to their adherence to the program. This study aimed to investigate and compare the perceptions of disabled and demented older adults in wheelchairs toward the Wheelchair-bound Senior Elastic Band (WSEB) exercise program.

Material and Method

A descriptive and comparative design was applied. Data were derived from the experimental groups of two cluster-randomized controlled trials. A total of 133 participants from 8 long-term care facilities were recruited: disabled trial (four facilities, $n = 60$) and dementia trial (four facilities, $n = 73$). All participants received the Wheelchair-bound Senior Elastic Band exercises 3 times per week, 40 minutes per session for 6 months. The self-rating survey using the criteria of simplicity, safety, appropriateness, and helpfulness was applied to rate the program through face-to-face individual interviews at the end of the study.

Results

Both disabled and demented older adults have positive perceptions of the Wheelchair-bound Senior Elastic Band exercise program after 6-month of practice. The dementia group even had higher ratings for the four criteria of the program than the disabled participants.

Conclusion

Older adults with dementia were as capable of expressing their perceptions toward an exercise program through use of a self-rating survey as those without dementia. It is important to know how an exercise program was perceived by the participants in order to modify, improve, and sustain the long-term implementation of the program.

Keywords

Dementia;Elastic band exercise;Older adults in wheelchairs

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.01 Geriatrics - Dementia

ISPR8-0406

QUANTITATIVE TEXT ANALYSIS OF LITERATURE ON DAILY LIVING CHALLENGES EXPERIENCED BY PEOPLE WITH DEMENTIA, WRITTEN BY MEDICAL PROFESSIONALS IN JAPAN IN THE LAST FIVE YEARS.

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Introduction/Background

According to the government estimation, the number of elderly people with dementia will exceed 7 million in 2025. Therefore, medical professionals should provide medical services with the clear purposes of supporting the lives of elderly people with dementia. This literature survey was planned to investigate the interest amongst medical professionals in Japan about the challenges of daily living experienced by people with dementia.

Material and Method

The Japan Medical Abstracts Society (JMAS) Ver.5.0, only articles written in Japanese was surveyed. JMAS is the most popular internet document retrieval site for Japanese literature in medical field.

Keywords: Dementia and Daily Living and Problems or Inconvenience

From the literature found by the keywords, duplicated literature was detected and omitted. Then, those with abstracts documented in database were surveyed. Quantitative text analysis (co-occurrence network) was conducted for the abstracts selected using software "KH-Coder Ver2.0f).

Results

1248 literature with documented abstract was found and analyzed. From the co-occurrence network chart, the main keywords identified were "Dementia" "subjects" "daily living" "significance". The terms used frequently in the articles were as follows: evaluation, cognitive disorder, behavioral and psychological symptoms of dementia (BPSD), nutrition, caregivers, supporting family.

Conclusion

In order to provide effective support to people with dementia, it is important for each medical professional to employ its expertise and include family as members of support team for dementia clients. However, there are only few studies targeting daily living problems of people with dementia and families, hence the result showed a need for more research focused on daily living.

Keywords

Demantia;Quantitative Text Analysis;Daily Living

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.01 Geriatrics - Dementia

ISPR8-1071

CURRENT STATUS OF OCCUPATIONAL THERAPY FOCUSING ON DAILY ACTIVITIES FOR DEMENTIA PATIENTS: A CASE REPORT AND A LITERATURE REVIEW

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Introduction/Background

According to ministry of health labor and welfare, Japan, the number of dementia is around seven million, it indicated one in four out of the elderly has a risk of dementia. Regional inclusive care system has been started to support every elderly including dementia by all community professions. The primary goal of occupational therapy(OT) is to enable people to participate in daily activities(WFOT). The purpose of this study to examine current situations and problems of support provided by (OT) for daily activities of elderlies with dementia in Japan by a case report and literature review.

The case was a 75 years' women who lived in nursing home with assist. Three years before she developed disorientation, and Alzheimer disease was diagnosed. She could almost PADLs, she was difficult to do some IADLs by herself such as go shopping by bus. Even though she told nursing staff that she would like to go shopping to get items, the staff did not have an idea to enable it.

Material and Method

The medical literature was searched using the case registered system of the JAOT. The key words were "dementia", "ADL". An illustrative case report was checked a target ADL of OT, methods, places to provide OT.

Results

There were 150 literatures, relate to dementia, of which only 47 were focusing on ADLs. The problem of ADL assisted by occupational therapist was toilet (18), bathing (12), and eating (6) in turn. Only 2 cases had services relate to IADLs. All the support was done at the facility where he or she worked.

Conclusion

It tended to provide OT service with severe dementia. Though occupational therapists could have reached any dementia cases using regional inclusive care system, they did not provide services outside the facility using this system.

Keywords

Dementia;Occupational Therapy;Daily activities

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.01 Geriatrics - Dementia

ISPR8-1692

A NOVEL HANDICRAFT KIT FOR COGNITIVE ASSESSMENT AND REHABILITATION FOR PEOPLE WITH DEMENTIA

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Introduction/Background

People with dementia have various cognitive dysfunctions, which deprive them of their daily activities. In order to maintain and activate cognitive functions, handicrafts are sometimes used for rehabilitation. However, it is difficult to apply the handicrafts for people with dementia because of the difficulty of objective assessment. We have developed a handicraft kit without needle, named Funsy Stitch (Fun and easy stitch) manufactured by Uemura Co., Ltd and used it to analyze cognitive function of people with dementia along with the provision of appropriate assistance.

Material and Method

Subjects were 27 patients with Alzheimer's disease. They carried out 40 minutes of work twice, using the stitch with several difficulty levels. In addition, we asked them to evaluate the work subjectively using Visual Analog Scale (VAS) along with the objective evaluation by occupational therapist.

Results

In the subjective evaluation (VAS), the average value of pleasure for work (0: absolutely not fun~10: very pleasant) was 8.3 ± 1.4 . If part of the work is appropriately supported by occupational therapist, it was possible to complete the whole process. We also found that the type of error and the contents of support were different depending on the subject.

Conclusion

With appropriate support, most subjects could enjoy the activities and complete the task. It would be possible to use this kit for the cognitive assessment as well as cognitive rehabilitation which can provide fun for the people with dementia.

Keywords

dementia;rehabilitation;work

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.01 Geriatrics - Dementia

ISPR8-1824

CORRELATION BETWEEN MINI MENTAL STATE EXAMINATION(MMSE) AND MONTREAL COGNITIVE ASSESSMENT INDONESIA VERSION (MOCA INA) TO THE ADL OF ELDERLY PATIENT AT M. DJAMIL HOSPITAL PADANG

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Introduction/Background

Screening test is crucial to diagnose cognitive disfunction, they should be sensitive for mild cognitive impairment. Mini Mental State Examination (MMSE) and the Montreal Cognitive Assessment Indonesia version (MoCa Ina) are commonly used for screening of patient with vascular cognitive impairment. Mild cognitive impairment can affect the ability of elderly to perform their activity daily living.

Aim: To find the correlation between MMSE and MoCA Ina with ADL score of elderly patient

Material and Method

24 elderly patient without visual impairment, movement disorder and can use the dominant hand for writing, their cognitive were test with MMSE and MoCA Ina. Then the ADL was test with Lawson IADL

Results

The median age was 67 year. The education level 33% elementary school, 25% high school and the others 41% collage.

Cognitive test with MMSE 22 patient (91,7%) normal and only 2 patient (8,3%) had mild cognitive impairment. Different from MMSE the result of cognitive test with MoCA Ina 7 patient (29,2%) normal and the rest of the patient 70.8% had mild cognitive impairment

There is no correlation between MMSE and IADL ($p: 0,261$) and there syncnifican correlation between MoCA Ina and IADL ($p: 0,013$)

Conclusion

We can detect Mild cognitive impairment in elderly with MoCA Ina than MMSE. MoCA Ina has a correlation with the IADL Score of the elderly patient at M. Djamil Hospital

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.01 Geriatrics - Dementia

ISPR8-2479

PREVALENCE OF HIV ASSOCIATED DEMENTIA AMONG HIV/AIDS ADULTS ATTENDING COMPREHENSIVE CARE CENTRE-KAPSABET REFERRAL HOSPITAL

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Introduction/Background

HIV associated dementia is the most devastating central nervous system consequence of HIV infection which invades the brain directly. Progression into HIV associated dementia (HAD) has is associated with a number of bio-psychosocial factors. Despite the high prevalence of HIV infection, there are no adequate data on HIV associated dementia both internationally and locally especially in Africa. The aim of this study was to establish the prevalence of HAD, the associated socio-demographic factors, and the association between International HIV Dementia Scale Score and viral load among HIV/AIDS adult patients attending the Kapsabet Comprehensive Care Centre, Nandi County.

Material and Method

The study design was descriptive cross-sectional study and the study population was 4,100 HIV positive adults who were drawn from various locations within the county. Sample size was 352 patients who came for their routine clinic appointment. Sampling method used was simple random sampling where the potential participants randomly picked numbers in a container at the triage nurse desk. Those who picked odd numbers from 1 to 31 and met inclusion /exclusion criteria participated in the study. International HIV dementia scale and Socio-demographic questionnaire was used to collect socio-demographic characteristic and HIV related information.

Results

The data collected was analyzed using SPSS Version 20 and the results were presented in tables, graphs, Charts and narratives. Study results The prevalence of HIV associated dementia was 65.6% among HIV patient attending Kapsabet Comprehensive Care Centre, There was no association between viral load and International HIV dementia score with a chi-square of 3.96 and p-value of 0.267

Conclusion

The results indicated that HIV associated dementia is common among HIV patients attending Kapsabet comprehensive Care Centre and is not associated with viral load

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.02 Geriatrics - Frailty

ISPR8-2625

EXERCISE PREVENTS AGE HEART RATE VARIABILITY DECLINE IN THE ELDERLY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

Previous studies suggest that exercise training improves cardiac autonomic drive in young and middle aged adults. Benefits for elderly are discussed.

We aimed to establish whether exercise still increases heart rate variability beyond the age of 60.

Material and Method

Interventional controlled and non-controlled studies were selected from Pubmed, Ovid, Cochrane and Google Scholar databases. A random effects model was used to determine effect size (Hedge's g) for change in SDNN, RMSSD, PTOT, HF, and LF heart rate variability indices. Heterogeneity was assessed using the Q and I statistics.

Results

After checking for inclusion criteria, we found 12 studies, whom 7 controlled, including respectively 218 and 111 subjects (mean age 69.0 ± 3.2 and 68.6 ± 2.5), appropriate for meta-analysis. Including the 12 studies demonstrated a homogeneous significant effect sizes for SDNN ($g = 0.420$ (95% CI 0.239 to 0.602) $p < 0.0001$). Controlled studies analysis demonstrated homogeneous significant effect sizes ($p < 0.05$) for SDNN ($g = 0.489$; 95% C.I. 0.154-0.823), as well as for RMSSD ($g = 0.501$; 95% C.I. 0.138-0.864), and Ptot ($g = 0.751$; 95% C.I. 0.075-0.215).

Conclusion

This meta-analysis demonstrates a positive while moderate effect of endurance type exercise on parasympathetic and global cardiac autonomic regulation in older adults. We conclude that autonomic improvement in older adults, which needs long-term exercise with sessions preferably repeated at least thrice a week, may be even more critical as the remaining autonomic activity spontaneously decreases.

Keywords

Exercise;Heart Rate Variability;Older adults

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.02 Geriatrics - Frailty

ISPR8-0622

INFLUENCE OF AGING AND PHYSICAL FRAILITY OF ELDERLY PEOPLE ON THE BIOMECHANICAL CHARACTERISTICS OF TRUNK AND LOWER EXTREMITIES OF SIT TO STAND MOTION

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Introduction/Background

The purpose of this study was to obtain new findings on an effective physical therapy approach to sit-to-stand (STS) motion by clarifying aging- and physical frailty-related changes in kinematic and kinetic characteristics of trunk and lower limbs of elderly people.

Material and Method

The subjects were 17 healthy young people, 12 healthy elderly people, and 12 pre-frail elderly people. STS measurements were carried out using a three-dimensional motion analyzer (VICON MX) and ground reaction force plates (AMTI). Furthermore, the moments of the obtained hip, knee and ankle joints were summed to calculate the support moment.

Results

In the healthy elderly group, the maximum flexion angle of the trunk was significantly smaller than that in the healthy young group. There was no significant difference between the three groups in terms of the maximum flexion angle of the hip and ankle joint. In the pre-frail elderly group, the maximum flexion moment of the trunk and the hip joint was significantly lower than that of the healthy young group and the healthy elderly group, and the integral value of the extension moment and peak extension moment of the knee joint was significantly higher. Moreover, the ratio of the hip joint extension moment to the support moment was significantly lower than that in the healthy young group and the healthy elderly group, and the ratio of the knee joint extension moment to the support moment was significantly higher.

Conclusion

It was suggested that age-related changes occur earlier in trunk movement than lower limb movement. It was also suggested that the absolute value of the kinetic data of the trunk and hip

joint during STS motion declines due to the physical frailty of the elderly and that the absolute value of the kinetic data of the knee joint increases to compensate for this physical frailty.

Keywords

biomechanics;physical frailty;sit-to-stand

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.02 Geriatrics - Frailty

ISPR8-0948

RELATIONSHIP BETWEEN DYNAPENIA AND FUNCTIONAL MOBILITY IN INSTITUTIONALIZED FRAIL ELDERLY

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Introduction/Background

Frail Elderly Syndrome (FES) has been considered as one of the most incapacitating events with people aging. This syndrome is characterized by five disorders outlined in figure 1 which involves a greater risk of falls, disability, hospitalization and even death. Although FES is characterized by these 5 main disorders, recent studies have cited that dynapenia and reduced functional mobility have a crucial role in FES. Therefore, this study aimed to investigate the relationship between dynapenia and functional mobility in frail elderly institutionalized.

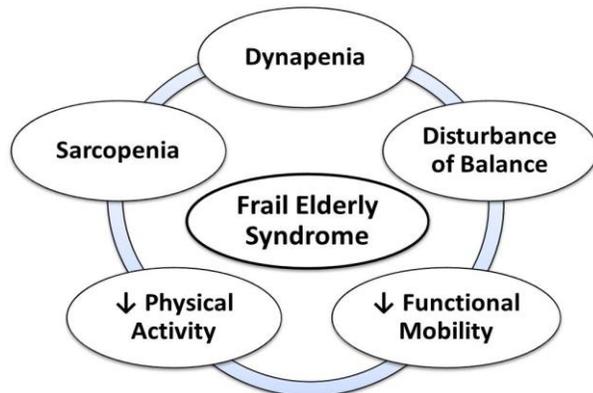


Figure 1. Clinical characteristics of Frail Elderly Syndrome

Material and Method

Twenty six institutionalized elderly men and women with average age 82.3 ± 6 years participated in this descriptive correlational study. All participants had 3 or more characteristics of fragility according to established criteria. Mini Mental State and Examination Geriatric Depression Scale were used for patients' screening phase. Functional mobility was assessed through the

International Physical Activity Questionnaire and Timed Up and Go test, whereas handgrip dynamometer and handheld dynamometer were used to evaluate respectively grip strength and large muscle groups (elbow flexors, shoulder flexors, ankle dorsiflexors, knee extensors, and hip flexors). Data were analyzed with descriptive statistics and Pearson correlation test.

Results

A significant negative correlation with a *large* effect size was observed between functional mobility and the dynapenia for all muscle groups: grip strength ($r=0.36$), elbow flexors ($r=0.58$), shoulder flexors ($r=0.56$), ankle dorsiflexors ($r=0.56$), knee extensors ($r=0.65$) and hip flexors ($r=0.51$).

Conclusion

This study confirmed previous results suggesting that functional mobility in institutionalized frail elderly is associated with muscle strength, especially knee extensors. FES prevention and treatment programs depend on accurate clinical diagnosis. The assessment of muscular strength seems fundamental, and dynamometry can contribute to this purpose.

Keywords

Geriatric assessment; Muscle strength; Frail elderly syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.02 Geriatrics - Frailty

ISPR8-1036

THE EFFECT OF PALLIATIVE EXERCISE ON MAXIMUM OXYGEN CONSUMPTION (VO₂MAX) AND QUALITY OF LIFE IN ELDERLY WOMAN WITH FRAILITY

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Introduction/Background

Aging is a process that turns a healthy adult into a frail and in Indonesia there has been no published frailty data. It is important to identify frailty and intervene to prevent disability. One of therapeutic modalities provided is exercise, therefore Installation of Physical Medicine and Rehabilitation Dr. Soetomo Hospital with Palliative Foundation Indonesia creates exercise for palliative patients.

Material and Method

This study was an experimental quasi with non randomized control group design pre test and post test design. The sample is chosen by purposive sampling method. The number of subjects analyzed were 24 subject, 13 subjects of treatment group and 11 subjects of control group. Treatment group was given palliative exercises with duration 30 minutes, frequency 3x/week for 6 weeks. The parameters evaluated were maximal oxygen consumption (VO₂max) with 6 minute walk test and quality of life with SF-36 questionnaire in each group.

Results

The result showed a significant difference ($p < 0.05$) VO₂max, quality of life of physical dimension, general health, vitality, mental health, and there was no significant difference in social function, and emotional role after treatment compared before treatment in treatment group.

Conclusion

There was an increase in cardiorespiratory fitness assessed by VO₂max measurements and improved quality of life in the physical function, general health, vitality, social function, and mental health of elderly woman with frailty in a nursing home attending palliative exercise 3x/week for 6 weeks.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.02 Geriatrics - Frailty

ISPR8-1090

KINECT BASED EXERGAMING TO IMPROVE FRAILTY STATUS AND PHYSICAL PERFORMANCES IN THE FRAIL AND PRE FRAIL ELDERLY

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Introduction/Background

Frailty is a multisystem degeneration. It is becoming recognized that frailty may be a pre-disability state. Exercise training is proved to improve physical performance and health status in the elderly. Kinect is an affordable and accessible exergaming systems. Whether Kinect-based exergaming is efficient in improving physical performances and reverse the deterioration process in frail and pre-frail elderly require further investigation. The purpose of this study is to investigate the effect of Kinect based exergaming on frailty status, physical performances in pre-frail and frail elderly.

Material and Method

We recruited frail and pre-frail elderly people in the elderly day care centers and institutions. Participants were randomized to two group and received 60 minutes Kinect based exergaming or multi component exercise for 36 sessions over 12 weeks according to their group assignment. Programs in both groups include muscle strengthening , aerobic exercise, balance training and cognitive training. Outcome measures include frailty status and physical performances.

Results

Fifty two pre-frail and frail elderly finished all the intervention and assessment. Both groups showed improvements in frailty scores after intervention. The frailty components revealed that weakness, exhaustion, low physical activity, and slow walking speed were reversed in both group, but unintentional weight loss did not significantly changed. Both groups also showed improvements in most parts of the physical performances after intervention. For between group differences, Kinect based exergaming group showed more improvement in forward reaching distance than multi component exercise group.

Conclusion

Kinect based exergaming can reverse the frailty status and improve physical performances. Our results provided information to support the possibility of therapeutic use of exergaming training in the frail and pre-frail elderly.

Keywords

frailty;exergaming;multi component exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.02 Geriatrics - Frailty

ISPR8-1326

RATE OF FORCE DEVELOPMENT OF TONGUE PRESSURE IN THE ELDERLY - PILOT STUDY -

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Introduction/Background

Maximum tongue pressure is used clinically to assess dysphagia and to facilitate swallowing exercises. A previous study reported on maximum tongue pressure and endurance of tongue pressure, but did not report on speed (rate of force development, RFD). The objective of this pilot study was to investigate the RFD of tongue pressure in the elderly.

Material and Method

The subjects were 60 healthy elderly people (60-year-olds, n=20; 70-year-olds, n=20; 80-year-olds, n=20). Tongue pressure was measured using a tongue pressure measurement device (JMS Co. Ltd., Japan). The maximum tongue pressure and RFD of tongue pressure were measured thrice. RFD of tongue pressure was measured as 1) the rate from the start of rising tongue pressure to peak and 2) 80% of peak from the start of rising of tongue pressure.

Results

Maximum tongue pressure was 36.8 ± 6.2 kPa, 35.3 ± 5.9 kPa, and 32.6 ± 8.2 kPa in the 60-, 70-, and 80-year-olds, respectively, with no significant difference with age. Regarding RFD of the tongue pressure, the speed to reach the peak was 105.3 ± 46.0 kPa/s, 106.0 ± 45.6 kPa/s, and 82.5 ± 38.0 kPa/s in the 60-, 70-, and 80-year-olds, respectively, and the speed to reach the 80% peak was 148.9 ± 54.0 kPa/s, 144.7 ± 61.6 kPa/s, and 107.7 ± 62.1 kPa/s in the 60-, 70-, and 80-year-olds, respectively, both of which were not significant but tended to decrease in the 80-year-olds.

Conclusion

In the elderly, RFD of tongue pressure appeared to decrease more in the 80-year-olds than in the 60- and 70-year-olds. Further studies will be done with a larger number of subjects, with young people for comparison, and with patients with dysphagia.

Keywords

tongue pressure;rate of force development;elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.02 Geriatrics - Frailty

ISPR8-1503

THE CHARACTERISTICS OF FRAIL ELDERLIES USING NEW TYPE OF A SHORT TERM INTENSIVE PREVENTION SERVICE C, JAPAN

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Introduction/Background

In Japan, a new type of service for frail elderly called "life support comprehensive service C" has been launched. The purpose of this service is improvement of health condition and ADL. This service C has the feature that it ends in a short period of about 3 months. However, little weakness was known about the characteristics of service C users. For these reasons, the purpose of this research was to compare with users of current preventive services to investigate the characteristics of vulnerability among Service C users.

Material and Method

The 28 participants were recruited by an area support comprehensive support center. Service C group (n=14) received community occupational therapy(OT) focused on restoring social functioning and improving QOL. Control group(n=14) who are healthy elderly also received community OT on current service focus on on restoring daily life skills and improving QOL. In both groups, from 8 to 16 times OT group sessions had conducted for 4 months. To compare measuring ADL and QOL, Frenchey Activities Index(FAI, Holbrook,1983) as a measurement for ADL, and EQ-5D-5L as a measurement for QOL were used. In this study, the scores of the initial evaluation of the experimental group and the control group were compared. This survey was initiated after approval of the Ethics Review Committee.

Results

There was no significant between groups on age. The mean of FAI on service C group (12.3±11.4) was significantly lower than current service group(32.3±4.3). The mean of EQ-5D-5L on service C group(0.538±0.117) was significantly lower than current service group(0.850±0.094).

Conclusion

These results indicated that the user of service C had ADL limitations. Even though their goals were similar, it should be different program based on frailty of participants.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.02 Geriatrics - Frailty

ISPR8-1594

EFFECTIVENESS AND EFFICIENCY OF NEW PREVENTIVE INTERVENTION SERVICES FOR COMMUNITY DWELLING FRAIL OLDER PEOPLE: PILOT STUDY

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Introduction/Background

In Japan, a new preventive intervention service has been launched for frail older people called "life support comprehensive service C". Many of the subjects in this service have some difficulty with Instrumental Activities of Daily Living: IADL such as housework, going out, hobbies, etc. However, it is unclear for the intervention detail and effects. Furthermore, this intervention is required for short term and low frequency. Therefore, the purpose of this pilot study was to determine the effectiveness and efficiency of the new preventive intervention service for community-dwelling frail older people.

Material and Method

This study design was pre-post design without a control group. Participants were community-dwelling frail older people. Intervention in this study was conducted by occupational therapists. Typically, the therapists provided the necessary advice with regards to the specified real-life occupation (doing meaningful activities in their real environment) for each participant. The intervention details were client-centred goals setting, observation of real living situations, and provision of advice on the individual problem of real occupation. The outcome was the Frenchay Activities Index (FAI), which is used for the evaluation of the Instrumental Activities of Daily Living (IADL). Additionally, frequency, and duration of the intervention were calculated.

Results

The mean age of participants was 76.7 (\pm 7.84) years old, with orthopedic disorders were most common (46.2%). The FAI scores were significantly improved for all items except work after the intervention ($P < 0.05$). Frequency of interventions was 4 or less, and the duration was within 3 months.

Conclusion

In this study showed intervention detail of life support comprehensive service C and this intervention had the potential of the effectiveness and efficiency. We believe that this pilot study contributes to future clinical studies for frail older people.

Keywords

Activities of Daily Living;Frail older people; Occupational therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.03 Geriatrics - Sarcopenia

ISPR8-0258

EFFECTS OF PROGRESSIVE ELASTIC BAND RESISTANCE EXERCISE FOR OSTEOSARCOPENIA ELDERLY WOMEN

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Introduction/Background

Sarcopenia involves age-related decreases in muscle strength and muscle mass, leading to frailty and disability in elderly people. When combined with osteoporosis, it is defined as osteosarcopenia, which can result in more functional limitations and disability than either disorder alone. Progressive elastic band resistance exercise has been used for the functional training of elderly people with disabilities, and can improve the physical performance of this population. However, the influence of body composition and physical function after elastic band resistance training among osteosarcopenia elderly women was still not well investigated. The aim of this study was to investigate the effect of progressive elastic band resistance exercise for osteosarcopenia elderly women.

Material and Method

This pilot randomized controlled trial focused on elderly women with osteosarcopenia (n=26). The study group underwent progressive elastic band resistance training for 12 weeks (3 times per week). The control group received only a 40-minute lesson about the exercise concept. Dual-energy X-ray absorptiometry was evaluated and physical capacity was evaluated using the timed up-and-go, single-leg stance, timed chair-rise, and 10-m walk speed tests. All the variables were measured at baseline, after 12 weeks of intervention, and 6 months follow up period. All data was analyzed by two-way-ANOVA.

Results

In the aspect of body composition, the study group (n=15) presented improved of T-score, Z-score and decreased fat percentage after intervention. When follow up, there was no statistical difference with comparing baseline data. The physical function of timed up-and-go and timed chair-rise test revealed improvement after intervention. There was no improvement of body composition and physical capacity of control group (n=11). After intervention and follow up evaluation, study group presented better performance of timed up-and-go, 10-meter walk test and timed chair-rise test than control group

Conclusion

Progressive elastic-band resistance exercise can improve bone density, fat, and physical function of elderly osteosarcopenia women.

Keywords

Sarcopenia;Osteosarcopenia;Elastic band resistance exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.03 Geriatrics - Sarcopenia

ISPR8-1103

COMPARISON OF BODY COMPOSITION BETWEEN AFFECTED AND UNAFFECTED SIDE OF HEMIPLEGIC PATIENTS BY BIOELECTRICAL IMPEDANCE ANALYSIS

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Introduction/Background

Hemiplegia leads to muscle abnormalities due to combination of denervation, disuse, abnormal metabolic function, remodeling and spasticity that may account for a muscle atrophy in affected extremities. The purpose of this study is to analyze the differences of body composition between affected and unaffected extremities in the patients with hemiplegia using Bioelectrical impedance analysis (BIA)

Material and Method

We enrolled in-patients with hemiplegic stroke. They received conventional physical and occupational therapy after onset. Body compositions were assessed by BIA and muscle mass, body water and extra-cellular water ratio were analyzed at each segments of body. They were divided into 3 groups according to the period of onset; acute (0-1 month), subacute (1-6 month), and chronic phase (after 6 month).

Table 1. Clinical characteristics of the subjects

Variables	Number
Age (years)	
Mean \pm SD	61.0 \pm 12.1
Gender	
Male	106 (61.2%)
Female	67 (38.8%)
Type of Stroke	
Infarction	94 (54.3%)
Hemorrhage	79 (45.7%)
Hemiplegic side	
The right side	91 (52.6%)
The left side	82 (47.4%)
Period after onset	
Acute(0-1 month)	58 (33.5%)
Subacute (1-6 months)	75 (43.3%)
Chronic (after 6 months)	40 (23.2%)

Results

In the study, we enrolled a total of 173 subjects (106 men, 167 women; 61.0 \pm 10.5 years). We divided subjects in three groups; acute (58, 33.5%), subacute (75, 43.3%), and chronic group (40, 23.2%). The ischemic stroke was 94 and hemorrhagic stroke was 79 patients. Of all subjects, 91 have been a right hemiplegia. There was no significant difference in segmental lean body mass between affected and unaffected upper and lower extremities in all groups. Also, the segmental body water was no significant difference between affected and unaffected extremities in all groups.

Table 2. Comparison segmental lean mass and body water between affected and unaffected extremities

Variables		Affected side	Unaffected side	<i>p</i> -value
Segmental lean mass (kg)				
Acute	Upper extremity	2.37±0.70	2.38±0.73	0.91
	Lower extremity	6.61±1.79	6.67±1.96	0.84
Subacute	Upper extremity	2.31±0.66	2.35±0.73	0.81
	Lower extremity	6.90±1.70	6.89±1.69	0.75
Chronic	Upper extremity	2.46±0.52	2.51±0.60	0.68
	Lower extremity	6.84±1.64	6.98±1.74	0.71
Segmental body water (kg)				
Acute	Upper extremity	1.85±0.53	1.87±0.55	0.91
	Lower extremity	5.25±1.36	5.26±1.47	0.96
Subacute	Upper extremity	1.81±0.51	1.82±0.54	0.87
	Lower extremity	5.42±1.33	5.35±1.37	0.75
Chronic	Upper extremity	1.94±0.51	2.19±1.06	0.21
	Lower extremity	5.66±1.63	5.68±1.54	0.96

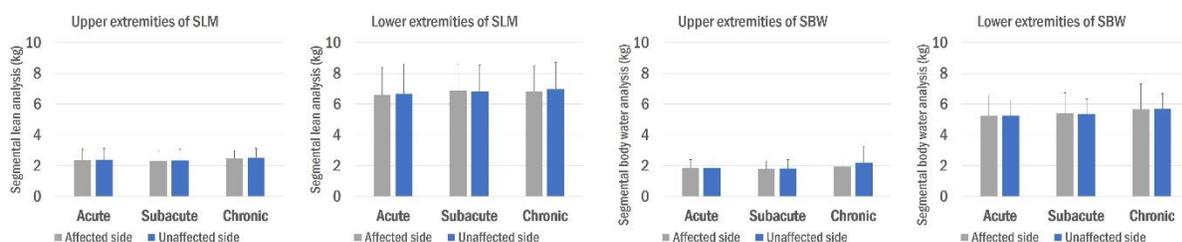


Fig. 1. Segmental lean mass and body water in upper and lower extremity.

Conclusion

There were no significant differences in body composition between affected and unaffected upper and lower extremities in acute to chronic stroke. These results expect that patients with hemiplegic stroke who received rehabilitation therapy to maintain body composition in affected side. Rehabilitation therapy might be useful strategies to preventive effect of muscle wasting.

Keywords

Bioelectrical impedance analysis ;Muscle atrophy;Hemiplegia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.03 Geriatrics - Sarcopenia

ISPR8-1225

INFLUENCE OF TONGUE COMPOSITION CHANGE ON TONGUE PRESSURE IN THE ELDERLY: A STUDY USING TONGUE MR IMAGING WITH DIXON

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Introduction/Background

The mechanism of oral sarcopenia concerned with tongue muscle atrophy is imperfectly understood. We must pay careful attention whether the pathology of tongue muscle affects dysphagia in the elderly. The purpose of this study was to investigate the relationship between the decrease in tongue muscle volume and tongue weakness with magnetic resonance imaging (MRI) examination.

Material and Method

11 elderly patients without stroke or neuromuscular disease participated (Mean age:72.6±6.5). Tongue pressure was measured using a device (TPM-01, JMS, Hiroshima) equipped with a balloon probe. Tongue volume was evaluated with T1-weighted MR imaging. Tongue lean muscle mass was evaluated with Dixon MRI. The Pearson analysis was used to calculate coefficients between tongue pressure and tongue volume/lean tongue muscle mass.

Results

The mean tongue pressure, tongue volume and lean tongue muscle mass were 29.9±8.1 kPa, 66.8±12.3 cm³ and 56.2±10.4 cm³. Tongue pressure was significantly correlated with tongue volume and lean tongue muscle mass ($r = 0.60$, $p = 0.049$ and $r = 0.64$, $p = 0.035$).

Conclusion

To our knowledge, this is the first study to investigate tongue muscle mass, lean tongue muscle mass and tongue pressure using MRI images. Tongue muscle mass and lean tongue muscle mass was significantly associated with tongue pressure.

Compared with previous studies for healthy young adults (Utanohara, 2008; Fabrice, 2010), tongue pressure was decrease in spite of tongue volume was similar. Bassler (1987) suggested that the tongue volume after muscular atrophy is compensated by metaplasia of fatty tissue. We speculated that adipose might be an important factor for reducing tongue pressure and dysphagia.

Keywords

sarcopenia of tongue;MRI

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.03 Geriatrics - Sarcopenia

ISPR8-1545

RECOVERY OF FUNCTION IN SARCOOPENIC AND NON-SARCOOPENIC PATIENTS AFTER HIP FRACTURE UNDERGOING FRAGILITY FRACTURE INTEGRATED REHABILITATION MANAGEMENT

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Introduction/Background

Fragility hip fracture and sarcopenia are critical causes of mortality and loss of function in elderly patients. Also, sarcopenia is known for association with overall worse functional outcome after rehabilitation. This study evaluates the functional recovery in patients with sarcopenia receiving Fragility Fracture Integrated Rehabilitation Management (FIRM) after hip fracture.

Material and Method

Patients over 65 years who underwent hip surgery for fragility hip fracture at three university hospitals in Korea from July 2016 to December 2017 received multidisciplinary rehabilitation. Sarcopenia was defined according to Asian Working Group for Sarcopenia (AWGS) criteria. We evaluated various functional characteristics including primary ambulatory function and other secondary outcomes between sarcopenic and non-sarcopenic group at admission, discharge and 3 months after surgery.

Results

107 patients with a mean age of 81.26 ± 8.85 years were eligible for the study and patients satisfied the criteria of sarcopenia were 40 (37.4%). Compared with patients without sarcopenia, those with sarcopenia showed lower ambulatory status at discharge (Functional Ambulatory Category (FAC) : 2.18 ± 1.14 versus 2.67 ± 0.98 , $p=0.021$) and at 3 months after surgery (KOVAL : 4.07 ± 1.87 versus 3.04 ± 1.82 , $p=0.016$, FAC : 3.03 ± 1.07 versus 3.68 ± 1.02 , $p=0.008$). In addition, other secondary outcomes were lower in sarcopenic group at discharge (Modified Rivermead Mobility Index (MRMI), Berg Balance Scale (BBS), Mini Mental State Examination, Grip strength, Korean Instrumental Activities of Daily Living (K-IADL), EQ-5D) and at 3 months (MRMI, modified Barthel index, K-IADL, EQ5D) after surgery.

Conclusion

These results support the negative impact of sarcopenia on functional recovery among patients with fragility hip fracture receiving rehabilitation. Well-customized comprehensive rehabilitation program focused on sarcopenia is helpful for improving functional outcomes.

Keywords

hip fracture;sarcopenia;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.03 Geriatrics - Sarcopenia

ISPR8-1755

RELATIONSHIP OF LOW PHYSICAL CAPABILITY AND THE AUTONOMIC FUNCTION OF OLDER ADULTS WITH SARCOPENIA

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Introduction/Background

Sarcopenia has increased risks of limiting physical capability (PC) and lowering physical activity levels of elderly people. Low physical activity levels may be mediated through autonomic dysfunction with diminished heart rate variability (HRV). However, the relationship between autonomic dysfunction and low PC remains unclear. This study investigated the association of low PC with HRV in older adults with sarcopenia.

Material and Method

We conducted an observational study with a cross-sectional design. We included a total of 126 older adults who had a mean (SD) age of 65.2 (7.6) years and was identified as sarcopenia. The PC was measured using mobility tasks, including functional reach (FR), single-leg stance (SLS), gait speed (GS), timed up-and-go, and timed chair-rise (TCR), which were merged and transformed into a global physical capability score (GPCS). Time- and frequency-domain indices of HRV were obtained. We used the highest and lowest quintiles of the distribution of GPCS as the cutoff points for high and low PC, respectively. A stepwise regression model was established to identify the determinants of HRV indices. We used hierarchical regression analysis to identify the associations of GPCS with HRV indices.

Results

Compared with the low PC group, the high PC group exhibited a significantly superior performance in the mobility tasks (all $P < 0.001$). Compared with the high PC group, the low PC group had a markedly diminished HRV in terms of a decreased standard deviation of normal-to-normal interval (SDNN, $P < 0.001$) and high frequency (HF) component of HRV ($P < 0.01$). FR and GS positively predicted SDNN, whereas FR, SLS, GS, and TCR were determinants of HF. The GPCSs independently explored 17.9% ($P < 0.001$) and 12.1% ($P = 0.001$) of the variances in SDNN and HF, respectively.

Conclusion

Low PC levels are an independent determinant of decreased HRV in older adults with sarcopenia.

Keywords

Sarcopenia;Heart rate variability;Physical capacity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.03 Geriatrics - Sarcopenia

ISPR8-2292

SARCOPENIA AS A RISK FACTOR FOR DEPRESSION IN COMMUNITY-DWELLING OLDER ADULTS: A 1-YEAR PROSPECTIVE STUDY

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Introduction/Background

Several studies have explored the association between sarcopenia and depression, but they have been based on cross-sectional data. The purpose of this 1-year prospective study was to determine whether sarcopenia is an independent risk factor of depression in community-dwelling older adults.

Material and Method

This was a prospective study including 860 Chinese suburb-dwelling participants aged ≥ 60 years. We defined sarcopenia using the diagnostic algorithm recommended by the Asian Working Group for Sarcopenia, and the participants were classified into the sarcopenia and normal groups according to this definition. The participants' depressive symptoms were assessed using the Geriatric Depression Scale (GDS) and defined the score of $GDS \leq 11$ as depression.

Results

Among the 860 participants (mean age 67.6 ± 5.9 years), 8.84% were classified as sarcopenia. Multivariate logistic regression showed that sarcopenia was independently associated with depression (adjusted OR 2.09, 95% CI 1.04-4.19, $P = 0.04$).

Conclusion

Sarcopenia was identified as an independent risk factor of depression in community-dwelling older adults during the 1-year study period.

Keywords

Sarcopenia; Depression; Chinese

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.03 Geriatrics - Sarcopenia

ISPR8-2413

SARCOPENIA AND RISK OF NEW ONSET DEPRESSIVE SYMPTOMS IN OLDER ADULTS: A COHORT STUDY

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Introduction/Background

Few studies have explored the relationship between sarcopenia and depressive symptoms in certain cohorts. The objective of this study was to examine the incidence of new onset depressive symptoms and associated factors over a 1-year period in an elderly Chinese suburban population.

Material and Method

This study was conducted on 510 Chinese suburb-dwelling participants aged ≥ 60 years, for whom detailed information regarding sociodemographics, behavioral characteristics, and medical conditions had been documented. Depressive symptoms were examined using the 30-item Geriatric Depression Scale. A Geriatric Depression Scale score of ≥ 11 was used to indicate depressive symptoms. Sarcopenia was defined according to the Asian Working Group for Sarcopenia (AWGS) criteria. Sarcopenia incidence was documented after one year of follow-up, and correlated with several possible factors.

Results

At baseline, 43 (6.4%) of the initial 670 participants had depressive symptoms. The prevalence of depressive symptoms was 23.9% after one year. Between baseline and 1-year follow-up, 122 of the participants without depressive symptoms at baseline had developed depressive symptoms. After multivariate adjustments, it was found that the incidence of new onset depressive symptoms increased with age and sarcopenia is associated with more incidence of depressive symptoms. Incidence was also higher among women.

Conclusion

We found depressive symptoms incidence increased with age, and women were more likely to have depressive symptoms. In addition, sarcopenia is a risk factor for depressive symptoms. Maintaining a healthy weight could be beneficial in the prevention of depressive symptoms.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-2601

RELIABILITY AND VALIDITY OF THE HELLENIC VERSION OF THE BERG BALANCE SCALE

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Introduction/Background

It has been estimated that approximately one of three persons over 65 years old falls repeatedly, once a year and 10% of them has a serious injury. The purpose of this study was to develop the hellenic version of Berg Balance Scale (BBS) and to process its reliability and validity according international guidelines of transcultural validation process.

Material and Method

60 patients selected according inclusion criteria, constituted the population of the study. BBS' structure was investigated using factors' analysis. In order to determine the reliability of BBS' internal consistency Cronbach's-a factor was used. The intraclass correlation coefficients (ICCs) were used in order to determine the accordance of the responses and the internal stability of the questionnaire. BBS' Person 's (r) correlation coefficient was associated with those of Test Up &Go (TUG) and Fall Efficacy Scale (FES) so to test the concurrent validity of YSQ. The statistical analysis was processed though the Statistical Package of Social Sciences, SPSS 19.0.

Results

The majority of the participants were women, secondary education graduated, married, 70-79 years old. The first time of assessment the mean score in BBS was 52.6 (SD=4,8) and the second time was 52.1 (SD=5,1). ICCs were significant ($p < 0,001$) and were estimated to 0.88 for the total of the sample, 0.91 when the two assessments were conducted by the same person and 0.85 when the persons were different. There was a significant negative correlation of BBS with TUG and FES, which confirmed the convergent validity of the BBS. Age and the educational level of the participants were associated independently to the BBS' score. Women and participants with fracture had significantly lower BBS' scores compared with men and individuals without fracture respectively.

Conclusion

The assessment of falls' risk factors is essential and realized through the appropriate methodological tools which provide and an automated risk analysis.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-0195

FACTORS ASSOCIATED WITH THE RISK OF FALL IN STROKE INPATIENTS

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Introduction/Background

Falls are popular and major problem for stroke patient during their hospital stay. The aim of this study is to reveal the factors associated with the risk of fall in stroke inpatients.

Material and Method

Retrospective study carried out with stroke hospitalized patients. Thirty-four stroke patients who fell and 34 stroke patients who did not fall during their hospital stay underwent structured medical examinations to identify factors associated with fall. The control subjects were matched for age, height, body weight, body mass index (BMI), and primary diagnosis. Potential variables related to fall risk factors were collected from medical records. A conditional logistic regression was performed to calculate odds ratios using SPSS. Clinical data were collected from January to December 2016. "An unexpected displacement of the body to a lower level than the initial position without loss of consciousness" was regarded as fall.

Results

Nutrition status, evaluated with modified CONUT score at admission, was significantly associated with fall risk (odds ratio = 3.11, 95%CI: 1.18-9.94). There were no statistically significant differences in the other candidate factors (e.g. sarcopenia, activities of daily living, and rehabilitation intervention) between the two groups.

Conclusion

Our findings demonstrated that nutrition status was associated with fall risk in stroke hospitalized patients. Further studies are needed to reveal that nutritional intervention can contribute to falls prevention in stroke patients.

Keywords

Fall prevention;Nutrition;Stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-0407

EFFECTS OF STRETCHING, STRENGTHENING AND BALANCE EXERCISES IN FALL PREVENTION PROGRAM IN ELDERLY

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Introduction/Background

Falls increase risk of death, worsen quality of life and make possibility of long term hospitalization in older community residents. For these reasons, falls cause increases of medical expenses. In South Korea, 42% of senior citizen had fall experiences and 38% of these people spend a lot of medical expenses. Given this background, we have attempted to prevent falls in elders through 8weeks prevention program. The aim of this study was to identify the effects of fall prevention program.

Material and Method

During a period ranging from July of 2015 to June of 2016, Patients who visited the out patient Department of Physical Medicine and Rehabilitation in Veterans Health Service Medical Center were enrolled. Inclusion criteria were (1)who ages over 60, (2) who experienced falls (3) who complained a disturbance during gait. The fall prevention program consists of stretching, strengthening and balance exercise of lower extremities and core muscles shows a gradual rise in exercise intensity and twice a week during 8weeks. Participants were rated for gait ability, functional status and fall fear risk with timed up go test, gait analysis, balance test, strength test, berg balance test (BBS), modified Barthel index (MBI), and Korean version of Fall efficacy international scale (KFES-I). We compared these parameters before and after program.

Results

Of 47 participants who enrolled at first, 32 participants finished the fall prevention program. In addition only 17 participants were evaluated after program. After the fall prevention program, significant improvements were noted in MBI ($p<0.01$), BBS ($p<0.005$) and KFES-I ($p<0.002$). But other parameters showed no significant differences including timed up and go test and gait analysis parameters.

Conclusion

In this study, participants showed a increase of balance ability and decrease of fall fear. through the program for fall prevention. therefore, Consistent stretching, strengthening and balance exercise may contribute to previontion of fall in olders.

Keywords

Elderly;Group exercise;Fall

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-0414

INSTRUMENTAL REHABILITATION IN THE MANAGEMENT OF POSTURAL DISORDERS IN ELDERLY WITH KNEE OSTEOARTHRITIS

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Introduction/Background

Knee osteoarthritis is the most common osteoarthritis in the lower limb.

In the elderly, the aging of major functions and of the postural system associated with knee osteoarthritis causes greater fragility with an increased risk of falls. One in three over 65 and one in two over 85 fall in one year. Therefore, postural rehabilitation takes an important place in the care

The aim of our study was to evaluate the contribution of instrumental reeducation in elderly with knee osteoarthritis subjects compared to classical proprioceptive rehabilitation and to draw up their postural profile.

Material and Method

Retrospective, evaluative and comparative study. Twenty patients aged over 65 were enrolled in the study and divided into two groups of 10: group 1 (G1) underwent instrumental rehabilitation, the second group (G2) underwent conventional rehabilitation . Both groups benefited from the same initial and final clinical, functional and instrumental evaluation.

Results

The average age of the general population was 68.65 ± 3.216 years ranging from 65 to 75 years.

Improvement was noted in both groups in pain, clinical parameters , and Lesquene and Womac functional scores. A notable improvement was also observed on the stabilometric parameters evaluated namely the surface S (open eyes and eyes closed) the Romberg quotient and the speed variation. These improvements were not, however, significant for both groups. G1 significantly improved stabilometric parameter data compared to G2, but this improvement was not statistically significant.

Conclusion

Stabilometric rehabilitation is a promising technique for the management of fine balance disorders. Longer-term programs would be offered to older people given the complexity of the field, in order to guarantee significant results.

Keywords

knee osteoarthritis; elderly; balance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-0706

THE USE OF WALKING AIDS IN ELDERLY FALLERS

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Introduction/Background

Falling is a serious public health problem among elderly people. Old people in Tunisia don't like to use crutches/walkers, symbols of handicap. We investigated whether the risk of falling could be reduced with walking aids and how to convince elderly people to use them .

Material and Method

We studied from march-july 2017 30 fallers (unipodal support test < 3sec), 27 women, mean age 69.1 years, who consulted at the department of physical and rehabilitation medicine for rheumatologic impairments (73%) – neurological conditions (17%) or traumatical conditions (10%). These subjects were assessed without and with a walking aid as following: intensity of pain, range of motion, muscular testing, Katz index, Tinetti POMA, gait (speed, cadence, step length, step width), self satisfaction. Statistic study was done by SPSS version 18.

Results

During 5 months of follow-up, 30 subjects were studied. 60% had inaccessible environment, 53% a loss of range of motion, 63% a contracture, 70% muscle weakness.

During rehabilitation sessions, a walk test with technical assistance was performed.

Many parameters were improved using walking aids (a single crutch in 60%, walkers in 30%, tripod stick in 10%): mild pain from 60% to 47%, Katz index, Tinetti (24-27 points), gait parameters (speed, cadence, step length).

73% of the subjects were satisfied using walking aids

Conclusion

The use of a walking aid is positive in elderly fallers. Statistically significant improvements were observed according pain, Katz index, Tinetti, gait parameters and self satisfaction. Nevertheless 3 patients didn't accept to use the walking aid.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-0821

HIGH HEEL HEIGHT IMPAIRS STANDING BALANCE IN ELDERLY WOMEN

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Introduction/Background

Preventing falls in elderly people is a major public health issue, regarding to significant consequences for physical, psychological and socio-economic level. Among various risk factors, influences of footwear, and particularly of the heel height, on the control of standing posture are discussed. The aim of this study was to assess the effect of heel height on the control of standing balance in older women.

Material and Method

Twenty old women were recruited from the community (Table 1) and voluntarily participated in the study.

Table 1:

Characteristics	Mean	SD	Median	Min	Max
Age (years)	75.50	6.73	75.00	65.00	89.00
Height (m)	1.59	0.07	1.60	1.45	1.70
Weight (kg)	68.15	14.06	65.00	51.00	110.00
BMI (kg/m²)	26.77	4.41	25.67	20.82	37.18

They were instructed to stand barefoot on force plate under four combined experimental conditions of two visual conditions (eyes open and eyes closed) and two heights of heels (0 and 4.5 cm). Centre of foot pressure (CoP) displacements were recorded using a force platform. Three dependent variables were used to describe the participants' postural behavior: the mean antero-posterior (AP) COP position, the surface area covered by the trajectory of the CoP and the mean speed of the CoP displacements.

Results

As reported in Tables 2 and 3, analysis of the CoP displacements showed for both eyes open and eyes closed conditions: (1) a more anterior shift of the mean COP position in the 4.5 cm heel condition than in the 0cm heels condition, and (2) a significant increase of CoP mean speed in the 4.5 cm heel condition than in the 0cm heels condition. Conversely, no significant

differences were observed for the surface area.

Table 2: Eyes opened	Surface area (mm²)		Mean speed (mm/s)		Mean AP CoP position (mm)	
	0cm	4.5cm	0cm	4.5cm	0cm	4.5cm
Mean	223	224	14.01	18.14	-24.5	-12.3
(SD)	(99)	(132)	(6.30)	(7.99)	(13.2)	(16.9)
p-value	0.94		<0.001		<0.01	

Table 3: Eyes closed	Surface (cm²)		Speed (mm/s)		Mean AP CoP position (mm)	
	0cm	4.5cm	0cm	4.5cm	0cm	4.5cm
Mean	405	563	20.98	30.34	-22.8	-5.7
(SD)	(326)	(596)	(11.89)	(17.68)	(12.6)	(17.9)
p-value	0.15		<0.001		<0.01	

Conclusion

The present findings demonstrated an impaired control of standing posture with increased heel height in elderly women.

Keywords

Balance;Elderly;Heel height

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-1166

BALANCE PERFORMANCE AND ITS ASSOCIATED FACTORS IN KOREAN HEALTHY FARMERS

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Introduction/Background

Introduction: Maintaining balance is a core performance in conducting the physical activity and activities of daily livings. The purpose of this study was to verify the related factors to balance performance in Korean healthy farmers.

Material and Method

Methods: A total of 504 healthy Korean farmers were recruited. The balance performance was evaluated with a force platform system in static standing with eyes open (EO) and eyes closed (EC). The deviations over 15 mm in mediolateral or anteroposterior directions were regarded as an "abnormal". Subjects' sociodemographic characteristics, cognitive function (Go/No-go test, GNGT), trunk body composites, physical activity level (International Physical Activity Questionnaire, IPAQ), psychological status (Center for Epidemiologic Studies Depression scale, CES-D) and sleep quality(Pittsburgh Sleep Quality Index, PSQI) were also assessed, and their associations with balance performance were analyzed by binary logistic regression analysis.

Results

Results: Abnormal balance performances were identified in 51(10.1%) farmers with EO and 85(16.9%) farmers with EC. The scores of IPAQ were higher in abnormal balance performances group with EO(7389.4±346.5 [mean±SE] vs.10670.4±1770.6, p=0.006) and EC(7079.8±330.8 vs.10884±1343.0, p<0.001), and the scores of CES-D were same with EO(9.2±0.3 vs.12.6±1.1, p=0.001) and EC(9.2±0.3 vs.11.4±0.8, p=0.007). Additionally, reaction time of GNGT was higher in in abnormal balance performances group with EC(631.9±9.8 vs. 696.5±23.7, p=0.008). Logistic regression analysis showed that both IPAQ and CES-D were explanatory variables in EO(OR=1.00, p=0.03 and OR=1.06, p=0.01, respectively) and EC (OR=1.00, p<0.001 and OR=1.04, p=0.04, respectively) conditions. Moreover, trunk back muscle (OR=0.97, p= 0.046) and abdominal muscle (OR=1.03, p=0.04) masses in EO, and reaction time (OR=1.002,

p=0.004) in EC were related to balance performance.

Condition	Predictor	OR	CI	P-value
Eye Open	IPAQ	1.00	1.00 – 1.00	0.03
	CES-D	1.06	1.02 – 1.10	0.01
	Trunk back muscle mass (cm ³)	0.97	0.94 – 1.00	0.046
	Trunk abdominal muscle mass (cm ³)	1.03	1.00 – 1.07	0.04
Eye Close	Reaction time (ms)	1.002	1.00 – 1.00	0.004
	Error rate (Go test)	0.73	0.50 – 1.06	0.10
	IPAQ	1.00	1.00 – 1.00	<0.001
	CES-D	1.04	1.002 – 1.07	0.04
	Visceral fat mass(cm ³)	1.00	0.999 – 1.01	0.08

IPAQ, International Physical Activity Questionnaire; CES-D, Center for Epidemiologic Studies Depression scale; OR, odds ratio; CI, confidence interval.

Conclusion

Conclusion: Poor balance performance is significantly associated with physical overload and depressive mood. Additionally with visual feedback trunk back muscles play an important role in maintaining balance, and without visual feedback poor attention is related to poor balance performance.

Keywords

Balance;Risk factor;Healthy farmer

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-1384

THE INFLUENCE OF COGNITIVE-EMOTIONAL TASKS AS AUTOBIOGRAPHICAL MEMORY RECOLLECTION AND FUTURE PROJECTIONS DURING WALKING ON WALKING CHARACTERISTICS IN THE ELDERLY

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Introduction/Background

Dual-task (DT) studies have demonstrated that performing a secondary cognitive task alters gait. However, the tasks employed in these studies are typically of low ecological relevance, and have not emphasized a possible impact of emotional processing on gait parameters.

The current work aim was to examine whether gait in old individuals is influenced by simultaneously performing cognitive-emotional tasks of retrieving autobiographical memories (AM) or imagining future projections (FP), in a dual task (DT) paradigm. Our working hypothesis was that similar to lab-based cognitive tasks, naturalistic, emotion-evoking processes may lead to alterations in gait execution.

Material and Method

Twenty-four old adults were instructed to recollect AM and FP, in response to cue words that were chosen in preliminary interviews to be personally relevant. A single-task condition (ST) served as baseline and a cognitive verbal fluency task (VF) as an active control.

Emotional responses to the tasks were subjectively rated using the Self-Assessment Manikin (SAM) scale, the autonomic-system activity was monitored using the MindWare Impedance Cardiograph, and gait was measured using the APDM's Mobility Lab™.

Results

AM and FP increased emotional valence relative to ST ($p < 0.0001$), while VF had diverse emotional responses. This effect was corroborated by increases in skin conductance, which were higher in the DT conditions relative to ST ($p < 0.0001$). DT led to a decrease in gait speed and cadence and an increase in double-limb-support, primarily in the VF condition and with a similar trend in AM and FP. Increase in emotional valence led to increases in gait speed ($p = 0.05$) and cadence ($p = 0.011$).

Conclusion

The effect of AM and FP on walking characteristics in the elderly showed similar trends to that of VF. Walking was influenced by emotional aspects that accompanied the various tasks.

Keywords

Dual-Tasking;Gait;Emotion

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-1578

HIP ABDUCTORS– A RELEVANT MUSCLE GROUP TO DISCRIMINATE BETWEEN FALLERS AND NON-FALLERS?

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Introduction/Background

The world's population is ageing and most countries are experiencing growth in the number and proportion of older persons. Advancing age is often related to an increase in the number of falls and fall related injuries. Fall injuries in older persons engender loss of confidence and fear of falling, with deleterious effects on independency and quality of life. Lower limb weakness and more specifically hip muscle strengths seem to be an influencing factor of falls. Nevertheless, currently it is unclear which hip muscles play the most important role in older people.

Therefore we aimed to investigate which hip muscle group strength shows an acceptable level of distinction (area under the curve (AUC) >0.7) between older fallers and non-fallers compared to fall history as our predefined external criterion

Material and Method

We measured the maximum voluntary isometric strength (MVIS) and the rate of force generation of the six hip muscle groups (hip abductors (ABD), adductors, internal and external rotators, extensors, and flexors) in 60 older people (38 females and 22 males). A trained physical therapist performed the strength evaluation of all participants with a dynamometer fixed to a custom-made frame. We then calculated the AUC and the mean decreased Gini Model to evaluate the parameter with the highest ability to distinguish between fallers and non-fallers.

Results

Of all the assessed hip muscle groups, hip ABD MVIS showed the highest discriminative value regarding the chosen external criterion in older people (AUC ABD MVIS 0.825, 95% confidence interval: 0.712–0.938).

Conclusion

Hip abductor strength is the only parameter which reached our predefined diagnostic accuracy of the AUC above 0.7. Therefore, our results indicate that ABD MVIS might be an interesting factor to target fall risk detection and might also shape fall risk prevention programs.

Keywords

hip muscle strength; measurement study; older adults

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-1678

BENEFICIAL EFFECTS OF COMBINED STRENGTH AND ENDURANCE TRAINING COUPLED WITH WALNUT SUPPLEMENTATION ON BIPEDAL AND MONOPODAL POSTURAL BALANCE IN ELDERLY PEOPLE

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Introduction/Background

Aging is characterized by an alteration of sensory motor function, which could impair postural balance, and consequently increase fall risk. The present study aimed to investigate the effect of combined strength and endurance training coupled with walnut supplementation on bipedal and monopodal postural balance in elderly people.

Material and Method

Twenty elderly participants were divided into two groups in a randomized controlled trial: Training + walnuts diet (GTW, n = 10); Training + control diet (GT, n = 10). Age, body mass and height of the participants were 66.7 ± 2.8 years, 169.0 ± 3.8 cm, 73.7 ± 5.2 kg, respectively. The experimental protocol consisted of combined strength and endurance training (three sessions/week) for six weeks coupled with a walnuts supplementation (15 g per day). Before and after training program, bipedal with double task (counting from 0 to add 7 each time) and monopodal balance measurements were performed in both conditions "open eyes" (OE) and "closed eyes" (CE) using the SATEL® force platform.

Results

The present findings showed that bipedal with double task and monopodal balance parameters were decreased significantly for GTW compared to GT in both conditions (OE, CE). For bipedal static balance, there was a significant decrease in Long X and Long Y ($F = 9.4$, $p = 0.007$, $F = 5.42$, $p = 0.032$, respectively) in the OE condition and ($F = 4.64$, $p = 0.045$, $F = 4.27$, $p = 0.05$, respectively) in the CE condition. Concerning monopodal balance, the results showed a decrease in Long X and Long Y ($F = 9.9$, $p = 0.005$, $F = 17.9$, $p = 0.001$, respectively) in CE condition.

Conclusion

Combined strength and endurance training coupled with walnut supplementation improved bipedal and monopodal stability parameters. This improvement could be explained by the beneficial effect of walnuts supplementation on vestibular system.

Keywords

Walnuts;Postural balance;Elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-1825

HIP FRACTURE: HOW DID THEY FALL INTO IT?

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Introduction/Background

Osteoporosis prevalence continues to grow, increasing morbidity and mortality associated with osteoporotic fractures, which often result from a fall. One third of the population aged 65+ falls each year. 5% of these falls result in fractures, mostly osteoporotic, with hip fractures having the greatest socioeconomic impact.

We aimed to characterize a group of women with recent hip fracture regarding fall risk factors, fall circumstances, previous falls and fractures, fall prevention, and osteoporosis treatment. **Material and Method**

Cross-sectional study in women with recent hip fracture during their stay at an Orthopaedics ward. It was conducted for one year by means of a questionnaire and consulting the clinical records of women aged 65+.

Results

192 women were evaluated, 69 of which had cognitive deficits. 95% of the respondents' fractures resulted from a fall with a greater proportion occurring indoor, at daytime, and on a flat floor. Overall, 76% had previous falls of which 61% had more than 2 episodes. 42% had previous osteoporotic fractures of which only 7% were medicated. We found a strong relationship between (1) vestibular disorders treatment, non-pharmacological measures for osteoporosis, and the number of falls; and (2) the number of previous falls, fall prevention measures, and the occurrence of osteoporotic fractures. However, no clear association was found between fall risk factors and the occurrence of falls.

Conclusion

Our comprehensive study results support the current knowledge on healthcare burden of falls and osteoporotic fractures. A more detailed research on the possible association between non-pharmacological measures for osteoporosis and treatment for vestibular disorders and falls should be done in the near future. Although our results may have a population selection bias, they confirm the seriousness of hip fractures, as the elderly population will continue to grow, representing a greater burden of osteoporosis and falls, both underrecognized and undertreated.

Keywords

Hip Fracture;Fall;Osteoporosis

Conflict of interest

Disclosure statement:

One author has activity as consultant and speaker for Servier. No further disclosures.

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-1975

WE WANTED TO DETERMINE DO SPINOMED® AS A TLO PRODUCE CHANGES IN RELATION WITH POSTURE , EQUILIBRIUM AND ABILITY OF PEOPLE WITH HYPERKYFOSIS I

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Introduction/Background

The more frequent vertebral osteoporotic fractures are the ones that occur in the thoracic spine where the gravity forces are greater because of the anatomic kyphosis and the increase of concavity forces.

For vertebral fracture and hyperkyphosis we normally using variety of spinal orthosis to stabilized them.

We chose Spinomed® because of specially characteristics :

“Beck orthosis for vertebral extension in osteoporosis and strengthening of the core musculature.”

Material and Method

We evaluated Overall Rating of control and stability (Romberg + Voluntary control and ability evaluation) of patients affected by hyperkyphosis using the Measure system for equilibrium made by Biomechanical Institute from Valencia (NedSVE/IBV®) performed 2 measures :

- st with the Spinomed® (SPINOMED® GROUP)
- nd without Spinomed® (NON SPINOMED® GROUP)
-

We evaluated women’s population between 41-87 (70) years old, mostly of them with osteoporosis

We measured the angle of Cobb using as a reference angle between 4th thoracic vertebral superior plate and 12th thoracic inferior plate. (Cobb 61,8°; 46°-91°)

The pain and disability evaluation

Results

We found patient`s in the Spinomed group “grow” 1 cm aproxim.

Spinomed® group we found reduction of Scanning area and reduction of Anterior movement

The Voluntary control and Ability evaluation we found that displacement in anterior direction decrease in the Spinomed group

Conclusion

In Romberg testing with open eyes in Spinomed® group we found reduction of Scanning area which is clinically significant. (more stability)

The Spinomed group shows the clinically significant results in decrease of anterior displacement and anterior displacement which means that the center of gravity moved back towards.

There is not risk of Equilibrium disturbance in the patients which wearing SPINOMED.

Keywords

HYPERCYFOSIS;;SPINOMED;EQUILIBRIUM

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.04 Geriatrics - Risk of Falls in the Elderly

ISPR8-2097

IMPLEMENTATION OF EVIDENCE BASED TREATMENT INTO CLINICAL PRACTICE FOR OLDER PEOPLE – A NEGATIVE TRIAL

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Introduction/Background

This project took the strong evidence that vitamin D supplements reduce falls in older people living in residential aged care facilities and applied implementation science principles to investigate whether the prevalence of vitamin D supplement use could be increased.

Material and Method

A multifaceted implementation program was developed that included education and targeted all stakeholders, use of audits and feedback, and addressing stakeholder beliefs and attitudes. Its effectiveness was assessed using a stepped wedge design.

Results

In the first group of 17 facilities (1466 residents) the prevalence of vitamin D supplement use was stable at 58% over the six month intervention period. Comparison data from control group facilities confirmed that the intervention was not effective in increasing supplement use.

Conclusion

Despite a carefully designed implementation program the goal of increasing use of an evidence based treatment was not achieved. It is likely that this occurred due to a complex interplay of factors that meant behaviour did not change in key players (general practitioners, facility managers and staff, and family caregivers and older people). This project has shown that an evidence based treatment recommendation and a best practice implementation program is not sufficient. In this case a direct action approach through general practitioners may have been more effective.

Keywords

Vitamin D;Adherence;Falls

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-2516

ACCELEROMETERS BIASES IN THE ESTIMATION OF THE STEPS NUMBER IN ELDERLY

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Introduction/Background

The number of steps is a parameter fluently evaluated by accelerometry. However, we believe that there are measurement errors that steps are recorded while the person does not necessarily move. The aim of the study was to highlight accelerometer biases in the estimation of the steps number in elderly on different physical activities.

Material and Method

27 elderly (71 ± 4 years) volunteered to realize successively: 3 minutes computer-based word processing (without moving feet), 5 minutes biking (with hands on the handlebars), 5 minutes walking on treadmill.

The number of step was estimated by accelerometers (1 SenseWear Armbands, 3 Actigraphs GT3X and 3 Acticals) worn on the hip, on the wrist and ankle on the dominant side (26 were right-handed and one was left-handed).

Results

Table 1: Mean of the steps number detected by the accelerometers according to the physical activities

	Computer	Biking	Walking
SenseWear (arm)	0	0	63 \pm 62
Actigraph (Ankle)	1 \pm 2	70 \pm 20	117 \pm 25
Actigraph (Hip)	0	20 \pm 28	106 \pm 29
Actigraph (Wrist)	13 \pm 10	7 \pm 22	79 \pm 30
Actical (Ankle)	0	73 \pm 13	125 \pm 11
Actical (Hip)	0	39 \pm 37	124 \pm 11
Actical (Wrist)	9 \pm 10	0	109 \pm 18

Values are expressed in mean \pm standard deviation

Conclusion

This study showed that accelerometers present biases in estimating the steps number in the elderly according to their position on the body but also the activity type. The principal bias of accelerometers is that even if the person is at a standstill, only moving their legs or arms, accelerometers detect steps. The Armband SenseWear seems to be the one which presents the least biases to estimate the steps number in this population.

Keywords

Step;Elderly;Accelerometer

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-0180

DEVELOPMENT OF DIGITAL DISEASES CARE PROGRAM: RESULTS FROM PHOTO DIARY AND FOCUS GROUP DISCUSSION

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Introduction/Background

Average life expectancy becoming longer, the prevalence of individuals with chronic illness and functional disability has surged. The aim of this project is to develop a digital diseases care management program, using both descriptive and Participatory Action Research designs.

Material and Method

Eleven older adults were recruited to take their photo diary up to three months. The focus group discussion was then applied to explore relevant facilitating and barrier factors for their chronic disease self-management practice in the community. It further aimed to suggest which lifestyle measures, symptoms and behaviors would be meaningful to be included in the digital diseases care management program.

Results

Five subthemes were merged. Most subjects went out regularly for exercise, and walking at nearby household, park, and temple as photographs represented. Systematically reminding and recording level of physical activities, and rewarding and group exercising strategies for exercising were proposed. Although most subjects complied with the prescription, they complained on often forgetting or adjusting medication according to their subjective review of health conditions. Digital system which can warn clients' symptom changes to enhance medication compliance and questions to ask health providers was proposed. Eating low nutritious and left over food were problems identified.

Conclusion

Use of meal photos to interact with families and intellectual training on healthy diet were suggested. Social connection was set up for interaction with families, chronic disease self-help group and health providers. Incorporating daily routine and good model practice sharing were discussed in this domain. The prototype of the application (App) to be used in tablet is developing. The wearable device, application of persuade technology to enhance subjects' self-consciousness on healthy behaviors, concept of calendar and incorporated community activities will be included in the App to reinforce behaviors and lifestyle to control their chronic conditions.

Keywords

digital diseases care management program;multiple chronic conditions; Participatory Action Research

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-0117

THE EFFECTS OF DEPRESSIVE SYMPTOMS ON QUALITY OF LIFE AMONG INSTITUTIONALIZED OLDER ADULTS IN TAIWAN

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Introduction/Background

To identify factors that influence QOL in the elderly is important. Depression has a significant impact on QOL. The inability to independently perform ADL was the major factor affecting QOL. This study tested whether depressive symptoms mediate the effect of ADL on the physical and mental components of QOL in institutionalized elderly individuals in Taiwan.

Material and Method

Inclusion criteria of sampling included a healthy cognition status, which was tested by the Short Portable Mental Status Questionnaire (SPMSQ). After I explained the aims of this study to the administrators of the facilities, 73 facilities agreed to participate and 306 of those met the inclusion criteria for this study. The Sobel's significance test was used to test whether physical health status and depressive symptoms have an impact on QOL.

Results

The results of the Sobel test showed that depressive symptoms mediated the effects of ADLs on the physical components of QOL (standardized $\beta = 0.16$, Sobel test $z = 3.33$, $p < .001$) to a degree of 11.11%. Depressive symptoms significantly mediated 40% and 53.68% of the effect of the number of chronic diseases on the physical and mental components of QOL, respectively ($z = -2.41$, $p = .016$; $z = -2.45$, $p = .014$, respectively).

Conclusion

Depressive symptoms mediate the effects of ADL and the number of chronic diseases on the physical and mental aspects of QOL. Improving depressive symptoms appears to be necessary for improving both the physical and mental aspects of QOL of institutionalized people of advanced age.

Keywords

activities of daily living; quality of life of institutionalized elders; depressive symptoms

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-2660

SURVEY ON PRESSURE ULCERS AND NOSOCOMIAL INFECTIONS IN FUNCTIONAL REHABILITATION CENTERS IN LEBANON

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Introduction/Background

The aim of the survey is to study the prevalence of pressure ulcers and nosocomial infections in 4 state-of-the-art rehabilitation centers in Lebanon and to compare the results with the literature data.

Material and Method

Descriptive survey with prospective collection of patients admitted to hospital in 4 rehabilitation centers during one week. Collection of information using a grid with demographic study (age, sex, third-party payment), diagnosis, length of stay less than 3 months, presence or absence of bedsore, or urinary tract infection (nosocomial or not). Statistical study using the SPSS software v 10. After a description of the variables of interest, a univariate study using the Chi2 and Levene tests is carried out. A $p < 0.05$ is considered significant

Results

Descriptive study: 69 patients identified in the 4 centers. Male predominance 58%. Average age 69 +/- 17 [18-90], paying third mainly social security.35%. Neurological diseases predominate 65%, orthopedics 25%.

Presence of bedsores 13% of which 88% before hospitalization. Single bedsore 90%, sacral lesion 70%.

Urinary infection 50% (23% on arrival and 27% on hospitalization). The most common germs on arrival: E. Coli 62.5%, Klebsiella Pneumonia 31%. During hospitalization E. Coli (66%), Pseudomonas Aeruginosa 16.5%.

ESBL germs: on arrival 67% of urinary tract infections, during hospitalization 50%. Predominance of Pseudomonas 65%.

Univariate study Predictive factors for the occurrence of pressure ulcers: urinary tract infection on arrival p: 0.04, and patient infected with resistant germ p: 0.089. Predictive factors for urinary tract infection during hospitalization: length of stay p 0.061, neurological diseases p: 0.02, and advanced age p: 0.03.

Conclusion

The occurrence of pressure ulcers in rehabilitation centers does not exceed international standards, but nosocomial infections are high and their frequency differs from one center to another according to the patient recruitment policy.

Key words functional rehabilitation centers, pressure ulcers, nosocomial infections

Keywords

functional rehabilitation centers; pressure ulcers; nosocomial infections

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-0339

CORRELATION BETWEEN PEAK EXPIRATORY FLOW AND ABDOMINAL MUSCLE ACTIVITY WHILE HOLDING MAXIMUM EXPIRATION AND SIDE BRIDGE EXERCISE IN ELDERLY WOMEN

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Introduction/Background

Expiratory flow plays an important role in minimizing the risk of infection by expelling foreign substances and excessive mucus from the lungs. Expiratory flow results primarily from the activities of the abdominal muscles. However, data regarding the association of the abdominal muscle activity during expiratory effort and abdominal exercise with expiratory flow rate are limited. This study aimed to assess the correlation between expiratory flow and abdominal muscle activity while holding maximum expiration and side bridge exercise in elderly women.

Material and Method

Rectus abdominis (RA), external oblique (EO), and internal oblique (IO) muscle activities were measured using electromyography in 14 elderly women (82.8 ± 6.7 years), who could independently walk, performing two tasks: holding breath after maximum expiration in the crook-lying position (maximum expiration) and holding side bridge on knees without breathing indication (side bridge). Peak expiratory flow (PEF) was obtained using a peak flow meter with the subject in the sitting position. Correlations between PEF and the abdominal muscle activity were determined using Spearman rank correlation coefficient. The Ethics Committee of the Kawasaki University of Medical Welfare approved the protocol for this study. Written informed consent was obtained from each subject before participation in the study.

Results

The correlation coefficients between PEF and the RA, EO, and IO activities while holding maximum expiration were 0.407 ($p=0.149$), -0.345 ($p=0.227$), and 0.732 ($p=0.003$), respectively. The correlation coefficients between PEF and the RA, EO, and IO activity while holding side bridge exercise were -0.297 ($p=0.303$), -0.552 ($p=0.041$), and 0.147 ($p=0.615$), respectively.

Conclusion

Our results showed that higher IO activity while holding maximum expiration or lower EO activity while holding side bridge exercise was related to higher PEF. Thus, maximum expiration and abdominal exercise might be effective in the improvement or prevention of the decrease of expiratory flow.

Keywords

peak expiratory flow; abdominal muscle activity; electromyography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-0359

EFFECT OF INTERMITTENT HYPOXIA TRAINING FOR DIZZINESS: A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

The dizziness symptoms are very common among various diseases. It is often considered as an independent clinical manifestation or accompanying symptom. The aim of our research is to study the effect of intermittent hypoxia training for dizziness.

Material and Method

A single-blind, randomized controlled trial. All participants were recruited from a rehabilitation department in an acute university-affiliated hospital. Participants with dizziness were randomly assigned to IHT group and control group. The Dizziness Handicap Inventory, Activities-specific Balance Confidence scale, Vertigo Visual Analog Scale were conducted at baseline, end of the 4th week.

Results

Among 52 subjects, ages from 35 to 62 years old (mean \pm SD = 46.9 \pm 7.93). Time length since onset ranged from 12 months to 34 months (20.2 \pm 7.15 months). The Dizziness Handicap Inventory, Activities-specific Balance Confidence scale, Vertigo Visual Analog Scale scores and attack frequencies of dizziness were improved after IH training intervention in the end of 4th week. There were significant differences between IHT group and control group in The Dizziness Handicap Inventory, Activities-specific Balance Confidence scale, Vertigo Visual Analog Scale scores and attack frequencies of dizziness in the end of 4th week ($P < 0.05$). No adverse events occurred during the study.

Conclusion

Intermittent hypoxia training could improve dizziness after intervention in end of 4th week. It could be the effective method for releasing dizziness.

Keywords

intermittent hypoxia training;dizziness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-0784

LONG-TERM INTENSIVE LOCOMOTION TRAINING WITH WEARABLE HIP-ASSIST ROBOT IN ELDERLY ADULTS: A PRELIMINARY STUDY

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Introduction/Background

The purpose of this study was to investigate the long-term training effect of wearable hip-assist robot on locomotion function in elderly adults.

Material and Method

Seven elderly participants (age means: 74.5 ± 5.78 , 3 males) were recruited. The Gait Enhancing Mechatronics System (GEMS, Samsung Electronic Co., Ltd., Korea), which functions as a wearable hip-assist robot was used. All participants received 45-minute gait training with GEMS in various overground environments for 24-sessions during the consecutive 8 weeks. Muscle efforts were acquired and analyzed using the 12-channel surface electromyography system (Desktop DTS system, Noraxon, USA) at preferred speed. Gait functions were determined by 3D motion capture system (Motion Analysis Corporation, USA). Cardiopulmonary metabolic energy consumption measurements were obtained during 6 minutes of treadmill walking using portable cardiopulmonary metabolic system (COSMED K4B², Rome, IT). In addition, cerebral oxygenation was measured using the fNIRS imaging system (NIRSport, NIRx Medical Technologies LLC, Glen Head, NY, USA).

Results

The 24-sessions of long-term intensive locomotion training with GEMS significantly improved gait function of elderly adults ($P < 0.05$). Metabolic energy consumption during 6 minutes treadmill walking was significantly lower after 24-sessions training ($P < 0.05$). Furthermore, long-term intensive locomotion training with GEMS demonstrated decreased activity of specific brain regions related with gait and might represent increased efficiency of neural resources. These gains were maintained for 4 weeks after the cessation of training ($P < 0.05$).

Conclusion

The results of this preliminary study suggest that long-term intensive locomotion rehabilitation with the GEMS were tolerable and effective for improving gait function, cardiopulmonary metabolic efficiency and cerebral oxygenation patterns during walking in the elderly. Randomized controlled trial with larger participants is invited in near future.

(This study was supported by the Samsung Medical Center (PHO0171341) and by a grant from the NRF (NRF-2016R1A6A3A11930931 and NRF-2017M3A9G5083690), which is funded by the Korean government.)

Keywords

Locomotion Training ;Wearable Hip-assist Robot ;Elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-0814

RELATIONSHIP BETWEEN PHYSICAL ACTIVITY, FUNCTIONAL MOBILITY AND BALANCE IN COMMUNITY-DWELLING ELDERLY

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Introduction/Background

Decline in functional mobility and balance is some of the changes that occur with aging in community-dwelling elderly. It's proven that physical activity has many positive effects in different age groups. This study aimed to investigate the relation between physical activity level, functional mobility and balance in community-dwelling elderly.

Material and Method

A total of 136 community-dwelling elderly without cognitive dysfunction (range: 65-92 yrs; mean age: 71.20±5.66 yrs; 86 male) was assessed. Physical activity level of subjects was measured with Physical Activity Scale for the Elderly (PASE). The Timed Up and Go test (TUG) and Five-Time-Sit-to-Stand Test (FTSST) was used to determine subjects' functional mobility. Also, One-Legged Stance Test (OLST) and Sharpened Romberg test (SR) was used to evaluate balance of subjects.

Results

The correlation analysis showed that there is a significant positive correlation between PASE score and OLST ($r = 0.381$), SR ($r = 0.363$) scores. Furthermore, there is a significant negative correlation between PASE score and TUG ($r = -0.351$), FTSST ($r = -0.298$), age ($r = -0.185$).

Conclusion

Results obtained from this study indicate that physical activity has beneficial effects on functional mobility and balance in community-dwelling elderly. Increasing physical activity level of elders could improve functional mobility and balance that crucial for decreasing the risk of fall.

Keywords

Physical activity ;Balance;Elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-0849

CEREBRAL OXYGENATION PATTERNS DURING WALKING WITH WEARABLE HIP-ASSIST ROBOT IN ELDERLY ADULTS: A FNIRS STUDY

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Introduction/Background

The purpose of this study was to investigate the modulating effect of wearable hip-assist robot, Gait Enhancing Mechatronic System (GEMS, Samsung Electronics Co., Ltd., Korea), on cerebral oxygenation patterns during treadmill gait in elderly adults.

Material and Method

Twenty elderly adults participated in this study. Each subject performed treadmill walking task at self-selected speed either with assistance of GEMS (GEMS) or without assistance of GEMS (NoGEMS). An experimental session began with a fixed standing condition (60s), followed by one of the 2 walking conditions (60s) and then a resting condition (60s) for five repetitions. For analyzing the cortical activation, a task period was divided into the early and late phase. Cerebral oxygenation was measured by oxyhemoglobin (OxyHb) concentration using the functional near infrared spectroscopy (fNIRS) imaging system (NIRScout, NIRx Medical Technology, LLC, Germany) covering bilateral prefrontal cortices (PFC), premotor cortices (PMC), supplemental motor areas (SMA), and lower limb sensorimotor cortices (SMC).

Results

We observed less OxyHb concentration over the lower limb SMC, SMA and PMC regions in the late phase of gait with GEMS than NoGEMS conditions. In addition, PFC activity demonstrated left side predominance in GEMS condition.

Conclusion

Additional brain activity in older compared to younger adults may be a reflection of compensatory mechanism to improve performance in a specific task which is associated with less efficient use of neural resources. Walking with GEMS demonstrated decreased activity of specific brain regions related with gait and might represent increased efficiency of neural

resources. In addition, increased hemispheric asymmetry during walking with GEMS might reflect less need for compensation through right prefrontal activity. (This study was supported by the Samsung Medical Center (PHO0171341) and by a grant from the NRF (NRF-2016R1A6A3A11930931 and NRF-2017M3A9G5083690), which is funded by the Korean government.)

Keywords

Elderly;Cortical activation;Hip assist robot

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-0961

THE INFLUENCE OF AGE IN WOMEN IN VISUO-SPATIAL MEMORY IN REACHING AND NAVIGATION TASKS WITH AND WITHOUT LANDMARKS

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Introduction/Background

Spatial memory and navigation capabilities tend to decline in normal aging, but few studies have assessed the impact of landmarks on route learning in a large-scale environment. The objectives were to examine age-related effects on visuo-spatial working memory capabilities and to determine the impact of landmarks in navigation skills in normal aging.

Material and Method

42 young women (23.6±4.9 years) and 39 older women (70.8±4.6 years) without cognitive impairment have realized three tests of visuo-spatial working memory: one in reaching space (computerized Corsi-Block-Tapping test) and two in navigation space (a condition without landmarks: Virtual Walking Corsi Test and a condition with landmarks: Virtual Room Walking Test).

Results

A two-way mixed ANOVA test shows that the young subjects had better performance in all conditions than older subjects ($p < 0.05$). Visuo-spatial working memory performances were identical in reaching and navigation space for both groups. Visuo-spatial working memory performance decreases with age.

Conclusion

The integration of landmarks into a navigational task decreases performance in older women, while it is this performance is stable in younger women subjects.

Keywords

spatial navigation;aging;visio-spatial memory

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1137

LARYNGEAL CLOSURE IMPROVED FUNCTIONAL PROGNOSIS OF EATING: A CASE REPORT OF 80-YEAR-OLD WOMAN WHOSE SWALLOWING PROCESS WAS SEVERELY IMPAIRED ASSOCIATED WITH INCLUSION BODY MYOSITIS

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Introduction/Background

Aspiration pneumonia has been in the spotlight in Japan, one of the most rapidly progressing super-aging societies in the world. This life-threatening condition is associated with eating dysfunction and it is often recurrent. Swallowing rehabilitation is useful approach to prevent the repeat aspiration pneumonia; however, surgical laryngeal closure to prevent the further aspiration episodes is eventually considered. Here, we report a successful case of 80-year-old woman who had inclusion body myositis and received a surgical prevention and restored her swallowing function.

Material and Method

A Case Report as follows. The patient had been admitted with an repeating episodes of aspiration pneumonia. Although she was able to speak, the videofluoroscopy and laryngeal fiberscopy revealed that her swallowing process was almost abolished and oral intake was impossible. In parallel, she was suspected to suffer from an underlying neuromuscular disorder. Then, we inserted a nasogastric tube and administered the tube feeding and planned gastrostomy. However, another episode of aspiration of saliva and bacteria in the oral cavity occurred, then we decide to apply the surgical approach of laryngeal closure even her speech ability was still maintained. At the time of the laryngeal closure, the muscle biopsy of the cricopharyngeal muscle was performed and the inclusion body myositis was confirmed.

Results

Perioperative process was going well, and 2 weeks after the surgery, no aspiration was observed on video fluoroscopy. Then she started eating using a standard polymeric formula (Ensure®), and no symptoms of aspiration was observed after that. She was firstly fed both by oral intake and tube feeding, but the swallowing rehabilitation was effective and finally she withdrew the tube and avoided gastrostomy.

Conclusion

We report a successful case of 80-year-old woman with inclusion body myositis who received the laryngeal closure improved functional prognosis of eating and prevented aspiration pneumonia.

Keywords

inclusion body myositis;laryngeal closure;swallowing rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1147

SCARCE USE OF HEARING AIDS FOR AGE-RELATED HEARING IMPAIRMENT IN ELDERLY PSYCHIATRIC PATIENTS

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Introduction/Background

Age-related hearing impairment has a harmful effect on elderly people's daily living. The only helpful device available is a hearing aid. Although people with hearing impairment have difficulty in communicating with others, they seem unwilling to use hearing aids. It has been reported that hearing impairment is likely to cause dementia, and its improvement is important in geriatric psychiatry and otolarhngology. We studied the use of hearing aids in elderly psychiatric patients.

Material and Method

The subjects were 87 patients (64-95 years old; 64 females, 23 males) who visited a geriatric clinic in a psychiatric hospital in Saitama, Japan between December 8, 2017 and February 2, 2018. They answered questions about the self-awareness of hearing difficulties and the use of hearing aids.

Results

Of the 87 patients, 20 patients (26.4%; 68-93 years old; 15 females, 5 males) became conscious of hearing impairment. Nine (45%) of 20 patients were using or had used hearing aids. Three (33.3%) of the 9 patients were using them effectively. Their diagnoses were mild dementia (2 patients) and bipolar disorder (1). Six (66.7%) of 9 patients stopped using them, because wearing them felt uncomfortable (4 patients), they were not helpful in enhancing hearing ability (1), and they caused headache (1). Their diagnoses were mild dementia (3 patients), schizophrenia (1), depression (1), and drug-induced cognitive decline (1).

Conclusion

This study found that not a few patients stopped using hearing aids due to their discomfort or ineffectiveness, even if they wanted to use them. Although the subjects in the study were psychiatric patients, the general population's tendency could be similar. The elderly with age-related hearing impairment have difficulty in communicating, and they are more likely to develop dementia. To improve the quality of their daily living, more comfortable hearing aids and the guidance of medical specialists will be needed.

Keywords

age-related hearing impairment ;hearing aids;dementia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1172

QUALITY OF LIFE SHORT-TERM OUTCOMES AFTER INTERDISCIPLINARY HIP FRACTURE REHABILITATION IN A GERIATRIC MIDDLE-STAY UNIT.

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Introduction/Background

Hip fracture is an important health problem because of its associated morbidity, and high economic costs for healthcare providers.

The aim of this research was to study short-term quality of life outcomes for elderly inpatients who followed an interdisciplinary hip fracture rehabilitation program in a geriatric middle-stay unit.

Material and Method

This is a prospective and follow-up cohort study. Study population was 50 inpatients, admitted to a middle stay geriatric rehabilitation unit.

Study participants were older than 72 years, with stable medical condition after undergoing a hip fracture surgery procedure (hip replacement arthroplasty, or internal fixation by intramedullary nail).

Patients received a daily 60 minutes rehabilitation program. They were assessed at admission to the unit, at the time of being discharged, and 1 month after being discharged, using clinical, functional, and quality of life scales (Barthel index, EuroQoL-5D/ EuroQoL VAS, mini mental state examination, Charlson comorbidity index, mini nutritional assessment).

Results

Pre-fracture EuroQoL-5D median score was 0.75 (interquartile range 0.63, 1). One month after being discharged, EuroQoL-5D median score was 0.65 (CI 95 % 0.38, 0.69). A proportion among study patients still had some difficulty for self-care (50%), and mobility (60 %). From them 36 % still had moderate pain, and 30 % moderate depression/anxiety. Regression analysis showed that age, malnutrition, prior comorbidity, and pre-fracture functional and cognitive status, were associated to quality of life recovery, short-term after following Rehabilitation.

Conclusion

Study patients did not recover pre-fracture quality of life. Patients without serious pre-fracture cognitive and functional impairments, achieved better short-term quality of life outcomes.

Keywords

Elderly;Hip fracture;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1265

ANTERIOR VS POSTERIOR CORE MUSCLE STRENGTH MEASURED BY 3D NEWTON IN ELDERLY POPULATION IN SILOAM HOSPITALS KEBON JERUK INDONESIA.

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Introduction/Background

Core muscle strength declines in aging and affects mobility and function in geriatric patients. Siloam Hospitals Kebon Jeruk incorporates core strength examination with 3D Newton machine in geriatric medical check-up program.

Material and Method

Core strength muscle were examined using 3D Newton, by placing the patient in positions of challenge against gravity through 360°rotation and 0° to 60° inclination control, muscle contraction recorded by computers to determine its strength. Results were recorded as degrees of the maximum inclination angle. Medical record data used by consecutive sampling from geriatric medical check-up, a voluntary health-screening for people above 60 years of age, from January 2017 to January 2018. Subjects were generally healthy and functional at the time of the examination.

Results

From January 2017-2018 there are 32 elderly who undergone geriatric medical check-up. From this data, mean age was 69 + 6 years old. Mean BMI was 25.53 + 5.18 (obese, Asia Pacific standard). There are 17 (53%) male. Mean of abdominal 3D newton examination results was 24.3+ 4.8° while back was 27.1 + 4.7°, which is significantly difference based on paired t test ($p < 0.001$). There were no significant difference between right and left (26.25 +4.9 vs 26.75 + 4.3)

Conclusion

It showed that anterior core muscle (abdominal) is weaker than posterior (back) muscle. This could help in developing exercise strategy for elderly. 3D newton core strength measurement did not correlate with BMI. Further studies are required to elaborate more regarding the best measurement and intervention of geriatric core muscle strength, balance and functional activities.

Keywords

elderly;core muscle strength;3D newton

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1421

OROPHARYNGEAL DYSPHAGIA IN OLD AGE

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Introduction/Background

Oropharyngeal dysphagia in old age can occur for many causes, functional or organic. In this population, there is a higher incidence of neurodegenerative diseases, oncological pathology or strokes that may present with dysphagia. The role of the rehabilitation doctor is the assessment of any patient diagnosed with dysphagia to establish the anatomo-functional cause and guide the swallowing problem, trying to address it with specific objectives at a specific time, and be able to give recommendations for a safe and effective diet and guide speech therapy if necessary

Material and Method

A 76-year-old woman admitted for bronchoaspiratory pneumonia. Antecedents of several surgeries because of glomus tympanic in the right ear and subsequent radiotherapy, with the effect of right facial paralysis. She reports weight loss of 4kg in one year and signs of choking, cough and pharyngeal residue sensation. On examination, we observe a severe right facial paralysis according to the House-Brackmann scale, with a highly impaired oral transport phase. The Volume-Viscosity Clinical Exploration Method (MECV-V) was performed: voice changed and desaturation of 2 points with 5 ml of nectar. Same signs with 5ml of honey-pudding. These signs disappear with anterior cervical flexion. Speech therapy treatment is prescribed: orolingual-pharyngeal praxias to improve mainly the seals and anterior flexion maneuver retraining. 10 ml nectar consistency turmix diet and liquids thickened to the same consistency.

Results

After 6 sessions of speech therapy, the patient has maintained facial paralysis improving the velopharyngeal and palatoglossal seals. It has integrated the previous bending maneuver so the MECV-V improves substantially. It achieves consistency and volume in the diet, although it still needs thickener for liquids.

Conclusion

Dysphagia in old age is one of the major syndromes of geriatrics. We must know the signs and symptoms of alarm in order to modify the diet and prevent complications such as bronchial pneumonia, dehydration or malnutrition.

Keywords

Dysphagia;Speech therapy;Facial paralysis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1497

FINDINGS OF VIDEOFLUOROSCOPIC SWALLOW STUDY IN THE OLD AGE ESOPHAGEAL DYSPHAGIA (PRESBYESOPHAGUS)

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Introduction/Background

Dysphagia has been reported in about 13.8% of the general population aged over 65 years and in 28.2% of people over 85 years. Among the dysphagia, esophageal dysphagia occurs more commonly in the aged. Presbyesophagus is proposed to explain age-related decrease in esophageal peristaltic pressure, abnormal esophageal contractions, incomplete lower esophageal sphincter relaxation and dilation of the esophagus in the aged.

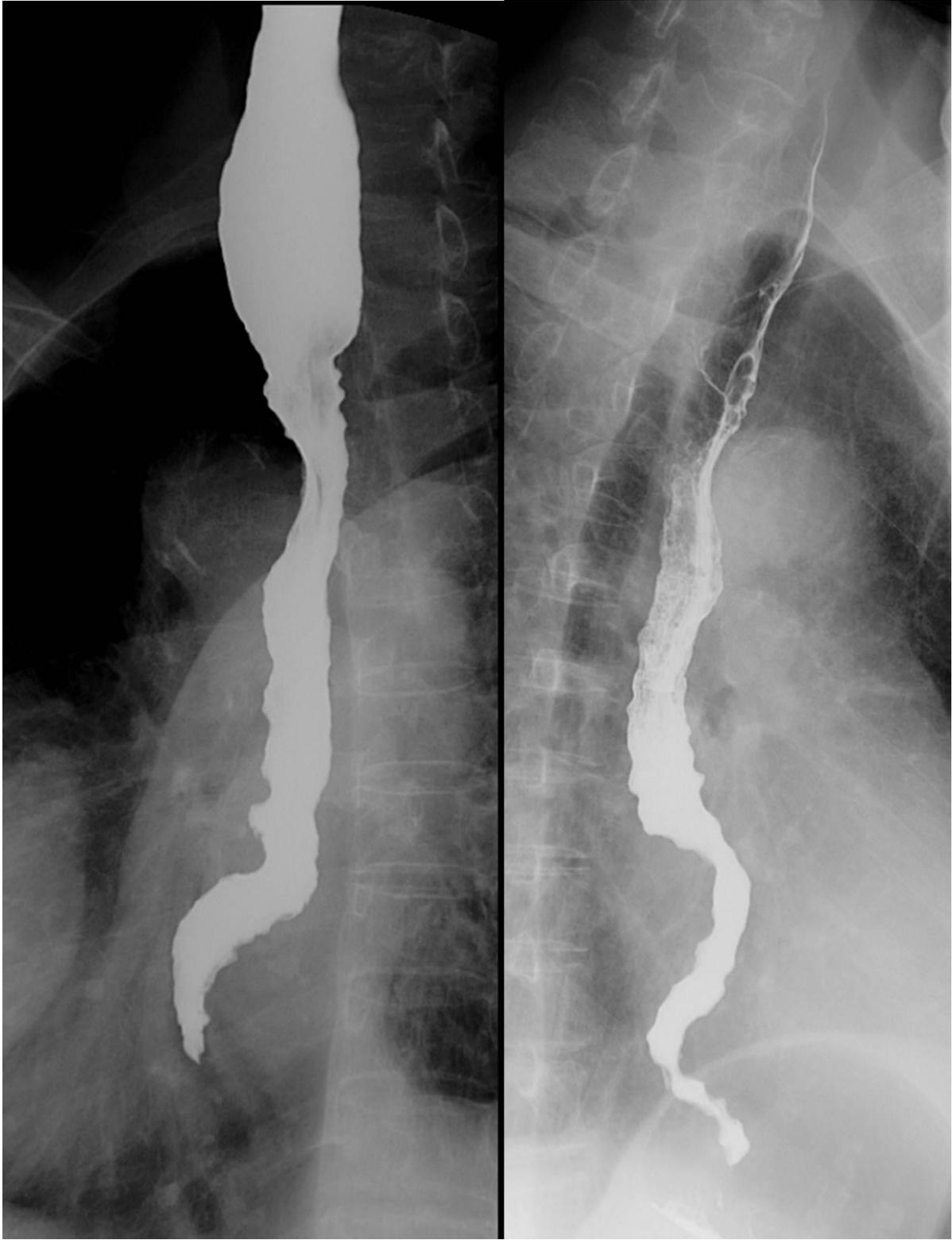
Material and Method

A 82-year-old female presented with swallowing difficulty for 3 years. Her symptoms were sensation of food stuck in the chest region and vomiting after swallowing in all consistencies of foods. The vomiting was spontaneous reflux type without nausea, especially in thin liquid. It started 2 years after her son's suicide. Initially, she had poor oral intake due to loss of appetite, and it had progressed to vomiting.

Results

In physical and neurologic examinations, brain MRI and esophagogastroduodenoscopy was unremarkable. Video Fluoroscopic Swallowing Study(VFSS) showed intermittent esophageal dilation after passage of bolus of food and regurgitation from esophagus immediately after swallowing (Fig. 1). Chest CT was unremarkable. Esophageal manometry measuring pressure and movement showed impaired esophageal peristalsis and ineffective bolus esophagus passage with relatively increased low esophageal sphincter pressure of 43.8 mmHg through rapid pull-through measurement. Esophagography revealed that lower esophageal sphincter was not properly relaxed, leading to gastroesophageal reflux (Fig. 2). Finally, she was diagnosed with presbyesophagus. Life style and diet modification education and medications were prescribed





Conclusion

Presbyesophagus is not unusual phenomenon in elderly patients, and more prevalent with aging. Approximately 10% of over 67 years old with dysphagia symptoms have presbyesophagus. For non-invasive visualization of dynamic esophageal functions, VFSS or esophagography can be of diagnostic values. Of the two, VFSS has additional benefits in that it can also evaluate the swallowing function with diverse consistencies of foods and oropharyngeal swallowing dysfunction including aspiration, which is common in elderly patients.

Keywords

Esophageal dysphagia; Video Fluoroscopic Swallowing Study; Presbyesophagus

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1593

THE EFFECT OF IT CONVERGENCE GAMIFICATION TRAINING IN COMMUNITY-DWELLING OLDER PEOPLE: PILOT RANDOMIZED CONTROLLED TRIAL (RCT) STUDY

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Introduction/Background

For the elderly, the reduction of motor function is natural phenomena, but requires a variety of concerns about how to slow down the rate of decline. Therefore, it is necessary to expand the exercise facilities or welfare facilities for the elderly, but the reality is suffering from space, cost problem and compliance.

In the case of elderly people, the social exercise and the medical exercise therapy should be distinguished, but the boundary is usually ambiguous. Furthermore, exercise for the elderly, whether preventive or therapeutic, should be provided as a public service, but this is also difficult.

Material and Method

In this study, we tried to approach exercise therapy for improvement of elderly physical function such as walking, balance and flexibility etc. through gamification exercise equipment(Men&Tel, Korea, Balpro 110, Model No. SBT 110).

The elderly over 65 years of age were trained for 8 weeks(30 minutes/3 times/week) and the functional ability was evaluated after 4 weeks of rest. Both groups were randomized. Group 1 exercises were performed by conventional method, and Group 2 exercises were performed by IT convergence exercise equipment.

Results

There were both functional improvement in Group 1(10 patients) using conventional exercise and Group 2(10 patients) using Balpro 110. In the first group, after 8 weeks of training, lower extremity muscle strength and balance ability, and body fat mass and skeletal muscle mass improved significantly. In the second group, leg strength, balance, mobility, walking abilities,

flexibility, body fat and skeletal muscle mass were statistically significantly improved.

Group 1

	Pre	Post (8weeks)	Resting (4 weeks)
FTST_30 sec	15.70±2.40	20±2.54	19.6±1.65
<u>FTST_time</u>	8.17±1.67	7.03±1.39	7.27±0.99
BBS	54.6±1.35	55.6±0.52	55.4±0.7
TUG	7.03±0.75	6.56±0.64	7.04±0.71
10WMT	4.03±0.52	3.76±0.48	3.98±0.37
CSRT	6.57±5.75	8.84±7.23	9.0±5.16
KFES-I	16.8±1.31	16.6±1.06	17.40±2.50
BMI	24.46±2.04	24.49±2.02	24.49±2.02
% Body Fat	27.35±6.85	24.79±7.39	24.76±7.67
SMI	7.73±0.69	8.18±0.73	8.36±0.79
Phase angle	5.78±0.75	5.99±0.49	5.9±0.6

Group 2

	Pre	Post (8weeks)	Resting (4 weeks)
FTST_30 sec	16.2±2.57	20.8±2.52	20.7±3.49
FTST time	8.79±2.66	7.00±1.44	7.17±1.52
BBS	54.4±1.08	55.4±0.51	55.7±0.48
TUG	7.65±0.79	6.59±0.80	7.24±0.74
10WMT	4.41±0.59	3.98±0.41	3.94±0.37
CSRT	9.15±8.86	12.48±10.29	11.78±9.09
KFES-I	18.10±2.65	17.10±1.91	16.60±1.90
BMI	23.58±1.32	23.58±1.31	23.58±1.32
% Body Fat	27.31±7.2	24.07±6.75	24.11±7.93
SMI	7.22±1.01	7.80±0.97	7.96±1.08
Phase angle	5.61±0.76	5.96±0.80	5.79±0.71



Conclusion

The results of this study suggest that the information technology convergence gamification device will be a supplementary tool for the exercise of the next generation elderly population and at the same time provide an opportunity to think about the future direction.

Keywords

IT convergence gamification training;community-dwelling older people

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1608

FOUR STEP SQUARE TEST IN OLDER ADULTS: GENDER DIFFERENCES

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Introduction/Background

In the elderly population, loss of balance is a common health problem. That's why; measuring the balance ability in older adults is vital. Four Step Square Test (FSST) is also widely used to measure balance disturbances in geriatric rehabilitation. The reliability and validity of the FSST has been appraised in a group of Turkish older adults, aged 65 and over. The aim of this study was to show the impact of gender in older adults, who were independent in daily living activities. On the other hand, we aimed to show the relation between age and FSST score in the sample.

Material and Method

A total of 80 volunteer older adults aged 65-85 included in this study, broken in two groups by gender; (1) women mean age=72.36±5.57 yrs.(n=36); T(2) men mean age=72.95±4.72 yrs. (n=44). The FSST was used to evaluate the sample.

Results

The scores of FSST the compared groups are as follow: women=15.70±5.48; men=14.86±4.71 sec. There was not significant difference between women and men ($p>0.05$).

A significant positive relation was found between age and the FSST score of the sample ($p=0.000$)

Conclusion

The findings obtained from this study indicate that gender has not impact on the FSST score in older adults. However ageing has negative effect on the FSST score. Increased age makes the FSST score longer.

Keywords

Four Step Square Test, Geriatrics, Balance.

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1613

EXPLORATORY STUDY OF THE ENJOYMENT ITEMS OF LEISURE ACTIVITIES IN THE GERIATRIC HEALTH SERVICES FACILITIES

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Introduction/Background

There are various enjoyment items obtained from occupation. More concretely, it's fun because "I can do with friends", and it's fun because "I will grow myself". Most of the elderly in the geriatric health services facilities (Roken in Japan) have different leisure activities in the past and present, some elderly people might not have an opportunity to engage in occupation. Even if the elderly engage occupation as a leisure, there was little known whether the meaning of occupation was same or not he or she used to do it. From these, the purpose of this research was to investigate whether there is a difference in meaning of past and present leisure activities for elderly people living in facilities.

Material and Method

9 participants (3male, 6female) were recruited with 2 facilities, and conducted an individual interview using semi-constructed guide. Interviews was audio-recorded, verbatim, and analyze the meaning of sentence using KJ method. This survey was initiated after approval of the Ethics Review Committee.

Results

The 8 enjoyment items were found, of which especially 2 enjoyment items," Admitting my own worth and accept the existence affirmatively", "Emotions and five senses react by being dependent on occupation" that were not found in previous studies were found and suggested the possibility of being a characteristic of the elderly in facilities. Also, the enjoyment items tended to match between almost participants in the past and present, but long-term residents tended to cause discrepancies.

Conclusion

It was suggested that focusing on coincidence between past and present enjoyment items can be utilized for performing occupational therapy for the elderly in the facilities.

Keywords

geriatric health services facilities;leisure activities;enjoyment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1663

RELATIONSHIP BETWEEN COGNITIVE STATUS, MOTOR PERFORMANCE AND DUAL TASK PERFORMANCE IN GERIATRICS

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Introduction/Background

Aging is a process of growing old which describes a wide array of physiological changes in the body system. Elderly people may show difficulties in dual tasking, in general and when walking while performing another task. This study was planned to investigate the relationship between cognitive, motor performance and dual task performance in geriatric people.

Material and Method

A total of 82 healthy geriatric participants (41F, 41M) aged 65 to 75 years, included in the study. Chair-stand test (CST), timed up & go test (TUG) and 10-meter walking test (10WT) for physical performance and Montreal Cognitive Assessment (MoCA) for cognitive performance were used. Three test conditions to evaluate dual task performance were single walking, walking while performing cognitive task (telling the days), and walking while performing motor task (tray-carrying).

Results

It was found that statistically significant correlation between cognitive performance and cognitive-motor dual tasking, and physical performance and motor-motor dual tasking of participants ($p < 0.05$).

Conclusion

Success in dual task performance of geriatric individuals depends on good cognitive status and physical performance.

Keywords

geriatrics, dual tasking, cognitive performance, motor performance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1722

END OF LIFE CARE IN A TUNISIAN HOSPITAL: A REPORT OF 12 CASES

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Introduction/Background

Recognition of an end-of-life situation should lead to a change in the objectives of care: ensuring comfort rather than cure. The objective of our work is to report our local experience in end of life care, and highlight the importance of Rehabilitation in a global approach of the terminally ill patients.

Material and Method

We conducted a monocentric retrospective study, including 12 patients who had been hospitalized in the Medical Intensive Care Unit (MICU) of a University Hospital. We included patients who required palliative care and for whom a do not resuscitate order (DNR) was issued upon admission or within 48 hours of hospitalization.

Results

Average age was 73 ± 13 years. Almost all of them had at least 2 comorbidities. The most common reason for admission was acute respiratory failure for 8 patients and unconsciousness for 4 patients.

Palliative care was sustained until death with high FiO₂ in 3 patient, and non invasive ventilation (NIV) in 8 patients. Chest physiotherapy was performed in 11 patients, and nebulized bronchodilators were required for 5 patients. Analgesics and postural physiotherapy were essential for 7 patients.

Body hygiene, prevention of bed sores, deep venous thrombosis, and gastrointestinal bleeding were ensured for all patients. Physicians and paramedics rounds were frequent and regular. Spiritual beliefs were satisfied. Regular and wider visiting schedules were ensured for families. Nursing staff showed a good acceptance of all procedures of end of life care despite the

increased work load. Regular discussion with the nursing staff prevented the occurrence of burn out syndrome.

Conclusion

Our palliative approach was successful to ensure comfort and dignity of terminally ill patients, preventing therefore futile treatment and inappropriate aggressive resuscitation, with complete respect of ethical issues. The need of a law for end of life care is highlighted in this study.

Keywords

end-of-life care;palliative care;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-1816

CORRELATION BETWEEN DOMAIN OF EQ5D IN OUTPATIENTS GERIATRIC REHABILITATION

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Introduction/Background

Background and Aims : Geriatric patients with major knee arthritis problem, have some restriction in activities and daily participation caused by mobility problem, pain disorders, psychological problems, and the environment. EQ5D as a tool of quality of life used in elderly people has components that represent these aspects. The aims of this research is to investigate the correlation between domain of EQ5D in Geriatric Rehabilitation patients with Knee Arthritis.

Material and Method

Methods : Retrospective study. All patients with Knee Arthritis was assessed EQ5D description part. Data was taken from Geriatric Rehabilitation Outpatient Clinic, Juni-November 2017. Data will be analyzed using SPSS 20.0 with Spearman test.

Results

Results : From 85 subjects with main problem Knee Arthritis and ≥ 2 medical condition, 15 subjects (17.6%) men, and 70 subjects (82.4%) women. 49 subjects (57.6%) 60-69 years old, 34 subjects (40%) 70-79 years old, and 2 subjects (2.4%) older than 80 years old. According to domain EQ5D Mobility, Self Care, Daily activity, Pain, Anxiety/Depression, we found significant difference between Mobility and Self Care $p=0.037$ $r -0.227$, Mobility and Daily Activity $p < 0.001$ $r 0.446$ (moderate correlation), Mobility and Pain $p=0.002$ $r 0.329$ (moderate correlation), Mobility and Anxiety $p=0.531$ $r 0.069$, Pain and Activity $p < 0.001$ $r 0.609$ (strong correlation), Ages and mobility, $p=0.754$, $r -0.34$.

Conclusion

Conclusion : From this research, majority cause of activity and participation restriction are pain disorder and mobility problem on women. So, rehabilitation management is more focused on appropriate intervention strategies with pain management and optimizing mobility for Geriatric with Knee Arthritis.

Keywords

Geriatric Rehabilitation, Knee Arthritis, Mobility, Pain, Activity and Participation Restriction, EQ5D

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-2053

CLINICAL AND SOCIAL FACTORS ASSOCIATED WITH THE FUNCTIONALITY IN THE ELDERLY PEOPLE POSTOPERATIVE OF TROCHANTERIC AND SUBTROCHANTERIC HIP FRACTURES IN A REFERENCE HOSPITAL

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Introduction/Background

Currently, clinical and social factors that affect the functional recovery of older adults with hip fracture have been described, the objective of our study was to evaluate clinical and social factors associated with functionality in postoperative older adults of trochanteric and subtrochanteric hip fractures in a reference hospital.

Material and Method

Prospective, longitudinal and quasi-experimental study of consecutive cases in Adults Older than 60 years post-operative of trochanteric and subtrochanteric hip fracture, from August to December 2017. The clinical and social factors of the patients were analyzed; with initial and final assessment of the Katz index three months after the fracture. Descriptive statistics and student t test were performed for independent samples considering significance $p = <0.05$

Results

The sample included a total of 27 patients, female gender 85.2%, age <85 years 59.3%, concomitant diseases 77.8%, single marital status 66.7 %, unemployed 59.3%, transtrochanteric fracture treated surgically with DHS in 81.5%, of which 51.9% of patients presented falls prior to fracture, 66.7% of patients reported a functional family situation and the evaluation the emotional state was normal at 55.6%.

Conclusion

It was corroborated that age <85 years, was found to be a factor for functional recovery in post-operative older adults with short-term trochanteric and subtrochanteric hip fracture.

Keywords

Hip fracture elderly, Cognitive state, Functional independence.

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-2149

A STUDY OF EFFECT OF PHYSICAL ACTIVITIES AND COGNITIVE GAMES ON COGNITIVE FUNCTION OF CHINESE OLDER ADULTS

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Introduction/Background

Elderly with cognitive decline is a common problem in an aging world. Either physical activities or cognitive games are found to be effective in improving cognitive function in the elderly. However, their combined effect has been rarely studied and in Chinese elderly populations.

Material and Method

Healthy elderly, of age 50 or above, both genders were recruited from communities and nursing homes in mainland of China. They were invited to report on their participation level in physical activities and cognitive games by means of Chinese Version of the Physical Activities Scale of the Elderly (PASE-C) and a self-designed Cognitive Activity Scale for the Elderly (CASE) respectively. Mean scores in PASE-C and CASE were used to operationally classify participants into four groups, a) Physical and cognitive inactive group (PCIG), b) Physical active group (PG), c) Cognitive active group (CG) and d) Physical and cognitive active group (PCG). Their cognitive functions, as indicated by Beijing version of Montreal Cognitive Assessment (MoCA-BJ) were examined. The relationships of participation physical activities and cognitive games levels and scores of (Chinese version) (GDS-15) and (MoCA-BJ) were also analyzed.

Results

172 elderly people were interviewed and 167 of them were eligible for further analysis. Participants of the four groups did not differ significantly in demographics except age ($F=11.137$, $p=0.000$) and monthly income ($F=2.871$, $p=0.038$). The physical and cognitive active group (PCG) had a better cognitive function than the physical and cognitive inactive group (PCIG) ($p<0.05$) through ANCOVA analysis (using age and income as covariates), but no statistically significant difference could be found in other comparisons.

Conclusion

It was suggested that elderly who actively participated in both physical activities and cognitive games might have better cognitive function than those mainly participate in either physical activities or cognitive games alone. Causal relationship cannot be assumed in the present cross-sectional study.

Keywords

Cognitive Function;Cognitive Games;Physical Activities

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A6.05 Geriatrics - Other Geriatric Conditions

ISPR8-2160

EVALUATION OF PHYSICAL FITNESS AND COMPARISON BETWEEN INSTITUTIONALIZED AND NON INSTITUTIONALIZED ELDERLY.

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Introduction/Background

The aging process generates functional and structural changes in the body; such changes affect the functionality and self-efficacy of the elderly. It is common to consider that aging leads to cognitive and behavioral deficits, and the determination of functional capacity is essential for the diagnosis of the needs of a population serving as a parameter to elaborate a program directed to the development and maintenance of the autonomy of the elderly. The aim of this study was to evaluate the physical fitness comparing institutionalized and non-institutionalized elderly.

Material and Method

Were evaluated 10 elderly (five institutionalized and five non-institutionalized elderly). Were evaluated the components related to functional independence, balance, agility, flexibility, body mass index, aerobic endurance and muscular strength. The individuals were evaluated and divided into two groups. The group A is composed of the elderly with altered cognitive and group B by the elderly with the normal cognitive function.

Results

In the chair lift and sit test the group B showed an average of 9.2 times and the group A performing an average of 5.4 times. In the forearm flexion, the group B performed on average 23 forearm flexions, while group A performed 15.2 times. In the sitting and reaching test, the groups had a difference of only 1 centimeter (A = 8.8 cm) and (B = 9.8 cm). In the behind-the-back test, the group A had an average of 40 cm and the group B 19.4 cm. Comparing the 6-min walk test (6 MWT) the group B performed 11.8 laps, while the group A performed 2.6 laps.

Conclusion

The institutionalized elderly have a lower physical fitness due to their cognitive alterations and decreased functional capacity, which are more vulnerable and dependent for carrying out activities of daily life.

Keywords

Physical fitness;Aging;Cognition

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2566

QUANTIFYING GAIT PARAMETERS TO DETERMINE INTENSITY OF GAIT PERTURBATIONS PRESCRIBED BY PHYSICAL THERAPISTS TO TRAIN SUBJECTS WITH BALANCE DEFICITS

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Introduction/Background

Gait perturbation training for fall prevention is gaining recognition over regular strength and balance exercises. Difficulty of perturbations chosen varies between interventions and the most effective intensity is unknown. Some physiotherapists already use perturbations in clinical settings. Our objective was to quantify the changes in balance parameters during gait perturbations selected by an experienced physiotherapist.

Material and Method

Seven subjects with moderate to severe traumatic brain injury and deficits in dynamic balance participated. Three-dimensional whole-body motion and kinetics analysis was performed, after one habituation session. Self-imposed (head rotations) or physiotherapist-imposed (repeated or random slips and trips induced by changes in belt speed) perturbations were applied while walking on a split-belt treadmill. Relative anteroposterior position (APP) and velocity of the center of mass (COM) and center of pressure (COP) were compared between perturbations and natural and fast gait speed.

Results

No differences were found in relative APP of COM and COP for physiotherapist-imposed slip-like or self-imposed perturbations compared to natural gait ($p > 0.134$). Physiotherapist-imposed trip-like perturbations caused significantly more forward relative APP of COM and COP than during fast gait ($p \leq 0.05$). Velocity of COM and COP was significantly greater during physiotherapist-imposed ($p \leq 0.001$), but not self-imposed ($p > 0.106$), perturbations than at natural gait speed. COM velocity remained lower than during fast gait for all perturbations ($p \leq 0.05$), but COP velocity in physiotherapist-induced perturbations reached fast gait COP velocity ($p > 0.279$).

Conclusion

Balance-related gait parameters were not affected during self-imposed perturbations, while physiotherapist-imposed trip-like perturbations altered parameters the most. During physiotherapist-imposed perturbations, balance control (COP-related) parameters reached values equal or greater than at fast gait speed. Meanwhile, the level of balance quantified by COM-related parameters, reached levels similar to fast gait for relative APP but not velocity. Future research should examine the possibility of personalizing perturbations to train specific balance parameters based on patient needs.

Keywords

gait;balance;perturbations

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2585

IMPACT OF MODIFIED GAME BASED ACTIVITY THAT IMPROVE MOTOR CONTROL AND FUNCTIONAL OUTCOME IN STROKE

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Introduction/Background

Globally stroke is one of the main causes of impairment or disability. The estimated annual prevalence of stroke in Pakistan is an estimate of 350,000 new cases every year. Evidence showed, sports and Physical exercise is directly interlinked with cardiovascular fitness. It improves skill related fitness like balance, coordination etc and health related fitness i.e., cardiovascular, endurance, strength. The most important thing is neuroplasticity of brain which increase brain function and automatic learning pattern will enhance and help in motor control.

Aim: To find out usefulness of game based activity to attain skill related fitness and motor performance skill in stroke

Material and Method

It is qualitative study .continuous on-going process. Fifty adult patients of stroke (suffering from stroke between 1-5 years) from adult clinics will select. All patients receive conventional therapy and additional game based activities 4 days a week. Sports based therapy included Basket Ball, Balloon Bounce, Volley Ball, Cricket, and Football .These 5 activities covered with warm up and cool down exercises. Pre and post assessment is done by Fugal Mayer and Chadock scale

Results

Results are collected in the form of reflection. Each after 3 months re-evaluate and do amendments according to patients need. After 6 month final re-evaluate and do reflection.Reflection is based on PEO model in which we explain person ,environment and occupation(sports).A scoring sheet also make to support the documents.

Conclusion

As it is on-going process, we do not compile any numerical result but we recorded things as reflection. Finally make a guide book for stroke survivor.

Keywords

game based activity;skill related fitness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2596

EFFECTS OF LESION EXTENT AND LOCATION ON UPPER-LIMB SPASTICITY FOLLOWING HEMISPHERIC STROKE

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Introduction/Background

Spasticity of the hemiparetic upper limb (UL) leading to difficulty performing activities of daily living is a major concern in stroke rehabilitation. Spasticity results from impaired control of motoneuronal activation thresholds exerted by descending direct and indirect pathways. This is reflected by pathological alteration of the specific muscle length/joint angle at which the stretch reflex and other proprioceptive reflexes begin to act (tonic stretch reflex threshold, TSRT). The relationship between lesion location and the appearance of spasticity is poorly understood. We investigated the relationship between lesion characteristics and elbow-flexor (biceps) TSRT in the hemiparetic UL, as part of an international multicenter RCT (ENHANCE project; ClinicalTrials.gov, ID: NCT02725853).

Material and Method

Elbow-flexor TSRT (°) was examined in 8 right-hemisphere damaged (RHD) and 15 left-hemisphere damaged (LHD) stroke patients using the Montreal Stretch Reflex Threshold device. Normalized lesion data were used for voxel-based lesion-symptom mapping (VLSM) analyses of lesion impact on biceps spasticity.

Results

Application of VLSM using 10 continuous affected voxels as a minimum for consideration, showed in the LHD group, a cluster localized in the superior part of the corona radiata, where damage affected the level of spasticity in the biceps as revealed by its TSRT (smaller clusters were recognized in the external capsule and insula). In the RHD group, VLSM failed to reveal voxel clusters where damage affected the biceps TSRT.

Conclusion

The paucity of hemispheric voxels where damage is related to increased spasticity levels may indicate that impaired regulation of motoneuronal activation threshold after stroke is attributed to the sum effect of various brainstem control substrates (which cannot be analyzed using VLSM), rather than to direct corticospinal control.

Keywords

Stroke;lesion analysis (VLSM);Spasticity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2609

FALLING BACKWARD WHILST BENDING FORWARD: AN APPARENT CONTRADICTION RESOLVED IN ONE CASE OF PARKINSON DISEASE

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Introduction/Background

We present a documented observation showing the existence of a biased representation of verticality in PD, resulting in a severe retropulsion and recurrent falls, and a camptocormia likely compensatory. A specific rehabilitation led to a spectacular result.

Material and Method

A 68 year-old patient with Parkinson's disease fall backward 3 times a day. He presented an important camptocormia. There were no spinal muscular amyotrophy neither spinal canal stenosis on the lumbar tomography. The Postural vertical (PV) was tilted backward at -9° (normal for this age = $-1.1^\circ \pm 1.4^\circ$). Our interpretation was that retropulsion was due to a backward tilt of the internal model of verticality, which led to recurrent falls. Camptocormia was mainly compensatory.

The patient underwent an intensive rehabilitation program of 15 days including: erectus spinae muscles strengthening, realization of postural exercises thanks to mirror. A modulation of the internal model of verticality was undertaken on the basis of theoretical arguments (synthesis of graviceptive vestibular and somatosensory information) and on experimental studies: 30° forward tilted posture on a tilt table, bodyweight support walking, vibration of tibialis anterior's tendons. PV measurements before and after these technics confirmed the relevance of this approach.

Results

After 2 weeks the results were spectacular (Table 1): posture spontaneously more upright (35 mm gain in C7 position), attenuated retropulsion (objectively assessed using the BDS), and normalization of PV = 0.1° . At discharge the patient was instructed to daily perform the exercises taught. Reviewed at M2 and M6, he was very satisfied with a dramatic reduction of fall frequency and the feeling to stand better.

Table 1. Performances of balance and walk before and after the rehabilitation program.

	Baseline	After day 1	End of the program
Postural vertical <u>sagittal</u> (degrees)	-9	-2.8 to -4.3	0.1
Sagittal C7 <u>arrow</u> (centimeters)	26.5	<u>n.a.</u>	23
Frontal C7 arrow to the left (centimeters)	8.5	<u>n.a.</u>	4.5
Backward <u>Desequilibrium</u> State (/15)	4	<u>n.a.</u>	3
Five times sit to stand test (seconds)	50-65-55	<u>n.a.</u>	41-45-43
Berg Scale (/56)	50	<u>n.a.</u>	53
Walk speed (m/s)	0.78	<u>n.a.</u>	0.74
Time up and go test (seconds)	15-13-11	<u>n.a.</u>	13-11-12

Conclusion

This observation brings a new insight about the nature of some postural disorders in PD, and suggests the interest of a novel rehabilitation dedicated to the sense of upright.

Keywords

postural disorders;parkinson's disease

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2642

TREATMENT OF TACROLIMUS INDUCED TREMOR IN POST- TRANSPLANT PATIENT

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Introduction/Background

Tacrolimus is frequently used in patients after transplantation leading to some adverse effects which includes tacrolimus induced tremor, a frequent event in post renal transplant patients, occurring in about 12% of the patients.

Material and Method

Not applied

Results

Female, 62 years old with mRanking scale of 0 with no resting or intention tremor. She was done a kidney transplantation in June 2017 due to a 25 years ago diagnosed type 2 Diabetes Mellitus, which led to kidney failure. After the transplantation, Tacrolimus 7mg twice a day was started. Approximately 4 months after, the patient started to feel an intermittent intention, and after also resting, tremor in both hands, that impacted her quality of life for activities of daily living like feeding and dressing and mainly, waking her up during the night. Her mRanking scale at that time was 2. The patient was sent to Physical Medicine & Rehabilitation (PMR) appointment 2 months after the tremor begun. 80mg/day dosage of propranolol was started. We re-evaluated the patient 1 month later and registered an improvement in activities of daily living and she was also able to sleep without waking with the tremor, leading to a mRanking scale of 0 again.

Conclusion

Tacrolimus induced tremor is a frequent cause of tremor in these patients and PMR physician should pay attention for this specific cause of tremor. The tremor could have other cause, however, given its frequency and the fact that the symptoms started after the beginning of the treatment, it is probably related with Tacrolimus. The suspension this drug could not be done due to it's importance in post-transplantation patients. In conclusion, propranolol may be a good treatment to offer to these patients but since there are no studies for the specific treatment of this adverse effect, investigation should be done to confirm its effect.

Keywords

propranolol;tacrolimus;tremor

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

**A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control
(including Postural Control)**

ISPR8-0179

**ABSTRACT NEED TO BE EDITED - THE EFFECTS OF TEXTURED INSOLES ON QUIET
STANDING BALANCE IN FOUR STANCE TYPES WITH AND WITHOUT VISION**

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Wearing a textured shoe insole can decrease postural sway during static balance. In contrast to previous studies, we aimed to investigate if textured insoles modulated postural stability during four stance types, with and without vision.

Keywords

static balance;footwear intervention;sensory reweighting

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0186

IMMERSIVE VS NON-IMMERSIVE VIRTUAL REALITY SYSTEMS FOR PROPRIOCEPTION IN PATIENTS AFTER STROKE.

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Introduction/Background

Proprioception is the ability to sense stimuli arising within the body regarding position, motion, and equilibrium. This sense can be disturbed in many neurological disorders. Proprioception is significantly correlated with Limits of Stability (LOS) values. Patients with decreased LOS have an increased likelihood of falling. Virtual Reality systems (immersive and non-immersive) are established rehabilitation methods for balance and proprioception training.

Purpose of this study is to determine if the immersive virtual reality systems with headsets may elicit a risk factor for falls in patients after stroke.

Material and Method

Methods: 20 patients (12 males-8 females; age 48.8 ± 6.8 years) with hemiplegia after stroke. All the participants were in post-acute phase. Prerequisite for inclusion in the study were the lack of visual and cognitive deficits and presence of subtle movement in all four limbs. Patients were assessed through Berg Balance Scale and Limits of Stability values. All patients had sessions of the same virtual reality protocol in immersive and non-immersive mode.

Results

No statistically significant difference was found in terms of descriptive features of the patients ($p > 0.05$).

Conclusion

We suggested that vision is less able to supplement peripheral input to maintain balance compared with the proprioceptive system. The first sessions may be destructive but the patients easily accommodate to the head sets virtual reality mode. Immersive Virtual Reality systems seems to be safe and provide good clinical outcomes.

Keywords

Virtual reality ;propioception;stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0272

CRANIAL NERVE NON-INVASIVE NEUROMODULATION IMPROVES GAIT AND BALANCE IN STROKE SURVIVORS: A PILOT RANDOMISED CONTROLLED TRIAL

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Introduction/Background

Cranial nerve non-invasive neuromodulation (CN-NINM) has been shown to enhance physiotherapy interventions for balance and mobility in patients with neurological impairments. The objective of this study was to determine the efficacy of CN-NINM in improving gait and balance in a pilot randomised controlled trial in stroke survivors undergoing inpatient rehabilitation.

Material and Method

A convenience sample of 10 stroke survivors were randomised to two groups, one receiving CN-NINM using a Portable Neuromodulation Stimulation (PoNS™) device (n=5, mean age 72±5 y) and the other not receiving stimulation (controls n=5, mean age 74±6y). For the two-week trial period, both groups received 2 sessions per day of high-intensity physiotherapy. Each session included 20 minutes of balance training and 20 minutes of gait training as well as 20 minutes of relaxation/consolidation period with concurrent stimulation. The main outcome measures were the Mini-BEST, posturography, instrumented timed up-and-go (iTUG) and walking measures.

Results

Significantly greater improvements in Mini-BEST scores ($p<0.05$) were found in the group receiving CN-NINM compared to the control group. No significant differences were found for the other outcome measures.

Conclusion

This is the first study showing the feasibility of a 2-week intensive physiotherapy intervention combined with CN-NINM using PoNS™ in stroke survivors. This combined intervention was significantly more efficacious than high intensity physiotherapy alone for the rehabilitation of gait and balance in this population.

Keywords

stroke;neurostimulation

No conflict of interest

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A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0290

BALANCE EVALUATION IN PARKINSON'S DISEASE – IS IT SIMPLE TO CHOOSE THE ONE SIMPLE TEST? – REVIEW

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Introduction/Background

One of the main symptoms in Parkinson's Disease (PD) are balance disorders – patients have tendency to fall, related traumas and also significant restriction of mobility. To evaluate the balance many tools can be used, however, it is difficult to choose the proper one. The aim of this study was a comparison of simple, diagnostic tools for PD and indication those characterized by high reliability and sensitivity.

Material and Method

The global literature search was conducted in PubMed, Scopus, Science Direct, Web of Science, Cochrane and Google Scholar for publications in English and Polish from January 2007 through January 2017.

Results

According to the literature seven scales and functional tests, in which the clinimetric properties had been assessed in PD population, were selected. Summary is presented in Table 1.

Table. 1 Comparison of selected diagnostic tools in PD.

Test/Scale name (abbreviation)	Number of items	Time of administration (min)	Inter- rater/retest reliability	Sensitivity/ specificity	Floor/ ceiling effects
Berg Balance Scale (BBS)	14	15-20	Good to excellent*	Moderate	Yes
The Balance Evaluation Systems Test (BESTest)	36	20-40	Good to excellent*	Good	No
Brief-BESTest	6	<10			
Mini-BESTest	14	10-15			
Fullerton Advanced Balance Scale (FAB)	10	<10	Good to excellent*	Good	No
The Functional Reach Test (FRT)	1	<10	Poor to excellent*	Adequate to good	No
Tinetti Balance Scale	9	<10	Good	Not found	Yes
Timed Up and Go (TUG)	1	<10	Adequate	Good	Not found
UPDRS – Postural Instability	5	<10	Moderate to good*	Not found	Yes

*differences between study groups e.g. faller and non-fallers

Conclusion

Each of the short versions of BESTtest or FAB Scale could be used to assess individual postural mechanisms of the patient with PD. The tests are easy in administration, not time-consuming and provide professional diagnosis allowing to plan individual therapy for the patient being examined.

Keywords

Parkinson's disease;Balance assesment

Conflict of interest

Disclosure statement:

The work was carried out as a part of the Research Project implemented in the years from 2017 to 2018 funded by a grant obtained by the Second Faculty of Medicine, Medical University of Warsaw.

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A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0497

EFFECTS OF GALVANIC VESTIBULAR STIMULATION WITH WHITE AND PINK NOISE ON UPRIGHT STANDING SWAY FOR HEALTHY ADULTS

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Introduction/Background

It has been reported that the noisy galvanic vestibular stimulation (n-GVS) could improve upright body sway in healthy subjects. It is unclear which sort of noise is appropriate for n-GVS. Our study aimed to investigate the effects of n-GVS with white and pink noise for upright standing sway in healthy adults.

Material and Method

Seventeen healthy adults (11 men; age = 21.9 ± 1.6 years) were instructed to stand on a force plate with foamed rubber and wore an eye-mask and ear-muffs. Center of pressure (CoP) displacement was measured for 60-s with 1000 Hz sampling. We generated the 30-s white and pink noise and added this to the galvanic vestibular stimulation. We applied the n-GVS to the participants and stimulus intensities were 30, 50, 70, 90, and 110% of each participant's electric sensory threshold level (10 conditions: 2 noise \times 5 intensities). Right-side anode n-GVS was applied via both mastoids 30-s after the measurement was started.

We used the anteroposterior (AP) and mediolateral (ML) direction of standard deviations (SD) and total length (LNG) of CoP displacement as measurement variables. Each condition's variable was represented as a percentage value based on the initial 30-s measurement data (pre-n-GVS). We compared these variables with two-way repeated measures ANOVAs and t-test as post hoc test (significance level was 5%).

Results

In the AP- and ML-LNG, significant intensity effects were observed with ANOVAs (both of $p < 0.05$). Conversely, there were no main effects and interactions in the AP- and ML-SD. In the AP-LNG, the 90% intensity condition showed significantly smaller values compared to 50, 70, and 110% in the pink noise.

Conclusion

We found that the n-GVS improved the CoP displacement length but not the width and the optimal stimulus intensity was at around 90% of the sensory threshold level with pink noise.

Keywords

galvanic vestibular stimulation;postural sway;noise

Conflict of interest

Disclosure statement:

JPJS KAKENHI: 16K21516

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A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0520

EXAMINATION OF STATIC AND DYNAMIC BALANCE OF BRAIN INJURED PATIENTS IN ELASTIC SPACE

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Introduction/Background

The partial or complete loss of static and dynamic balance after vascular or traumatic brain injury is an important dysfunction in neurorehabilitation. The balance skills significantly contribute to gait ability which determines the patient's living conditions and return to normal daily activities. The recovery of standing stability and walking ability are the most important elements of rehabilitation after brain injury.

The purpose of this examination is to show the key elements of core stabilization, postural control, balance and coordination exercises with the use of vertical suspension and to analyze the effects with some tests among hemiparetic and ataxic patients.

Material and Method

Twenty patients were assigned for follow up study in 2 treatment groups (10 hemiparetic, 10 ataxic) and they completed average 30 minutes of special treatment (exercises in elastic space), 5 times a week over a period of 6 weeks. During the research the previously used conventional therapies were unchanged. In order to document the changes in the state of locomotion we used the following: transfers and locomotion items of the Functional Independence Measure (FIM), Fugl-Meyer Balance, Scale for the Assessment and Rating of Ataxia and Stabilometer device.

Results

Therapeutic exercises in elastic space were useful for both groups with regard to static and dynamic balance and stability of standing, however, better results were observed in the group of ataxic patients. The bigger difference over the obtained outcomes was demonstrated rather in the locomotion item of FIM and in the measurements of Stabilometer.

Conclusion

The stability provided by springs and elastic ropes significantly contributes to proprioception and accurate body awareness in space. Based on our observations the elastic space formed with vertical suspension continuously stimulates the sensory system which can develop new neuromuscular connections that can greatly improve balance, postural control and gait.

Keywords

brain injury;postural control;elastic space

No conflict of interest

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A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0585

THE ORIGINAL METHOD OF BALANCE AND GAIT CORRECTION IN PATIENTS AFTER STROKE

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Introduction/Background

This abstract covers a classical method of stato-locomotor function correction with application of platforms with biological feedback (BF), a proprietary method of balance correction MAPS-1 based on activation of anticipatory synergies and an original method of balance and gait correction consisting in activation of the vestibular analyzer and postural synergies by means of shifting the centre of gravity and oscillation of the patient in the vertical plane.

The aim of our study was to assess whether the original method based on dosed centre-of-gravity shifting in the vertical plane is effective in restoring gait and balance functions.

Material and Method

Inpatients (n=75) diagnosed with vestibular-atactic syndrome of stroke origin were randomly divided into 3 groups. Group 1 (n=25) was treated with application of the original method, Group 2 (n=25) received treatment by means of the MAPS-1 method and Group 3 (n=25) underwent balance correction via BF equipment.

Each patient underwent computer stabilometry (CS), gait parameters assessment by means of the method "Laser analyzer of kinematic gait parameters" (LA-1), balance and gait assessment using Berg Balance Scale, ICARS and Dynamic Gait Index prior to and after the course of treatment.

Results

Significant decrease in main CS and LA-1 values and improvement in indices of DGI and BBS functional scales after treatment was revealed. Statistically significant differences in DGI scale indices were found after comparison of CS, LA-1 and functional scale values in Group 1 with such in Groups 2 and 3.

Conclusion

Our study confirmed that the original method of balance and gait correction consisting in activation of the vestibular analyzer and postural synergies by means of shifting the centre of gravity and oscillation of the patient in the vertical plane improves balance and gait functions and can be recommended for complex restorative treatment in patients after stroke.

Keywords

stroke;balance;neurorehabilitation

No conflict of interest

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A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0596

INTRA-RATER RELIABILITY OF THE PERSIAN BALANCE EVALUATION SYSTEMS TEST (BESTEST) IN SUBJECTS WITH STROKE

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Introduction/Background

The assessment of balance function is an important part of physical therapy. The BESTest is a measure that evaluates systems underlying balance control. The aim of this study was to translate and cultural adapt the BESTest into Persian and investigate its intra-rater reliability in subjects with stroke.

Material and Method

First, the Persian version of BESTest was produced following standard forward and backward translation, and review by an expert committee. Then, 18 subjects with stroke (15 male, age 56.9 ± 10.3 years, duration since stroke 50 ± 35.1 months) participated for intra-rater reliability of the Persian BESTest. Measurements were taken in two sessions with 1 week interval by one physiotherapist and according to Persian BESTest.

Results

The intraclass correlation coefficient (ICC) for total score was high (ICC=0.88, 95% CI= 0.73-0.95). The Standard Error of Measure (SEM) and the Minimal Detectable change (MDC) were 8.33 and 22.82, respectively.

Conclusion

The Persian BESTest has high intra-rater reliability in evaluation of balance in subjects with stroke.

Keywords

physical therapy;stroke;balance

No conflict of interest

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A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0640

EFFECT OF NECK MUSCLES VIBRATION ON POSTURAL BALANCE AND SPATIAL FRAME OF REFERENCE: A SYSTEMATIC SCOPING REVIEW

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Introduction/Background

Muscle vibration, in particular applied to the neck muscle is increasingly being used as a mean of rehabilitation treatment. Neck muscle vibration (NMV) is thought to have an effect on the representation of the body in space through sensory recalibration. The objective of this systematic scoping review was to map out the characteristics of the existing studies and gather the effect of neck muscle vibration on both spatial frame of reference and on postural balance.

Material and Method

following the PRISMA guidelines, a systematic search was carried out using the databases MEDLINE, EMBASE, Cochrane library and PEDrO applying the following key words ((Postural balance) OR (Spatial reference)) AND (Neck muscle vibration) for those articles published through to July 2016.

Results

Altogether 67 studies were assessed and they unveiled both a large heterogeneity and a standard quality of methodology with a total of 1522 participants included. Under unilateral neck muscle vibration, the visual environment (illusion of a visual target) seemed to move towards the opposite side of the vibration, and both the visual vertical and the straight ahead were shifted towards the vibrated side. In addition, NMV produce a body tilt. This effect is however not constant at all times.

Conclusion

NMV is considered as a useful remedy tool in rehabilitation therapy which has shown to induce a body sway on the force platform and a deviation of the spatial representation in both healthy subjects and patients. That said, however, owing to the heterogeneity of the experiences and the various significant shortfalls highlighted, this research does not allow us to firmly conclude our results.

Keywords

Neck muscle vibration;postural balance;spatial frame of reference

No conflict of interest

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A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0688

IMPACT OF AN IMMEDIATE VIRTUAL REALITY HEADSET ON STATIC AND DYNAMIC BALANCE IN HEALTHY INDIVIDUALS.

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Introduction/Background

A virtual reality headset (VRH) is a head-mounted device that enables the user to experience virtual reality. Although VRHs are currently used to train medical students for surgery, a few studies on its use in rehabilitation have been published. This technology produces an immersive virtual environment and virtual worlds that can affect the real world, specifically balance. We sought to evaluate the immediate effects of VRH on static and dynamic balance in healthy individuals.

Material and Method

Participants were recruited from a community in the Minas Gerais state in Brazil by convenient sampling. We assessed timed static balance using the Romberg, Tandem, and single leg stance test with and without foam and dynamic balance using the Fukuda stepping test (FST). After balance evaluation, all participants used the VRH for 30 minutes. The VRH consisted of glasses, headphones, and foam for immersion using the roller coaster game. After using the VRH, each participant was subjected to balance evaluation again. Student's t-test was used to determine the effect of VRH on balance, with $p < 0.05$ considered statistically significant.

Results

Eight individuals were evaluated, including 5 women and 3 men with a mean age of 55.5 ± 13.9 years. Table 1 shows that no significant difference in static balance was seen among the individuals after wearing the VRH, and in the FST, the mean was $40 \pm 18.3^\circ$ before and $20 \pm 8.3^\circ$ after wearing the VRH ($p = 0.043$). Postural oscillation during static balance tests increased in all individuals.

Table 1. Mean and standard deviation of static and dynamic balance tests before and after using a virtual reality headset.

	Mean	SD	p-value
Tandem test (right side)	3.675	8.30075	0.441
Tandem test (left side)	-4.9	6.90748	0.251
Tandem test with foam (right side)	-2.1525	17.9316	0.826
Tandem test with foam (left side)	-9.4	15.48741	0.312
Single leg stance test (right side)	-6.3	10.87903	0.331
Single leg stance test (left side)	-0.925	14.44931	0.906
Single leg stance test with foam (right side)	0.325	9.03267	0.947
Single leg stance test with foam (left side)	-1.425	2.85	0.391
Fukuda stepping test (degrees)	25	14.7196	0.043

Conclusion

The immediate effect of wearing a VRH was an improvement in dynamic balance. These data suggest that VHRs may be useful as a therapeutic tool to shift the center of gravity of individuals undergoing balance training.

Keywords

Balance; Postural control; Virtual reality

No conflict of interest

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A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0693

ADAPTATION OF ANTICIPATORY POSTURAL ADJUSTMENTS DURING GAIT INITIATION INDUCED BY SHORT-TERM WHOLE-BODY VIBRATION: A RANDOMIZED SHAM INTERVENTION STUDY IN YOUNG ADULTS AND ELDERLY

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Introduction/Background

Whole-body vibration (WBV) is a training method that exposes the entire body to mechanical oscillations while standing on a vibrating platform. WBV are used by clinicians to improve balance and gait. However, WBV may also induce an increase in leg stiffness through a “tonic reflex vibration”, which may potentially hinder balance control during locomotor tasks. Gait initiation (GI) is a functional task that is classically used to investigate balance control. It includes two phases, the “Anticipatory Postural Adjustments” (APAs) and step-execution phase. During GI, stability is known to depend on the capacity of the central nervous system (CNS) to generate adequate APAs along the mediolateral direction. This study tested the hypothesis that, in young and elderly adults, the CNS programs mediolateral APAs in function of the changes in stance leg stiffness induced by WBV so as to maintain (or even improve) stability.

Material and Method

Participants (i.e. 23 young adults and 20 elderly) were randomly divided in two subgroups and exposed to a single WBV session or a sham intervention. Series of ten GI trials were performed on a force-plate before and after WBV or sham intervention.

Results

In young adults, the amplitude of mediolateral APAs (peak center-of-pressure shift and center-of-mass velocity at heel-off) and stance leg stiffness significantly increased following WBV. Mechanical modelling of the body showed that the increased leg stiffness was detrimental to stability. However, experimental data showed that stability remained unchanged following WBV, and even tended to be improved. Results further showed that center-of-mass velocity at heel-off

and stance leg stiffness were positively correlated. In elderly, there was no significant effect of WBV on GI parameters.

Conclusion

Young adults compensate the negative effect of increased leg stiffness on stability by larger mediolateral APAs. In elderly, the absence of WBV effects may possibly be due to proprioceptive and/or plantar inputs alterations.

Keywords

Gait initiation;Whole body vibration ;Elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0752

GRIP STRENGTH AFTER STROKE: RATE OF FORCE DEVELOPMENT AND SUSTAINED MAXIMAL GRIP STRENGTH

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Introduction/Background

After stroke, hemiparesis often leads to reduced muscle strength and reduced ability to rapidly generate and sustain muscle force. The aim of this study was to assess how rate of force development (RFD) and sustained maximal grip strength develop during the first year after stroke.

Material and Method

This is an exploratory study of 11 stroke patients (8 men, 3 women, mean age 79.1 years) who participated in the Norwegian Constraint Induced Movement Therapy trial (NORCIMT). The patients were recruited 7-28 days' post stroke and had mild to moderate symptoms. RFD (0-250 ms) and sustained maximal grip force (15 sec) were recorded for the paretic and non-paretic hand with a hand dynamometer and a pinchmeter (G/P200, Biometrics Ltd., UK) using the testing positions recommended by the American Society of Hand Therapists. All participants were tested 5 times (at inclusion; 2, 26, 28 and 52 weeks after inclusion).

Results

At inclusion, mean(SD) RFD from the dynamometer was 25.1(22.3) and 75.0(44) kg/s in the affected and non-affected hand respectively ($p=0.003$). However, RFD increased and the difference was no longer significant after 2 weeks. Contrary, the ability to sustain maximal grip strength was similar for both hands at inclusion, however it was reduced ($p<0.001$) for the affected hand if the values were normalized to maximum voluntary contraction. On the affected side, most of the decrease in strength occurred during the first 3 seconds, while it decreased continuously on the non-affected side. The affected hand approached the capacity of the non-affected hand during the 52-weeks follow-up period. Pinchmeter recordings showed comparable results.

Conclusion

Although RFD and the ability to sustain maximal grip strength is reduced in the affected hand early after stroke, this study shows that the difference between affected and non-affected hand decreases markedly during the first year after stroke.

Keywords

grip strength;stroke;rate of force development

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-0802

EFFECTS INDUCED BY MOTOR CORTEX ANODAL TRANSCRANIAL DIRECT CURRENT STIMULATION ON WRIST MUSCLES IN STROKE PATIENTS

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Introduction/Background

Transcranial direct current stimulation is used to modify non invasively cortical brain excitability in humans. It consists in delivering a weak current through two electrodes : one applied over the motor cortex and a second in supra-orbital position. Recently we showed in healthy subjects that anodal tDCS applied over the motor cortex can be used to modify descending inputs relayed by corticospinal tract on reciprocal inhibition pathways innervating wrist muscles (1). We found that effects induced by anodal tDCS in wrist extensors and in wrist flexors are opposite: tDCS increases reciprocal inhibition in extensors but decreases reciprocal inhibition in flexors. It appears that modulations induced by anodal tDCS on reciprocal inhibition pathways favor the contraction in wrist extensors. Motor deficit in wrist extensors is usual in hemiplegic patients and the aim of this study is to combine spinal cord MRI and electrophysiological methods to explore effects of tDCS at wrist level in patients with impaired wrist motor control.

Material and Method

Anodal tDCS is applied over the non lesional hemisphere (ipsilateral motor cortex). Its effects at spinal level are explored using electrophysiological techniques based on EMG recordings and percutaneous stimulations of peripheral nerves to elicit reciprocal inhibition at wrist level. MRI study relies on Diffusion Tensor Imaging (DTI) and Magnetization Transfer (MT) (2).

Results

Preliminary results in hemiplegic patients suggest an increase of reciprocal inhibition contrary to the results found in healthy subjects . They also show a relationship between motor impairment and MRI metrics .

Conclusion

It opens new vista for motor rehabilitation of stroke patients.

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2 Cohen-Adad J1, El Mendili MM, Lehericy S, Pradat PF, Blancho S, Rossignol S, Benali H. Neuroimage. 2011 1;55(3):1024-33.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1018

USE OF AN OBSTACLE AVOIDANCE TASK TO IMPROVE MOTOR CONTROL BEFORE WEIGHT LOSS SURGERY

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Introduction/Background

Obesity negatively impacts motor control; adults with obesity walk more slowly and take shorter steps, which affects recovering from a loss of balance. Bariatric surgery induces massive weight loss and spurs walking improvements. However, we know little about whether practice before surgery improves motor control. We asked if brief practice completing an obstacle avoidance task would improve walking prior to undergoing surgery.

Material and Method

Sixty-two adults (Mean age=45.55 years, $SD=9.28$) with obese BMI (Mean BMI 42.22, $SD=4.53$) walked under five conditions: initial baseline walking on flat ground, crossing three obstacle heights, and final baseline walking on flat ground for a total of 25 trials. Walking parameters were collected using a gait carpet: velocity (cm/s), cadence (steps/minute), step length (distance between consecutive steps), step width (lateral distance between feet), single limb support time (time on one leg), and double limb support time (time on two legs). Paired t-test were used to compare baselines. We conducted oneway repeated measures analyses of variance to examine the effects of obstacle height on walking. The Bonferroni correction was used for all tests.

Results

Participants demonstrated improved walking after crossing obstacles. From the initial to the final baseline, participants showed a 5.6% increase in velocity, 3% increase in cadence, 2.8% increase in step length, and a 1.78% increase in step width. Single limb support time decreased by 2.9% and double limb support time decreased by 4.85% (all $ps<.05$).

Conclusion

Individuals with obesity may benefit from participating in a brief obstacle avoidance task; the results suggest that even before receiving bariatric surgery participants showed improvements in walking that are associated with decreased safety risks. Examining how to minimize safety risks via improving motor control may help create ways to encourage a more active lifestyle for adults with obesity.

Keywords

obesity;gait;motor rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1019

EFFECTS OF OBESITY AND KNEE OSTEOARTHRITIS ON GAIT AND POSTURAL STABILITY IN PRE-BARIATRIC SURGERY CANDIDATES

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Introduction/Background

Knee osteoarthritis (OA) is the most common cause of chronic disability and is frequently comorbid with obesity. The personal burden of knee OA and obesity are substantial. Adults with knee OA with obesity demonstrate postural instability, which makes them susceptible to falls. The purpose of this study was to investigate gait and postural stability during flat ground walking and obstacle crossing in pre-bariatric surgery candidates.

Material and Method

Forty-four adults with obesity (Mean BMI = 43.35, $SD=4.33$) and 30 adults without obesity (Mean BMI = 23.10, $SD=3.98$) walked 60 feet at self-selected paces for 25 trials under five conditions: initial baseline on flat ground, crossing low (4 cm), medium (11 cm), and high (16 cm) obstacles, and final baseline on flat ground. Spatio-temporal kinematics were collected with a gait carpet (Protokinetics).

Results

During the final baseline, for adults with obesity, most parameters improved ($p<0.05$); at the final baseline condition, participants had the fastest step times, stance times, single limb support times, and velocities. The analyses also revealed that during obstacle negotiation, participants had longer step times, slower velocity and wider step widths compared to level ground walking ($p<0.05$). Most alterations in gait for individuals with obesity were observed during high obstacle crossing ($p<0.05$).

Conclusion

The findings suggest that obstacles pose a challenge beyond flat ground walking for pre-bariatric surgery candidates. Obstacle height also influenced participants' gait. This supports the utility of examining gait in this population during tasks beyond flat ground walking.

Keywords

obesity;motor rehabilitation;gait

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1253

'HONEY MOON' AFTER SPINAL CORD STIMULATION IN A PERSON WITH HEREDITARY SPASTIC PARAPARESIS

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Introduction/Background

Currently there is a renewal of interest to use spinal cord stimulation (SCS) as a treatment for improving motor control and reducing spasticity in central motor pathway disorder. Here, we report documented positive long lasting effect both on spasticity and on motor control, in a 26 year old man with Hereditary Spastic Paraparesis with severe, widespread lower limb spasticity and limitation of mobility.

Material and Method

SCS material consisted of 4 electrodes (MEDTRONIC) on the posterior epidural space at T6 level (entry zone L1). The stimulation parameters were initially set as follows: amplitude 4.0-7 V, rate 70-100 Hz, pulse width 210 μ sec. The SCS Balance control was assessed by timed right and left stance. Gait control was assessed by the timed 10-meter walk test at preferred and maximal speed. Measurements were performed stimulation on and off, in many sessions 6 months apart. Data were analysed by the Mann-Whitney *U* test, with $p < 0.05$ considered significant.

Results

The stimulation decreased spasticity, especially for proximal muscles. Stimulation on, performance at all tasks was improved. In the condition stimulation off, the patient was more performing than 6 months before, possibly due to long-lasting effects of the stimulation, that progressively increased with time. The gains obtained after six months of intermittent stimulation were substantial: 4.7% for maximal walking speed, 11.2% for preferred walking speed, 85% for right stance ability and 55% for left stance ability. The positive effect lasted 4.5 years.

Conclusion

In the light of the new technological developments both for electrodes and the control of stimulation parameters, together with a better understanding of the mechanisms underlying the effect of the SCS for improving motor control and reducing spasticity, our results could be useful to enhance the treatment of future patients.

Keywords

spinal cord stimulation;Hereditary spastic paraparesis;spasticity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1320

PERCEPTION OF GAIT MOVEMENTS INDUCED DURING TRAINING WITH MULTIPLE PATTERNED VIBRATIONS IN INDIVIDUALS WITH INCOMPLETE SPINAL CORD INJURY

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Introduction/Background

Multiple patterned vibration applied on lower-limb joints in individuals after incomplete spinal cord injury (iSCI) generates gait-like movements at a cadence specific to the vibration pattern. This intervention is currently tested on individual with iSCI, who may need body weight support. The main objective of the study was to quantify perceptions associated to sensory afferents generated by multiple vibrations by iSCI participants. The second objective was to determine whether weight support and cadence of the simulated gait cycles affects perceptions before and after 15 gait-like vibrations training sessions.

Material and Method

Six participants (21-77 years old) with an incomplete spinal cord injury (ASIA Impairment Scale grade C&D) received gait-like vibrations in a standing position, with different levels of weight relief (0%/20%/40%), and two gait cadences (60 and 120 steps/min). Perception was evaluated in each condition with a Visual Analog Scale (VAS), before and after 15 training sessions over three weeks.

Results

Every participant showed good perception of a gait motion (VAS score >5/10) for 1 or more conditions in the pre- and post- training evaluation. Body weight and cycle duration had no effect on perception (less than 1 point difference). Perception increased, though not significantly by 2.2 (1.1) points after training, with the increase particularly marked in conditions with low score pre-training

Conclusion

Individuals with iSCI perceived gait motion during the application of patterned gait-like vibrations, which may participate to the effect of gait vibration training individuals with iSCI in intensive rehabilitation, regardless of their need for body weight support.

Keywords

Spinal Cord Injury;Vibrations;Gait

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1351

UPPER LIMB RECOVERY IN APHASIC PATIENTS AFTER VASCULAR ACCIDENT: A THEORY.

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Introduction/Background

Cortex and cortical function can be regarded as modular, with separate areas involved in processing sensory information and the initiation of motor movement. The blood supply supporting cortex is, like the brain itself, modular. Disruption in blood flow leads to a multiplicity of dysfunctions like the frequent co-occurrence of aphasia and right upper limb hemiparesis.

Material and Method

A review of the vascular accident literature reveals a correlation between Broca's aphasia and upper limb motor recovery. The precise reason for the correlation is not known but this paper proposes one.

Results

Patients with Broca's aphasia show slower and poorer motor recovery of right arm compared to non-aphasic ones. Different causes were summoned to explain the difference in recovery.

Conclusion

Our theory, contrary to other conclusions, is that speech impairment is indicative of damage to Brodmann area BA45 but that the motor deficits are due to damage to the proximal, but functionally discrete area BA44. BA44 is a multisensory area. But experiments on tone-deaf or stutters, radiological tools like fMRI and DWI, studies of the neuro-ontogeny and development in babies, findings of genetic, epigenetic and embryology, all point to BA44 playing a central role in visuo-motor integration.

Keywords

stroke;upper limb;aphasia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1423

AMOUNT (ACTIVITY AND MOBILITY USING TECHNOLOGY) REHABILITATION TRIAL: TECHNOLOGIES USED AND PARTICIPANT PERCEPTIONS IN THE INPATIENT SETTING

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Introduction/Background

New technologies may provide an affordable way to increase the dose of practice for people undertaking rehabilitation. *Study aims:* (1) Which technologies were used to address participants' mobility limitations during the inpatient phase of the AMOUNT rehabilitation trial? (2) Did participants perceive technologies to be enjoyable and easy to use, and which factors influenced this?

Material and Method

Design: process evaluation from a randomised controlled trial in which 149 participants (52% male; mean age 70 (SD18); 54% neurological conditions) were allocated to the intervention group.

Intervention: tailored technology prescription according to a protocol matching exercises from eight technologies (commercially-available: *Nintendo Wii*; *Xbox Kinect*; *activity monitors*; *smartphone apps*; rehabilitation-specific *Humac*; *Fysiogaming*; *Stepping Tiles*; *exercise iPad apps*) to seven mobility limitations.

Outcome measures: intervention dose, technologies used, mobility limitations addressed, Physical Activity Enjoyment (PACES; 18-126) and System Usability Scales (SUS; 0-100).

Results

Participants received on average 11 (SD11) sessions of 43 (SD11) minutes duration. Each participant used on average 4 (SD1) technologies to address a mean of 4 (SD1) different mobility limitations. Intervention focused largely on limitations related to standing (80%) and stepping (79%), as well as on physical activity levels (90%). The *Humac* was the most frequent first-introduced technology (35% of participants). *Activity monitors* (80%) and *iPad apps* (71%) were most prescribed, and commercially-available exergames and *smartphone apps* used least. At 3 weeks, participants perceived technology use as enjoyable (mean PACES 95.4 (SD23.2)) and rated usability above average (mean SUS 72.2 (SD18.8)). Enjoyment and usability were positively related to previous technology use ($p < 0.01$) and younger age ($p \leq 0.03$). Usability was greater in those with neurological conditions ($p < 0.05$). Previous technology use remained associated with usability after adjustment for other factors ($p = 0.003$).

Conclusion

In inpatient rehabilitation, tailored prescription of technologies can address a range of mobility limitations and was well accepted. Previous technology use enhances uptake.

Keywords

Exercise dose; Inpatient rehabilitation; Affordable technologies

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1425

BRAIN ACTIVITY REGION DURING KINESTHETIC ILLUSION INDUCED BY VISUAL STIMULATION OF ANKLE JOINT

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Introduction/Background

Kinesthetic illusion induced by visual stimulation (KiNvis) is a novel method that produces kinesthetic perception through observation of a person's physical exercise on a computer screen. KiNvis enhances lower-limb corticomotor excitability in healthy subjects. However, it is not clear which regions of the brain are activated during KiNvis. The purpose of this study was to investigate the regions of brain activity during KiNvis in the ankle dorsiflexion movement.

Material and Method

We examined the left lower limbs of 17 healthy subjects (mean age, 24.1 ± 5.3 years; 12 males and 5 females). We randomly applied two conditions to the left lower limbs. Condition 1 (observation condition) was to observe the image of ankle. Condition 2 (KiNvis condition) was to observe the video and induced the KiNvis. The video of ankle dorsiflexion movement on the right side filmed in first-person perspective was flipped horizontally and then shown on a computer screen. A computer was placed over the left side foot. Subjects observed the video that recorded the ankle dorsiflexion movement to induce KiNvis. The two conditions were measured using a rest-task-rest block design. Cerebral blood flow during rest and task (in the two conditions) were recorded using functional near-infrared spectroscopy (fNIRS). Effective size of the two conditions were calculated and compared. During the KiNvis condition, A visual analogue scale (VAS) was measured to evaluate the degree of kinesthetic illusion.

Results

VAS was found to be 66.9 ± 12.5 mm (mean). Cerebral blood flow in the right premotor area was significantly increased during the KiNvis condition compared with that during the observation condition.

Conclusion

Our results demonstrate that cerebral blood flow in the premotor area increases with KiNvis of the ankle dorsiflexion movement in healthy subjects.

Keywords

Kinesthetic illusion induced by visual stimulation;fNIRS;premotor area

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1523

DEVELOPMENT OF PERIPHERAL MAGNETIC STIMULATION SYSTEM TO STIMULATE SUPRAHYOID MUSCLES

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Introduction/Background

Neuromuscular electrical stimulation has been widely used in patients with dysphagia, but obtaining sufficient hyoid bone movement through surface electrodes seems difficult due to pain. On the other hand, magnetic stimulation activates the nerve and the muscles without stimulating the skin nociceptors. However, the coil for magnetic stimulation is too big to stimulate smaller muscles like the suprahyoid muscles. The aim of this study was to develop the peripheral magnetic stimulation system to stimulate suprahyoid muscles.

Material and Method

This study was approved by the institutional review board. We designed a smaller coil to stimulate suprahyoid muscles without stimulating inferior alveolar nerve that induced pain to the teeth. We also developed a jig to support the coil. Eleven healthy subjects aged 32 ± 9 years participated in this study. The new coil was placed on the submental area of the subjects and the magnetic stimulation was performed one time at a rate of 30 Hz for 2 s. The intensity level selected induces hyoid bone movement without causing intolerable pain to the subjects. The hyoid bone at rest between on- and off-magnetic stimulations of the suprahyoid muscles were identified using fluoroscopy at 30 frames/s in lateral projection and the displacements of the hyoid bone were calculated using Image J program. Pain during peripheral magnetic stimulation was assessed from 0 to 10 using the numerical rating scale (NRS).

Results

Magnetic stimulation resulted in 10.9 ± 2.8 mm forward displacement and 8.3 ± 4.1 mm upward displacement of the hyoid bone. The median NRS score during magnetic stimulation was 1.

Conclusion

We obtained similar extent of hyoid bone movement at rest compared with normal drinking of 10-mL liquid. The peripheral magnetic stimulation can become an alternative to electrical stimulation for patients with reduced laryngeal elevation.

Keywords

peripheral magnetic stimulation;suprahyoid muscles ;hyoid bone

Conflict of interest

Disclosure statement:

IFG Corporation has a pending patent.

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A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1707

GAIT INITIATION IN DIFFERENT CONSTRAINTS IN PARKINSON'S DISEASE PATIENTS

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Introduction/Background

Parkinson's disease (PD) is a neurodegenerative disease, which is characterized by tremor, muscle rigidity and bradykinesia, what may affect the posture and the body balance. The balance disturbance may occur during both: the quite standing and during gait initiation. The aim of this study was to investigate the postural instability in PD patients in different conditions during gait initiation.

Material and Method

The research was conducted on 17 patients with PD in a III clinical stage of disease and 17 older healthy adults – the control group. The gait initiation was measured on the two force platforms. The procedure consisted of three phases: quite standing on a first platform, crossing on the second platform, quite standing on a second platform. There were four conditions: crossing without obstacle, crossing the obstacle, walking up on the step and walking down of the step. We analyzed: phase time 2 [s], stability time S1 [s] (time from loss of stability to step on the second platform), stability time S2 [s] (time from step on the second platform until the stability is regained).

Results

The time phase 2 significantly increased among conditions in both groups (PD: $p=, 0163$, control: $p=,000$). In PD group data indicate notable stability problems during walking up on the step, but the elderly have more problems with walking down of the step. The control group presents significant trouble with regained stability after crossing the obstacle and walking up and down of the step ($p=,000$), while the PD group have equally problem to restore balance in all conditions, even during level ground walking ($p>0,05$). All measured variables were significantly lower in the control group compared to PD group ($p<0,05$).

Conclusion

The different constraints may change the gait initiation patterns in PD patients more than in elderly.

Keywords

crossing obstacle;postural control;Parkinson's Disease

No conflict of interest

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A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1761

MOTOR COMPENSATIONS DURING REACH MOVEMENT OF THE DOMINANT UPPER LIMB HEALTHY VERSUS STROKE PATIENTS

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Introduction/Background

Background: Stroke is one of the leading causes of morbidity and mortality in the world. Clinical and functional changes after stroke related with postural control not only affect the contralesional but may also contribute to motor dysfunction on the ipsilesional side, in particular the efficiency of distal movement. Compensatory trunk movement is commonly reported during reach, which is one key function required to several daily activities. **Aims:** Compare the compensatory movements during reach movement of the dominant upper limb, in stroke patients with healthy subjects.

Material and Method

Methods: Cross-sectional study was carried out. The sample comprises 30 subjects with right dominant upper limb: 15 patients with left hemiparesis (75±9.1 years) and 15 healthy subjects (74±7.5 years). For assessing compensatory movements during upper limb reach the Reach Performance Scale was used. The differences between groups in the total score of the near target and the distant target were compared throughout the Mann-Whitney test. The association between qualitative variables were performed by Qui-Square. The level of significance was $\alpha=0.05$.

Results

Results: Both groups exhibit movements compensations during reach, however, no differences were found in the quality of movement of the dominant upper limb between groups, neither in the total score on near target ($p=0.092$) nor in the distant target ($p=0.292$).

Conclusion

Conclusions: There are no differences in motor compensations used for dominant upper limb reaching in patients with hemiparesis and healthy subjects.

Keywords

REACH PERFORMANCE SCALE;COMPENSATORY MOVEMENTS;STROKE

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-1990

GUIDED SELF REHABILITATION VIDEO TOOL IN ADDITION TO STANDARD REHABILITATION FOR SUBACUTE POST-STROKE PATIENTS WITH SPASTIC PARESIS

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Introduction/Background

Recent studies have shed light on promising recovery in motor command in post-stroke patients with spastic paresis through guided self-rehabilitation (SR). It can enhance the intensity, the number of repetitions and the daily duration of trained movements. Our team developed a SR video tool for subacute post-stroke patients admitted on our ward to be used in addition to their standard rehabilitation program. The main goal was to analyze the number of repetitions by each patient and the time spent doing the self exercises.

Material and Method

Post stroke patients eligible for inclusion were recruited between Feb and Dec 2017. Patients were educated by our physiotherapists to use the video tool correctly in their room. A follow up booklet was provided to note the number of times the exercise was repeated and the time spent doing it. Results were extracted through analysis of each booklet.

Results

7 of the 113 stroke patients admitted to our unit were eligible for recruitment. One patient refused to participate and another didn't fill his booklet. Results are documented in tables 1 and 2.

All 5 patients were able to implement bedside SR, with an average time spent of 32 minutes /day, and an average of 147 exercises/ day.

Table 1. Patients characteristics

Patients	Age in years	Sex	Date Of Stroke	Type of Stroke	Included (I) or Not included (N)	Exclusion Reason
1	43	F	Oct-17	Ischemic	I	
2	77	F	Nov-16	Ischemic	I	
3	62	M	Jan-17	Ischemic	I	
4	52	F	Sept-17	Hemorrhagic	I	
5	51	F	Nov-17	Hemorrhagic	I	
6	49	F	Oct-17	Hemorrhagic	N	Booklet not filled
7	66	M	Aug-17	Ischemic	N	Refusal to participate

Table 2. Results

Patients	Duration of SR in weeks	Number of strenghtening repetitions	Number of stretching repetitions	Total repetition duration (minutes)	Date of starting SR*	Time spent / day(minutes)	Average number of exercices/ day
1	3	4980	no videos given	1340	Nov -17	63	237
2	6	1630	3500	1080	Mars-17	24	114
3	12	2940	5930	2155	Mars-17	23	98
4	4	1470	3400	990	Nov-17	33	162
5	4	2740	1115	640	Dec-17	21	128

*SR : Self-rehabilitation

Conclusion

This was a preliminary study of feasibility. Our results show that SR initiated during hospitalization, in subacute post- stroke patients with spastic paresis, can dramatically increase daily time spent on repetitive trained movements. This tool contributes to increasing patients' commitment to their rehabilitation program. For the physiotherapist it is an important complimentary asset which easy to integrate into the standard rehabilitation program.

Further studies are warranted in order to show true effect on recovery from post-stroke spastic paresis. An estimated 20 -25000 of patients per year in France could benefit from using this tool.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2721

AQUATIC THERAPY AS A TOOL TO IMPROVE SENSORY AND MOTOR CONTROL IN PEDIATRIC NEUROLOGIC PATIENTS

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Introduction/Background

Aquatic protocols may be a beneficial therapy for children with neuromuscular diseases, especially for those land-based physical activity is difficult. The 2 most important assessments in these patients are the gross motor function measures and Quality of Life. This study evaluates changes in Gross Motor Function, QoL of the child and of care givers before and after an aquatic protocol therapy that aims to stimulate the child both the motor and the psychological aspects.

Material and Method

Patients affected by neuromuscular diseases were recruited for a 6 months aquatic rehabilitation program. They were followed in the previous 6 months to record their changes about GMFM and QoL scores to compare the 2 periods as well. Age, gender, and type of disease were recorded. The following associated impairments were also recorded: visual impairments, hearing impairments, communication problems, and intellectual impairment. QoL was assessed by the Pediatric Quality Of Life Inventor Neuromuscular Module.

Results

Seven males, 13 females, mean age 10.4yo were followed. GMFM with a mean of 18% after the aquatic protocol. Children with severely impaired motor function were more likely to have poor QoL in the physical well-being and autonomy domains as well as those with higher intellectual impairment have higher risks of poor QoL during the first 6 months with an improvement after the aquatic protocol.

Conclusion

We found positive effects following a 6-months aquatic intervention on the GMF and QoL of children with neuromuscular diseases following changes during one year where 6 months of aquatic therapy have compared to the previous 6 months. QoL in these patients seems to be affected by the lack of psycho-social experience.

Keywords

Aquatic rehabilitation;Gross Motor Function;Trunk Control

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2272

SENSORY-MOTOR TRAINING IMPROVES HEALTH-RELATED QUALITY OF LIFE AND FALL EFFICACY IN CHRONIC STROKE SURVIVORS

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Introduction/Background

Stroke survivors struggle with an array of disabilities, which can be divided into physical, social as well as emotional debilities. The primary objective was to assess the influence of an eight-week sensory-motor training program on health-related quality of life and concern for falling in chronic stroke survivors.

Material and Method

This was a double-blind randomized control trial. Chronic stroke participants (≥ 6 months) were divided into two groups namely, sensory-motor training group ($n = 12$; 68 ± 13 years old) and attention-control group ($n = 10$; 71 ± 11 years old). Both interventions were executed three times a week for 45-60 minute sessions over an eight-week period. The sensory-motor training consisted out of task-specific balance exercises while manipulating the visual, vestibular and proprioceptive sensory systems. Health-related quality of life was measured with the Short Form Health Survey (SF-36) and concern for falling with the Fall Efficacy Scale International (FES-I). Participants were evaluated pre-intervention and post-intervention.

Results

A significant Group x Time interaction was identified for physical functioning ($p = 0.005$) and FES-I ($p = 0.03$). Additionally, the experimental group showed a significant improvement in physical ($p = 0.01$) and social functioning ($p = 0.02$) subdomains of SF-36 after training. Lastly, the sensory-motor training group perceived their physical and social functioning to be better compared to attention-matched group ($p < 0.05$).

Conclusion

The results of this study indicate that balance training under sensory manipulated conditions can improve the perception of physical and social functioning as well as concern for falling in chronic stroke survivors.

Keywords

Sensory-motor training;Chronic stroke;Quality of life

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2275

THE EFFECTS OF VIBRO-MEDICAL INSOLE ON SENSATION AND PLANTAR PRESSURE DISTRIBUTION IN DIABETIC PATIENTS WITH MILD-TO-MODERATE PERIPHERAL NEUROPATHY

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Introduction/Background

The first aim of this study was to determine the effect of vibro-medical insole on pressure sensation and the second was to measure the effects of vibro-medical insole with and without random noise on plantar pressure distribution in diabetic patients with mild-to-moderate peripheral neuropathy.

Material and Method

Twenty patients with mild-to-moderate diabetic neuropathy were recruited in the clinical trial pre-test, post-test study. Medical insole was made for each participants and vibratory system was inserted it. Pressure sensation was evaluated before and after the 30 minute walks using the vibro-medical insole with Semmes-Weinstein Monofilaments. Peak pressure data was measured using the vibro-medical insole with and without random noise by Pedar-x system.

Results

Pressure sensation is shown improvement using the vibro-medical insole with added random noise at heel, metatarsophalangeal heads and hallux of both feet in all participants ($p < 0.05$). Peak pressure decreased significantly in heel, MTP_{2,3}, MTP_{4,5} and hallux ($p < 0.05$) and increased in midfoot ($p < 0.05$) using the vibro-medical insole with and without random noise compared to shoe only condition. Only the peak pressure of the heel region decreased using the vibro-medical insole with random noise compared to without random noise ($p = 0.006$).

Conclusion

Vibro-medical insole seems to improve pressure sensation and alter peak pressure in the diabetic patients with mild-to-moderate peripheral neuropathy. This work suggests that vibro-

medical insole with added random noise can be used for daily living activities to overcome sensory loss and probably decrease the risk of ulceration in diabetic neuropathy patients.

Keywords

Vibro-Medical Insole ;Plantar Pressure Distribution;Diabetic Peripheral Neuropathy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2379

DYNAMIC BALANCE RETRAINING USING GAIT PERTURBATIONS IN INDIVIDUALS WITH MODERATE-TO-SEVERE TRAUMATIC BRAIN INJURY

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Introduction/Background

Individuals with traumatic brain injury often present with balance problems associated with a decrease in their social participation. An innovative approach consists in using perturbations on a split-belt treadmill to improve dynamic balance. The aim of this study is to quantify the effects of a training program including perturbations on a split-belt treadmill on dynamic balance, walking speed, balance confidence and social participation in individuals with traumatic brain injury in social integration rehabilitation phase or at a chronic stage.

Material and Method

Seven individuals with moderate-to-severe traumatic brain injury participated in six training sessions on a split-belt treadmill with self-perturbations (head movements, turns, cognitive task) and unexpected perturbations (stop-and-go, speed increase or decrease of one treadmill belt). The Mini-BESTest, Community Balance & Mobility Scale, comfortable and fast walking speed, Reintegration to Normal Living Index and Activity-Specific Balance Confidence Scale were measured twice before and after the intervention.

Results

Preliminary results indicated a statistically significant improvement of 2.1 (1.5)/28 at the Mini-BESTest and 7.0 (6.9)/96 at the Community Balance and Mobility Scale. No significant change in speed, balance confidence and social participation were observed. A learning effect was observed between the two pre-intervention assessments.

Conclusion

This approach seems promising in balance reeducation with individuals with moderate-to-severe traumatic brain injury.

Keywords

traumatic brain injury;dynamic balance training;splitbelt training

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2467

EFFECTS OF DIFFERENT DIRECTIONAL STATIC CONTRACTION OF THE RIGHT UPPER EXTREMITY ON THE CONTRALATERAL LEFT SOLEUS H-REFLEX

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Introduction/Background

The purpose of this study was to explore the neurophysiological remote effects and remote after-effects of resistive static contraction (SC) of the upper extremity, with consideration of the resistant direction on the contralateral soleus H-reflex.

Material and Method

The participants were 12 healthy subjects with a mean (SD) age of 23.4 (2.7) years. SC of the muscles of the upper extremity was performed for 10 s utilizing the resistive SC of shoulder flexion - abduction - external rotation (R-F-A-E) and shoulder extension - adduction - internal rotation (R-E-A-I) of the upper extremity using proprioceptive neuromuscular facilitation (PNF). Three tasks, R-F-A-E, R-E-A-I, and rest after either of the first two tasks, were randomly performed. The left soleus H-reflex was measured before the task (20 s), after the resistive exercise phase (10 s), and after the rest phase after resistive exercise (180 s). The H-reflex amplitude was normalized to the corresponding maximal M-wave (Mmax) H-reflex, which is expressed as the H/Mmax ratio.

Results

Three-way analysis of variance of the H/Mmax ratio with a Bonferroni post-hoc analysis revealed that the H/Mmax ratio for the resistive exercise phase was significantly larger than that in the rest phase after resistive exercise.

Conclusion

Whereas the R-E-A-I task had significant facilitatory effects compared with the R-F-A-E task, the H/Mmax ratio of the rest phase after R-E-A-I had a tendency to be reduced compared with rest after R-F-A-E, which may indicate induction of relaxation as a remote after-effect as an indirect approach.

Keywords

Soleus H-reflex; Remote After-effect; Resistive static contraction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2468

EFFECTS OF OPPOSITE DIRECTIONAL RESISTIVE STATIC CONTRACTION OF THE MUSCLES AROUND THE SCAPULAE ON THE UNEXERCISED CONTRALATERAL SOLEUS H-REFLEX

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Introduction/Background

An indirect approach is useful in clinical practice when a direct approach is difficult to use due to insufficient muscle contraction caused by muscle weakness. The purpose of this study was to compare the neurophysiological remote effects and after-effects of resistive static contraction of the muscles around the scapulae, with consideration of the resistant direction.

Material and Method

The participants were 12 healthy subjects with a mean (SD) age of 23.7 (3.4) years. A static contraction of the muscles around the scapula was performed for 10 s, utilizing the resistive static contraction of scapular anterior elevation (SCAE) and scapular posterior depression (SCPD) using proprioceptive neuromuscular facilitation. The subjects were asked to maintain the scapular position against the traction force at a level of resistance that was 50% of the maximum voluntary contraction. The left soleus H-reflexes were elicited sequentially without interruption for a period of 210 s, which was divided into a rest phase (20 s), task phase (10 s); and a rest phase after each task (180 s). For comparison, each H-reflex amplitude during and after each resistive exercise was normalized to the corresponding maximal M wave (Mmax), as expressed by the H/Mmax ratio. Data were obtained from a randomized block experiment with three tasks (SCAE, SCPD, rest) for each subject (individual factor) performed over a period of 190 s (19 conditions [time course]: condition C1-C19).

Results

Three-way analysis of variance for the H/Mmax ratio with Bonferroni post-hoc analysis revealed that the SCAE task had significantly smaller effects than the SCPD and rest tasks, and that the SCPD task had significantly larger effects than the rest task ($p < 0.05$).

Conclusion

SCAE may induce neurophysiological inhibitory effects as remote after-effects, which may induce relaxation of remote muscles.

Keywords

remote after-effect;H-reflex;resistive static contraction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.01 Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ISPR8-2502

EFFECTS OF LESION EXTENT AND LOCATION ON UPPER-LIMB FUNCTION FOLLOWING HEMISPHERIC STROKE

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Introduction/Background

Background and Aim: A large proportion of stroke survivors present spastic paresis of the upper limb (UL). Therapeutic interventions result in large variance in the response of patients to the same treatment protocols, possibly stemming from differences in lesion characteristics, among other factors. Here we concentrated on the impact of lesion size and location on UL function following stroke, comparing the effect of right hemisphere damage (RHD) to that of left hemisphere damage (LHD).

Material and Method

Method: Clinical and lesion data for the current study were collected as part of a multi-center randomized, controlled trial (ENHANCE project; ClinicalTrials.gov, ID: NCT02725853). Two

groups of patients with sub-acute stroke were compared: those with right hemisphere (n=8) and left-hemisphere damage (n=15). Voxel-based lesion symptom mapping (VLSM) was employed to identify voxel clusters in the normalized brain where damage exerts a significant impact on the functioning of the hemiparetic UL, as revealed by the Functional Ability Scale of the short (streamlined) version of the Wolf Motor Function Test.

Results

Results: Motor function of the hemiparetic UL was affected in LHD patients by damage to voxel clusters involving (a) cortical areas of the superior temporal regions and the insula, (b) white matter tracts, notably the superior and inferior fronto-occipital fascicles, the corona radiata and the internal capsule, and (c) the basal ganglia and thalamus. In the RHD group, VLSM analysis showed a different pattern where UL function was affected almost exclusively by damage to subcortical structures of the corona radiata, the capsular-putaminal region, the superior longitudinal fasciculus and the external capsule.

Conclusion

Conclusion: Motor function of the hemiparetic upper limb in patients with sub-acute stroke was affected differently by damage to homologous structures in the left and right cerebral hemispheres.

Keywords

Lesion characteristics; upper limb; motor function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2543

TREATMENT FREQUENCY FOR LONG-TERM EFFICACY OF ABOBOTULINUMTOXINA INJECTIONS: A PHASE 3 STUDY IN PATIENTS WITH UPPER LIMB SPASTICITY FOLLOWING STROKE OR TRAUMATIC BRAIN INJURY

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Introduction/Background

Long-term safety and efficacy of repeated abobotulinumtoxinA (aboBoNT-A) injections in patients with upper limb spasticity (ULS) after stroke or traumatic brain injury have been described in an open-label study (Gracies *et al. Muscle Nerve* 2018). Continuous improvements in active movements, and perceived and active function were reported, with no unexpected safety signals identified. Here, we describe the frequency of repeated aboBoNT-A injections over the open-label study.

Material and Method

A phase 3, international, double-blind, single-treatment study (NCT01313299) of aboBoNT-A in the hemiparetic upper limb, followed by a 12-month open-label extension study (NCT01313312) with up to four additional treatment cycles, at least 12 weeks apart. Re-treatment was per investigator's clinical judgement, based on muscle tone, spasticity measures and other findings. Patients not requiring re-treatment completed the study.

Results

A total of 254 patients entered in open-label Cycle 1 (Table 1). In Cycle 1, 14/254 patients withdrew and 240 completed the cycle. After Cycle 1, 10 patients completed the study without subsequent aboBoNT-A injections. In Cycle 2, 219/229 patients completed the cycle (10 withdrew) and 44 did not require subsequent injections. Of 175 patients entered Cycle 3, six withdrew and 169 completed the cycle, 88 of whom did not require subsequent injections. Overall, 55.9% (n=142) of patients required three or fewer injections of aboBoNT-A over the course of the 12-month study, 21.6% required two or fewer injections, and 3.9% required one injection.

Table 1. Patient flow per treatment cycle during open-label extension study

Treatment cycle and cumulative injections	Entered treatment cycle	Withdrawn from treatment cycle	Completed treatment cycle	Did not require re-injection in a subsequent cycle, n (cumulative %)
Cycle 1 ^a (=1 injection)	254	14	240	10 (3.9)
Cycle 2 ^b (=2 injections)	229	10	219	44 (21.6)
Cycle 3 ^c (=3 injections)	175	6	169	88 (55.9)
Cycle 4 ^d (=4 injections)	81	1	80	-

Data are number of patients.

Reasons for withdrawal: ^a10 patients withdrew consent, 2 adverse events, 1 lack of efficacy, 1 other;

^b7 withdrew consent, 1 adverse event, 2 lack of efficacy; ^c2 adverse events, 4 other; ^d1 withdrew consent.

Any serious adverse events: ^a10 patients (12 events); ^b6 patients (10 events); ^c6 patients (11 events);

^d1 patients (3 events).

Conclusion

Over half of the patients (55.9%) enrolled in this phase 3 study required three or fewer injections of aboBoNT-A over the course of a year, based on physician clinical assessment. This decreased injection frequency, with respect to usual practice, may reduce the burden associated with treatment for patients and their caregivers/families.

Keywords

AbobotulinumtoxinA;Upper limb spasticity;Re-treatment

Conflict of interest

Disclosure statement:

Jean-Michel Gracies has served as a consultant for and received research grant support from Allergan, Ipsen, and Merz he is also an investigator on an Ipsen trial. Allison Brashear has served as a consultant for Ipsen, Allergan, Concert, Revance and WorldMeds. Research is supported by NINDS, Allergan, Ipsen, Merz and Revance. Dr Brashear's conflict of interest is managed by Wake Forest School of Medicine. Svetlana Khatkova has received honoraria and conference attendance fees from Ipsen. Anne-Sophie Grandoulier is an employee of Atlanstat, subcontracted to Ipsen. Philippe Picaut and Oyku Senturk are employees of Ipsen.

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A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0008

BOTULINUM TOXIN TYPE A INJECTION AND PRONE POSITIONING FOR A PATIENT WITH CONGENITAL CYTOMEGALOVIRUS INFECTION

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Introduction/Background

We report a case of Congenital cytomegalovirus infection (cCMV) with severe spinal scoliosis whose treatment consisted of rehabilitation, botulinum toxin type A injection (BTX) and postural control of prone positioning.

Material and Method

A case was 20-year-old female patient. She was diagnosed as a sequela of cCMV and severe motor and intellectual disabilities. A progressive spinal deformity became evident as she grew up, and her left hip was completely dislocated. Since she was 15 years old, she had undergone rehabilitation therapy in our hospital. Prone positioning has been performed persistently using a handmade positioner. BTX were started from the age of 19 years to decrease spasticity of the trunk muscles. The supposed target muscles were the left posterior cervical and right lumbar muscles, but it was difficult to sufficiently support her neck and legs with the small prone positioner as a grown-up. Therefore, we reformed the positioner to widen the support and devised she could choose a half of the left side position by placing the seat at the right angle to the tilt frame. We administered BTX after she was used to spending on the new prone positioner. In addition, we made a supine positioner to correct and keep better alignment of her spinal deformity on the bed.

Results

The severe spasticity of the spine was reduced through the combination therapy of BTX, the new prone positioner and supine positioning. This resulted in the patient being more comfortable and respirable than before.

Conclusion

Prone positioning is effective for respiration and swallowing in patients with chronic respiratory disorders and severe motor disabilities. Combination therapy with BTX, rehabilitation, and use of positioners was effective for our patient. However, it is important to adjust the positioner seat appropriately based on the deformity of the patient.

Keywords

Congenital cytomegalovirus infection;botulinum toxin type A;postural control of prone positioning

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2546

WHEN CAN MAXIMAL EFFICACY BE EXPECTED WITH REPEATED BOTULINUM TOXIN INJECTIONS IN UPPER LIMB SPASTIC PARESIS? AN EXPLORATORY STATISTICAL ANALYSIS

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Introduction/Background

The efficacy of botulinum toxin A treatment for spastic paresis in adults is well established. This analysis uses statistical modelling to estimate the maximal therapeutic effect of abobotulinumtoxinA (aboBoNT-A) for upper limb spastic paresis, and number of treatment cycles required to reach an efficacy level close to maximal effect.

Material and Method

Retrospective analysis of combined data from two clinical studies of aboBoNT-A in upper limb spastic paresis: a randomised, placebo-controlled, single-treatment study (NCT01313299), followed by an open-label extension study (NCT01313312). Analyses focussed on technical and functional measures of efficacy (Table 1). Two inferential methods were used to assess changes in efficacy parameters after repeat aboBoNT-A treatment cycles: Mixed Model Repeated Measures analysis and Non-Linear Random Coefficients analysis. Using the latter model, the asymptote (maximal effect size; not placebo-controlled) and number of treatment cycles to reach 90% of the asymptote were estimated.

Results

Table 1 shows the estimated asymptote (maximal effect size) and number of cycles at 90% asymptote for technical and functional assessments of efficacy at Weeks 4 and 12 post-injection. When estimating maximal effect at Week 4, measures of passive or perceived parameters (muscle tone, disability, angle of catch) reached their maximum around 1–2 cycles before active parameters (active range of motion, active function). In contrast with technical assessments and perceived function, maximal effects for active function (modified Frenchay scale) assessments at Week 12 were higher than or equal to Week 4.

Table 1. Estimated maximal effect (change from baseline) and number of cycles at 90% asymptote in technical and functional efficacy assessments at Weeks 4 and 12 after injection

Efficacy measure	Week 4		Week 12	
	Asymptote (maximal effect) (95% CI)	Cycles at 90% asymptote (95% CI)	Asymptote (maximal effect) (95% CI)	Cycles to 90% asymptote (95% CI)
Technical assessments				
Active range of motion (X_A), degrees (°): EFF WF	44.6 (31.5; 57.6) –	4.2 (2.8; 8.5) –	32.8 (16.5; 49.0) 27.8 (6.9; 48.8)	6.1 (3.7; 18.1) 12.5 (6.4; 231.0)
Tardieu Scale (spasticity), degrees (°): Passive range of motion (X_{V1}) EFF WF	– 18.2 (12.7; 23.7)	– 4.7 (3.3; 8.1)	– 13.0 (8.1; 17.9)	– 4.1 (2.8; 7.8)
Angle of catch (X_{V3}) EFF WF	63.6 (52.6; 74.7) 47.9 (39.6; 56.1)	2.8 (2.0; 4.5) 3.3 (2.4; 5.1)	42.1 (31.8; 52.4) 33.3 (24.7; 41.9)	3.6 (2.6; 5.6) 4.5 (3.1; 7.8)
MAS score (muscle tone) in PTMG	-1.8 (-2.0; -1.6)	2.3 (1.7; 3.3)	-1.6 (-2.0; -1.2)	6.4 (4.5; 10.9)
Functional assessments				
MFS score (active function) Overall Opening tasks Grasping tasks	0.6 (0.4; 0.8) 0.7 (0.4; 0.9) 0.4 (0.3; 0.6)	3.5 (2.8; 4.9) 3.1 (2.2; 5.3) 2.2 (1.8; 3.0)	0.8 (0.6; 1.0) 0.7 (0.5; 0.9) 0.5 (0.4; 0.7)	3.7 (3.0; 5.0) 2.6 (1.8; 4.6) 2.2 (1.7; 3.2)
DAS score (perceived function) Principal target for treatment Limb position	-1.2 (-1.3; -1.0) -0.7 (-0.9; -0.6)	2.8 (2.1; 4.1) 1.9 (1.4; 3.0)	-1.0 (-1.2; -0.9) -0.6 (0.8; -0.4)	3.2 (2.4; 4.9) 1.5 (1.1; 2.6)

Results are not shown where model assumptions were likely violated.

MAS scored on a 6-point scale; MFS tasks assessed on a 10-interval visual analogue scale; DAS scored on a 4-point scale.

CI, confidence interval; DAS, disability assessment scale; EFF, extrinsic finger flexors; MAS, Modified Ashworth Scale; MFS, Modified Frenchay Scale; PTMG, primary targeted muscle group; WF, wrist flexors

Conclusion

These analyses reveal that patient benefits in adults receiving aboBoNT-A for spastic paresis are maximised with repeated treatment cycles. Active parameters reached maximal effect later than other measures, hence patient benefit may be underestimated in studies with single treatment cycles. Results also revealed further improvements in active function at 12 weeks after injection.

Keywords

abobotulinumtoxinA; maximal effect; repeat injection

Conflict of interest

Disclosure statement:

Jean-Michel Gracies has served as a consultant for and received research grant support from Allergan, Ipsen, and Merz he is also an investigator on an Ipsen trial. Robert Jech has received grants from Ipsen, the Czech Science Foundation, Czech Ministry of Health, Czech Ministry of Education, and Charles University, Prague he has also received honorarium from Ipsen for consultations and lectures. Peter Valkovic received compensation was an investigator on an Ipsen trial. Claire Vilain and Philippe Picaut are employees of Ipsen. Bruno Delafont has received consultancy fees from Ipsen.

This study is sponsored by Ipsen.

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2547

ABOBOTULINUMTOXINA INJECTIONS IN SHOULDER MUSCLES: RESULTS FROM A REAL WORLD (ULIS-II) AND A PHASE 3 (AUL) STUDY

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Introduction/Background

Shoulder spasticity post-stroke or -traumatic brain injury (TBI) may cause pain and restrict joint range of motion (ROM). Few studies have investigated botulinum toxin injections into shoulder muscles for spasticity treatment. Here we present data for sub-populations of patients receiving shoulder injections of abobotulinumtoxinA (aboBoNT-A) in two international, multicentre clinical studies: phase-4 ULIS-II (Upper Limb International Spasticity Study-II; post-stroke spasticity; NCT01020500), and phase-3 AUL open-label study (Adult Upper Limb; post-stroke or -TBI spasticity; NCT01313299).

Material and Method

ULIS-II: selection and achievement of patient-centred primary goals. AUL study: Tardieu scale for passive ROM (X_{V1}), angle of catch (X_{V3}) and spasticity angle (X) for shoulder muscles; and Modified Frenchay Scale (MFS) for active function.

Results

In ULIS-II, 82 patients receiving aboBoNT-A in shoulder muscles selected pain treatment goal three times more often than those without (Figure 1), with high goal achievement (85.7 and 85.0% respectively). In AUL study, 96 patients received ≥ 1 injection cycle in shoulder muscles, of which 84 received ≥ 2 shoulder injections. In patients with 1 shoulder injection, improved shoulder muscle spasticity (Tardieu) at last injection cycle: mean change from baseline at Week 4 was $+12.3^\circ$ and -8.2° for X_{V3} , and X, respectively (Figure 2). Patients with ≥ 2 shoulder injections had an improvements of $+17.9^\circ$ in X_{V3} . Concomitant improvements were also observed in active function (Week 4 Cycle 4, ≥ 2 shoulder injections: MFS: $+0.71$ [0.48]) (Figure 3). A trend towards lower injection doses in proximal compared with distal muscles was seen.

Figure 1. Selection of primary goal areas in sub-populations of patients with and without shoulder injections

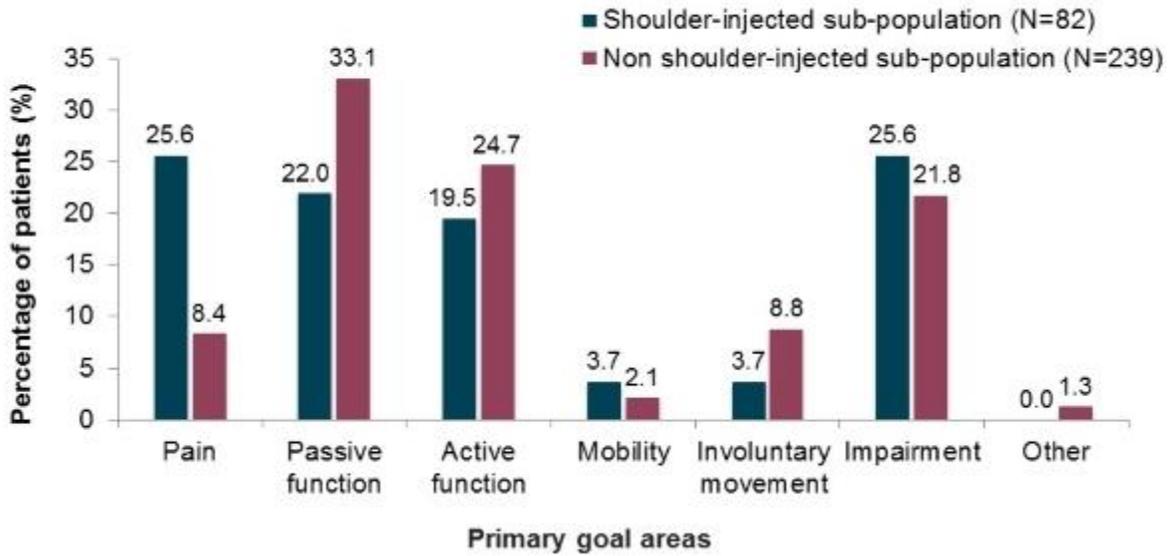


Figure 2. Mean change from baseline to Week 4 in passive range of motion (X_{V1}), angle of catch (X_{V3}) and spasticity angle (X) in shoulder muscles at the last injection cycle.

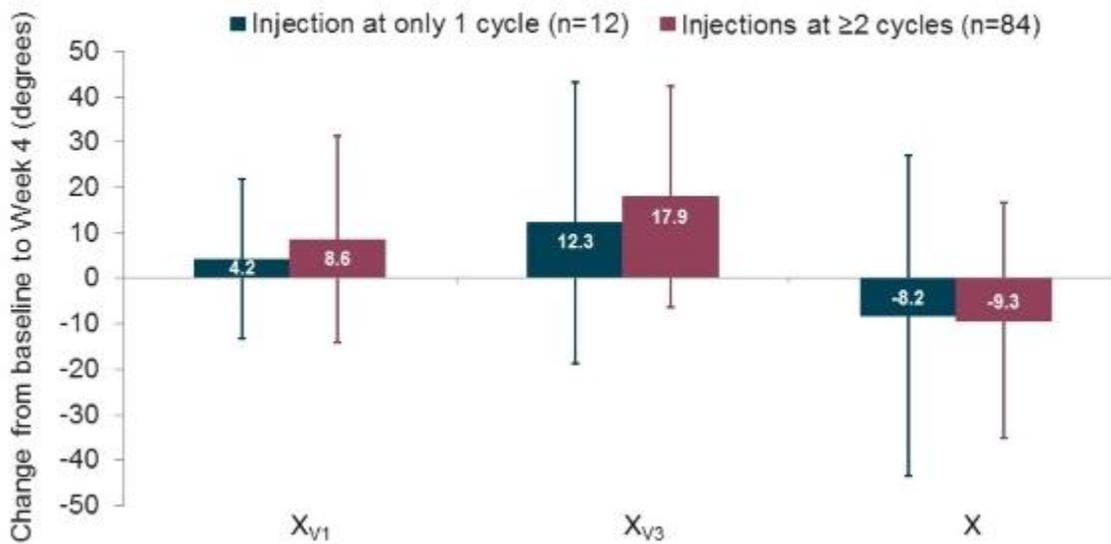
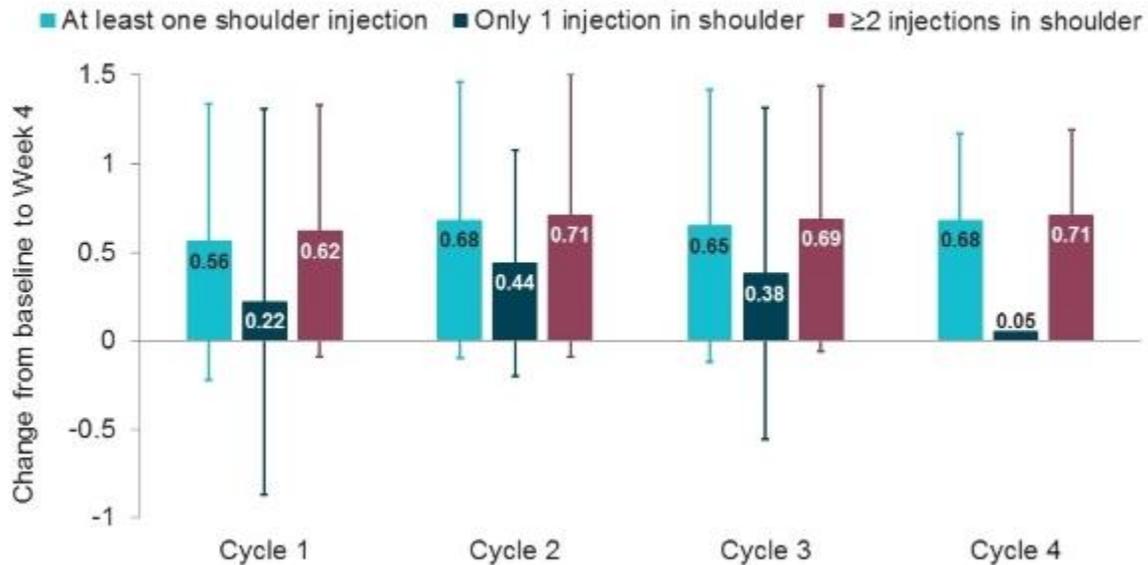


Figure 3. Mean change from baseline to Week 4 in Modified Frenchay Score for active function of shoulder muscles after each injection cycle.



Data are the mean (standard deviation) change from baseline to Week 4 of last injection cycle to include shoulder muscles

Conclusion

Post-stroke or -TBI patients receiving abobotulinumtoxinA in shoulders, in addition to other proximal muscle groups, reached high levels of goal achievement, particularly relating to pain and showed improvement in active function (MFS).

Keywords

abobotulinumtoxinA; upper limb spasticity; shoulder injection

Conflict of interest

Disclosure statement:

François Constant Boyer has served on scientific advisory boards for Ipsen, Allergan, Merz and Medtronic. Thierry Lejeune has received grants from Ipsen and personal fees from Merz. Svetlana Khatkova has received honoraria and conference attendance fees from Ipsen. Philippe Picaud, Pascal Maisonobe and Jovita Balcietiene are employees of Ipsen.

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A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2514

SIMULTANEOUS UPPER AND LOWER LIMB ABOBOTULINUMTOXINA INJECTIONS AND GUIDED SELF-REHABILITATION CONTRACTS IN SPASTIC HEMIPARESIS: BASELINE DATA FROM THE ENGAGE STUDY

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Introduction/Background

Guided self-rehabilitation contracts (GSC) are a diary-based and antagonist-targeting strategy, in which therapists identify muscles against which to prescribe patients daily, home-based self-stretching and active training programmes. Patients record a diary of exercises performed between visits. The ENGAGE study assesses effects of abobotulinumtoxinA (aboBoNT-A) on voluntary movements, following co-injection of upper (UL) and lower limbs (LL), alongside GSC in patients with chronic hemiparesis resulting from acquired brain injury. An interim analysis of ENGAGE baseline data is presented here.

Material and Method

International phase 3b/4, prospective, single-arm, open-label study (NCT02969356). Patients, stratified with UL or LL as primary treatment target (PTT), receive two consecutive injections of aboBoNT-A 1500 U, together with personalised GSC. Primary efficacy endpoint is the proportion of responders (improvement in composite active range of motion [CXA] of $\geq 35^\circ$ or 5° in UL or LL, respectively) in the PTT at Cycle 2 Week 6.

Results

Baseline data were analysed for 157 patients (data cut-off December 2017). Baseline characteristics are presented in Table 1; 91% of patients had experienced stroke; mean time since brain injury was 79.5 months.

Table 1. Baseline demographics and patient characteristics

Characteristic	Patients (ITT population) N=157
Age in years, mean (SD) [range]	52.9 (12.9) [22, 77]
Sex, n male (%)	104 (66.2)
Country	
France	19 (12.1)
Czech Republic	58 (36.9)
Russian Federation	50 (31.8)
United States	30 (19.1)
Missing	0
Type of acquired brain injury, n (%)	
Brain trauma	14 (8.9)
Vascular (infarct or haemorrhage)	143 (91.1)
Time (months) since date of acquired brain injury, mean (SD)	79.5 (75.4)
PTT limb	
Upper limb	82 (52.2)
Lower limb	75 (47.8)
Naïve to BoNT treatment for upper and lower limb spasticity, n (%)	43 (27.4)
For upper limb spasticity	53 (33.8)
For lower limb spasticity	91 (58.0)
Naïve to GSC, n (%)	115 (73.7)

BoNT-A, botulinum toxin A; GSC, guided self-rehabilitation contract; ITT, intention-to-treat; PTT, primary treatment target; SD, standard deviation.

PTT split was 52% versus 48% for UL and LL, respectively. 27% of patients were naïve to botulinum toxin (BoNT) for both UL and LL spasticity (34% UL-naïve; 58% LL-naïve), and 74% were naïve to GSC. Baseline BoNT doses administered are shown in Table 2.

Table 2. Baseline dose of abobotulinumtoxinA administered

Dose of abobotulinumtoxinA administered at Cycle 1 (safety population), mean units (SD)		
Overall	Patients (N=157)	
PTT limb = upper limb	965.9 (70.7)	
PTT limb = lower limb	980.4 (182.3)	
According to PTT limb	Upper limb (n=82)	Lower limb (n=75)
Upper limb		
Pectoralis major	176.8 (34.5) [19]	178.1 (48.2) [16]
Brachioradialis	140.7 (47.9) [48]	93.5 (22.7) [13]
Brachialis	208.3 (69.3) [52]	179.8 (59.2) [26]
Biceps brachii	206.4 (65.2) [29]	155.0 (42.7) [16]
Flexor carpi radialis	142.3 (49.1) [44]	140.2 (49.3) [33]
Flexor carpi ulnaris	120.4 (48.7) [24]	103.1 (44.4) [13]
Flexor digitorum profundus	155.8 (60.2) [60]	128.3 (43.5) [32]
Flexor digitorum superficialis	156.9 (49.1) [75]	131.5 (43.5) [47]
Flexor pollicis longus	106.3 (41.2) [35]	102.5 (38.2) [20]
Pronator teres	144.6 (47.9) [50]	134.7 (49.3) [38]
Lower limb		
Soleus	213.9 (100.0) [42]	299.2 (89.6) [52]
Gastrocnemius medial head	154.3 (61.1) [68]	192.1 (82.6) [73]
Gastrocnemius lateral head	138.9 (55.3) [67]	177.1 (70.8) [71]
Rectus femoris	165.0 (62.6) [10]	194.4 (59.4) [27]
Tibialis posterior	162.6 (58.6) [40]	196.0 (61.3) [50]
Flexor digitorum longus	119.7 (48.3) [17]	151.1 (46.8) [36]
Flexor hallucis longus	107.7 (50.8) [11]	125.7 (44.3) [23]

Data presented as mean dose (standard deviation) [n]. Only the muscles injected in $\geq 20\%$ of the safety population are presented by PTT limb. BoNT-A, botulinum toxin A; PTT, primary treatment target; SD, standard deviation.

Degree of CX_A in UL or LL at baseline are presented in Table 3.

Table 3. Composite active range of motion at baseline

Active range of motion at baseline (degrees), mean (SD)	Patients N=157
CX _A in upper limb	n=155 319.5 (118.8)
CX _A in lower limb	n=157 141.3 (34.4)
Full CX _A in upper limb	n=154 506.8 (173.4)
Full CX _A in lower limb	n=157 635.5 (76.1)

CX_A in upper limb = $X_{AEF} + X_{AWF} + X_{AFF}$; CX_A in lower limb = $X_{ASol} + X_{AGN}$

Full CX_A in upper limb = $X_{ASE} + X_{AEF} + X_{AWF} + X_{AFF} + X_{APT}$; Full CX_A in lower limb = $X_{ASol} + X_{AGN} + X_{AGM} + X_{AHS} + X_{ARF}$

CX_A, composite active range of motion; EF, elbow flexors; FF, extrinsic finger flexors; GM, gluteus maximus; GN, gastrocnemius; HS, hamstrings; PT, pronator teres; RF, rectus femoris; SD, standard deviation; SE, shoulder extensors; Sol, soleus muscle; WF, wrist flexors.

Conclusion

The ENGAGE study will provide insights into the safety and efficacy of the combination of GSC with aboBoNT-A, simultaneously injected into UL and LL, in adults with spastic hemiparesis.

Keywords

Guided self-rehabilitation contracts;Spastic paresis;AbobotulinumtoxinA

Conflict of interest

Disclosure statement:

Jean-Michel Gracies has served as a consultant for and received research grant support from Allergan, Ipsen and Merz he is also an investigator on an Ipsen trial. Gerard E. Francisco has received research grant funding and consulting fees from Allergan, Ipsen, Merz, Medtronic, Microtransponder and Ottobock. Robert Jech has received grants from Ipsen, the Czech Science Foundation, Czech Ministry of Health, Czech Ministry of Education, and Charles University, Prague and honorarium from Ipsen for consultations and lectures. François Constant Boyer has served on scientific advisory boards for Ipsen, Allergan, Merz and Medtronic. Pascal Maisonobe and Jovita Balcaitiene are employees of Ipsen.

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E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2521

REPEATED ABOBOTULINUMTOXINA INJECTIONS BENEFIT WALKING SPEED, STEP LENGTH AND CADENCE IN ADULTS WITH SPASTIC HEMIPARESIS DUE TO STROKE OR TRAUMATIC BRAIN INJURY

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Introduction/Background

Patients with chronic hemiparesis following stroke or traumatic brain injury (TBI) often experience restricted walking performance. Our previous double blind (DB) trial of 388 patients demonstrated that abobotulinumtoxinA (aboBoNT-A) treatment improves muscle tone and functional outcomes in adults with lower limb spastic paresis. This sub-analysis from the open-label (OL) study extension phase assesses changes in walking speed (WS), step length (SL) and cadence in these patients.

Material and Method

Phase 3, prospective, multicentre, double-blind (DB), randomised study (single injection of aboBoNT-A 1000U or 1500U or placebo; NCT01249404), followed by an OL study extension (≤ 4 cycles of aboBoNT-A 1000U or 1500U; NCT01251367). Participants were ambulatory adults with spastic hemiparesis causing gait dysfunction, comfortable barefoot WS 0.1–0.8 m/s in 10-metre WS test without walking aids, and stroke or TBI ≥ 6 months before study enrolment. Patients receiving either aboBoNT-A dose were assessed relative to DB baseline for WS, SL and cadence using 10-metre WS tests under different conditions (maximal and comfortable WS, barefoot and with shoes). Week 12 data are shown for the last treatment cycle with available data (Cycle 3).

Results

Relative to baseline, improvements in WS, SL and cadence by OL Cycle 3 Week 12 were observed in all four categories (Table 1). Mean percentage of improvements in WS were +19.7–23.6% across categories. Mean percentage improvements of +9.4–13.8% and +7.2–9.7% were observed for SL and cadence, respectively. The highest mean percentage improvements were

at comfortable barefoot WS for WS and SL, and at maximal barefoot WS for cadence. The least improvements from DB baseline were observed with shoes compared with barefoot, across all categories.

Table 1. Changes from baseline in 10-metre walking speed test

		Walking speed (m/s)		Step length (m/step)		Cadence (steps/s)	
		Mean (SD)	%	Mean (SD)	%	Mean (SD)	%
Comfortable walking speed	Barefoot n=150	+0.09 (0.14)	23.6	+0.04 (0.08)	13.8	+0.08 (0.21)	8.4
	With shoes n=151	+0.08 [0.15]	22.6	+0.04 [0.09]	13.2	+0.06 [0.21]	7.2
Maximal walking speed	Barefoot n=150	+0.10 [0.19]	22.9	+0.04 [0.09]	11.2	+0.10 [0.25]	9.7
	With shoes n=151	+0.10 [0.20]	19.7	+0.03 [0.10]	9.4	+0.10 [0.26]	8.6

Data presented as mean (standard deviation) of individual percentage of improvement.

Conclusion

Substantial improvements in WS, SL and cadence were achieved over time in hemiparetic adults with repeated administration of aboBoNT-A.

Keywords

AbobotulinumtoxinA; walking speed; lower limb spasticity

Conflict of interest

Disclosure statement:

Alberto Esquenazi has received research funding from Ipsen and Allergan. Allison Brashear has consulted with Ipsen, Allergan, Concert, Revance and WorldMeds. Research is supported by NINDS, Allergan, Ipsen, Merz and Revance. Dr Brashear's conflict of interest is managed by Wake Forest School of Medicine. Thierry Deltombe served as a consultant for Allergan, Ipsen, and Merz. SK received training fees and meeting sponsorship from Ipsen, Merz, and Allergan. Anne-Sophie Grandoulier is an employee of Atlanstat, subcontracted to Ipsen. Claire Vilain and Philippe Picaut are employees of Ipsen. Jean-Michel Gracies has served as a consultant for and received research grant support from Allergan, Ipsen, and Merz he is also an investigator on an Ipsen trial.

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2529

EFFICACY AND SAFETY OF EARLY USE OF ABOBOTULINUMTOXINA IN ADULTS WITH POST-STROKE SPASTICITY: RESULTS FROM THE ONTIME AND ABCDE-S STUDIES

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Introduction/Background

Initial muscle tone increase may be apparent within 6 weeks, and even days, post-stroke. Botulinum toxin-A (BoNT-A), an effective and well-tolerated treatment for upper limb spasticity (ULS), improves muscle tone and function, however most studies were conducted >6 months post-stroke. The ONTIME and ABCDE-S studies assessed efficacy and safety of early use (2–12 weeks post-stroke) of abobotulinumtoxinA (aboBoNT-A) in ULS.

Material and Method

ABCDE-S (NCT00234546; 2008): 24-week, randomised (1:1 aboBoNT-A [n=80]: placebo [n=83]), study assessing muscle tone changes in patients treated within 2–12 weeks of first stroke, with a Modified Ashworth Scale (MAS) score $\geq 1+$. ONTIME (NCT02321436; 2016): 28-week, randomised study (2:1 aboBoNT-A [n=28]: placebo [n=14]), assessing time to appearance or reappearance of reinjection criteria in patients with MAS score ≥ 2 treated 2–12 weeks post-stroke. All observed or volunteered adverse events (AEs) were recorded.

Results

MAS score improvements at Week 4 were greater in aboBoNT-A-treated patients than placebo in both studies (ABCDE S -1.5 vs. -0.5; ONTIME -1.25 vs. -0.25). At 12-weeks post-injection, fewer aboBoNT-A-treated patients versus placebo had MAS scores ≥ 2 in ONTIME (29.6 vs. 69.2%) and ABCDE (21.3 vs. 60.2%) (Table 1). In ONTIME, 11 (39.3%) aboBoNT-A-treated patients did not require reinjection for ≥ 28 weeks versus 2 (14.3%) for placebo. AboBoNT-A was well tolerated; most AEs were mild–moderate in intensity, with no clinically significant

differences in AEs between groups (Table 2). Six patients had treatment-related AEs: two in placebo groups (dysuria and complex regional pain syndrome), and four in aboBoNT-A groups (fatigue [n=2], pyrexia, muscular weakness). No serious AEs or deaths were considered treatment-related.

Table 1. Patients with a MAS score of ≥ 2 at week 4 and 12 in the most affected joint in ONTIME and ABCDE-S studies.

		ONTIME		ABCDE-S	
		AboBoNT-A 500 U, n (%)	Placebo, n (%)	AboBoNT-A 500 U, n (%)	Placebo, n (%)
MAS Score	Week 4	6/28 (21.4%)	8/14 (57.1%)	9/80 (11.3%)	39/83 (47.0%)
	Week 12	8/27 (29.6%)	9/13 (69.2%)	17/80 (21.3%)	50/83 (60.2%)

aboBoNT-A, abobotulinumtoxinA; MAS, Modified Ashworth Scale

Table 2. Adverse events in ≥ 2 patients per treatment group in the ONTIME and ABCDE-S studies.

	ONTIME		ABCDE-S	
	AboBoNT-A 500 U (N=28)	Placebo (N=14)	AboBoNT-A 500 U (N=80)	Placebo (N=83)
Any AE	8 (29)	4 (29)	25 (31)	21 (25)
Any SAE	3 (11)	0	8 (10)	5 (6)
Any severe AE	1 (4)	0	6 (8)	4 (5)
Any AE related to study drug	0	0	4 (5)	2 (2)
Most common AEs				
Dizziness	0	1 (7)	3 (4)	4 (5)
Arthralgia	0	0	3 (4)	2 (2)
Shoulder pain	0	0	2 (3)	2 (2)
Cerebrovascular accident	0	0	2 (3)	1 (1)
Head injury	2 (7)	0	0	0
Urinary tract infection	1 (4)	1 (7)	2 (3)	1 (1)
Depression	0	0	2 (3)	0
Fall	1 (4)	1 (7)	2 (3)	0
Fatigue	0	0	2 (3)	0
Insomnia	2 (7)	0	0	0
Oedema peripheral	0	0	2 (3)	0
Pyrexia	1 (4)	0	2 (3)	0

Data are given as n (%). aboBoNT-A, abobotulinumtoxinA; AE, adverse event; SAE, serious adverse event

Conclusion

Early treatment with aboBoNT-A (2–12 weeks) was well tolerated and had a longer time to reinjection versus placebo.

Keywords

early use;upper limb spasticity;abobotulinumtoxinA

Conflict of interest

Disclosure statement:

Raymond L. Rosales, Keng He Kong and Khean Jin Goh. Witsanu Kumthornthip and have received consultancy fees from Ipsen. Khean Jin Goh received honorarium as a moderator for 4th Pompe Disease Symposium 4th and 5th November 2016, Shanghai China from Sanofi Genzyme. Witsanu Kumthornthip was a speaker and injector for hands-on workshops in Thailand and Vietnam sponsored by Allergan. Chayaporn Chotiyarnwong and Phakamas Tanvijit served as speakers and injectors for a hands-on workshop in Thailand sponsored by Allergan. Witsanu Kumthornthip, Chayaporn Chotiyarnwong and Phakamas Tanvijit have received research funding as investigators in a trial sponsored by Ipsen, outside of this study. Raymond L Rosales has received scientific advisory board, consulting and speaker fees from Ipsen and Pfizer. Mazlina Mazlan, Lydia Abdul Latif, Mary Mildred D. De Los Santos and Odessa Nuez have nothing to disclose. Jovita Balcaitiene and Pascal Maisonobe are full-time employees of Ipsen.

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E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2557

TREATMENT FREQUENCY FOR LONG-TERM EFFICACY OF ABOBOTULINUMTOXINA INJECTIONS: A PHASE 3 STUDY IN PATIENTS WITH LOWER LIMB SPASTICITY FOLLOWING STROKE OR TRAUMATIC BRAIN INJURY

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Introduction/Background

Long-term safety and efficacy of repeated abobotulinumtoxinA (aboBoNT-A) injections in patients with lower limb spasticity (LLS) after stroke or traumatic brain injury have been established, with improvements in walking speed and community ambulation observed during a 12-month open-label study, and no unexpected safety signals (Gracies *et al. Neurology* 2017). Here, we describe the frequency of repeated aboBoNT-A injections over the open-label study.

Material and Method

A phase 3, international, double-blind, single-treatment study (NCT01249404) of aboBoNT-A in the hemiparetic lower limb, followed by a 12-month open-label extension study (NCT01251367) with up to four additional treatment cycles, at least 12 weeks apart. Re-treatment was per investigator's clinical judgement based on muscle tone, spasticity measures and other findings. Patients not requiring re-treatment completed the study.

Results

A total of 345 patients entered in open-label Cycle 1 were included in this analysis (Table 1). In Cycle 1, 38/345 patients withdrew and 307 completed the cycle. After Cycle 1, 10 patients completed the study without subsequent aboBoNT-A injections. After Cycle 2, 22/297 patients withdrew, 275/297 patients completed the cycle and 51 completed the study. Of 224 patients entering treatment Cycle 3, 13 withdrew, 211 completed the cycle and 72 completed the study. Overall, 38.6% (n=133) of patients required three or fewer injections of aboBoNT-A over the course of the 12-month study, 17.7% required two or fewer, and 2.9% required one injection.

Table 1. Patient flow per treatment cycle during open-label extension study

Treatment cycle and cumulative injections	Entered treatment cycle, n	Withdrawn from treatment cycle, n	Completed treatment cycle, n	Did not require re-injection in a subsequent cycle, n (cumulative %)
Cycle 1 ^a (=1 injection)	345	38	307	10 (2.9)
Cycle 2 ^b (=2 injections)	297	22	275	51 (17.7)
Cycle 3 ^c (=3 injections)	224	13	211	72 (38.6)
Cycle 4 ^d (=4 injections)	139	3	136	-

Data are number of patients.

Reasons for withdrawal: ^a19 patients withdrew consent, 7 adverse events, 1 each protocol deviation, lost to follow-up and lack of efficacy, 9 other; ^b9 withdrew consent, 9 adverse events, 2 lost to follow-up, 1 lack of efficacy, 1 other; ^c7 withdrew consent, 3 adverse events, 1 lost to follow-up, 2 other; ^d1 withdrew consent, 1 lost to follow-up, 1 other.

Any serious adverse events: ^a23 patients (30 events); ^b14 patients (16 events); ^c7 patients (7 events); ^d2 patients (4 events).

Conclusion

The number of injections of aboBoNT-A required to treat muscle overactivity in patients with LLS varied between patients in this 12-month open-label phase 3 study, with almost 40% of patients requiring three or fewer injections based on physician clinical assessment. Decreased injection frequency may reduce the burden associated with treatment for patients and their caregivers/families.

Keywords

AbobotulinumtoxinA; Lower limb spasticity; Re-treatment

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2600

BENEFITS OF PARASPINOUS LIDOCAINE INJECTION IN POST-STROKE

REHABILITATION: A CASE REPORT

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Introduction/Background

Stroke is the second cause of mortality and the third cause of disability worldwide. Pain enhances spasticity and should be properly assessed and then addressed in these patients. We report a successful case of spasticity management using paraspinous lidocaine injection followed by functional electrical stimulation during an intensive in-patient stroke rehabilitation program.

Material and Method

A 52-year-old Caucasian man diagnosed with hemorrhagic stroke presented with incomplete right hemiparesis with upper and lower limb spasticity. Despite receiving daily physical therapy for the last two years, he had no motor or sensory improvement. His muscle strength was as follows: grade 3 in the shoulder joint, grade 1 in elbow pronation/supination, grade 0 in hand and wrist flexion and extension, grade 4 in hip flexors and knee extensors, and grade 3 in ankle dorsiflexors. "Pinch-and-roll" maneuver on the subcutaneous cellular tissue showed hyperalgesia of C5-C7 and L3-L5 dermatomes. He was on an intensive in-patient rehabilitation regime to address muscle strengthening and functional recovery. Paraspinous lidocaine 1% (without epinephrine) injections were performed at C6/C7 and L4/L5 levels. Dry needling was applied to the belly of the right deep flexor digitorum muscle.

Results

Significant reduction of hyperalgesia, hypertonia and spasticity was observed immediately after the intervention, with an associated increase in passive range of motion of the involved joints. Spasticity reduced from 3 to 1+ in the Ashworth modified scale. There was also an improvement in muscle strength, reaching grade 4 in the shoulder joint; and grade 3 in the elbow. By demonstrating preservation of neural movement pathways and partial muscle strength recovery, we feel that electrotherapy and physiotherapy/occupational therapy should have improved effectiveness.

Conclusion

In this case report, paraspinous lidocaine injections reduced dermatomal hyperalgesia, hypertonia and spasticity and they caused an increase in the range of motion of involved joints. These clinical effects facilitated the in-patient post-stroke rehabilitation program.

Keywords

spasticity management;hyperalgesia;stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0065

OBTURATOR NERVE BLOCK WITH AQUEOUS PHENOL REDUCES HIP ADDUCTOR SPASTICITY

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Introduction/Background

Spasticity is a cardinal symptom of the upper motor neuron syndrome. It affects the different individuals differently. Hip adductor spasticity can be very painful and result in postural abnormalities that interfere with walking, transferring and hygiene. Phenol block of the obturator nerve results in neurolysis reducing the hip adductor spasticity.

Material and Method

Patients with known spasticity in the lower limbs who had been assessed suitable for phenol nerve block had Modified Ashworth Scale (MAS) and intercondylar distances recorded before the phenol nerve block, the at 6 weeks and 6 month's post phenol nerve block. Non-parametric Friedman test of differences among repeated measures was conducted from data at 0, 6 and 24 weeks.

Results

52 obturator nerves were blocked using 5% phenol. The procedure was bilateral in 38 patients and unilateral in 14 patients. There were 34 females and 18 males. Minimum age was 18 years and maximum age was 78 years with a mean age of 50.6 years. Majority of patients (28.8%) had a diagnosis of multiple sclerosis. There was statistically significant difference between the pre-injections MAS and intercondylar distance at 6 weeks and 6 months.

Conclusion

Spasticity of the lower limb, especially adductor muscle spasm, is a major source of long-standing disability and pain in neurological patients. It is a cost-effective procedure that leads to improved personal hygiene. It is operator dependent and needs skills and training to inject phenol without complications.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0240

FIXED FOOT EXTRAPYRAMIDAL DYSTONIA AFTER DEEP BRAIN STIMULATION: PERCUTANEOUS TENOTOMY CAN IMPROVE WALKING. A CASE REPORT.

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Introduction/Background

Dystonia have been reported to be a problem in some surgically treated Parkinsonian patients (Tolosa 2006). Botulinum toxin injection can sometimes significantly improved foot dystonia in this population (Anupam Data Gupta 2016).

Material and Method

We report our diagnostic and therapeutic approach to a fixed deformation not improved by the toxin injection. A 65-year-old, male, undergoing a bi-pallidal deep brain stimulation surgery in 2016, present a right foot deformity (equino-varus 30° and toe claw). Walk with rolator and medium risk of fall according to BERG scale (35/56). The foot deformation wasn't reducible by switching off the brain stimulation.

Results

Botulinum toxin injections (350UI incobotulinumtoxinA): no improvement. Anesthetic motor block of right posterior tibial nerve: no modification of deformation. Clinical examination under short general anesthesia: no improvement of the equine, even with addition of curare. This confirmed tendinous retraction, so surgical indication was retained. Achievement of tenotomies: calcaneus tendon elongation, posterior tibial, abductor of the hallux and tenotomy at the base of the 4 toes. After 5 weeks of immobilization, then 4 weeks of rehabilitation, complete reduction of the equine (0 °), walking without technical aid and low risk of falling according to the BERG (53/56).

Conclusion

In extrapyramidal patient with fixed foot dystonia, tenotomies can efficiently correct the deformity and improve walking. It requires a rigorous diagnostic approach in a specialized department in order to carry out the least invasive surgery.

Keywords

extrapyramidal;dystonia;tenotomy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0250

GAIT ANALYSIS AND OTHER FUNCTIONAL PARAMETERS IN FOOT DYSTONIA FOLLOWING BOTULINUM TOXIN A INJECTION.

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Introduction/Background

Foot Dystonia (FD) is a movement disorder characterised by sustained or intermittent muscle contractions causing abnormal, often repetitive movements resulting in pain, spasm and difficulty in walking. The most effective treatment for FD is botulinum toxin injection. The spatiotemporal gait analysis in Gait Rite is well validated and may help clinicians to record the outcomes more objectively. In this paper, we discuss the spatiotemporal gait parameters in FD pre-and post-botulinum toxin injection along with other lower limb functional outcomes.

Material and Method

Fourteen (14) adult patients with FD were assessed in the multidisciplinary spasticity clinic pre- and post-injection of botulinum toxin. We conducted gait analysis in the Gait rite system besides recording Fan Marsden Dystonia Scale (FMDS), Visual Analog Scale (VAS) of pain, Berg Balance Score (BBS), Unified Parkinson's Disease Rating Scale- Lower Limb Score (UPDRSLL), Timed Up and Go (TUG) test and the Goal Attainment Scale (GAS).

Results

We used the random effects panel data estimators in Stata to examine the difference from before the intervention to after to assess whether there was significant change in gait parameters. In all models the test for the time effect was adjusted for age, sex, and side (left or right). We found that stride length increased significantly in both the affected ($p=0.021$) and unaffected leg (0.010) after treatment, and that the improvement in stride length was roughly the same in each leg. Similar results were found for step length ($p=0.021$) with improvement in the step length differential ($p=0.016$). The improvement in the lower limb functional outcomes were also significant (FMDS, $p<0.001$, VAS, $p<0.001$, TUG, $p<0.001$, BBG, $p=0.001$, UPDRSLL, $p<0.001$, GAS, $p<0.001$, GV, $p=0.028$) except Cadence, $p=0.367$.

Conclusion

BT is effective in improving walking in foot dystonia as evidenced through gait analysis and improved lower limb functional outcomes.

Keywords

Gait;Foot Dystonia;Botulinum toxin

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0293

CLINICAL AND INSTRUMENTAL GAIT ASSESSMENT IN ADULT WITH CEREBRAL PALSY AND GLUTEUS MEDIUS ANTERIOR FIBERS SPASTICITY BEFORE AND AFTER LOCAL TREATMENT WITH BOTULINUM TOXIN

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Introduction/Background

Gait with internal hip rotation is often observed in adult with cerebral palsy both in diplegic and hemiplegic forms. Walking disabilities could be the consequence of gluteus medius anterior fibers spasticity.

Material and Method

A monocentric prospective pilot study was to assess the clinical and paraclinical progression of hip internal rotation, velocity and Functional Ambulation Performance (FAP) score index. We included eight patients (nine hips) with a follow up to five weeks. Clinical (questionnaire, spasticity) and instrumental (walk on "GAITRite®") assessments were performed at the beginning and at the end of the study.

Results

The FAP was significantly higher (10%) after botulinum toxin (80 to 87, $p < 0.05$). There was no significant impact on internal rotation and velocity. Patients felt better with a fluid gait and less fall.

Conclusion

Botulinum toxin improved gait performances in adult with cerebral palsy and gluteus medius anterior fibers spasticity. A randomized prospective multicentric study is required to confirm the preliminary results and to assess the impact of quality of life.

Keywords

cerebral palsy;gluteus medius anterior fibers spasticity;Functional Ambulation Performance (FAP)

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0453

USE OF BOTULINUM TOXIN TO TREAT A REFRACTORY TIBIALIS ANTERIOR TENDINOPATHY IN A DYSTONIC POST-TBI TALUS FOOT: A CASE REPORT

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Introduction/Background

Patients with traumatic brain injury (TBI) could suffer from spasticity but also from secondary focal dystonia. When constant and severe, dystonia could be painful and even source of tendinitis.

Material and Method

Here, we report the case of a 34yo woman who suffered from a severe TBI 20 years ago, which has been responsible for a right spastic and dystonic hemiparesia. A tibial nerve neurotomy was performed 10 years ago to treat an ankle clonus disturbing gait and upright balance. She recovered the ability to walk with the assistance of a cane, but presented with a talus pattern in both phases of gait due to a constant activation of her tibialis anterior muscle (TA). She complained of dorsal midfoot pain restraining gait to 100m (>1km anteriorly) and restricting her participation in several activities of daily living. Physiotherapy (cold therapy + deep transverse friction massage) failed to relieve the pain.

Results

Clinical examination revealed that pain was localized at the distal insertion of the TA and increased with stretching and isometric contraction. The MRI scan revealed a distal tendinopathy of the TA associated with interstitial tears and a tenosynovitis. We injected 70U of onabotulinum toxin A in the TA under ultrasound guidance. The patient reported a total relieve of the pain 2 weeks later, lasting at the 5 months follow-up, and have recovered her anterior walking perimeter. The treatment did not impair foot clearance during the swing phase of gait.

Conclusion

Muscle overactivity, particularly if inducing a constant contraction of muscle like in dystonia, can be a risk factor of tendinopathy. As already described in tendinopathy related to sport conditions (e.g. tennis elbow), botulinum toxin treatment could be of interest in tendinopathies in the context of muscle overactivity in brain injured patients.

Keywords

tendinopathy;botulinum toxin;muscle hypertonia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0592

EARLY BOTULINUM TOXIN INJECTIONS IN INFANTS WITH MUSCULOSKELETAL DISORDERS: A SYSTEMATIC REVIEW OF SAFETY AND EFFECTIVENESS

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Introduction/Background

Background : Botulinum toxin injection is increasingly used in children with musculoskeletal disorders. The literature supports the hypothesis that the earlier the injection is carried out the better the efficiency is.

Objective: To report current evidence regarding the safety of intramuscular BTI in children with orthopaedic- and neurological-related musculoskeletal disorders under the age of 2 years.

Material and Method

Data Source: PUBMED, The Cochrane Library, and Science Direct, Google Scholar and Web of Science.

Study Selection: Two reviewers independently selected studies based on predetermined inclusion criteria.

Data Extraction: Data relating to the aim were extracted. Methodological quality was graded independently by 2 reviewers using the Physiotherapy Evidence Database assessment scale for randomized controlled trials (RCTs) and the Downs and Black evaluation tool for nonRCTs. Level of evidence was determined using the modified Sackett scale.

Results

Data Synthesis: Data of 473 infants were analysed. Fifty-five infants had cerebral palsy, 112 had obstetric brachial plexus palsy, 257 had clubfoot and 44 had congenital torticollis. No studies reported any severe adverse event that could be attributed to the BTI. The rate of mild to moderate adverse events reported varied from 5 to 25%. Results regarding efficacy were

preliminary, dependant on the pathology and limited by the small number of studies and their low levels of evidence.

Conclusion

Conclusion: BTI is already widely used as an early treatment for this age group. The safety profile of BTI in infants appears similar to that of older children and risks appear more related to the severity of the pathology and the location of the injections than to the toxin itself. With regard to effectiveness, other studies with higher levels of evidence should be carried out for each specific pathology.

Keywords

Botulinum toxin; Safety; Infant

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0614

IMPROVED RESPONSE AFTER INTRATHECAL ADMINISTRATION OF BACLOFEN IN A PATIENT WITH IMPAIRED CONSCIOUSNESS – A CASE STUDY

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Introduction/Background

Disorders of consciousness present some of the most difficult diagnostic and therapeutic challenges in brain rehabilitation. Within the spectrum of these disorders, diagnosis remains clinical and depends on the response to various stimuli in the environment rather than objective physiological markers. In recent years, various cases have been reported in the medical literature in which patients with such diagnoses reacted to various stimuli indirectly. Spasticity is a common sequela of brain injury and may significantly impair a patient's ability to respond to stimuli in their environment.

Material and Method

A case study of a patient in a state of minimal reactivity demonstrating significantly improved responses to their environment following intrathecal injection of Baclofen.

Results

A 59-year-old man who was admitted for rehabilitation following subarachnoid hemorrhage secondary to anterior coronary artery aneurysm (ACA) requiring subsequent periventricular shunt placement. At admission, the patient presented in a vegetative state. During hospitalization, there was a temporary improvement in level of consciousness until the appearance of infection along the VPS drain necessitating removal of the shunt. Upon completion of treatment, the patient returned to our department with inconsistent, minimal reactivity on exam. Due to severe spasticity in all four limbs unresponsive to oral treatment and local injection, a one-time intrathecal injection of Baclofen was administered. Directly following treatment, the patient demonstrated decreased tone and immediate improvement in responsiveness and ultimately the production of a number of intelligible words and phrases.

Conclusion

In evaluating patients suffering from disorders of consciousness, it is important to recognize that limited responsiveness results not only from the impairment of information reception, processing, and response initiation, but also from tonal disturbances that may be causing difficulty in performing such movements. This case study supports previous literature demonstrating improved communication following cellophane pump implantation following severe head injury.

Keywords

spasticity;Baclofen

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-0632

USE OF BOTULINUMTOXINA FOR SIMULTANEOUS MULTIPLE INDICATIONS IN NEUROLOGICAL PATIENTS

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Introduction/Background

This is a preliminary retrospective cohort study to determine the occurrence of all adverse events after the simultaneous treatment with botulinumtoxin A for multiple indications, with at least a urologic one for injection. A substantial number of patients may have multiple indications for botulinumtoxinA injection. The treatment for certain conditions may be delayed due to the cumulative dose limitation within a three months interval, based on FDA trials. This delay may significantly impair a patient's function, rehabilitation programme and, at least, the quality of life; because of this sometimes it is very difficult to stratify the priority of treatment. All our patients needed, at the same time, a bladder and musculoskeletal treatment with botulinumtoxinA.

Material and Method

4 traumatic SCI, 2 vascular SCI, 1 Arnold-Chiari malformation, 1 infant cerebral palsy. Range of age between 14 and 53y. All patients are affected by neurogenic bladder sphincter dysfunction (NBSD) non-responder to antimuscarinic therapy. Toxin forms: 3 patients abobotulinumtoxinA, dosage range 950-1500 U; 5 patients onabobotulinumtoxinA, dosage range 300-400 U. Treatment site: 3 patients bladder sphincter and lower limb; 5 patients detrusor muscle and upper and lower limb.

Results

We registered in only one case (abobotulinumtoxinA 950 U) as adverse event the development of a temporary hand weakness, that already occurred after a previous treatment with botulinumtoxinA.

Conclusion

These data support the evidence of the possibility to perform – in very selected patients – a simultaneous treatment of overactive bladder and limb spasticity with botulinumtoxinA.

Keywords

Spasticity;Bladder;BotulinumtoxinA

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0666

INTERDISCIPLINARY INPATIENT REHABILITATION OF POST-STROKE PATIENT, SUFFERING FROM 3 TYPES OF MUSCLE HYPERTONIA

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Introduction/Background

Muscle hypertonia can be great problem in rehabilitation, especially in management of patient with different types of tonus. Rehabilitation team commonly have an experience in controlling spasticity and rigidity, but paratonia, which is associated with cognitive impairment is less common in rehabilitation. The aim of case report was to present a successful result of achieving functional goals through inpatient interdisciplinary rehabilitation of patient with association of spasticity, rigidity and paratonia.

Material and Method

Patient AS, male 68 years old, formerly independent, including employment. Few years ago was assessed due to slowness and memory loss, and Parkinson disease and Dementia were diagnosed. L-DOPA was prescribed with good functional effect. Recently was hospitalized with acute presentation of Left Hemiplegia and Neglect. Due to imaging, Ischemic stroke in right MCA and PCA territory was diagnosed. After receiving TPA treatment was transferred to Rehabilitation Department.

Results

AS was motivated despite of cognitive impairment and neglect. He was totally dependent with FIM 47, the staff used patient lift transfer with assistance of at least 2 helpers. The main goal was outlined as reaching transitions with one helper for being able to return home. His main problem was defined as high muscle tonus, especially in lower extremity and back. Staff examination with neurologist was organized was decided that the main barrier is association of spasticity, rigidity and paratonia. From the list of treatment options elevation of L-DOPA dose was selected with continuation of intensive training of transfers. After the intervention his muscle tone decreased and enabled an effective use of core muscles synergistically for better motor activity. After 75 days FIM was 57 and he returned home with ability to stand with walker and make transfers with one assistant.

Conclusion

Patient with association of spasticity, rigidity and paratonia can achieve appropriate functional goals while combining different types of rehabilitation approaches.

Keywords

spasticity;stroke;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0751

INTRATHECAL BACLOFEN THERAPY – 18 YEARS OF EXPERIENCE IN THE CENTER OF MEDICINE AND REHABILITATION OF ALCOITAO (CMRA)

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Introduction/Background

Spasticity occurs in a variety of neurological disorders related to upper motor neuron lesion. Baclofen is the most widely used antispastic agent. The infusion of intrathecal baclofen (ITB) is a safe option for severe spasticity, refractory to conventional oral therapy.

CMRA began using this therapy in 1999 with the creation of "ITB appointment", where patients were selected according to indications and contraindications to ITB.

The purpose of our work was to make a clinical and epidemiological characterization of the population under ITB therapy in CMRA. Evaluation of the time elapsed since the lesion/diagnosis and the beginning of therapy.

Material and Method

Retrospective, descriptive study of the population under ITB therapy follow-up in CMRA between 1999 and 2017.

Results

We studied 23 patients, 6 (26,08%) female and 17 (73,91%) male, with a mean age of 48,8years-old.

19 patients presented SCI, 14 (60.86%) of traumatic origin, 3 patients (13.04%) due to sequelae of intramedullary tumors and 2 (8.69%) to sequelae of Transverse Myelitis. 3 (13.04%) patients presented Cerebral Palsy and 1 (4.34%) Multiple Sclerosis.

Of the 19 SCI patients, 12 (63,15%) were cervical lesions, 8 (66,66%) incomplete and 4 (33,33%) complete injuries. 7 (36,84%) were paraplegias, 5 (71,42%) were incomplete and 2 (28,57%) were complete injuries.

The mean time of placement of the baclofen pump was 4.37 years after the date of the injury. A

case (4.35%) of double tolerance was described and controlled with two drug holidays. All patients showed improvement of spasticity of the lower limbs according to the modified Ashworth Scale (MAS).

Conclusion

The decision to initiate IBT should be weighed case by case, on a cost-benefit basis.

In our sample, the majority of patients had sequelae of SCI, most of them were tetraplegias. The mean duration of injury until initiation of therapy was 4.4 years. The half-life of the baclofen pump is in accordance with literature.

Keywords

baclofen;intrathecal

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-0761

PLACE OF BOTULINUM TOXIN IN MANAGEMENT OF SPASTICITY : EXPERIENCE IN DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION OF CASABLANCA

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Introduction/Background

Botulinum toxin(BT) injections have evolved over the past 25 years into a safe and effective therapeutic in a variety of neurologic disorders. Botulinum toxin is now being a first line treatment for focal spasticity and focal dystonia, improving functional disability and quality of life in the most of cases.

The aim of our study was to describe the current Moroccan practice for the use of BT injections to treat spasticity.

Material and Method

Prospective study of 78 patients with spasticity or focal dystonia treated at our center from January 2015 to July 2017. Both ultrasound or electrical stimulation guided botulinum toxin injections are employed to isolate muscles. The modified Ashworth score (MAS) , functional independence measure (FIM) and the Barthel scale were assessed pre- and post- BT injections of muscles.

Results

Seventy eight patients were included. Mean age was 33,1 years and M/F sex ratio 1,3. Main clinical features were: stroke(42,54%) ; cerebral palsy (16,20%) ; spinal cord injury(10,13%) and traumatic brain injury(10,13%. The most aim of treatment (43, 5 %) was function improvement. One month after botulinum toxin injection , significant improvements were noted in the modified Ashworth score , the FIM and the Barthel scale.

Conclusion

BT is a useful intervention in the treatment of spasticity with the majority of patients demonstrating improvement on objectives measures of tone and function and reporting improvement on subjectives measures. Associated with physical therapy, BT allows optimal management of spastic patients. If the effectiveness of botulinum toxin in spasticity is proven as evidenced by our experience. The difficulties encountered in our practice in Morocco are a lack of reimbursement of toxin by medical insurance organizations.

Keywords

spasticity;botulinum toxin

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1012

LOW-DOSE BOTULINUM TOXIN FOR THE TREATMENT OF SPASTIC CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

The treatment of children with cerebral palsy (CP) with Botulinum toxin A (BoNT-A) injections is well established, safe and effective. However, a standardized injection strategy is still missing and the used dosage has escalated over the years. The aim was to analyze the efficacy and safety of a lower dose of BoNT-A injections into lower limb in children with CP.

Material and Method

We analyzed retrospectively BoNT-A injections for 63 children (25 girls and 38 boys) with spastic CP. Children received 1-7 repeated injections and adapted physiotherapy. Children were classified according to the GMFCS. Treatment results were evaluated with the modified Ashworth scale. Side effects, total dose and dose per body weight were analyzed.

Results

Multilevel BoNT-A injections were indicated for 30 patients with spastic forms of CP, and in most of cases, the total dosage was 103.1 ± 20.8 U Allergan for Botox® and 473 ± 105.9 U Speywood for Dysport®. Doses for each muscle in U/kg were 1.5 ± 0.5 U Allergan for Botox® and 3 ± 0.7 U Speywood for Dysport®. The total doses of BoNT-A and the intervals between the repeated injections were stable for each patient. Side effects reported, out of which 10, were generalized and/or focal distant. Average Modified Ashworth scale decreased 1 point in each session. These effects were retained at 3.5 ± 1.3 months.

Conclusion

The lower dose ranges suggested for CP are effective and safe for the reduction of spasticity in lower extremities in one treatment session.

Keywords

botulinum toxin type A; cerebral palsy; safety; adverse events;

No conflict of interest

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A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1063

ACUPUNCTURE FOR SPASTICITY AFTER STROKE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

Spasticity is the common complaint among patients with stroke. Acupuncture has increasingly been used for spasticity management after stroke. The aim of the present study was to summarize and evaluate evidence on the effectiveness of acupuncture in alleviating the spasticity after stroke.

Material and Method

Five databases were searched from inception through October 2017 without language restrictions. Randomized controlled trials (RCTs) were included if acupuncture was compared to placebo or other conventional therapy for treatment of spasticity after stroke. Assessments were performed primarily with Modified Ashworth Scale (MAS).

Results

A total of 186 studies were identified; 5 RCTs met our inclusion criteria. Meta-analysis showed that acupuncture is effective in reducing the spasticity after stroke, as assessed by MAS (weighted mean difference, 0.72; 95% confidence interval [CI], 0.29–1.14; $P < 0.001$). A subgroup analysis showed that acupuncture significantly decreased wrist, knee, and elbow spasticity in post-stroke patients. Heterogeneity could be explained by the differences in control, acupoints, and the duration after stroke occurrence.

Conclusion

Our results suggest that acupuncture could be effective for treating spasticity after stroke. However, further studies are needed to confirm the role of acupuncture in the treatment of this disorder.

Keywords

Acupuncture; Stroke; Spasticity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1095

A TRIAL OF CONVALESCENT REHABILITATION WITH BOTULINUM TOXIN INJECTION IN SUBACUTE RECOVERY STAGE FOR SPASTICITY

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Introduction/Background

Botulinum toxin (BTX) injection therapy is known to be effective for control of hyper muscular conditions and involuntary movements. Since 2010 in Japan, BTX therapy has been widely used for patients with post-stroke spasticity, especially the effectiveness is often recognized in the chronic stage of rehabilitation. However, in some patients spasticity is observed in early stage, which can be cause of inhibitory role for rehabilitation and activity of daily life. We studied the effectiveness of BTX therapy with rehabilitation for patients with spasticity in subacute stage (3-6 months after onset) in the kaifukuki rehabilitation hospital. Kaifukuki rehabilitation is determined as the integrated rehabilitation ward system, commonly in Japan, for the convalescent stage with cerebrovascular diseases (CVD) and so on.

Material and Method

In the 15 cases with spasticity, we applied to BTX injection into the target muscles using standard injection procedure. Onset etiologies were 9 cases with CVD, 2 cases with brain injury, 4 cases in spinal cord disorders. The patients were evaluated with the assessment of scales such as range of motion (ROM), modified Ashworth scale (MAS), functional independence measure (FIM), and video recording for walking speed and difficulty of movement of upper extremity of the injected side.

Results

All the patients achieved functional improvement by BTX injection therapy, especially in the point of functional improvement (7 cases), in range of motion (5 cases) and in reduction of muscle pain (3 cases). Additional BTX injection was required in 5 cases after more than 3 months of the first BTX therapy.

Conclusion

The degree of spasticity may be various in each case, in some patients with spasticity earlier injection of BTX may be effective in the recovery course after neurological damage.

Keywords

botulinum toxin;spasticity;convalescent rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1190

EFFECTS OF BOTULINUM TOXIN TYPE A TREATMENT COMBINED WITH INTENSIVE REHABILITATION FOR GAIT IN POST-STROKE PATIENTS

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Introduction/Background

The aim of this study was to examine the effects of botulinum toxin type A (BoNT-A) treatment combined with intensive rehabilitation for gait compared with intensive rehabilitation alone in patients with chronic stroke.

Material and Method

A comparative case series design was used. Subjects were 19 patients with chronic stroke and spastic hemiplegia. In 9 patients (group I), BoNT-A was injected into spastic muscles of the affected lower limbs, followed by a four-week, inpatient intensive rehabilitation program. In the other 10 patients (group II), a four-week, inpatient intensive rehabilitation program alone was first provided (control period), followed by the same treatment protocol in group I. The Modified Ashworth Scale (MAS) scores of ankle plantar and knee flexors, range of motion (ROM) of ankle dorsiflexion and knee extension, gait speed in 10-Meter Walking Test, 6-Minute Walking Distance Test (6MD) scores, Timed Up and Go Test (TUG) scores, and Berg Balance Scale scores were evaluated every four weeks following baseline assessments.

Results

All results except for the MAS score of knee flexor and the ROM of knee flexion improved in group I and the gait speed, 6MD, and TUG score improved in group II. Inter-group comparisons at week 4 showed significantly greater improvements in the MAS score of ankle plantar flexor, ROM of ankle dorsiflexion, and 6MD in group I than in group II ($p=0.016$, 0.011 , and 0.009 , respectively). Inter-group comparison between group I at week 4 and group II at week 8 showed no significant difference in the change of any assessment.

Conclusion

BoNT-A treatment for lower-limb spasticity combined with intensive rehabilitation was effective in improving spasticity and the 6MD compared with intensive rehabilitation alone in patients with chronic stroke.

Keywords

spasticity;gait disorder;stroke

Conflict of interest

Disclosure statement:

The authors received honoraria from GlaxoSmithKline (Tokyo, Japan) for presentations on the benefits of BoNT-A. No author has a personal financial interest in BoNT-A or in any of the methods used in this research.

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1217

IMPACT OF SPASTICITY AND BOTULINUM TOXIN-A INJECTIONS ON THE DAILY LIFE OF PATIENTS AND THEIR CAREGIVERS: RESULTS FROM AN INTERNATIONAL ONLINE SURVEY

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Introduction/Background

Spasticity can have a considerable impact on patients' lives, causing pain and loss of mobility with resultant burden to patients and caregivers. Botulinum toxin-A (BoNT-A) injections have proven to be an efficacious and well tolerated treatment for spasticity.

The objectives were: (1) to measure the impact of spasticity on patients' and caregivers' employment and quality of life, (2) to better understand patient perceptions of BoNT-A injections.

Material and Method

A survey is currently being conducted by Carenity (an online patient community) in the US and Europe (France, Germany, Italy, Spain, UK). A committee (a patient, 3 neurologists and a physiatrist) approved the questionnaire. This analysis reports data from 333 participants enrolled to date, (target: 600) including 210 patients with spasticity receiving BoNT-A injections, and 123 caregivers.

Results

The respondents' spasticity was caused by Multiple Sclerosis (40%), Stroke (22%) and Spinal Cord Injury (9%). Mean age was 47.6 years and 54% of patients were women.

Impact on work:

- 50% of patients work part-time or do not work due to their condition
- 32% of caregivers limit their work activity to help the patient
- Professional life was the most affected area (mean=6.9/10, 0=no impact, 10=a great impact)

Spasticity also had an impact on patients' leisure activities (mean=6.7/10), self-esteem (mean=6.6/10) and sexual life (mean=6.6/10).

The overall level of satisfaction regarding BoNT-A injections was acceptable (mean=5.9/10), despite the inconvenience associated with the injections, including pain during/after injections (mean=4.1/10), logistic constraints such as travel (mean=3.8/10) or difficulties related to frequency of injections (mean=3.5/10). 71% of respondents would feel benefits from having 1 or 2 fewer injections per year.

Conclusion

These results emphasize the multifaceted impact of spasticity on patients' and caregivers' quality of life. Patients receiving BoNT-A injections are mostly satisfied with their treatment, but report some inconvenience and would prefer less frequent injections.

Keywords

Spasticity; Botulinum Toxin-A injections; Patients' quality of life

Conflict of interest

Disclosure statement:

Laxman Bahroo, Manuel Murie Fernandez, Atul Patel and Theodore Wein are part of a scientific advisory committee sponsored by Ipsen.

Jovita Balcaitiene is Ipsen's employee.

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1279

AN EXAMINATION OF REAL-WORLD ONABOTULINUMTOXINA UTILIZATION FOR THE TREATMENT OF UPPER LIMB SPASTICITY: THE ADULT SPASTICITY INTERNATIONAL REGISTRY (ASPIRE) STUDY

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Introduction/Background

OnabotulinumtoxinA treatment for spasticity is variable as treatment is individualized and dependent on numerous factors. Here, we explore real-world patterns of onabotulinumtoxinA utilization in patients with upper limb spasticity over 2 years.

Material and Method

Multicenter, international, prospective, observational study (NCT01930786), examining adult patients with focal spasticity across multiple etiologies treated with onabotulinumtoxinA at their physician's discretion. Assessments include utilization (each treatment visit) and patient/physician satisfaction (5±1 weeks post-treatment).

Results

Patients (N=731) were on average 53.6 years of age (18.5-93.2 years), 52% female, and predominantly Caucasian (77%). Stroke was the most frequently reported etiology (56%). The most commonly treated upper limb spasticity presentation was clenched fist (52%). Across all clenched fist treatment sessions (N=1505), percentage injected and dose (mode) injected into each muscle are as follows: flexor digitorum superficialis (86%, 50U), flexor digitorum profundus (80%, 50U), flexor pollicis longus (25%, 20U), flexor pollicis brevis (9%, 25U), other (6%, 20U). EMG was frequently used to localize muscles to treat clenched fist (>44%). Across all treatment sessions, 93% of physicians and 86% of patients reported being satisfied/extremely satisfied that treatment helped manage spasticity, 84% of physicians and 76% of patients reported

treatment benefit was sustained, and 99% of physicians and 92% of patients would definitely/probably continue treatment with onabotulinumtoxinA. 261 patients (36%) reported 831 adverse events (AEs); 23 AEs in 20 patients (3%) were considered treatment-related. 94 patients (13%) reported 195 serious AEs; 3 serious AEs in 2 patients (0.3%) were considered treatment-related. No new safety signals were identified.

Conclusion

ASPIRE provides valuable, real-world data on dosing, injection guidance, and muscle targeting over 2 years, that may help guide clinical strategies. This study captured the individualized nature of onabotulinumtoxinA utilization for spasticity, while demonstrating consistently high satisfaction. These results add to the body of evidence on the safety and effectiveness of onabotulinumtoxinA for spasticity.

Keywords

spasticity;onabotulinumtoxinA;observational

Conflict of interest

Disclosure statement:

G. Francisco - Consulted for, and received research grants from Allergan.

D. Bandari - Consultant, speaker, and/or conducted research for Accorda, Allergan, Biogen, Genentech, Genzyme, EMD-Serono, Questcore, and Teva. Received research support from Biogen, Teva, Genentech, Allergan, and Genzyme.

G. Bavikatte - Served on a steering committee as a consultant for Allergan.

W. Jost - Speaker and consultant for Allergan, Ipsen, and Merz.

S. Tang - Consultant for Allergan.

A. Zuzek - Full-time employee of Allergan.

A. Patel - Full-time employee of Allergan.

J. Largent - Full-time employee of IQVIA (formerly QuintilesIMS), the contract research organization responsible for the management of this study and was formerly a full-time employee of Allergan.

A. Esquenazi - Participated in advisory boards and consulted for Allergan. Received research grants from Allergan and Ipsen.

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A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1336

QUANTITATIVE ASSESSMENT OF MUSCLE SPASTICITY WITH ULTRASOUND ELASTOGRAPHY AFTER BOTULINUM TOXIN A INJECTION IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

The modified Ashworth scale (MAS) is the most frequently used method in the assessment of spasticity in clinical practice. Ultrasound elastography is an imaging method that assesses the viscoelastic characteristics of tissues noninvasively.

Our objective in this study was to assess the changes in gastrocnemius muscle (GCM) stiffness after botulinum toxin A (BTA) injection in children CP by using ultrasound elastography and to research the usability of this technique. **Material and Method**

Ten children with spastic CP were enrolled in the study. BTA injection treatment was applied to GCM. Muscle stiffness was measured with the ultrasound elastography before the procedure, 1-2, 3 weeks, and 6 month post-injection. Spasticity was also assessed with the MAS at about the same time. Shear wave velocity (SWV) values and MAS scores before and after the treatment were compared.

Results

The mean age was 5.9 years and the mean body weight was 19.9 Kg. The average MAS score values were 2 before BTA. Abobotulinum toxin A injections were administered to 5 children with an average dose of 100 units and Onabotulinum toxin A injections were administered to 5 children with an average dose of 60 units in GCM. SWV values were measured as 2.38 m/s before BTA and as 1.6 m/s after BTA. This study is currently under progress.

Conclusion

There are few studies that have assessed muscle stiffness after BTA injection in children with spastic CP using ultrasound elastography. These studies have concluded that the combined use of ultrasound elastography with clinical scales can be useful in the assessment of spasticity.

Keywords

Cerebral palsy, Muscle spasticity, ARFI elastography

No conflict of interest

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A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1356

INTEREST OF A MULTIDISCIPLINARY CONSULTATION IN THE CARE OF THE CEREBRAL PALSY CHILD

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Introduction/Background

The multidisciplinary management of spasticity in children with central neurological conditions, including cerebral palsy, involves different specialties such as the physical physician, the orthopedic surgeon or the equipment masters. The goal is to offer the most appropriate therapeutic option in the good time.

Material and Method

Retrospective study of patients with cerebral palsy seen in a monthly multidisciplinary spasticity consultation at the physical medicine department of the Institute of Orthopaedy Mohamed Kassab during the year 2017.

Results

Fifty-five patients were seen at the multidisciplinary spasticity consultation, 20 boys and 35 girls, mean age was 9.8 years.

Therapeutic recommendations were: injection of botulinum toxin in 15 patients, surgical reduction of hip dislocation in 2 patients, lower limb plaster under general anesthesia in 5 patients, prescription of Garchois brace in 3 patients, tendon lengthening in 7 patients, a posterior tibialis muscle transfer in one patient, a double arthrodesis of the ankle in 2 patients, a neuro-motor block in 5 patients, rehabilitation with a renewal of the orthopedic equipment of day and night for other patients.

Conclusion

The development of a therapeutic strategy requires a close collaboration between the different specialties, especially when the clinical presentation can be very complex. The family must be involved in the decisions to ensure its membership.

Keywords

cerebral palsy;children;rehabilitation

No conflict of interest

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A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1618

THE CLINICAL EFFICACY OF BAIMAI OINTMENT COMBINED WITH TRADITIONAL CHINESE MASSAGE IN THE PATIENTS OF POST-STROKE WITH LIMB SPASM

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Introduction/Background

Post-stroke spasm has high incidence and leads to limb pain, dyskinesia, even deformity, further more, it increases the treatment cost, which further hinders the recovery of limb motor function. It has many effective treatments, those have many side effects and cost more. Spasm belongs to athetosis in Chinese medicine. Qi deficiency and blood stasis is the main etiology and pathogenesis of athetosis. Baimai ointment and Chinese massage can replenish qi and activate blood, so that relieve the spasticity and decrease the muscular tone and improve the ROM.

Objective To explore the effect on limb spasm degree, motor function and activities of daily living in the post stroke patients with Limb spasticity treated with of Baimai ointment, traditional Chinese massage and modern rehabilitation training.

Material and Method

61 patients were divided into the treatment group (31 cases) and control group (29 cases) according to random numbers generated by computer. The two groups accepted basic treatment and besides, the treatment group accepted Baimai ointment and Chinese massage. The duration of treatment was 4 weeks. Before and after treatment, Modified Ashworth scale (MAS), Fugl-Meyer assessment scale (FMA) and the modified Barthel index (MBI) were evaluated in the patients.

Results

There was no statistical difference in the index scores among the two groups before treatment ($P > 0.05$). After treatment, the MAS scores were decreased, FMA and MBI were increased evidently as compared with those before treatment ($P < 0.05$), the difference was statistically significant. Furthermore, the variation of scores in the treatment group were greater than that in

the control group($P < 0.05$).

Tab.1 FMA and MBI score before and after treatment

item	group (n)	number	Before treatment	After treatment	Value of appreciation
MAS	control	28	8.54 ± 3.60	7.21 ± 3.33	1.32 ± 0.72
	treatment	30	$9.03 \pm 3.18^{**}$	$6.70 \pm 2.77^{**}$	$2.33 \pm 1.56^{**}$
FMA	control	28	29.37 ± 18.06	$32.00 \pm 18.99^{**}$	5.07 ± 4.26
	treatment	30	$29.37 \pm 16.32^{**}$	$37.77 \pm 19.70^{**}$	$8.40 \pm 6.73^{**}$
MBI	control	28	56.04 ± 22.69	$61.89 \pm 21.08^{**}$	5.86 ± 4.57
	treatment	30	$54.13 \pm 23.97^{**}$	$63.13 \pm 23.85^{**}$	$9.00 \pm 6.55^{**}$

Conclusion

Baimai ointment combined with traditional Chinese massage could relieve the limb spasm degree in the post stroke patients, and improve effectively motor function and activities of daily living.

Keywords

Limb Spasm;Baimai Ointmen;Chinese Massage

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1625

THE EFFECTS OF MATRIX RHYTHM THERAPY ON HAND FUNCTIONS IN HEMIPARETIC INDIVIDUALS: A PRELIMINARY REPORT

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Introduction/Background

Matrix rhythm therapy was formed by tracing the microvibrations of 8-12 Hz, where the healthy muscle cells in our body have. Matrix Rhythm Therapy helps normalize alpha-gamma tonus in the muscles by activating metabolism. This study was planned to investigate the effects of Matrix Rhythm Therapy applied on spastic muscle in hemiparetic individuals on muscle tone and hand functions.

Material and Method

A total of 7 hemiparetic individuals (4E, 3K) were included in the study. Modified Ashworth Scale was used to determine the severity of spasticity in the upper extremity. The decrease in joint motion due to spasticity was determined by goniometric measurement. The Box & Block test and the Nine-hole peg test were used to evaluate hand functions. Matrix rhythm therapy was applied one hour as 3 days a week for 4 weeks. All assessments were repeated before and after treatment.

Results

The mean age of hemiparetic individuals is 49 ± 16.85 (age range: 20-63) years. Mean duration of hemiparesis was 16.71 ± 17.47 months. Statistically significant improvements were found in the total score of the Modified Ashworth Scale after matrix rhythm therapy, in elbow extension, finger flexion and extension active movements in goniometric measurements ($p < 0.05$). We found that Box and Block test score was increased ($p < 0.05$). At the same time, it was found statistically significant improvement on nine-hole peg test score ($p < 0.05$).

Conclusion

Matrix rhythm therapy applied to spastic muscle in hemiparetic individuals contributes to spasticity inhibition by reaching to the normal rhythm. Hemiparetic individuals may be treated with Matrix rhythm therapy in the earliest period, thus increasing the functional use of the upper extremity.

Keywords

Matrix Rhythm Therapy, Hand Functions, Spasticity.

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1764

DOSE TITRATION OF INCOBOTULINUMTOXINA FOR TREATMENT OF MULTIFOCAL UPPER- AND LOWER-LIMB SPASTICITY

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Introduction/Background

Effective treatment of disabling, multifocal upper- and/or lower-limb spasticity may require botulinum neurotoxin doses higher than those indicated currently. TOWER (NCT01603459) previously investigated the safety and efficacy of escalating incobotulinumtoxinA doses (400–≤800U) in adults with upper- and lower-limb spasticity due to stroke or other cerebral causes (*Wissel Neurology*, 2017). Here we report further data regarding the impact of escalating doses on multi-pattern treatment and muscle dosing.

Material and Method

Treatment comprised three injection cycles (ICs) with escalating total doses on the same body side, each followed by 12–16 weeks' observation: IC1, 400U into the upper limb and/or lower limb; IC2, 600U into the upper limb and/or lower limb; and IC3, 600–800U into the upper and lower limbs (maximum 600U per limb). At screening, investigators selected a target clinical pattern for treatment in all ICs. Other patterns were treated at the investigator's discretion.

Results

In total, 155 patients (mean [SD] age, 53.7 [13.1] years) were enrolled, with spasticity due to stroke (85.2%) or other cerebral causes (14.8%). The number of clinical patterns and muscles treated increased with escalating dose at each IC. In IC1, IC2 and IC3, respectively, 608, 743 and 811 clinical patterns and 46, 49 and 53 different muscles were treated in 155, 152 and 140 patients. The number of patients treated for the most frequently injected clinical patterns in the upper (flexed elbow) and lower limb (pes equinovarus), respectively, increased from 75.5% and 56.8% of patients in IC1 to 88.6% and 87.1% in IC3.

Conclusion

Escalating incobotulinumtoxinA doses enabled a more comprehensive multi-pattern treatment approach, with an increase of approximately 33% in clinical patterns and more muscles treated with the highest dose (600–800U) versus the initial dose (400U) in patients with upper- and lower-limb spasticity.

*D Dressler and DM Simpson contributed equally to this work.

Keywords

Botulinum neurotoxin type A;incobotulinumtoxinA;spasticity

Conflict of interest

Disclosure statement:

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D Dressler and DM Simpson contributed equally to this work.

J Wissel received research grant support from and served as a consultant for Allergan, Ipsen, Medtronic and Merz D Bensmail served as a consultant for Allergan, Almirall, Ipsen, Medtronic and Merz O Simon is a former employee of Merz Pharmaceuticals A Scheschonka is an employee of Merz Pharmaceuticals B Flatau-Baqué is an employee of Merz Pharmaceuticals D Dressler received payments from Abbvie, Allergan, Bayer, IAB-Interdisciplinary Working Group for Movement Disorders, Ipsen, Medtronic, Merz, Sintetica, Syntaxin and UCB. He holds patents on botulinum toxin and botulinum toxin therapy and is a shareholder of Allergan DM Simpson received research grant support from and served as a consultant for Allergan, Ipsen and Merz.

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A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1789

UPPER LIMB SPASTICITY : IS THERE ANY FUNCTIONAL EFFECT OF LOCAL TREATMENT ?

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Introduction/Background

Spasticity is characterized by an increased muscle tone following lesions of the central nervous system such as strokes. It is a major cause of impairment and disability, especially when it affects the upper limb, and can be focally relieved by intramuscular injections of botulinum toxin (BT). Therefore, whether treating upper limb spasticity (ULS) has functional effects and improve the active use of the affected upper limb remains controversial. We hereby aim to assess the functional effects of focal treatment of upper limb spasticity, among the existing literature.

Material and Method

We searched the MedLine and Cochrane databases for trials, reviews and meta-analyses assessing the effects of BT injections in ULS. This was a non-systematic narrative review, and the selection of articles was based on the authors' expertise.

Results

Most studies assessed impairments and passive function outcomes by means of patients-defined main therapeutic targets using the disability assessment scale or the goal attainment scaling. Impairments and passive function goals prevailed on active function and participation, and were more frequently achieved than the latter. Trials and meta-analyses did not show a significant improvement of participation in upper limb activities of daily living (ADL).

Discussion – The effects of BT injections on impairment and passive function are linked to better kinematic parameters, nonetheless, the relationship between the relief of spasticity and better upper limb activity has not been established. Not every patient with ULS could have functional benefits from BT injections, as the motor impairment may largely prevail upon spasticity in causing disability. It is likely that patients, who could have the best functional outcome, should have the least underlying motor impairment.

Conclusion

Further studies are needed to assess the functional effects of focal treatments of ULS, in a well-selected subset of patients, with mild to moderate motor impairment.

Keywords

spasticity;botulinum toxin;upper limb function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-1819

EFFICACY AND SAFETY OF INCOBOTULINUMTOXINA IN THE TREATMENT OF SHOULDER SPASTICITY DUE TO CEREBRAL CAUSES

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Introduction/Background

Botulinum neurotoxin is well established for treating upper-limb spasticity. However, few studies have assessed efficacy in the shoulder. TOWER (NCT01603459) previously evaluated the safety and efficacy of escalating incobotulinumtoxinA doses (400U–≤800U) in adults with upper- and lower-limb spasticity due to cerebral causes (Wissel *Neurology*, 2017). This post-hoc analysis assessed the efficacy and safety of incobotulinumtoxinA for treating shoulder spasticity, as part of upper-limb treatment.

Material and Method

Patients received three injection cycles (IC) with escalating incobotulinumtoxinA doses on the same body side (400U, 600U and 600–800U; ≤600U per limb including optional shoulder dose, planned range 100–250U). Here, patients who had received shoulder treatment were compared with those who had upper-limb treatment, without shoulder treatment. Ashworth Scale (AS) scores for shoulder adduction, extension and internal rotation were added to form the AS shoulder sum score (AS-SSS), to fully assess joint function. The incidence of adverse events (AEs) was assessed.

Results

The number of patients receiving shoulder treatment increased with escalating incobotulinumtoxinA dose at each IC, peaking in IC3 (n=84/140 [60.0%]; mean [SD] shoulder dose 118.4 [60.2] U). From baseline to 4 weeks post-injection in IC1, IC2 and IC3, respectively, the mean (SD) AS-SSS improved by –1.1 (1.9), –1.7 (1.8) and –1.7 (1.8) in patients treated in the shoulder and –0.5 (1.3), –0.8 (1.6) and –0.9 (1.4) in patients who were not. Multiple regression analysis adjusting for IC baseline showed significant improvement in AS-SSS with incobotulinumtoxinA shoulder dose in IC3 (p=0.0081). AEs occurred in 52.1% of patients treated in the shoulder and 61.0% in those who were not. No differences were observed in AE

patterns and no unexpected safety concerns were reported with shoulder treatment or higher incobotulinumtoxinA dose.

Conclusion

Results support the efficacy and safety of incobotulinumtoxinA for treatment of shoulder spasticity as part of upper-limb treatment.

Keywords

IncobotulinumtoxinA;spasticity;shoulder

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2034

SPORADIC DISTANT NEUROTOXIN EFFECTS IN THE CHRONIC TREATMENT OF SPASTICITY

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Introduction/Background

Neurotoxin therapy is an effective component of comprehensive spasticity management. The two cases presented demonstrate adverse effects.

Material and Method

Patient S is a 60 year old female with right spastic hemiparesis due to left hemispheric stroke (age 46) treated with therapy, bracing, oral baclofen. Patient R is a 28 year old female with left spastic hemiparesis due to hemispherectomy (age 6).

Results

For patient S, onabotulinumtoxinA (ONA) was initiated at 300 units (u) to the right upper extremity (RUE), advanced to 500u. She received injections every 3-3.5 months for over 9 years and continued to function independently. At routine follow-up, she related left upper extremity (LUE) weakness that she noted but didn't report with her two prior injections. She denied any other symptoms. Examination revealed mild, diffuse LUE weakness, imaging was unremarkable and EMG demonstrated a chronic LUE axonal polyradiculopathy. ONA was continued at 300u to the RUE with somewhat lesser but maintained benefit without adverse effects.

For patient R, ONA was initiated at 400u to the LUE every three months for 13 rounds, advanced to 500u. Contralateral (RUE) weakness developed after the second round of 500u dosing. Diagnostic evaluation was notable only for increased insertional activity, fibrillation potentials and decreased recruitment with subsequent long duration polyphasic motor unit potentials. Unchanged with high dose steroids, weakness improved with IVIG. Repeat ONA with 500u resulted in good local effect, recurrent contralateral upper and lower extremity weakness. EMG demonstrated contralateral cervical, thoracic and lumbosacral axonal polyradiculopathy. Symptoms improved with IVIG. Patient declined subsequent ONA.

Conclusion

Both patients were treated with neurotoxin therapy for 3-9 years with good clinical response before developing the adverse reaction. Weakness distant to the injection sites is supported by electrodiagnostic findings of contralateral axonal polyradiculopathy. The clinical presentations

suggest the possibility that the adverse effect of distant weakness may be immune-mediated and dose-related.

Keywords

Spasticity;Neurotoxin;adverse effect

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2714

INTRATHECAL BACLOFEN: IMPACT VESICAL REGIMEN – A CASE REPORT

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Introduction/Background

Spasticity is an increase in muscle tone velocity dependent due to the muscle stretch reflex hyperexcitability caused by central nervous system lesion. Individuals with spinal cord injury may suffer from spasticity with significant functional impairment. Intrathecal baclofen pump is used for the treatment of severe spasticity. This case report demonstrates the impact of intrathecal baclofen on vesical regimen on a patient that went from a supra-pubic catheterization to intermittent self-catheterization after intrathecal baclofen pump implantation.

Material and Method

Case report: Male, 33 years old, with complete T6 paraplegia. On admission in a Spinal Cord Injury ward, he presented with severe spasticity on both lower limbs (Grade 4 on Penn's Scale and Grade 3 on Modified Ashworth Scale) that were cause of pain and impairment. Spasticity difficulted catheterization and occurred the formation of a bulbar false passage with consequent supra-pubic catheterization. He had a poor response to oral anti-spastic therapy and was proposed for intrathecal baclofen pump implantation.

Results

Three weeks after the implantation, Penn's Scale was grade 1 and modified Ashworth Scale grade 1 on lower limbs. Spasticity control allowed starting intermittent self-catheterization, more independency in transfers and self-care and pain relief. His MIF scale raised from 71/126 on admission to 105/126 and SCIM from 30/100 to 62/100.

Conclusion

Intrathecal baclofen usually is an efficient anti-spasticity therapy that greatly improves quality of life. In this case, the patient went from a supra-pubic catheterization to intermittent self-catheterization. At our best knowledge, this is the first published case where intrathecal baclofen therapy allowed a significant functional achievement in the vesical regimen of person presenting spastic paraplegia.

Keywords

intrathecal baclofen pump;catheterization

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2203

DISCONTINUATION OF BOTULINUM TOXIN-A TREATMENT IN PATIENTS WITH MUSCLE OVERACTIVITY

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Introduction/Background

The aim of this study is to determine the reasons for discontinuation of focal and regional spasticity management with botulinum toxin A (BTA)

Material and Method

Retrospective study of patients' files treated with BTA the past seven years. Cases of BTA treatment discontinuation for more than 12 months were further evaluated with telephone interview. Causes of discontinuation were analyzed according to patients' interview and were compared with patients' files. Patient satisfaction was evaluated with a three grade scale (pleased, somewhat pleased and not pleased).

Results

Sixty nine (69) files were reviewed; 19 patients continuing their treatment regularly and 50 patients with discontinuation of treatment. We investigated further the patients with treatment discontinuation: 30 male and 20 female, with a mean age of 57.8 years. In 9 cases contact details were invalid, 12 patients did not wish to participate, and two were deceased. The remaining 27 patients were interviewed by phone; group A (17patients) were not pleased or somewhat pleased with the results, and group B (10patients) were pleased with the results. Group A, 10 patients had no or small functional improvement according to physicians' assessment, 5 were not satisfied with the process, 2 are bedridden and have difficulty commuting to the clinic. Group B, 3 improved and had no more need for treatment, 3 reported practical difficulties, 4 had small functional improvement according to physicians' assessment. In group A, treatment discontinuation was not under physician's recommendation in 7 cases (41.2%), and in group B, in 3 cases (30.0%).

Conclusion

A significant number of cases in group A of dissatisfied patients report that the discontinuation was mainly because the results were below their expectations and not under physician's recommendation. This demonstrates once again the necessity of detailed informing of the patient and the mutual agreement of goals setting before every session.

Keywords

Spasticity; Botulinum Toxin; Goals Setting

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2247

FUNCTIONAL OUTCOME OF UPPER LIMB DYSTONIA AFTER BOTULINUM TOXIN MANAGEMENT A PROSPECTIVE CASE SERIES ABOUT 8 PATIENTS

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Introduction/Background

Botulinum toxin A is the current standard therapy for focal dystonia and the treatment of choice for segmental dystonia. Objective: To assess the functional outcome of upper limb segmental dystonia treated by botulinum toxin.

Material and Method

Patients: Adult patient with unilateral upper limb dystonia treated at least once by Bot. Toxin A. Patients with mental retardation or cognition deficit were excluded. Methods: A prospective case series study; Functional Assessment was based on House Functional classification for upper motor neurone hand disorders (ranging from class zero no hand function to eight full hand function). Satisfaction was rated by self-rating. Video recording was performed before and after 6 to 10 weeks of injection.

Results

Results: 8 cerebral palsy patients presenting unilateral upper limb dystonia were included in the study, 4 men and 4 women, mean age 34,3 (limits: 25-44), clinical presentation: 1 monoparesis, 5 hemiparesis and 1 tripareisis. All patients underwent brain MRI, basal ganglia lesion was present in 6 patients. Based on House functional classification patients were classified class zero to class three before treatment. Most Injected muscles were lumbricals, thumb adductor and opponens, flexor carpi and flexor digitorum. After six weeks of injection all patient improved their functional status. On House classification patients were classified class three to class eight with maximum of recovery in two patients. Patient satisfaction assessed at week six ranged from 30% to 90% with a mean of 51,6%. Long term follow up showed persistence of effect up to 8 month for most of patients.

Conclusion

Our study showed moderate to excellent efficacy of Bot toxin A in segmental upper limb dystonia. The functional effect of Bot Toxin seems to remain more than expected. Limits : Retrospective study; Limited group of patients; No Group Control.

Keywords

Upper Limb ;botulinum toxin;functional outcome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.02 Rehabilitation Addressing to Specific Issues - Spasticity Management

ISPR8-2367

IMMUNOGENICITY AFTER BOTULINUM TOXIN INJECTIONS FOR LIMB SPASTICITY: MYTH OR REALITY?

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Introduction/Background

The imputability of neutralizing antibodies (NAB) in secondary non-responsiveness (SnR) to treatment by botulinum toxin (BTX) injections is still debated for limb spasticity. This systematic literature review aimed to determine the prevalence of NAB after BTX injections for limb spasticity, analyze their determinants, and their causal role in SnR.

Material and Method

Medline, Cochrane and Embase databases were consulted for the period 1990-2017. Two independent reviewers extracted the data and assessed the quality of the studies with a specific scale (PRIMA and STROBE guidelines). Since the techniques used to detect NAB did not influence the results, we calculated the sensitivity and specificity of NAB+ to reveal SnR.

Results

We analyzed 13 articles published between 2002 and 2017, the quality of which was satisfactory (mean score 18/28a.u.). They were 5 randomized controlled trials, 5 interventional and 3 observational studies. NAB detection was the primary criterion for 4 and a secondary criteria for 9. On a total of 1201 participants (91% stroke), 1201 serums were tested after BTX injections. NAB prevalence was estimated between 1% and 2% according to various scenario, and did not significantly differ between the 3 BTX-A formulations. NAB production seemed favored by long duration therapy with high doses and short interval between injections. NAB revealed SnR with poor sensitivity (56%) but extremely high specificity (100%). No consensual criteria were used to diagnose non-responsiveness to BTX treatment.

Conclusion

This study is the first systematic review to specifically address the question of the BTX immunogenicity for limb spasticity. NAB prevalence is much lower than that reported for cervical dystonia. Consensual criteria must be defined to diagnose non-responsiveness to BTX

treatment. If immunogenicity is not the most common cause of non-responsiveness to treatment, NAB should be more often sought in SnR persons for whom there is no other cause explaining treatment inefficacy.

Keywords

limb spasticity;botulinum toxin;immunogenicity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-0038

IDENTIFICATION OF BARRIERS IN THE REINTEGRATION OF PAKISTAN MILITARY AMPUTEES AT THE WORKPLACE: A CROSS SECTIONAL SURVEY

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Introduction/Background

Many soldiers and officers of Pakistan army have suffered major limb loss in the war against terrorism. Amputee rehabilitation leads to successful community re-integration but certain barriers can hinder this process. This study aims to identify barriers in the reintegration of Pakistan military amputees at their workplace and to suggest remedial measures.

Material and Method

Cross sectional survey was planned and hospital ethics committee approval was obtained. Two part survey was constructed consisting of demographics and questions about the possible barriers in the workplace. Fifty eight military amputees (20-60 years, with disability class A and B due to major amputation of a limb) were approached and requested to fill in the questionnaire after explaining the rationale and possible benefits of the study. Response rate was 100 %.

Results

All patients were males. Most of the patients had trans-tibial amputation (41). Majority were matriculate and earned between Rs 20,000- 40,000 (53.4%) All patients were provided with latest modular prosthesis of Ottobock (Germany) and Ossur (USA), free of cost with life time maintenance and replacement by AFIRM. Majority of the patients had accessible washrooms in units, could ambulate independently, were confident after provision of prosthesis and were spared by their units for timely follow-up.

Conclusion

Amputee rehabilitation can lead to successful and complete community re-integration. Pakistan army is providing comprehensive amputee rehabilitation services to those who sustain a limb loss. However, certain barriers can hinder the rehabilitation process and it is important to identify and remove these barriers for better functional outcomes in amputees.

Keywords

amputee;barriers;community reintegration

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-0056

MOBILIZATION STATUS OF DIABETICS VERSUS NON-DIABETICS AFTER BELOW KNEE AMPUTATION: A COMPARISON

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Introduction/Background

Mobility following below knee amputation has a direct impact on the quality of life. Early and independent mobilization develops confidence in the below knee amputee. This helps the patient to become psychologically, socially and economically independent. We compared mobilization status of diabetics versus non-diabetics amputees.

Material and Method

A total of 144 below knee amputees using various supports for mobilization were included in this study of which 63 were diabetics and 81 non diabetics. They were followed for a minimum period of 1 year. On follow up they were observed for the type of support used for mobilization.

Results

92 patients initially used crutches for mobilization. 40 patients used walker, 7 used wheelchair and 5 remained bed ridden before they died. Of 92 patients who were using crutches, 22 were in diabetic group and 70 in non diabetic group. 31 patients of diabetes and 9 patients of non diabetic group used walker. 5 patients in diabetic group and 2 patients in non diabetic group could mobilize only on a wheelchair. 104 patients started using prosthesis for mobilization once their stumps had healed adequately of which 30 were in diabetic group and 74 in non diabetic. Of 104 prosthesis users, 43 were using it for less than 6 hours per day, 55 were using 6-12 hours per day and 6 patients were using it for > 12 hours per day.

Conclusion

Non diabetics preferred crutches and prosthesis for mobilization in comparison to diabetics. More diabetics were bedridden or on wheel chair after amputation. Non diabetics were using prosthesis for longer time in comparison to diabetics. Major causes for this difference was preoperative lower ambulatory grading in diabetics, weaker muscle mass, old age, co-morbid conditions, increased incidence of infection and prolonged stump healing time.

Keywords

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-0068

SPINOPELVIC SAGITTAL ALIGNMENT OF PEOPLE WITH A TRANSFEMORAL AMPUTATION

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Introduction/Background

This study aims to describe the spinopelvic sagittal alignment in transfemoral amputees (TFAs) and to compare with a reference population. To our knowledge, this is the first recent radiologic study of the TFAs' spine and the first postural approach destined to better understand the high prevalence of low back pain (LBP) in the TFAs.

Material and Method

Volunteers with transfemoral amputation underwent bi-planar X-rays with 3-D reconstructions of the spine and pelvis. Sagittal parameters were analyzed in the light of literature and compared to those of a reference group of non-amputees. Differences between TFAs with and without LBP were also searched.

Results

Twelve subjects have been prospectively included. The two groups (TFA-LBP n=5 and TFANoP n=7) were comparable in terms of gender, age, amputation delay and sedentarity. In the TFA-LBP group, the impact of LBP was estimated on average to 16.4% with the ODI (SD 7.9%, [6; 24]). Pelvic incidences were within normal limits, except for one subject of the TFA-LBP group. Anterior pelvic tilt was observed in two subjects of each group. Eight subjects (6 NoP and 2 LBP) had abnormal low value of TK. The mean angle of TK in the TFA-LBP group was lower than in the TFA-NoP group (p= 0.0511). Two subjects of the TFA-LBP group had a hyperlordosis while all the TFAs-NoP had a lower lumbar lordosis than expected in an economic posture. Concerning the sagittal balance, four of the five individuals of the TFA-LBP group had unbalanced sagittal posture versus two of the seven in TFAs-NoP.

Conclusion

This study emphasizes the importance of considering the sagittal balance of patients with a transfemoral amputation to prevent and manage the onset of low back pain. Moreover, in

this population, it seems necessary to study not only the sagittal plane but also the frontal plane which is also probably unbalanced.

Keywords

limb amputation;Spinal alignment;low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-0071

EQUIPMENT OF LOWER LIMBS IN THE DIABETIC AMPUTEE: PROSTHETICS AND FOOTWEAR

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Introduction/Background

Concerning amputations in France, 52% is due to diabetes and amputation risk is 14 times higher in case of diabetes.

There is up to now no study about amputation rate in French West Indies (FWI), but there are 2 times more diabetes treated in the French Overseas Departments compared of France and there were 82 hospitalized patients with major lower limb amputation (above foot) in our service in 2015 (data from the Information Systems Medical Program (ISMP)).

We wished to show higher complexity management of patients with lower limb amputations due to diabetes because of its global nature (general disease, frequent associated morbidities) and necessity of fitting the two lower limbs (residual limb or stump, and the other limb or “intact” limb). **Material and Method**

It's a direct-inclusion study.

We followed 31 adults of Caribbean origin, Above Foot Amputees (AFA) and hospitalized to obtain a first walk prosthesis.

Our objective was to evaluate lower limbs fittings in diabetic amputee: choice of prosthesis for residual limb and equipment of the other foot by therapeutic footwear (serial model or orthopedic footwear, and even foot orthosis).

Results

Diabetic amputees need 53% more bilateral fittings than others: walking prosthesis on the amputated side and therapeutic footwear on the other side, because of foot trophic disorders (53% more). There is no significant difference for other criteria.

Conclusion

Above foot amputees due to diabetes need walking prosthesis and therapeutic footwear, but little impact on prosthetic choice and walking performance. Prosthesis and walking performances in diabetic above foot amputee are only few differences with others.

Keywords

amputee;diabetes;foot

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-2614

LIMB AMPUTATION EPIDEMIOLOGY: WHAT IS CHANGING?

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Introduction/Background

Epidemiological data on limb amputation seem to have suffered several changes, especially in what concerns to cause, age or co-morbidities. The challenges of the increased life expectancy, the demands of higher functional levels and the costs constraints seem to deserve a reflection, allowing a new definition of appropriate clinical strategies to face this reality.

This study goal is to know the evolution of the epidemiological data on limb amputation, particularly in the parameters age, aetiology, amputation level and co-morbidities, through the analysis of our own figures and experience.

Material and Method

A retrospective study was conducted from a 252 outpatient's sample of our Amputee Unit, observed in 2016. The collected data were statically treated according our study objectives. All the ethical procedures were respected.

Results

From the original sample we excluded 9 cases due to insufficient information. Our definitive group consisted of 243 patients, 155 men and 88 women.

As causes of amputation we found: vascular (54%), trauma (25.1%) and infection (7%). The remaining percentage referred to neoplasm and congenital deformities. There was a higher prevalence of amputees in advanced age stages, particularly in vascular aetiology (mean age 65 years); mostly of these were diabetic (58.6%) and commonly presented other vascular risk factors.

Despite the challenge of serious co-morbidities, including neurological deficits, it's worth to mention the progress in our Unit's fitting index with a successful ratio of 75%.

Conclusion

Our data seem to point to a new paradigm on limb amputation epidemiology.

Nevertheless the increase of difficulties linked to the clinical parameters found in our sample, the overall index of fitting has grown. This is due to new rehabilitation strategies, adapted to the kind of patients we have. We highlight the multidisciplinary work in collaboration with other specialties/professionals and the use of new prosthetic components that make possible previously unavailable solutions.

Keywords

amputation;rehabilitation;fitting

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-0133

NON-INVASIVE NEUROMODULATION FOR THE MANAGEMENT OF PHANTOM LIMB PAIN: A SYSTEMATIC REVIEW

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Introduction/Background

Maladaptive plastic reorganization of the somatosensory cortex surrounding the area representing the deafferented limb is considered to be responsible for phantom limb pain (PLP). Given the mechanism of PLP, non-invasive stimulation of the brain can help to induce plastic changes associated with PLP, which may in turn block maladaptive plasticity, revert or modulate plastic changes and provide pain relief. This review aims to give an overview of the current state of research regarding the effectiveness of noninvasive neuromodulation for the management of PLP.

Material and Method

A systematic literature search in the PUBMED, SCOPUS, Web of Science, Cochrane Library databases by two independent review authors was performed to identify studies investigating the effects of noninvasive neuromodulation for PLP. The included journal articles were reviewed according to a structured diagram and the methodological quality was assessed via a classification of study designs as described by Jovell & Navarro-Rubio. A narrative synthesis approach was used throughout as no studies were sufficiently homogenous to justify useful meta-analysis.

Results

The literature search identified 239 studies. Of these 239, 4 RCTs studies fulfilled the inclusion criteria and were included for data extraction. Two of the studies focused on repetitive transcranial magnetic stimulation (rTMS) while two of them focused on transcranial direct current stimulation (tDCS).

Conclusion

Most of the evidence for noninvasive neuromodulation is from studies with fair to good strength of evidence. The present review showed that there is promising evidence on the effectiveness of rTMS for PLP, whereas the effectiveness of tDCS is not yet elucidated.

PROSPERO registration: CRD42017075454

Keywords

neuromodulation;phantom limb pain;systematic review

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-2690

PERFORMANCE OF DAILY LIVING ACTIVITIES IN PATIENTS WITH LOWER LIMB AMPUTATIONS

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Introduction/Background

Individuals who experience acquired amputation faces the task of adjusting and adapting to the loss of a part of the body that was already fully integrated with their body schema and self-image. In addition, may experience situations of social discrimination, feelings of incapacity and other barriers that may hinder the resumption of his activities and participation in life situations.

The occupational therapist, as part of the Rehabilitation Team, works through the post-amputation, pre- prosthetic and post-prosthetic phases and the program consists of establishing an individualized assessment and treatment plan with the main objective of promoting independence in daily, productive and leisure activities, learning or resumption of significant occupations and functioning according to the demands, interests and abilities of each individual. **Material and Method**

The aim of this study is to present a data survey based on the medical records of patients treated at the Occupational Therapy Service as part of the intensive inpatient rehabilitation program since 2015, focusing on the main demands in relation to daily life activities and Assistive Technology resources.

Results

We observed a significant impact on mobility and upper limb reaching skills and changes in the ability to perform most of the daily activities, although with few changes in the level of functional independence. Some patients presented associated lesions such as brachial plexus injury or fractures, in cases of traumatic amputations; and peripheral nerve damage, decreased sensation and changes in visual acuity when associated with chronic diseases; resulting in additional demands for rehabilitation.

Conclusion

The main outcome of program was to ensure the most satisfactory level of competence and independence in the performance of the occupational roles that the patient considers significant in his or her life, with or without modifications in the steps, resources or environment related to

the activities. The educational program for caregivers contributed to accomplish the rehabilitation goals.

Keywords

amputation;daily living activities;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-2696

EPIDEMIOLOGY AND QUALITY OF LIFE OF PATIENTS WITH AN AMPUTATION AFTER A BURN INJURY

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Introduction/Background

Post-burn amputations are still a major problem in our society. Although its incidence is rather low, they are an important cause of morbidity in a relatively young population. We examined the characteristics of patients with an amputation after a burn injury and described their quality of life after discharge.

Material and Method

We made a retrospective analysis of the patients admitted in a major Burn Unit in Portugal (n=736) with the diagnosis of burn injuries and needing amputation during hospitalization since 1/1/2012 until 31/12/2016. The variables analysed were: demographic data, clinical presentation and mortality. A questionnaire was also performed by phone call after discharge. Follow-up information was not obtained for 13 patients.

Results

Thirty-nine patients, who were submitted to at least one amputation, were included, 66% of which were male and with a mean age of 63.03±18.4 years. The mean LOS was higher in amputee patients (30.03±27.27 days vs 17.66±16.58, p<=0.001). Patients with electrical burns had a higher risk of amputation compared to remaining patients. (OR=3.056, p=0.040). 67.5% of the amputations were at the upper limb level, mainly transmetacarpal (50%). The mortality rate during hospitalization was higher in the amputee group (20.5% vs 6.8%) (p<0.005). Follow-up information was obtained in 26 patients: 76.92% according to Barthel Index had light dependence, 66.7% continued to work but 40% of these needed professional retraining. Phantom pain was reported in 57.7% and stump pain in 15.4%. The use prosthesis was reported in 7 patients, of whom 57.1% were fully satisfied with it.

Conclusion

Amputees need special care for the problems they may have in adapting to their environment. We found that these patients had injuries mainly due to electrical burns, have longer hospital

stay and higher mortality risk. However, most of the patients had a good functional recovery and are satisfied with their quality of life.

Keywords

Amputation;Rehabilitation

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-2699

SPORT'AMP : SPORT ACTIVITIES AND LOWER LIMB AMPUTEES

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Introduction/Background

In France, in 1990, people presenting a major lower limb amputation was estimated at 90000, incidence stable:8000cases/year.

Objective of Sport'Amp study: evaluate, with a self-questionnaire online, the sports practice and its characteristics before the amputation, at the resumption / renewal and at present, for individuals with lower limb amputation, above or below-knee, uni- or bilateral, who practice sport or not.

The questionnaire answer about sport activities, used prosthesis for walking and sports, choice of activities, conditions of renewal, difficulties, prosthesis management, quality of life and motivation in sport. If people don't practice sport, they have questions to know why.

Material and Method

After a preliminary study, Sport'Amp study began gradually since the 1st february.

15 centers (hospitals or clinic), groups of prosthetists and associations are concerned, in all the French territory.

Doctors, prosthetists or associations of patients propose participating at study and give a card with link of connection and QR-code to individuals with lower limb amputation. They can contact them by mail or email.

To participate, they have to be amputee since more than a year and who live in France.

The software used is REDCap.

Sport'Amp pass promotion agreement of CHU of Nimes (France).

Results

Actually, 37 questionnaires.

10 women (27%) and 27 mens (73%)

Average age : 41 years old.

Individuals live in 11 regions/districts of France.

70,3% are working or studying.

Amputations :

Traumatic : 75,7% (28)

Cancer : 13,5% (5)

Infection : 2,7% (1)

Malformation : 2,7% (1)

Other : 5,4% (2)

Unilateral : 94,6% (35)

Bilateral : 5,4% (2)

Below-knee : 57,1%

Above-knee : 42,9%

22,2% of people don't practice sport before amputation, only 8,8% after amputation.

50% return at practice before one year after amputation.

Main difficulties : prosthesis problems, residual limb pain, muscular weakness/loss of weight

Management of prosthesis improve by sport practice : 81,5% agree

Quality of life : average 70/100

Conclusion

More results during the next months with statistical evaluation of this population, probably estimated around 300 persons or more.

Keywords

sport activities;lower limb amputation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-0237

THE ORTHOSIS OF LOWER LIMBS IN REEDUCATION: INDICATION IN THE CENTER OF REHABILITATION AND OF EQUIPMENT FOR HANDICAPS “THE REASON OF LIFE”

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Introduction/Background

Clarify the indications of the orthosis of lower limbs after several months of activities in the center of equipment and of rehabilitation “The reason of life, the right of hope” in Libreville.

Material and Method

Descriptive retrospective study led from patients' files having benefited from an orthosis of lower limbs and sailed in the center of equipment and of rehabilitation “The reason of life, the right of hope” from 2012 till 2014

Results

It stands out from the analysis of 25 followed patients, that 15 patients were male and 10 others female (sex-ratio of 1.5). The majority of the cases concentrate on the age bracket 0–5 years with extremes of 1 month and 80 years. The malformed foot established the majority of the indications of orthosis with 40% of the cases, followed deformations of the knee in 32% of the cases and 5% of the cases of poliomyelitis. The orthosis of correction was the most prescribed in 64% of the cases followed by the orthosis of walking in 9 cases. So, we notice that 20 patients were pupils, 4 of the civil servants and 1 pensioner.

Conclusion

The centre of equipment “The reason of life, the right of hope” is relatively young and envisages long-term to develop in the Gabon and in the surrounding countries.

Keywords

Orthosis;Rehabilitation;Malformed foot

No conflict of interest

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ISPR8-0244

EFFECT OF POSTOPERATIVE AMBULATION LEVEL ON THE QUALITY OF LIFE IN A TRANS-TIBIAL AMPUTEE

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Introduction/Background

Quality of life of a trans-tibial (TT) amputee is not only determined by his functional rehabilitation but also social, economical and psychological rehabilitation. A number of studies have analyzed the influence of lower limb amputation on these factors. This study analysed the effect of functional recovery on other parameters of quality of life in a TT amputee.

Material and Method

This was a 10 years retrospective and 2 years prospective study. A total of 160 patients of trans-tibial amputation were followed. Their postoperative ambulatory status was calculated using Pinzur's ambulatory level. Their quality of life was determined on the basis of answers to a five point questionnaire which included their social, economic and psychological aspects. These parameters were correlated to assess the influence of functional recovery on the quality of life.

Results

All the amputees with Pinzur's 0-1 level of ambulation suffered loss of income consequent to loss of job. All of them felt increased level of depression and anxiety after amputation. 50% of the patients with postoperative 0-1 level of ambulation felt socially neglected. Comparatively much less percentage of amputees with 5-6 level of ambulation suffered economic, social and psychological crisis.

Conclusion

Quality of life of a TT amputee is determined not only by his functional rehabilitation but also social, economical and psychological factors. From this study we concluded that post operative functional outcome significantly affects the quality of life of an amputee. An amputee with better ambulation level fares better economically, psychologically and socially in comparison to an amputee with poor ambulatory outcome.

Keywords

No conflict of interest

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ISPR8-0245

IMPORTANCE OF TYING THE SCIATIC NERVE IN ABOVE KNEE AMPUTATION TO PREVENT NEUROMA FORMATION

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Introduction/Background

Sciatic nerve is the thickest nerve in human body. Neural sheath of sciatic nerve is rich in microvasculature. In this study we compared neuroma formation after tying the sciatic nerve with leaving its cut end open in patients who undergo above knee amputation.

Material and Method

In this study we followed a total of 90 patients who underwent above knee amputation. In half of these patients, cut end of sciatic nerve was left open and in other half, the nerve was tied. Patients in both the groups were age, sex and BMI matched. Neuroma formation in the stump was assessed one year after surgery. This assessment was done by measuring the diameter of sciatic nerve ending using sonogram. Sciatic nerve diameter was measured bilaterally at the same level, and the value of the normal limb was taken as control.

Results

Out of 45 patients who underwent tying of sciatic nerve, only 10 patients developed thickening of the cut end of sciatic nerve in comparison to opposite limb. On the other hand, 45 patients in whom the cut end was left open, 33 patients developed neuroma formation. This result was statistically significant.

Conclusion

Rich microvasculature of sciatic nerve results in the formation of haematoma beneath the cut end, if it is left open. This haematoma eventually results in growth of neural fibres. As a result of this, neuroma formation occurs at cut end of sciatic nerve in above knee amputation. We thus conclude, it is always wise to tie the cut end of sciatic nerve in above knee amputation to prevent neuroma formation.

Keywords

No conflict of interest

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ISPR8-0452

THE PHANTOM PAIN TREATMENT USING INCOBOTULINUM TOXIN A - SERIES OF CASES

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Introduction/Background

Phantom limb pain is any pain phenomenon which is felt at an absent limb or a portion of the limb. Sometimes these sensations are extremely painful and disabling.

Material and Method

All the patients were followed for minimum 06 months in the Rehabilitation Center. They presented severe stump neuropathic pain and phantom pain almost daily.

The first patient presented pain all over the hand, the second in the fingers and the third in dorsal wrist. The first patient scored 86 mm in Visual Analogic Scale (VAS) at rest and 95mm during critical episodes. The second one scored 78mm at rest and 94mm during critical episodes. The third scored 87mm at rest and 98mm during pain crisis.

All of them were included in a physiotherapy and occupational therapy program, associated to neuropathic pain drug therapy.

Despite the therapies applied the patients maintained the pain scores.

Due to this treatment failure, another with botulinum toxin was tried owing to its analgesic effect in neuropathic pain.

Intradermal incobotulinumtoxin was applied in both painful stump area and ghost pain stump trigger points.

Incobotulinumtoxin was applied in 5U per point, a part every 2 cm in the surface area, in a total amount of 80U.

Results

The patients were followed for 15 and 90 days after the procedure. The VAS results were below :

Patient 1 -15 days: 32mm /90 days : 0 mm.

Patient 2 - 15 and 90 days : 0mm

Patient 3 - 15 days -34mm / 90 days 31 mm

The botulinum toxin treatment decreased pain successfully improving the efficiency of the reahabilitation program and pain control. All patients decreased the neuropathic pain drugs dosis.

We need further high level studies in this area to confirm these results**Conclusion**

The botulinum toxin could be considered useful in amputee neuropathic pain and ghost pain.

Keywords

Upper limb amputation;Botulinum toxin;Phantom pain

No conflict of interest

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ISPR8-0470

EASY TECHNIQUE FOR RADIOGRAPHIC EVALUATION OF STUMP-SOCKET FIT IN BELOW-KNEE AMPUTEES

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Introduction/Background

The critical relationship between accurate fit of a prosthesis and amputee comfort and function constitutes the foundation of prosthetic fitting. Prosthesis alignment affects the way load is transferred to the residual limb through the socket, and this load is critically important for comfort and function. The aim of the study was to assess the value of radiopaque materials in evaluation of stump-socket fit in people with transtibial amputation, and to develop a simple procedure for clinical use in diagnosing skin pressure problems more accurately.

Material and Method

Thirty-two amputees (herein: 'participants') had one or more cutaneous lesion in the stump, and another 26 amputees (control group) had no lesion in the stump after training with their prosthesis. Radiopaque metallic markers were attached to weight-bearing points in the outer surface of the internal socket. Full weight-bearing X-rays were made in the antero-posterior and lateral projections.

Results

In the antero-posterior view, the weight-bearing points of the stump in 78.1% of the participants did not correspond to radiopaque metallic markers placed over the patellar tendon and the tibial tuberosity points in the socket. In the control group, there was non-adaptation in only 42.3% between the up-mentioned anatomical and the metallic (Chi-Square, $p < 0.007$). In the lateral view X-rays, the weight-bearing points of the stump in 65.6% of the participants did not correspond to radiopaque metallic markers placed over the patellar tendon and over the tibial tuberosity points in the socket. In the control group, there was non-adaptation in only 23.1% between the up-mentioned anatomical and the metallic (Chi-Square, $p < 0.002$).

Conclusion

The conflict between prosthesis and residual limb is the cause of skin disruption in the stump and can be successfully treated by prosthetic socket modification. X-rays should be done to identify if there are discrepancies between the stump and the socket.

Keywords

Below-knee amputees;first-time prosthesis;stump-socket adaptation

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-0543

REFERRED PHANTOM LIMBS SENSATION, TELESCOPING, PHANTOM LIMB PAIN AND PRE-AMPUTATION PAIN EXPERIENCE IN ADULTS TRAUMATIC LIMB AMPUTEE

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Introduction/Background

Phantom limb sensation always occur after sudden traumatic limb amputation. It follows a specific pattern that is related with body image (Melzack Theory). Phantom pain have a correlation with pre-amputation pain. Aims to find relationship between referred phantom limb sensation (RPLS), telescoping grade (PS), phantom limb pain (PP) and pre-amputation pain (PNPA).

Material and Method

Six months prospective study, fifty adults, single traumatic limb amputee without stump pain, aged 17 to 55 years, men and women, allocated by consecutive random sampling into two independent groups, prosthetic group (P) and non-prosthetic group (NP). PP analyzed using VAS, PS and RPLS using modification visual and vividness movement imagery score. For PNPA, subjects answered questionnaire.

Results

Gender and age are homogenous ($p=0.445$ and $p=0.909$). Within six months observation, increase in PS followed by RPLS and lower PP ($p<0.0001$). Differences between the two group ($p<0.0001$). Pearson correlation show positive correlation between PS and RPLS ($r=0.999$, $p<0.0001$). PNPA and PP showed significant difference ($p<0.0001$), also without PNPA and no PP incidence ($p<0.0001$). Mean score of PP in group NP is 6.16 (SD 1.96) and mean score of PP in group P is 5.26 (SD 1.47). Subjects without PNPA has no PP.

Conclusion

RPLS, PS and PP in adult traumatic limb amputee can determine the degree of phantom limb, as the results of somatotopic map reorganization (Melzack Neuromatrix and Neurosignature Theory). PNPA will develop into PP. Loss of ascending impuls caused by amputation will disinhibit cortical somatosensory pain memory. Without PNPA, no painful memory to build and

no PP. However phantom sensation is still there, memory of self body perception was established since birth.

Keywords

Referred phantom limb sensation;Telescoping;Phantom pain

No conflict of interest

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ISPR8-0565

FUNCTIONAL INDEPENDENCE IN THE LOWER LIMB AMPUTEES – THE EFFECT OF GENDER AND AMPUTATION LEVEL

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Introduction/Background

The Functional Independence Measure (FIM) instrument is widely used in the clinical practice, but merely in the lower limb amputees and without differentiation between men and women as well as between transtibial (TT) and transfemoral (TF) amputees. Only the Total FIM score and/or Motor FIM and Cognitive FIM subscores are analyzed, in spite, that certain parts of Motor FIM score attract more interest of practitioners. The aim of this study was to confirm the hypothesis of better functional abilities in the amputee men than women and in TT than TF. We wanted to demonstrate the advantage of a detailed analysis of the Motor FIM too.

Material and Method

Two hundred and twenty-nine hospitalization cases of the lower limb amputees were sorted into eight groups according to their gender and amputation level (TT or TF), separately for the first and second hospitalization. The scores of Motor FIM, walk, stair climbing, self-care and transfers at the admission and discharge were chosen as variables as well as the age, length of stay (LOS) and the interval between the surgery and admission to rehabilitation department (delay). The Mann-Whitney test was used to set the significant differences at the level $p < 0.05$.

Results

The gender effect on functional independence was ascertained in almost all Motor FIM parts, especially at the first discharge and second admission. Amputation level effect was also ascertained frequently at discharge, especially in walk and stair climbing. The effect of age, LOS or delay was very rare.

Conclusion

Expected better functional abilities in men and TT were confirmed. The analysis of selected parts of Motor FIM brings more detailed information than the Total FIM exclusively

Keywords

amputation level;gender;functional independence

No conflict of interest

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ISPR8-0694

THE RELATIONSHIP BETWEEN LEG DOMINANCE AND THE AMPUTATION OF LOWER LIMB IN PATIENTS WITH DIABETES MELLITUS

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Introduction/Background

Diabetic patients frequently suffer from lower extremity' vascular problems. A manifestation of this illness is diabetic foot with possible leg damage, which can lead to amputation. Different harmful factors for ulceration of diabetic foot were detected. One of them can be mechanical stress, due to weight bearing activity and walking, which is more prominent at dominant side. The aim of the study was to analyze the relationship between leg dominance and the amputation of lower limbs in patients with diabetes mellitus.

Material and Method

In a retrospective study at the new Rehabilitation Department (established at 2015) in Soroka Medical Center, twenty-six amputees (from total 500 patients) were recruited to participate in the study. 15 patients, aged 58.1 ± 10.2 , only 2 of them female, were defined as one-sided bellow knee amputees of diabetic origin and were included to the analysis. In a questionnaire following amputation, each patient was asked "what is your dominant side?", and the prevalence of dominant leg amputation versus non-dominant was analyzed.

Results

Of the fifteen diabetic patients, thirteen had their dominant leg amputated (86.7%) and only 2 (13.3%) – non-dominant. It was shown that the dominant leg is more frequently exposed to mechanical stress, leading to increased risk for diabetic foot and ultimately, amputation. It is subjected to greater recurrent pressure due to its role in mobilization tasks, it more frequently experiences the consequences of walking. It is believed, that walking, as a regular aerobic exercise can be good for diabetic patients. Our data strengthens a possible harmful effect of walking exercising for preserving of diabetic leg and for prevention of amputation.

Conclusion

Our study shows that the dominant leg is much more at risk for amputation in diabetic patients. The current guidelines for diabetic patients' exercises prescription may need to be modified to consider for this harm.

Keywords

Amputation; Rehabilitation; Dominance

No conflict of interest

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ISPR8-0932

ACUTE ISCHEMIA OF THE LOWER LIMBS SECONDARY TO NEPHROTIC SYNDROME

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Introduction/Background

Nephrotic syndrome is a high-risk thromboembolic disease. Thromboses of the peripheral veins are common, while arterial localizations have been reported more rarely. Several factors are incriminated in the genesis of these thromboses. They are hard to diagnose and especially to treat.

Material and Method

We report the case of a patient aged 30 years treated for a nephrotic syndrome since 2008 under Cortancyl, transferred from the vascular surgery department to the rehabilitation after a lower limb amputation.

Results

The interrogation had found the notion of a brutal installation of pain and coldness of the two lower limbs for which he had consulted the emergency room. There was no concept of trauma preceding the symptomatology.

The initial examination had found two cold, pale lower limbs with sensitivomotor disturbances, a left femoral pulse present with absence of all the other pulse of the lower limbs. An emergency CT angiography showed an endoluminal embolus of the terminal aorta extending to the primitive iliac arteries. The patient was therefore amputated both lower limbs mid-leg and was transferred to our department for additional care.

The patient benefited from pre-prosthetic rehabilitation including strengthening of the upper limb muscles and the key muscles of the hips and knees. He then benefited from two prostheses with a progressive work of walking at the beginning with walker, then with two canes. The method used was bandaging and pain treatment, a training program comprising contraction prevention, strengthening, standing and balance training and walking training.

Conclusion

Arterial thrombosis during nephrotic syndrome are not frequent but serious. Their knowledge is essential in order to make the early diagnosis, insuring an adequate care. Prevention can be

achieved by simple means: physical activity, proscription of vascular punctures. The use of preventive anticoagulant treatment is controversial.

Keywords

nephrotic syndrome;ischemia;amputation

No conflict of interest

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ISPR8-0953

FEASIBILITY, SAFETY, AND RELIABILITY OF EXERCISE TESTING USING THE ARM-LEG (CRUISER) ERGOMETER IN SUBJECTS WITH A LOWER LIMB AMPUTATION

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Introduction/Background

Physical fitness of patients with a lower limb amputation predicts their walking ability and may be improved by physical exercise and training. A maximal exercise test is recommended prior to training in order to determine cardiovascular risks and design exercise programs. A potentially suitable ergometer for maximal exercise testing in patients with a lower limb amputation is the combined arm-leg (Cruiser) ergometer (figure 1). The aim of this study was to determine feasibility, safety, and reliability of (sub)maximal exercise testing on the Cruiser ergometer in subjects with a lower limb amputation.



Material and Method

Subjects with a lower limb amputation performed 1 submaximal exercise test and 3 maximal exercise tests on the Cruiser ergometer. Feasibility was determined by examining whether key variables such as heart rate and oxygen uptake (VO_2) were correctly and reliably measured, by determining whether a test was maximal, by studying reasons for non-completion, and by

measuring gross efficiency (GE). Safety was analyzed by recording complications, electrocardiogram (ECG) results, and blood pressure. Reliability was tested by comparing the results of the second and third maximal exercise test

Results

Seventeen subjects (14 men and 3 women) out of 21 preselected subjects completed the study. In general, the maximal Cruiser exercise test was feasible. Almost 75% of the subjects reached maximal performance. The test was also safe because no complications occurred, although ECG and blood pressure could only be reliably recorded in most subjects just before and after the test. Reliability was good: Intraclass correlation (ICC) was 0.84 for peak VO_2 .

Conclusion

The Cruiser ergometer is a feasible, safe, and reliable ergometer for measuring physical fitness of subjects with a lower limb amputation

Keywords

lower limb amputation;exercise test;ergometer

No conflict of interest

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ISPR8-1174

BARRIERS AND FACILITATORS FOR THE IMPLEMENTATION OF CLINICAL PRACTICE GUIDELINES FOR THE AMPUTEE: THE PERCEPTION OF USERS

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Introduction/Background

Efforts to produce high quality Clinical Practice Guidelines (CPG) must be accompanied by implementation strategies aimed at eliminating specific barriers. With this study, we seek to identify the perceptions of the users of the CPG for the rehabilitation and care of individuals with lower limb amputation on the factors that facilitate or hinder its implementation.

Material and Method

A qualitative design was used. Semi-structured interviews were conducted with patients, health service providers and administrators of medium and high complexity organizations of the health system in Colombia. The transcribed interviews were coded to identify emerging categories based on the empirical findings. These were compared and complemented with the theoretical categories that resulted from the review of the literature.

Results

In the analysis of the 38 interviews the perceived barriers were: Categories related to the patient, such as clinical and sociodemographic aspects (eg, low economic resources, comorbidities and reduced mobility); access to services (eg, residence in rural areas) and the type of social security affiliation. Categories related to the professionals, such as knowledge and competences (eg, variability in academic training programs), experience with the amputated patient and communication skills. Categories related to the health system, such as availability of resources, opportunity in the care, information systems, costs of the health services and changes in the regulations of the system. And categories related to the CPG, such as its usefulness, methodological rigor, flexibility and the characteristics of the developer group.

Conclusion

We identified categories not included in the theoretical review, such as the type of affiliation to social security, the variability in academic training programs, the changes in the system's regulations and the usefulness of the CPG. These findings allow designing implementation strategies that respond better to the Colombian scenario.

Keywords

Qualitative research;clinical practice guidelines;implementation

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-1239

GAIT ANALYSIS OF AMPUTEE PATIENTS WALKING WITH A CANADIAN PROSTHESIS

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Introduction/Background

Canadian Prostheses (CP) are used for the most proximal amputations of the lower limbs such as hip disarticulation, hemipelvectomy and short transfemoral. The etiologies of these amputations are essentially vascular, tumoral and traumatic.

These amputation levels are extremely rare (0.5 to 3% of amputations) and only 1.2 to 35.8% of patients manage to be fitted according to the literature depending on etiology and co-morbidities.

Few studies have investigated the gait pattern of patients with PCs and they were essentially case reports.

The aim of our study is to characterize the walking parameters of patients with a PC on a significant database and to evaluate the parameters of influence on the gait quality.

Material and Method

This is a prospective cross-sectional study of patients with a PC who were followed at the Robert Merle d'Aubigné Institute in Valenton with a well-adapted prosthesis and who are used to walk with it. Recruitment started from September 2017.

The study protocol includes a six-minute test and a Gait Analysis in our laboratory equipped with a Vicon optoelectronic system and an AMTI force platform.

Results

Table 1: Socio-demographic characteristics of our population.

Gender	Male	6
	Female	6
Age	(Years)	45,7 [Std 17,6]
Height	(cm)	170.2 [Std 10.0]
Weight	(kg)	71.1 [Std 22.7]
Level of amputation	Transfemoral (very short)	1
	Hip disarticulation	9
	Hemipelvectomy	2
Time since the first prosthesis	(Years)	11.6 [Std 15.7]

Table 2 : The spatiotemporal parameters and the main kinematic parameters.

		Prosthetic side [Std]	Sound side [Std]
Step length (cm)	(cm)	0.58 [0.2]	0.59 [0.1]
Percentage of stance phase	(%)	59.7 [4.4]	72.9 [4.8]
Range of motion of ankle joint (sagittal)	(°)	12.7 [4.2]	34.5 [9.4]
Range of motion of knee joint (sagittal)	(°)	29.1 [17.0]	57.4 [8.9]
Range of motion of hip joint (sagittal)	(°)	27.1 [7.5]	57.4 [11.3]
Range of motion of pelvis tilt (sagittal)	(°)		20.7 [6.4]
6 minutes test	(m)		269.7 [105.0]

Conclusion

Our study, still in progress (we aim to recruit about 35 patients by July) shows variability of the gait pattern depending on age, prosthetic material characteristics, etiology, co-morbidities . The preliminary study of our results shows a healthy side vaulting higher than that described in the literature for more distal amputation levels, as well as a significant increase in pelvic sagittal plane inclination during the walking, which is a characteristic strategy of the gait pattern of high level amputees.

Keywords

Gait analysis; Hip disarticulation; Canadian Prosthesis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-1407

20 YEARS RETROSPECTIVE STUDY ON LOWER LIMB REAMPUTATION

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Introduction/Background

Many patients who underwent lower-extremity amputation secondary to peripheral vascular disease or Diabetes Mellitus (DM), eventually require reamputation. Previous studies have demonstrated that DM, male gender and chronic renal insufficiency are risk factors associated with reamputation. The aim of our study is to describe the incidence of reamputation in a population of amputees of a PRM service and assess their capability to walk with prostheses.

Material and Method

Retrospective cohort study on lower limb amputees referred to PMR service at a secondary care hospital in Portugal between January 1997 and January 2017. Standard demographic information, etiology, amputation and reamputation level, functionality achieved with prosthesis, before and after reamputation, were collected from medical records. Only major amputations (below-knee or above-knee) were considered. A descriptive, bivariate analysis was performed using Q-square test; statistical significance $p < 0,05$ on SPSS v.23.

Results

In 536 lower limb amputees, 46 (8,6%) had reamputations, within an average of 22 months after the first amputation. 78,3% were male, with a mean age of 64 years old. The main cause of amputation was peripheral artery disease (PAD), with 72% having DM. The most frequent level of first amputation was below-knee (68,2%) and the most frequent level of reamputation was above-knee on contralateral limb (52,3%). There was no statistically significant difference between the mortality rate of reamputees and the control-population of amputees. Only a third (34%) of patients were able to walk with a prosthesis between amputations, and only 8 (17%) after reamputation. The mortality rate was statistically significantly higher ($p < 0,05$) in reamputees on hemodialysis.

Conclusion

Conclusions: To our knowledge, this is the first report showing the ambulatory status achieved by patients after major reamputation. Determining the incidence of reamputation and its outcome is important to improve patients' rehabilitation treatment and inform them about their prognosis.

Keywords

reamputation;mortality rate

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-1433

REHABILITATION OF A PEDIATRIC PATIENT WITH ALVEOLAR SOFT PART TISSUE SARCOMA OF THE HAND: A CASE REPORT

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Introduction/Background

Alveolar soft part sarcoma (ASPS) is a rare soft tissue sarcoma approximately 1.0% of all soft tissue sarcomas in the Philippines. An 8-year-old male presented to the Philippine General Hospital in February 2017 and underwent ray amputation of the 3rd to 5th digits of the left hand.

Material and Method

Bone scan, chest and abdominal computed tomography scans revealed no distant metastasis. Post-operatively, edema, pain, weakness, and limitation of joint range of motion (ROM) were noted at the left wrist, 1st and 2nd digits. He had difficulty in performing bi-manual hand activities. Patient was admitted at the Rehabilitation Medicine Ward for pain control and improvement of left hand function. Gabapentin provided pain relief for phantom limb pain. A low-cost, volar based, thermoplastic custom molded hand splint was prescribed to prevent ulnar collapse of the residuum and provide a base for grasping. He underwent physical therapy (edema management, ROM and strengthening exercises); occupational therapy (gross and fine motor skills training, activities of daily living (ADL) retraining); and psychology sessions (depression screening and counseling). He was evaluated by Pediatric Hematology and Oncology, Radiation Oncology, and Pediatric Orthopedics and underwent surveillance radiographs with normal results. Chemotherapy and radiotherapy were not warranted.

Results

After four weeks of rehabilitation, phantom limb pain resolved and he regained hand function. Jebsen hand function test, Purdue Peg Board and grip strength, measured 10 months post-operatively, revealed improvement in picking up small objects, lifting heavy objects, and arm hand dexterity. Patient was able to perform ADL, attend regular school, play with schoolmates, and perform house chores.

Conclusion

This case report presents the challenges in rehabilitation of a pediatric patient with ray amputation of the 3rd to 5th digits of the dominant hand for alveolar soft part sarcoma and highlights multi-disciplinary approach to management.

Keywords

amputation;sarcoma;rehabilitation

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-1494

SURGICAL TREATMENT AND REHABILITATION OF FRACTURES OF AMPUTATED LIMBS

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Introduction/Background

Previous reports on surgical treatment of fractures occurred in amputated limbs are scarce. We report 5 patients with femoral and hip fractures of amputated limb in which they regained walking ability with prosthesis by rehabilitation with physiotherapist and prosthetist .

Material and Method

Included in this report, 5 patients of hip and femoral fracture who had received surgical treatment in our hospital ,3 cases were men and 2 cases were women. Mean age was 64.2 years (Range , 37 to 83 years), 3 cases had received above knee amputation and 2 cases had underwent below knee amputation. Causes of amputation included trauma in 3 cases and diabetes in 2 cases. In this case series, period of hospitalization, complication, rehabilitation for amputee were examined.

Results

All patients were able to walk independently with prosthesis and when they left hospital. Mean period of non-weight bearing was 7.2 weeks (Range, 0-12 weeks), and that of regaining walking ability for daily life was 14.0 weeks (Range, 8-18 weeks). 2 patients suffered from localized pain due to skin irritation but resolved by removal of implants. Temporary substitution of a socket were necessary for all patients due to swelling of soft tissue after surgery.

Conclusion

In surgical treatment of amputated limbs, orthopedic surgeons choose implants considering the length and shape of remaining bone. . We also consider skin irritation between screws, plates and prosthesis.

Volume of soft tissue changes after surgery, so we used bigger socket temporarily to continue rehabilitation which leads to good outcome. Careful observation of amputated limb and treatment by close cooperation with physiotherapist and prosthetist is important for rehabilitation of amputees.

Keywords

amputated limb ;prosthesis;implant

No conflict of interest

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ISPR8-1555

COMPARATIVE EVALUATION OF THE EFFICACY OF FIVE PRM PROGRAMMES ON FUNCTIONAL AUTONOMY AND PHANTOM PAIN IN PATIENTS AFTER LOWER LIMB AMPUTATION

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Introduction/Background

Our OBJECTIVE was to realize a comparative evaluation of five PRM programmes of care in patients after trans-femoral amputation.

Material and Method

During last years a total of 105 amputees were observed and investigated – in-patients of the Clinic / Department of Physical and Rehabilitation Medicine (PRM). Patients were randomized into five treatment groups consisting of 21 patients each.

All patients received a trans-femoral amputation 1 to 6 months before rehabilitation, with stump pain and phantom pain. All patients gave written informed consent.

All patients received a complex rehabilitation programme including physical therapy and patients' education. We accentuate on: analytic exercises for hip muscles, post-isometric relaxation for ilio-psoas muscle, strengthening exercises for the paravertebral and abdominal muscles; balance and gait training. In group 1 we applied too drug therapy – paravertebral infiltrations. Patients of groups 2 & 3 received a complex rehabilitation programme, including a preformed physical modality [Deep Oscillation (DO) or LASER]. In groups 4 and 5 we applied combined analgesic techniques (gr 4 = infiltrations and DO, gr 5 = infiltrations and laser).

For statistical evaluation we used t-test (ANOVA) and Wilcoxon rank test (non parametrical correlation analysis), performed using SPSS package (statistical significance - if *P value* < 0.05).

Results

The comparative **analysis of results** shows a significant improvement of the symptoms of the patients, concerning: *quality of life and functional autonomy* (Mc Gill quality of life questionnaire); *pain* (Visual analogue scale, faces scale and evaluation of stump tenderness), and *depression* (scale of Zung). Best results were obtained in groups 4 and 5.

Conclusion

We could recommend the complex program for functional recovery of amputees.

Keywords

stump pain, phantom pain, analgesia, physical modalities, deep oscillation

No conflict of interest

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ISPR8-1611

REHABILITATION OF PARTIAL HAND AMPUTATIONS IN PAKISTAN

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Introduction/Background

More than fifty percent of traumatic injuries to hand result in hand/wrist amputation. Partial hand amputations severely affect functionality, quality of life and cause social and psychological disturbances. Cost effective, aesthetically pleasing silicon finger fillers is associated with acceptance and satisfaction among patients. This study aims at describing the cosmetic rehabilitation of partial hand amputations.

Material and Method

This is a cross sectional observational study conducted from Nov 2014 to Jan 2018. Patients with partial hand amputations, due to any cause, reporting to OPD of tertiary care rehabilitation facility were recruited. Epidemiological data (age, gender, education), cause, type and duration of injury and cosmetic intervention were recorded. Statistical analysis was done using statistical package for social sciences version 25.

Results

A total of 9 patients participated in this research; all were males. Mean age was 36 +_3.6 years. Average duration of amputation is 3 years. Most common cause of amputation was blast injury (n=3), followed by injury with heavy machinery (n=2), fire arm injury (n=2), fall from train (n=1) electric injury by high tension wire (n=1). Type of amputation: left transmetacarpal with thumb sparing (n=3), ray amputation right index finger (n=3), right transmetacarpal with thumb sparing (n=1), ray amputation right middle finger (n=1), amputation left partial thumb and index finger (n=1). All patients could carry out activities of daily living even without prosthesis. Otto bock silicon finger fillers with cosmetic sleeve were given to all patients.

Conclusion

Aesthetically acceptable silicon finger fillers are the main stay of rehabilitation of hand amputations.

Keywords

Silicon finger fillers;rehabilitation;hand amputations in pakistan

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-1628

APPLICATION OF FUNCTIONAL LOAD PROCEDURES IN THE DEADLY DISABLED PERSONS FOR EVALUATION OF INDICATORS OF THE CARDIOVASCULAR SYSTEM AT THE STEPS OF PROSTHETICS

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Introduction/Background

The problem of prosthetics of elderly patients (EP) has worsened due to the growing number of disabled people in the Russian Federation (RF), the aging of the population. Annually in RF, about 10 000 surgical interventions are performed in the case of lesions of the arteries of the lower extremities. The number of EP who need prosthetic supplies has increased. To individualize the selection of technical means of rehabilitation (TMR), at the stages of learning to walk and use prostheses, it is necessary to conduct optimal functional tests (FT). The aim: selection of the optimal FT with load in EP who underwent amputation at the level of the shin and thigh.

Material and Method

We examined 54 patients who underwent at the level of the lower leg and thigh. Studies were carried out with modeling of the load using manual bicycle ergometry. A universal variant of the loading test is developed, the most informative for assessing the physical state of EP, identifying potentially dangerous rhythm disturbances and painless myocardial ischemia. All samples were monitored by electrocardiography, pulse oximetry.

Results

Severe circulatory failure (CF) was detected in 7 patients (12.9%), persistent moderate in 35 patients (64.8%), insignificant in 12 patients (22.3%). Patients with severe CF prosthetics were not performed, due to low FT and a high risk of complications in the stages of prosthetics. Patients with mild CF after choosing conservative treatment were successfully prosthetized. In the remaining 12 patients the results of FT with exercise helped to start prosthetics in the early period.

Conclusion

The use of functional stress tests in disabled patients for assessment of the cardiovascular system at the stages of prosthetics, as well as adaptation to new living conditions, allows individualizing the selection of TMR, eliminating the risks of complications at the stages of prosthetics, and shortening the terms of rehabilitation.

Keywords

amputation;functional tests;prosthetic

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-2704

QUADRUPLE AMPUTATION: ENABLING PERFORMANCE IN DAILY LIVING ACTIVITIES AND PARTICIPATION IN DAILY ROUTINE- CASE REPORT

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Introduction/Background

Multiple amputations are a challenging subject in rehabilitation. An integrated team work is essential to provide the patient with the most suitable and up to date therapeutic resources to reach the best quality of life and functioning as possible.

Material and Method

The aim of this study is to present a case report about the rehabilitation program of a patient that has quadruple amputation (trans-tibial and trans-radial bilateral) in 2015 due to limb ischemia from vasopressor drugs during septic shock by urinary tract infection in solitary kidney by *S. aureus*; focusing on the aspects of enabling performance in daily living activities and participation in daily routine.

We analyzed the data from the medical records of the patient, regarding the occupational therapy evaluations and interventions since May 2015; when the patient first started the inpatient rehabilitation program and through the post-amputation, pre- prosthetic and post-prosthetic phases. The patient attended to multidisciplinary team sessions, including daily occupational therapy individualized sessions, twice a week occupational therapy group sessions and caregiver educational groups.

Results

The patient was able to perform basic and instrumental activities of daily living using adaptation techniques or assistive technology with a higher level of independence and quality of performance. Education approaches were used regarding aspects of energy conservation, safety, home modifications and caregiver orientation. At the final phase of rehabilitation, the patient was able to walk with bilateral lower limb prosthesis and has a 3D prosthesis for the right upper limb.

Conclusion

The multidisciplinary team assure the best rehabilitation outcomes for people whit multiple amputations and the occupational therapist plays an important role in the maintenance and restoration of the patient's functional abilities, helping to surpass the activity limitations and to participate in the life situations that are significant to him in the physical, social and attitudinal environment that he is part of.

Keywords

four limb amputation;rehabilitation;occupational therapy

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-1769

AUDIT OF ACUTE PAIN MANAGEMENT POST MAJOR AMPUTATION IN SOUTH MERSEY ARTERIAL (SMART) CENTRE

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Introduction/Background

Good pain management is essential post amputation. Patients experience a mixed nature of pain including nociceptive pain, wound pain and neuropathic/phantom limb pain. There often a mixed picture. Good pain management aids early mobilisation. National guidelines recommend 100% compliance with a pain management protocol. Aim is to assess current compliance with the local pain management protocol, review how pain is assessed and treated, and find if patients are discharged with unnecessary medication.

Material and Method

All patients following lower limb major amputation (above ankle amputation) in 2016 were identified, data collected retrospectively from electronic case notes.

Results

40 patients included. 20 above knee, 18 below knee and 2 through knee amputations. Length of stay ranged from 6 to 121 days.

32%(13/40) of patients had chronic pain and already on analgesia.

15 had significant nociceptive stump pain, 6 only neuropathic pain and 5 mixed pain. 9 reported no pain on day 1. 6 had no assessment of pain in medical notes.

Following surgery, 22.5%(9/40) were not given zomorph (or alternative opiate) 20%(8/40) were not given gabapentin with no reason or alternative. (According to local protocol)

20%(8/40) had problematic pain and discharged on multiple medications.

2 waited over 10 days before mobilisation, these patients had uncontrolled pain. 4 mobilised on day 1 with good pain control.

2 discharged on zomorph despite having no pain. 18 discharged on gabapentin; however 5 on a small dose.

Conclusion

A uniform pain assessment as part of the major amputation pathway is required to be used by all clinicians involved in patient care. This would provide an accurate assessment of pain and used as a tool to monitor response to medication changes. An assessment of pain on admission and discharge with medication review is essential. Multi-centre audits are recommended to establish corresponding guidelines for pain management for these patients.

Keywords

pain;amputation;audit

No conflict of interest

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ISPR8-1865

TREATMENT OF RESIDUAL LIMB HYPERHIDROSIS (LOWER LIMB): SALUTOX, AN ONGOING STUDY COMPARING ONABOTULINUMTOXINA AND TOPICAL ALUMINIUM CHLORIDE. STUDY PROTOCOL AND STUDY POPULATION

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Introduction/Background

Amputees often complain of residual limb hyperhidrosis (RLH), responsible for prosthesis function impairments, dermatological problems and decreasing quality of life. Botulinumtoxin is an innovative treatment but its use for RLH has not been strictly evaluated.

The treatment of the RLH with botulinumtoxin is described in only 22 cases in the literature (six case reports and two series of case) and in a randomized placebo-controlled study (N=11) where rimabotulinumtoxinB produced the same perceived effect on prosthetic use as placebo, whereas objective gravimetric sweat analyses significantly decreased for rimabotulinumtoxinB only.

Material and Method

SALUTOX is an ongoing multicentered prospective open randomized controlled trial comparing topical aluminium chloride (TAC) (considered as standard treatment) and OnabotulinumtoxinA intradermal injections in RLH treatment.

After randomization, patients will receive either 100 units OnabotulinumtoxinA in a single injections procedure or TAC for 6 months. They will all be evaluated during 3 study visits (week 4, week 12, week 24) and 1 phone call (week 18). Primary outcome measure is HDSS decrease (Hyperhidrosis Disease Severity Scale). Other functional parameters, tolerance, pain and quality of life are also evaluated.

Results

25 patients have already been included (5 females, 20 males). Represented amputation levels are tibial (58%) and femoral (42%). Compared to amputees general population, they are younger and mainly amputated for traumatic reasons. They are quite active and have to take off their prosthesis to dry it 2.6 times per day, what impairs their quality of life. 71.4% report HDSS greater than or equal to 3. Although HDSS might increase with the young age, the tibial amputation level and a short delay after amputation, no statistical significance appears in this sample. 26% have skin damages. Pain is not overrepresented.

Conclusion

This study aims to bring new evidence to determine if OnabotulinumtoxinA should be a first-line RLH treatment regarding effectiveness, tolerance and cost.

Keywords

residual limb ;hyperhidrosis;therapy

No conflict of interest

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ISPR8-1885

VALIDATION OF ABILOCO IN BENINESE ADULTS WITH UNILATERAL LOWER LIMB AMPUTATION USING RASCH ANALYSES

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Introduction/Background

Mobility and locomotion are basic physical needs whose restoration is an important goal of rehabilitation programs for lower limb amputees. The objective of this work is to validate the ABILOCO questionnaire for patients with a lower limb in Benin.

Material and Method

The preliminary version of ABILOCO included 36 items. Fifty-eight patients with unilateral amputation of the leg or thigh were evaluated with this version. Patients were asked to provide their perceived difficulty in completing each item according to three response categories. Patients were also evaluated with additional measures included: Locomotor Capabilities Index (ICL), Rivermead Mobility Index (RMI), Six minute walk test. Data were analyzed with the RUMM2030 software. and SigmaStat softwares.

Results

Rasch analysis retained 20 items with three response categories. Indeed, 9 items were deleted because they had more than 50% of missing responses; one item was deleted because it had a disordered threshold; 8 items were deleted because they did not fit the model; and two items because had differential functioning. The ABILOCO in Beninese adults with unilateral lower limb amputation had good external validity with the RMI ($r = 0.74$ and $p = 0.01$) and with the ICL ($r = 0.72$ and $p < 0.01$) and with the NFAC ($r = 0.65$ and $p < 0.01$).

Conclusion

The ABILOCO in Beninese adults with unilateral lower limb amputation consisted of 20 items at 3-level.

Keywords

lower limb amputation;locomotion ability;Assessment

No conflict of interest

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ISPR8-1908

TRAINING OF PHANTOM LIMB MOVEMENTS IN TRANS-HUMERAL AMPUTEES INCREASES MOBILIZATION CAPACITY AND ASSOCIATED RESIDUAL MUSCLE ACTIVATION

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Introduction/Background

In the light of the development of polydigital hand prosthesis, we recently explored an intuitive control mode by surface EMG associated to phantom limb movements (PLM) in upper arm amputees (Jarrassé et al, 2017a,b). As little was known about PLM, we described types and characteristics of upper limb PLM and explored some factors potentially influencing these in a population of upper limb amputees (De Graaf et al., 2016; Touillet et al., submitted). We showed, among others, that one persistent characteristic of PLM is the associated fatigue, which potentially is a problem when using PLM for prosthesis control since fatigue diminish the mobilization capacity as well as the stability of the EMG signals and thus interferes with the prosthesis control.

Material and Method

In the present study, we explored whether PLM training (not to confound with learning) can increase mobilization capacity and stabilize EMG signals. Five trans-humeral amputees volunteered for training of all their types of PLM at home on a daily basis during about 6 weeks. Kinematics (via the intact limb imitating the phantom movements) as well as EMG signals from the residual muscles were recorded just before and right after the training period.

Results

None of the participants experienced (phantom or residual limb) pain related to the training. Three participants increased the number of different PLM they could execute. All of them increased the amplitude and velocity, and thus diminished the cycle duration, as well as the number of cycles they could execute before the PLM blocked by fatigue. The amplitude of the EMG increased and became more specific to the type of PLM.

Conclusion

In conclusion, as is the case for intact limbs, training of PLM improves motor performance and stabilizes the EMG signals associated to PLM execution. This is encouraging for future PLM-based prosthesis control.

Keywords

Phantom mobility; Training; Muscle activity

No conflict of interest

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ISPR8-1935

EVALUATION OF DIFFERENT TYPES OF PROSTHETIC HANDS ON THE SHOULDER COMPENSATORY MOVEMENTS

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Introduction/Background

The use of myoelectric prosthetics in upper limb amputees introduced compensations on the residual shoulder and trunk which could be the cause of musculoskeletal disorders. Task/work involving movements in abduction of shoulder ($>60^\circ$) more than two hours per day in cumulative have been identified to be responsible of musculoskeletal disorders. The aim of the study is to evaluate the shoulder compensations in upper limb amputees with the use of the new myoelectric multi-articulated prosthetic hands compared to tri-digital hands during different functional tasks.

Material and Method

Five unilateral trans-radial upper limb amputees (4 male, 1 female; age 45.6 ± 13.8 years old) participated in this prospective cross-over study. Evaluations were realized by each participant with their own tri-digital myoelectric prosthesis and 2 multigrip prosthesis: I Limb Ultra® (IL) without a wrist mobility and Michelangelo® (MA) with a wrist mobility, after specific rehabilitation and one month of home use. Mean of internal rotation, mean of abduction shoulder, percent time in abduction higher than 60° and its extrapolation in hours were calculated by an optoelectronic system (VICON) for the both sides (amputated - non-amputated) during the Box and Block Test (BBT) and 2 common daily life tasks (cut meat, make a knot).

Results

Whatever the tasks, there is any significant difference in internal rotation with the different prosthetic devices. The results of the abduction shoulder of the BBT are presented in table 1, and of the 2 daily life tasks are presented in table 2.

Conclusion

New types of grip of innovative prosthetic hands and wrist mobility seems to decrease shoulder abduction, considered as pathogenic compensations. However, the compensation strategy is different across patients which involve a personalized analysis for his rehabilitation program and for the prosthetic device choice. Further studies are necessary to evaluate the impact of trunk compensations.

Keywords

upper limb amputee;shoulder compensations;multi-articulated prosthetic hand

No conflict of interest

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A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-1939

A REHABILITATION PROGRAM FOR LOWER LIMB AMPUTEES WITH OCCLUSIVE ARTERIOPATHY

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Introduction/Background

Rehabilitation programs are part of grade A recommendations for cardiovascular diseases. Amputation is a major event in arteriopathy as it significantly impacts quality of life and life expectancy. However, currently there are no validated rehabilitation programs for lower limb amputees with occlusive arteriopathy. The aim of our study was to assess the effects of a rehabilitation program on functional abilities and quality of life. This study also evaluated the feasibility of implementing a rehabilitation program at our regional rehabilitation center in Normandy, France.

Material and Method

We included patients aged from 18 to 85 years old with unilateral lower limb amputation due to occlusive arteriopathy and a definitive prosthesis. They were followed at our center between 2012 and 2015. All patients had a compulsory cardiovascular check-up and a VO2Max Test. Our main criterion was the 2-minute walking test (2MWT). It was performed with the PPA-LCI and TUGT survey at the beginning and the end of the 15-week program. Patients had 4 sessions a week (including muscle strength exercises and endurance exercises).

Results

Among 119 patients with lower limb amputation due to peripheral arterial disease followed at our center between 2012 and 2015, only five were included in our rehabilitation program (25% of death). The median difference at the 2MWT between the start and the end of the program was 2.5 meters (SD 8.7). Three of the five patients included were able to walk more than 113 meters at the 2MWT at the end. The median maximal strength increased by 10Watts (SD 5.5). The median difference in TUGT was 1.9seconds (SD 3). All patients were satisfied.

Conclusion

Despite the absence of statistical validation, our results suggest the value of a rehabilitation program for amputees with occlusive arteriopathy. Difficulties associated with study recruitment

highlight the importance of a care network focused on the management of peripheral artery disease.

Keywords

periphery arterial disease;amputation;physical exercise

No conflict of interest

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ISPR8-1940

THE IMPORTANCE OF SOMATOSENSORY FEEDBACK FOR PHANTOM LIMB MOBILITY REVEALED BY DIFFERENCES IN PHANTOM MOVEMENT KINEMATICS BETWEEN ABOVE- AND BELOW-ELBOW AMPUTEES

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Introduction/Background

After amputation, hand and wrist phantom limb movements (PLM) are experienced as effortfull, slower and smaller than healthy limb movements. Our hypothesis is that this is caused by the altered somatosensory feedback coming from the residual limb muscle contractions that are associated to PLM. If this is true, one can expect to find differences between below- and above-elbow amputees since the latter ones still have many muscles left that were involved in hand and wrist movements, such that the sensory feedback is close to that before the amputation. To test this hypothesis, we compared PLM kinematics between above- and below-elbow amputees.

Material and Method

Six above- and 8 below-elbow amputees performed phantom hand and wrist PLM. The kinematics of the PLM was indirectly obtained via the intact limb that synchronously mimicked the PLM at a comfortable velocity, using a Cyberglove for hand movements and an inertial measurement unit for wrist movements. For each patient and each type of PLM, we determined the number of executed cycles, the duration of the cycles and the velocity.

Results

Our results show that after above-elbow amputation the number of different types of PLM was higher, PLM repetitions were more numerous before blocking caused by fatigue, cycle duration was shorter and velocity was higher.

Conclusion

In conclusion, below-elbow amputees have more facilities for PLM execution (i.e., they perceive their PLM as faster and less tiring) than above-elbow amputees. This confirms our hypothesis that the more the somatosensory feedback is altered with respect to intact limb feedback, the slower and more effortfull are PLM.

Keywords

kinematics;phantom mobility;neuromuscular plasticity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-1998

TRANSCULTURAL ADAPTATION AND VALIDATION OF A FRENCH VERSION OF THE PROSTHETIC LIMB USERS SURVEY OF MOBILITY 12 ITEMS SHORT-FORM (PLUS-M/FC-12)

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Introduction/Background

The “PLUS-M 12-item Short Form” (PLUS-M/SF-12) is a self-administered questionnaire that assesses the perceived capacity of Lower Limb Amputees (LLA) to perform a number of daily-life activities. Its psychometric properties are excellent (ICC > 0.9), administration time and scoring are quick and normative data is available. It can be used either in clinical practice, or for research purposes.^{1,2} Our objective was to develop a French version of this questionnaire and to assess its psychometric properties.

Material and Method

International recommendations for translation and cross-cultural validation of questionnaires were followed. Forty-seven subjects (age 54±16, 36 males/13 females, 27/10/10 transtibial/gritti/transfemoral, 21/23/3 ischemic/traumatic/other) participated. Criterion validity was assessed with the Pearson Correlation Coefficient (PCC) between PLUS-M/FC-12 and other constructs (Locomotor Capabilities Index, Activities-specific Balance Confidence scale and 2 Minutes Walking test), internal consistency with the α -Cronbach Coefficient (α) and reliability with the Intra-class Correlation Coefficient (ICC) in forty-two subjects who completed the questionnaire twice in a 7-day interval.

Results

PLUS-M/FC-12 raw scores ranged 29-60/60 (49±8). Criterion validity, internal consistency and reliability were very good (PCCs ranging 0.55 to 0.86, $p < 10^{-6}$ to 10^{-4} ; $\alpha = 0.90$, ICC = 0.92 [0.86-0.96]). There were no floor or ceiling effect.

Conclusion

The French version of the PLUS-M/SF-12 has excellent psychometric properties, comparable to those of its original version. We promote the use of this short-form questionnaire for both clinical and research purposes.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-2080

RHYTHMIC AUDITORY STIMULATION FOR GAIT TRAINING IN PERSONS WITH UNILATERAL TRANSTIBIAL AMPUTATION: A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

The objective of the study is to compare the time taken for prosthetic training using Rhythmic Auditory Stimulation with that of conventional therapy, for unilateral transtibial amputee patients. We will also compare the gait parameters in unilateral transtibial amputee patients trained with and without Rhythmic Auditory Stimulation

Material and Method

Design: Randomized controlled trial with two groups- RAS group and control group Setting: Outpatient and Inpatient Rehabilitation units, Department of PMR, CMC, Vellore Participants: Twenty nine unilateral transtibial amputee patients ready for prosthetic training, 13 in the RAS group, 16 in the control group (age range 18-65 years). Intervention: Rhythmic beats introduced through MP3 players and earphones during prosthetic training for one hour daily Main outcome measures: The primary outcome measures- included time to complete training, timed up and go (TUG) test and 6MWT(6 minute walk test). The secondary outcome measures were gait velocity, gait cadence, step length, stride length, symmetry, and physiological cost index (PCI).

Results

Time required to complete training was 6.08 hours in RAS group and 7.44 hours in the conventional group ($p= 0.159$). The mean TUG was 11.09 s in RAS group and 13.43s in control group (p value 0.061). The mean 6MWT was 323.37 m in RAS and 288.96m in control group (p value 0.390). On sub-analysis with exclusion of two skewed variables, statistical significance was found for the TUG test (p value 0.020). Step length was found to be better for those in the control group ($p=0.016$ on amputated side and 0.019 on normal side) probably because of external cueing possibly leading to “forced gait” in RAS patients.

Conclusion

RAS may potentially decrease the time to completion of training in patients with transtibial amputation. Its effect on improving walking endurance and enabling independent community ambulation for unilateral transtibial amputee patients needs further research with larger studies.

Keywords

Rhythmic auditory stimulation ;Neurologic music therapy;Transtibial amputation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-2187

DEVELOPMENT OF A QUESTIONNAIRE TO IDENTIFY BARRIERS AND FACILITATORS OF THE IMPLEMENTATION OF A CLINICAL PRACTICE GUIDE FOR PEOPLE WITH AMPUTATION IN COLOMBIA

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Introduction/Background

Research on the use of innovations in practice is limited by the lack of validated instruments to assess factors that facilitate or hinder the implementation of Clinical Practice Guidelines (GPC) in Colombia. The aim of this study is to develop a questionnaire to identify barriers and facilitators for the implementation of the CPG for the rehabilitation and care of lower limb amputees.

Material and Method

Development of the questionnaire included four phases: literature review, aimed to identify domains of the construct (phase I). Individual interviews with potential and current users of the CPG, to gain insight into the perceived barriers and facilitators for its implementation (phase II). Selection of relevant items by a panel of experts with the information collected in previous phases (phase III). Pilot test with health professionals and administrators to assess face validity, response time and the presence of ceiling or floor effect (phase IV).

Results

Review of the literature identified generic and specific questionnaires; common domains across most questionnaires were related to the innovation, the provider, the patient and the context. The analysis of the interviews revealed some categories not included in the theoretical review. The panel of experts selected 90 items for the first version of the questionnaire. In the pilot test of the questionnaire (n = 13), the average response time was 28 minutes (14 to 60); in 85 of the questions ceiling effect was present and in 8 of the questions floor effect was present. Changes were made to the directions of the instrument in order to reduce these effects in the new version, with 73 items.

Conclusion

We developed a questionnaire to assess the barriers and facilitators for the implementation of the CPG for the rehabilitation and care of individuals with lower limb amputation. In a next step, the psychometric properties of the questionnaire will be evaluated.

Keywords

Clinical practice guidelines;implementation;barriers

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-2359

TRANSCULTURAL ADAPTATION AND VALIDATION OF A FRENCH VERSION OF THE PROSTHESIS EVALUATION QUESTIONNAIRE (PEQ-F).

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Introduction/Background

The Prosthesis Evaluation Questionnaire (PEQ) ¹ is a self-questionnaire that assesses quality of life (QoL) of lower limb amputees (LLA). It contains 9 sub-scales that explore the following areas: ambulation, appearance, frustration, perceived response, residual limb health, social burden, sounds, utility and well-being. An optional addendum of 14 questions that assesses stumbling, falls, attentional load and balance confidence during walking has also been developed and used.² Our objective was to develop a French version of this questionnaire (PEQ-F) and to assess its psychometric properties.

Material and Method

International recommendations for translation and cross-cultural validation of questionnaires were followed. Fifty-two subjects (age 53±16, 40 males/12 females, 28/12/12 transtibial/grittistokes/transfemoral, 21/28/3 ischemic/traumatic/other, years since amputation 10±10) participated. Criterion validity was assessed with the Pearson Correlation Coefficient (PCC) between PEQ-F and other constructs (SF-36, Prosthetic-Profile-of-the Amputee-Locomotor-Capabilities-Index, Amputation-Body-Image-Scale, Brief-Pain-Inventory, Trinity-Amputation-and-Prosthesis-Experience-Scales-Revised, Activities-specific-Balance-Confidence-Scale, Timed Up and Go and 2 minutes Walking Tests). Internal consistency was assessed with the α -Cronbach Coefficient (α) and reliability with the Intra-class Correlation Coefficient (ICC) in 48 subjects who completed the questionnaire twice in a 7-day interval.

Results

PEQ-F scores ranged 46-96/100 (76±11). Criterion validity was verified for the PEQ-F ($r = 0.38-0.33$, $p = 0.008-0.03$) and for all tested subscales ($r = 0.32$ to 0.50 , $p = 0.02$ to 0.0002). Internal consistency was satisfactory ($\alpha=0.87$). The reliability of the global PEQ-F was excellent (ICC=0.89[0.82-0.93]), and good to excellent for its subscales (ICC ranging 0.60[0.37-0.75]-0.89[0.82-0.94]). There were no floor or ceiling effect.

Conclusion

The French version of the PEQ-F has good psychometric properties, comparable to its original version. It offers a holistic evaluation that helps managing LLA patients and identifying personal needs. We promote the use of the whole questionnaire or part of it for both clinical and research purposes.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-2366

THE EFFECT OF REPEATED BOTULINUM TOXIN TYPE A INJECTIONS IN THE TREATMENT OF RESIDUAL LIMB HYPERHIDROSIS: A CASE STUDY

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Introduction/Background

Residual limb hyperhidrosis is a problem frequently encountered in amputations, experienced by 66% of the subjects in the Hansen et al. Study. If the condition resists conventional treatment (appropriate hygiene measures, antiperspirants), it can be treated by intradermal or intraepidermal botulinum toxin injections.

Material and Method

Objective: to study the effect of repeated botulinum toxin type A injections in the treatment of residual limb hyperhidrosis.

Study type: case report.

Participant: Afro-Caribbean male, aged 29, with transfemoral amputation suffering from debilitating excessive sweating of the residual limb, causing prosthesis to slip when walking.

Intervention: four sessions of superficial intradermal injections of botulinum toxin type A into the residual limb, at 14, 9, and 4-month intervals.

Results

Botulinum toxin A reduced sweat production in the residual limb by an average of 70.5%. It reduced sweat-induced discomfort when this was assessed to be major at the pre-toxin assessment, and improved times before prosthesis removal when these were short at the initial assessment.

On average, it led to an overall reduction in sweat-induced discomfort by 38.25% and discomfort during work by 37%, and increased times before prosthesis removal (+1h39 during work and +3h22 during activities of daily living).

Pain experienced during the injection session was reduced during the 4th session.

Finally, a progressive reduction in the duration of BTA effect was observed.

Conclusion

This study suggests that botulinum toxin type A injections effectively reduce sweat quantity in the residual limb. Major sweat-induced discomfort and short prosthesis wearing time without removal may be improved by BTA. However, the duration of BTA effect appears to decrease over time.

Keywords

hyperhidrosis;stump;amputee

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.03 Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ISPR8-2370

EQUIPMENT OF LOWER LIMBS IN THE DIABETIC AMPUTEE: PROSTHESIS AND SHOES

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Introduction/Background

Concerning amputations in France, 52% is due to diabetes and amputation risk is 14 times higher in case of diabetes .

There is up to now no study about amputation rate in French West Indies, but there are 2 times more diabetes treated in the French Overseas Departments compared of France and there were 82 hospitalized patients with major lower limb amputation (above foot) in our service in 2015.**Material and Method**

Objective: Evaluate the equipment specificities of diabetic lower limb amputees.

Inclusion: direct inclusion of 31 patients.

Judging criteria: compare residual limb prosthesis, equipment of the other foot and walking performances in diabetic and non diabetic above foot amputees.**Results**

Diabetic amputees need 53% more bilateral fittings than others: walking prosthesis on the amputated side and therapeutic footwear on the other side, because of foot trophic disorders (53% more). There is no significant difference for other criteria.

Conclusion

Above foot amputees due to diabetes need walking prosthesis and therapeutic shoes. There is few impact on prosthetic choice and walking performances.

Keywords

amputee;prosthesis;shoes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.04 Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

ISPR8-2635

ACQUIRED BRAIN INJURY AND NEUROGENIC BLADDER: A PRELIMINARY REPORT ON THE USE OF TRANSCRANIAL DIRECT CURRENT STIMULATION (TDCS) IN NEUROGENIC LOWER URINARY TRACT DYSFUNCTIONS (ANLUTD)

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Introduction/Background

It is accepted that suprapontine lesions such as cerebrovascular disease produce loss of voluntary inhibition of micturition, which corresponds to the uninhibited overactive bladder (OAB). Functional magnetic resonance imaging (fMRI) brain responses to bladder filling in patients with OAB differ from normal: orbitofrontal cortex, parahippocampal gyrus and amygdala, together with adjacent inferior temporal lobes, show deactivation. Transcranial Direct Current Stimulation (tDCS) represents a safe, inexpensive and straightforward technique that could be easily integrated into rehabilitation programs. From a neurophysiological point of view, tDCS increases the neuronal excitability by facilitating the action potential release and modification of the excitability of NMDA receptors. The effect of a single tDCS session lasts about 60 to 90 min and when the stimulation is repeated for 10 to 20 sessions, the effects have been found to last up to 3 months after the end of the stimulation sessions.

Material and Method

This research aims to determine whether OAB recovery can be promoted with tDCS. All participants were patients with a suprapontine lesion and OAB; ethical approval was obtained from the Local Ethics Commission.

For non-invasive brain stimulation, a computer controlled HD-tDCS device with eight channels was used (Starstim, Neuroelectronics, Spain). For the experimental group (10 pts), an anodal direct current was delivered 20 minutes every day for two weeks at an intensity of 2 mA to the stimulation electrode placed at F3, which covered left dorsolateral prefrontal cortex. Four return electrodes were placed at T7, Fp2, CP1 and FC2.

Results

In the experimental group, urodynamics tests showed increased maximum cystometric bladder only in four patients.

Conclusion

Results to date do not allow to affirm that tDCS can modulate the activity of higher cortical centres involved in bladder control in AOB patients.

Keywords

BRAIN INJURY;tDCS

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.04 Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

ISPR8-0395

CLEAN INTERMITTENT CATHETERIZATION : BARRIERS AND ADHERENCE ISSUES IN A MUSLIM POPULATION

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Introduction/Background

Clean intermittent catheterization (CIC) is the gold standard for the management of urinary retention. This act requires therapeutic education. The team in charge faces a lot of problems while teaching this procedure. It has a big impact on adherence to CIC. The objective is to analyse barriers and adherence issues of CIC in a muslim arabic population and to present some solutions to the problems found.

Material and Method

This is a prospective, descriptive and analytic study that lasts during 19 months. The patients were recruited at the service of Physical Medecine and Readaptation of CHU IBN ROCHD Casablanca during the neuro-uro consult. Intermittent catheterization adherence scale (I-CAS) was administrated along with a questionnaire we made based on difficulties faced by patients.

Results

50 patients were recruited. The mean age was 36.4 years, with a male predominance. 18% of the sample were child. Adherence to CIC was examined and showed that after only 1 month, 80% were compliant with this method of bladder emptying. Patients were followed up at regular intervals following CIC training for 19 months. The adherence rate was only 58% at 1.5 year. The most common difficulties while teaching this procedure were anxiety and fear of hurting themselves, and of losing their virginity (for women and girls) (n= 30 ;60%).

Conclusion

There are several factors that may act as barriers to successful CIC. Adequate follow-up is essential, and patients should be reassured with a nonjudgmental approach.

Keywords

clean intermittent catheterization;adherence issues;urinary retention

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.04 Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

ISPR8-0436

LOWER URINARY TRACT DYSFUNCTION IS THE MAJOR CONCERN OF ADULT PATIENTS WITH SPINA BIFIDA : DATA FROM A PROSPECTIVE COHORT OF 395 PATIENTS

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Introduction/Background

Spina bifida (SB) may be associated with various lower urinary tract dysfunctions, with very little data on their prevalence and severity in this population. The objective was to assess the major concerns reported by adults with SB and to report their lower urinary tract dysfunctions.

Material and Method

During their first visit to the French national referral center for SB, patients were asked about their major concern in daily living : lower urinary tract dysfunction, musculoskeletal disorders, bowel dysfunction, sexual dysfunction, pain or social issue. Were also collected : history of urological surgery, type of SB, neurological level according to Abbreviated Injury Scale, mobility, method of voiding, kidney function, Urinary Symptom Profile and Qualiveen scores, Knowles-Eccersley-Scott Symptom Constipation Score, Cleveland Clinic Incontinence Score and Neurogenic Bowel Dysfunction score. All patients seen in the French National referral center from 2007 to 2015 were unselectively included.

Results

395 patients were included, with a median age of 32 (2-88), 219 women (55.6%), 176 men (44.4%), myelomeningocele (69.4%), closed spinal dysraphism (30.6%). 144 patients voided spontaneously (37%); 15 patients used clean intermittent catheterization (54.4%); 34 patients had non continent cutaneous diversion (8.7%) and 2 indwelling catheter (0.5%). Most frequent major concerns were lower urinary tract dysfunction (28.5%) and bowel dysfunction (16.1%), followed by musculoskeletal disorders (13.6%) and pain (9.6%). 227 patients had a Qualiveen score ≥ 3 (61.1%). 145 patients had urinary incontinence during their first visit (52.1%).

Conclusion

Lower urinary tract dysfunction is the major concern in daily living in 28.5% of patients with SB.

Keywords

Dysrhythms; lower tract urinary symptoms; major concern

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.04 Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

ISPR8-0936

POOR LEVEL OF INFORMATION FOR YOUNG ATHLETES REGARDING STRESS URINARY INCONTINENCE : REFERENCE TO A SURVEY CONDUCTED ON THE INTERNET

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Introduction/Background

Physical exercise performed intensively is a serious risk factor of stress urinary incontinence. Despite a better knowledge of the risks factors and the existence of available therapeutics measures, urinary incontinence remains taboo. The major purpose of this study was to assess the knowledge and expectations of athletes regarding stress urinary incontinence.

Material and Method

We have released an anonymous questionnaire using "Google Form". This questionnaire was developed by experts. The release took place on social networks and on sports women forums from 5 to 20 May 2016. We have obtained 178 answers and 163 were selected for the study. Then, we have accomplished a global statistical study as well as a statistical study in groups of the achieved outcomes.

Results

The average age of the athletes was 29 years old of which 77% were nulliparous. They practiced an average of 3.9 hours of sport per week. 83% practiced sports as a hobby and 17% took part in competitions. The prevalence of stress incontinence was up to 45% of which 66% had an inconvenience in their everyday life. 60% had never been informed of urinary incontinence. 80% had no idea that this phenomena may occur at a young age. 86% had no knowledge of the physiopathology of the urinary incontinence. 67% knew that reeducation could help athletes to prevent stress urinary incontinence and only 34% thought they could improve it once it is established. Among the athletes affected by stress urinary incontinence, 67% had never dared speaking of it and only 19% benefited from rehabilitation.

Conclusion

The results of our study confirmed a high prevalence of stress urinary incontinence among athletes with a real impact on their well-being. However, knowledge of the subject remains very poor due to a clear lack of information. This subject is taboo, partially explained by the lack of education of athletes.

Keywords

stress urinary incontinence; young athletes; survey

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.04 Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

ISPR8-0979

SWALLOWING EXERCISE FOR UPPER ESOPHAGEAL SPHINCTER DYSFUNCTION IN STROKE PATIENT WITH DYSPHAGIA : A SYSTEMATIC REVIEW

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Introduction/Background

Dysphagia is common in patients with stroke. Patients may experience deficits in oral, pharyngeal and upper esophageal sphincter (UES) function, including insufficiency in chewing and mastication, weak pharyngeal constriction, UES and pharyngeal incoordination, and abnormal UES relaxation. The UES is usually closed except during swallowing phase. The suprahyoid muscles make the larynx move upward and forward to open the UES. Many studies have reported the swallowing exercise for the UES dysfunction, this systematic review aims to appraise the evidence of the swallowing exercise to facilitate the suprahyoid muscle and open the UES for stroke patients with dysphagia.

Material and Method

A systematic search of Pubmed, Embase, Medline, Web of Science, The Cochrane Library, and ProQuest databases was conducted from January 2007 to December 2017. The following four areas of research were reviewed:

- (1) Studies including specific swallowing exercise for improving suprahyoid muscles activity.
- (2) Studies examining the efficacy of each swallowing exercise with a device in healthy adults.
- (3) Studies examining the efficacy of specific swallowing exercise with a device as a dysphagia treatment in stroke patients with dysphagia.
- (4) Studies comparing the difference between those swallowing exercise in healthy adults and stroke patients.

Results

A narrative analysis of the results was conducted. Five types of swallowing exercise including Shaker Exercise, Chin tuck against resistance, Jaw open Exercise, Modified Jaw open Exercise and Head extension Exercise may facilitate the suprahyoid muscle and the opening of the UES. With the strengthened suprahyoid muscles, the amount of upward and forward movement was increased to facilitate the opening of UES and decrease the time of pharynx passage.

Conclusion

Though many studies have reported the swallowing exercise is efficacious for suprahyoid muscles, the Modified Jaw Opening Exercise holds more potential in training the suprahyoid muscle among the five swallowing exercise for stroke patients with dysphagia.

Keywords

upper esophageal sphincter;dysphagia;swallowing exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.04 Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

ISPR8-1035

CONTRIBUTION OF A THERAPEUTIC EDUCATION GUIDE FOR PATIENTS WITH ANORECTAL DISORDERS.

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Introduction/Background

In the practice of Physical Medicine and Rehabilitation, many neurological or post traumatic conditions may cause voiding disorders and anorectal disorders. Both are taboo subjects, but it seems like neurological bladder is best known and treated.

The aim of this study is to design an illustrative illustrated guide dedicated to the patients in order to explain the anorectal disorders and how to manage them.

Material and Method

A quantitative and descriptive study was carried out in the Physical Rehabilitation Physical Medicine department of the National Institute of Orthopedics Mohamed Kassab in 30 adults aged between 18 and 60 years, followed for a neurological pathology with anorectal disorders. The assesment has been done by Bristol Scale, Neurogenic Bowel Dysfunction Score, Fecal Incontinence Quality of Life Questionnaire, Fonctionnal Independance Measurement.

During this study we proposed a therapeutic education guide (in French and Arabic) for patients with neurological disorders to see its contribution to their ano-rectal disorders at the medical, psychological and social levels.

Results

Several patients have experienced difficulties for this topic. Stool consistency was improved in 12 patients; anal incontinence decreased in 12 patients. The feeling of discomfort decreased in 18 patients and disappeared in 3 patients.

Stool frequency improved in 14 patients. The duration of defecation decreased in 15 patients. Regarding discomfort during defecation improvement is very minimal.

Conclusion

The therapeutic education guide had a positive effect on anorectal disorders facilitating social integration.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.04 Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

ISPR8-1886

URODYNAMIC PROFILE OF DIABETIC NEUROGENIC BLADDERS

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Introduction/Background

It is now estimated that the prevalence of Lower urinary tract dysfunction (LUTD) in patients diagnosed with diabetes can reach 80% in some series. They are frequent and polymorphic. They can have a significant impact on the patient's quality of life, but above all, they can have a negative prognosis. The purposes of this study were to study the urodynamic profile of these disorders, and to try to identify the risk factors associated with the various abnormalities found on this urodynamic examination.

Material and Method

A retrospective descriptive cross-sectional study, which took place in July 2017 at the urodynamic laboratory of the Department of Physical Medicine and Functional Rehabilitation of the Military Tunis Hospital. Anamnesis, symptoms and urodynamic data were collected.

Results

23 patients, average age 62.04 years. 15 women and 8 men. Patients were followed for their diabetes for an average of 11 years. No urodynamic assessment was free of abnormalities. Debimetry was normal in 30% of patients. During cystometry, the most common abnormalities were: contractility disorder (52.4%), hypersensitivity (47.6%), detrusor overactivity (38.1%), and the small capacity (38%). In profilometry, sphincter hypertonicity was noted in 52.6% of patients. Regarding the analytical study, in the cystomanometry, bladder stability was associated with a more recent diabetes ($p = 0.02$). All patients with a good glycemic control had a normal bladder contractility ($p = 0.09$). The presence of diabetic nephropathy was associated with bladder compliance disorder ($p = 0.07$).

Conclusion

If the screening of LUTD in diabetic patients can be done in consultation with endocrinology or general medicine, the urodynamic consultation must be suggested in case of disorders of significant post-void residue, or occurrence of urinary infections. It allows, thanks to the urodynamic assessment, to specify the type of neurogenic bladder and to propose an adapted care.

Keywords

diabetes mellitus;urodynamics;neurogenic bladder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.04 Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

ISPR8-2341

PREDICTIVE FACTORS OF LEARNING IN INTERMITTENT CATHETERIZATION IN THE NEUROLOGICAL PATIENT

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Introduction/Background

Clean Intermittent Self-Sampling (ASIP) is the gold standard treatment for regular emptying of the neurological bladder. The technique seems simple. But, its mastery requires a rigorous apprenticeship within referent services. The objective of this study was to study the predictive factors of the mastery of ASIP learning in the neurological patient.

Material and Method

Our prospective cross-sectional study included patients with neurological bladder and ASIP. The patients were divided into two groups. Group 1: patients having mastered the technique. Group 2: patients who have not. A Chi² test was performed to compare the quantitative variables. A Student's test was used for the mean comparisons.

Results

Of the 30 included patients who learned the ASIP procedure during hospitalizations in PMR ' department, 21 patients did not master the procedure after an average of 5 years of practice. The average age was 38 years old. The sex ratio was 5. Twenty-seven patients (93%) were paraplegic. None of the patients had a self-administered therapeutic education session (FTE-AS). All patients received a prescription of more than 3 ASIPs per day. Sex, pathology, initial discomfort, repercussions of urinary disorders on quality of life were not statistically significant for the acquisition of the ASIP gesture. The predictive criteria of the failure of the acquisition of the gesture of ASI that we could highlight were: the age above 35 years, the low socio-economic and educational levels. The learning of the gesture in a physical medicine service, the absence of urinary leaks between the polls were favorable to the control of the ASIP technique.

Conclusion

The mastery of the ASIP technique cannot be done thanks to a simple and unique learning. This learning should fit best in a FTE-AS program. This program is focused on the patient and his family. It integrates into the nursing setting, performed by trained professionals.

Keywords

Neurogenic bladder;Clean intermittent catheterisation;learning

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.04 Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

ISPR8-2343

STUDY REVIEW OF THE EFFICACY OF POSTERIOR TIBIAL NERVE STIMULATION FOR FECAL INCONTINENCE TREATMENT

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Introduction/Background

Fecal incontinence is a common multifactorial disorder and a disabling symptom. Its management consists in medical or biofeedback therapy and invasive surgery. Sacral nerve stimulation has changed fecal incontinence management with a good success rate. This technique is less invasive than other surgical methods, but it remains an invasive procedure. Posterior tibial nerve stimulation (PTNS), both the percutaneous (PCT) and the transcutaneous (TCT) routes, has been used as a cheaper and easier alternative. This review purpose is to assess the efficacy of PTNS for fecal incontinence treatment.

Material and Method

A review was performed of the data published since 2008 until 2017 on PTNS for fecal incontinence using PubMed database with the keywords “posterior tibial stimulation” and “fecal incontinence” to identify studies describing the clinical outcome of PTNS for fecal incontinence.

Results

Thirteen studies were selected, with a median of approximately 24 individuals studied in each one and including population with age ≥ 18 years. The majority (9) were prospective uncontrolled studies. All showed that there was at least one significant improvement in one or more evaluated parameters of fecal incontinence. The Wexner scale was used by 8 of the studies, with a significant continence improvement in 7 of the studies. There was only one prospective blinded randomized placebo-controlled trial in our selection and it concluded that patients undergoing PCT had a greater reduction in the number of incontinence episodes than those undergoing TCT and sham stimulation.

Conclusion

Although the results were positive, this review was limited by the study's population small size and the high variability of evaluation tools used. PTNS may be a new and easy-to-use option to treat fecal incontinence but we need high-quality studies with comparison groups, blinded and clinically meaningful outcome measures to further establish the utility and optimal application of PTNS.

Keywords

Posterior tibial nerve stimulation ;Fecal incontinence

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.04 Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

ISPR8-2368

SACRAL NEUROMODULATION IN THE TREATMENT OF ANAL INCONTINENCE

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Introduction/Background

Anal incontinence (AI) is a prevalent problem that drastically affects quality of life (QoL). Pelvic floor rehabilitation (PFR) is an important first-line treatment. When conservative (and surgical) measures fail, other options should be considered. Sacral neuromodulation (SNM) is a recognized treatment due to its less invasive approach, low associated morbidity and good results in AI.

The aim of this work was to perform a review about the role of SNM in the treatment of AI, exposing a clinical case. **Material and Method**

Data about the patient was extracted from the clinical process and in the consultations of PFR of our Department. A review of literature of the last 10 years was conducted in Pubmed-Medline and Cochrane databases using the keywords SNM and AI.

Results

Female, 49 years old, with a medical history of perianal abscess and transsphincteric fistula submitted to abscess drainage and fistulectomy in 2007. After surgery, she started AI. She underwent sphincteroplasty in 2008 and 2015 followed by PFR program (5 months) and peripheral neuromodulation (PTNS) without significant clinical improvement. Anorectal manometry showed hypotonia of both anal sphincters

with minor improvement of squeeze pressures.

She maintained incontinence for gas (daily), liquid and solid feces (> 3 times/month), with important affectation of QoL (Wexner score:13/20).

Was referred for SNM, performed in January 2018 after a temporary stimulation period of 1 month. Since then, she had improvement of AI, maintained incontinence for gas but only 1-2 episodes/month of incontinence for solid feces and minor affectation of QoL (Wexner score:8/20).

Conclusion

Currently, we found a considerable number of studies about SNM and its application in the AI. Is a safe and efficacious procedure in properly selected patients, contributing for increase in anal canal resting pressure, improvement of squeeze pressures, rectal sensation to distention and continence.

Keywords

anal incontinence; Sacral neuromodulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-2541

THE EFFECT OF HYPERBARIC OXYGEN THERAPY ON HEALING OF CHRONIC LEG ULCERS

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Introduction/Background

Chronic leg ulcers affect 0.6–3% of those aged over 60 years and are a common cause of morbidity; prevalence ranging from 1.9% to 13.1%. The aim was to assess the effect of hyperbaric oxygen therapy on healing of chronic leg ulcers as an adjuvant to standard wound care when compared to standard wound care alone in ulcer healing.

Material and Method

Prospective observational comparative study with followed up of 12 weeks. Patients are divided into two Arms, Arm (1) received HBOT+ Standard wound care and Arm (2) received Standard wound care . Arm (1) receives 100% oxygen at 2 ATA for 90 min in a mono-place chamber (HBOT) 4 times a week for a period of 3 weeks in a mono-place chamber along with standard wound care. In Arm 2, patients receive standard wound care alone. Based on the characteristics of the wound, dressings were changed as required. Both groups assessed at 3 and 12 week for change in size of the Index ulcer . Rate of healing is assessed by reduction in size of index ulcer i.e., ulcer area covered with epithelial regeneration.

Results

35 patients were enrolled in each arm. The mean percentage regression in size of Index ulcer was 39.9% (39.9% +/- 10.9%) in arm 1 and 20.0% (20.0% +/- 10.4%) in arm 2 at 3rd week. and 72.4% (72.4% +/- 17.5%) in arm 1 and 57.5% (57.5% +/- 21.2%) in arm 2 at 12 weeks which is significant

Conclusion

HBOT has a definitive adjunctive role in management of chronic non healing leg ulcers. Large scale randomized controlled studies are required.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-0039

COMPRESSION STOCKINGS RELATED PRESSURE ULCERS: CASE SERIES OF A NEGLECTED ISSUE

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Introduction/Background

Pressure ulcers develop in-patients who endure long periods of immobilization due to musculoskeletal and/or neurological diseases for example. This adversely affects the patient, increases caregiver burden and healthcare costs. Usual sites for development of pressure ulcers are the sacrum, trochanters and heels. However, they can also manifest in unusual sites such as the nape of the neck, on the penis, nostrils, helix of the ear, and the upper back.

Material and Method

Compression stockings, commonly used globally, assist in prevention and further progression of, venous disorders including deep vein thrombosis. The authors describe three case reports of pressure ulcer development due to prolonged application of compression stockings.

Results

Following investigation, it was found that the stockings were applied continuously without any intermittent relief. The nursing staff are primarily responsible for the prevention of pressure ulcers, and unfortunately failed to take this factor into account. Moreover, the stockings did not come with any manufacturer instructions such as length of time used in continuum before relief is necessary. We were unable to find any other cause for these unusual and rare pressure ulcers except for prolonged application of compression stockings without any formal monitoring.

Conclusion

The authors recommend that nursing staff are trained in pressure relief and prevention of pressure ulcers, including such rare occurrences, and that manufacturer give detailed guidance regarding safe use of compression stockings.

Keywords

pressure ulcer;wounds;thromboembolism

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-0196

A RETROSPECTIVE ANALYSIS OF TREATMENT OF WOUNDS CAUSED BY CALCIPHYLAXIS: HYPERBARIC OXYGEN THERAPY WITH AND WITHOUT SODIUM THIOSULFATE

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Introduction/Background

Calciphylaxis, or calcific uremic arteriolopathy, is a rare, but devastating condition with a mortality approaching 80% in the United States, often seen in patients with chronic kidney disease. It is characterized by calcification and intimal fibrosis with arteriolar stenosis and subsequent thrombosis. Skin changes such as livedo reticularis, tender papules, and violaceous plaques result and progress to necrotic ulceration. Management of calciphylaxis includes maintenance of normal levels of calcium, phosphorus and parathyroid hormone, and optimization of hemodialysis and nutritional status. In our cohort, aggressive wound management coupled with sodium thiosulfate and hyperbaric oxygen therapy (HBOT) has achieved improvement in rates of healing for recalcitrant wounds associated with calciphylaxis but limited evidence for the efficacy of either treatment exists.

Material and Method

We conducted a retrospective analysis of 94 patients treated for calciphylaxis at a Wound and Hyperbaric Center at an academic institution between 2000 and 2017 who were considered for HBOT. We assessed whether response to therapy as measured by wound healing varied among patients who received sodium thiosulfate, hyperbaric oxygen treatment, both therapies, or neither therapy.

Results

We found HBOT to be beneficial in healing compared to no therapy – 81.7% or 36 of 44 patients with complete or substantial resolution of their wounds vs neither therapy – 11.4% or 3 of 26 patients. We found sodium thiosulfate to be beneficial in healing compared to neither therapy – 66.6% or 2 of 3 patients with complete or substantial resolution of their wounds vs no therapy. We found combined HBOT & sodium thiosulfate to be more beneficial in healing compared to either therapy alone and to neither therapy – 86.3% or 19 of 22 patients with complete or substantial resolution of wounds.

Conclusion

Given the dramatic clinical improvement, HBOT in combination with sodium thiosulfate has an important adjunctive role in the treatment of calciphylaxis.

Keywords

hyperbaric oxygen;calciphylaxis;wound healing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-0535

AN INNOVATIVE IN WOUND MANAGEMENT TECHNOLOGY

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Introduction/Background

“Difficult to heal wounds” are a common and complex medical problem. It causes suffer to the patient and adds medical, social and economic burden to the health system.

The medical definition of a difficult to heal wound is: a wound showing no signs of healing between 4-6 weeks from the beginning of treatment. Part of these wounds are colonized by anaerobic bacteria.

Material and Method

We applied a novel method for treatment of difficult to heal wounds the - Regulated Oxygen - Enriched & Irrigation Negative Pressure -Assisted Wound Therapy (ROI-RNPT). This method creates a negative pressure in the wound, in combination with oxygen administration and antibiotics, applied directly into the wound bed. The negative pressure is generated by a computer controlled pump connected to an open cell sponge, located over the wound, applying a sub-atmospheric pressure scattered evenly over the wound. As part of the care and wound closure process we use the “external tissue expansion” method which is implemented by the unique TopClosure® tension relief system (TRS). The TopClosure® applies two main mechanisms: Mechanical Creep in which tension is applied to the skin slowly, and over time, skin, and stress-relaxation - stretching the skin under high tension to a fixed distance followed by waiting for the skin to relax, then repeating this action for several cycles.

Results

These principles lead to a reduction in tension enabling early and immediate closure of big wounds.

Conclusion

This study aims to investigate the efficacy and safety of the combined treatment of ROI-NPT and TopClosure®, in treatment of difficult to heal wounds, compared with the previously used methods. Our findings demonstrate that this method aids in early closure of diabetic wounds,

shortens the length of time required for treatment and hospitalization, prevents re-hospitalization and leads to increase in patients' quality of life in the long term.

Keywords

Wound Management ;Regulated Oxygen -Enriched & Irrigation Negative Pressure -Assisted Wound Therapy ;TopClosure® tension relief system

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-0687

EVALUATION OF THE IMPACT OF A THERAPEUTIC EDUCATIONAL PROGRAM CONCERNING THE PREVENTION OF RISK OF PRESSURE ULCERS FOR PERSONS WITH A SPINAL CORD LESION

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Introduction/Background

We conducted a study measuring the impact of a program of therapeutic education concerning the prevention of risk of pressure ulcers for persons with a medullar lesion, during the chronic phase.

Material and Method

This study concerns each person older than 18 with a medullar lesion, no matter the cause, having had pressure ulcer or not. The participants benefited from 2 collective workshops with for educational objective the prevention of the risk of pressure ulcer.

Data are collected during an initial individual interview and after 3, 6 and 12 months. They are demographical and clinical and the results of different scales among which the Skin Management need assessment checklist revised (revised SMnac). The main evaluation criterion is the score of the revised SMnac.

Results

The results concern 20 middle-aged people 52 years. 19 have a traumatic spinal cord injury with median aged of lesion at 234 months (14-684). The last one has a congenital myelomeningocele. The results demonstrate a benefit shown by the very significant increase of the global score on SMnac revised after 3 months with stability at 6 and 12 months. Furthermore, the annual rate incidence of pressure ulcer went from 75 % the year before the study to 55 % during the study.

Conclusion

In literature, there is no evidence about the place of the therapeutic education in the management of the risk of pressure ulcer for the persons with medullar lesion and numerous questions remain unsettled including the timing moment to realize these educational programs, evaluation tools, type and duration of intervention. This study enables us to bring some answers

on the impact of the therapeutic education during the chronic phase for persons with a medullar lesion on their knowledge and their practices in terms of prevention of the risk of pressure ulcer.

Keywords

Spinal cord injury,; pressure ulcer,; therapeutic education

No conflict of interest

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A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-0697

PRESSURE ULCERS IN A TUNISIAN REHABILITATION CENTER: A CLINICAL AND EPIDEMIOLOGICAL STUDY ABOUT 148 CASES

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Introduction/Background

The pressure ulcer, a wound of ischemic origin, constitutes a real public health problem. It is often the consequence of a poorly evaluated risk or poor management. It is a pathology that alters the quality of life of the patient. The occurrence of a pressure ulcer leads to a considerable increase in the workload for the medical and the nursing staff and the length of hospital stay. The objectives of our study were to analyze the epidemiological, etiological and clinical aspects of patients managed in the Physiotherapy and Rehabilitation Medicine department of Sahloul University Hospital in Sousse.

Material and Method

This is a descriptive retrospective study of a series of 148 patients managed in the Rehabilitation Department of Sahloul University Hospital in Sousse between January 2002 and December 2017, who presented at admission or during their hospitalization one or more pressure ulcers.

Results

All of the analysable results include 148 patients with pressure ulcers, with an average age of 38,1 years and 69.5% of whom were male. The majority of the patients (50%) were transferred from the intensive care unit, their immobilization had exceeded 30 days in 53.4% of the cases. Paraplegia was the most common reason for hospitalization (30%) followed by tetraplegia (22.7%). The other reasons for hospitalization were traumatic brain injury (16.4%), polytrauma (10.9%), and hemiplegia (8.6%). The heel and sacred locations were largely predominant (61% and 48.4% respectively). Stages II and III together accounted for 75.2%.

Conclusion

There is currently no data available in Tunisia, but despite the efforts made, pressure ulcers remain widespread. Our study has allowed us to collect figures specific to our service, which, moreover, coincide on several points with those of studies carried out in other countries.

Keywords

pressure ulcer;epidemiology;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-0703

RISK FACTORS FOR PRESSURE ULCERS IN PATIENTS ADMITTED TO A REHABILITATION SERVICE

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Introduction/Background

A pressure ulcer is an ischaemic skin lesion related to compression of soft tissue between a hard surface and a bony prominence. According to the National Agency for Accreditation and Evaluation in Health (ANAES 2001) the factors considered today as risk factors for pressure ulcer come from a clinical experience. Their relevance and relative weight are not defined and would require studies.

The objectives of our study were to determine which risk factors for pressure ulcer are found in patients managed in the Rehabilitation department of Sahloul University Hospital in Sousse.

Material and Method

This is a descriptive retrospective study of a series of 148 patients managed in the Rehabilitation Department of Sousse between January 2002 and December 2017, who presented at admission or during their hospitalization one or more pressure ulcers.

Results

All of the analysable results include 148 patients with pressure ulcers, with an average age of 38,1 years and 69.5% of whom were male. The majority of the patients (50%) were transferred from the intensive care unit. The risk factors incriminated in the formation of pressure ulcers found in the population of our study were distributed as follows: motor deficit (98.4%), use of diapers (87.5%) sensory disorders (68.8%), urinary and faecal incontinence (68%), spasticity (37.5%), poor nutritional status (31.3%), anemia (28.1%), depression (28.1%), age > 65 years (15.6%).

Conclusion

Our study has allowed us to determine risk factors for pressure ulcer found in rehabilitation patients. The motor deficit was the most implicated risk factor in pressure ulcer formation with 98.4%. We lack information supported by an adequate level of evidence to assess, prevent and manage pressure ulcers. Studies and research on these subjects need to be encouraged.

Keywords

pressure ulcer; risk factors; rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-1151

SUCCESSFUL TREATMENT OF DIGITAL ISCHEMIC ULCER WITH STELLATE GANGLION BLOCKADE

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Introduction/Background

Stellate ganglion blockade (SGB) could be used for the treatment of sympathetic dependent circulatory insufficiency in the upper limb. The sympathetic blockade produces relaxation of the upper extremity arteries, which increases blood flow of capillary and helps to relieve ischemia then facilitate peripheral wound healing. We report a patient with refractory ischemic ulcer in distal phalanges, who was successfully treated with SGB.

Material and Method

A 36-year-old female patient admitted in department of plastic surgery for contact burn wound in the right hand. There were 2nd degree burn in the right 2nd through 5th fingertips (fig 1). Despite of 2 months of dressing, digital burn wound was not healed and seems to be refractory. Suspecting vascular insufficiency, upper extremity angiography was done. It revealed decreased perfusion in 2nd through 5th fingers (fig 2) and digital fingertip wounds were diagnosed as ischemic ulcer.



Fig 1. Ischemic ulcers in 2nd-5th fingertips (left) and healed state (right)



Fig 2. Arteriography shows perfusion decrease in 2nd- 5th fingertips.

Results

For the improvement of circulation in her vulnerable fingers, physical modalities were applied and 100mg of aspirin was prescribed daily. The sympathetic skin response was conducted for the evaluation of sympathetic nerve system. It showed no response in right hand and foot. We planned SGB to increase blood flow at the fingers and SGB was done under ultrasonography, twice per week for 3 weeks. The follow-up angiography showed significant improvement of fingertip perfusion (fig 3). Consequently fingertip wounds were completely healed (fig 1). Finally,

she could achieved independent ADL with her hand.



Fig 3. The follow-up arteriography shows improved perfusions in 2nd- 5th fingertips

Conclusion

The SGB can be effective on improving blood flow for healing of ischemic ulcer in the fingertips. We suggest the SGB could be an alternative option to overcome intractable condition.

Keywords

ischemic ulcer; Stellate ganglion blockade; digit

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-1165

HOW ARE THE SURFACES AND SHAPE IMPORTANT TO PREVENT PRESSURE SORES?

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Introduction/Background

The contact surfaces shape and the material type which they are made of, are very crucial issues to figure out better the consequences on the skin integrity of the users sitting on a wheelchair. More, we have to consider how a contact surfaces can grant breathability and moisture absence, in order to avoy the increasing skin temperature and local humidity. In this study, we demonstrated that a particular backrest shape (a V-shape) and a innovative material used for the backrest as well as for the seat, can work decreasing significantly the interface pressure on the user's skin, even without using a specific antidecubitus cushion (for those patients with no so high level of risk, according to Braden and Waterlow Scale). We evaluated two patients: one with severe outcome of Sub Aracnoid Haemorrhage by Brain Aneurism followed by a non response period, with high pressure sore risk (weight 45 kg), and another with an outcome of a Stroke Ischemic and Haemorrhagic followed by a non response period (weight 78 kg).

Material and Method

They used a tilt-in-space wheelchair with a specific V-shape backrest and with a particular surfaces material, totally breathable and with a visco-elastic effect. We tried to put them in different position according with the items of the study (no tilt-20° of tilting-max tilting-max tilting and backrest reclination-max tilting and backrest reclination plus rised legrest), with and without the upholstery. The acquisition with Pressure Mapping Sensor were done immediately after positioning, after 10 minutes and after 1 hour of sitting.

Results

The data obtained show in both of the patients a good distribution of the pressures, bearing in mind that there weren't any interface cushion between the seat and the user's bottom.

Conclusion

The records without upholstery showed that the back in the middle was completely unloaded and the pressure spread effectively.

Keywords

ergonomic sitting;better pressure distribution;alternative to bedridden

Conflict of interest

Disclosure statement:

Martino Avellis, has an affiliation with Ormesa srl, an italian company that manufactures technical aids for person with disability, as employees involved in R&D Department and User's evaluations

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A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-1184

NATIONAL PRESSURE ULCER (PU) PREVALENCE IN FRENCH INTENSIVE CARE UNITS FOR PATIENT WITH NEUROLOGICAL DISEASES

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Introduction/Background

Pressure ulcers are frequent complications in PMR wards. A lot of patients arrive from intensive care units. French national society for Pressure Ulcer conduct several national studies in France and a study in intensive care units in 2017. We analyse PU prevalence and Acquired PU prevalence, for patients with neurological diseases and without.

Material and Method

A national study was conducted with French society of intensive care and French society for pressure ulcer. 1221 patients are screened, in 85 intensive care units in whole France. Patients have surgical disease in 28% and medical disease in 72% with 23% neurological disease (282 patients). 67% are men. Mean age is 61.7 y.o with 30% under 55. Mean IGS2 is 42. Prevalence was analyzed one day during same week in all units by auto delivered survey. Comparison was organized between pathologies and patients in logistic regression.

Results

Global PU Prevalence is 18.7% and acquired PU prevalence is 12.7%. As Acquired PU prevalence for neurological patients is 27% significantly higher than global ($p < 0.0001$). 50.5% (47) of severe PU arrive with neurological disease. ($p < 0.0001$). Neurological disease is an explicative variable for PU : odds ratio is 3.128 (IC 1.972- 4.961).

Conclusion

In intensive care units, Acquired PU is higher for patients with neurological diseases (27% against 12.7%). Neurological disease increase PU risk in intensive care units.

Keywords

pressure ulcer;neurological diseases;intensive care units

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-1211

FRENCH NATIONAL GUIDELINES FOR PRESSURE ULCER (PU) PREVENTION AND CARE

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Introduction/Background

Pressure ulcers are frequent complications in PMR wards. Some patients arrive with PU, prevalence is 12% in national survey conducted by French society for PU (PERSE- prevention, education, research, care of PU). Some patients are Spinal cord injured (SCI) and require surgery.

French society for PU provide guidelines : in 2012 general guidelines according with international guidelines and in 2016 guidelines for surgical PU in SCI.

Material and Method

As PU is a general disease and some recommendation are contradictory, PERSE organized 2 conferences. The first updated previous guidelines from 2001 and the second provided first guidelines for surgical PU in SCI.

During the conferences, all the references are reviewed to remove EBM recommendations. In a second time, for questions without EBM guidelines, professional agreement is searched out.

Results

Guidelines for prevention and care is written.

First is : assess risk level as soon as possible.

Second is organize prevention in relation to the issue and always with effort on nutrition and mobilization.

Third is care is not only local dressings.

Then, the first guidelines for surgical PU SCI was written. The result is : to improve good results for patients, multidisciplinary work and patient compliance assessment is necessary. Second is progressive recovery of sitting is essential

.

Conclusion

Elaborate and disseminate guidelines is necessary and bring more consistent between all care givers

Keywords

pressure ulcers; french guidelines

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-1553

THE EFFECTS OF HIGH-DENSITY HIGH-RESILIENCE MATTRESS ON INTERFACE PRESSURE IN BED-RIDDEN PATIENTS

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Introduction/Background

Many bed ridden patients are suffering from complications like pressure-ulcer, even though mattress is applied to reduce pressure, and more effective methods are being studied. The aim of this study was to investigate the effects of high-density high-resilience (HDHR) foam mattress (ROTA mattress) on interface pressure compared with air mattress in bed-ridden patients.

Material and Method

Fifteen bed-ridden patients were included and their body mass composition measured. Interface pressure was measured by applying a pressure sensor(CONFORMat pressure sensor) from the lumbar spine to the area containing the pelvis in the patient's supine position on the bed. We measure the pressure in three ways as follow: 1) with hospital mattress 2) with air mattress 3) with HDHR mattress. The maximal peak pressure when used mattress was selected. For data analysis, we used SPSS version 22.0 (SPSS Inc., Chicago, IL, USA) for Windows. An post-hoc comparisons between groups on calculating Kruskal–Wallis ANOVA statistic

Results

There was no significantly difference in pressure reduction according to body mass composition. All types of air mattress showed a reduced in pressure compared with hospital mattress. Compared with all air mattress, the HDHR mattress showed a significantly reduced in pressure.

Conclusion

The HDHR foam is made of cell opener containing ester linkage in molecule have improved values of tensile strength, tear strength and elongation. The HDHR mattress is consist of central base of high-density high-resilience foam, which provides imprint of the body shape, follows its contour and maintains a floating state. So the distribution of pressure is optimized on the entire surface and the shearing areas are reduced. There are 4 specific discharge zones at the ends of the mattress to relieve pressure on the heels and head. The use of a more effective pressure reducing mattress may have a more positive effect on patient management and decreased complications.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-1777

TEMPORAL EVOLUTION OF BACTERIAL ECOLOGY OF PRESSURE ULCERS IN PEOPLE WITH SPINAL CORD INJURY

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Introduction/Background

Bacterial species and their role in delaying the healing of pressure ulcers (PU) in spinal cord injury (SCI) patients have not been well described. The aim of this study was to characterize temporal evolution of superficial and deep microbiota of PU in SCI population.

Material and Method

Patients treated for PU between 05/2015 and 12/2016 at the Propara Neurological Rehabilitation Center in Montpellier (France) were included. After wound debridement, samples for bacterial cultures were obtained by swabs (superficial) and tissue biopsies (deep) at the day of inclusion (D0) and 28 after (D28).

Results

Forty-nine patients were included (median age: 56 years; 79.6% men). At deep level, coagulase-negative staphylococci (33.8% at D0; 20% at D28), *S. aureus* (17% at D0; 21% at D28), *Enterococcus* sp. (12,3% at D0; 16% at D28) and *Corynebacterium* sp. (13.8% at D0; 16% at D28) were the most frequent bacterial species isolated. After 28 days, percentage of Enterobacteriaceae had significantly increased (0% at D0; 10.5% at D28; $p < 0.05$) and percentage of anaerobic bacteria had significantly decreased (10.7% at J0; 5.3% at J28; $p < 0.05$). During the follow-up, at the intra-individual level, the bacterial species isolated were significantly different between D0 and D28, especially at the deep level. This great variability was also described between the deep and the superficial levels.

Conclusion

This study highlights for the first time the evolution of the ecology of PU during one month. The low proportion of Gram-negative bacilli suggests that these bacteria are often colonizing bacteria that could be eliminated by an efficient surgical or mechanical debridement. Moreover, this work demonstrates the uselessness of superficial swabs that do not reflect the bacterial ecology present in depth of the wound.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-2003

USE OF ABSOLUTE ETHANOL SCLEROTHERAPY FOR ISCHIAL PRESSURE SORES IN 4 SPINAL CORD INJURY PATIENTS.

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Introduction/Background

The ischial region is a common site of pressure sore in Spinal Cord Injury (SCI) patients. Ischial pressure sore with a large subcutaneous bursa and small surface fistula is usually resistant to conservative treatment and tends to require radical flap surgical treatment. A new alternative is to scarred the bursa and to close it up by sterilizing, fixing, and denaturing by the pharmacologic effect of absolute ethanol.

Material and Method

Patients selected had a small defect of the cutaneous portion, and a large subcutaneous bursa. The surgical method is: irrigation and washing the inside of the bursa, insertion of a suction drain tube into the bursa, suture of the trimmed edges of the cutaneous wound together, and then 6 inflations of the bursa for a 90-seconds period with absolute ethanol.

Results

We report the use of absolute ethanol sclerotherapy in 4 SCI patients (4 males, 23 to 53yo) with an ischial pressure sore bursa for 9 months in average. Two of them had undergone a musculocutaneous flap surgery before. After sclerotherapy, they spent 6 to 13 days in the plastic surgery department and then 2.5 to 6 months in a spinal cord injury rehabilitation department for 3 of them before to go back home. They were cicatrized and sited from 7 to 26 weeks post-surgery for 3 of them with no recurrence for a 3 to 18-months follow-up. One patient did not cicatrized after a 10 weeks discharge and went back home with still an ischial sore.

Conclusion

This surgical procedure was efficient for 3 of the 4 patients. Sclerotherapy appears as an alternative to fasciocutaneous or musculocutaneous flap for ischial pressure sore in patients with a small surface fistula but large subcutaneous bursa. There is a need of a larger group of patients to better study the delay of full-cicatrizing and the recurrence risk.

Keywords

pressure sore;spinal cord injury;surgery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-2158

EFFECTS OF LOW-LEVEL LASER THERAPY ON THE PROGRESS OF WOUND HEALING IN HUMANS.

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Introduction/Background

Pressure sores also identified as pressure ulcers, decubitus ulcers and bedsores, occur in structures supporting the body on bony prominences as a consequence of external skin compression, shear force and friction that generate ischemic necrosis on the tissue. The laser acts on the cellular level, increasing the metabolism, being able to accelerate the healing process with the decrease of the release of inflammatory mediators. It also promotes increased proliferation, fibrin reabsorption and fibroblast development. The aim of this study was to evaluate the physiotherapeutic performance in the application of laser therapy on the healing process through a retrospective analysis of medical records.

Material and Method

Medical records were analyzed from 02/2014 to 06/2017, collecting data relevant to the research including aspects such as: patient identification, age, sex, pathology, treatment period, number of applications, thus evaluating the evolutionary process and the healing process as well with the use of low intensity laser.

Results

A total of 45 medical records were analyzed from 02/2014 to 06/2017, 17 women and 28 men, with an age average of 65.1 years old, all with open wounds, with an average number of 40 applications per patient with diabetes mellitus and 25 applications in trauma. The used dose of the Helium-Neon (632.8 nm) and Gallium Arsenide (904nm) lasers were respectively 5 J/cm² and 4 J/cm² with a frequency of 16Hz and using scanning and punctual mode.

Conclusion

It can be verified in this study that the application of low intensity laser was effective in the healing of wounds with both the application methods, punctual and scanning mode, therefore showing its reliability in the auxiliary work in the treatment of pressure sores, promoting tissue proliferation accelerating the healing process.

Keywords

Laser therapy ;Wounds;Healing process

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.05 Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

ISPR8-2222

TREATMENT OF PRESSURE ULCERS WITH THE COMBINATION OF AUTOLOGOUS PLATELET RICH PLASMA AND PLATELET RICH FIBRIN: A CASE SERIES STUDY

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Introduction/Background

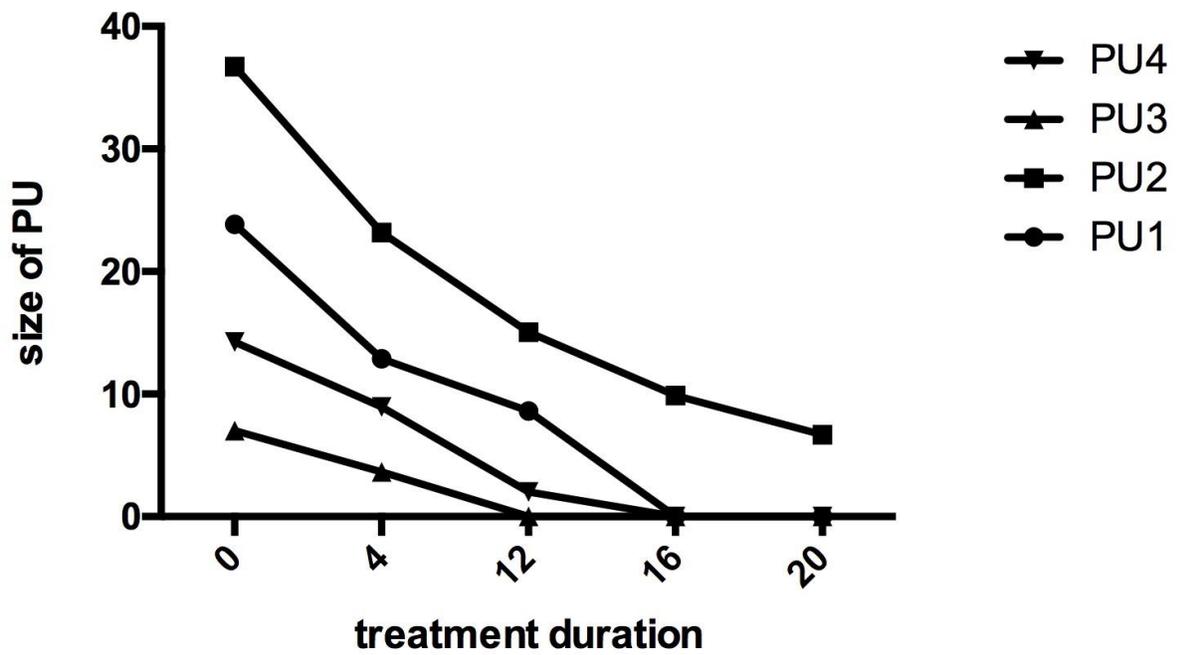
Platelet rich plasma (PRP) and platelet rich fibrin (PRF) are both autologous blood products and their high concentrated platelets, cytokines and numerous growth factors have drawn a world-wide attention for enhancement of tissue repair and regeneration. Pressure ulcer (PU) remains a severe challenge for clinical and rehabilitation professionals. The purpose of this case series was to study the safety and efficiency of applying both PRP and PRF for treating PUs.

Material and Method

The PRP and PRF were prepared from the whole blood with different centrifugation tubes under the same centrifugation protocol (RCF 117.7g). 3 patients with PUs in sacrococcygeal region were included. Each PU was treated with 4 pieces of PRF as tissue matrix plugs and 5ml of PRP as subcutaneous injections every 3 days. The baseline information of enrolled patients, platelet count of whole blood and PRP, sizes of PU and healing time of PU were recorded for analysis.

Results

The mean age of enrolled patients was 49.33±29.54 years. Two patients had diagnosis of spinal cord injury and the other had pelvic fractures. 4 PUs with different size ranging from 7.06cm² to 36.72cm² were treated with PRP and PRF. All patients demonstrated significant reduction of PU size and average follow-up time was 15.5 weeks. Our preparation protocol produced PRP with 3.52 times platelets compared with un-centrifuged whole blood.



Conclusion

PRP and PRF have shown their prosperity in tissue repair and regeneration in many aspects. Our case series have testified that the combination utility of PRP and PRF can be benefit for PU patients and may be useful for other chronic wound treatment.

Keywords

pressure ulcer ;platelet rich plasma (PRP);platelet rich fibrin (PRF)

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.06 Rehabilitation Addressing to Specific Issues - Management of Fatigue and Sleep Disorders

ISPR8-0193

CHARACTERIZATION OF KNEE EXTENSOR MUSCLES FATIGABILITY DURING ISOKINETIC CONCENTRIC CONTRACTIONS IN PATIENTS WITH MULTIPLE SCLEROSIS

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Introduction/Background

Increased muscle fatigability has been reported in patients with multiple sclerosis (MS) assessed during sustained isometric contractions however rehabilitation programs and daily life activities often involve concentric contractions. The aim of this study was to characterize knee extensor muscles fatigability in patients with MS during concentric contractions.

Material and Method

38 patients with MS and 14 healthy persons were included in this study. An isokinetic assessment of knee extensor muscles fatigability was carried out during a fatiguing task of 50 concentric contractions, associated with an electromyographic activity analysis of the rectus femoris, vastus lateralis, biceps femoris and semitendinosus muscles.

Results

Patients with MS experienced lower knee extensor muscles fatigability than healthy subjects. When torque was normalized to maximal isometric peak torque, patients with MS and healthy persons had the same level of relative strength at the end of the fatigue protocol (50% of the maximal isometric peak torque). During the fatiguing task neuromuscular efficiency decreased but coactivations of knee flexor muscles remained unchanged.

Conclusion

Fatigability is a common complaint in patients with MS but they experienced lower muscle fatigability than healthy persons during maximal concentric contractions, nevertheless they finished fatigue protocol at the same level of relative strength.

Keywords

Fatigability;Multiple sclerosis;Concentric contractions

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.06 Rehabilitation Addressing to Specific Issues - Management of Fatigue and Sleep Disorders

ISPR8-0766

THE EFFECTIVENESS OF A SLEEP CLINICAL PATHWAY IN AN INPATIENT MUSCULOSKELETAL REHABILITATION COHORT: A RANDOMISED CONTROLLED TRIAL

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Introduction/Background

Background: Sleep is important for health, quality of life and general well-being. Poor sleep in hospitalized patients is common and can affect recovery, engagement, and prolong hospital stay. The assessment and management of sleep in hospitalised patients is poorly understood. The inpatient rehabilitation setting may present an opportunity for better management of sleep disorders. Clinical pathways may be useful for the management of sleep disorders in a rehabilitation setting.

Aim: To assess the effectiveness of a sleep clinical pathway compared to standard care in improving sleep quality, patient engagement in therapy and length of stay in an inpatient rehabilitation setting.

Material and Method

Rehabilitation inpatients with a musculoskeletal diagnosis (N=51) were randomized to standard care ("control" N=29) and sleep clinical pathway ("intervention" N=22). Outcome measures included: Pittsburgh Sleep Quality Index (PSQI), Hopkins Rehabilitation Engagement Rating Scale (HRERS), Fatigue Severity Scale (FSS), Patient Satisfaction with Sleep Scale, and Actigraphy. Assessment time-points were at admission and upon discharge from rehabilitation.

Results

There were no significant differences between groups for any outcome measures. As a cohort (N=51), there were significant improvements from admission to discharge in sleep quality [PSQI (-2.31; 95% CI -3.33 to -1.30 P=<0.001)], fatigue [FSS (-8.75; 95% CI -13.15 to -4.34; P=<0.001)], engagement with therapy [HRERS-Physiotherapists (+1.37; 95% CI 0.51-3.17; P=0.037), HRERS-Occupational Therapists (+1.84; 95% CI 0.089-2.65; P=0.008)], and Satisfaction with sleep (+0.824; 95% CI 0.35-1.30; P=0.001). Actigraphy results showed that all patients reported more sleep than what was measured.

Conclusion

A sleep clinical pathway did not improve sleep quality compared with standard care. Larger studies and studies with alternate methodology such as “cluster randomization” are needed.

Keywords

Musculoskeletal; Sleep

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.06 Rehabilitation Addressing to Specific Issues - Management of Fatigue and Sleep Disorders

ISPR8-1950

IMPACT OF INSPIRATORY MUSCLE TRAINING ON OBSTRUCTIVE SLEEP APNEA IN CORONARY PATIENTS. THE RICAOS STUDY: PRELIMINARY RESULTS.

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Introduction/Background

Obstructive Sleep Apnea (OSA) syndrome affects 5% of the adult population and its prevalence is 13 times higher in coronary patients. However, OSA in coronary patients is less suggestive, leading to under diagnosis and lower adherence to continuous positive airway pressure (CPAP) treatment. While oropharyngeal exercises showed significant decrease in apnea hypopnea index (AHI) in patients with moderate OSA, there were no studies on specific inspiratory muscle training (IMT).

The aim of our study was to assess the effectiveness of IMT on AHI reduction in coronary patients with moderate OSA and already engaged in a cardiac rehabilitation program post-infarction.

Material and Method

We included coronary patients involving in a cardiac rehabilitation program after infarction, presenting an AHI between 15 and 30, and without clinical symptoms requiring CPAP. Patients were randomized in a 1:1 allocation in a control group (CTL - classic training) or in an IMT group (classic training + IMT). IMT consisted in a prolonged inspiration into a device allowing the air to pass during the inspiration only according to the force developed. The resistance applied was 70% of the maximum inspiratory pressure ($P_{i_{max}}$). Patients in the IMT group perform 2 sets of 30 breaths per day, 6 days a week for 2 months.

Results

We included 19 patients (59±10 years; BMI=27±3 kg/m²). All the patients showed a significant decrease in AHI after rehabilitation (21.5±5.1 to 16.3±7.8, p<0.009). The IMT group (n=10) significantly improved $P_{i_{max}}$ (p<0.05) and had a significant decrease of AHI by 25% (-8.7, p=0.02). In the CTL group (n=9), the AHI decreased by 23% (-5.2; p=0.1). No significant differences were observed in anthropometric data.

Conclusion

A specific IMT during a cardiac rehabilitation contributes to reduce significantly AHI in coronary patients with moderate OSA. Further research is needed to determine which patients benefit more of this alternative therapy.

Keywords

inspiratory muscle training;sleep disorder;infarction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.06 Rehabilitation Addressing to Specific Issues - Management of Fatigue and Sleep Disorders

ISPR8-1952

FEASIBILITY OF A MULTIDIMENSIONAL REHABILITATION PROGRAM OF PHYSICAL ACTIVITY AS “DRUG NON-DRUG” TO MANAGE FATIGUE IN ONCO-HAEMATOLOGICAL PATIENTS

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Introduction/Background

In literature Cancer-Related Fatigue (CRF) is the main symptom reported by onco-haematological patients, but a lot of them need information on its management. It is known that Physical Activity (PA) could help to deal with CRF, but the modalities to do it are not already definite.

For this reason multidimensional programs combining PA and Therapeutic Patient Education (TPE) are offered to onco-haematological patients, but their effectiveness is not clear yet.

Aims of the project:

- To Investigate the feasibility of TPE program associated to PA in onco-haematological patients.
- To assess the intervention's effect on CRF, QoL, physical performances and psychological distress of this subgroup of cancer patients.

Material and Method

The study will be conducted in Arcispedale Santa Maria Nuova in Reggio Emilia (Italy) from November 2017.

It's a pilot RCT, with blinded assessment, 18 months duration, addressed to adults onco-haematological patients newly diagnosed that received medical approval to do PA.

It's composed by 2 Phases:

1. Baseline: before starting intervention, at least 10 patients;
2. RCT: at least 40 patients.

Assessment with evaluation scales:

T0: Enrollment + Randomization in two groups

T1: 1 month after T0

T2: 2 months after T1
T3: 6 months after T1

Interventions, acted between T1 and T2:

Control Group (CG): Standard care + 2 group sessions of TPE

Intervention Group (IG): as CG + 6 weekly individual sessions focused on planning a tailored PA program.

Results

Baseline early data collection showed that after 1 month of medical treatment (T1) CRF and psychological distress increase, meanwhile QoL decreases and physical performances remains stable.

Conclusion

Our program offered between T1 and T2 could help onco-haematological patients to prevent the further decrease of their conditions due to therapies. At the time of the congress we will describe all baseline data collection and early intervention data.

Keywords

fatigue management;Therapeutic Patient Education ;Physical Activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.06 Rehabilitation Addressing to Specific Issues - Management of Fatigue and Sleep Disorders

ISPR8-2148

HOW TO MEASURE WALKING-RELATED PERFORMANCE FATIGABILITY IN A CLINICAL PRACTICE? A SYSTEMATIC REVIEW

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Introduction/Background

Fatigue and walking impairments are often reported in patients with neurological and non-neurological conditions. Fatigue during the performance of physical activities, can be defined as 'fatigability'. Questionnaires, BORG and VAS-scores based on the subjective feeling that indicates more effort to perform a walking task, are currently used to assess fatigability. However, objective measures of fatigability during walking are still sparse.

Material and Method

The aim of this systematic review is to provide an overview of objective measurement systems assessing walking related performance fatigability in different pathologies and healthy subjects. Two databases were used for obtaining articles: Pubmed and Web Of Science. Articles were excluded according to title and abstract or by screening on full texts, if indistinctness occurred from the abstract. Extra articles were added through hand searching.

Results

In total, 711 articles were found, from which 32 were included in this review. Across different study populations performance related fatigability was most frequently measured during longer walking test such as; 6 minute walking test and 500 or 400-m walking test, by comparing the first and last minute/lap for spatiotemporal or other kinematic changes.

Conclusion

Longer walking test seem to be consistent methods for assessing walking-related performance fatigability, when comparing the changes over the last and first part of the test. However, due to differences in study population, terminology and definition of fatigability or variance in the walking task (e.g. speed, distance, protocol), there is no golden standard in the objective measurement of walking-related performance fatigability. Normative data based on performance of healthy individuals and psychometric properties are scarce or non-existing.

Keywords

Multiple Sclerosis;Fatigue;Fatigability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.07 Rehabilitation Addressing to Specific Issues - Rehabilitation of Disability-Related Mental Disorders (e.g. Depression, Anxiety)

ISPR8-2668

THE LIMITATION OF REHABILITATION IN A PATIENT WITH HETEROTOPIC OSSIFICATIONS AND SEVERE CRANIOCEREBRAL TRAUMA.

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Introduction/Background

heterotopic ossification represents the formation of bone tissue in abnormal anatomic sites, usually in soft tissue, due to mesenchymal cell metaplasia in osteoblasts leading to the presence of mature lamellar bone tissue in non-osseous tissue.

There are two forms: acquired - caused by muscular-skeletal trauma (fracture), thermal trauma or total hip arthroplasty; neurogenic - determined by spinal cord injury, stroke, and traumatic cerebral lesions.

Material and Method

We present the case of 32-year-old patient with medical history of traffic accident polytrauma and severe craniocerebral trauma (Feb. 2012), with supratentorial, subtentorial and subarachnoidal hemorrhage, drained hemothorax, spastic, tetraparetic, motor deficit, splenectomy, hepatic lesions, fracture of the left 3-5 ribs arch, fracture of the right ilioischipubia

and left ilioischipubian flexum (extension deficiency) 70 degrees irreducible, heterotopic right elbow ossification, coxofemoral volume expositions, percutaneous tenectomy, coordination synchines.

For the initial evaluation we used a number of scales; like muscles strength (Right superior limb 2/5, left-3/5, Inferior limb 3/5, VAS because the movements were painful at the beginning, VAS=7/10, the passive flexural balance of the hip was 40m degree before operation, and 25 active.

The patient followed a staged rehabilitation program and drug therapy

Results

After the drug treatment, , rehabilitation program but especially the operator for heterotopic osteoporosis (Dec 2017), the pains at the level of the hips decreased, the mobility was better, the passive flexural balance was 60 degrees, 40 active Kinetec who was recommended post operatoir reaching after 2 weeks at 90 degrees flexion, keeps sitting seated in wheelchair without pain, maintains coordination synchines

Conclusion

The parcularity of the case; 32-year-old patient with polytraumatism and TCC severe post-traffic accident (2012) with multiple post-traumatic marks with bilateral coxofemural ossification and pain at this level, painful mobilizations that slowed the recovery program

Keywords

TCC;PT

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.07 Rehabilitation Addressing to Specific Issues - Rehabilitation of Disability-Related Mental Disorders (e.g. Depression, Anxiety)

ISPR8-1016

EFFECT OF MIND-BODY REGULATION TECHNIQUES ON HUMAN BLOOD FUNCTIONAL PROPERTIES

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Introduction/Background

Mind-body regulation techniques have many positive effects on human health, benefitting many different physiological systems of the body. Here, we show the effect of mind-body regulation techniques on several different functional properties of human blood.

Material and Method

The study was conducted on 45 subjects ages 20 to 50 years old. At the beginning of each experimental session, a blood sample was first obtained from a subject. Then the subject performed a series of mind-body regulation techniques, including specific breathing and articular exercises, for 10 to 20 minutes, after which a second blood sample was immediately obtained. Our results are based on a comparison of the two blood samples as well as a personal questionnaire. Microscopic examination revealed a reduction in red blood cell aggregation following the exercises.

Results

Thirty subjects had marked aggregation of red blood cells before the exercise period while only 15 subjects had marked aggregation following the exercises. Reduced aggregation indicates healthy red blood cells, including increased blood oxygenation. Changes in red blood cell color were also observed. Before the exercises, blood samples from 25 subjects exhibited uneven erythrocyte color, indicating low haemoglobin saturation, while after the exercises uneven erythrocyte color was observed in only 5 subjects. Additionally, motility analysis revealed leukocytes with low activity in 42 subjects before the exercise period, while only 12 subjects exhibited low leukocyte activity following the exercises. The exercises also had a marked beneficial effect upon the psychological state of the subjects. Before the exercises, 71% of subjects felt stressed and emotionally overloaded, 17% somewhat emotionally loaded, and 12% emotionally balanced. After the exercises 91% of subjects felt emotionally balanced.

Conclusion

Our results indicate a beneficial effect of mind-body regulation techniques upon several functional properties of human blood, which likely contribute to the overall health and psychological benefits of these exercises.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.07 Rehabilitation Addressing to Specific Issues - Rehabilitation of Disability-Related Mental Disorders (e.g. Depression, Anxiety)

ISPR8-1957

THE EFFECTIVENESS OF ADAPTIVE BEHAVIOR SKILLS FOR PEOPLE WITH MODERATE MENTAL DISABILITIES DURING THE MODIFIED PHYSICAL EDUCATION LESSON

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Introduction/Background

People with moderate mental disabilities suffer from inadequate adaptive behavior skills which have a negative impact on their daily tasks and interaction with their environment, especially the learning environment which turns this suffering into an acceptable integration with the teacher or colleagues. These skills are essential in the process of diagnosis and classification based on the levels of adoption of the educational plan and teaching strategies, content, goals of mobility and cognitive and behavioral. The aim of the research work is to assess the effectiveness of adaptive behavior skills during the modified physical education lesson for the mentally disabled.

Material and Method

A standardized scale designed during the physical education lesson for the mentally handicapped with the degree of intermediate disability (those who can receive training), who are between 40 and 54 degrees above 12 years of age and require special training programs appropriate to their age. Fitness scale includes, simple motor skills, moving to and from physical education classes, teacher response, peer and equipment handling, effort and self-acceptance, cognitive abilities.

Results

An accurate description of the levels the behavioral skills of the child during the physical education lesson, which was adapted to the mathematical learning environment, was identified and described in a certain lack of skills that can guarantee him and the teacher the maximum benefit during the lesson.

Conclusion

The need to design modified or integrated physical education classes to develop adaptive skills for the mentally handicapped in a specialized manner and to train physical education teachers working with that group on how to improve those skills

Keywords

adaptive behavior skills ; moderate mental disabilities ; the modified physical education lesson

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.07 Rehabilitation Addressing to Specific Issues - Rehabilitation of Disability-Related Mental Disorders (e.g. Depression, Anxiety)

ISPR8-2414

CLINICAL RELEVANCE OF DIFFERENT OBESITY INDICES AND DEPRESSIVE SYMPTOMS IN THE ELDERLY ADULTS

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Introduction/Background

To identify optimal obesity indices and cutoff to identify depressive symptoms in suburb-dwelling older Chinese.

Material and Method

Data are from 576 men and 753 women aged 60 years and older recruited in the Hangu area of Tianjin, China. Depressive symptoms were examined using the 30-item Geriatric Depression Scale. A Geriatric Depression Scale score of ≥ 11 was used to indicate depressive symptoms. Receiver operating characteristic curve analyses were used with calculation of the area under the curve (AUC) to evaluate the performance of body mass index (BMI), body fat percentage (BF%), waist circumference (WC), waist-hip ratio (WHR), and waist-height ratio (WHTR) for the identification of depressive symptoms.

Results

The prevalence of depressive symptoms was 14.6% in women and 8.5% in men. The AUC for body fat percentage (BF%) was 0.686 (95% confidence interval [CI] = 0.602–0.770) in men and 0.614 (95% CI = 0.557–0.670) in women, respectively. These values were indicated higher levels of depressive symptoms compared with other relative obesity indices. The cutoffs of the most relevant index in men and women that effectively identified individuals at risk of depressive symptoms were 19.20% and 32.35%, respectively.

Conclusion

Overall adiposity measures generally performed better than abdominal obesity indices, and BF% performed best in both men and women. Optimal cutoffs for clinically relevant index have the potential to identify elderly adults at risk of depressive symptoms.

Keywords

Depression; obesity; elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.08 Rehabilitation Addressing to Specific Issues - Sexual Functioning in People with Disability and Chronic Health Conditions

ISPR8-0273

ENHANCED EXTERNAL COUNTERPULSATION (EECP) IN REHABILITATION OF ERECTILE DYSFUNCTION: A NARRATIVE LITERATURE REVIEW

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Introduction/Background

BACKGROUND and AIMS: Enhanced external counterpulsation (EECP) is a noninvasive treatment option which has been recently applied in patients with erectile dysfunction (ED). The aim of this study was to review the efficacy of EECP in patients suffering from ED.

Material and Method

METHODS: PubMed, MEDLINE, Google Scholar, Tripdatabase, Scopus and Cochrane library databases were searched for articles with the following search terms: Enhanced external counterpulsation, erectile dysfunction. No restrictions with respect to study setting, date of publication or language were imposed.

Results

RESULTS: From an initial set of 208 records, four studies were selected after final review. Total number of 177 patients were included in these studies with the treatment duration with EECP ranging from 20 to 35 hours weekly. Peak systolic flow, quality of erection, International index of erectile function (IIEF) and overall satisfaction were all significantly increased after EECP treatment.

Conclusion

CONCLUSION: To the best of our knowledge, this is the first study reviewing the clinical effectiveness of EECP in patients with ED. According to the articles mentioned in this study, an enhancement in erectile function after EECP treatment courses has been observed in patients both with and without coronary artery disease without any significant adverse effects.

Keywords

coronary artery disease;enhanced external counterpulsation;erectile dysfunction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0115

DECONDITIONING PATIENTS IN ACUTE REHABILITATION SETTING

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Introduction/Background

Patients admitted to hospital with prolonged hospital stay and those who had to stay in ICU particularly elderly age group are likely to get deconditioned quickly. They have postural hypotension, pain and stiffness and or functional decline. They may need a period of in-patient rehabilitation to get back their functional status and or coordinate care prior to discharge back to community

Material and Method

Aim of our study was to look into the de-conditioned patients admitted to our rehabilitation wards

- To look at FIM (Functional Independent measures) gains, the functional improvements, length of stay and final discharge destination of these group of patients
- To stream line the de-conditioned patients admission to our wards and make more effective use of the available resources

Results

We collected 100 consecutive patients admitted to our rehabilitation wards from January 2017 to May 2017; patients included in the study were admitted for deconditioning, patients with stroke, fractures, spinal cord injury, amputees, Pulmonary rehabilitation and or any other neurological condition were excluded from the study. Age, sex, ethnicity, underlying diagnosis for deconditioning, length of stay in acute and rehab wards, FIM gains, discharge destination, medical issues during rehab stay and whether they returned to premorbid situation were analyzed.

Conclusion

Nearly 75% of patients returned to premorbid living situation with 85% returning to independent to minimal assist with activities of daily living. Including weekend therapy, newer equipment and regular education and closer involvement of family will help improve the FIM outcomes and reduce length of stay further.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0132

SYSTEMATIC REVIEW ON THE EFFECTS OF DIFFERENT REHABILITATION THERAPIES IN ELDERLY POST- STROKE PATIENTS

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Introduction/Background

Background:

It is right to review this topic, since currently one of the most prevalent pathologies in the elderly population is cerebrovascular accident, which is why it is necessary to know the rehabilitation therapies available for this pathology.

Aims:

Among the main objectives of this review are:

- List the different existing rehabilitation therapies for elderly patients who have suffered strokes.
- Clarify the results of the different therapies in these patients.
- Specify the most beneficial techniques in the treatment of these patients.
- Define the evolution of the elderly post-stroke patient after therapy.

Material and Method

A search was carried out through the main medical databases, specifically Pubmed, Cochrane and Medline.

The keywords used were: "rehabilitation", "stroke", "patients", "elderly" and "management"

Approximately 350 results were obtained, which were subjected to the following inclusion criteria:

- Publication in the last 3 years.
- Experimental studies.
- Inclusion of at least 2 key words in the title of the text.
- Do not be duplicated.

Results

-Transcranial low frequency therapy seems to be a promising therapy to recover cognitive and motor function in patients with chronic cerebral ischaemia.

-Body vibration therapy improves recovery in patients with subacute strokes.

-Technique of repetitive facilitation exercises (RFE) showed improvement in elderly post-stroke patients.

-Botulinum toxin appears to be useful in post-stroke patients and have shoulder pain and hemiplegia.

-Valecular balloon application is useful in post-stroke patients with dysphagia, improving it and avoiding the risk of aspiration.

Conclusion

-Currently, cerebrovascular accidents represent one of the most serious health problems in the Western world.

-Numerous aspects / therapies that seem to be useful in the rehabilitation of elderly post-stroke patients have been described throughout this review. With proven results through experimental studies and with a promising future.

-In my opinion, there should be greater efforts in the creation and research of rehabilitative therapies that try to improve step by step the future recovery of these patients.

Keywords

rehabilitation;stroke;elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-2674

DANCE THERAPY IN PATIENTS WITH PARKINSON'S DISEASE: A REVIEW

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Introduction/Background

Parkinson's disease (PD) is a chronic, progressive and disabling neurodegenerative disorder. It affects physical, psychological and emotional functions and consequently has a profound effect on quality of life. Emerging evidence suggests that rehabilitative exercise interventions can have a neuroprotective effect and promote neuroplasticity. Dance techniques are designed to encourage postural extension, head and trunk rotation with repetitive turning, ankle movements, stepping strategies, enhanced balance mechanisms and increased exercise capacity, all shown to be of deficit in people with PD. The aims of this study are to assess and synthesize the literature on dance interventions in patients with Parkinson disease and to provide information regarding the frequency, intensity and type of dance used in these programs.

Material and Method

Systematic literature searches were performed to select randomized controlled trials and observational studies. PubMed, Cochrane Library and Medline databases were searched from 2014 to 2018 using the following terms "Parkinson's disease" AND "dance." A total of 15 studies were eligible for this research after exclusion criteria were applied.

Results

Multidimensional benefits are sometimes achieved through dance in people with mild to moderately severe PD. The findings of this review have found that improvements in balance, motor impairment, and endurance were reported after participation in dance. Dance significantly improved motor scores, berg balance and gait speed when compared with no intervention. The mean duration of each session of dance-therapy was 1.25 hours. The frequency was once or twice per week for at least 3 months. Various dance styles were tested including modern dance, creative dance, tango and samba.

Conclusion

Dance-therapy significantly improved motor and cognitive tests in PD patients. All types of dance techniques showed positive results. This work shows evidence that dance-therapy may be included in rehabilitation programs for patients with PD.

Keywords

Parkinson's Disease;Dance Therapy;Dance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0183

WORD PREDICTION SOFTWARE IN PEOPLE WITH CERVICAL SPINAL CORD INJURY: A LITERATURE REVIEW

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Introduction/Background

Individuals with cervical spinal cord injury (ICSCI) have difficulty accessing computers through conventional methods. The purpose of this paper was to provide a critical narrative review on types of computer access devices and word prediction software for ICSCI.

Material and Method

A search was conducted in several electronic databases.

Results

There is limited data about Test Input Speed (TIS) in ICSCI. One study showed that TIS in ICSCI was significantly lower (mean = 11 words per minute (wpm)) ($p=0.001$) than TIS of able-bodied individuals (19 wpm). In a sample of ICSCI, there was a significant difference between voice recognition system (mean = 18 wpm), a standard keyboard (mean = 8 wpm) and an onscreen keyboard (mean = 3 wpm) ($p<0.001$). However, the literature suggested that the impact of Word Prediction Software (WPS) for increasing TIS remains questionable. Indeed, there is limited scientific documentation of the influence of the parameters of WPS on TIS. Regarding the number of words displayed in the prediction list, this parameter did not increase TIS. For the parameter "frequency of use", use of WPS with the activation of frequency of use increased TIS in participants with high-level tetraplegia. For participants with low-level tetraplegia, the use of WPS with frequency of use activated only decreased the number of errors.

Conclusion

Each professional could provide clear and accurate information on the benefits of WPS for people with cervical SCI. WPS must be set regarding the needs of people with cervical SCI. If not, the use of these software's may go against the expected benefits.

Keywords

Spinal Cord Injury;Computer access devices;Occupational Therapist

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0184

TRAINING PROGRAMS ON TEXT INPUT SPEED IN PERSONS WITH CERVICAL SPINAL CORD INJURY

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Introduction/Background

Computer access is important for social participation for people with cervical spinal cord injury (SCI). Different devices have been developed to enable them to use a computer but text input speed (TIS) with them is low. Several methods (eg, word prediction software (WPS)) have been developed to increase TIS. In the literature, the effect of WPS on TIS were debatable. One hypothesis to explain the disparity is the lack of specific WPS-training programs for people with cervical SCI.

Material and Method

The aim of this study was to compare the influence of three WPS-training programs on TIS in people with cervical SCI, and to determine which was the most effective. Participants were randomized to one of three different groups: a group with training with an occupational therapist (REHAB), a group with a standardized home self-training with a written training guide (SELF), and a third group that had no training (CONTROL).

Results

Forty-two participants were included and 38 completed the study. TIS improved significantly more in the REHAB group (with and without WPS) than in the CONTROL ($p < 0.001$) and SELF groups ($p < 0.001$) between D0 and D30.

Conclusion

The results of this study showed that OT-supervised training improved TIS but did not provide any specific improvements in the use of WPS on TIS, although the number of recorded errors decreased when using WPS after training and the improvement of the rate of word prediction

use. These results suggest that supervised training should be developed when providing patients with word prediction software, in order to increase their TIS.

Keywords

Cervical Spinal Cord Injury;Computer Training;Occupational Therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0234

HYDROTHERAPY AS A NON-PHARMACOLOGICAL ALTERNATIVE FOR THE TREATMENT OF CONGESTIVE HEART FAILURE

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Introduction/Background

The World Health Organization stated that Cardiovascular diseases represent one third of the deaths in the world. Heart Failure is the main reason of hospitalization on the elderly population and a non-pharmacological treatment is necessary in order to promote, prevent and preserve general health among the population.

The purpose of this study is to determine whether Hydrotherapy can be classified as an effective means of treating elderly patients with heart failure.

Material and Method

Throughout Scientific research using worldwide data, the Hemodynamic and Respiratory effects were analyzed during water immersion and how this would impact the population suffering of Congestive Heart Failure, establishing safety parameters for the treatment of this disorder.

Results

During this research it was observed that Water Temperature is one key element, along with Hydrostatic Pressure, affecting Cardiac and Respiratory physiology. It was analyzed that individuals submitted to immersion in cold water (22°C) had significant increase in Systolic Blood Pressure (101 ± 31 to 118 ± 20 mmHg), opposed to warm temperatures (32°C) which remained on similar values.

In regards the Hydrostatic pressure, it was analyzed that, in average, 700 ml of blood move from the extremities to the chest, increasing 60% of the central volume and significant increase in the Intrathoracic Pressure (0,4 mmHg to 3,4 mmHg) and Pulmonary Blood Pressure (5 mmHg to 22 mmHg). These values promote increase of 65% on Respiratory Workload and decrease 66% of Expiratory Reserve Volume. Besides shocking changes, studies demonstrate that Hemodynamic and Respiratory values return to baseline immediately after getting out of water.

Conclusion

As conclusion, in spite of several changes, individuals did not reach concerning levels and researches demonstrated that physical activity in water using Scales of Perceived Exertion

demonstrate a proper monitoring strategy for the treatment of Heart Failure with patients having Hydrotherapy an important supporter as a non-pharmacological treatment.

Keywords

Congestive Heart Failure;Hydrotherapy;Physiological Changes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0236

CYCLING WITH/WITHOUT FUNCTIONAL ELECTRICAL STIMULATION IMPROVES LOWER LIMBS DISABILITY IN PATIENTS POST-STROKE: A SYSTEMATIC REVIEW WITH META-ANALYSIS

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Introduction/Background

Cycling with or without functional electrical stimulation (FES) is an effective way to rehabilitate patients with lower limb disability. The purpose of this systematic review and meta-analysis was to quantify the effectiveness of different protocols of cycling with/without FES on lower limbs after stroke.

Material and Method

The following databases were searched: PubMed, Cochrane Central Register of Controlled Trials, Ovid Medline, EBSCO Cumulative Index of Nursing and Allied Health Literature, Ovid EMBASE, Physiotherapy Evidence Database (PEDro), and Occupational Therapy Systematic Evaluation of Effectiveness, by means of words relevant to randomized and stroke, cycling and lower limbs disability. Randomized controlled trials from 1990 to July 2017 were included following predetermined search and selection criteria. Data extraction was performed using a pre-determined data collection form.

Results

A total of 15 trials satisfied eligibility criteria for this review. Cycling had a positive effect on 6 meter walking test performance (30.4 s; -1.9 – 62.6 (standardized mean difference; 95% confidence interval) compared with no or placebo intervention (control). Cycling had a positive effect on walking speed (0.10m/s; 0.1 - 0.2), based on the results of 10 meter walking test, compared with control. Cycling had a positive effect on balance based on Berg score (0.25; - 0.44 - 0.94) compared with control. Cycling with FES had a positive effect on balance (1.95; 1.33 – 2.52) compared with cycling alone.

Conclusion

Although cycling alone has a positive effect on walking ability, walking speed, and balance the effects are small and variable. In terms of balance, positive effects substantially smaller when compared with concurrent effect of FES with cycling with low evidence. It appears that cycling with or without functional electrical stimulation has positive effects on walking ability walking speed and balance, but further research is needed to confirm the clinical utility of these modalities for stroke patients.

Keywords

meta-analysis;stroke;lower limb disability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0528

COMPARISON OF HOME-BASED MODIFIED SELF-EPLEY MANOEUVRE AND BRANDT-DAROFF EXERCISE ON THE POSTERIOR CANAL BENIGN PAROXYSMAL POSITIONAL VERTIGO SYMPTOMS: A RANDOMIZED SINGLE-BLIND CONTROLLED TRIAL

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Introduction/Background

Benign paroxysmal positional vertigo (BPPV) is the most common vestibular disorder in adults and the treatment of choice is by particle repositioning manoeuvres (PRM). This study compares the effects of two home-based exercises, self-Epley manoeuvre (SEM) and Brandt-Daroff exercise (BDE) in patients with posterior canal BPPV.

Material and Method

This is a single-blinded prospective randomized controlled trial on 50 patients suffering from unilateral posterior canal BPPV with a documented positive Dix-Hallpike test and symptoms of vertigo for at least 1 week. Both groups (25 in SEM and 25 in BDE) performed the home-based exercise for a total of 2-weeks duration. The primary outcome was vertigo resolution at 1 month and 6 months. Secondary outcomes were conversion of a positive to a negative Dix-Hallpike test at 1 month, reduction of vertigo intensity and the Dizziness Handicap Inventory (DHI) scores at 1 month and 6 months.

Results

Vertigo resolution was achieved in 40% of patients at 1 month and 48% of patients at 6 months for both groups. Conversion rate from positive to negative Dix-Hallpike test at 1 month was 92% in the SEM group and 84% in the BDE group ($p=0.38$). From repeated assessments at 1 and 6 months, significant reduction in vertigo intensity, $F(1.6, 78.4) = 84.6$, $p < .001$ and improvement in the mean DHI scores, $F(1.7, 85.1) = 74.3$, $p < .001$ was seen within groups. There were no significant differences in vertigo intensity and mean DHI scores between the two groups. Both

SEM and BDE were well tolerated with few minor complications reported, such as transient dizziness and nausea.

Conclusion

Both the SEM and BDE are effective in treating posterior canal BPPV. Although there was no significant vertigo resolution, there was a reduction in vertigo intensity, and perceived negative impact on daily life from the improvement in the mean DHI scores

Keywords

Vertigo;benign paroxysmal positional vertigo;particle repositioning manoeuvre

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0609

IMPLEMENTATION OF A FALL SCREENING PROGRAM FOR OUTPATIENTS IN PMR DEPARTMENT

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Introduction/Background

In PMR Outpatient department, within General Hospital and Trauma center, we developed and implemented a fall screening program as a part of routine assessment for patients at risk of fall coming for the treatment. With the main goal to promote patient's safety, we wanted to establish consistency in process of fall risk assessment in PMR department and to develop plan of care for the patients in risk.

Material and Method

The program was developed for outpatients, with clear inclusion criteria and it was applicable for all geriatric patients above 70 years of age, patients on neuro- rehabilitation, patients using walking device or support and patients with history of fall.

We selected Fall risk Assessment tool that is comprehensive, quick and easy and incorporate algorithm for interventions and management plan to the format. We used Madison State Hospital Falls Risk Assessment Form and modified scoring system, considering score above 10 as high risk for falls.

Results

Physiotherapists and Occupational Therapists are responsible for assessing the patients on the admission to the treatment, integrating the screening program into the usual clinic workflow.

To assure continuity of care for all patients at risk, in coordination with Quality department, we developed departmental Policy for fall risk assessment in PMR outpatient setup.

Conclusion

Implementation of a fall risk-screening program in an outpatient PMR department appears feasible with development of appropriate screening tool and integrated departmental policy in order to detect all patients in risk of fall and deliver proper management.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0763

EFFECTIVE ELECTRICAL STIMULATION PLACEMENT COMBINED WITH EFFORTFUL SWALLOWING MANEUVER FOR POST-STROKE DYSPHAGIA THERAPY

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Introduction/Background

The objective of this study is to evaluate which type of neuromuscular electrical stimulation (NMES) electrode placement is more effective for post-stroke dysphagia therapy.

Material and Method

Thirty-one post-stroke dysphagic patients were randomly divided into the three groups according to NMES electrode placement types; in group A (n=10), both pair of electrodes were horizontally attached on the suprahyoid muscles above the hyoid bone and on the infrahyoid muscles below it, in group B (n=11), each pair of electrodes was horizontally and vertically attached on the suprahyoid muscles above the hyoid bone and on the infrahyoid muscles below it, and in group C (n=10), both pair of electrodes were vertically attached across the hyoid bone above the thyroid notch and across the cricoid cartilage below the thyroid cartilage. All patients received NMES combined with effortful swallowing maneuver five times a week for a 4-week period as rehabilitation treatment. The effect of NMES electrode placement was assessed by comparing functional dysphagia scale (FDS) and dysphagia outcome and severity scale (DOSS) scores about thin liquid swallowing at the initial videofluoroscopic swallowing study (VFSS) and the follow-up VFSS after intervention. Additionally, FDS scores were categorized into oral phase (FDS-O) and pharyngeal phase (FDS-P).

Results

Significant improvement of FDS and DOSS scores was observed in all three types of electrode placements. However, only group A electrode placement showed significant difference in FDS and FDS-P scores compared to group B and group C after the intervention.

Conclusion

The group A electrode placement was significantly more effective than other electrode placements in NMES therapy for post-stroke dysphagia patients.

Keywords

Dysphagia;Electrical Stimulation ;Effortful swallowing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0845

POLIOMYELITIS SEQUELAE WITH PATELLAR BONE FRACTURE: A CASE REPORT

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Introduction/Background

The aim of this case report is to contribute to the literature about the physiotherapy treatment methods after poliomyelitis sequelae with patellar bone fracture and to report the results of the treatment programme.

Material and Method

Our patient was a 43-year old man with a poliomyelitis sequelae who had left patellar bone fracture occurring after traffic accident. Then a plaster cast was applied and worn for 2 months. After removal of the plaster cast, the subject was included physiotherapy and rehabilitation programme for 4 weeks (5 days/week) by physiotherapist. He had pes cavovarus deformity, 2 cm limb-length discrepancy, muscle weaknesses and atrophies, flaccidity, limitations of joint mobility and inadequate patellar mobilization in the left extremity. Pain intensity was assessed by Visual Analogue Scale (VAS), life quality was investigated by Nottingham Health Profile (NHP) and Beck Depression Inventory (BDI) was used to evaluate depression level. Also WOMAC scores were reviewed for knee status. He had never received any medication or surgery for poliomyelitis sequelae. Conservative management (i.e. hotpack, ultrasound, TENS, patellar mobilization, regular passive range of motion, strength, resistive, balance and proprioceptive exercises) was applied. Resistive exercises were added after the 2nd week of the programme. Also, balance and proprioception exercises were gradually complicated.

Results

After the 4-weeks physiotherapy, range of motion of knee (40° in flexion and extension) and life quality [before treatment (B.T.) 514.11, after treatment (A.T.) 504.13] were increased. Pain during activity, rest and asleep (B.F. 9.2, 6, 6.7; A.T. 6.9, 5.6, 4.1, respectively) and WOMAC scores (B.T. 61, A.T. 54) were decreased favour of recovery. Depression level was decreased from extreme to moderate.

Conclusion

It is recommended that physiotherapists would contribute to the patient's functional recovery by performing a patient-tailored treatment programme.

Keywords

polio;fractures;physiotherapy

No conflict of interest

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A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-0969

MODALITY AND IMPACT OF RESPIRATORY MUSCLE TRAINING IN COPD

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Introduction/Background

Respiratory muscle weakness is well known in Chronic obstructive pulmonary disease (COPD), and it is an argument to the rational of respiratory muscle training. The aim of this review is to identify the most appropriate training modality of respiratory muscle and to investigate the effects of this training.

Material and Method

we performed a narrative review, bases on Pubmed database, with the key word « respiratory muscle training » AND « COPD » from 2011 to 2018.

Results

Twenty-two studies were selected in this research. Most of them expose an inspiratory work. No study compare different frequency, intensity, or duration. The work in endurance or in strength is not compare. A meta-analysis [1] promotes the inspiratory strengthening when the maximal inspiratory pressure (PIMax) is under 60cmH₂O but other study show an interest of this work in patients with better PIMax. The use of threshold device seems to be more effective than resistive device. The inspiratory work in COPD patient in this studies show an impact in PIMax, six minutes walk test and dyspnea. Its impact is possible on quality of life. The effects on pulmonary volume are divergent.

Conclusion

Although the modality of respiratory muscle training is not clearly determinate, it is well tolerate and provide analytic and functional benefit. If further studies are needed, inspiratory muscle training should be included in a pulmonary rehabilitation program.

[1]Gosselink R, De Vos J, van den Heuvel SP, Segers J, Decramer M, Kwakkel G. Impact of inspiratory muscle training in patients with COPD: what is the evidence? *Eur Respir J* 2011;37:416–25

Keywords

respiratory muscle;resistance training;COPD

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1060

ROLE OF O-C2 ANGLE IN THE DEVELOPMENT OF DYSPHAGIA IN PATIENTS WITH HALO-VEST FIXATION

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Introduction/Background

The halo-vest brace has been a common mode for immobilization of the cervical spine. The incidence of complications such as pin loosening and infection are known in patients with halo-vest fixation. Dysphagia is one of the most serious complications seen with the use of a halo-vest brace. The aim of this study was to elucidate factors associated with the incidence of dysphagia in patients treated using a halo-vest brace in terms of not only demographic data, but also radiological findings of the cervical spine.

Material and Method

We retrospectively reviewed medical records and radiological measurements using lateral plain X-rays of the cervical spine in patients who had undergone halo-vest fixation in our institute between January 2006 and August 2016. Severity of dysphagia was assessed using the Food Intake Level Scale (FILS) from medical records. Patients were classified into non-dysphagia (FILS level: 10) and dysphagia (FILS level: 1-9) groups.

Results

Forty-three patients were attributed for analysis. Twenty-eight patients were classified into non-dysphagia group, 15 patients were classified into dysphagia group. Mean age was greater ($P=0.041$), length of ICU stay was longer ($P=0.002$), and frequency of tracheostomy was larger ($P=0.043$) in the dysphagia group. Mean O-C2 angle was smaller in the dysphagia group ($P=0.027$). Body mass index (odds ratio (OR)=0.522, 95% confidence interval (CI)=0.377-0.934, $P=0.024$), ICU stay (OR=1.302, 95%CI=1.272-10.624, $P=0.016$), and O-C2 angle (OR=0.911, 95%CI=0.833-0.996, $P=0.041$) remained independent risk factors related to incidence of dysphagia. Spearman rank correlation showed a negative linear correlation between ICU stay and FILS level ($r=0.476$, $P=0.001$) and a positive linear correlation between O-C2 angle and FILS level ($r=0.385$, $P=0.011$).

Conclusion

This study suggested the significance of O-C2 angle as well as ICU stay for incidence and severity of dysphagia in patients with halo-vest fixation.

Keywords

Dysphagia;halo-vest;O-C2 angle

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1068

USEFULNESS OF ICE STICK® IN SWALLOWING TRAINING

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Introduction/Background

In Japan, ice massage is widely used as the prefeeding technique to facilitate dry swallowing. However, there was no device for ice massage, and it was handmade by nurse and therapist. We have developed Ice Stick® and evaluated the effect of ice massage using Ice Stick®.

Material and Method

The subjects were 30 dysphagia patients. Subjects were randomly divided into a group that performs ice massage with a conventional syringe (conventional group) and a group using a newly developed ice stick ® (Ice Stick ® group), indirect swallowing training was conducted, repeated saliva swallowing for 30 seconds (Repetitive saliva swallow test: RSST) before and after training. The number of RSSTs was compared in both groups and tested by Wilcoxon's signed rank test.

Results

The median RSST before and after ice massage increased from 3 to 4 in the conventional group and a significant difference was observed at $r = 0.038$. In the Ice Stick ® group, it was 2.5 to 3 times, and a significant difference was observed at $r = 0.041$. There was no difference in the increase in both groups.

Conclusion

Both the conventional type and the Ice Stick ® increased the number of RSSTs after training, so ice massage is considered to be effective against dysphagia. The Ice stick ® reduces the work burden of creating staff 's ice massage device, which is considered to be effective in reducing the risk of infection because it is individual packaging.

Keywords

dysphagia;ice massage;swallowing reflex

Conflict of interest

Disclosure statement:

I have received research expenses from Mitsubishi Paper Mills Limited.

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1115

HOW CAN BIOMECHANICAL FOOT ORTHOSIS AFFECT GAIT IN ARTHRITIS WITH HALLUX VALGUS?

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Introduction/Background

Hallux valgus (HV) deformity is the most commonly observed forefoot deformity in elderly women patients with arthritis. We investigated the effects of customized biomechanical foot orthosis (BFO) on kinematic data during gait in arthritis with HV deformities compared with normal control group.

Material and Method

Ten arthritis patients with HV deformities and 10 normal women were enrolled in this study. All patients were diagnosed with foot deformities by biomechanical and radiologic studies, and they received the customized BFOs manufactured at a commercial orthosis laboratory (Biomechanics, Goyang, South Korea) according to the strictly defined procedure by a single experienced technician. The kinematic data by the Vicon 3D motion capture system (Oxford Metrics, Oxford, England) were compared in with and without application of the BFO (Figure 1).

Results

Patients with application of the BFO showed increased gait cadence, walking speed and decreased stride, step time in temporal parameters (Table 1). Total mean range of motion (ROM) of hallux respect to forefoot was 52.67 degree (dorsiflexion (DF) 34.41; plantar-flexion (PF) 18.26) without BFO, and was increased to 73.12 degree (DF 24.75; PF 48.37) after application of the BFO. During specific gait events, a different range of motion was found at several inter-segment angles (Table 2). Particularly, the range of motion of the hallux (sagittal plane) and hindfoot (frontal-transverse planes) during stance were significantly different (Table 3). The averaged position of forefoot during whole gait cycle was persistently abducted in with application of the BFO (Figure 2).

Conclusion

The application of BFO will be considered to be useful effects for improvement of gait pattern in arthritis with HV deformities by increased ROM of hallux and change of foot position. Our results suggest that it is very important to find out pathophysiology of HV and the effectiveness of BFO on gait pattern in arthritis with HV.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1135

SCREENING WATER TEST FOR ASPIRATION.

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Introduction/Background

One of the basic needs in life is eating. Swallowing problem is caused by a lot of diseases whose common complication is aspiration pneumonia. Physical examination, such as modified water swallowing test(MWST), can detect aspiration but not silent aspiration. The videoendoscope(VE)/ videofluoroscope(VF) are able to find out all aspirations but it is more complicated. Therefore this paper aims to study the capability of MWST to detect all aspirations.

Material and Method

The demographic data, swallowing physical examination, MWST and videoendoscope(VE)/ videofluoroscope(VF) test were recorded. Normal MWST scores 4 and 5. Abnormal MWST scores between 1 to 3. Aspiration with choking or wet voice and silent aspiration were reported in percentage. Chi-square test was used to detect the different between normal and abnormal MWST.

Results

There were 60 patients who accessed the dysphagia clinic, MWST was used in 55 patients and VE/VF were done in 40 patients. There were only 36 patients who had done both MWST and VE/VF. From 22 abnormal MWST patients, 6 patients (27%) had aspiration with choking or wet voice and 2 patients (9%) had silent aspiration from VE/VF. From 14 normal MWST patients, 3 patients (21%) had silent aspiration. Therefore, the MWST can detect aspiration 36%. Moreover, the MWST showed no significantly different between normal and abnormal group (p value 0.34).

Conclusion

The MWST detected aspiration at 36% which was quite low. Further study with a large number of patients or other screening tests should be done.

Keywords

Screening water test;aspiration;swallowing problem

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1335

INCREASE OF SURVIVAL AND IMPROVEMENT OF THE PROGNOSIS WITH NEW THERAPIES FOR THE TREATMENT OF CYSTIC FIBROSIS

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Introduction/Background

Cystic Fibrosis (CF) is the most prevalent autosomal recessive disease in Caucasians, resulting from a mutation of the gene located on the long arm of chromosome 7, which encodes the production of cystic fibrosis transmembrane conductance regulator (CFTR) protein, present in epithelia, which functions as a channel for the passage of chlorine and other ions. Clinically it presents multi-organ involvement; being more serious the pulmonary manifestation and prognostic determinant.

Despite scientific advances, it remains an incurable disease, only with treatment to prevent and treat symptoms, until the appearance of therapies (genotype-dependent) such as the combined lumacaftor/ivacaftor, indicated in *F508del* homozygote patients above 12 years; aimed to correct the defect in CFTR, which could improve quality of life, prognosis and survival.

Material and Method

7-year-old patient with CF diagnosis through positive neonatal screening: genotype *F508del/F508del*. During the perinatal period, she presented: intestinal perforation, meconium peritonitis, jejunal atresia: Appel-Peel, intervened (resection of jejunum and ileum), as well as malnutrition. At 7 years of age, presented recurrent pulmonary exacerbations despite the symptomatic treatment of inflammation, infection and fluidification of secretions of the respiratory system and pulmonary rehabilitation. In addition, she required nutrition by gastrostomy with a low weight gain due to malabsorption. In view of the poor clinical evolution, treatment with lumacaftor/ivacaftor is introduced, for compassionate use, being less than 12 years old.

Results

One year after treatment, it was observed an important decrease in the number of pulmonary exacerbations (from having 3 to 1 exacerbations/year), weight gain (BMI from 12.98kg/m² to 14.52kg/m²), improvement in FEV₁ (from 54% to 65%) and quality of life.

Conclusion

The new physiopathological treatments suppose a great hope in CF; in our patient they have decreased: the number of pulmonary exacerbations, improved lung function and quality of life. Even so, pulmonary rehabilitation remains one of the pillars of treatment for these patients.

Keywords

Newtherapy of Cysticfibrosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1367

DYSPHAGIA SECONDARY TO ANTERIOR OSTEOPHYTES OF THE CERVICAL SPINE

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Introduction/Background

Cervical osteophytes are often accidentally discovered on cervical spine X-rays. Usually, they have low impact on swallowing.

We report one case of surgical treatment for dysphagia secondary to cervical hyperostosis.

Material and Method

With the patient's consent, we retrospectively reviewed his medical record.

Results

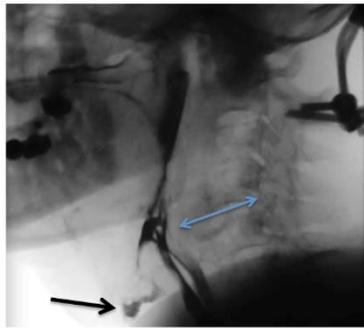
A 77 years old man, diagnosed with hypertension and type 2 diabetes mellitus, was treated surgically for cervical spinal cord compression due to atlantoaxial subluxation. After an ineffective transorally procedure, he benefited to a surgical decompression and stabilization by occipital-C2 arthrodesis

Dysphagia was complicated by one aspiration pneumonia and malnutrition requiring enteral nutrition by gastrostomy.

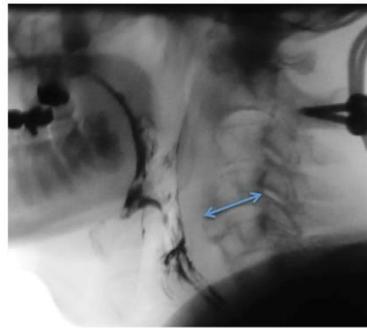
Thus, the patient was referred to the consultation of swallowing disorders. Although the larynx vision was limited by a posterior hypopharyngeal wall protuberance, the FEES exam reveals salivary stasis and left laryngeal immobility. In videofluoroscopy, the wall protuberance appears to be prevertebral osteophytes of cervical spine that limited the rise of the larynx, epiglottis tilt and induced inhalation.

Additional surgical treatment has been proposed because of the severe symptomatology and compromising of patient's quality of life. An osteophylectomy via the anterolateral cervical access was performed without intercurrences, and the patient showed expressive improvement

of previous symptomatology.



Pre-operative videofluoroscopy



Post-operative videofluoroscopy



Pre-operative FEES



Post-operative FEES

FEES and VFS show the improvement but swallowing disorders persist because of the propulsive deficit. The immobility of left larynx has been confirmed. The mechanism is still unknown. **Conclusion**

The radiologic findings were consistent with diffuse idiopathic skeletal hyperostosis (DISH) or Forestier disease of the cervical spine causing dysphagia, which is an uncommon cause of myelopathy and dysphagia.

We must be aware that these anterior cervical osteophytes can affect laryngeal function, not only on swallowing, but also on airway management (ie during tracheal intubation).

Keywords

Diffuse idiopathic skeletal hyperostosis; Cervical myelopathy; Deglutition disorders

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1388

THE ASSESSMENT OF RELATION OF MOVABILITY OF THE CERVICAL SPINE AFTER THE ODONTOID VERTEBRA DENS FRACTURE SINCE THE TIME OF WEARING THE ORTHOPEDIC COLLAR

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Introduction/Background

The aim of the article is to evaluate kinetic efficiency of a cervical spine taking into consideration the range of active motion as well as to assess the relation of movability range of the cervical spine since the day of wearing the Philadelphia collar, as well as the level of the strength of pain, and age.

Material and Method

41 individuals surgically or conservatively treated at the Neurosurgery Ward and subjected to a post-hospital observation at the Neurosurgery Outpatient Clinic of Provincial Hospital in Tarnów participated in the study. The control group consisted of 41 individuals without a clinically diagnosed cervical spine disease. The study of the range of motion of the spine in the cervical section was performed by means of MCU (Multi Cervical Unit) appliance. The strength of the pain was evaluated by means of VAS - the visual analogue pain scale.

Results

The individuals after the odontoid vertebra fracture are characterised by a limited motion range in case of all types of motion, except for bending and extension. In the study extremely significant differences of the range of motion of the study group in comparison with the control group were discovered. In case of the time of wearing the orthopedic collar, statistically significant negative correlations related to entire motion apart from side bending. The strongest correlation was obtained for rotation ($r=-0,36$).

Conclusion

The patients after the odontoid vertebra fractures have statistically significant limitations of the range of active motion of the cervical spine. Age, strength of the spine ache as well as the time of wearing the Philadelphia collar are negatively correlated in a significant manner with the movability range of the cervical section of the spine of individuals after the odontoid vertebra fracture.

Keywords

motion range;odontoid fracture;cervical spine

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1481

THE EFFECT OF EXERCISE IN THE TREATMENT OF OBESITY

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Introduction/Background

The world continues in the midst of a significant public health problem related to obesity and inactivity. This epidemic has far-ranging consequences on the workforce of the world and on our children, and shows no signs of slowing down in the near future.

Material and Method

A significant amount of research has been performed on the effects of exercise for the reduction of body weight. A literature review was performed to address the effects of aerobic exercise, strength training, and high intensity interval training (HIIT) on obesity and weight loss.

Results

Most studies indicate that exercise alone has a small effect on body weight reduction independent of caloric restriction. When combined with dietary restriction, exercise has a synergistic effect and enhances weight loss beyond the effect of diet alone. Exercise also has been shown to have significant beneficial effects on cardiovascular and metabolic risk factors independent of actual weight loss, and losing just a small amount of weight can have a significant beneficial effect. Genetic factors related to obesity have been found to be positively modified when individuals incorporate physical activity into their lifestyle. Sitting time also appears to be an independent risk factor for the development of metabolic risk factors; individuals who spend more time sitting and watching television have worse metabolic profiles, even if they achieve the recommended amount of physical activity per week. High intensity interval training has been shown to be a safe, effective, and well tolerated mode of exercise in the obese population, and compliance may be better than continuous moderate duration exercise.

Conclusion

Continuous moderate intensity aerobic exercise has a synergistic effect with diet to enhance weight loss. Resistance training has significant cardiovascular and metabolic effects independent of weight loss. High intensity interval training is effective, time efficient, and well tolerated in the obese population.

Keywords

Exercise;Obesity;Interval

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1498

EXAMINATION OF POSTURAL CHANGE ACCORDING TO THE STATE OF EXERCISE IN PREGNANCY IN BACKACHE, DISABILITY AND DAILY LIFE ACTIVITIES

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Introduction/Background

Aim of this study is to examine postural change according to the state of exercise in pregnancy in backache and daily life activities.

Material and Method

This research is in analytical cross-sectional type and conducted in Aydın Obstetrics and Gynecology hospital policlinics between 1st of September 2017 and 28th of February 2018. 160 pregnancy women have been included in the study. Survey form prepared by researcher has included questions related to sociodemographic characteristics, questions about exercises, Visual Analog Scale to evaluate backache and Oswestry Scale for disability and Katz Daily Life Activities form to evaluate life activities. New York Postural Analysis form also been used to evaluate postural change of pregnant prepared by researcher physiotherapist.

SPSS 20.0 program has been used in coding of data, transferring to the computer environment and analysis. Descriptive statistics of individuals participating in the study have been given in minimum average, maximum average and standard deviation. Depending on the exercise condition of the individuals participating in the study difference between their daily life activities, pain, disability situations and postural changes have been evaluated by t-test analysis in independent groups.

Results

Average age of pregnant participating in the survey has been identified as 26.43 ± 3.96 . Daily average standing time of pregnant has been detected as 5.7 ± 1.58 hour and average sitting time of them has been detected as 6.40 ± 1.59 hours. Pre-pregnancy body weights have been detected as 60.35 ± 8.15 kg. body weights in pregnancy have been detected as 71.41 ± 7.94 kg. In this research, pregnant who are doing exercise have more daily life activity. Scores, less backache scores, have better postures and pain has less affected their daily life activities ($p < 0.005$).

Conclusion

As a result of our research , it is detected that exercising in pregnancy has effected positively in postural changes, backhache and daily life activities.

Keywords

Pregnancy;Exercise;Daily Life Activities

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1557

FACTORS AFFECTING LOCATION AFTER DISCHARGE IN PATIENTS OF HIP FRACTURES.

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Introduction/Background

Patients of hip fracture are increasing in Japan. The purpose of this study is disclosing the factor influence location after discharge in patients of hip fracture.

Material and Method

56 patients of hip fracture treated at our hospital since June 2015 and January 2017, who were living at home before the injury. 12 males and 44 females, mean age was 79.6 years. Patients were divided into those who were discharged to home and nursing homes or recuperation hospital. Predictor variables were functional level before fracture, Functional Independence Measure(FIM) total score at discharge, motor FIM score at discharge and family caregiver score. Statistical analysis was performed using Mann - Whitney U analysis.($p < 0.05$)

Results

In the Group of discharge to home, functional level before fracture ($p = 0.013$) and motor FIM score at discharge ($p = 0.049$) were significantly high.

Conclusion

Various factors have been reported to affect location after discharge of patients of hip fracture. In this study, no significant differences were observed in caregiving ability and FIM total score at discharge which is considered to be related to the prognosis before. However, significant differences were observed in motor FIM score at discharge and functional level before fracture. This suggests that not only the presence or absence of caregivers but also independence in activities of daily living and less amount of care will increase the possibility of home discharge.

Keywords

hip fracture;factor;discharge

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1570

ACCURACY OF ULTRASOUND-GUIDED AND NON-US-GUIDED BOTULINUM TOXIN INJECTION INTO CADAVER SALIVARY GLANDS

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Introduction/Background

Recent investigations have reported the increased efficacy and safety of BTX injection under US guidance, there have not been any studies comparing the injection accuracy between blind and US-guided approaches. This study was designed to evaluate the injection accuracy of blind and US-guided botulinum injections into the parotid and submandibular glands of fresh cadavers.

Material and Method

Two rehabilitation physician injected dye into three sites in the salivary glands (two sites in the parotid gland, and one site in the submandibular gland) on one side of each cadaver (one was injected on the right side, while the other was injected on the left side), using either a non-US guided injection procedure based on superficial landmarks or a US-guided procedure. Orange dye was used for the US-guided procedure, and green dye was used for the blind procedure. Two physicians uninvolved with the injection procedures and who were blinded to the method of injection dissected the cadavers to identify whether the dye was accurately injected into each target site.

Results

The accuracies of the blind and US-guided injections into the parotid gland were 79.17% and 95.83%, respectively. In the submandibular gland, the accuracies of the blind and US-guided injections were 50.00% and 91.67%, respectively. The difference in accuracy between the two procedures was statistically significant only in the submandibular gland ($p=0.025$). There were no significant differences in the accuracy of US-guided and non-US-guided injections between the two physicians for the two sites in the parotid gland ($p=0.278$ and $p=0.146$, respectively).

Conclusion

US-guided BTX injection into the submandibular gland offers significantly greater accuracy over blind injection. For the treatment of drooling by injecting BTX into the submandibular gland, clinicians should consider using US guidance for improved accuracy.

Keywords

Salivary gland;Botulinum Toxin

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1639

REHABILITATION TEAM APPROACH FOR THE TREATMENT IN FACIAL PALSY IN A MULTICENTRIC CLINICAL PRACTICE. CONSENSUS GUIDE.

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Introduction/Background

The treatment for facial palsy is complex and requires specialized units as well as a multidisciplinary team to assess the patient globally and respond to the problems of each phase.

To unify criteria and define the best treatment for each phase of the facial palsy, to improve facial function and quality of life.

Material and Method

Both doctors and physical therapists from the Facial Palsy Units from the Rehabilitation Services of two university hospitals in Barcelona, Spain, got together to revise scientific articles, share clinical experiences and introduce new technique for facial palsy management. Afterwards, a consensus document was created as a protocol for both medical centers.

Results

Consensus on best treatment for each phase was achieved, as follows:

- Hypotonic phase: neurosensory stimulation through Perfetti method, proprioceptive and cognoscitive activities with neurosensory feedback, and movement induction by neuromuscular training (ill side). Treatment with botulinum toxin helps diminish hypercontractility of the sound side.
- Initiation of movement: neuromuscular training and Perfetti's neuromuscular stimulation.
- Synkinetic Phase: neuromuscular retraining with dissociated movements of the synkinetic muscles. Relaxation treatment of the maintained muscle contractures. Treatment with botulinum toxin helps control aberrant movements and induces facial symmetry.

Myofascial techniques (dry needling and mesotherapy) may help diminish maintained muscular contraction.

After dynamic surgery, treatment must be based on the physiology of the reconstruction implemented, inducing movement according to the given nervous stimuli.

In congenital/obstetric palsies, treatment will be similar to that of adults' Bell's palsy, adjusting treatment to patient's age.

Conclusion

We believe this consensus will allow for a better clinical practice, to offer the patient the best treatment to improve functionally, mentally and socially, thus improving quality of life.

Keywords

consensus;facial palsy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1730

CLINICAL DISORDERS DUE TO VITAMIN B12 DEFICIENCY IN RHEUMATOLOGY PRACTICE

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Introduction/Background

Vitamin B12 deficiency could have a significant clinical impact. It could be manifested by neurological disorders or muscle weakness. The causes of deficiency are dominated by Biermer's disease. The aim of this study is to describe rheumatologic revelations due to vitamin B12 deficiency.

Material and Method

We reported a retrospective study, from 2003 to 2017, conducted in the Rheumatology department of Fattouma Bourguiba Hospital, Monastir, Tunisia dealing with patients who presented vitamin B12 deficiency

Results

Five cases were analyzed (3 women and 2 men). Mean age was 55.2 years [49-70]. The clinical presentations were polymorphic. Neurological symptoms included paresthesia, tingling and limb heaviness in all cases, inferior limb pyramidal syndrome in 2 cases, gait disorder with muscle weakness in 3 cases and ataxia in 2 cases while memory disorder was documented in only one case. Biological explorations revealed macrocytic anemia in all cases. Mean hemoglobin rate was 10.76 g / dl, mean MCV was 109.16 fl. The sternal puncture, practiced in 3 cases, revealed a granular lineage gigantism with large myelocytes and metamyelocytes. In 3 cases, Medullar MRI revealed a cordonal demyelination of medulla. Vitamin B12 deficiency is noted in all cases. Mean vitamin B12 level was 130.63 pg / ml with a minimum level of 50pg/ml. Treatment with parenteral vitamin B12 regressed neurological and muscular symptoms in all cases. Memory disorders persisted with the patient who had the lowest rate of vitamin B12 (50 pg / ml).

Conclusion

Neurological and psychiatric symptoms are the mostly noted in our study. Their association with macrocytic anemia may suggest the diagnosis of vitamin B12 deficiency which will be easily treated with good prognosis.

Keywords

Neurological disorders;vitamin B12 deficiency ;gait disorder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1795

OCCUPATIONAL THERAPY ADDRESSING SELF-CARE NEEDS WITH LOW TECHNOLOGY AND LOW-COST ASSISTIVE TECHNOLOGY IN BANGLADESH

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Introduction/Background

Understand the role of Occupational Therapy in the creation of assistive technology. Learn about four low tech examples implemented by OTs in Bangladesh. Be able to reproduce low tech assistive technology in other settings based upon information shared here.

Material and Method

There were some articles and review the literature, all qualitative and quantitative which are included in this review. All studies were mixed methods in design. All but one study was not conducted with participants. The literature search here, OT Seeker, Google search, Google Scholar, PubMed, and Hinari searched for literature related to the contribution to and involvement low technology and low cost assistive device for person with SCI.

Results

Scope of practice in Occupational Therapy for persons with SCI used self-care needs with low cost assistive technology in Bangladesh. Adapted Toilet/Shower Chair A plastic (resin) outdoor chair with handles has a hole cut in the seat create an over the toilet handled commode and shower chair. Toilets in many Bangladeshi homes, especially in rural areas, are "Squat toilets" which are difficult for people with SCI and mobility issues to safety use. Buttoning tool A lightweight eating utensil, a paperclip, a short piece of duct tape makes for a easy to hold buttoning tool for people with tetraplegia SCI and hand dexterity issues. Universal cuff A piece of elastic sown onto a small leather sleeve to hold eating utensils, toothbrushes, writing implements. A local leather (belt and purses) merchant created this to custom fit a woman with a SCI to feed herself and lessen caregiver burden of hand feeding her every meal. Shoe lift Extra sole attached to shoe of a foot with a shortened leg discrepancy.

Conclusion

Occupational Therapists working with SCI in Bangladesh use low assistive technology for effective rehabilitation. Low assistive technologies are appropriate for developing countries.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-1911

WHICH TREATMENTS FOR THE HYPERVENTILATION SYNDROME IN ADULTS?

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Introduction/Background

The hyperventilation syndrome is a complex entity whose management is poorly codified. A cochrane review in 2013 [1] highlighted the lack of proof in the treatment of this disease. The aim of this presentation is to expose the different options used in hyperventilation syndrome and to discuss their efficacy.

Material and Method

We performed a narrative review in Pubmed, Science direct and clinical trials, with the key word « hyperventilation syndrome », « Dysfunctional breathing », « breathing exercise », « physical therapy », « rehabilitation », « treatment », without limitation of date.

Results

Fifteen articles were selected. Among them, three studies about drug treatment and the others about non-pharmacological approaches. Among the last ones, a re-educational approach based on abdominal ventilation and regulation of the ventilatory rate, and an educative approach seems to be the most effective. Methodological biases did not permit a conclusion on the efficacy of these treatments. No study was done to explore the efficacy of pulmonary rehabilitation. A recent study was proposed on clinical trials to explore the nasal ventilation as a therapeutic modality.

Conclusion

Teaching abdominal ventilation and respiratory rate regulation, associated with a personalized therapeutic education, seems to be a pertinent management approach. Other clinical studies should explore this issue.

(1) Jones M, Harvey A, Marston L, O'Connell NE. Breathing exercises for dysfunctional breathing/hyperventilation syndrome in adults. Cochrane Database Syst Rev. 2013;5.

Keywords

hyperventilation syndrome;respiratory therapy;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-2010

PATIENTS WITH BLEEDING OF UNKNOWN CAUSE AND JOINT HYPERMOBILITY: CLINICAL ASSESSMENT AND GENETIC SCREENING

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Introduction/Background

Symptomatic joint hypermobility has been associated with bleeding tendency, suggesting that collagen disorders could be the cause in some cases of bleeding. The aim of this study was to examine the clinical characteristics of patients with bleeding tendency of unknown cause and joint hypermobility and to perform a genetic study based on Next-Generation Sequencing (NGS).

Material and Method

This was a single-centre, prospective, observational study. Patients included were a Haemophilia Centre (HC) for bleeding symptoms of unknown cause (normal or abnormal haemostatic tests not explaining the bleeding phenotype) and having joint laxity and Musculoskeletal Rehabilitation Unit (RHB) for joint laxity and reporting bleeding symptoms. Bleeding severity was assessed by the haematologist using the ISTH Bleeding assessment tool (ISTHBAT) and joint hyperlaxity by the physiatrist by the Beighton score. Molecular analysis was performed using TruSight One Sequencing Panel Kit (Illumina). Quality and population frequency filters were applied and the search was limited to 78 genes related with Heritable Disorders of Connective Tissue (HDCT)

Results

43 patients were included between June 2016 and January 2017. All were females; median age was 38.6 years (range 17-62 years). Median ISTH-BAT score was 8 (range 3-17) and Beighton score 7 to 9 (range 3- 9). ISTH-BAT score was abnormal in 77% and Beighton score in 80%. In 25 patients, both scores were abnormal. A total of 175 potential mutations were identified in HDCT related genes for all except one patient. In 46.5% a direct correlation between the identified mutation and the clinical phenotype could be established. In 10 patients, mutations in COL5A1, COL5A2, COL1A1 and COL1A2 genes were identified and validated by Sanger sequencing.

Conclusion

Clinical assessment for symptomatic joint hypermobility should be considered in patients with significant bleeding history of unknown cause. NGS could be a useful tool for the study of the responsible genes and the classification of patients.

Keywords

Hipermobility;bleeding

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-2733

THE EFFECTIVENESS OF INTERVENTIONS TO INCREASE PHYSICAL ACTIVITY OF CHILDREN WITH PHYSICAL DISABILITIES: A SYSTEMATIC REVIEW.

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Introduction/Background

Increased sedentary behaviour (SB) and decreased physical activity (PA) is a concern in pediatric health care because of rising obesity rates and long-term adverse health effects. Since children with physical disabilities are even more sedentary than their peers without disabilities, there is growing concern over how to increase PA and decrease SB in this group of children. The purpose of this systematic review was to review the evidence related to the effectiveness of interventions aimed to increase objectively measured physical activity in children with physical disabilities

Material and Method

Randomized controlled trials (RCTs) were obtained through a search of bibliographic databases conducted searching in six databases up to October 21, 2017. Articles were considered for inclusion if participants were aged 0–18 years, had physical disabilities, and the outcomes of interest were either? physical activity and/or sedentary behavior. Two independent reviewers screened the abstracts found in the databases. Risk of bias was assessed using the Cochrane collaboration tool. Data were pooled considering mean differences with 95% confidence intervals.

Results

Nine articles were selected for inclusion. Of these articles, the majority of the studies implemented interventions in children with CP (n=5). The remaining studies included children with other physical disability. Accelerometry was the most common objective measure of PA and SB. Overall, the efficacy of interventions on increasing PA and decreasing SB was not significantly better than absence of interventions in children with physical disabilities. Most of the studies were considered to be of unclear risk of bias.

Conclusion

More research to evaluate interventions related to increase PA and decreased SB in children with physical disabilities is needed. Future research should also consider interventions that target behaviour change in a specific age range. In addition, interventions that addressed participation and increase PA in different environmental setting is necessary.

Keywords

physical activity;children with physical disabilities;intervention

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-2171

ISOKINETIC MUSCLE ASSESSMENT AND STRENGTHENING IN CENTRAL NEUROLOGY: STROKE PATIENTS

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Introduction/Background

It is important to solicit the brain in many ways, through very different exercises, to support the rehabilitation of people with stroke. The training and the repetition of the physical exercise is a major factor in secondary prevention after stroke. However, Our main goal is to strengthen a hemiparetic patient muscularly through eccentric muscular work to increase his strength to transfer to his autonomy.

Material and Method

23 adults hospitalized with single episode of supra-tentorial stroke (less than eight months), with normal evaluation (spasticity, syncinesia, sensitivity, Functional Independence Measure), be able to perform the exercise requested on the horizontal press, and be voluntary. 3 sets of 5 repetitions each of eccentric contraction (Second leg for control) according to the maximum resistance (MR) evaluated. Two series at 40% of the MR and 1 series at 60% during 4 weeks. We test, the 10-meter test, the isokinetic test, the International Muscular Testing and the 6 minutes walking test.

Results

We observe a significant increase in the performance of these patients on all parameters analyzed between before and after the various rehabilitation sessions. This means that the progression in terms of strength and muscle power has impacted the functional component of the patients. We observed no change in spasticity. Our exercises did not modify a physiological component that could negatively affect the standard therapeutic management proposed to these patients.

Conclusion

This study provides additional information on the current trend in the use of muscle strengthening versus resistance. Moreover, this study shows that apart from the positive effects on muscular power, there is also a tendency to increase the functional capacities of the non-spastic hemiparetic patient in the subacute phase. At the central level, deficiencies in motor control have been identified, but no study has undertaken to evaluate the effect of specific training on the functioning of the predictive system.

Keywords

Stroke;excentric;muscle rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-2173

PRACTICAL STRENGTH TRAINING FOR POPULATION HEALTH AND WELLNESS

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Introduction/Background

Strength training is universally recognized as an essential component of fitness and injury rehabilitation, and is a core component of the United States Department of Health and Human Services Physical Activity Guidelines for Americans. The multiple health benefits of resistance training, including physical, metabolic, and psychologic benefits, make it imperative to prescribe for public health, yet many people are intimidated by the emphasis placed on number of sets and repetitions, the amount of resistance, and complex periodization protocols.

Material and Method

This session will review multiple meta-analyses and research studies that compare a wide variety of combinations of resistance, repetitions, and sets. Outcomes of each of these methods and programs will be analyzed.

Results

Multiple combinations of applied resistance, repetitions, and sets produce similar outcomes, and heavier load does not produce a universally superior result. Subtle differences that may be gained from complex programs are less relevant to public health and injury rehabilitation. The degree of effort is a more accurate gauge of true intensity than the 1 RM resistance, and data are unclear as to whether more volume results in greater strength gains. Studies indicate that the external load is not the absolute muscle stimulus to induce muscle protein synthesis, but effort to fatigue is; a wide range of repetitions and time can be used.

Conclusion

Resistance training has documented benefits for injury rehabilitation as well as performance training and population health. Traditional training usually focuses on multiple set exercise with heavy loads and sometimes complex periodization protocols, which hinders participation by many. Multiple studies show that a variety of combinations of applied resistance, repetitions, and sets produce similar outcomes, and heavier load is not superior. Compliance and injury reduction could be enhanced with the prescription of practical programs of strength exercise that would provide overall benefit to public health.

Keywords

strength training;population health;wellness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-2348

THE AFFECT OF SERUM 25 (OH) D3 LEVEL OF THE BREAST CANCER-RELATED LYMPHEDEMA

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Introduction/Background

In this study, it was evaluate whether there was a correlation between the serum 25 (OH) D3 level and severity of lymphedema in patients with breast cancer.

Material and Method

The study population was categorized two groups. Inclusion criteria of the first group was diagnosis with breast cancer-related lymphedema (BCRL) in unilateral upper extremity (n:31). Also, second group was consist of diagnosis with unilateral breast cancer without lymphedema (n: 34). The patients in the second group were accepted as control group. The patients in the second group were not described any pain, weakness or limitation of their upper extremity secondary to breast carcinom.

Age, duration of malignancy diagnosis, side and type of malignancy, serum levels of the 25 (OH)Vit D3, calcium and phosphorus, the history of chemotherapy, radiotherapy, lymph node dissection, grade of breast carcinoma were recorded for both groups.

In BCRL group, it was recorded education level, dominant extremity, side of lymphedema (right /left), duration of BCRL, lymphedema stage, body mass index (BMI) (body weight [kg] / height² [cm²]), visual analog scale (VAS), the quick disabilities of the arm, shoulder, and hand questionnaire (Q-DASH) score, the diametric and volumetric differences between affected and unaffected extremities.

Firstly, the serum levels of the 25 (OH)Vit D3 were compared between two groups. After this analysis, it was evaluated the correlations between the measurements in the BCRL group.

Results

Demographic data were similar between groups (p>0.05).

In statistical analysis, it was found that the serum levels of the 25 (OH)Vit D3 were similar between groups (p:0.188).

Also, 25 (OH)Vit D3 levels were not correlated with VAS, Q-DASH, BMI, the diametric and volumetric differences in BCRL group (r<0.3; p >0.05).

Conclusion

25 (OH) D3 vitamin level seems to be not affect BCRL. In routine clinical practice, this vitamin may not important in BCRL patients.

Keywords

BREAST CANCER-RELATED LYMPHEDEMA;FUNCTION;25 (OH) D VITAMIN

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-2349

TREATMENT OF POST-POLIOMYELITIS SYNDROME BY INTRAVENOUS IMMUNOGLOBULIN : A RETROSPECTIVE STUDY OF CLINICAL CRITERIA.

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Introduction/Background

We investigated the efficacy of intravenous immunoglobulin therapy in the treatment of post-poliomyelitis syndrome (PPS) of clinical criteria.

Material and Method

We realised an unicentric retrospective descriptive study at the CHU of Montpellier, involving patients with PPS treated with intravenous immunoglobulin (IG), between 2009 and 2017. The doses administered were 0.4 mg / kg / day for 5 days, once a month for 3 consecutive months. Patients were evaluated on pre- and post-therapy on clinical and functional aspects using validated scales : pain Visual Analog Scale, 6 minutes walking test, walking speed.

Results

17 patients, 9 men and 8 women were included, some patients receiving multiple courses. All patients had lower limb involvement.

The walking perimeter was improved in 67% of the patients studied ($p = 0.320$), the walking speed increased in 71% ($p = 0.541$) of the patients and the progression of the pain was favorable in 71% ($p = 0.586$) cases studied. 1 patient experienced a deterioration of functional abilities during walking after treatment. We will graphically represent the evolution of variables,

before and after IG IV treatment.

Conclusion

Our analysis seems to show a favorable evolution of the PPS after treatment with IG on clinical data related to the pain and function of walking. This treatment could thus represent an effective therapeutic strategy in the management of PPS.

Keywords

post-poliomyelitis syndrome;intravenous immunoglobulin therapy ;walking test

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A7.09 Rehabilitation Addressing to Specific Issues - Other Specific Functions

ISPR8-2396

RECOVERY OF ORAL INTAKE AFTER INITIATION OF TUBE FEEDING: CLINICAL EXPERIENCE FROM A JAPANESE REHABILITATION WARD

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Introduction/Background

Tube feeding plays an important role in managing their nutritional needs of dysphagic patients. Although nasogastric feeding (NG) can be useful for the short term, percutaneous endoscopic gastrostomy (PEG) is usually the route of choice for long term tube feeding. In this study, we analyzed the current situation of tube feeding and the recovery of oral intake after dysphagia therapy in our rehabilitation ward.

Material and Method

Patients admitted into our rehabilitation ward between January 2012 and December 2016 were screened. Patients who were intubated (NG or PEG tube) when warded and patients who required intubation after admission due to insufficient oral intake were included in our analysis.

Results

A total of 1129 patients were admitted into our rehabilitation ward during the five year period. At admission, 1036 (92%) patients were fed orally, 63 (5%) patients received PEG tube feeding and 30 (3%) patients received NG feeding. Out of the 30 patients receiving NG feeding, 11 patients improved to full oral feeding whereas 19 patients required PEG tube placements after admission. Out of the 63 patients who receive PEG tube feeding, 22 patients recovered to full oral feeding at discharge. 7 patients from the 1036 patients who were fed orally at admission eventually required PEG tube placements, with 6 of them recovering partial oral feeding upon discharge. More than two thirds of tube feeding patients recovered at least partial oral intake upon discharge from our rehabilitation ward. More than half of patients who received PEG tube placement recovered full oral intake upon discharge.

Conclusion

The majority of tube-fed patients resumed at least partial oral intake after dysphagia therapy. Tube feeding plays an integral role in providing the nutritional needs of patients with dysphagia, and along with rehabilitation therapy, may contribute to the recovery of swallowing function.

Keywords

Dysphagia;Swallowing function;Tube feeding

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0171

SPORTS MEDICINE ISSUES IN WOMEN

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Introduction/Background

.women and men have different anatomical and physiologic characteristics. Adult female is 6 inches shorter than her male counterpart. Men have stronger bones, muscles, and weigh more than women. Women's arms and legs are shorter than men's. Women have narrower shoulders and a smaller thoracic cage. Women have greater knee valgus and Q angle. Also female athletes have lower hemoglobin levels. While leisure sport rarely produces dramatic body changes, demanding physical activity, as may occur when participating in sports at a high competitive level, can produce alterations in some physiological parameters at very pathological levels. Some medical considerations should be addressed in female athletes. One of the most important issues is oligomenorrhea or amenorrhea in highly trained or low body weight athletes.

Material and Method

There are conflicting reports on the influence of menstrual status on the level of physical performance, and often amenorrhea is more common in female athletes with a history of menstrual disturbances preceding commencement of training activity, in those younger than 30, in those who run more than 40 miles per week, and in porous athletes. ..

Results

Exercise stimulates growth hormone production and enhances statural growth. Melatonin increases during exercise and is unresponsive to either dopaminergic or opioidergic blockade. Increased opioid production during exercise can stimulate prolactin release, which can stimulate adrenal release of androgens and interfere with the ovarian aromatization of androgen precursors to estrogens. Cortisol levels increase during exercise, particularly in amenorrheic athletes. .

Conclusion

Best way for promoting health in women is considering scientific principle in exercise prescription.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0215

THE ANALYSIS OF FORCE AND SURFACE ELECTROMYOGRAM OF AGONIST AND ANTAGONIST DURING ISOMETRIC ELBOW FLEXION AT DIFFERENT JOINT ANGLES

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Introduction/Background

Kinematic and electrophysiological performance can effectively elaborate the characteristic of muscle contraction which can provide beneficial proof of rehabilitation program to treat motor dysfunction. In this study, we aimed to analyze the difference and regularity of force and surface electromyogram (sEMG) of agonist and antagonist during isometric elbow flexion at different joint angles.

Material and Method

Twenty-one young volunteers were recruited and then performed maximum voluntary isometric contraction (MVIC) of elbow flexion continuously until exhaustion at four different elbow flexion angles (i.e., 30°, 60°, 90° and 120°). Isokinetic dynamometer was used to assess the torque during MVIC and synchronous sEMG signal recorded from biceps brachii (BB) and triceps brachii (TB).

Results

The corresponding experimental results showed that PT at elbow flexion 60° was the highest among four angles. BB-RMS and BB-AEMG at flexion 30° and 60° were both significantly higher than those at flexion 90° and 120°, while no difference was found in TB-RMS among different angles. The MF and MPF of BB and TB increased with increasing in elbow flexion angle. It was found that both PT and Av-T correlated positively with BB-RMS and BB-AEMG and there is stronger correlation with smaller elbow flexion angle. Extensive analysis displayed that the torque under 0~70% MVIC at four elbow flexion angles had a good linear relationship with corresponding rectified EMG-amplitude but not rectilinear relationship.

Conclusion

It can be concluded that the joint angle can affect the force and sEMG signal and elbow flexion around 60° may produce the maximum force. Joint angle should be introduced to interpret the muscle force with the EMG-amplitude. Furthermore, an important conclusion is made in this study that muscle strength under 0~70% MVIC may be interpreted accurately by sEMG.

Keywords

Surface electromyogram; Isometric Contraction; Joint angle

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0451

CASE REPORT: CENTRAL SLEEP APNEA IN A PATIENT WITH PRESUMED CHRONIC TRAUMATIC ENCEPHALOPATHY

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Introduction/Background

Chronic Traumatic Encephalopathy (CTE) is seen with repetitive head trauma, particularly in boxers and football players. Diagnosis can only definitively be made post mortem, though imaging, history and presentation can be used to make a presumptive diagnosis. We discuss a patient with history and clinical presentation consistent with CTE who required intubation on multiple occasions for hypercapnic respiratory failure. Despite a healthy body habitus and normal airway, the patient developed hypercapnia whenever he slept without bilevel positive airway pressure. The patient was noted to have Cheyne Stokes breathing pattern during sleep, consistent with Central Sleep Apnea (CSA). This appears to be a novel case of Central Sleep Apnea secondary to Chronic Traumatic Encephalopathy

Material and Method

Review of patient stay

Results

72 year old male with history notable for long career in football, culminating in an eight year NFL career as a wide receiver. According to family, he developed symptoms of memory loss starting at age 69 that progressively worsened. He required intubation three times in two months for hypercapnic respiratory failure. Physical Exam: Pulse Ox 100% on 40% FiO₂ on ventilator. Lungs: CTA bilaterally. Pt was moving all extremities spontaneously. Initial ABG on ventilator showed pH 7.345, pCO₂ of 66, pO₂ of 171, O₂ sat 98.9His initial neurologic examination after extubation revealed decreases in short-term memory and executive function but scored a 24/30 on his MMSE.

He was stabilized and discharged with theophylline and trilogy ventilator.

Conclusion

Although there is an association of sleep disorders with TBI, even central sleep apnea, there have been no documented cases of CSA associated with CTE. We propose that patients with a history of hypercapnic respiratory failure and a history of repeated head trauma should be considered for workup of CTE. In addition the converse is of importance to physiatrists, that patients with CTE should be monitored for CSA.

Keywords

Chronic Traumatic Encephalopathy; Central Sleep Apnea

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0541

THE EFFECTS OF KINESIO TAPING ON BALANCE REACTION IN HEALTHY YOUNG ADULTS AT DIFFERENT TIMELINE

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Introduction/Background

Kinesio tape (KT) is used in sport injury prevention, rehabilitation and sports performance enhancement. KT does improve proprioception and decreasing pain. But KT will affect the balance or lower limb function, is still a controversial issue. At present, most studies are more focused on immediately effect on KT, while ignoring the correlation between taping time and its effects . Purpose of this study is to understand KT immediate, short-term and long-term effects on static and dynamic balance in healthy subjects.

Material and Method

17 healthy untrained young participants aged 18-30 years were allocated with KT on quadriceps with 25% tension to the dominant leg. All measurements would be done before and after taping 15 minutes, 1 day and 3 days respectively with Biodex Stability System for postural stability, fall risk and limits of stability (LOS). Repeated measurement ANOVA had been used to compare the balance measurements prior to application, 15 mins , 1 day and 3 days after.

Results

A significant increase of dynamic balance (fall risk and **LOS**) appeared, especially after the KT application 1 day and 3 days ($P < 0.05$), however there were no significant differences between groups for three time periods (15 mins-post-tape, 1 day-post-tape, and 3 days-post-tape). In addition, there was no difference on static balance (postural stability) whenever tape was applied ($P > 0.05$).

Conclusion

From this research, we demonstrated that the different taping time of KT affected differently, KT significantly improved dynamic standing balance after 1 day application in general. Further investigation can base on the varied effects of Kinesio tape, different intervention time will be suggested for specific purpose for injury prevention, rehabilitations and enhancement of sport performance.

Keywords

Kinesio tape;balance|;quadriceps

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0612

PERSONAL EXERCISE TRAINING IN PATIENTS WITH GLIOMAS: PRELIMINARY RESULTS OF FEASIBILITY AND EFFECTIVENESS.

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Introduction/Background

Gliomas are the most common primary brain tumors in adults. Physical activity is proposed as an associated care in multiple cancers with proven benefits but has not been often and specifically evaluated for gliomas. The main objective of our study was to assess the feasibility and the potential effectiveness of exercise training in patients with high and low grade gliomas.

Material and Method

28 patients (mean age 49 years, 16 high grades and 12 low grades, minimal Karnofsky Performance Status at 70%) were addressed by the neuro-oncology for fatigue complaint. They were first screened by a physiatrist and then included a program of individual exercise training. A six-minute-walking-test was realized before and after the training.

Results

On the 17 patients included, 14 finished the program (7 high grade and 7 low-grade gliomas). Only 2 patients were excluded for a clinical degradation and only 1 patient did not finish it for a reason linked to his tumor. Mean number of sessions was 8; no major sides effects were reported. After the program, a statistically significant increase of the 6-minute-test was found ($p=0,0007$).

Conclusion

In this population, this kind of program seems to be feasible and efficient. However our results cannot be extended to all gliomas patients due to the good general state of our population and the inner limits of the six-minute-walking-test. Further studies are needed to assess the possible benefits in larger sample.

Keywords

gliomas;physical exercise;feasability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0686

INFLUENCE OF PULMONARY FUNCTION ON SPRINT ABILITY AND AGILITY IN AMATEUR FOOTBALL PLAYERS AGED BETWEEN 14-15 YEARS

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Introduction/Background

Physical fitness in football consists of several factors including aerobic capacity, anaerobic power, strength, speed, flexibility, agility, balance and coordination. Importance of the pulmonary function for aerobic capacity is well documented but the relationship of pulmonary function with other components of physical fitness is not extensively investigated. Our aim was to investigate the influence of spirometric parameters on sprint ability and agility in amateur football players.

Material and Method

Forty football players aged between 14-15 years who play in an amateur club were included. Pulmonary function was assessed using a portable spirometer. Sprint ability was assessed using 30-m sprint test and agility using T-test. Tests were conducted on an open football field and photocells were used for precise measurement. Correlations of spirometric parameters with sprint and agility test results were analyzed. Also, subjects were grouped into either above or below average according to sprint and agility test performances, then the spirometric parameters were compared between groups.

Results

Average completion time was $4,39\pm 0,22$ seconds for sprint test and $10,59\pm 0,41$ seconds for agility test. None of the spirometric parameters correlated with sprint or agility test results (Table 1). There were no significant differences between below average and above average subjects in terms of spirometric parameters according to sprint (Table 2) or agility (Table 3) test performances.

Table 1. Correlations of the spirometric parameters with the sprint and agility test results (n=40)

	30-m Sprint Test (seconds)	T-test of Agility (seconds)
FEV1(pred%)	0,029	0,212
FVC (pred%)	0,066	0,019
FEV1/FVC (%)	-0,096	0,07
PEF (pred%)	0,289	0,155

Pearson correlation coefficients (r) are presented. None of the correlations are statistically significant ($p < 0,05$).

FEV1: forced expiratory volume in 1 second, FVC: forced vital capacity, PEF: peak expiratory flow

Table 2. Comparison of the spirometric parameters between below average (>4,3 seconds) and above average (<4,3 seconds) subjects according to 30-m sprint test performance.

	30-m sprint test > 4,3 seconds (n=22)	30-m sprint test < 4,3 seconds (n=18)	p
FEV1(pred%)	90,28 ± 17,21	92,22 ± 15,19	0,704
FVC (pred%)	90,78 ± 10,10	92,72 ± 22,94	0,464
FEV1/FVC (%)	0,86 ± 0,19	0,88 ± 0,12	0,773
PEF (pred%)	107,11 ± 21,12	116,96 ± 14,38	0,840

Independent samples t-test

FEV1: forced expiratory volume in 1 second, FVC: forced vital capacity, PEF: peak expiratory flow

Cut-off data for the average performance in sprint test is from " DAVIS, B. et al. (2000) Physical Education and the Study of Sport. UK London: Harcourt Publishers Ltd. "

Table 3. Comparison of the spirometric parameters between below average (>10,50 seconds) and above average (<10,50 seconds) subjects according to T-test of agility.

	T-test > 10,5 seconds (n=23)	T-test < 10,5 seconds (n=17)	p
FEV1(pred%)	90,24 ± 18,50	92,88 ± 14,04	0,878
FVC (pred%)	90,17 ± 9,08	91,00 ± 24,29	0,478
FEV1/FVC (%)	0,86 ± 0,19	0,87 ± 0,12	0,840
PEF (pred%)	111,47 ± 21,18	113,46 ± 16,01	0,734

Independent samples t-test

FEV1: forced expiratory volume in 1 second, FVC: forced vital capacity, PEF: peak expiratory flow

Cut-off data for the average performance in agility test is from " PAUOLE, K et al. (2000) Reliability and Validity of the T-Test as a Measure of Agility, Leg Power, and Leg Speed in College-Aged Men and Women. The Journal of Strength and Conditioning Research 14 (4), 443–450. "

Conclusion

Our results suggest that the pulmonary function of the subjects does not have an influence on the sprint ability or agility in amateur football players. It may be due to the fact that both sprint and agility tests are completed in a short time thus the respiratory system is not becoming a limiting factor for these tests. Nevertheless, the importance of the respiratory system could not be ignored in the performance of the players since it is one of the key determinants of aerobic capacity.

Keywords

pulmonary function; Sprint Ability; Agility

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0699

TRANSLATION AND VALIDATION IN CLASSICAL ARABIC LANGUAGE OF THE QUESTIONNAIRE OF FATIGUE FOR SPORT CHILD

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Introduction/Background

Translate and validate linguistically in classical Arabic; the French version of the questionnaire of fatigue for sport child (QFES).

Material and Method

The Arabic translation of the questionnaire of fatigue was obtained by the method of "direct translation / backward translation".

We have included 28 children aged between 12 and 15 years old practicing an intensive sport or competition sport and training more than 12 hours per week. The questionnaire was self-administered and completed twice at two-week intervals.

We studied feasibility, acceptability, internal consistency using Cronbach's alpha and test-retest repeatability by non-parametric Spearman correlation.

Results

Twenty-eight children were included. The average age was 14.07 years. The questionnaire was feasible and acceptable, no element was excluded. The Spearman correlation was 0.836. Internal consistency was rated good with Cronbach's alpha 0.874.

Conclusion

The Arabic version of QFES was reproducible and the validity of the construction was satisfactory.

The study of its responsiveness to change with a larger number of patients will be subject to further work.

Keywords

questionnaire;fatigue;translation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0727

ASSESSMENT OF ARTERIAL OCCLUSION PRESSURE USING PULSE OXIMETRY: A VALIDATION STUDY

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Introduction/Background

Blood-flow-restriction (BFR) training is recently progressively applied in functional training settings. The optimal cuff pressure during BFR exercise, current literature recommends using percentages of each individual's arterial occlusion pressure (AOP). Most frequently, blood flow is determined by Doppler ultrasound (DU) techniques. Despite its high accuracy, the practicability of this gold standard is limited and time-consuming. An alternative solution to assess blood volume changes and pulse is pulse oximetry (PO). It was hypothesized that measurement of AOP could simplify the determination of cuff pressure during BFR training. Therefore, the main purpose of this study was to evaluate the accuracy of the PO for measuring the AOP compared to the current gold standard DU.

Material and Method

Thirty-five subjects (27.7 ± 2.9 years) were enrolled in the study. Participants were positioned in a supine position and a 12-cm-wide cuff was applied in a counterbalanced order at the most proximal portion of the right upper and lower limb. The cuff pressure was then successively increased until the systolic pulse wave was no longer detected by DU and PO, respectively.

Results

The results show that the mean values of AOP were 145.7 ± 19.1 mmHg and 144.0 ± 26.4 mmHg for the upper limbs, 191.5 ± 24.1 mmHg and 174.5 ± 28.3 mmHg for the lower limbs tested by DU and PO respectively (Fig. 1). Significant differences (paired t-test) between the two methods

were revealed for the lower limbs ($p = .000$) but not for the upper limbs ($p = .621$).

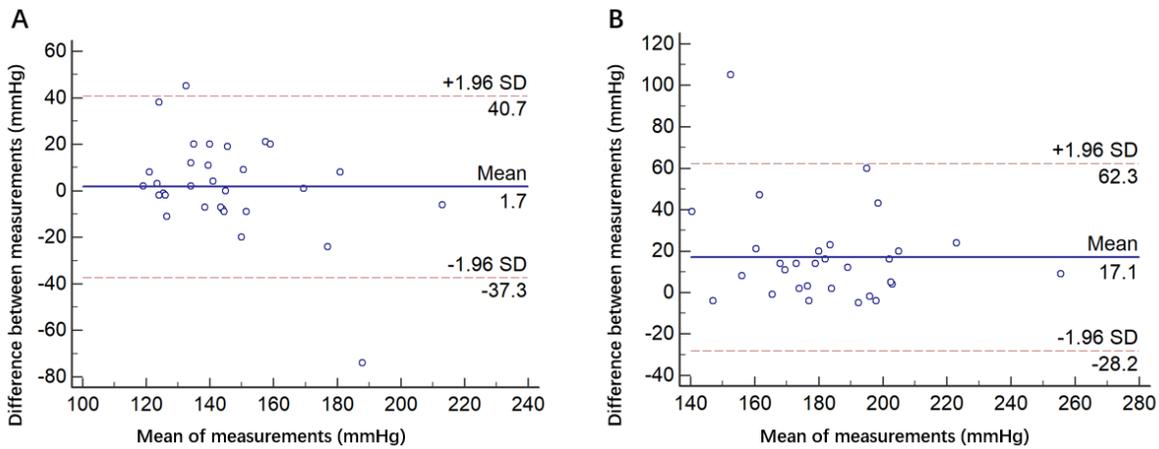


Fig.1 : Bland-Altman Plot of differences in AOP between PO and DU for upper limbs (A) and lower limbs (B)

Conclusion

Our results indicate that, compared with the gold standard DU, the PO method has statistically acceptable accuracy when measuring AOP in upper limbs. However, in lower extremities the PO significantly underestimates the actual AOP. This must be considered when implementing PO as a method for determining cuff pressure for BFR exercise.

Keywords

blood flow restriction training;arterial occlusion pressure;pulse oximetry

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0791

DIFFERENCE IN CONTRIBUTIONS TO THE TEAM'S SCORE IN MALE WHEELCHAIR BASKETBALL AT THE 2016 RIO PARALYMPICS BY PHYSICAL CAPABILITY CLASSIFICATION

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Introduction/Background

This study clarified differences in players' contributions to the team's score in male wheelchair basketball at the 2016 Rio Paralympics by physical capacity classification, and examined the roles required in the team.

Material and Method

This study used stats (record of play contents) for players who played for more than 20 minutes from the official box scores of all 42 games at the 2016 Paralympics. Players were divided into three groups by physical capacity classification: low, middle, and high. The average stats for each group were compared and the covariance structure was analyzed to determine the role of each group during the game.

Results

Comparisons showed that the higher the class, the higher the value of many stats items. In the low group, important elements were field goal made, steal, and turnover. Steel leads to increased assist and successful shoot. In addition, players with many field goal attempts had a common point that there are many assistants. In the high group, important elements were field goal made, field goal attempts, assist, and turnover in the high group. In addition, players with many field goal attempts had a common point that there are many assistants.

Conclusion

Players in the high group have more plays related to the ball. Those in the low group should increase the numbers of field goal made and steals and reduce turnover. High group players are required to have scoring ability and reduce turnover.

Keywords

male wheelchair basketball;classification;contribution to scoring

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0805

EFFECTS OF KINETIC CHAIN EXERCISE INTERVENTION ON PAIN AND MOTOR PERFORMANCE IN VOLLEYBALL PLAYERS WITH SCAPULAR DYSKINESIA: PRELIMINARY RESULTS

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Introduction/Background

Shoulder is the 3rd-most commonly injured segment in volleyball players, with the majority resulting from chronic overuse. Scapular abnormal position and movement could lead to dyskinesia (SICK scapula), causing further shoulder girdle injuries. For treating scapular dyskinesia, conventional training focus on retraining of shoulder girdle, while some researchers consider that kinetic chain rehabilitation would be more beneficial. However, there was no study comparing different effects between these two interventions. Therefore, the aim of this study is to compare the effects of 4-week kinetic chain exercise intervention (KC) and conventional training (CT) on pain and motor performance in volleyball players with scapular dyskinesia.

Material and Method

40 volleyball players mainly from universities in Taipei would be enrolled in this study after PT's evaluation. So far, ten subjects were enrolled and finished the pre-test, than randomly allocated into KC group (3M 2F, age: 22.17±1.32) and CT group (3M 2F, age: 21.50±1.05). All subjects would execute a 30-spikes task followed by warm-up and maximal voluntary isometric contraction (MVIC) test before and after intervention. Visual Analogue Scale (VAS) was used to measure self-reported pain. The electromagnetic wireless tracking system (LIBETY™) and the wireless surface electromyographic (sEMG) system (TELEmyo 2400T G2) were used to collect kinematics and muscle' activation data respectively. The proprioceptive feedback magnitude (PFM) was calculated for measuring scapular movement consistency in 30-spikes task. The data at timing of maximal shoulder flexion and ball contact during spikes was analyzed.

Results

The ten enrolled subjects was still undergoing the 4-week interventions. No significant between groups difference in baseline demographic data ($p>0.35$) and pre-test data, which including self-reported pain ($p>0.25$), kinematics (scapula and trunk movement) ($p>0.35$), and scapular muscle's activation (serratus anterior, upper and lower trapezius) ($p>0.22$).

Conclusion

The study is still on-going, we anticipated all primary data would be collected and analyzed completely before June of this year.

Keywords

Scapular dyskinesia; Volleyball; Kinetic chain exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-0810

DESIGN AND EVALUATION OF UPPER LIMB PROSTHESIS FOR SPRINT IN PARA-ATHLETICS COMPETITION: CASE REPORT

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Introduction/Background

Paralympic sports athletes are classified according to functional level and not diagnosis. Amputees can use mechanical prosthesis to compete, without changing their classification. A facilitator in sport participation for amputees is using optimal prosthetic components. Multiple studies have analyzed sprint in lower limb amputees and the impact of running prosthesis (RP). We found no articles for upper limb (UL) amputees and RP, but the role of UL in running has been described. We present the case report of an UL amputee athlete, that felt restrain when running with her regular body-powered prosthesis and share the process of creating and evaluating a new kind of RP, specially design for competition. To achieve this, we analyzed videos of pass years paralympics competitions in UL amputees and the role of UL during sprinting.

Material and Method

Study Type: Case Report. Population: 17 years old female athlete with congenital left transradial amputation. Variables: RP design description (materials, socket design, suspension system, terminal devise), timing of running test in 200 m (with no prosthesis, old prosthesis and RP), patient satisfaction with RP (Goal Attainment Scale (GAS)).

Results

RP design: Socket was made in carbon fiber, with aerodynamic shape to facilitate brace. Terminal devise was a rubber bumper, to lean on it without sliding, and suspension was with a silicone liner with Velcro straps. Timing in running test: 29.7 sec without prosthesis, 28.9 sec with old prosthesis, and 28.36 sec with RP. GAS: +2 (high satisfaction).

Conclusion

We share the design of an innovating RP for UL that had a positive contribution in a patient's professional performance. She still uses her RP and has improved her competitive level.

Keywords

upper limb prosthesis; Sprint competition; Innovative design

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1024

DANCE THERAPY FOR CHILDREN WITH CEREBRAL VISUAL IMPAIRMENT: A SCOPING REVIEW TO ASSIST CLINICAL DECISION-MAKING

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Introduction/Background

Dance Therapy (DT) seems to show promising effects on physical and cognitive function in children. The Institut Nazareth et Louis Braille, a Rehabilitation Center, is interested in exploring the effects of DT in children with Cerebral Visual Impairment (CVI) who may also have cognitive (e.g. executive dysfunction) or motor impairments. However, there are few studies on the effects of DT in children, and none for the population with CVI. Moreover, there is no consensus on the parameters of DT (e.g. duration and frequency of sessions). It is thus challenging to propose innovative, global therapeutic interventions to enable these children improve their activities and participation. DT is an innovative group intervention that could broaden the child's motor experiences, help them explore the surrounding space, and interact with others. With the goal of creating a DT intervention for children with CVI, this study aims to systematically map the current state of the literature describing different group physical activity interventions and their outcomes for children with CVI.

Material and Method

Our scoping review follows a 6-step framework (Levac, 2010; Arskey and O'Maley, 2005). The electronic search strategy, conducted and including 11 electronic databases such as MEDLINE, Embase, and CINAHL, resulted in 1535 references. Documents reporting any type of physical or leisure activities group for individuals with CVI or children with low vision are included. Data extraction, analysis, and synthesis are ongoing. An expert stakeholder group from the rehabilitation center will validate and enhance the results thereby constituting the consultation phase of the review.

Results

Preliminary results indicate a large variability of interventions that include different physical activities (judo, aerobic training), setting, duration and population.

Conclusion

This review will contribute to the creation of DT for children with CVI (guideline) and to help clinician to choose appropriate assessment tools.

Keywords

Dance Therapy ;Cerebral Visual Impairment;Scoping Review

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1104

HIP MOTOR CONTROL TRAINING DID NOT IMPROVE MUSCLE PERFORMANCE DURING JUMP LANDING IN YOUNG DANCERS WITH RECENT ANKLE-FOOT INJURY

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Introduction/Background

Dance is a unique combination of athleticism and artistry which exposes dancers to extreme physical demands and risks of injuries. Previous studies showed that hip muscle training improved lower extremity neuromuscular control in patients with ankle instability. However, few studies investigated the effectiveness of hip control training in dancers with ankle-foot injury. Therefore, aim of this study was to determine whether hip control training could improve muscle performance in dancers with ankle-foot injury.

Material and Method

Thirty three young dancers with ankle-foot injury within 6 months were recruited. Participants were randomized to the hip motor control training group (3 males and 13 females, 19.24±3.03 years old, n=16) or the control group (4 males and 13 females, 19.45±1.41 years old, n=17) and received hip motor control training or regular training for 4 weeks. The outcome measurement included compensated turnout, muscle activation (gluteus maximus, gluteus medius, biceps femoris, femoris rectus, tibialis anterior, peroneal longus and soleus) during jump landing, and lower extremity muscle length and muscle strength. Two-way repeated measures ANOVA was used to examine the intervention effect. A statistical significance was set at $P < 0.05$

Results

After four weeks of training, the hip motor control training group did not show significant improvement in the compensated turnout angle or muscle activation during jump landing except the affected side rectus femoris (50.13±14.88 vs. 51.52±10.16, $p=0.026$) as compared to the control group. The 4-week hip training program however improved lower extremity muscle strength including both affected and non-affected side hip muscle strength and ankle dorsiflexion strength, and non-affected side knee flexion and ankle eversion and inversion strength.

Conclusion

Hip motor control training improved lower extremity muscle strength, but its effect on lower extremity muscle activation or turn-out angle requires further research to clarify.

Keywords

dancer;hip control training;ankle foot injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1153

CORE BODY TEMPERATURE OF ABLE-BODIED INDIVIDUAL VERSUS AMPUTEE DURING WHEELCHAIR FIELD RUNNING: CASE REPORT

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Introduction/Background

Heat dissipation in the thermoregulatory responses is important for sweating. However, it seems that an amputee has a decreased heat dissipation capacity due to decreased body surface area (BSA). Therefore, there is a possibility that amputees are more likely to experience an increase in core body temperature than able-bodied individuals. The lower limb amputees often execute field wheelchair sports; however, no report has yet measured their core body temperatures during wheelchair running.

Material and Method

An able-bodied individual (AB) and an above-the-knee amputee (AKA) performed wheelchair running on a field-track for 1 hour. Their core body temperatures were continuously measured during wheelchair running. In addition, running speeds, heart rates, and body weights before and after running were measured. The change in body weight was determined as the sweat loss. BSA was calculated using the Dubois equation. Thermal sensation was also recorded after running. The ambient temperature was recorded as the wet-bulb globe temperature (WBGT).

Results

WBGTs were 27.8° C and 27.5° C; changes in core body temperature were 1.11° C and 1.06° C; heart rates were 161 bpm and 127 bpm; running speeds were 8.6 km/h and 9.16 km/h; sweat losses were 0.95 kg and 0.75 kg; BSAs were 1.69 m² and 1.40 m²; and thermal sensations after running were hot and neutral in AB and AKA, respectively.

Conclusion

There was no significant difference in the core body temperatures of AB and AKA while wheelchair field running for 1 hour. Although AKA had a recognized decrease in BSA, his body temperature was within the range of core body temperature control due to sweating in an ambient temperature with WBGT at 27.5° C. AKA had a faster wheelchair running speed than AB; thus, convection might have assisted him with heat dissipation. Case studies are necessary for thermoregulatory responses of amputees in the future.

Keywords

amputee;core body temperature;wheelchair field running

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1309

THE IMPACT OF THE LOCAL EXHAUSTION ON THE PROPRIOCEPTION OF THE SHOULDER IN YOUNG TUNISIAN VOLLEYBALL PLAYERS

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Introduction/Background

Proprioceptive afferents from the different structures of the particular complex of the volleyball players' shoulder have an important role in the coordination and the control of the different technical gestures of this sport. The impact of local exhaustion on shoulder proprioception has been studied only for external and internal rotations and the results are controversial. The effect of local on the proprioception of the shoulder in all areas of mobility among young volleyball players is poorly known.

Objective: To study the impact of local on shoulder proprioception in all mobility sectors.

Material and Method

It was a prospective analytical study conducted on a population of eleven young Tunisian volleyball players in the Physiology and Functional Exploration Laboratory of the Faculty of Medicine of Sousse. The experimental equipment consists of a MONARK ergo meter bicycle and a digital camera. The measurement of the different joint angles was performed using the "GIMP2" software.

Results

Our results showed a significant effect of local on shoulder proprioception in active ($p < 0.03$) and passive ($p < 0.003$) repositioning mode for external rotation as well as for internal rotation, in two modes of active ($p < 0.01$) and passive ($p < 0.003$) repositioning.

We observed a significant difference ($p < 0.005$) between active and passive repositioning in anterior elevation after local exhaustion, as well as posterior elevation in both active ($p < 0.009$) and passive ($p < 0.003$) repositioning modes.

Conclusion

Shoulder proprioception is impaired by local exhaustion, which is a major risk factor for injury.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1413

WHEELCHAIR RACING: CHAIR SET-UP, CONVENTIONAL SEATING POSITION, KNEELING POSITION, PARA BACK HAND TECHNIQUE, INJURY PREVENTION

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Introduction/Background

Wheelchair racing is one of the disability the most recognized by the public. Obtaining the correct seating position is very important for an optimum power on the push rim.

Material and Method

The three keys for the best chair set-up are the horizontal position in relation with the rear axle, the seat and knee height.

Results

The position of the legs, the level of the impairment and the physical size determine two racing positions: the conventional seating position and the kneeling position, the most popular among the top athletes. It exists two pushing techniques: the parabackhand and the T51 technique concerning the racer with a lack of triceps. The gloves used manufactured or made by the racer. The last generation of gloves, the solid gloves allow a third technique: the thumb catch technique. The injury prevention is in relation with a perfect chair set up, the best pushing technique and a good balance and flexibility between the different muscles of the shoulder.

Conclusion

The knowledge about biomechanics and technical improvements in wheelchairs have permitted a better injury prevention and significant racing progresses.

Keywords

wheelchair racing;injury prevention

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1417

WHEELCHAIR FENCING: A FURTHER ADAPTATION OF FENCING TO BREAST-CANCER CASES

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Introduction/Background

In France, breast-cancer currently affects one woman in eight – 54,000 new cases were detected in 2015. Among them, some women with motor disabilities as almost 100,000 women aged under 65 have to use wheelchairs. Numerous scientific studies have highlighted the positive effects of well-adapted physical activity after breast-cancer surgery - it is shown to reduce fatigability, posture problems and the risk of recurrence, hence to foster a better quality of life. Several federations have adapted their sport to cancer patients; yet most of those adaptations take no account of the possible presence of pre-existing motor problems.

Material and Method

Solution RIPOSTE offers women with breast-cancer an adapted practice of fencing, devoid of hits, which improves shoulder mobility thanks to the reflexive gesture of high parry commonly made in sabre fencing, and also corrects posture anomalies thanks to the shoulder opening required by the *en garde* position. Besides, the elegance of the sport helps to restore a feminine self- image which has been severely impaired.

Results

All the fencing masters and instructors in charge of those special fencers have been specifically trained, and they are regularly re-trained. To further our action, a fencing instructor who is a member of the French National team of wheelchair athletes has just completed that course, and

she has started to run fencing sessions open to every single woman who has had breast cancer – debarring none.

Conclusion

With their oncologists' backing, wheelchair fencing could also be proposed to women with lumbar or sacrum metastases, for whom any sport involving stamping is strictly contraindicated. Thus the French Federation of Disability Sports meets the French National Olympics and Sports Committee's wish to develop a 'sport for health' policy.

Keywords

wheelchair fencing;breast-cancer;physical activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1430

THE EFFECT OF HIGH AND LOW IMPACT PHYSICAL ACTIVITY ON BONE MINERAL DENSITY: A LITERATURE REVIEW

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Introduction/Background

Physical activity is often associated with increased bone mineral density and decreased osteoporosis. Low impact sports, have been described as having a neutral or negative effect on bone mass. However, the literature is not consensual in this practice. The objective is to identify the effects of high and low impact physical exercises on bone remodeling.

Material and Method

Research and selection of the most relevant bibliography, published in the electronic database Pubmed (from January 1990 to January 2018), using as keywords: "sport", "bone mass" and "osteoporosis."

Results

Were included 24 articles in this review. In all studies, bone mineral density was calculated by bone densitometry (whole-body, femoral neck and lumbar spine) in individuals between 18 and 30 years of age. The review demonstrates that high-impact exercises appear to be important for the prevention of osteoporosis by increasing bone mass. Studies also suggest that regular practitioners of low-impact exercise, particularly swimming, have bone mineral density similar to those who do not exercise, and values lower than those who practice high-impact sports.

Conclusion

These data suggest that physicians and other professionals accompanying swimming athletes should implement high-impact exercises before or after training in aquatic environments in order to improve swimmers bone mineral density. The effects described should not discourage the practice of the modality, which undoubtedly also provides positive body effects, but rather encourage a close look of the doctor who recommends regular practice of this modality, given the increased risk of osteoporosis development. Considering that the increase in latitude, with a consequent decrease in the sun exposure of the practitioners of out-door modalities, has reduced the differences found in bone mass among swimmers (in-door) and those with high impact modalities, it seems fundamental to do more studies in this area to evaluate possible bias and using new evaluation methods as biochemical markers of bone metabolism.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1438

ISOLATED HOOK OF HAMATE FRACTURE IN PEOPLE WHO PLAY RACQUET SPORTS

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Introduction/Background

To report characteristics of isolated hook of hamate fractures related to racquet sports and to identify factors affecting early diagnosis and recovery period.

Material and Method

A comprehensive literature search was conducted using MEDLINE, EMBASE, SCOPUS, Web Of Science, the Cochrane Central Register of Controlled Trials, ClinicalTrials.gov, International Clinical Trials Registry Platform, and the EU Clinical Trials Register. This article included case reports, literature reviews for patients with isolated hook of hamate fractures related to racquet sports from 1977 to 2016.

Results

A total of 21 case reports and literature reviews with 120 patients were satisfied with our criteria. Fifty-two patients (43%) had been injured playing golf, and 65 injuries (76.5%) were in the non-dominant hand. The most common subjective symptom or physical examination finding were pain (38%) or tenderness (56%) over the ulno-palmar area. CT and/or MRI (magnetic resonance imaging) were most frequently used to confirm diagnosis (41.6%). There was no significant difference in the time to diagnosis between the times before and after CT was widely used. There was a statistically significant correlation between time from injury to diagnosis or surgery and recovery period after surgery (correlation coefficient = 0.206). The coefficient of determination (r^2) of time from injury to diagnosis or surgery was 0.042 for recovery period after surgery in the simple linear regression analysis.

Conclusion

Carefully hearing the patient's history and symptoms and strong clinical suspicion of disease are important for optimal decision making and patient management in the hook of hamate fracture. Early diagnosis can prevent delayed complications and leads to an early return to sports activity and daily life.

Keywords

sports; hamate; Racquet

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1449

EFFECT OF MOBILIZATION EXERCISE ON THE FUNCTIONAL MOVEMENT SCREEN SCORE

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Introduction/Background

The Functional Movement Screen (FMS) has been utilized as a screening tool for detecting such as asymmetries and compensations on movement patterns. Previous study has reported that 14 points and under of the FMS composite score showed a higher risk of severe sports injury. To improve the FMS score is considered to be important for injury prevention. While the FMS has been considered to be a useful prediction tool for sports injury, it is still unknown whether active mobilization exercise (MEx) influences the FMS score. The aim of this study was to determine the effects of MEx on the FMS score.

Material and Method

Thirty-eight collegiate American football players participated in this study. The inclusion criteria were as follows; no orthopaedic injury history in latest 3 months, 2 points and under of the FMS mobility score (Shoulder Mobility Reaching; SMR and Active Straight Leg Raise; SLR) in baseline test. Written informed consent was taken from all players before the test. The FMS was measured at preseason as a baseline test and was retested after 12 weeks. Players performed MEx that focused on improving active mobility of shoulder, trunk and hip for 12 weeks (3 times per week). Wilcoxon signed-rank test was used to determine changes from baseline score.

Results

The median value (inter-quartile range) of the FMS composite score was 14 (13-14.25) at baseline, 15 (15-16) at 12 weeks, respectively. As the results of Wilcoxon signed rank test, composite score was significantly increased at 12 weeks.

Conclusion

12 weeks' MEx focused on active mobility improved the FMS composite score. the SMR and SLR mainly require active mobility. This results means the significance of doing MEx based on the FMS, and the MEx may be useful as one of the injury prevention tools in sports field.

Keywords

Functional Movement Screen;mobility;exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1478

RELATIONS OF TOE GRIP STRENGTH AND PHYSICAL FITNESS TEST AT 10-14 YEAR OLD

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Introduction/Background

In our local government, physical therapists participate in the physical fitness test of the elementary and junior high schools and helps with subsequent data entry, the close inspection of data from enforcement.

The purpose of this study were to measure a toe grip to 10-14 years old, and to investigate the relations with each evaluation items of the physical fitness test.

Material and Method

We intended for five elementary schools and two junior high schools students (girls: 578, boys: 645) asked for intervention from the Board of Education to physical fitness test.

The measurement of the physical fitness test obeyed fate of Ministry of Education, Culture, Sports, Science and Technology.

The toe grip used toe muscular strength measuring instrument 2 (T.K.K.3364, Takei instrument industry Co., Ltd.).

We conducted this study with approval (H28-06) of the Ethical Review Board of the regional organization.

Results

When age rose, the toe grip significantly increased.

Only at 12 years old, the mean of girls exceeded the mean of boys (girls: 12.2±3.9kg, boys: 11.5±4.8kg). However, there was not the significant difference.

A finger grip (muscle strength)($r=0.66$, $p<0.01$), standing broad jump (instantaneous force) ($r=0.58$, $p<0.01$), side step (agility) ($r=0.65$, $p<0.01$), and the relations with each item of the physical fitness test were a significant correlation to a toe grip.

Conclusion

It is very interesting that the muscular strength of girls is in the generation more than boys.

As for other results, a correlation was found in other according to report, a toe grip and muscular strength, a power, agility.

Keywords

toe grip strength;physical fitness test;children

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1640

RELATIONS OF FOOT ALIGNMENT AND PHYSICAL FITNESS OF THE CHILDREN

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Introduction/Background

It is reported that the physical fitness decreases when we have an abnormality in the alignment of the adult foot part, but the relations with the change of the foot part alignment of children are not reported.

The purpose of this study conducted the foot alignment investigation of children and decided to investigate the relations with the item of the physical fitness test.

Material and Method

We intended for the children(girls: 280, boys: 305) of five elementary schools asked for intervention from the Board of Education to the physical fitness test.

The measurement of the physical fitness test obeyed fate of Ministry of Education, Culture, Sports, Science and Technology.

The foot part alignment measured a navicular high, a valgus thumb angle, the flat feet with the footprint and the presence or absence of floating digit.

We conducted this study with approval of the Ethical Review Board of the regional organization (H28-06).**Results**

By the measurement of the foot part alignment, there was flat feet 77(13.2%), and there was a floating digit 326 (55.7%). There was a thing with 15 degrees or more valgus angle of the thumb 94(16.0%).

The significant difference was not found in physical strength between a normal group with the group with the change in an above-mentioned foot part alignment.

Conclusion

Because there are a lot of children of an abnormal foot part alignment as we are reported so far, it is more likely to be with reason of a decrease and the locomotorium disorder of some kind of performances in future.

The person with the change had a report that there was the decrease of the motor function in a foot part alignment, but the significant change was not found in this subject age.

Keywords

physical fitness test;children;foot alignment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1705

EXAMINATION OF THE EFFECT OF WHOLE BODY VIBRATION EXERCISES ON TRUNK ENDURANCE AND DYNAMIC BALANCE IN HEALTHY YOUNG PEOPLE: RANDOMIZED CONTROLLED STUDY

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Introduction/Background

Whole body vibration exercises, defined as exercise applied to the body in contact with a vibrating platform, stimulate reflex muscle contractions and synchronize motor unit activation. This study was planned to investigate the effects of Whole Body Vibration Exercises on trunk endurance and dynamic balance in healthy young people.

Material and Method

The study included forty-six healthy subjects (mean age=22.93±1.04 years, 26 female, 20 male). Participants were randomly assigned to an exercise group (n=26) or a control group (n=20). Trunk endurance was evaluated using curl-up and Biering Sorensen tests, and dynamic balance was assessed using Y balance test. All assessments were performed at baseline and end of 3 weeks. Whole body vibration exercises lasted 3 weeks (3 sessions/week). No intervention was made to the control group. Mann Whitney U tests were used to analyze the data.

Results

When the groups are compared; significance was obtained in right anterior (p=0.000), left anterior (p=0.000) and left posteromedial (p=0.048) directions of Y balance test in favour of the exercise group, the difference in the results of other evaluations was not significant (p> 0.05).

Conclusion

Whole body vibration exercises have had positive effects on dynamic balance in healthy young people. We recommend that the effect of long-term whole body vibration exercises on muscular endurance of the trunk is examined.

Keywords

Exercise training; Whole Body Vibration; postural balance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1763

THE FEASIBILITY OF AN ENDURANCE TRAINING PROGRAM IN PATIENTS WITH STROKE DAMAGE.

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Introduction/Background

Patients' endurance capacities are decreased after stroke. Due to their motor impairment the feasibility of an exercise stress test is compromised. To date there are no guidelines regarding the cardiovascular evaluation before entering an endurance training program (ETP). We selected cardiologic parameters (cardiovascular history, blood pressure – BP, heart rate – HR, ECG) and aimed to evaluate their use before and during an ETP.

Material and Method

This is a preliminary prospective study. Patients performed an individualized ETP of 3 training sessions per week during 10 weeks on an arm or leg motor driven device, or walking treadmill. The predefined cardiovascular criteria were collected all along the session. The HR throughout the exercise had to be lower than defined by Karvonen's formula [$\text{trainingHR} = \text{restingHR} + 0.6(220 - \text{age} - \text{restingHR})$] and systolic BP ≤ 190 mmHg.

Based on these criteria, exercise's duration and power were adjusted to obtain, in the first session, an exercise duration of 20 minutes with a perceived exertion $\leq 11/20$ on the Borg scale. The duration and the power were gradually increased, with respect of a perceived exertion $\leq 12/20$, to reach, at the fifth session an exercise duration of 30 minutes.

For next sessions, duration was 30 minutes and the power gradually increased and adjusted to maintain a perceived exertion $\leq 14/20$.

Results

Twenty-eight patients (age 52.9 ± 11.1 , sex-ratio 15/13, ischemic strokes 19 (68%)) underwent the first session of ETP (5 on an arm motor driven device, 12 on a leg-driven one and 14 on a treadmill.) Throughout the session, the perceived exertion was 12 ± 2 , only 2 patients reached the training HR and the blood pressure remained ≤ 180 mmHg for all patients. None of the patients experienced adverse events. Based on this feasibility analysis, 8 patients are currently undergoing the entire ETP.

Conclusion

Simple cardiovascular parameters appear to be safe and sufficient to assess post-stroke patients for endurance training programs.

Keywords

Endurance training program;Stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1897

OVERTRAINING SYNDROME AMONG FOOTBALLERS

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Introduction/Background

Primarily observed in athletes, the overtraining syndrome is characterized by metabolic changes, reduction in the athletic performance, and the response to the training in healthy individuals, incidence of bruises and viral and bacterial infections due to the fall in the immunological resistance, alterations in the mood, constant fatigue, etc. Although it has already been the subject of several studies, the syndrome of overtraining remains a complex and relatively unknown pathology

One of the methods for early detection of overtraining syndrome using a questionnaire Assembly French Sports Medicine is (SFMS): a simple questionnaire, low-cost and accessible. The aim of this study is to detect early stage of overtraining with the (SFMS) questionnaire.

Material and Method

It is a transversal study which included thirty footballers (professional and amateur). We used the Assembly French Sports Medicine questionnaire (SFMS), It includes 54 items which the subjects have to answer by (yes) or (no) : 20 questions related to psychological symptoms, 17 questions related to physiological signs and 17 questions were related to fatigue. A score is then established by summing the answers by (yes) and a final score equal to or higher than 20 is the overtraining threshold.

Results

Thirty men were included in our study with a mean age of 24.65 years. The mean score obtained by all participants in this study was 11.84 with a minimum score of zero and a maximum score of 28. From 30 footballers five were given a score of 20 or more. The mean score of fatigue was 7.45, psychological score was 8.63 and physiological score was 2.18.

Conclusion

The overtraining syndrome is a condition of chronic fatigue, underperformance. psychological, endocrinological, physiological, and immunological factors all play a role in the failure to recover from exercise. Careful monitoring of athletes and their response to training will help to prevent overtraining syndrome.

Keywords

Overtraining Syndrome ;Footballers

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1910

MODEL OF EXERCISE AND SPORT ADAPTED FROM TELETON CHILE FOR REHABILITATION AND SOCIAL INCLUSION

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Introduction/Background

Teletón is a private non-profit institution whose mission is the integral rehabilitation of children and youth with neuromusculoskeletal diseases. Throughout Chile there are 14 Teletón Institutes, which rehabilitate more than 90% of the national population with motor disabilities in childhood and adolescence.

Material and Method

In each Teletón Institute, the Adapted Exercise and Sport Unit involves the physical education teacher (PET) within the rehabilitation team, who use sports tools with a playful nature to execute therapeutic programs that optimize some physical qualities with a functional objective defined by the Physiatrist.

During the execution of the therapeutic program, the PET objectifies if the patient is actively participating in the physical education class of his / her school. If a problem is detected, the teacher makes reports and visits to the school to promote school inclusion. If necessary, conduct training sessions for physical education teachers of the school community.

On the other hand, the PET carry out and coordinates community sports schools for people with motor disabilities. The economic resources of these sports schools are managed with public and private resources.

Results

Athletes with competitive potential are referred to the Paralympic Committee of Chile to continue the sport in a professional manner. The rest of the athletes are encouraged to continue practicing physical activity as a habit of healthy living.

Conclusion

This model of work has been implemented for four years, being a reference center for national and international training within South America for rehabilitation team who wish to use exercise and adapted sports as a tool for rehabilitation and social inclusion.

Keywords

Adapted Sports; School Inclusion; Therapeutic sport

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1931

MEDICAL MANAGEMENT IN HANDISPORT: A REVIEW OF THE LITERATURE AND A SUMMARY OF REQUISITE SKILLS

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Introduction/Background

The benefits of physical activity on physical and mental wellness are recognised and Handisport is no exception. Physical activity is a key tool for the physical and social rehabilitation of disabled persons and has been increasingly used in recent years, as indicated in studies. Our objective was to review all published data on sports activities involving disabled persons and to summarize the requisite skills for physicians involved in Handisport.

Material and Method

First, we review the existing literature on medical management in Handisport. Second, we report the «Jeux de l'avenir» 2017 from an epidemiological perspective, and then give feedback and make proposals to improve medical management. Finally, based on our findings, we provide a summary of the medical skills and knowledge required for physicians involved in Handisport.

Results

We analysed 37 articles with the key words «sport medicine» and «disabled person»/«sports for persons with disabilities». These articles discussed medical check-ups, medical organisation for international events, «dangerous sports» and predominating injuries, psychological aspects, overtraining, illnesses induced by disability and overuse injuries, classification and doping issues. The «jeux de l'avenir» included 551 youths aged 8 to 21 years old in 14 sporting disciplines. Impairments were: cerebral palsy (45%), visual impairment (8%) and genetic

pathology (8%). The major sport activity was athletics (26%). There were 46 medical procedures, including 5 which required emergency room transfer.

Conclusion

Disabled athletes require multidisciplinary care and specific knowledge, close to physical and rehabilitation medicine. The aim is not to replace the specialist but to improve the athlete's preparation with better knowledge of his/her impairment and better injury prevention. We propose a 12-point summary of the specific skills required in Handisport medicine. Our study may be a first database and a working tool to build the medical management of Handisport for tomorrow.

Keywords

disabled person;sport medicine;para-sport

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-1978

THE EFFECTS OF COMBINED STRENGTH AND ENDURANCE TRAINING COUPLED WITH WALNUT SUPPLEMENTATION ON COGNITIVE PERFORMANCE AND SLEEP PARAMETERS IN ELDERLY PEOPLE

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Introduction/Background

Aging is characterized by an alteration of cognitive function and accompanied by a sleep disorders. The present study aimed to investigate the effect of combined strength and endurance training coupled with walnut supplementation on cognitive performance and sleep parameters in elderly people.

Material and Method

Twenty elderly participants were divided into two groups in a randomized controlled trial: Training + walnuts diet (GTW, n = 10); Training + control diet (GT, n = 10). The experimental protocol consisted of two evaluation sessions (pre and post-training) and combined strength and endurance training (tree sessions / week) for six weeks coupled with a walnuts supplementation (15 g per day). For each assessment session, cognitive test (Montreal Cognitive Assessment: Moca) and sleep quality tests (Spiegel's Sleep Questionnaire, Sleep Diary) were conducted.

Results

Age, body mass and height of the participants were 66.7 ± 2.8 years, 169.0 ± 3.8 cm, 73.7 ± 5.2 kg, respectively. In the present study, cognitive performance and sleep parameters were increased significantly for GTW compared to GT. For cognitive performance, the results of this study showed a significant increase in the Moca test score ($F = 55.14$, $P < 0.001$). Concerning sleep parameters, statistical analysis showed a significant increase for sleep efficiency and Spiegel's Sleep Questionnaire ($F = 16.36$, $P < 0.001$, $F = 7.8$, $P = 0.01$ respectively).

Conclusion

In the present study, combined strength and endurance training coupled with walnut supplementation improves cognitive performance and sleep parameters. This improvement

could be explained by the beneficial effect of walnuts supplementation since walnuts contains significant amounts of ω_3 fatty acids, vitamin E, and melatonin.

Keywords

Elderly;Cognitive Performance;Walnuts

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-2074

EFFECTS OF SHORT AND LONG TERM PERIOD OF KINESIOTAPE APPLICATION IN BALANCE AND FUNCTIONAL STATUS OF CHRONIC ANKLE INSTABILITY

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Introduction/Background

Ankle sprain can developed into chronic ankle instability which characterized by "giving way". Injury to the ligaments causes impaired of proprioception function due to joint mechanic alteration of the joints. This can cause disruption to the balance function. Application of kinesiotope aims to stimulate the cutaneous mechanoreceptor to provide information input to the brain. It is expected to improve the function of static balance, dynamic, and functional status of patients with chronic ankle instability. The purpose of this study is to determine the effect of kinesiotope application on static balance, dynamic balance, and functional status in the short and long term period.

Material and Method

The study was conducted on fifteen male futsal athletes who experienced chronic ankle instability. Short-term assessment was performed after 30 minutes of kinesiotope and long-term effects were performed after 2 weeks. Static balance measurements using Single Leg Stance Test (SLST), dynamic balance measurement with Normalized Star Excursion Balance Test (NSEBT), and functional status measurement using Foot and Ankle Ability Measure (FAAM).

Results

There was a significant increase ($p=0.001$) in the SLST between before and 30 minutes after kinesiotope application, as well as after 2 weeks. The SLST value for 2 weeks was not found to be increased compared to 30 minutes ($p=0,648$). NSEBT values increased significantly between before and after kinesiotope application for either 30 minutes or 2 weeks ($p <0.05$). A significant increase was also found in the NSEBT score between kinesiotope application for 30 minutes and 2 weeks ($p <0.05$). The value of FAAM was found to increase significantly between before and after kinesiotope ($p <0.05$).

Conclusion

Application of kinesiotope has both immediate and long-term effects on static balance, dynamic balance in patients with chronic ankle instability. Application of kinesiotope has effect on improving functional status in patients with chronic ankle instability.

Keywords

chronic ankle instability;kinesiotape;balance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-2317

NON-UNIFORM DEFORMATION IN ACHILLES TENDON IS NOT INFLUENCED BY A CHANGE IN KNEE ANGLE OR LEVEL OF FORCE PRODUCTION DURING ISOMETRIC CONTRACTIONS

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Introduction/Background

Mechanical loading has become the golden standard in managing achilles tendinopathy. The goal of this study was to evaluate the impact of different levels of force production and knee angle on the non-uniform behaviour in the achilles tendon during an isometric contraction. It was hypothesized that a flexed knee position would lead to a more non-uniform behaviour, due to greater differential loading of soleus versus gastrocnemius in this position, but that this effect would be attenuated by higher levels of force production.

Material and Method

Nineteen healthy subjects participated in this study. A high-spatial and high-temporal resolution ultrasound system was used to acquire 2D + time ultrasound images during an isometric contraction at 25%, 50% and 75% MVC in the extended and flexed knee position. Local tendon tissue displacement and normalized displacement ratio of the different tendon layers were calculated.

Results

Contrary to the hypotheses, it was found that the non-uniform deformation, i.e. superficial-to-deep variation in displacement with highest displacement in the deep layer, is consistently present, irrespective of the level of force production and knee angle.

Conclusion

From clinical perspective, this might indicate the absence of a mechanical rationale for a change in knee angle during eccentric heel drops. Additionally, it was found that despite reaching high levels of force, the contribution of the achilles tendon might sometimes be relatively smaller, potentially due to compensatory actions. This is relevant for rehabilitation as the goal is to reach specific local tendon loading. Therefore, the tool used in this study might be ideally placed to

monitor local achilles tendon loading during rehabilitation and individually tailor exercises to reach that goal.

Keywords

Tendinopathy; Mechanical behaviour; Ultrasound

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-2486

THE EFFECTS OF ACUTE SLING EXERCISE PROGRAM ON PAIN INDEX, PRESSURE INDEX, RANGE OF MOTION, GRIP STRENGTH OF EPICONDYLITIS PATIENTS

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Introduction/Background

The purpose of this study was effects of acute sling exercise program on pain index(VAS), pressure index, range of motion(ROM), grip strength of epicondylitis patients

Material and Method

This study was acute sling exercise program examine changes in pain index(VAS;visual analog scale), pressure index(Upper trapezius muscle, Wrist flexior muscles, Wrist extensor muscles), range of motion(Wrist Flexion, Wrist Extension), grip strength compared analysis. Participants was randomized sling group and vibration sling group for 60 patients diagnosed with epicondylitis

Results

The result of this study is First, The pain index significant changes in both the experimental group($p < .001$) and the control group($p < .001$). Second, pressure index significant changes experimental group in Rt.URA($p < .001$), Lt.URA($p < .001$), Rt.WE($p < .001$), Lt.WE($p < .001$), Rt.WF($p < .01$), Lt.WF($p < .001$), and control group in Rt.URA($p < .01$), Lt.URA($p < .01$), Rt.WE($p < .001$), Lt.WE($p < .001$), Rt.WF($p < .05$), Lt.WF($p < .001$). Third, range of motion significant changes experimental group in Lt.flexion($p < .05$), Lt.Extension($p < .01$), and control group in Lt.Extension($p < .05$). Fourth, grip strength is significant changes control group in Left strength($p < .05$), Right strength($p < .01$).

Conclusion

In conclusion, there were significant changes in the VAS, pressure pain, and ROM between the two groups, and control group saw a significant increase in grip strength, and further studies said that the two groups need to study each other continuously by extending the duration of their interventions.

Keywords

Sling Exercise;Epicondylitis ;Acute

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-2494

EVALUATION OF MUSCULAR IMPAIRMENT OF PLANTAR FLEXORS AND ANKLE DORSIFLEXORS IN AMATEUR AND PROFESSIONAL SOCCER PLAYERS BY ISOKINETIC DYNAMOMETRY

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Introduction/Background

The ankle is the anatomical segment most prone to injury during soccer practice. Stability of the ankle joint is maintained by intrinsic controlling mechanisms such as muscle strength. The isokinetic dynamometry evaluates muscle performance dynamically, providing quantitative peak torque, work and power values, as well as relative values such as the agonist/antagonist ratio. The objective was to compare the performance of ankle muscle groups using the isokinetic evaluation in amateur and professional soccer players.

Material and Method

In this cross-sectional study, sample consisted of 107 athletes, age between 18-30 years old, being 36 amateurs and 81 professionals. Isokinetic evaluation of the dorsiflexors and plantar flexors muscles was performed with the isokinetic dynamometer Biodex System 4 Pro. Test consisted of five repetitions at 30°/s and fifteen repetitions at 120°/s, with 30 seconds period of rest between each test. Isokinetic parameters were qualitatively classified as symmetric and asymmetric and distributed according to the frequency of asymmetries. Comparison between the frequency of imbalances between legs according to the isokinetic parameters was performed by the chi-square test. Level of significance was 5%.

Results

No significant differences in isokinetic parameters found between the frequency of asymmetries for both professional and amateur groups regarding peak torque (plantar flexors 30°/s: $p=0,28$; 120°/s: $p=0,05$; dorsiflexors 30°/s: $p=0,78$; 120°/s: $p=0,64$), total work (plantar flexors 30°/s: $p=0,83$; dorsiflexors 30°/s: $p=0,28$; 120°/s: $p=0,25$), and average power (plantar flexors 30°/s: $p=0,98$; 120°/s: $p=0,16$; dorsiflexors 30°/s: $p=0,37$; 120°/s: $p=0,37$), in both speeds at 30°/s and 120°/s. Significant difference found in the frequency of asymmetries for the dorsiflexors / plantar flexors ratio (dominant 120°/s: $p=0,00$; non dominant 30°/s: $p=0,03$; 120°/s: $p=0,02$), with greater weakness of the ankle dorsiflexors muscles.

Conclusion

Both amateur and professional athletes presented high asymmetries of ankle strength, with no difference between groups. Dorsiflexors/ plantar flexors ratio asymmetries were higher in professional athletes.

Keywords

Ankle; Soccer; Muscle Strength

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A8 Sports in Rehabilitation and Sports Rehabilitation

ISPR8-2498

EFFORT PERCEPTION OF PHYSICAL ACTIVITIES IN HEALTHY POPULATION: YOUNG ADULTS AND ELDERLY

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Introduction/Background

To compare the effort perception on different physical activities, according to age.

Material and Method

29 young adults (from 20 to 33 years) and 27 elderly (from 65 to 83 years) volunteered. The effort perception was assessed by the Borg's scale (6-20) at the end of each activity. The metabolic equivalent of task (MET) was evaluated continuously by a gas analyzer (Metamax 3B). The participants realized successively: 3 minutes sitting at rest, 3 minutes computer-based word processing, 5 minutes biking (70 watts), 5 minutes walking (4.6km/h corresponding to a moderate intensity activity (≥ 3 METs)) and 5 minutes running (6.4km/h for young adults and 5.8km/h for elderly, corresponding to an intensive intensity activity (≥ 6 METs)).

Results

Table 1: Comparison of effort perception and oxygen consumption for each activity according to age

	Effort perception (/20) Young adults	Effort perception (/20) Elderly	p	MET Young adults	MET Elderly	p
Sitting at rest	6 ± 0	6 ± 1		1.1 ± 0,3	0.9 ± 0,3	*
Computer	6 ± 1	7 ± 1	*	1.3 ± 0,4	1.1 ± 0,3	**
Biking	8 ± 2	9 ± 2		2.9 ± 1.4	2.5 ± 0,8	
Walking	9 ± 1	10 ± 2	*	3.6 ± 0,8	4.0 ± 0,9	
Running	11 ± 2	14 ± 3	***	7.0 ± 1.3	6.6 ± 0,9	

p= * <0.05; ** <0.01; *** <0.001

Values are expressed in mean ± standard deviation

Conclusion

This study showed a difference of effort perception between young adults and elderly, for a same physical activity and a same intensity. Our results are not consistent with the literature (Gros Lambert and Mahon, 2006) that mentions that age does not influence the effort perception. Further works are necessary to show the age effect on the effort perception according activity type and intensity level.

Keywords

Perceived exertion; Borg ; Physical activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.01 Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

ISPR8-0181

VITALIZING PARTNERSHIP FOR ENHANCING ACTIVE AGING: THE JOINT EFFORT OF ARCHITECTURE AND NURSING IN YIN TUNG COMMUNITY, TAINAN

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Introduction/Background

An increasingly aging population has become an urgent and important global issue. Taiwan has no exception. Yin Tung Community, a deprived old neighborhood located in urban Tainan, Taiwan. During the urban renewal process, elderly has been suffering from social exclusion because of tourism business development and environmental interference of community public activities. Referenced the experience of Japan, this demonstration project is to evaluate the effect of scholarly collaboration between architecture and nursing to enhance the World Health Organization's Active Ageing framework naming, health, participation and security, through setting up an Integrated Community Center (ICC) in Yin Tung community.

Material and Method

Through this single entry approach, community elderly needed continuous services from health promotion to palliative care through the integration of health care, housing facilities and living support services could be interdisciplinary provided. In our demonstration project, we formed an 'active aging coalition' and engaged community elderly in the first phase of our study. Through this interactive platform, some accomplishments such as renunciation unused community building and spaces, mobile kitchen, and elderly schools have been implemented in the community. As most of the community older residents revealing the need for health and social care, the second phase of this project aims to implement the ICC using Participatory Action Research approach.

Results

The main research foci for the following includes: a) to demonstrate the operation of ICC in Yin Tung, b) to identify and empower potential community health workers responsible for each neighborhood in the community, and c) to promote interdisciplinary collaboration and facilitate innovative community health programs.

Conclusion

Through this intersectoral action, this project demonstrates the effectiveness of the various proposed course of action on health, participation and security, it offers a platform for

consensus building that addresses the concerns of multiple sectors. Testing of the program is in process.

Keywords

interdisciplinary; Integrated Community Center; Active Ageing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.01 Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

ISPR8-0308

ANALYSIS OF SOCIAL DETERMINANTS IN CARDIOVASCULAR REHABILITATION: SOCIAL INEQUALITIES IN HEALTH?

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Introduction/Background

Retraining and cardiac rehabilitation are looking to increase cardiorespiratory and functional capacity but also to master some risk factors like, smoking, high cholesterol and physical inactivity. It is therefore a suitable transition in changing health behaviors and engages the shift to healthier lifestyles. These behaviors are influenced by a multitude of social determinants that condition and shape patients and may lead to differences in care.

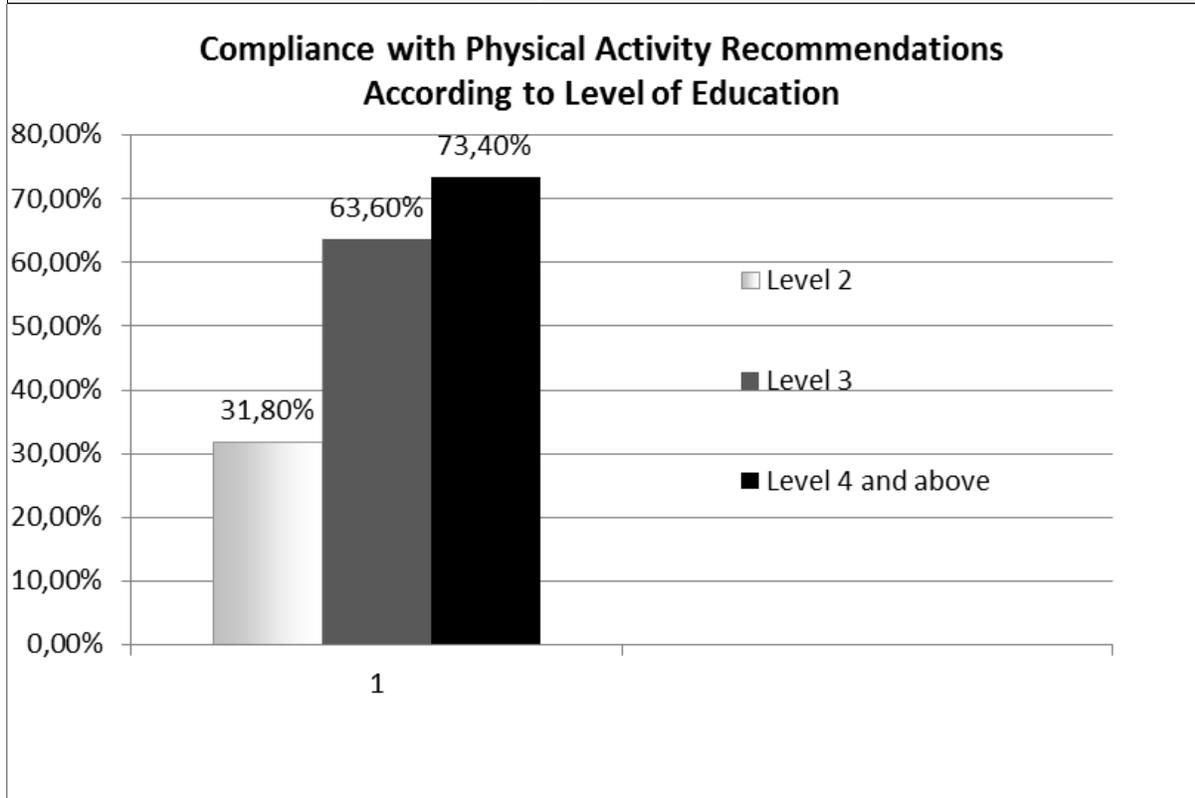
Material and Method

This study aims to analyze and understand the interactions between certain social factors and physical practice after cardiovascular rehabilitation in order to better understand the management and follow-up of patients.

Follow-up was conducted with 100 patients (23 women, 77 men) with a mean age of 59.8 years (± 10.4), who underwent a year ago of a rehabilitation program for cardiac rehabilitation. We determined the level of physical spending of these patients by a physical activity log and the International Physical Activity Questionnaire (IPAQ). We also determined the level of knowledge on physical activities by a pre-test/post-test style questionnaire. **Results**

We observed that the level of physical activity depends to socioprofessional category and academic level of the patients, 73.7% of the patients with higher professions continue to be active, 89.5% of these patients follow the recommendations of physical practice. 70.6% of the patients with a higher academic level follow the recommendations and finally 66.7% of the patients with a culture of physical practice remain sufficiently active.

	Compliance with Physical Activity Recommendations (%)
No working	33,33%
Workers, farmers	33,33% (7)
Craftsmen, tradesmen	36,36% (4)
Employees	42,9% (3)
Intermediate professions	61,1% (22)



Conclusion

The pursuit of physical activities after cardiac rehabilitation is conditioned by the determinants of health. It becomes necessary to understand and learn about the social and cultural determinants of patients to improve our medical practices and reduce some social inequalities in health.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.01 Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

ISPR8-0329

THE EFFECTIVENESS OF DANCE THERAPY AS AN ADJUNCT TO REHABILITATION OF PERSONS WITH A PHYSICAL DISABILITY

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Introduction/Background

Alternative treatment modalities have been gaining popularity in rehabilitation for the past decade. Among these modalities, Dance Therapy seems to be particularly interesting since it is an enjoyable physical activity that combines improvisation, music and social interaction. A 12-week dance therapy program (DTP) offered to rehabilitation out-patients aims to promote community participation and mobility. Its effectiveness has never been studied. The objective was thus to determine the effect of DTP on participants' mobility and participation compared to that of persons only receiving rehabilitation.

Material and Method

A pre-post intervention repeated measures design with a comparison group was used (2 evaluations each pre and post intervention). Participants were receiving outpatient rehabilitation at the Lucie-Bruneau Rehabilitation Centre (Montréal, Québec). Outcomes measures included Timed up and go (TUG), Assessment of life habits (LIFE-H) relating to community mobility and community life, and number of leisure activities performed. Generalized Estimating Equations over repeated measures determined if groups evolved differently over time; paired t-tests assessed change among DTP participants in Flow state scale (FSS-2) scores pre-post intervention.

Results

Forty-three DTP and 50 control subjects participated (half were male, average age of 49.1±14.2 years). Subjects in both groups significantly ($p<0.05$) improved across pre and post intervention periods for the TUG and LIFE-H leisure and number of leisure activities. Interactions between group and time were not significant; groups did not evolve differently over time for any outcome

measure, nor were differences found between genders or between those with and without degenerative conditions. FSS scores significantly improved ($p=0.008$ to 0.01) for 5/9 dimensions of flow experience (e.g. clear goals, sense of control) indicating DTP participants were immersed in the program and enjoyed it.

Conclusion

Rehabilitation clients enjoy DTP however DTP appears to have limited added value beyond the provision of usual rehabilitation. Non-significant results are likely due to the choice of outcome measures.

Keywords

Dance therapy ;mobility ;Participation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.01 Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

ISPR8-0894

EFFECTIVENESS OF A SELF-MANAGEMENT INTERVENTION TO IMPROVE POST-STROKE PARTICIPATION: PRELIMINARY RESULTS

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Introduction/Background

Stroke has a negative effect on participation. The impairments and disability caused by a stroke raise the need for continuous management of the medical, emotional and functional consequences to achieve better quality of life. However, in rehabilitation settings the focus is mostly on the short-to-medium term recovery, and less on preparing the stroke survivors to manage the long-term disability, in order to improve their participation.

Self-Management (SM) approach is aimed at improving wellbeing and quality of life of people with chronic conditions. Over the past years SM programs have been implemented in diverse populations including stroke survivors, and were found effective in improving self-efficacy, health status and reducing health care utilization. Nevertheless, only a few interventions were aimed at improving participation. The 'Improving Participation after Stroke Self-Management Program (IPASS)', is one of the first SM group-based programs which aims to improve post-stroke participation, in addition to improving health-behaviors and symptom management. The program was found effective for stroke survivors in the United States.

The main aim of our research is to evaluate the feasibility and effectiveness of the IPASS, implemented for stroke survivors in the sub-acute phase, in a community setting in Israel.

Material and Method

Participants include adults aged 18 years and older, diagnosed with stroke, who were admitted to a day-rehabilitation center. The effectiveness of the SM intervention is compared to the regular 'one-on-one' treatment, which is the standard care given in this setting.

Results

Initial results from the first three IPASS groups show that the program is feasible. Outcomes of most participation measures show a clear trend for more improvement or less deterioration between T0 and T1 in the intervention group, compared to control.

Conclusion

The IPASS seems to have potential to prevent deterioration for a longer term post-stroke, compared to standard individual care.

Keywords

Self-Management;Participation;Stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.01 Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

ISPR8-1502

A CASE STUDY EXPLORING THE SATISFACTION OF PSYCHOLOGICAL NEEDS FOR PHYSICAL ACTIVITY A FEMALE WHO COMPLETED A SMARTPHONE-DELIVERED PEER PHYSICAL ACTIVITY COUNSELLING (SPPAC) PROGRAM.

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Introduction/Background

A Smartphone-delivered Peer Physical Activity Counselling (SPPAC) program attempts to increase physical activity (PA) for manual wheelchair users. Given the importance of understanding real-life complexities, the purpose of this case study was to explore how the SPPAC may have satisfied one individual's perceived autonomy, relatedness, and competence for PA.

Material and Method

One participant was followed through the SPPAC program (14, 30-minute sessions). This presentation reports findings from the Psychological Need Satisfaction in Exercise Scale (subscales for autonomy, relatedness, and competence) that were observed at baseline and three months follow-up. Findings from a post-study interview were also explored.

Results

At baseline, a 65-year old female ranked in the 45th, 10th and 25th percentile (compared to 303 females) for competence, autonomy and relatedness respectively. Three months after completing the SPPAC program, her percentile ranking improved to the 70th, 55th and 55th percentile for competence, autonomy and relatedness respectively. Preliminary deductive qualitative analysis revealed insights about the potential mechanisms of change. She expressed perceived competence: *"Moving more made me feel good [...] I realized that just moving my arms more made it [easier] to get out of my lazy-boy"*. Perceived autonomy was reflected in statements about making choices: *"It was me who decided what I was doing, and it was me who decided how to do it, and it was me who decided when I stopped [...] I took control"*. She conveyed feelings of relatedness with her peer trainer: *"the feeling of being alone with your disease subsides when you can share stories with somebody who is facing a similar situation [...] someone who's not in a wheelchair, I have a hard time believing that he understands what we live on a daily basis"*.

Conclusion

Preliminary findings provide some qualification of how the SPPAC program may influence an individual's satisfaction of autonomy, relatedness, and competence for PA.

Keywords

physical activity;autonomy support;manual wheelchairs

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.01 Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

ISPR8-1643

THE EFFECTS OF REGULARLY EXERCISE IN TERM OF SELF-EFFICACY, SELF-ESTEEM, FATIGUE AND BODY AWARENESS ON HEALTHY ADULTS

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Introduction/Background

This study was planned to examine the effect of regularly exercising on self-efficacy, self-esteem, chronic fatigue and body awareness on healthy adults.

Material and Method

In the study, 115 participants (47 F, 68 M) aged 20 to 40, who do regularly exercise at least two days a week for last 6 months (Group 1), and 115 sedentary individuals (69 F, 46 M; Group 2) were assessed. Demographics of participants and the type, duration, and frequency of the exercise were recorded. Participants were used General Self-Efficacy (GSE) for self-efficacy, Rosenberg Self-Esteem for self-esteem, Checklist Individual Strength (CIS) for the level of fatigue and Body Awareness Questionnaire.

Results

The mean age of Group 1 was 22.86 ± 3.07 years and Group 2 was 22.96 ± 3.20 years. It was found statistically significant differences in terms of self-efficacy, self-esteem, body awareness and fatigue between groups and the results of participants who were doing exercise regularly were much better than sedentary ones ($p < 0.001$).

Conclusion

In our study shows positive effects of regularly exercising on personal and psychological parameters. Exercise is a preferred method to increase self-efficacy, self-esteem and body awareness and decrease chronic fatigue.

Keywords

Regularly Exercise, Body Awareness, Healthy Adults.

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.01 Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

ISPR8-2724

USING TELE-REHABILITATION TO PROVIDE METACOGNITIVE THERAPY FOLLOWING TRAUMATIC BRAIN INJURY: ONE WOMAN'S EXPERIENCE

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Introduction/Background

Each year hospitals across North America are inundated with patient visits related to Traumatic Brain Injuries including concussion. In Canada, approximately 1.5 million people are living with a brain injury. The impact brain injury has on public health is considerable. A TBI can adversely affect a person's ability to independently carry out many functional everyday activities. This population often requires a lifetime of ongoing support to help them navigate everyday life. However, for many this help is unavailable, very expensive, geographically unrealistic or not focused on the everyday support they require.

Tele-Rehabilitation is the delivery of rehabilitation services over the internet. Metacognitive therapy is well suited to this type of service delivery.

Material and Method

The subject of this case study is a 54 year old woman who sustained a brain injury in a motor vehicle collision and as a result had many neuro-cognitive impairments and a myriad of functional sequela. Initially, she engaged in traditional community based rehabilitation, but still could not participate in many of her everyday life activities. She was introduced to a Meta-Cognitive program provided over the internet.

This case presentation will describe the Tele-Rehabilitation Program program and will demonstrate how the implementation of tele-rehabilitation contributed to the functional and meaningful changes seen in the one woman's life.

Results

The subject participated in the Tele-Rehabilitation program with an eCoach three times weekly to implement compensatory and meta-cognitive strategies. She began to experience greater success in the participation of her life roles and experienced subsequent improved quality of life.

Conclusion

Tele-Rehabilitation is a cost effective way to deliver meta-cognitive therapy. Given the geographical realities of a country such as Canada, this service delivery model also makes it

possible to provide services to more people and helping to improve the quality of life for many people living with the effects of brain injury

Keywords

Conflict of interest

Disclosure statement:

I am a co-owner of the Tele-Rehabilitaiton social enterprise used in this case study. I do not however receive any payment from the social enterprise.

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A9.01 Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

ISPR8-2732

SALT REDUCTION CAMPAIGN IN THE WASHOKU JAPAN AND CHANGES OF DIETARY SALT INTAKE

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Introduction/Background

Excess dietary salt intake consumption is a risk factor for high blood pressure, stroke and cardiovascular disease. Currently, dietary salt intake consumption in almost every country is too high. Excess salt intake is associated with high blood pressure, which is common and costly and accounts for significant burden of disease. The aim of this study was to assess the impact of population-level interventions for dietary salt intake reduction in Japan. And the second aim of this study was to assess the differential impact of those initiatives by social and economic indicators.

Material and Method

The subjects were 3904 people from 2007 to 2017 in Miyagi state of Japan. Daily salt intake measured dietary food records.

Results

The salt intake changed 12.5g (2007), 11.1g (2010), 10.4g (2012), and 10.3g (2017). Male of salt intake changed 14.7g (2007), 11.9g (2010), 11.5g (2012), and 11.4g (2017). Female of salt intake changed 13.0g (2007), 10.4g (2010), 9.5g (2012), and 9.5g (2017).

2013 year in December; since "Japanese traditional food culture of the Japanese people" has been registered in the UNESCO intangible cultural heritage, our will, with the cooperation of other relevant ministries and agencies of the Ministry of Agriculture. Registration application to the UNESCO intangible cultural heritage of Japanese culture in opportunity, in order to inherit the Japanese culture to the next generation, will continue to develop activities to share its value in the entire nation.

Conclusion

In order to protect reportedly healthy development of the Japanese culture, academic point of view to understand the significance of the tradition of food and ingredients will be supported. The Washoku Japan campaign of future initiatives should embed more effective means of evaluation to help salt reduction better the variation.

Keywords

salt reduction;population strategy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.01 Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

ISPR8-2117

COMMUNITY BASED REHABILITATION IN ITALY AND IN LOW-RESOURCES COUNTRIES.

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Introduction/Background

All over the World we are living a difficult moment about low resources in developing but also in so called developed countries, for this reason the access to health systems is a lot difficult for many people and so we need to think about new activities nearer the needs of disabled and old people who need for rehabilitation. We think that CBR may be a good way to bring rehabilitation to all people who need it.

Material and Method

We start in 1999 to teach CBR in Albania, Shkodra District, for volunteers of the Northern districts and we start to give rehabilitation in the mountains' villages and in the towns of Puke and Shkodra. After 5 years, through the job of Italian NGOs and with the collaboration of University of Florence and Shkodra, started a regular course of Physiotherapy in the University of Shkoder. In the years between 2004 and 2017 we did CBR course in Moldova, Montenegro, Ethiopia, Guatemala, Jordan, Djibouti, Ghana. In 2013 we start to teach CBR also in Italy in Forli and other districts and now people with disability in difficulty to frequent, for various reasons, regular rehabilitation activities in National Health service can do rehabilitation in the place in which CBR is active.

Results

The quality of life and the respect of human rights of disabled people, the integration in the communities. To do actions for something that can be really useful for disabled and poor people.

Conclusion

The goal will be to make rehabilitation available for all who need. We think CBR can be a good activity to listen and resolve integration requests of disabled people.

Keywords

CBR; Developing countries; human right

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.01 Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

ISPR8-2738

IMPROVE INTEGRATION OF VISUALLY IMPAIRED OLDER ADULTS WITH THE SUPPORT OF COMMUNITY VOLUNTEERS

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Background and aims: Social participation in older adults is associated with several health components such as increased functional independence, but can be restricted by a visual impairment. The Personalized citizen assistance for social participation (APIC) involves stimulation with a non-professional attendant and has been shown to be feasible in people with acquired brain injuries and older people with disabilities. Recently adapted for visually impaired older adults and implemented in a rehabilitation centre, little is known about the effects of this APIC. Thus the aim of this project is to document the APIC experience adapted to visual impairment and implemented in a rehabilitation centre.

Methods: A qualitative clinical research design is used with 13 visually impaired aged adults. Trained community volunteers assist the participants weekly, over 6 to 9 months, under the supervision of the rehabilitation centre professionals. Standardized questionnaires, diaries and semi-structured interviews explore the effects of APIC.

Preliminary results: Aged from 70 to 92 years [median=76.0; semi-interquartile interval (Q)=3.5], participants suffer from moderate visual impairment through to blindness, acquired at ages 1 to 67 (median=3; Q=4). Following an accompaniment of less than 19 weeks (median=12, Q=5.5), a trust relationship was established between participants and volunteers, fostering the identification of significant social activities (e.g., walking with someone). The barriers to the APIC are related more to difficulties in socializing or disabilities other than visual impairment (e.g., gait disorder). However, support from professionals allowed volunteers to overcome most of these barriers and help participants to initiate social activities.

Conclusions: By providing gradual stimulation, the APIC should improve social integration of visually impaired older adults, and, ultimately, their functional independence. The support of community volunteers should enhance the ability of the health services to meet the needs of this population.

Keywords

Document not received

E-Poster Session - July 9-12 - Exhibition Area

A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-2560

CROSS-CULTURAL ADAPTATION, RELIABILITY, INTERNAL CONSISTENCY AND VALIDATION OF A FRENCH VERSION OF READINESS FOR RETURN TO WORK SCALE (RRTWS)

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Introduction/Background

The Readiness for Return-to-work scale (RRTWs) is a Patient-reported Outcome Measure (PROM) developed to assess in a motivational perspective the individual stages during the process of return to work after injuries or illnesses. The aim of this study was to translate and to make a cross-cultural adaptation of this questionnaire into French (RRTWs-F) for patients who have not yet returned to work. Internal consistency, reliability, and criterion validity were also assessed.

Material and Method

International recommendations for the translation and cross-cultural validation of PROM were followed. Ninety subjects with chronic musculoskeletal pain (74 men, 16 women; mean age: 43y±11) participating in a vocational rehabilitation program were included. Internal consistency was assessed with the Cronbach's alpha, and reliability with the Intra Class Correlation (ICC) in 20 subjects who completed the questionnaire twice in a 7-day interval. Criterion validity was measured with Pearson correlation between the RRTWs and others constructs: the Brief Pain inventory, the Hospital Anxiety and Depression Scale, the Pain Catastrophizing Scale, and the Tampa scale for Kinesiophobia

Results

According to the small number of items (from 3 to five items) for each dimensions, Cronbach's alphas were satisfactory (0.62-0.88) in four dimensions with the exception of the Prepared for action-self evaluative stage (0.58). Reliability was also quite good (0.71-0.85) with the exception of the Contemplation scale (0.59). Small to moderate correlations (0.24-0.60) were found between the RRTWS and all the others constructs, with the exception of the Prepared to action-self evaluative stage only related with pain, depression, and kinesiophobia. No correlation was found with the Contemplation stage

Conclusion

The RRTWs-F has good psychometric properties similar to those of the original questionnaire. This scale may be used to evaluate the patients' motivation of return to work during vocational rehabilitation and may be helpful to tailor interventions for French-speaking patients.

Keywords

motivation;return-to-work;scale

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-0281

HOW CAN WE ANTICIPATE FAILURE IN RESUMING VOCATIONAL TRAINING FOLLOWING BRAIN INJURY? A RETROSPECTIVE STUDY

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Introduction/Background

Seventy-five percent of people with an acquired brain injury are of working age, most of them are young adults who want to return to work or need to resume a vocational training. However, a failure in returning to work / vocational training is associated with depression and isolation. Our aim was to identify objective measures to allow clinicians to anticipate failure in resuming vocational training following a brain injury.

Material and Method

Neuropsychological data from 343 patients with brain injury, who benefited from a vocational rehabilitation program (UEROS Lille, France) between 2002 and 2017, were retrospectively analyzed. After completing this program, 28 patients resumed a vocational training and we identified, through Machine Learning algorithms, the neuropsychological measures predicting vocational outcome.

Results

Success in resuming vocational training after brain injury was predicted by mnemonic scores (verbal forgetting and visual retrieval). The scores obtained on the Tower of London test predicted both success and failure.

Conclusion

Our study highlighted that neuropsychological measures underlying planning abilities could help clinicians to anticipate a failure in resuming vocational training in patients with brain injury. Planning and memory abilities would predict an effective vocational outcome. These initial results, that need to be confirmed with larger samples of patients with brain injury who resumed vocational training, may have a relevant implication for neuropsychological practice, allowing a better vocational guidance of these patients.

Keywords

vocational training;brain injury;machine learning

Conflict of interest

Disclosure statement:

Romina Manoli was funded by a Doctoral contract from the French Public Health Research Institute (IReSP) and National Solidarity fund for Autonomy (CNSA).

E-Poster Session - July 9-12 - Exhibition Area

A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-0369

TOWARDS A BETTER PARTNERSHIP WITH EMPLOYERS AND OTHER STAKEHOLDERS DURING THE WORK REHABILITATION OF MILD TRAUMATIC BRAIN INJURY WORKERS

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Introduction/Background

Developing an effective partnership with employers and other stakeholders is now considered a key intervention for supporting the return to work (RTW) of workers following a long-term absence. However, how this applies to workers recovering from a mild traumatic brain injury (mTBI) remains unknown. The aim of this project was to describe strategies used by practitioners to develop this partnership during post-mTBI work rehabilitation and to explore how these strategies were perceived by workers.

Material and Method

Two viewpoints were documented: that of the practitioners (n=30) in a rehabilitation centre in Quebec (Canada), through four focus groups; and that of the workers (n=10), through semi-structured individual interviews. The data were transcribed verbatim and analyzed according to thematic analysis principles.

Results

The results indicate that seven different strategies are commonly used during work rehabilitation to develop a partnership with the various stakeholders (employer, insurer, attending physician and family). All are designed to bring these partners' messages and interventions in line with those of the rehabilitation team. The mechanisms underlying these strategies are mainly discursive (e.g. validation, explanation, or persuasion). While the workers corroborate the strategies' relevance, they consider some inadequate for attaining the goal, notably as regards the employer.

Conclusion

Though it appears desirable to use a range of strategies to ensure consistency among the different stakeholders' messages and interventions during post-mTBI work rehabilitation, it alone does not guarantee success, particularly with the employer. It may also be necessary to use non-discursive mechanisms to achieve greater consistency.

Keywords

work rehabilitation;mild traumatic brain injury;partnership

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-0868

DEVELOPMENT OF THE SHORT-HAND FUNCTION SORT IN VOCATIONAL REHABILITATION

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Introduction/Background

The Hand Function Sort (HFS) is a pictorial self-questionnaire with 62 items measuring task self-efficacy in working population. It is a valid and a reliable scale that focuses on upper limb physical function. [1] It is frequently used in order to assess the ability to resume work. [1, 2] Our goal was to develop a short version of the HFS with less than 30 items to improve its feasibility

Material and Method

Inclusion criteria were as follows: patients aged between 18 and 65 years with chronic pain and various orthopaedic conditions of the upper limb in the aftermath of an accident, who were hospitalized for a vocational rehabilitation. Items were selected using various methods: interviews with patients, experts' opinions, the Rasch analysis model, detection of the floor/ceiling effect, and measurement of unidimensionality (principal component analysis). In addition, the final version had to include the different levels of effort assessed by the original version

Results

Six experts with over 10 years of clinical experience were consulted (2 physiatrists, 2 physiotherapists, and 2 occupational therapists), 34 patients were interviewed and the questionnaires of 629 patients were analyzed. Of the top-rated items, 25 were selected following a final round with the experts (items: 1,5-8,10-14,23-25,27,29,37,41,43,45,50-51,55,57,60-61). The internal consistency of the short version was satisfactory (Cronbach's alpha = 0.959)

Conclusion

A short version of the HFS was developed. Further studies are needed to verify the reproducibility of the short version, its concurrent validity with the original version and its criterion validity with other clinical scales of the upper limb such as the Disabilities of the Arm, Shoulder and Hand (DASH score)

References:

[1] Matheson, J Occupational Rehabil 2001

[2] Volker, J Occupational Rehabil 2015

Keywords

Self-efficacy;Patient reported outcome measures;Upper limb function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-0943

ASSESSING THE FEASIBILITY OF DELIVERING A COMBINED COGNITIVE AND VOCATIONAL INTERVENTION TO INDIVIDUALS WITH TRAUMATIC BRAIN INJURY IN THE SOUTH-EASTERN REGION OF NORWAY

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Introduction/Background

Few studies have examined the effect of cross-sectorial collaboration on vocational outcomes, symptom burden, and quality of life following traumatic brain injury (TBI). In preparation for a larger scale randomized controlled trial (RCT), we assessed the feasibility of delivering a combined cognitive and vocational intervention to individuals with mild-to-moderate TBI in the South-Eastern region of Norway. The feasibility of the cognitive intervention is reported in this abstract.

Material and Method

Six patients received a manualized, group-based intervention targeting post-concussive and cognitive symptoms management (Compensatory Cognitive Training, CCT) in ten weekly sessions. In addition, all patients received individualized support at the work place (supported employment) for six months. Feasibility was assessed by exploring whether the CCT procedures were satisfactory in terms of recruitment and retention, satisfaction with the intervention, and treatment engagement (i.e. attendance, level of participation, ability to learn and apply strategies). The Therapist Checklist assessed level of participation and the CCT evaluation form assessed perceived helpfulness of the intervention.

Results

Gender distribution was 1:1, mean age was 40 years, and mean years of education was 16 years. All participants had a diagnosis of concussion, were enrolled on average 4 months post-injury, and were sick-listed at range 70-100%. Attendance across CCT sessions was 97%. Eight out of nine topics in the CCT-intervention received a rating above 3.5 on a 5-point scale (i.e., towards very helpful). The topics receiving the highest ratings were information about TBI, post-concussive symptoms and fatigue, memory, learning, and prospective memory. All participants

were rated as participating fully (3/6) or moderately (3/6), and most participants (5/6) attempted to apply skills to real-life situations.

Conclusion

The results indicate that the CCT procedures were feasible, and no major adjustments were made to the protocol. Recruitment of participants to the full-scale RCT began in July 2017.

Keywords

Traumatic Brain Injury; Vocational Rehabilitation; Cognitive Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-1142

STANDARDIZED EVALUATION OF VOCATIONAL REINTEGRATION ABILITIES – THE RHEINFELDEN MODULAR ASSESSMENT TOOL

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Introduction/Background

One of the main objectives of rehabilitation is the restoration of working capacity. In some cases, physical and mental performance cannot be achieved to the degree that was possible before the onset of illness or accident. Conventional medical examination alone often leads to a deficit-oriented assessment of work-related contents and limitations on work ability. Alternative employment opportunities are rarely recommended.

Material and Method

For this reason, a modular assessment tool was developed in cooperation with a regional Swiss disability insurance. The results of the reintegration assessment tool reflect not only medical but also performance as well as motivation-related aspects of individual vocational rehabilitation ability and lead to immediate occupational recommendations within the conclusions. Several modules are combined to achieve a case-related, task-oriented review with solutions for reintegration. The assessment of occupational reintegration capacity consists of 1. Clinical Examination, 2. Performance Tests and Questionnaires, 3. Roundtable with patient and insurer.

Results

Optionally, additional modules for psychiatric or specific medical questions can be integrated as needed. In addition to the examinations, validated assessments of general and disease-related function as well as quality of life and standardized physical tests including assessment of willpower, motivation and test consistency are used. The concluding round table discussion represents the novel key feature of this reintegration assessment tool. By explaining all the results to the patient in an understandable way, together, the remaining physical and mental resources can be worked out and further steps can be defined that take the individual situation into account. Consequences to the patient can be directly matched with the possibilities of the insurer.

Conclusion

The final assessment report, approximately 12 plus 12 pages, is largely standardized but highly individualized in terms of conclusions and recommendations, which makes it applicable by the insurer to further activities. More than 100 cases were completed - examples are given.

Keywords

vocational reintegration;modular assessment ;tool

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-1218

FROM EVIDENCE TO PRACTICE: IMPROVING WORK PARTICIPATION OUTCOMES BY WORK-RELATED MEDICAL REHABILITATION IN PATIENTS WITH CHRONIC MUSCULOSKELETAL DISEASES

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Introduction/Background

In Germany, work-related medical rehabilitation programs were developed for patients with musculoskeletal disorders to improve work participation outcomes. Randomized controlled trials have shown that return to work rates can be increased by about 20 points compared to common medical rehabilitation programs. Since 2014, the Federal German Pension Insurance has approved several work-related rehabilitation departments to implement these new rehabilitation programs. Our study was launched to assess the effects of work-related medical rehabilitation under real-life conditions.

Material and Method

Participants received either a common or a work-related medical rehabilitation program. Propensity score matching was used to identify controls that were comparable to work-related medical rehabilitation patients. Effects were assessed by patient-reported outcome measures 10 months after completing the rehabilitation program.

Results

We included 1282 patients (mean age: 52.4 years; 75.3% women). Work-related medical rehabilitation increased stable return to work (OR = 1.42; 95% CI: 1.02 to 1.96) and self-rated work ability (b = 0.38; 95% CI: 0.05 to 0.72) compared to common medical rehabilitation. Participants of work-related medical rehabilitation had also less depressive symptoms and fear of movement, and they reported better self-management skills. Subgroup analyses showed that the effect on stable return to work depended on the prior risk of not returning to work and the dose received as rated by the participants. Only persons with a high initial risk of not returning to work and a high dose received benefited from work-related medical rehabilitation. In this subgroup, i.e. high risk and high dose received, the absolute risk difference was about 20 points in favor of work-related medical rehabilitation.

Conclusion

Implementation of work-related medical rehabilitation in German rehabilitation centers affected work participation outcomes. Our effectiveness study showed that the results from randomized controlled trials can be also achieved under real-life conditions. However, effectiveness is moderated by the population reached and the dose received.

Keywords

return to work;musculoskeletal disorders;effectiveness

Conflict of interest

Disclosure statement:

This research was funded by the Federal German Pension Insurance.

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A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-1223

CROSS-CULTURAL TRANSLATION TO FRENCH AND PSYCHOMETRIC EVALUATION OF THE SELF-ADMINISTERED VERSION OF THE WORK REHABILITATION QUESTIONNAIRE (WORQ)

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Introduction/Background

The Work Rehabilitation Questionnaire (WORQ) is a generic instrument to examine work-related functioning, based on the ICF core set for vocational rehabilitation (VR). Comprehensive identification of functioning problems is crucial for developing specific return-to-work strategies. We cross-culturally adapted WORQ into French and evaluated its psychometrics.

Material and Method

We followed a dual-panel cross-cultural adaptation process to translate WORQ. A forward-translation into French was done by a bilingual panel including, two experts in questionnaire development, three bilingual experts, one VR-specialist and two of the developers. This first version of WORQ-French was then evaluated by two lay persons and three patients followed by a review by the panel. The resulting second version was pilot tested and cognitively tested. After a final evaluation, the panel finalized WORQ-French.

In connection with the cross-cultural adaptation, psychometrics were evaluated including internal consistency (Cronbach's α), test-retest reliability ($ICC_{2,1}$), and construct validity (Pearson correlation). The validity of the WORQ sumscore was analyzed based on Rasch analysis. Usability was evaluated in ten patients for comprehension, completeness and questionnaire length.

Results

Basic psychometrics were tested in a convenient sample of 89 patients in VR with various musculoskeletal conditions. Internal consistency (Cronbach's α : 0.968) and test-retest reliability (ICC : 0.935) were high. WORQ correlated positively with HADS ($r= 0.564 / 0.570$) and self-rated general functioning ($r=0.662$). The WORQ sumscore was confirmed based on a Rasch analysis performed in a sample of 221 patients in VR with musculoskeletal conditions. Usability was rated as "good" to "very good."

Conclusion

WORQ-French is a valid, reliable and easy to administer questionnaire with a valid sumscore to assess the concept of work-related functioning that can be used to identify functioning problems, plan interventions and measure and document change in the study population. Studies to evaluate its usability and psychometric characteristics in other populations and settings are ongoing.

Keywords

Work Rehabilitation Questionnaire (WORQ); Vocational Rehabilitation; Cross-cultural adaptation

Conflict of interest

Disclosure statement:

The study was founded by a grant from suva (Swiss accident insurance)

E-Poster Session - July 9-12 - Exhibition Area

A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-1443

MODEL FOR THE HUMAN AND OCCUPATIONAL DEVELOPMENT OF PERSONS WITH INTELLECTUAL DISABILITY. MIXED METHODS

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Introduction/Background

The prevalence of intellectual disability (ID) in the world is 1 to 4%, in Latin America it is estimated to be four times higher. In Colombia it corresponds to 22.47% of all types of disability. Young people and adults with ID experience more inequality and social exclusion than the rest of the population. The objective of the project was to design and validate a model for the human and occupational development of people with intellectual disabilities with an ecological and interdisciplinary approach.

Material and Method

Quasi-experimental design that includes an experimental group and the application of pretest and post-test tests, with a deliberate control of the variables of interest, mixed methodological perspective with qualitative and quantitative data. Four stages, first the design, second the validation of the model and the third and fourth stages the construction of general recommendations for a higher education program and for the integral attention of the population in an ID situation, which help to reduce the barriers for family, social and occupational inclusion in Colombia.

Results

Until now, a 2-stage model has been designed, the first called "ESCALAR", pre-university with a duration of 6 months and the second one called "UIncluye", a university program with a duration of 1 year. A comprehensive evaluation model has been developed and the entry of 20 young people who met the inclusion criteria have been completed, they have completed the ESCALAR phase and the first semester of UIncluye. Outcomes: determinants of health, individual quality of life, quality of family life, anxiety, depression, practical, conceptual and social skills.

Conclusion

Inclusion in higher education of young people with ID requires a multidisciplinary team capable of constructing a model for the inclusion of people with intellectual disabilities in higher education adapted to the contextual characteristics of each country.

Keywords

Intellectual disability; Higher education; Human development

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-2271

UPDATING THE EVIDENCE ON FUNCTIONAL CAPACITY EVALUATION METHODS: A SYSTEMATIC REVIEW

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Introduction/Background

To synthesize the evidence on the psychometrics functional capacity evaluation (FCE) methods.

Material and Method

A systematic literature search in nine databases. The resulting articles were screened based on predefined in- and exclusion criteria. Two reviewers independently performed this screening. Included studies were appraised based on their methodological quality.

Results

The search resulted in 20 eligible studies about nine different FCE methods. The Baltimore Therapeutic Equipment work simulator showed a moderate predictive validity. The Ergo-Kit (EK) showed moderate variability and high inter- and intra-rater reliability. Low discriminative abilities and high convergent validity were found for the EK. Concurrent validity of the EK and the ERGOS Work Simulator was low to moderate. Moderate to high test–retest, inter- and intra-reliability was found in the Isernhagen Work-Systems (IWS) FCE. The predictive validity of the IWS was low. The physical work performance evaluation (PWPE) showed moderate test–retest reliability and moderate to high inter-rater reliability. Low internal and external responsiveness were found for the PWPE, predictive validity was high. The predictive validity of the short-form FCE was also high but need to be further examined on several psychometric properties. Low discriminative and convergent validity were found for the work disability functional assessment battery. The WorkHab showed moderate to high test–retest, inter- and intra-rater reliability.

Conclusion

Well-known FCE methods have been rigorously studied, but some of the research indicates weaknesses in their reliability and validity. Future research should address how these weaknesses can be overcome.

Keywords

Functionale Capacity Evaluation;Review;Vocational rehabilitation

No conflict of interest

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A9.02 Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

ISPR8-2274

THE RELATIONSHIP BETWEEN EHLERS-DANLOS SYNDROME AND LABOR PARTICIPATION. AN INDUCTIVE THEMATIC ANALYSIS.

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Introduction/Background

Ehlers-Danlos syndrome (EDS) is a heritable disorder influencing multiple aspects of daily life. As the disorder is still quite unknown, little knowledge about treatment and psychosocial effects has been collected yet. Participation in employment is an aspect influencing the Quality of Life of patients with EDS-HT. This study aims to find a deeper connection between EDS-HT and the difficulties in labor-participation through exploring lived experiences.

Material and Method

A inductive thematic analysis, using semi-structured interviews was used. Nine patients, selected by a purposive sampling strategy, were included. Interviews were audio-recorded and transcribed verbatim.

Results

The health complaints can, on the one hand, make labor-participation difficult, but on the other hand, the practice of a job can positively affect well-being. There are factors that can promote employment. The data analysis results in three main themes. (1) Elements assisting participation in employment, (2) limitations in labor-participation and (3) unemployment due to the EDS.

Conclusion

There are specific reasons either a person with EDS participates, or does not participate in labor. The reasons are individual and different for each and every person and may even vary in time.

Keywords

Ehlers Danlos Syndrome;Qualitative research;Labor

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.03 Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

ISPR8-2507

RELIABILITY OF THE LATVIAN TRANSLATION OF THE ROTTERDAM TRANSITION PROFILE (RTP)

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Introduction/Background

Transition process from childhood to adulthood is a crucial period for young adults with cerebral palsy. The Rotterdam Transition Profile (RTP) is a valid tool to gain more insight into the transition process (M Donkervoort *et al.* Dev Med Child Neurol 2008, 51: 53–62).

The aim of this study was to test the reliability of the Latvian translation of the RTP and to gain the first insight of the transition process of young adults with cerebral palsy.

Material and Method

The transition process of RTP included the following steps: forward translation, expert panel (10 physiotherapists and an English language specialist), back-translation, pre-testing and cognitive interviewing (young adults with cerebral palsy, aged 16-21y), and the admission of the final version. Reliability was tested in classes of inter-rater, test-retest and internal consistency reliability.

Results

Sixty-three participants (32 males, 31 females, Me 18, IQR=20-17) were included. The levels of Gross Motor Function Classification System (GMFCS) were: first- n=28, 44.4%, second- n=20, 31.7%, third- n=9, 14.3%, fourth- n=6, 9.5%, fifth- n=0, 0.0%. Reliability values of RTP were the following: good internal consistency- Cronbach's Alpha 0.86, high test-retest reliability- r_s 0.99 ($p<0.01$) and high inter- rater reliability- r_s 0.91 ($p<0.01$). There was found a medium correlation between the level of GMFCS and the total score of RTP- r_s -0.44 ($p<0.01$) and between the age of participants and the total score of RTP- r_s 0.47 ($p<0.01$).

Conclusion

The Latvian version of RTP is a reliable tool to be used in assessment of transition process of young adults with cerebral palsy. It was found that the older and the more physically functional the person is, the more independent. Thus the correlation was only in a medium level. Validity testing should be advisable for stronger psychometric qualities of the Latvian version of RTP.

Keywords

No conflict of interest

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A9.03 Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

ISPR8-0427

A PRACTICAL EXPLORATION OF THE SERVICE MODE - COMBINATION OF REHABILITATION MEDICAL SERVICE AND EDUCATION FOR CHILDREN WITH SPECIAL NEEDS ON THE BASIS OF ICF

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Introduction/Background

To solve the social problem of children with special needs receiving either medical rehabilitation or just special education and explore the service mode of “rehabilitation medical service combined with education” provided in an integrated way in China.

Material and Method

To integrate the resources of rehabilitation medical service and education and establish a comprehensive intervention system suitable for the physical and mental development of children with special needs based upon ICF-CY and applying the theory of translational medicine, as well as build a multiple interactive service system of “rehabilitation medical service combined with education” and improve the services for the education and rehabilitation of children with special needs by means of experience summary and case study.

Results

The service system of “rehabilitation medical service combined with education” is an innovative setup of integrated courses in a multilayer and interactive way of rehabilitation medical service, education and life practice, realizing the functional rehabilitation course with activities and participation as its aim, laying a basis for them to be engaged in social life, and guaranteeing the equal access to rehabilitation medical service and education of children with special needs.

Conclusion

Exploring the pattern of rehabilitation medical service combined with education is of special significance in terms of mechanism innovation, which has facilitated the implementation of the government policy to purchase services and optimized the service function of the organization, thus playing an active role in helping underprivileged families, decreasing the abandonment of children with special needs, improving the employment of the people with disabilities and promoting the stability and harmony of society.

Keywords

combination of rehabilitation medical service and education; children with special needs; activities and participation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.03 Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

ISPR8-0677

THE CHALLENGES FOR PSYCHOLOGICAL SUPPORT IN CHRONIC SPINAL CORD INJURY

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Introduction/Background

Spinal cord injury (SCI) is a tremendous psychophysical trauma. While most recourses and time has been spent to recover functional deficits, the importance of psychological support is often underestimated by patients. The aim of this study was to investigate the psychological status and make proposes for more effective psychological interventions.

Material and Method

The study was performed in the neurorehabilitation department and included 63 patients with chronic SCI (3-18 months) at different segments of the spinal cord. The following tools were used: psychological interview, Luscher color test, test "The non-existent animal", Beck's depression inventory (BDI) and Beck's anxiety scale (BAS).

Results

All patients were psychologically closed and avoided sharing their feelings and 11 of them refused any contacts with a psychologist. At the beginning, most patients expressed affection and kindness which had been transformed to irritation and aggression during the conversation. The self-scored tests revealed the lowest possible scores: 0-4 via BAS and 0-6 via BDI. Oppositely, the projective tests demonstrated the high level of tension, anxiety and depression. Nine patients had unspoken suicidal ideations. The main issues were alterations in the body image with the rejection of objective facts. Patients were immersed on negative aspects of the life and ignoring or minimizing any positive changes.

Conclusion

The psychological support is an undisputed part of rehabilitation after SCI. It seems psychological interventions for emotional discharge and relaxation could be more accepted by patients even in the chronic phase. Rational psychotherapy ought to be also considered but it would take probably more time and resistance to reach any complacence.

Keywords

chronic spinal cord injury;psychological support;psychological status

No conflict of interest

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A9.03 Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

ISPR8-0707

ACCESS TO DENTAL CARE FOR PEOPLE WITH DISABILITIES IN BRITANNY

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Introduction/Background

Oral health care is an important element in the care of people with disabilities. We conducted a survey among users of two french health networks: the BreizhPC network and the specific dental network to measure the impact of these on access to dental care.

Material and Method

A survey of dental care in terms of prevention and treatment was sent to 1500 users of the two networks.

Results

323 users answered the questionnaire, equally divided between the two networks, with a mean age of 38.8 +/- 16 years. 54.4% live in institutions, 45.6% at home most often with their parents. 86.8% are single. 91.4% of the population benefits from a dental follow-up, most often in town offices. An accompanying person is most often necessary for the care. Sedation was necessary for 14.9% of users and general anesthesia for 14, 2%, in majority for behavioral handicap. The most common treatments are conservative and preventive care.

Users are very satisfied with their care, particularly with regard to pain. At the level of oral hygiene, brushing is performed at least once a day for 87.4% of users and remains the most frequent prevention treatment. Prevention messages are essentially delivered by the practitioner

Conclusion

This study found a satisfactory access to dental care of the users. For comparison, the survey carried out by the UDAPEI on the same territory in 2015 on 185 establishments found a rate of 68.4% of dental follow-up in their population. This highlights the importance of health care networks in the access to care for people with disabilities.

Keywords

Health network;dental care;cerebral palsy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.03 Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

ISPR8-1507

CASE ILLUSTRATION OF HOLISTIC FUNCTIONAL AND COGNITIVE REHABILITATION IN ECOLOGICAL SETTING FOR INDIVIDUALS WITH ACQUIRED BRAIN INJURY

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Introduction/Background

Acquired Brain Injury often results in a range of impairments and leads a combination of physical disabilities, cognitive deficits, communication difficulties, and emotional and behavioural disturbances. Multi-disciplinary rehabilitation has been shown to be highly effective in improving the functional outcome, modifying and alleviating the problems associated with cognitive and behavioural issues. Supporting these individuals and providing therapy in naturalistic environment is highly conducive, enhancing their participation compliance and psychological motivation.

Material and Method

This case illustration asserts how a planned group excursion to a community venue creates an opportunity for participants to respond verbally and emotionally to the displayed visual installation, and provides interactions with the general public, with guidance from rehabilitation clinicians. In addition, with the terrain of the venue purposefully made to be uneven, the participants also exercised precautions with their mobility, as trained by their physical therapists.

Results

Participants responded very positively to the experience. Afterwards, individual participant was then assisted to recount his or her impression and appreciation, both verbally and facilitated with photos taken during the visit, with a rehabilitation clinician. Once having refined the details, the individual was then encouraged to again repeat the story with family and friends.

Conclusion

Through this excursion, the participants appeared to gain more confidence, and their motivation enhanced, having been given the exposure and chance to practise physical, cognitive, and communication skills in naturalistic setting.

It also underlines the importance of designing an activity of rehabilitation treatment to have equally relevant and entertaining aspects, to be optimally successful, and fully embraced by participants.

Keywords

Cognitive rehabilitation; Ecological Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.03 Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

ISPR8-1573

PRELIMINARY CONCEPT TEST FOR ROBOTIC SMART HOME FOR ELDERLY: A CASE REPORT.

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Introduction/Background

With Japan's population rapidly aging, the number of elderly households was estimated to be more than 12million, which was approx. 23% of the entire households in 2015. In order to help elderly people to live longer independently in their own homes, we started the project to develop an assistive home environment called Robotic Smart Home (RSH), which integrates robotics and devices that support elderly's mobility, operation, and information. Mobility support robots are aimed to assist walking and transfer movement, while an operation support robot communicates with users and help with small chores. Information support devices include tele-exercise and IoT connected home automation system.

In 2017, we established RSH's experimental facility, and conducted an assessment by an elderly couple to preliminarily evaluate the effectiveness of RSH and its components.

Material and Method

An elderly couple aged over 70 years old were admitted for this assessment to stay at RSH and try assistive robots for walking and operation, tele-exercise and home automation system. After researchers gave the subjects thorough instruction to handle robots and devices, they were allowed to spend freely inside RSH on their own for several hours. After that, researchers conducted surveys to collect their feedbacks.

Results

The subjects showed mostly favorable responses to the robots and devices presented, and found the walking support robot highly effective to reduce the risk of falls, while they found more value in the communication function for the operation support robot rather than physical support it provides.

Conclusion

Although the result for this preliminary trial was favorable, further assessment is needed for evaluating the effectiveness of robotic devices and RSH itself. This trial also helped us

modifying the development goals for devices, and we will continue to collect feedbacks from subjects in order to improve RSH and its devices for sooner social implementation.

Keywords

Assistive technology;Elderly care;Home automation

Conflict of interest

Disclosure statement:

We declare a potential conflict of interest as follows: Dr. Saitoh got collaborative research fund from Toyota Motor Corporation which developed the robot discussed in this study.

E-Poster Session - July 9-12 - Exhibition Area

A9.03 Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

ISPR8-1602

ROBOTIC SMART HOME FOR ELDERLY: LITERATURE REVIEW OF THE ACTIVITY ASSISTIVE TECHNOLOGIES AND CONCEPT OF OUR NEW FACILITY

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Introduction/Background

The number of people in need of care is rapidly increasing in Japan. To continue life at their own home in elderly households requires not only social systems such as community comprehensive care but also home environment support. In order to provide a safe, secure and comfortable home life for everyone, we propose Robotic Smart Home (RSH) which is a living space designed for the use of activity assistive devices/robots and is used as a facility for conducting development and assessment of these assistive devices. This report is a literature review on smart home and activity assistive robots for the elderly, and introduction of our RSH project.

Material and Method

The database of PubMed was searched for articles published between inception and January 29, 2018 by using a term "smart home robot". This search and careful reading were conducted by one independent evaluator.

Results

Twenty-five papers were retrieved, among which 22 were concerned with living support for elderly and people with disabilities. Many of them were occupied by introduction of a concept, technical evaluation, and their reviews. Clinical trial was conducted in only five papers.

Conclusion

Several reports pointed out an insufficiency of clinical trials as a barrier to social implementation. This survey suggests that further objective reports in the living space such as demonstration tests and effectiveness verification on activity assistive devices for elderly will be needed. In order to challenge these problems, our university established RSH which is an empirical research facility introducing robots of mobility, operation and information support to the smart home system with IoT connection implemented. We would like to propose a new way of life in

an aging society by carrying out the demonstration experiment conducted at this facility, developing the robot to be used at home and validating its usefulness.

Keywords

Assistive technology;Elderly care;Home automation

Conflict of interest

Disclosure statement:

We declare a potential conflict of interest as follows: Dr. Saitoh got collaborative research fund from Toyota Motor Corporation which developed the robot discussed in this study.

E-Poster Session - July 9-12 - Exhibition Area

A9.03 Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

ISPR8-1898

DEVELOPING INNOVATIVE INTERDISCIPLINARY TECHNOLOGICAL SOLUTIONS FOR CAREGIVERS OF OLDER ADULTS WITHIN CANADA'S TECHNOLOGY AND AGING NETWORK

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Introduction/Background

Caregivers are critical to the health and support of older people with disabilities. Canada's technology and aging network, AGE-WELL (agewell-nce.ca), is dedicated to the creation of technologies and services that benefit older adults and caregivers. One important research theme within this network focuses on the development of novel technological solutions to address caregivers' needs. This presentation reports on AGEWELL activities that seek to gain insight as to how to support care providers of older adults with disabilities.

Material and Method

We use a mixed-methods approach to contribute to a growing body of knowledge about the complexity and diversity of caregivers' lives and needs. Our inclusive research approach captures, and integrates a breadth of stakeholders and disciplines.

Results

An overview of 10 ongoing and completed projects with a balance between discovery and application-based research is provided. These range from surveying caregivers to better understand their needs and challenges, to developing online assistive technology rating and recommendation systems for caregivers. The projects consider different care recipient conditions (cognitive and physical limitations), caregiver needs (physical, social, emotional, and financial) and caregiver groups (paid work roles and family caregivers). The results also highlight shared tools and strategies used by the researchers all focusing on the needs of

caregivers, to optimize resources and increase visibility; these include a repository of scientific paper citations and promotional videos.

Conclusion

This presentation offers an example of collaborative research that seeks to develop a wide range of innovative technological solutions that can benefit both the lives of disabled older adults and their caregivers.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.04 Social Integration Programmes and Rehabilitation for Specific - Disability Compensation

ISPR8-0377

DRIVING PERFORMANCE OF MOTORIZED MOBILITY SCOOTERS OF A VISUALLY IMPAIRED INDIVIDUAL

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Introduction/Background

Visual impairment has been shown to influence the safe use of motor vehicles in fast traffic, such as motorcycles and cars. Motorized mobility scooters (MMS) are assistive products for personal mobility that can increase community participation and independent living of users. However, MMS are misused as vehicle in Taiwan. It is widely accepted that visually impaired people can't drive MMS safely. The objective of this study was to investigate driving performance of MMS of a visually impaired individual.

Material and Method

This was a case report study to preliminarily investigate driving ability of visually impaired people. Inclusion criteria of subject were Mini-Mental State Examination score ≥ 24 , and Power Mobility Screening Tool score ≥ 13 . A 4-wheeled MMS with a maximum speed of 10 km/h was used. The MMS driving performance was evaluated with Power Mobility Clinical Driving Assessment (PMCD) which consisted of 13 indoor tasks and 10 outdoor tasks.

Results

The subject was a 51-year-old man who had blurred vision since 2013. He was diagnosed as polycythemia, hypertension and diabetes mellitus in 2014. He had 25 years car driving history, but no MMS driving experience. The last time he drove the car was 3 years ago. The binocular visual acuity was <0.1 , the left and right visual fields were 85° and 90° outside central respectively. The passing rate of indoor tasks of PMCD was 69.2%, and 90.0% of outdoor tasks.

Conclusion

The results of the driving assessment revealed that the visually impaired individual had partial ability to drive MMS. It's worth noting that this was the first time the subject drove MMS. This study indicated that visual functions were not the determining factors since there were no legal standards of vision for MMS driving. Visually impaired individuals might compensate poor vision from intact cognition and previous experience about car driving.

Keywords

Motorized mobility scooters;Community mobility;Visual impairment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.05 Social Integration Programmes and Rehabilitation for Specific - Miscellaneous

ISPR8-0048

ABSTRACT EDITED - CLOTHING IN THE EVERYDAY LIFE OF PERSONS WITH A PHYSICAL DISABILITY: A SCOPING REVIEW PROTOCOL

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Background and aims: Clothing is important in everyday life. The act of dressing, among other clothing-related activities, can be challenging for persons living with a physical disability (PWD). As such, clothing can have an altering effect on their participation (everyday activities and fulfillment of social roles). Clothing design and wearable technologies are growing industries, however, their potential impact on participation of PWD is understudied. The aim of this scoping review is to map the state of the literature of the role of clothing on participation of PWD. **Methods:** A scoping review of literature (peer-reviewed and grey) published since 1990 is being conducted using Levac's updated six-step approach (2010). Six databases (MEDLINE, Embase, Cinahl, Eric, PsycInfo, Sociological Abstracts) have been searched, resulting in 2100 references. Three authors have reviewed references in iterative stages (abstract and full-text analyses) and inter-rater agreements were monitored to ensure an excellent kappa statistic (>0.75). Accepted articles (n=164) were retained for data extraction using the International Classification of Functioning, Disability and Health as a guiding framework. Grey literature will be added and experts (n=12) from different relevant fields (e.g., rehabilitation, technology, fashion) are validating the extracted data and synthesis. **Results:** Findings are being synthesized quantitatively and qualitatively for a complete picture of the existing literature. Preliminary results indicate a variety in study populations, types of apparel (e.g. shoes, coats, undergarments), and certain facilitators and barriers that exist when considering adapted clothing. This review will contribute towards recommendations for future innovations (e.g.

clothing design) and practice (e.g. information clinicians give to patients or their caregivers). Ultimately, supporting the development of an inclusive society. **Conclusions:** This scoping review protocol outlines a rigorous method integrating a multidisciplinary consultation team at many intervals, to best synthesize the literature related to the role of clothing on participation of PWD.

Keywords

Rehabilitation;Participation;Clothing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.05 Social Integration Programmes and Rehabilitation for Specific - Miscellaneous

ISPR8-2633

PHYSICAL MEDICINE AND REHABILITATION: INSIGHTS FROM 10TH GRADE STUDENTS OF A FRENCH SCHOOL IN BRAZIL

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Introduction/Background

This study started with a five-student group of tenth grade ("Classe de Seconde" in the French system) which wanted to justify their choice to belong to the Science Class in High School. We applied for an internship in the Lucy Montoro Rehabilitation Center (HC-FMUSP). As the Institution accepted us, within our original objective, we established as a goal to correlate the technological advances in this area and its performance in the treatment.

Material and Method

We had the privilege to observe not only physical therapy and conditioning, gait training and movement of the limbs (robotics), but also to visit the Brazilian Paralympic Center and found the same patients met previously during their training in the various sport activities. Furthermore, we joined several therapeutic workshops with the patients: for instance, music, weaving and drama classes. In addition to observing the patients' daily routine, we also analyzed clinical and diagnostic radiological tests. Moreover, engaging in the Physiatry League was an enriching experience since it gave us the will to know more and to focus our studies on this field. What we realized was striking: medical methods and treatments cannot reach their full potential without activities that motivate the patient and allow his social inclusion.

Results

On providing the opportunity to develop new interests and skills and to exchange experiences, the Institution has a highly satisfactory medical outcome.

Conclusion

Last but not least, this internship changed our lives as we realized that the motor improvement of the patients depends on their emotional well-being and social inclusion. We are extremely interested in the field of physical and rehabilitation medicine. We all learned that those patients had no deficiencies, but limitations, as we all have; and they can still perform flabbergasting tasks.

Keywords

Rehabilitation Medicine;Social inclusion;Social Interaction Programs

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.05 Social Integration Programmes and Rehabilitation for Specific - Miscellaneous

ISPR8-0883

EXPERIENCE IN DISASTER RELIEF REHABILITATION ASSISTANCE IN THE AFTERMATH OF THE KUMAMOTO EARTHQUAKE

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Introduction/Background

Introduction: On March 11, 2011, The Great East Japan Earthquake struck. At the time of this unprecedented disaster, 10 groups involved in Rehabilitation started activities for evacuees. Thereafter, new groups joined, 15 groups involved in rehabilitation formed the Japan Rehabilitation Assistance Team (JRAT). On April 14, 2016 the Kumamoto Earthquake struck. This is a report on the assistance the Hiroshima JRAT provided as Unit 3 after the Kumamoto Earthquake with a focus on livelihood time of evacuees.

Material and Method

Report Description: Unit 3 (five people comprising one doctor, two physical therapists, one occupational therapist, and one speech-language-hearing therapist) carried out activities for four days in the Kashima Town civic gymnasium in Kumamoto Prefecture about one month after the earthquake (subacute rehabilitation phase). Kashima had 524 evacuees with 404 living in the gymnasium. Assistance focused on instruction about the prevention of disuse syndrome and preparation for living in temporary housing or at home, and activities such as weeding using regional characteristics and cleaning living spaces were incorporated into the lives of evacuees at the shelter.

Results

Results: About 30% of evacuees actively participated in cleaning living spaces, while only eight participated in weeding. Later teams continued carrying out these activities.

Conclusion

Discussion and Conclusion: The groups in the JRAT maintain communication at regular intervals and, after a large-scale disaster occurs, carry out activities to help citizens overcome the disaster and rebuild their independent lives and to reconstruct the area. When assistance was provided in the subacute rehabilitation phase, evacuees needed to prepare to move back home or into temporary housing. However, evacuees tended to become passive due to relief supplies and intervention by various volunteers. The ultimate goal of reconstruction is to rebuild the lives of evacuees so that they can live independently in their region. Our assistance gave them the chance to take the initiative.

Keywords

Japan Rehabilitation Assistance Team(JRAT);disaster

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

A9.05 Social Integration Programmes and Rehabilitation for Specific - Miscellaneous

ISPR8-1331

SYSTEMATIC REVIEW OF PEER-BASED REHABILITATION INTERVENTIONS FOR IMPROVING MOBILITY AND PARTICIPATION AMONG ADULTS WITH MOBILITY IMPAIRMENTS

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Introduction/Background

Mobility is a key factor of participation. Many existing interventions aim to improve mobility and participation, some of which involve peers. The involvement of peers in the delivery of interventions is proliferating in healthcare. However, evidence surrounding involvement of peers for enhancing mobility and participation outcomes in rehabilitation is unclear. This study aims to identify existing peer-based rehabilitation interventions and summarize their effects on mobility and participation among individuals with mobility impairments.

Material and Method

A systematic review was conducted in CINALH, EMBASE, MEDLINE, PsycINFO. Guided by definitions in the International Classification of Functioning, Disability and Health (ICF), articles that applied a peer support model and at least one endpoint assessing mobility or participation were included. Study quality was assessed using the Physical Therapy Evidence Database (for RCTs) or the Quality Assessment Tool for Pre-Post Studies With No Control Group. Effects of the interventions on mobility and participation were documented and summarized.

Results

Thirteen studies were identified: six were peer-led (three RCTs, three pre-posts) and seven professional-led (five RCTs, two pre-posts). Two peer-led studies evaluated mobility and six evaluated participation. Six professional-led studies evaluated mobility and seven evaluated participation. Pre-post studies' quality varied from poor to good and RCTs quality was either fair or high. Fewer studies have been conducted with a peer-led model and there were proportionally more peer-led RCTs presenting positive effects (3/3) than professional-led (2/5).

Conclusion

Peer-led interventions are of interest for improving mobility and participation among adults with mobility impairments because of the effectiveness they have demonstrated with different populations. The small number of studies, their current results as well as the lack of causal evidence of pre-post designs highlight the need for further research before going forward with any implementation in the clinical rehabilitation practice.

Keywords

Peer-based interventions; Mobility impairments; Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B1 Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

ISPR8-0368

PULSED ELECTROMAGNETIC FIELDS AMELIORATE BONE DETERIORATION THROUGH REGULATING WNT/ β -CATENIN SIGNALING IN STREPTOZOTOCIN-INDUCED DIABETIC RATS

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Introduction/Background

Evidence showed that pulsed electromagnetic fields (PEMFs) can ameliorate bone deterioration in streptozotocin(STZ)-induced diabetic rats. However, the underlying mechanism of its favorable effects has not yet been fully studied. This study aimed to investigate the effects of PEMFs on Wnt/ β -catenin signaling in STZ rats.

Material and Method

Thirty 3-month-old Sprague Dawley rats were randomly divided to the following three groups: control group (injection of saline vehicle), DM group (injection of STZ), and PEMFs group (injection of STZ +PEMFs exposure). After 12-week PEMFs intervention, serum bone formation markers, bone mineral density(BMD), bone architecture, bone strength, and gene expression of Wnt/ β -catenin signaling were investigated.

Results

Serum BALP in DM group was statistically lower than that in control group. While serum BALP statistically increased compared to DM group. The femur BMD in DM group was significantly lower than that in control group. The femur BMD in the PEMFs group was significantly higher than that in DM group. Histopathological examination showed markedly diminished trabecular area and trabecular number, and apparent expanded marrow cavity in DM group compared to control group. However, these changes of DM rats were partially reversed after 12-week PEMFs exposure. Maximum load and energy to failure in DM group was significantly lower than that in control group. However, maximum load and energy to failure in PEMFs-treated DM rats significantly increased compared to DM group. The mRNA expressions of β -catenin and Runx2 in DM group significantly decreased, and DKK1 significantly increased compared to control group. However, the mRNA expressions of LRP5, β -catenin and Runx2 were significantly increased, and DKK1 significantly decreased in PEMFs group compared to DM group.

Conclusion

Pulsed electromagnetic fields can ameliorate bone deterioration through regulating Wnt/ β -catenin signaling in streptozotocin-induced diabetic rats.

Keywords

Pulsed electromagnetic fields; Diabetes mellitus; Wnt/ β -catenin signaling

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B1 Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

ISPR8-0394

PERIPHERAL DENERVATION PARTICIPATES IN HETEROTOPIC OSSIFICATION IN A SPINAL CORD INJURY MODEL

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Introduction/Background

We previously reported the development of a new acquired neurogenic HO (NHO) mouse model, combining spinal cord transection (SCI) and chemical muscle injury. Pathological mechanisms responsible for ectopic osteogenesis after central neurological damage are still to be elucidated. In this study, we first hypothesized that peripheral nervous system (PNS) might convey pathological signals from injured spinal cord to muscles. Secondly, we sought to determine whether SCI could lead to intramuscular modifications of BMP2 signalling pathways.

Material and Method

Twenty one C57Bl6 mice were included in this protocol. Bilateral cardiotoxin (CTX) injection in hamstring muscles was associated with a two-stage surgical procedure, combining thoracic SCI with unilateral peripheral denervation. Volumes of HO (Bone Volume, BV) were measured 28 days after surgery using micro-computed tomography imaging techniques and histological analyses were made to confirm intramuscular osteogenesis. Volume comparisons were conducted between right and left hind limb of each animal, using a Wilcoxon signed rank test. Quantitative polymerase chain reaction (qPCR) was performed to explore intra muscular expression of BMP2, Alk3 and Id1.

Results

Nineteen mice survive the complete SCI and peripheral denervation procedure. When CTX injections were done right after surgery (n=7), bilateral HO were detected in all animals after 28 days. Micro-CT measurements showed significantly increased BV in denervated paws (1, 47 mm³ +/- 0, 5) compared to contralateral sides (0, 56 mm³ +/-0, 4), p=0.03. When peripheral

denervation and CTX injections were performed after sham SCI surgery (n=6), bilateral HO were present in three mice at day 28. qPCR analyses showed no changes in intra muscular BMP2 expression after SCI as compared to control mice.

Conclusion

Peripheral denervation can be reliably added to spinal cord transection in NHO mouse model. This new experimental design confirms that neuro inflammatory mechanisms induced by central or peripheral nervous system injury plays a key role in triggering ectopic osteogenesis.

Keywords

Heterotopic ossification;spinal cord injury;experimental mouse model

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B1 Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

ISPR8-0444

EFFECTS OF DIFFERENT CONCENTRATIONS OF DEXTROSE PROLOTHERAPY ON CONTUSION INDUCED MUSCLE INJURY IN MICE

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Introduction/Background

The current treatment options for muscle injury remain suboptimal and often result in delayed/incomplete recovery of damaged muscle. In this study, the effects of dextrose prolotherapy on inflammation and regeneration in skeletal muscle after contusion injury were investigated

Material and Method

Mice were grouped into five groups, including groups of normal control (NC), post injury without any treatment (mass-drop injury, MDI), post-injury with 10% dextrose (MDI+10% dextrose), post-injury with 20% dextrose (MDI+ 20% Dextrose), and post-injury with 30% dextrose (MDI+ 30% Dextrose). The gastrocnemius muscles of mice were subjected to MDI and muscle samples were collected after 7 days post-injury.

Results

These results showed serum CK, BUN, CREA, and LDH of MDI-alone group were significantly higher than those in the normal control group ($p < 0.05$). However, the levels of serum CK, BUN, CREA, and LDH were significantly decreased in different concentrations of dextrose. In addition, dextrose could suppress the macrophages response (F4/80 protein decreased) and promote the muscle satellite cell regeneration (desmin protein increased).

Conclusion

In conclusion, dextrose prolotherapy can effectively help the repair of muscle, thereby it may be one of the methods in clinical treatment of muscle injury.

Keywords

Dextrose; prolotherapy; contusion

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B1 Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

ISPR8-1711

INTEGRIN AND FIBRONECTIN GUIDE BRIDGING MOVEMENT OF REMNANTS DURING ANTERIOR CRUCIATE LIGAMENT SPONTANEOUS HEALING IN RAT MODEL

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Introduction/Background

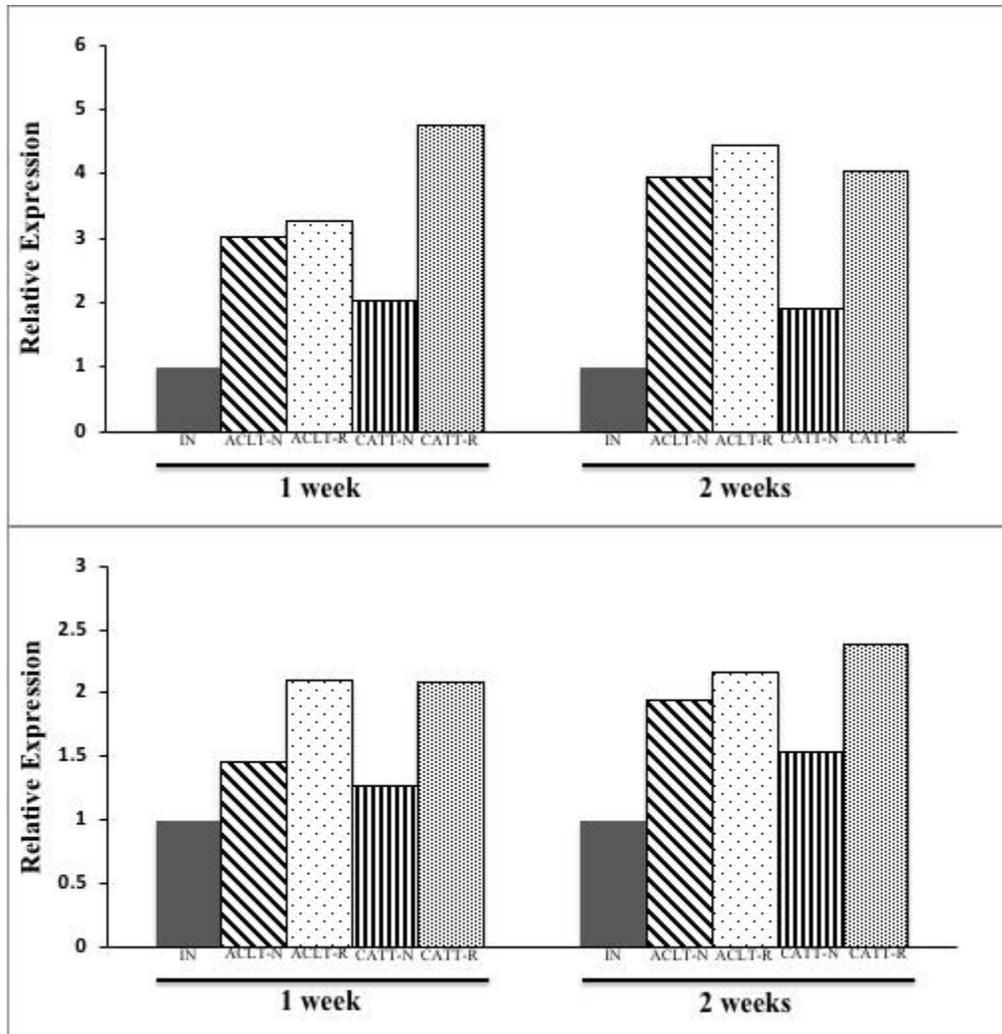
Cells communicate with extracellular matrix (ECM) through the some essential components of mechano-biological factors. Integrin and Fibronectin are known as a connecting organizer between ECM and the cells. Moreover, these are also known as a sensor of mechanical cues. In this study, we focus the function of this sensor of mechanical cue to elucidate the mechanism of anterior cruciate ligaments.

Material and Method

All experiment used 10-week-old male Wistar rats after more than 2 weeks of acclimatization. Initially, 4 rats had their ACL transected, which were divided into 2 groups: ACL transection (ACL-T) groups and ACL transection and controlled abnormal tibial translation (CATT) groups. These rats were then used for a microarray analysis. Next, 40 rats were distributed across the 4 groups based on two factors for comparing controlled abnormal tibial translation and treadmill exercise (sedentary and exercise): ACL-transection sedentary or exercise groups (ACLT-Sed or ACLT-Ex), or the controlled abnormal tibia translation sedentary or exercise groups (CATT-Sed or CATT-Ex). Contralateral knees (intact ACL [IN]) of ACLT-Sed rats were used as controls. These rats were used in RT-qPCR.

Results

The relative expression of ACL remnants had no remarkable changes between groups. However, the relative mRNA expression of infra-patellar fat pad in the both CATT groups had an increasing trend compared to the both non-exercise group.



Conclusion

Integrin and Fibronectin have a key role in ACL spontaneous healing as a sensor of mechanical cues. These protein works at the infra-patellar fad pad, not at ACL remnants. These results suggest that infra-patellar fad pad works mechanosensor in knee joint, and in detail, these function may support by the Integrin and Fibronectin.

Keywords

ACL; Spontaneous Healing; Mechanobiology

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B1 Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

ISPR8-1712

NEURAL CORRELATES OF COGNITIVE AND EMOTIONAL MALADAPTATIVE BEHAVIOUR IN CHRONIC LOW BACK PAIN : A SYSTEMATIC REVIEW

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Introduction/Background

Non-specific chronic low back pain (ns-cLBP) is a leading cause of disability and loss of quality of life worldwide.

Clinical and theoretical models explaining pain chronicization (such as the fear-avoidance model) emphasize the key role of maladaptative cognitive and emotional factors in the development of chronic pain.

Modern neuroimaging techniques have demonstrated that pain chronicization leads to functional and structural brain changes, in various areas and networks. These changes seem to be specific to a given clinical condition.

Our purpose was to study the association between maladaptative cognitive and emotional behavioural changes and structural or functional brain modifications in patients with ns-CLBP.

Material and Method

We performed a systematic scoping review of the literature, according to the PRISMA guidelines. Pubmed, Web of Science, OpenGrey and Cochrane databases were searched for original research reports. Methodological quality of included studies was assessed by two independent individuals. Risk of bias in included studies was investigated using a modified ROBINS tool.

Results

Sixteen studies met the inclusion criteria. We found significant modifications within emotional limbic network (including cingulate cortex, hippocampus and amygdala), and inconclusive evidence regarding other areas implied in attention to pain and pain perception.

Conclusion

More similar study designs and better defined groups may help to an increased understanding of these brain modifications, potentially leading to a better treatment of cLBP patients.

Keywords

chronic low back pain ;neuroimaging;fear-avoidance model

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B1 Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

ISPR8-2283

PREDICTION OF THE PATHOLOGICAL FRACTURE RISK DURING STANCE AND FALL-LOADING CONFIGURATIONS FOR METASTASES IN THE PROXIMAL FEMUR, USING A COMPUTED TOMOGRAPHY-BASED FINITE ELEMENT METHOD.

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Introduction/Background

It is important to assess the fracture risk associated with metastasis in the proximal femur. The study aimed to assess the effect of tumor location on the risk of pathological fracture of the proximal femur and investigate the fracture risk not only in the stance-loading configuration (SC), but also in the fall-loading configuration (FC) using a computed tomography (CT)-based finite element (FE) method based on a simulated metastatic model.

Material and Method

The axial CT scans of the proximal femora of healthy men (n=4; age range, 42-48 years) and post-menopausal women (n=4; age range, 69-78 years) were obtained with a calibration phantom, from which the three-dimensional FE models were constructed. A single 15-mm-diameter spherical void simulating a tumor was created at various locations from the neck to subtrochanter level. Nonlinear FE analyses were performed.

Results

The mean predicted fracture loads without spherical voids in the SC were 7700 N in men and 4370 N in women. With the void at the medial femoral neck and in the region anteromedial to lesser trochanter, the mean predicted load significantly reduced to 51.3% and 59.4% in men and 34.1% and 64.5% in women, respectively. The mean predicted fracture loads without a spherical void in the FC were 2500 N in men and 1862 N in women. With the void at the medial and posterior femoral neck, the predicted fracture load was significantly reduced to 65.7% and 79.7% in men and 48.3% and 65.4% in women, respectively.

Conclusion

These results showed that the risk of pathologic fracture was quite high in both the SC and FC when the lytic lesion existed along the principal compressive trabecular trajectory or posterior neck. Prophylactic intervention should be considered for metastases at these locations.

Keywords

pathological fracture;proximal femur;finite element method

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-2525

MECHANICAL ENVIRONMENT IN EDEMATOUS TISSUE PROMOTES MYOFIBROBLAST ACTIVATION

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Introduction/Background

Myofibroblast activation is essential to numerous physiological and pathological states, including wound healing, chronic inflammation, tissue and organ fibrosis, and tumor progression. Increased interstitial hydrostatic pressure (IHP) is a mechanical hallmark in edematous tissues resulting from damage or inflammation. We hypothesized that the increased IHP condition has a role in myofibroblast activation.

Material and Method

3T3 fibroblasts embedded in collagen matrix were cultured in a custom-made bioreactor that allows for culturing the matrix in various IHP conditions and dynamic measurement of the matrix elasticity using shear-wave elasticity imaging. Western blotting and immunostaining were applied to analyze the expression of myofibroblast specific proteins.

Results

We found that an increase of the IHP to 20 cmH₂O significantly increased expression of alpha smooth muscle actin, the molecular signature of myofibroblast, as well as the transforming growth factor beta-1, in the cultured cells. The activated myofibroblasts were highly contractile and stiffened the cell-populated matrix roughly two times than that in zero IHP condition.

Conclusion

Our results indicate that increased IHP promotes the transformation of fibroblasts into myofibroblasts and the stiffening the cell-populated matrix. These findings support our hypothesis that the mechanical characteristic associated with an edematous tissue promotes wound healing and tissue stiffening.

Keywords

extracellular matrix remodeling;interstitial fluid pressure;tissue stiffness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-0081

THE EFFECT OF PHYSICAL EXERCISE ON NEUROGENESIS FACTOR PRODUCTION IN GLIAL CELLS

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Introduction/Background

The effects of physical exercise on cerebral function have been reported in various research studies, thereby leading to better understanding of the brain's cellular mechanisms related to adaptations concerning physical exercise and the different cell responses which become compromised regarding chronic mechanisms. Relearning patterns of movement may thus be an alternative clinical approach affecting cognition and brain plasticity. Recent evidence has shown that neurogenesis can become increased by exercise; nevertheless, moderation mechanisms and the times involved in this process are not at all clear.

Material and Method This review thus provides an update for understanding physical exercise-induced neurogenesis, covering mediating mechanisms and maturation. **Results**

The astrocytes, microglia and oligodendrocytes have dynamic situations which can substantially affect neuron function and activities; thus the astrocytes, more than being a simple support for nervous tissue structure, develop a very important function during the homeostasis of various ions in the CNS [50,51]; it is worth highlighting K⁺ capture from extracellular fluid [52, 53, 54]. The oligodendrocytes' main function is to produce myelin bands in the CNS [55]; these bands' structure was demonstrated almost simultaneously by Peters [56] and Maturana [57]. Nevertheless, since these first studies, research has focused on this area, especially work by Ochalski *et al.*, who demonstrated the relationship between astrocytes and other types of stem cells in the grey substance from the neurohistochemical point of view in a rat model [58].

Conclusion

Research involving animal models and humans has provided an approach to the possible mechanisms which could be the basis for physical activity's effects on cognition [43]. The main hypothesis is that exercise directly affects the brain's structures and functions. Increased aerobic capacity increases cerebral blood flow (CBF), thereby improving the brain's oxygen and glucose use, as well as increasing insulin, stimulating neurogenesis and increasing synaptic interconnections [44].

Keywords

neurogenesis, exercise, rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-0178

HISTOLOGICAL AND FUNCTIONAL RECOVERY IN PREVIOUSLY CHRONIC DENERVATED MUSCLES AFTER AUTOLOGOUS STEM CELLS INTRAMUSCULAR IMPLANT IN SCI PATIENTS

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Introduction/Background

In between January 2013 and January 2015, three chronic and complete SCI patients (thoracic level, flaccid paralysis) received 2 neural progenitor cells spinal cord implant and underwent intensive rehabilitation. During the evolution they showed recovery of electrical activity in muscles below the lesion level. Despite they continued the rehabilitation, muscular signs of severe atrophy persisted. In February 2016 and each 2 month they received intramuscular implant of muscular progenitor and neural progenitor cells looking forward to improve muscular trophism conditions in the muscles that had recovered the electrical activity.

Material and Method

Three previously flaccid paraplegic patients received 6-8 intramuscular implants with autologous stem cells previously in vitro differentiated to muscular and neural progenitor cells. The implanted muscles had severe signs of denervation atrophy but had recovered electrical activity after spinal cord cell therapy. The muscular cell therapy was complemented with an intensive rehabilitation program.

Results

All implants were well tolerated, no signs of muscular damage were observed. 3/3 patients showed ultrasound and histological changes in the implanted muscles. 2/3 patients also recovered visible and palpable muscular contraction. 1/3 recovered reflex activity.

Conclusion

Although this is a preliminary study with a small population. The results show that intramuscular cell therapy combined with rehabilitation, may be a therapeutic option for histological and functional improvement in chronic denervated muscles that had previously recovered electrical activity.

Keywords

DENERVATED MUSCLES; MUSCULAR STEM CELLS IMPLANT; SPINAL CORD INJURY

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-0228

PHYSIOLOGICAL ISCHEMIA TRAINING IMPROVES ENDOGENOUS EPCS HOMING TO INFARCTED HEART

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Introduction/Background

It was demonstrated that Physiological Ischemia Training increased EPCs in the ischemic limb. However, what about the EPCs levels in the rabbits with myocardial ischemia under physiological ischemia training? We checked and traced endogenous endothelial progenitor cells (EPCs) during physiological ischemia training.

Material and Method

Rabbits were randomly divided into 4 groups: a myocardial ischemia group (subjected to myocardial ischemia only); a physiological ischemia training group (subjected to physiological ischemia training only); a physiological ischemia training-myocardial ischemia group (subjected to both myocardial ischemia and physiological ischemia training); and a sham-operated group. Myocardial ischemia was induced experimentally by a 2-min ischemia, followed by a 1-h reperfusion. Physiological ischemia training involved a 4-min isometric contraction elicited by electrical stimulation (biphase square wave, 40 Hz, 1 ms), which generated a contraction force at 40% of the maximal isometric contraction force. Myocardial ischemia and/or physiological ischemia training were performed twice a day, 5 days a week for 4 weeks. EPCs were counted by FACS and traced by double-labelling with super paramagnetic iron oxide and chloromethyl-benzamidodialkylcarbocyanine.

Results

EPC levels in the blood and the ischemic heart region both improved significantly in the physiological ischemia training-myocardial ischemia group (mean 0.046% (standard deviation (SD) 0.007), 0.013% (SD 0.005)) and group myocardial ischemia (mean 0.038% (SD 0.016), 0.008% (SD 0.004)). The dual-labelled EPCs in the ischemic heart region were confirmed. Pearson's analysis demonstrated that there is a positive correlation between EPC levels in the blood and the heart region ($p < 0.05$) in the physiological ischemia training-myocardial ischemia group.

Conclusion

Physiological ischemia training can effectively improve endogenous EPCs. Their homing process from the circulating blood to the ischemic myocardium was clearly traced in this study. This homing process is of great importance for remote neovascularization.

Keywords

Physiological Ischemia Training;Endogenous;EPCs

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-0499

CILOSTAZOL SHOWS THE POSSIBILITY OF EFFECT FOR POST-STROKE DEPRESSION AND APATHY

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Introduction/Background

Introduction: Cilostazol is a selective phosphodiesterase III inhibitor that was prescribed as an anti-platelet agent, and increases cerebral blood flows in the cerebral infarction. Additionally, it acted as a neuroprotective agent by increasing cyclic adenosine monophosphate levels. Mood and emotional disturbance are common in stroke patients. Post-stroke emotional disturbance, depression, anxiety, apathy, fatigue are frequent and important symptoms. These symptoms are distressing for both the patients and their caregivers, and negatively influence the patient's quality of life. Monoamine transporters including the norepinephrine transporters (NET), the serotonin transporter (SERT) are located in the plasma membrane of the presynaptic nerve terminals. Most inhibitors of the monoamine transporters, especially of the NET and SERT, are clinically important antidepressants. Those antidepressants increase extracellular monoamine concentration by inhibiting the neuronal re-uptake of monoamines through the monoamine transporters. Most antidepressants act through inhibition of either the NET or the SERT or both transporters. The antidepressive effects of cilostazol on post-stroke depression have been reported, but the exact mechanism of this action is unknown.

Aims: The aim of this study was to investigate the direct effects of cilostazol on NET and SERT function.

Material and Method

Methods: SK-N-SH and SERT-transfected COS-7 cells were incubated with [³H]norepinephrine (NE) or [³H]serotonin (5-HT) in the presence or absence of cilostazol to assess the monoamine uptake.

Results

Results: Cilostazol decreased the [³H]NE uptake by SK-N-SH cells and the [³H]5-HT uptake by SERT-transfected COS-7 cells in a concentration-dependent manner.

Conclusion

Conclusions: The blood concentration of cilostazol in treating patients with cerebrovascular disease has been reported to be 13.8 mM after a single oral dose of 100 mg. These results indicate that cilostazol inhibit NET and SERT function at clinically relevant concentration, which is likely to show the antidepressant effect on post-stroke depression.

Source of findings: This study is supported by JSPS KAKENHI Grant Number 16K16456.

Keywords

post-stroke depression; cilostazol; antidepressive effect

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-0554

LOW POWER LASER IRRADIATION AND HUMAN ADIPOSE-DERIVED STEM CELL TREATMENTS PROMOTE BONE REGENERATION OF CRITICAL-SIZED CALVARIAL DEFECTS IN RATS

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Introduction/Background

The treatments of large bone defects are often accompanied by various limitations and complications. Stem cell therapy and physical treatments have both been shown to be beneficial in accelerating bone healing. However, the efficacy of combined treatment with stem cells and physical stimuli on large bone defects remains uncertain. The aim of this study was to evaluate the bone regeneration effects of low power laser irradiation (LPLI) and human ADSC treatments during fracture repair using a comparative rat calvarial defect model.

Material and Method

The viability of human ADSCs was cultured on a porous PLGA scaffold using an MTS assay. The critical-sized (7 mm) calvarial bone defect Sprague-Dawley (SD) rats were divided into 4 groups: a control group, an LPLI group, an ADSC group, and an ADSC+LPLI group. Bone formation was evaluated using micro-CT at 4, 8, 12, and 16 weeks after surgery. New bone formation areas and osteogenic factor expression levels were then examined by histomorphological analysis and immunohistochemical staining.

Results

PLGA had no cytotoxic effect on human ADSCs. Micro-CT analyses showed that both the LPLI and ADSC groups improved calvarial bone defect healing compared to the control group. In addition, the ADSC+LPLI group showed significantly increased bone volume at 16 weeks after surgery. The area of new bone formation ranked as follows: control group < LPLI group < ADSC group < ADSC+LPLI group. There were significant differences between the groups. The ADSC and ADSC+LPLI groups showed strong signals of vWF expression in week 16.

Conclusion

ADSC and LPLI treatments improve fracture repair in critical-sized calvarial defects in rats. Importantly, the combined treatment of ADSCs and further enhances the bone healing process.

Keywords

Bone healing; Adipose tissue-derived stem cells; Low power laser irradiation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-0767

COMPARISON OF BOTULINUM TOXIN TYPE A AND RHO-INHIBITOR ON ATDC5 CHONDROCYTE

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Introduction/Background

Knee osteoarthritis (OA) has an incidence rate of 25 % per year and its responses to treatment are variable. The analgesic effect of intraarticular injection of botulinum toxin type A (BTX-A) has been observed in patients with knee OA. BTX-A might inhibit Rho GTPase by ADP-ribosylation of amino acid asparagine-41. Rho activity has a role in mediation of chondrocyte catabolic signaling pathways, and Rho/ROCK (Rho-associated coiled-coil containing kinase) activation induces articular cartilage degradation. In our unpublished data, chondroprotection of BTX-A was observed based on pathological findings in rat knee OA. ROCK I & II were found to be altered in chondrocytes treated with BTXA, with dose-dependent effect. This study aimed to compare the effect on chondrocyte of BTX-A and Rho-inhibitor.

Material and Method

ATDC5 chondrocytes were compared based on cell phenotype and markers for chondrocyte differentiation and growth after administration of BTX-A, Rho-inhibitor (Y27632), and normal saline (control) to clarify the downstream signaling pathway.

Results

Reverse transcription-PCR (RT-PCR) showed that in ATDC5 chondrocyte cell culture, Y27632 and BTX-A elevated aggrecan on culture day 4 and day 7. On day 21, the level of collagen type X and MMP13 were lowered in Y27632 and BTX-A. ROCK I and II level were decreased on day 4 and 7 in all three groups, but were remarkably higher on day 14 and 21 in Y27632. On day 8, in ATDC5 cells not pretreated with insulin, decreased cell density, small and flat chondrocyte morphology were observed after addition of Y27632 and BTX-A, in comparison to control.

Conclusion

BTX-A and Rho-inhibitor decreased ROCK I & II and increased aggrecan level during early stage, and decreased collagen type X and MMP13 during late stage. Potential dedifferentiation effect in BTX-A and Rho-inhibitor were observed as well. Rho- signaling pathway might play different roles during early and late stage in chondrocyte growth.

Keywords

Botulinum toxin type A;chondrocyte;Rho

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-0782

ANGIOGENETIC EFFECT AND MECHANISM OF LPA ON THE PATHOLOGICAL HUMAN SYNOVIOCYTE FROM OSTEOARTHRITIS AND RHEUMATOID ARTHRITIS

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Introduction/Background

Lysophosphatidic acid (LPA) is a natural form of phospholipids contained in platelet rich plasma (PRP), which is often used in treating osteoarthritis. Abnormal synovial fluid production is related to osteoarthritis which may due to dysregulated vascular permeability mediated by synoviocytes related angiogenesis factors expression. In this study, we investigated the effect of LPA on the angiogenic factors expression in synoviocytes from normal and osteoarthritis tissue.

Material and Method

Primary culture of human fibroblast-like synoviocytes (HFLS) from normal (N) and osteoarthritis (OA) tissue and human umbilical vein endothelial cells (HUVEC) were used in this study. The expression patterns of LPA receptors on HFLS-N and HFLS-OA were determined by qRT-PCR. The effect of LPA on the angiogenic capability was evaluated by determining the effect of conditioned medium from LPA treated HFLS-N and HFLS-OA on HUVEC endothelial cell permeability and tube formation assays. Specific LPA modulated angiogenic factors were screened by angiogenesis protein array and confirmed by ELISA. The role of specific angiogenesis protein was confirmed by recombinant protein.

Results

The expression levels of LPA specific receptors between HFLS-N and HFLS-OA are different. LPA may enhance the angiogenesis effect of HFLS-N but not in HFLS-OA on endothelial cell permeability and tube formation on the matrix gel. Meanwhile, the LPA activated angiogenesis related factors MMP-9, IGFBP-1 and Prolactin are at least partly involved in promoting the angiogenic capability of HFLS-N.

Conclusion

HFLS-OA may lose the ability to express MMP-9, IGFBP-1 and Prolactin. The clinical significances of MMP-9, IGFBP-1 and Prolactin need further investigations.

Keywords

Lysophosphatidic acid ;osteoarthritis;synoviocytes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-1046

MICROSCOPIC OBSERVATION OF A RAT SPONTANEOUS ANTERIOR CRUCIATE LIGAMENT HEALING

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Introduction/Background

Controlling abnormal joint movement immediately after anterior cruciate ligament (ACL) injury could prevent destruction of intra-articular tissues and lead to spontaneous ACL healing. In a previous study, healing tissue was observed between the remnant gaps in the process of spontaneous ACL healing. The purpose of this study was to evaluate the healing tissue as observed in the process of spontaneous ACL healing by histological analysis.

Material and Method

A total of 30 adult male Wistar rats were randomly assigned to three groups: Sham, ACL transection (ACLT), and Controlled abnormal movement (CAM). The ACLT group and the CAM group underwent an ACL transection procedure, and the CAM group underwent extra-articular bracing to control for abnormal tibial translation. Samples of the knee joints were harvested at 1 and 2 weeks postoperatively, and stained by Hematoxylin-Eosin (HE), Aldehyde Fuchsin-Masson Goldner (AF-MG), and anti-CD68 antibody.

Results

HE staining showed that ACL healing was not observed in the ACLT group, while spontaneous ACL healing was observed at 2 weeks postoperatively in the CAM group. AF-MG stains showed that the healing area consists of collagen. CD68 positive cells were mainly located at the superficial layer and the fibrous layer in all groups. Furthermore, in the CAM group, CD68 positive cells were located at the remnant at 1 week postoperatively and at the healing area at 2 weeks postoperatively.

Conclusion

This study indicates that correcting abnormal kinetics during the early stages of ACL injury is critical for spontaneous ACL healing, and the healing tissue observed in the healing area contains collagen and type A synoviocytes.

Keywords

spontaneous healing; animal study; anterior cruciate ligament

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-1895

SUPRASPINATUS TENDON TEAR REPAIR WITH PLASMA RICH IN PLATELET GROW FACTORS

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Introduction/Background

Supraspinatus tendon tears (STT) represent one of the most frequent causes of benign skeletal muscle pain. At present, conservative treatment doesn't achieve the regeneration of breaks. Recently, the use of Plasma rich in growth factors (PRGF) is proposed to repair of various tissue lesions.

Material and Method

Prospective Analytical Observational Study of 25 clinical cases "prevalent over six months" of STT diagnosed by ultrasound, which has been applied a treatment by ultrasound-guided infiltration of 4 ml of PRGF and the number of three at weekly intervals. Size of rupture, joint balance, pain using the visual analogical scale, global functionality using the Constant Scale, both at the basal moment and at 6 months after the infiltrations are over, were recorded.

Statistical analysis: Descriptive statistics are shown in mean \pm ds, median (P25-P75) or in percentage according to the nature of the numerical or qualitative variable. The effectiveness of the treatment was estimated: decrease in the size of the break, Pain Improvement, Internal Rotation and Shoulder Abduction. The hypothesis contrasts were paired (before-after) using Chi-Square, T- Student and Lineal Factorial Model for Repeated Measures (GLIM). The analyzes were carried out using the statistical program SPSS / PC (version 24.0.)

Results

Reduction of Size of rupture was observed in 86%, observing statistically significant improvements in the length ($p = 0.018$) and width of the lesions ($p = 0.013$). Regarding joint balance, 53% improved in abduction, and 50% in internal rotation; 42% of patients reduced initial pain. Constant scale shows an improvement in 50% of patients

Conclusion

Although the treatment has been shown to be effective in reducing the size of tear, clinical improvement at six months is less evident. This could be due to the small size of the sample or to the fact that there could be clinical-sonographic dissociation six months after the end of PRFP treatment.

Keywords

Supraspinatus Tendon Tears; Plasma rich in platelet growth factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-2181

EFFECTS OF CHRYSIN AND EARLY EXERCISE ON NF-KB SIGNALING PATHWAY DURING LUNG INJURY INDUCED BY FOCAL CEREBRAL ISCHEMIA-REPERFUSION IN RATS

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Introduction/Background

Inflammation and oxidative stress play an integral role in the pathogenesis of cerebral ischemia. Chrysin exhibits anti-inflammatory and neuroprotective effects. Early exercise is an effective strategy for stroke treatment. However, the signaling pathways that link these events are not fully understood. We investigated the effects signaling pathways of chrysin treatment with early exercise in a rat model of lung injury induced by transient focal cerebral ischemia.

Material and Method

Forty female healthy SD rats were divided into four groups randomly (n=10): sham operation (A), lung injury induced by ischemia-reperfusion (B), chrysin treatment (C), and chrysin + early exercise (D). In C, rats were treated intragastrically with chrysin every day at a dose of 20mg/kg while rats were treated intragastrically with the same volume of NS in A and B. In D, rats received forced treadmill training and were treated intragastrically with chrysin (20mg/kg). Fourteen days later, all rats were sacrificed. Brain and lung tissues were obtained for pathological analysis, lung water content and lung function were assessed. Meanwhile, qRT-PCR and western blotting were employed to detect the expression of NF- κ B and TNF- α in lung.

Results

Neurobehavioral deficits and lung injury could be seen in B. Compared with B, chrysin (C and D) successfully decreased the infarct size, relieved pulmonary edema and improves lung function, while downregulated expression of NF- κ B and TNF- α . Notably, neurobehavioral deficits and lung injury were significantly improved in D, as well as the decreased expression of NF- κ B and TNF- α .

Conclusion

Chrysin treatment with early exercise improved functional outcomes and abrogated the lung injury induced by focal cerebral ischemia-reperfusion on rats, which might be associated with inhibition of NF- κ B-mediated neuroinflammation. Chrysin combined with early exercise may be used as a potential treatment in patients at high risk of lung injury induced by ischemic stroke.

Keywords

chrysin;early exercise;NF- κ B

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-2192

EXPERIMENTAL STUDY OF EXPRESSION OF HYPOXIA-INDUCIBLE FACTOR-1A AND ITS ROLE IN TRAUMATIC BRAIN INJURY

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Introduction/Background

Decades of traumatic brain injury (TBI) research have not led to the development of novel drugs that successfully improve the outcome of injured patients. Thus, new research approaches or medicine are required. Vascular injury is the primary key event that can cause a range of secondary injury, and become a key part of TBI repairment. Reduced blood flow is one pathophysiological symptom of TBI. Regenerative mechanisms are then initiated to reduce cellular damage, including the activation of hypoxia-inducible transcription factor 1 (HIF-1). Successful revascularization can provide critical neurovascular microenvironment, which produces effective perfusion to promote nerve repair and growth by clearing Toxic factors, providing nutrition, and making it a critical treatment for TBI.

Material and Method

96 Male SD rats were divided into four groups : Sham group(n=8), Control (sham operate ,n=8) , traumatic brain injury group (TBI group, n = 40) and TBI treated with 2ME2 group(n=40). Feeney's method was applied to establish TBI model. At the time point 6h, 24h, 3d, 7d, 14d after modeling, the expression of PHD2/HIF-1 α /VEGF/Ang-1 were observed by RT-PCR\Western blot analysis.

Results

Compared with sham-operated controls, the expression of HIF-1 α in TBI group have been significantly ($p < 0.05$) enhanced, which related to the degradation of PHD2 following TBI induction. HIF-1 α expression began to increase after 6h, within 24h to 3d reached peak and fall to common levels before 7d. Nevertheless, VEGF/Ang-1 expression was remarkably ($p < 0.01$) decreased after inhibition of HIF-1 α by 2-ME-2.

Conclusion

The expression of HIF-1 α increased after experimental TBI, which can induce its downstream target gene expression to promote the repairment of injured vascular and angiogenesis.

Keywords

Traumatic brain injury; Hypoxia-inducible factor-1 α ; 2-methoxyestradiol; Neurovascular unit

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B2 Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ISPR8-2426

NON-INVASIVE REMOTE ISCHEMIC POSTCONDITIONING STIMULATES NEUROGENESIS DURING THE RECOVERY PHASE AFTER CEREBRAL ISCHEMIA

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Introduction/Background

Ischemic postconditioning (IPostC) has been reported to have neuroprotection against ischemic diseases, and one cycle of IPostC induces neurogenesis when treated nearby.

Material and Method

To expanding these effects, we explored the effects of repetitively remote IPostC (NRIPostC) on neurogenesis in the subgranular zone (SGZ) and subentricular zone (SVZ) during stroke recovery. Animals underwent transient cerebral ischemia were treated with vehicle or NRIPostC immediately after reperfusion. Neurological severity scores, infarct size, neurogenesis, and protein expression levels of nestin and GFAP were quantified at 3d,7d, 14d, 21d and 28d post-ischemia.

Results

Results showed tha tNRIPostC significantly reduced acute infarction and improved neurological outcomes during the recovery phase. Meanwhile, NRIPostC significantly increased the number of BrdU+ /nestin+cells in SGZ on day 14 and in the SVZ on days 3, 7 and 14 respectively, and the number of DCX+cells from days 3 to 14. There were significant increments in the number of BrdU+/NeuN+and BrdU+/GFAP+cells in the SGZ and SVZ during the stroke recovery. The changing tendency of the protein expression of nestin and GFAP in DG was consistent with the result mentioned above.

Conclusion

In conclusion, NRIPostC reduced acute infarction and improved functional outcomes up to 28d, and it induced neurogenesis both in the SGZ and SVZ.

Keywords

Stroke;Neurogenesis;MCAO

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-0036

PLATELET-RICH PLASMA AND CORTICOSTEROID INJECTION IN LATERAL EPICONDYLITIS:WHO IS GREAT

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Introduction/Background

Elbow epicondylar tendinitis is a common problem that usually resolves with nonoperative treatments. When these measures fail, there is a role of Platelet-rich plasma (PRP) for tissue repair.

Material and Method

The trial was conducted in Bangabandhu Sheikh Mujib Medical University Hospital during the period August 2016 to February 2017. One hundred patients with chronic lateral epicondylitis were randomly assigned to a leukocyte-enriched PRP group (n = 51) or the corticosteroid group (n = 49). Patients received either a corticosteroid injection or an autologous PRP injection through a peppering needling technique. Outcome was measured in terms of VAS (Visual analog scale) and DASH(Disabilities of the arm, shoulder and hand).

Results

Success was defined as a reduction of 25% on VAS or DASH scores without a re-intervention within 6 months. When baseline VAS and DASH scores were compared with the scores of 6 months follow-up, both groups significantly improving within this time (intention-to-treat principle). But the DASH scores of the corticosteroid group come back to baseline levels, while the PRP group is unchanged at the end of 6 months (as-treated principle).The PRP group shows better outcome than the corticosteroid group (P < .0001).There were no complications shown in the use of PRP.

Conclusion

Patients with chronic lateral epicondylitis treated with PRP reduces pain and increases function, exceeding the effect of corticosteroid injection.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-0148

ASPIRIN, AN ASIC3 INHIBITOR, BLOCKS THE ANALGESIC EFFECT OF THERAPEUTIC ULTRASOUND IN CHRONIC MUSCLE PAIN

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Introduction/Background

Therapeutic ultrasound is widely used in pain control in physical medicine, and substance P (SubP) is the key pathway. However, the ion channels involving the analgesic process is still not clear. The objective of this study is to prove that the mechanism of the analgesic effects of ultrasound in a rodent model of chronic muscle pain is through acid sensing ion channel 3 (ASIC3).

Material and Method

We employed the chronic hyperalgesia mouse model proposed by Sluka et al. and applied therapeutic ultrasound at 3MHz, 100% duty cycle, 1W/cm² for 3 min. Mice were co-injected with pH 4.0 saline and 100 uM RP-67580 on day 0. From days 4 to 8 after the first acid injection, mice were co-injected with pH 7.4 saline and Aspirin (ASP) 500uM, 5mM, or ibuprofen (IBU) 500uM. The withdrawal response of mouse hind paws was defined as foot lifting when a 0.2-mN von Frey filament was applied (Fig 1).

Results

ASP diminished the analgesia induced by ultrasound treatment in mouse chronic muscle pain model. However, IBU, inhibitor of ASIC1a, did not. SubP and pERK content increased after ultrasound in DRG. Two minutes after ultrasound, ipsilateral pERK, subP, and tracer were significantly increased and overlapped each other. However, subP increased to less extent.

Conclusion

Therapeutic ultrasound and acid injection could inhibit intramuscular nociceptor activation, and result an anti-nociceptive effect against chronic mechanical hyperalgesia through ASIC3 pathway. In the future, small molecule inducing SubP and ASIC3 can be new candidate to treat chronic diffuse muscle pain.

Keywords

therapeutic ultrasound; substance p; muscle pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-0495

THE ROLE OF THE CEREBELLAR CORTEX IN THE ESTABLISHMENT OF ASSOCIATIVE LEARNING AND MEMORY IN GUINEA PIGS

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Introduction/Background

Time related cognitive function refers to the capacity of the brain to store, extract, and process specific information during the process of learning and memorizing. A large number of previous studies have shown that the cerebellar cortex is involved in the brain's advanced cognitive function. However, the role of the cerebellar cortex in cognitive function is not fully understood. Therefore, we established a behavioral model by using classical eyeblink conditioning (EBC) to study the role of the cerebellar cortex in associative learning and memory as well as the related underlying mechanism.

Material and Method

We carried out an investigation to determine whether EBC could be established by placing the stimulating electrode in the middle cerebellar peduncle (MCP). By using microcurrent pulse as a conditioned stimulus (CS), to stimulate the MCP, and corneal blow as an unconditioned stimulus (US), the behavior training was performed. Animals were male guinea pigs aged 4–5 months and without obvious eye diseases were selected.

Results

After 10 consecutive days of training, conditioned response (CR) was successfully achieved in Delay, Trace-200ms and Trace-300ms groups of guinea pigs, and the CR acquisition rates were greater than 60%, meaning that EBC was established successfully in these groups. However, the Trace-400ms and control groups did not achieve a CS-related blink CR.

Conclusion

By using pulsed micro-electric current as the CS, the cerebellar cortex of guinea pig can successfully establish EBC. Establishment of the optogenetic platform showed that by taking the induced AP in the neurons of LPN, which stimulates MCP directly, as the CS, the cerebellar cortex can successfully establish TEBC independently.

Keywords

middle cerebellar peduncle; lateral pontine nuclei; cognitive function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-0549

AN EXPLORATION OF MECHANOSENSITIVE MOLECULES ON HYPERTROPHIC SCARS UPON PRESSURE THERAPY: A PRELIMINARY STUDY

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Introduction/Background

Hypertrophic scar (HTS) is an aberrant yet common consequence of trauma. Pressure therapy has been regarded as first-line treatment for HTS, while its mechanism still remains unclear. External force is found to affect HTS formation via mechanotransduction during wound healing. Recently, researchers proposed that pressure therapy might control HTS through mechanotransduction. Therefore, an in-vivo human study was conducted to explore the change of mechanosensitive molecules on HTS upon pressure therapy.

Material and Method

Patients with hypertrophic scars were recruited between May 2013 and April 2016. Standardized pressure therapy (interface pressure of 15~25mmHg) was prescribed. Ultrasound was used to measure scar thickness. Immunohistochemical staining of Integrin β 1, Phospho-FAK(Y397), Phospho-Erk(1/2) was semi-quantified using imaging analysis. Paired Sample T-test was used to compare scar thickness before and after pressure therapy. One-way Repeated measure MANOVA was used to compare the intensity of mechanosensitive molecules.

Results

Forty patients with Forty-three hypertrophic scars were recruited in the study. Post injury days ranged from 28 to 277 days. After pressure therapy, difference in scar thickness was not statistically significant ($t=-1.41$, $p=.167$), and staining intensity of integrin β 1 ($F(1,39)=15.54$, $p<0.001$), pFAK(Y397) ($F(1,39)=7.51$, $p=.009$), and pErk(1/2) ($F(1,39)=.636$, $p=.016$) was significant.

Conclusion

The study found integrin β 1, Phospho-FAK(Y397), Phospho-Erk(1/2) significantly decreased in dermis after pressure therapy. The study established a basis for exploring the mechanism of scar management from mechanotransduction aspect. A well-designed controlled group is needed in the future to examine the effect pressure therapy on HTS.

Keywords

hypertrophic scar;pressure therapy;mechanotransduction

Conflict of interest

Disclosure statement:

Part of the study was funded by General Research Fund (Hong Kong S.A.R.(PolyU 5630/12M)).

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-0590

INTERLEUKIN-6 PLAYS AN ESSENTIAL ROLE IN PULSED ELECTROMAGNETIC FIELD IMPROVING CARTILAGE AND SUBCHONDRAL BONE IN MICE WITH OSTEOARTHRITIS

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Introduction/Background

Pulsed electromagnetic field (PEMF) has been investigated as a noninvasive alternative method to protect cartilage and subchondral bone from osteoarthritis (OA), and have anti-inflammatory and pro-regenerative effects. Interleukin-6 (IL-6) is a major cytokine in the pathogenesis of OA. Inhibition of IL-6 can alleviate cartilage degradation in mice with OA. This study aimed to investigate whether IL-6 is crucially involved in PEMF preserving cartilage degeneration and improving subchondral bone microstructure.

Material and Method

Forty 10-week-old male wild type (WT) C57BL/6 and IL-6 knockout (IL-6^{-/-}) mice were randomly divided into four groups (n=10): IL-6^{-/-}, WT, IL-6^{-/-}+PEMF, WT+PEMF. OA was induced by the destabilization of the medial meniscus (DMM) of the right knee. The PEMF groups were exposed to 75 Hz, 3.8 mT PEMF for 1 h/day, 7 days/week, 4 weeks. Cartilage destruction was investigated by Safranin O staining. Bone microstructure was evaluated by micro-computed tomography. Gene expressions were assayed with real-time quantitative polymerase chain reaction. Protein expressions were observed by the immunohistochemistry staining.

Results

The WT+PEMF group increased bone volume fraction (BV/TV), trabecular thickness (Tb.Th), trabecular number (Tb.N), and suppressed bone surface/bone volume (BS/BV) and trabecular separation (Tb.Sp) levels in the micro-computed tomography analysis. Real-time PCR analysis showed that PEMF decreased cartilage and subchondral bone's IL-6, Stat3, MMP-13, Adamts4 and Adamts5 mRNA levels. Similar results were observed in the immunohistochemistry staining. No significant differences were found between IL-6^{-/-} and IL-6^{-/-}+PEMF group.

Conclusion

PEMF preserved cartilage and subchondral bone in knee OA mice by inhibiting IL-6/Stat3 signaling.

Keywords

pulsed electromagnetic field;osteoarthritis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-0608

THE DEVELOPMENT OF CONTROLLED RELEASE REGIMEN FOR THE TREATMENT OF TENDINOPATHY USING ANTIOXIDANT AND HYALURONATE-BASED HYDROGEL

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Introduction/Background

For decades, tendinopathy therapy has seen limited progress because of incompletely understood pathogenesis, which includes repetitive microtrauma, impaired healing, and oxidative stress. Current treatment of tendinopathy is largely of limited efficacy and required a protracted treatment course. This study aims to develop a controlled release regimen using anti-oxidative medication and hyaluronate-based hydrogel as drug carrier for the treatment of tendinopathy.

Material and Method

In *in-vitro* model, tendon-derived cells (TDCs) were isolated from the Achilles tendons of Sprague-Dawley rats and cultured in a novel bioreactor capable of applying differential cyclic tensile strains (4% or 8%). The 8% strain TDCs were treated with/without epigallocatechin gallate (EGCG)-loaded hydrogel. Genes representing adipogenic, chondrogenic, and osteogenic lineages (PPAR α , Sox-9, and Runx2, respectively) and type I/type III collagen were analyzed by quantitative polymerase chain reaction (qPCR).

In *in-vivo* model, type I collagenase was injected to Achilles tendons of Sprague-Dawley rats in two successive days to induce tendinopathy. EGCG-loaded hydrogel was injected at day 3. At day 14, the tendons were harvested for histology and qPCR analysis.

Results

The 8% strain cells showed increased expression of non-tenocyte lineage genes and type III/type I collagen ratios compared with the control and 4% strain groups. Addition of EGCG ameliorated the expression of genes representing non-tenocyte differentiation.

In *in-vivo* model induced by collagenase injection, EGCG-loaded hydrogel injection group showed reduced disorganized collagen structures and hypercellularity, as compared with hydrogel alone and saline injection groups. The increased non-tenocyte lineage genes were suppressed by injection of hydrogel alone and further suppressed by the addition of EGCG.

Conclusion

EGCG diminished the expression of non-tenocyte lineage genes in *in-vitro* model. The injection regiment using EGCG-loaded hydrogel effectively ameliorated tendinopathy process in *in-vivo* model. The platform could be applied to future research on the pathophysiology of tendinopathy and development of treatment options.

Keywords

tendinopathy;controlled release;oxidative stress

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-0783

ADAPTATION TO THE ABSENCE OF TACTILE AND PROPRIOCEPTIVE FEEDBACK IN OBJECT HANDLING

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Introduction/Background

Dextrous manipulation necessitates efficient sensorimotor feedback mechanisms to orientate handheld objects, adjust for movement dynamics and respond to perturbations. In particular, cutaneous receptors and proprioception are paramount in the regulation of hand-object interactions (Johansson, 1991; Nowak et al., 2004). This study further examined the object handling skills of a person with massive peripheral deafferentation (consequent to sensory neuropathy) in order to improve knowledge of how people adapt/compensate for the loss of tactile/proprioceptive feedback.

Material and Method

Object handling abilities of a deafferented woman (GL) were compared to eight age-matched control subjects using three experimental tasks: 1) discrete vertical movements; 2) functional grasp and place and; 3) static holding with perturbations (taps) applied to the top of the object— firstly by the person themselves and secondly by the experimenter. Tasks 1 and 3 were performed under full vision and blinded conditions. Grip force and object acceleration/orientation were recorded using a portable, instrumented object.

Results

When compared to control subjects, GL demonstrated a global increase in grip force with diminished temporal coupling to changes in object acceleration and limited ability to maintain orientation of the handheld object in the absence of visual feedback. All phases of the grasp and place task were of greater duration for GL and a qualitatively distinct acceleration profile was observed. In the hold perturbation tasks, GL exhibited greater time delays between perturbation and grip force response but proved efficient at gauging grip force response with respect to the magnitude of the perturbation.

Conclusion

Whilst proprioceptive deficits limit temporal precision of grip force adjustments in object handling, visuomotor strategies and auditory feedback may assist in regulating object orientation during functional tasks and grip force scaling during perturbations. Future studies

might investigate the feasibility of augmented visual/auditory feedback devices to optimise object handling for people with somatosensory deficits.

Keywords

dexterity;somatosensory function;grip force

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-0900

LEFT UNILATERAL NEGLECT IS GREATER FOR NON-NAMABLE THAN FOR NAMABLE OBJECTS IN RECOGNITION MEMORY

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Introduction/Background

Patients with right hemisphere damage often fail to notice, respond to, and report on left sided stimuli, a condition termed unilateral spatial neglect (USN). In a previous study, we found that USN patients showed a significant contralesional disadvantage both in immediate recall and in delayed recognition of presented visual objects. However, successful verbal recall of an object immediately after its presentation eliminated to a large extent the effect of the spatial position on delayed recognition. Our aim in the present study was to assess whether the formation of a verbal memory trace is responsible for the attenuation of the lateralized bias in recognition of objects that have been verbally recalled.

Material and Method

To this end, we compared the immediate recognition performance of 16 USN patients and 16 control subjects for two categories of pictures: namable objects (fruits, furniture, etc...) vs. abstract colorful non namable pictures.

Results

Both healthy controls and USN patients showed a better mean general performance for objects than for abstract pictures (controls: discrimination rate d' namable objects: mean± standard deviation $3.20±0.86$, d' non-namable $2.05±0.73$; USN patients d' namable $1.61±0.68$; d' non-namable $0.98±0.58$). Laterality index ($LI = (d'_{Left} - d'_{Right}) / (d'_{Left} + d'_{Right})$) revealed a greater lateralized bias for abstract pictures than for object pictures in USN patients (USN patients: mean $LI_{namable}$: $-0.14 ± 0.15$, ; mean $LI_{non-namable}$: $-0.42 ± .27$; Controls: mean $LI_{namable}$: $-0.01 ± 0.06$; mean $LI_{non-namable}$: $0.06 ± 0.11$).

Conclusion

Semantic processing modulates the spatial biases exhibited by USN patients in recognition memory, even in the lack of an explicit verbal recall task; left-sided information is partially perceived and might be more accessible when coded dually - both verbally and visually. The use of verbalization as a rehabilitation technique in USN deserves further investigation.

Keywords

unilateral neglect; recognition memory; verbal tag

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-1216

STUDY ON EFFECTS BOTULINUM TOXIN TYPE A INJECTION FOR PATHOLOGICAL OF GASTROCNEMIUS IN RATS WITH SPINAL CORD INJURY

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Introduction/Background

To explore pathological characteristic of gastrocnemius (GM) and BBB motor assessment and MAS of ankle dorsiflexors in SCI model rats which were injected with BoNT-A in different time points. To make sure the proper time for BoNT-A injection

Material and Method

48 SD male rats (weight 260-280g) were allocated normal control group and 12w-control group, NS- injection group and BT- injection group in this study. NS/BT-therapy groups were divided into three subgroups separately (2w-NS, 2w-BT, 4w-NS, 4w-BT, 8w-NS, 8w-BT). No injection was applied in normal control group or 12w-control group. Saline / BoNT-A was injected in right GM in NS/BT-therapy group at different time points. MAS was used to assess the ankle dorsiflexors spasticity; BBB was used to assess the movement ability of lower limb. GM at right side of rats would be forwarded for pathological examinations, such as muscle weight, myosin heavy chain electrophoretic analysis.

Results

To compared with 12W-Contrl group, GM muscle weight decreased significantly in rats from BT injection group ($P \leq 0.05$). Comparison with 12W-Contrl group, MAS and BBB values were showed no significant difference in the two injection groups ($P > 0.05$). The differences in MyHC type ratio of GM between BT injection group and Nor-Contrl group and 12W-Contrl group were statistically significant ($P \leq 0.05$); and following the injection happened in the different time points, the changes in MyHC type ratio of GM were different in each BT injection subgroup

Conclusion

BoNT-A injection results in some changes in GM, such as decreased muscle weight, decreased GM/total weight. No obvious changes were happened in the ankle dorsiflexors spasticity level and the movement ability of lower limb in rats of BT/NS-injection groups. Earlier BoNT-A

intervention will cause significant changes on MyHC types characterize than later intervention in GM.

Keywords

Botulinum toxin type A; Spinal cord injury; Spasticity

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-1405

RESEARCH PROGRESSES AND PROSPECTS OF INTELLIGENT SENSING EQUIPMENT IN SPORTS REHABILITATION

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Introduction/Background

Sports rehabilitation is a combination of physical education and medical treatment. As a subdivision of rehabilitation medicine, the target group of the sports rehabilitation is patients who have skeletal muscle injuries and orthopedic surgeries but is gradually extending to people with chronic diseases and sub-health. There is a huge difference between the rehabilitative medicine and traditional one. The former regards the restoration and improvement of physical functions as its main task, and on the basis of recognizing the dialectical unity of structure and function, more attention is paid to the cure of functions, which provides an important supplement for many medical disciplines that are difficult to play a role.

Material and Method

In order to provide new ideas for the application of modern intelligent sensing technology in the field of sports rehabilitation medicine and human-machine integration, the paper analyzes international research literature on intelligent sensing equipment in the field of sports rehabilitation training.

Results

Through literature review, we find that smart sensor devices, especially those based on new materials or available to implant subcutaneously, have a significant influence on acquiring data efficiently, monitoring vital signs and body changes, guiding the training of body movements and recovering body functions rapidly.

Conclusion

With the idea of human-machine integration, the new intelligent sensing technology has exact, curative and obvious effects on body function improvements and quick recovery, showing an immeasurable application value and a broad application prospect in the field of sports medicine rehabilitation.

Keywords

Health Rehabilitation;Intelligent Sensing Technology;sports

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-1725

STUDY ON THE PROPERTY CAMK II IN TREADMILL EXERCISE ON MEMORY FUNCTION OF PARKINSON'S DISEASE

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Introduction/Background

To investigate the molecular mechanism of calcine kinase II (CaMKII) in improving the memory function of mice with Parkinson's disease, and to explore the possible mechanism of Treadmill Training to improve the memory function of PD and to provide a new idea for rehabilitation of patients with Parkinson's disease.

Material and Method

Frozen sections of healthy adult male C57BL / 6 mice were perfused and the expression of CaMKII and TH in hippocampus were detected by immunofluorescence double labeling method.

Results

The results of immunofluorescence showed that CaMKII and TH were expressed in all regions of hippocampus, and CaMKII and TH were expressed in the same nerve cell.

Conclusion

CaMKII / TH expression in the same neurons of hippocampus in normal physiological conditions may provide the possibility of regulating the activity of TH by CaMKII.2, Treadmill training by raising the level of CaMKII / TH in the hippocampus to increase the release of DA in the hippocampus, and ultimately improve the memory function of PD+no-Ex mice.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-1837

THE ROLE OF CORTICOSPINAL EXCITABILITY AND CORTICOSPINAL LESION LOAD IN RECOVERY OF MANUAL DEXTERITY AFTER STROKE: A LONGITUDINAL PILOT STUDY

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Introduction/Background

Impaired manual dexterity is frequently reported after stroke and thought to result from corticospinal tract (CST) damage. However, how CST function contributes to functional recovery remains unclear. In this prospective longitudinal study we investigated recovery of dexterity and CST injury and excitability in six patients undergoing conventional rehabilitation.

Material and Method

The Finger Force Manipulandum was used to measure dexterity components like force control, finger tapping and independence of finger movements. Transcranial magnetic stimulation was used to measure CST excitability, and structural MRI to calculate weighted-CST lesion load.

Results

Clinical tests showed complete recovery of gross motor hand movements in three patients by six months (maximal Fugl-Meyer Upper Extremity assessment score for hand). At six months, four patients had fully recovered in their ability to accurately control finger force. However, tapping speed and independence of finger movements remained affected in all patients at six months when compared to healthy subjects. Recovery in gross motor hand movements and finger force control occurred in those patients with smallest CST lesion load and recovery of CST excitability on TMS, although motor evoked potentials (MEPs) remained of smaller amplitude compared to those evoked from the contralesional side. The two patients with poorest recovery in manual dexterity showed persistent absence of MEPs and greatest structural injury to CST.

Conclusion

Although in a small patient sample, the findings show persistent deficits in manual dexterity after stroke despite good recovery of gross motor hand function and partial recovery of CST excitability, suggesting that CST integrity may be necessary but not sufficient for post-stroke recovery of dexterity.

Keywords

corticospinal tract lesion load;corticospinal excitability;manual dexterity recovery after stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-2716

CONSERVATIVE TREATMENT OF KNEE OSTEOARTHRITIS WITH BOTULINUM TOXIN TYPE-A. CLINICAL AND BIOLOGICAL ASSESSMENT.

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Introduction/Background

Osteoarthritis (OA) involves degradation of articular cartilage, subchondral bone and changes in periarticular soft tissues. It generates a local inflammatory process with increased pro-inflammatory cytokines (IL-1b, IL-6, TNF-a and IL-17) in synovial fluid and activation of catabolic enzymes (MMP-2,3 and 13 and ADAMT-4) that lead to cartilage destruction and failure of its renovation. There is a great need of biomarkers to define subsets of OA patients and to evaluate treatment outcome. Botulinum Toxin Type A (BoNT-A) has been identified as a potential novel analgesic. Inhibition of glutamate secretion by this treatment inhibits hyper-excitation secondary to nociceptive stimuli. The aim of this study was to correlate cytokine levels, demographics and clinical scores. Additionally, we evaluated clinical and biological effects of intra-articular BoNT-A treatment.

Material and Method

Experimental, longitudinal clinical trial. Diagnosis was confirmed using American College of Rheumatology criteria. Therapeutic approach: Knee Intra-articular incobotulinumtoxin A (100U) diluted in 1 mL of saline solution at days 0 and 90. Subjective assessment was evaluated using WOMAC and VAS scales. Cytokine levels (IL-2, IL-4, IL-6, IL-10, TNF-a, IFN-g and IL-17) were measured in serum and synovial fluid using Cytometric Bead Array. Association between clinical data and cytokines was analyzed using Spearman correlation, differences between groups using Mann Whitney-U test and basal and post-treatment changes in clinical scores and cytokines applying Wilcoxon signed-rank test.

Results

Kellgren-Lawrence score showed a negative correlation with TNF- α ($R=-0.363$, $p<0.05$) and IFN- γ ($R= -0.325$, $p<0.05$). TNF- α and IFN- γ could represent early knee degeneration markers in OA.

nt.

Table 1. Demographic data.	
Age, years: mean(SD) n=48 <i>Range</i>	63.4 (7.4) 49-76
Gender: female/male, n	41/7 (85.4/14.6%)
BMI, kg/m²:mean (SD) <i>Range</i>	28.98 (3.89) 20.75 - 36.76
Kellgren-Lawrence: n=48 Grade II Grade III Grade IV	10 (20.8%) 27 (56.3%) 11 (22.9%)
SD: standard deviation. The mean and standard deviation of the demographic variables are shown.	

Table 2. Clinical and physical evaluation. Values on day 0 and 90, n = 48.			
Rating scale	Day 0 N=48	Day 90 N=38	Wilcoxon: Z (value of p)
VAS, <i>median (p25 – p75)</i>	7 (7 - 8)	4 (2 - 6)	- 2.954 ($p<0.003$)* ^a
WOMAC, <i>median, (p25 - p75)</i>			
WOMAC pain	11.5 (7 – 14)	6 (5 – 8)	- 4.84 ($p<0.0001$)* ^a
WOMAC stiffness	3 (2 - 5)	3 (2 – 4)	- 2.307 ($p<0.021$)* ^a
WOMAC function	32.5 (20 - 41)	23 (17 – 30.25)	- 3.475 ($p<0.001$)* ^a
WOMAC total	48 (33 - 59)	31.5 (25 – 41)	-4.071 ($p<0.0001$)* ^a
The values of median and percentiles 25 and 75 are shown in all the variables as well as the values of the signed rank test of Wilcoxon, showing the value of Z as well as the value of p (2 tails). * = statistically significant difference, the value of p is indicated in each case. a = value of Z based on the positive ranges. It shows a decrease in the observations of day 90 compared to those of day 0. b = value of Z based on the negative ranges. It shows an increase in the observations of day 90 in comparison with those of day 0.			

Conclusion

BoNT-A therapy provides a safe conservative option to treat symptoms and physical constrain caused by knee OA. Cytokine levels correlate with radiological grading and should be further studied in human patients with focus on diagnosis and treatment assessment.

Keywords

Knee Osteoarthritis;Cytokines;Botulinum toxin

Conflict of interest

Disclosure statement:

In case of abstract acceptance, Merz Pharma will cover travel expenses of the presenting author. Merz Pharma did not participate on the design, excecution or analysis of this project.

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-2111

JUVENILE TREATMENT WITH A NOVEL MGLUR2 AGONIST/MGLUR3 ANTAGONIST COMPOUND LY395756 REVERSES LEARNING DEFICITS AND COGNITIVE FLEXIBILITY IMPAIRMENTS IN ADULTS IN A NEURODEVELOPMENTAL MODEL OF SCHIZOPHRENIA

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Introduction/Background

Schizophrenia (SCZ) is a neurodevelopmental psychiatric disorder, in which cognitive function becomes disrupted at early stages of the disease. Although the mechanisms underlying cognitive impairments remain unclear, N-methyl-D-aspartate receptors (NMDAR) hypofunctioning in the prefrontal cortex (PFC) has been implicated. Moreover, cognitive symptoms in SCZ are usually unresponsive to treatment with current antipsychotics and by onset, disruption of the dopamine system, not NMDAR hypofunctioning, dominates the symptoms. Therefore, treating cognitive deficits at an early stage is a realistic approach.

Material and Method

In this study, we tested whether an early treatment targeting mGluR2 would be effective in ameliorating cognitive impairments in the methylazoxymethanol acetate (MAM) model of SCZ. We investigated the effects of an mGluR2 agonist/mGluR3 antagonist, LY395756 (LY39), on the NMDAR expression with Western blot and function with electrophysiological recording in juveniles, as well as cognitive deficits in adult rats after juvenile treatment with cross-maze behavioral test.

Results

We found that gestational MAM exposure induced a significant decrease in total protein levels of the NMDAR subunit, NR2B, and a significant increase of pNR2BTyr1472 in the juvenile rat PFC. Treatment with LY39 in juvenile MAM-exposed rats effectively recovered the disrupted NMDAR expression. Furthermore, a subchronic LY39 treatment in juvenile MAM-exposed rats also alleviated the learning deficits and cognitive flexibility impairments when tested with a cross-maze based set-shifting task in adults.

Conclusion

Therefore, our study demonstrates that targeting dysfunctional NMDARs with an mGluR2 agonist during the early stage of SCZ could be an effective strategy in preventing the development and progression in addition to ameliorating cognitive impairments of SCZ.

Keywords

Schizophrenia;mGluR2/3 agonists;Cognitive function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B3 Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ISPR8-2346

ATYPICAL WITHIN-SESSION MOTOR PROCEDURAL LEARNING AFTER TRAUMATIC BRAIN INJURY BUT WELL-PRESERVED BETWEEN-SESSION PROCEDURAL MEMORY CONSOLIDATION

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Introduction/Background

Using the finger-to-thumb opposition sequence (FOS) learning task several stages of procedural learning have been defined in healthy subjects, nevertheless, in patients with traumatic brain injury (TBI) they remain obscure. Given the importance of skill acquisition in the rehabilitation of TBI patients, optimization of theory-based training protocols is vital to fulfill their potential for long-term plasticity.

The aim of this study was to characterize motor skill acquisition in TBI patients using the FOS paradigm in comparison with healthy subjects.

Material and Method

10 TBI patients (Trained TBI), 11 healthy participants were trained using a multi-session protocol: a single session was afforded in the first week of the study, and 4 daily sessions during the second. Performance speed and accuracy were tested before and after each session. Retention was tested one month later. 10 TBI patients (Control TBI) had no FOS training and were tested only at the beginning and after 6 weeks.

Results

The phases of skill learning found in healthy adults (acquisition, between-session consolidation gains and long-term retention) were identified in TBI patients. However, their time-course of learning was atypical. The Trained TBI demonstrated significantly larger speed increase compared with the TBI controls with no speed-accuracy tradeoff. During the second week, while training daily, the rate of improvement of the Trained TBI group was significantly slower compared with the Healthy controls, due to within-sessions losses in speed found only in this group.

Conclusion

The data presented allows for improved characterization of neuro-behavioral constraints on motor learning after TBI and enable caregivers to optimize treatment protocols

Keywords

Procedural learning; Traumatic Brain Injury; Skill acquisition

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B4 Miscellaneous

ISPR8-2558

HEMODYNAMIC RESPONSE OF THE CEREBRAL CORTEX DURING WALKING WITH TRUNCAL SUPPORT

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Introduction/Background

Upright bipedalism is one of the distinctive features that differentiates humans from quadrupedal mammals. Imaging studies using single photon emission computed tomography and functional near infrared spectroscopy have demonstrated that, in the frontal lobe, the primary sensorimotor area and the supplementary motor area were activated during walking. To understand cortical mechanisms related to truncal posture control during human locomotion, we investigated hemodynamic responses in the supplementary motor area with and without trunk orthosis. If the supplementary motor area is related to truncal control, we assume that the activation of supplementary motor area would decrease during gait with trunk orthosis because human need less control for truncal posture.

Material and Method

Twelve healthy human adults participated in this study. All participants provided their written informed consent prior to the study. We used functional near infrared spectroscopy to measure the activity of supplementary motor area while participants walked on a treadmill. All participants walked in two conditions: walk independently and walk wearing trunk orthosis. In each condition, task comprised five repetitions of walking for 40 sec each followed by 40 sec of rest as a block. We used oxy-Hb concentrations rather than deoxy-Hb concentrations because the former are reportedly related to brain activity.

Results

Compared with the baseline, the oxy-Hb level increased from the beginning of the trial but subsequently decreased and remained below the baseline before a trough in the rest phase. The peak value of the independent condition was higher than that of the trunk orthosis condition.

Conclusion

From our results, the supplementary motor area is related to truncal control during walking.

Keywords

Gait

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B4 Miscellaneous

ISPR8-0166

REAL-TIME CEREBRAL BLOOD FLOW MONITORING BY LASER SPECKLE CONTRAST IMAGING AFTER CARDIAC ARREST WITH TARGETED TEMPERATURE MANAGEMENT

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Introduction/Background

Brain injury is the main cause of mortality and morbidity after cardiac arrest (CA). Changes in cerebral blood flow (CBF) after reperfusion are associated with brain injury and recovery. Targeted temperature management (TTM) is the most effective treatment of CA patient. Despite of the advancement in detecting techniques, a real time CBF monitoring technique after CA and TTM, with a wide field of view and high spatiotemporal resolution, has not been established yet.

Material and Method

Fourteen rats underwent 7 min asphyxia-CA and were randomly treated with 6h post-resuscitation normothermic (36.5-37.5°C) or hypothermic (32-34°C) targeted temperature management (TTM) (N=7). rCBF was monitored by a laser speckle contrast imaging (LSCI) technique. Brain recovery was evaluated by neurologic deficit score (NDS) and quantitative EEG –information quantity (qEEG-IQ).

Results

There were regional differences in rCBF among veins of distinct cerebral areas. The rostral vein had a higher rCBF at the hyperemia phase (3-12 min after return of spontaneous circulation (ROSC)) and a lower rCBF at the hypoperfusion phase (40-90 min after ROSC) compared with both the middle and caudal veins. There were heterogeneous responses among the three components of the vascular system. The rCBF of capillaries increased more than that of veins and arteries in the hyperemia phase but decreased more in the hypoperfusion phase. Hypothermia immediately following ROSC led to a longer hyperemia duration, a lower rCBF at the hypoperfusion phase, a better NDS and a higher qEEG-IQ compared with normothermic TTM.

Conclusion

This is the first report on continuous CBF monitoring at the level of individualized vessels with high spatial and temporal resolutions in the setting of CA. The quantified rCBF response may help uncover the mechanism of injury and recovery after global brain ischemia and TTM.

Keywords

cardiac arrest;target temperature management;cerebral blood flow

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

B4 Miscellaneous

ISPR8-0482

PROPER METHODS FOR COLLAGENASE-INDUCED TENDINOPATHY ANIMAL MODEL

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Introduction/Background

The therapeutic advancements are limited for tendinopathy even though it is a common and might lead to disability. Collagenase injury model has been used for tendinopathy model. However, most of studies did not describe the precise protocols. We established proper injection volume and technique for collagenase induced tendinopathy model.

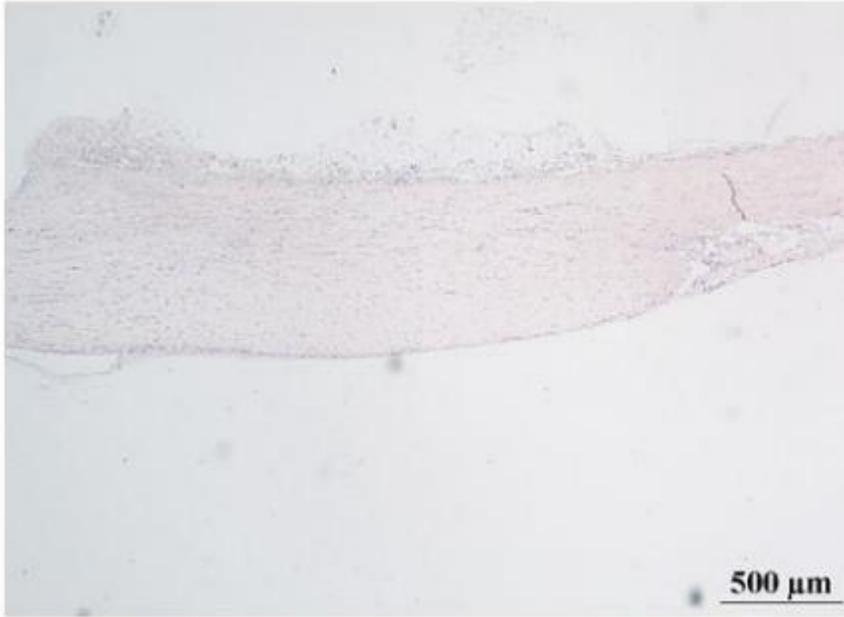
Material and Method

We injected type I collagenase to Achilles tendon of Eight-week old male Sprague-Dawley rats. We compared gross morphology and histologic findings according to injection volume, concentration, and injection technique.

Results

Injection of 62.5 units/ 10ul for each strip of two Achilles tendon strips, total 125 unit demonstrated homogeneous and adequate tendon injury. The homogeneity of tendinopathy was not improved with injection of > 125 unit. More than 10ul injection or blind injection without skin incision was not appropriate due to profuse leakage of injection materials. Injection of both strip in Achilles tendon made more homogeneous tendon damage than injection of one strip.

A



B

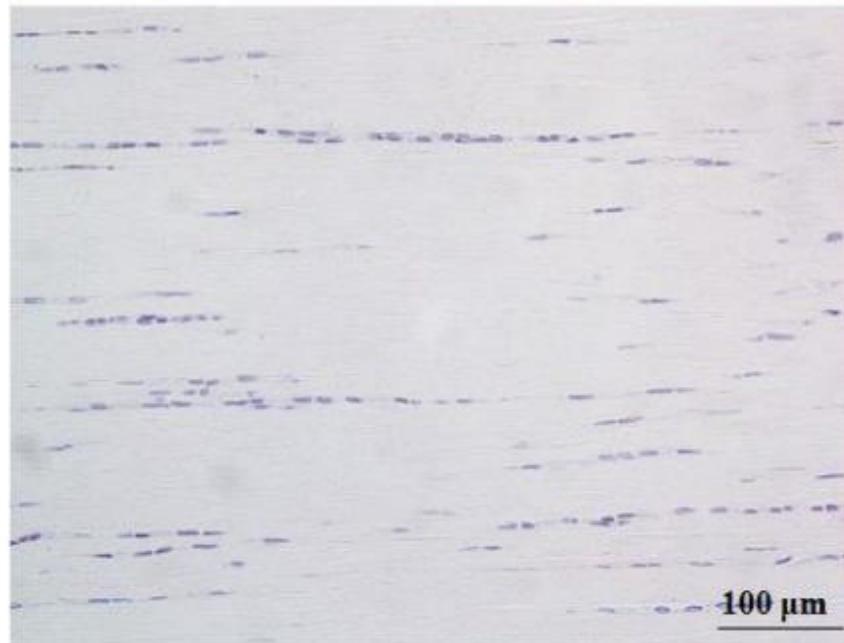


Fig 1. Control group. H&E staining of rat achilles tendon. Normal tendon fibrils are aligned.

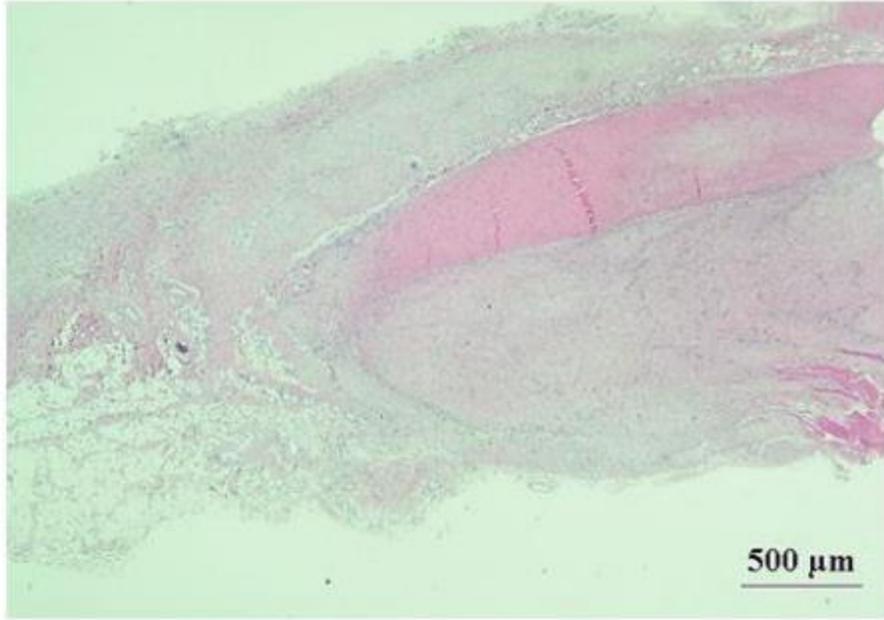
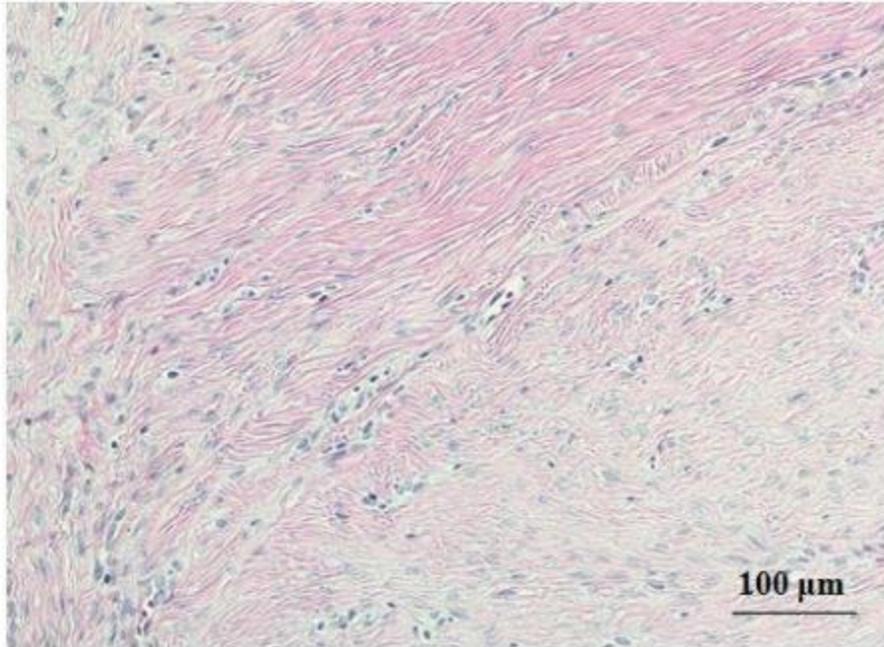
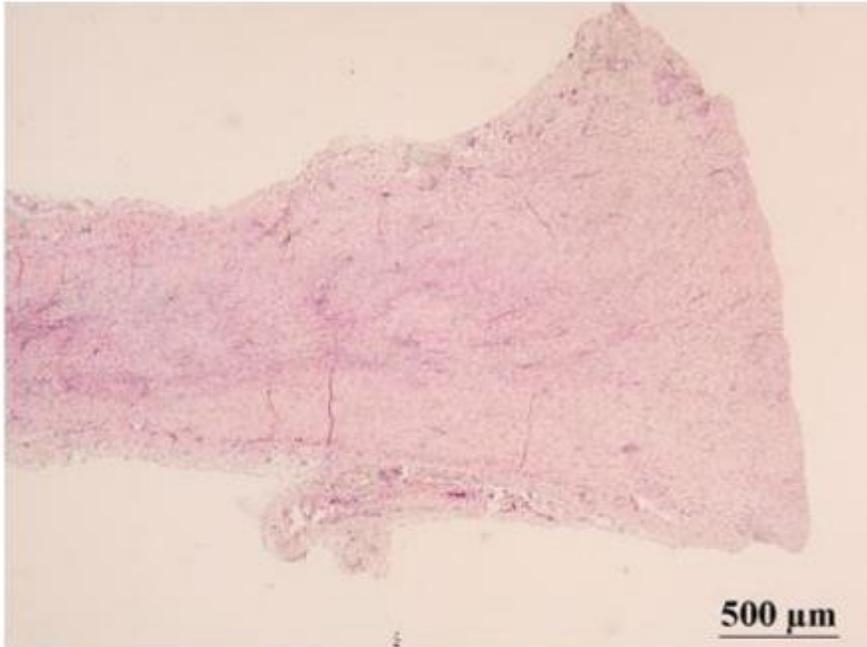
A**B**

Fig 2. H&E staining of single injection of 62.5UI for one strip. Injured one strip lost direction and tendon get thicker. Another strip was slightly affected and kept directional.

A



B

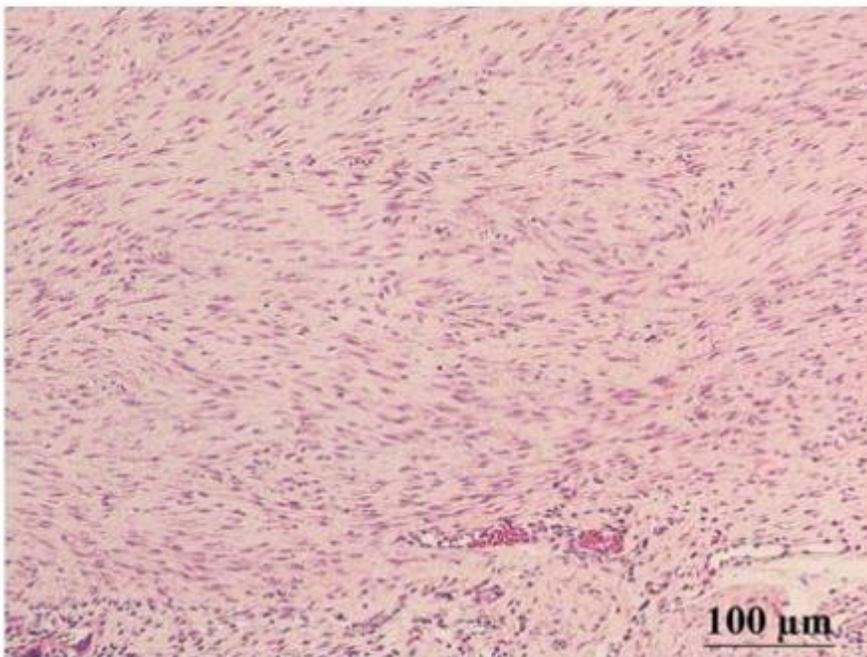


Fig 3. H&E staining of double injection of 62.5UI for each strip. Most of tendon area was damaged evenly and lost direction.

Conclusion

The injection with 10ul of 62.5UI collagenase type I for each strips of rat Achilles tendon under direct vision is effective way to make tendinopathy animal model. These precise techniques will be helpful in research fields of tendon injury and regenerative medicine.

Keywords

Collagenase;Tendinopathy;Animal model

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.01 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Mental Functions (including Neuropsychological Assessment)

ISPR8-2559

THE EFFECT OF NEW ARTICULATED SPLINT IN PINCH STRENGTH IN DE QUERVAIN SYNDROME: A COMPARATIVE STUDY

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Introduction/Background

For patients with De Quervain syndrome using thumb spica orthosis prescribing in acute stage of syndrome, is restricting. Many patients are dissatisfied with using the static hard design and find it difficult to perform their daily activities. The aim of this study is to compare the effect of modified articulated and conventional static orthoses on pinch power and functional abilities of hand in De Quervain syndrome.

Material and Method

In this quasi-experimental study, palmar and lateral pinch strength of the thumb, pain and functional abilities of hand, patient's satisfaction of orthoses, were evaluated after using modified articulated and conventional static orthosis in two groups. 24 women between 18 and 60 years with De quervain syndrome were randomly allocated in two groups of treatment. The first group used conventional static orthoses and the second one utilized modified articulated design. During the period of treatment, patients were encouraged to do their daily activities just like before.



Figure 2. Articulated orthoses, new design



Figure 1. Static orthoses, conventional design.

Results

Both orthoses improved palmar and lateral pinch strength of the thumb, pain level and functional abilities. In comparison of mentioned variables, there was no significant difference between two groups regarding to pain recovery and abilities improvement ($p>0.05$). However, the satisfaction level of the patients who had used the articulated orthosis was higher ($p<0.05$).

Conclusion

It seems, adding a joint to the static thumb spica leads to patient's relief and consequently to their satisfaction. This study shows that static and modified articulated thumb spica orthoses were similar regarding to the effect on pain and functional abilities of the patients with De Quervain syndrome. However, according to the higher rate of satisfaction of the patients utilizing articulated orthosis, the use of new articulated design of orthosis is recommended instead of the conventional static model.

Keywords

De Quervain syndrome;;long thumb spica;;DASH questionnaire

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.01 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Mental Functions (including Neuropsychological Assessment)

ISPR8-0826

PSYCHOMETRIC QUALITIES CHANGES WHEN UPDATING A TEST : COMPARISON OF D2 AND D2-R NORMALIZATIONS IN A CLINICAL FRENCH POPULATION

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Introduction/Background

Updating psychometric tests is essential for neuropsychologists to correctly detect cognitive disorders in clinical practice. However, data concerning the usefulness of this update is often incomplete, and there is a lack of knowledge on the changes of psychometric qualities, especially with clinical populations.

The publication of the d2-R (Brickenkamp, 2015) by Hogrefe LTD incited us to compare this new normalization with the first standardization, still widely used, of this attention test (Brickenkamp, 1998).

Material and Method

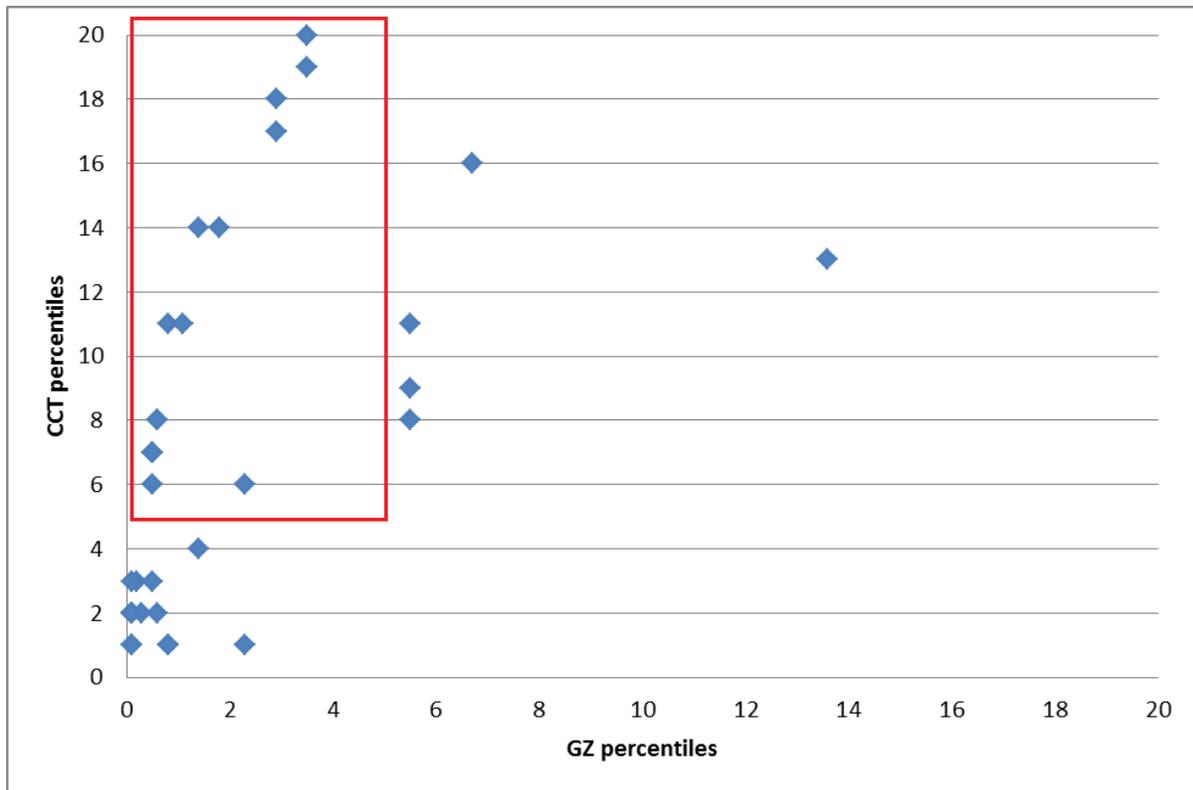
We performed this comparison on a clinical population of 64 adult patients (median age 60.5 years [IQR: 49.5-69]) 4 months post ICU discharge, to whom we administered the d2 attention test.

We converted the results in standard scores according to both rating systems and normalizations. We then performed statistical analyzes with the R software, and compared the difference of scores distributions on two rating criteria, namely a quantitative criterion (GZ and CCT) and a criterion also taking into account the quality of answers (KL and CC).

Results

We found good correlations for both criteria, confirming data provided by the publisher. But the Wilcoxon test shows a significant difference between GZ and CCT percentiles distributions ($w = 1256$, $p < 0.001$), not for KL and CC percentiles ($w = 1851$, $p = 0.35$).

The results analysis shows a divergence in the pathological zone of the curves: 51.4% of patients who are classified as "significantly slow" in the former norms, are now considered having a normal speed using the new norms (figure 1), thus showing great disagreement for slow processing diagnosis.



 Classification mismatch

Conclusion

Test publishers should provide more information on the clinical implications of their updates of psychometric tests, correlations cannot be sufficient to discuss sensibility and specificity changes.

Keywords

assessment ;updating ;statistics

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.01 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Mental Functions (including Neuropsychological Assessment)

ISPR8-0957

AGE AND GENDER DIFFERENCES IN MOTOR IMAGERY

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Introduction/Background

This study aimed 1) to investigate the age- and gender-related effect on motor imagery (MI) in vividness and chronometry capabilities, and 2) to examine the relationship between these two dimensions of MI.

Material and Method

Seventy-two (47% of men) good imagers including 41 young subjects (mean±standard deviation (M±SD): 22.1 ± 3.1 years) and 31 older subjects (M±SD: 72.6 ± 5.4 years) were assessed on MI vividness using the revised version of the Vividness of Movement Imagery Questionnaire (VMIQ-2) and on the performances on the real Timed Up and Go (rTUG) test and its imagined version (iTUG). The main outcome variables were the VMIQ-2 score (each modality) and the delta-TUG (difference between realized rTUG and iTUG).

Results

Mental vividness was affected by aging with a loss of visual dominance in favor of kinesthetic imagery in older subjects compared to younger ones ($p < 0.05$). rTUG and iTUG were performed faster in young than in old subjects, but no difference between the groups were found in chronometry measured by delta-TUG ($p > 0.05$). Vividness capabilities were similar between men and women, but chronometry was better in women than men (i.e. shorter delta-TUG; $p < 0.05$). VMIQ-2 scores were not associated with delta-TUG in the adjusted model, while only gender was significantly associated with delta-TUG.

Conclusion

This study was revealed 1) an age-related transfer from a visual to a kinesthetic MI ability, but no impact on mental chronometry; 2) a gender effect on mental chronometry without any impact on mental vividness ; 3) no association between vividness and chronometry capabilities.

Keywords

motor imagery;timed up and go;vividness

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.01 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Mental Functions (including Neuropsychological Assessment)

ISPR8-1042

VERIFICATION MOTOR AND COGNITIVE LOAD IN DUAL TASK INTERFERENCE

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Introduction/Background

Verification of motor and cognitive load in DTI can show the cognitive or motor impact separately on the DT to consist the coping strategies for the daily performances.

Material and Method

Computerized 3 experiments of cognitive (CT), motor (MT) and dual tasks (DT) were randomly tested in participants. All participants (n=46) were educated to press the button 1 (BT1) during preparing period. In CT, participants should release the BT1 as fast as possible if congruent letters in meaning and color of letter (Go), or they should press the BT1 consistently if incongruent. In MT, participants should release the BT1 and then tap the BT2 10 times as fast as possible if intuitive “o” was presented (Go), or press the BT1 consistently if “X” was presented. In DT, the Go trials of MT were changed with those of CT. The reaction time (RT) of correct releases of BT1 in all tasks, the button shifting time between BT1 release and BT2 press, and finger tapping rate in MT and DT were also measured. Then the ratio of RT of CR in CT and MT over DT were calculated to represent the DTI.

Results

The ratio of RT of CR in CT (78.6±13.0%, P < 0.001), and MT (74.2±10.1%, P < 0.001) were significantly decreased compared to those of DT (100%). The button shifting time of MT was 92.0±23.7% of that of DT (P = 0.027), and the finger tapping rate of MT was increased up to 106.1±19.1% of that of DT (P = 0.036).

Conclusion

Significant decreases in ratio of RT of CR in CT and MT show the both residual cognitive load and preceding motor load. The ratio of button shifting time and finger tapping rate in MT shows the superimposed tapering residual cognitive load on motor task.

Keywords

Dual task;Cognitive load;Motor load

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.01 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Mental Functions (including Neuropsychological Assessment)

ISPR8-1312

ASSESSING NEGLECT DYSLEXIA: USEFULNESS OF A COMPUTERIZED PROCEDURE.

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Introduction/Background

The neglect syndrome is frequently associated with neglect dyslexia (ND). ND is characterized by omissions or misread initial letters of words. In clinical settings, ND is usually assessed with "paper and pencil" tests. However, without controlling exposure time of items and patients' response time, ND could be unnoticed.

Material and Method

Our computerized procedure consists of four tasks: a single word reading task, a lexical and a semantic decision task and a text reading task. In each task, the time exposure of the items is controlled and we measured both the errors and the participants' response time. Twenty-eight brain-damaged patients, including 12 neglect patients, and 30 healthy neurological participants carried out this procedure.

Results

As expected, neglect patients produced more errors and are slower than brain-damaged patients and healthy volunteers and this especially during the single word reading task. This task shows 256 items: pseudo-words mixed with words (frequent or not, long or short) displaying in different ways (horizontal, vertical without anisometry or with a left or a right anisometry) with or without a spatial index. All this materiel permits error patterns to emerge according to the clinical state (neglect patients, brain-damaged patients or neurological healthy volunteers).

Conclusion

Our study aimed at proposing computerized tasks to help the diagnostic of neglect dyslexia. The neglect dyslexia could be observed with or without a severe neglect syndrome. In the case of a light neglect syndrome, having a computerized assessment is important in the ND diagnostic process especially as specific pattern have been observed based on the analyses of the error and the response time in the single word reading task.

Keywords

Neglect dyslexia; Computerized tasks

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.01 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Mental Functions (including Neuropsychological Assessment)

ISPR8-1976

VALIDATION IN HEALTHY SUBJECTS OF A CLINICAL PROTOCOL FOR THE EVALUATION OF FACIAL MICRO-EXPRESSIONS IN SEVERELY BRAIN INJURED PATIENTS AWAKENING FROM COMA

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Introduction/Background

Brain injured patients awakening from coma have a severe impairment of emotional facial expressions. Despite this impairment, very weak and brief facial expressions, called facial micro-expressions (FME), may persist whereas complete facial expressions are imperceptible. To test this hypothesis, we developed a complete system (device and method) to stimulate and analyze FME. We report here the validation of this system in an acute care unit environment with healthy subjects.

Material and Method

Eight healthy subjects were recorded in an intensive care unit. The multimodal stimulation paradigm consisted in 4 conditions acquired in distinct runs: no stimulation (control of spontaneous expressions), visual (PI), auditory (SO) and tactile (TA) stimulations. Each run lasted about 5 min, made of 6 random blocks of stimuli. To elicit FME, healthy subjects were asked to suppress their facial movements. Video were recorded with a high speed high resolution optical camera. Motion magnification was performed using Riesz pyramid algorithms. Native video (NV) and Magnified video (MV) were separately analyzed.

Results

On average, more than 9 FME per block of stimulation (intra-block FME rate) were detected in NV and MV. There was no statistical difference between NV and PV. The average duration of FME was $251,32 \pm 87,24$ ms. FME were also detected at a lower rate during the no stimulation run or the interblock periods ($p=0,026$ for intra-block versus interblock comparison). The intra-block FME rate was higher for PI (11,2) and SO (13,8) than for TA condition (5,3).

Conclusion

This study validate in healthy subjects the feasibility of this system to elicit and detect FME in a noisy (intensive care unit) environment. Following this validation, severely brain injured patients in coma condition will be repetitively recorded during their awakening period.

Keywords

coma awakening;brain injury;facial micro-expressions

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.01 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Mental Functions (including Neuropsychological Assessment)

ISPR8-2269

EXAMINATION OF VALIDITY AND RELIABILITY FOR PROTOTYPE SCALE TO ASSESS ACHIEVEMENT MOTIVE IN COMMUNITY-DWELLING HEALTHY OLDER ADULTS

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Introduction/Background

Long-term care prevention is an important issue, particularly given the rapidly growing aging society. For rehabilitation, an achievement motive defined as “the intention to achieve one’s goals while maintaining a standard of excellence” has been used as a means of assessment and intervention. The purpose of this study was to examine the validity and the reliability for a prototype scale for achievement motive in geriatric (P-SAMG) based on a scale for achievement motive in rehabilitation.

Material and Method

A cross-sectional study was conducted to measure the P-SAMG, which has been accepted content validity by 8 experts, classification and assessment of occupational dysfunction (CAOD) and comprehensive environmental questionnaire for the elderly (CEQ) in 238 older adults (average age: 76.1 ± 7.2) who participated in senior clubs. The factorial validity of P-SAMG was examined using exploratory structural equation modeling (ESEM) and a confirmatory factor analysis (CFA), the concurrent validity was assessed using correlative analysis, and the internal consistency reliability was assessed by calculating Cronbach’s alpha coefficient. This study was approved by the Ethical Review Board of Kibi International University and written consent was obtained from all the participants. This research was supported by JSPS KAKENHI Grant Number JP17H07288.

Results

ESEM presented good factor loadings (first factor of item 1–5: 0.93–0.56, the second factor of item 6–10: 0.95–0.54) and the CFA presented adequate fit indices. Moreover, P-SAMG indicated a moderate or low correlation with CEQ (0.42–0.20) and a partially low correlation with CAOD (–0.20 to –0.29). Cronbach’s alpha coefficient demonstrated a sufficient value for two factors and the whole scale (0.89–0.94).

Conclusion

These results demonstrated that P-SAMG is useful in the assessment of achievement motives for older adults without rehabilitation service. Management of material or personal environment

and appropriate occupational engagements was suggested as a valid strategy to improve motivation in this population.

Keywords

Achievement motive; Long-term care prevention; Elderly people

Conflict of interest

Disclosure statement:

This research was supported by JSPS KAKENHI Grant Number JP17H07288.

E-Poster Session - July 9-12 - Exhibition Area

C1.01 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Mental Functions (including Neuropsychological Assessment)

ISPR8-2478

EFFECTS OF UNSTABLE FOOTWEAR ON GAIT CHARACTERISTIC: A SYSTEMATIC REVIEW

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Introduction/Background

Over the last three decades, several designs of unstable footwear have been developed in the forms of shoes, sandals and boots. There are marketing claims related to the positive effects of these shoes on the training of lower limb muscles and improving gait. Many studies have been performed on the effects of unstable footwear on muscle activity, balance, posture, energy expenditure, lower extremity disorders, and bio-mechanical changes. The objectives of this study is to systematically review available evidence on the use of unstable footwear on kinetic and kinematic parameters to make specific recommendation for practice and future studies.

Material and Method

A computer-based search was undertaken through PubMed, Cochrane Library, Embase, PEDro, Web of Science and Google Scholar from 2005 to 2015. The included studies were appraised using McMaster Critical Review Form for Quantitative Studies.

Results

Ten studies (quasi-experimental design) were included (Table 1). A summary of the McMaster scores for each paper can be found in Table 2. All included articles scored moderate to high on McMaster critical appraisal tool. Statistically significant changes from wearing unstable footwear in chosen studies are available in (Table 3). Seven studies compared MBT with regular or running shoes and two investigated differences between unstable and stable sandals. Just one study collected barefoot variables and compared it with stable/unstable shoes. Two studies set a consistent gait speed of 5 km/h and in seven studies the participants were allowed to self-select their gait velocity. One study did not report any details about test condition.

Table1 Basic information of included studies

Ref	Author	Date	Title	Journal
1	Nigg et al.	2006	Effect of an unstable shoe construction on lower extremity gait characteristics	Clinical Biomechanics
2	Romkes et al.	2006	Changes in gait and EMG when walking with the Masai Barefoot Technique	Clinical Biomechanics
3	Stoggl et al.	2010	Short and Long term adaptation of variability during walking using unstable(MBT) shoes	Clinical Biomechanics
4	Buchecker et al.	2010	Lower extremity joint loading during level walking with Masai Barefoot Technology shoes in overweight males	Medicine & Science in Sport
5	Demura et al.	2012	Gait characteristics when walking with rounded soft sole shoes	The Foot
6	Taniguchi et al.	2012	Kinematic and kinetic characteristics of Masai Barefoot Technology footwear	Gait & Posture
7	Price et al.	2013	The effect of unstable sandals on instability in gait in healthy female subjects	Gait & Posture
8	Horsaket al.	2013	Effect of toning shoes on lower extremity gait biomechanics	Clinical Biomechanics
9	Choukouj et al.	2014	Effects of unstable footwear on stance pattern	Journal of Biosciences and Medicines
10	James et al.	2015	The biomechanical characteristics of wearing Fit Flop sandals highlight significant alterations in gait pattern	Clinical Biomechanics

Table 2 Methodological quality of studies using the McMaster Critical appraisal Form

Study design	Level	Items															Score	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
1	CCT	III -2	√	√	√	√	√	x	x	x	√	n/a	x	x	x	x	√	7/14
2	CCT	III -2	√	x	√	√	x	x	√	√	n/a	√	√	√	√	x	x	9/14
3	FU/RCT	II	√	√	√	√	x	x	√	√	n/a	√	√	√	x	x	√	10/14
4	CCT	III -2	√	√	√	√	x	x	√	√	n/a	√	√	√	x	x	√	10/14
5	CCT	III -2	√	√	√	√	x	x	√	√	n/a	n/a	√	√	x	x	√	9/13
6	CCT	III -2	√	√	√	√	x	x	√	√	n/a	√	√	√	√	x	√	11/14
7	CCT	III -2	√	√	√	√	x	x	√	x	n/a	x	√	√	√	x	√	9/14
8	CCT	III -2	√	√	√	√	√	x	√	√	n/a	√	√	√	√	x	√	12/14
9	CCT	III -2	√	x	√	√	x	x	√	x	n/a	n/a	√	√	x	x	x	6/13
10	CCT	III -2	√	√	√	√	√	x	√	√	n/a	√	√	√	x	x	√	11/14

Level of evidence (base on NHMRC hierarchy [30]); CCT= control clinical trial; FU/RCT= follow up study from randomized control trial
 √=yes; x = no/not reported; n/a= not applicable
 McMaster Items: 1.Study purpose clearly stated; 2. Background literature reviewed; 3. Appropriate research design; 4. Sample described in detail; 5. Sample size justified; 6.Outcome measurer reliability reported; 7. Outcome measurer validity reported; 8. Intervention described; 9.Contamination avoided; 10.Co-intervention avoided; 11.Results reported in terms of statistical significance; 12. Appropriate analysis method; 13.Clinical significance reported; 14.Drop-outs reported; 15.Appropriate conclusion

Table 3 Significant result of included studies

Ref	Time- distance	Kinematic			Moment	Kinetic	
		Ankle	Knee	Hip		GRF	COP
1	Not measured	↑ DF in St	Not significant	Not significant	Not significant		↑ A_P and M_L
2	↓ of cadence, speed, stride & step length ↑ of stride time & single support	↑ DF in IC ↓ DF in TS	↑ flex in IC ↓ peak flex and ROM	↓ peak flex, ext and ROM		Not measured	
3	No significant at pre test	↑ flex+ eve/inv	↑ flex & ext Not significant at post test	↑ flex & ext + abd/ add	Not measured		↑ M-L
4	Not significant		Not significant		↓ knee add	↓ medial	Not measured
5	↑ of speed, walking angle, stance time, step length & width	Similar DF in unstable & stable shoe> bare foot	Similar ROM in unstable shoe and bare foot < stable shoe			Not measured	
6	Not significant	↑ DF in St	↑ flex in IC	↓ ext in TS	↓ ankle DF in IC & PF in TS	↓ of both peak	Not measured
7	↑ of swing time ↓ of double support time		Not significant		Not measured		↓ A-P
8	↑ of speed & stride length	↑ DF in Sw ↓ DF in St	↑ flex in St ↓ flex in Sw	↑ flex in IC	↑ hip in St	↑ of first peak	Not significant
9	Not significant		Not measured		Not measured	↑ of both peak	Not measured
10	Not significant	↑ DF in IC ↓ DF in TS	↓ peak flex and ROM	Not significant	↓ ankle DF ↓ kne ext/flex ↑ hip ext/flex	Not measured	↑ A/L at IC ↑ M in Ts

The data was reported wherever; the comparing results of the unstable footwear vs. the control footwear were significant. The alpha level was set (0.05) for all the studies.
 GRF= ground reaction force; COP= center of pressure; ↑ = increase; ↓ = decrease; A-P = anterior/posterior; M-L = Medio/lateral ; DF= dorsiflexion; Flex= flexion; Ext= extension; eve= eversion; inv= inversion; abd= abduction; add= adduction; IC= initial contact; St= stance; Ts= terminal stance; Sw= swing

Conclusion

Considering kinetic and kinematic interaction of variables in the included studies revealed that confounding factors may have high impact on biomechanical findings of unstable footwear. Then, more homogeneous studies, considering these factors, should be implemented in future studies to inform the best clinical practice.

Keywords

Unstable footwear;Kinetics;Kinematics

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.02 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Sensory Functions and Pain

ISPR8-0628

PRELIMINARY DATA OF A NEUROSELECTIVE STUDY OF SENSORY PATHWAYS IN SPINAL CORD INJURED (SCI) PATIENTS

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Introduction/Background

Analyze the integrity of sacral area sensory pathways in all its components (A β , A δ and C fibers). We evaluated the relative activation state of each single fiber and correlated these data with the clinical conditions, especially the AIS (American spinal cord injury association Injury Score), to define the grade of SCI completeness.

Material and Method

We examined 25 patients affected by acute post-traumatic SCI and admitted between June 2015 and 2016. Lesion level: 10 quadriplegic (all incomplete) and 15 paraplegic patients (8 complete, 7 incomplete); average age 36,2y (12-71); time between traumatic event and evaluation <1y. Examination: AIS grading; evaluation of sensory fibres with the technological device Neurometer®; we analysed the pudendal nerve (Penis Dorsal nerve in male and Superficial Perineal nerve in female).

Results

In 3 of the 8 AIS A patients we found out a residual activity of sensory fibres (normal activity of C fibres and inactivity of A β fibres) showing a discrepancy in AIS score between clinical and instrumental findings (discomplete lesions). Accidentally we found out that this typical sensory fibres activation pattern (observed in 13 of 25 patients) was also associated with non-responder, high-grade neuropathic pain (NRS 8-10/10).

Conclusion

The presence of a discomplete lesion could lead to a different rehabilitation programme; early identification of patients presenting a typical fibers activation pattern associated with neuropathic pain could give us the opportunity to design a tailored therapy before the onset of chronic pain and overactivities; could the neuromodulation of inactive A β fibers be a new therapeutic target?

Keywords

Sensory;Pain;Fibers

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.02 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Sensory Functions and Pain

ISPR8-0631

QUANTITATIVE ULTRASOUND OF TRAPEZIUS MUSCLE INVOLVEMENT IN MYOFASCIAL PAIN: COMPARISON OF CLINICAL AND HEALTHY POPULATIONS USING TEXTURE ANALYSIS

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Introduction/Background

Myofascial pain syndrome (MPS) diagnosis is currently a source of contention amongst clinicians. Physicians, chiropractors, and registered massage therapists do not agree on the criteria they deem diagnostic of MPS. Ultrasound imaging is widely used in medicine to qualitatively identify anatomical structures and lesions. Quantitative ultrasound methods such as texture features have been used to characterize normal and pathological tissue in muscular disorders. We propose that quantitative ultrasound imaging techniques can be used to differentiate muscle with myofascial pain diagnosis from healthy controls. Therefore, we assessed whether texture features could differentiate upper trapezius muscle in patients with MPS relative to healthy participants.

Material and Method

We collected B-mode ultrasound images of the upper trapezius muscle in 15 healthy participants and 17 patients with MPS. The following texture features were extracted from the images: blob area, blob count, and 10 local binary patterns (LBP) (Figure 1). A principal components analysis (PCA) was performed to reduce the features to those that accounted for the most variability in the images (Table 1). A MANOVA was then performed to determine whether healthy or MPS group membership could be differentiated by the reduced features (Table 2).

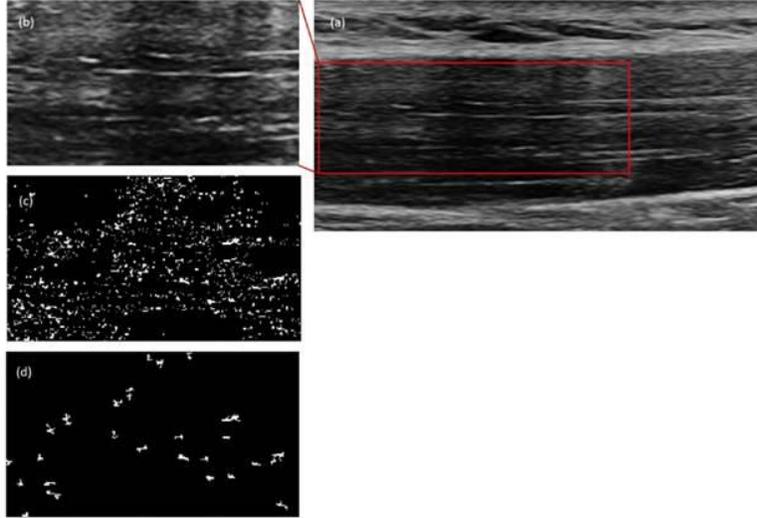


Figure 1: The B-mode Ultrasound grayscale image of the upper trapezius muscle (panel a). Panel (b) shows the selected region-of-interest for the blob analysis. The first round of identified blobs that have echo intensities outside the specified range is given by panel (c). These blobs are filtered on the basis of their size using the specified area threshold. These residual blobs (shown in panel (d)), are counted and measured.

Component	Highest loading variables	% of Variance
Component 1	LBP10, LBP6, LBP2	80.25
Component 2	Blob area, Blob count	12.30
Cumulative variance	92.55%	

Table 1: Rotated Component Solutions

Feature	Healthy mean (SD)	Myofascial Pain mean (SD)
Blob Area	844.50 (1723.21)	1121.92 (1181.64)
Blob Count	47.07 (21.31)	20.96 (10.0)
LBP2	0.02 (0.00536)	0.0001 (0.00001)
LBP6	0.45 (0.09038)	0.0048 (0.00081)
LBP10	0.05 (0.01)	0.000005 (0.000015)

Table 2: MANOVA results for identified features between healthy and myofascial pain groups.

Results

The PCA identified two components that accounted for 93% of the variability. Features with the highest loading factors included: LBP2, LBP6, LBP10, blob area, and blob count. All features but blob area could statistically differentiate healthy from myofascial pain groups ($p < 0.001$).

Conclusion

Texture features are capable of differentiating muscle tissue in patients with MPS relative to healthy individuals. These findings may be used to develop an accurate diagnostic tool for clinicians to diagnose patients with MPS.

Keywords

musculoskeletal conditions; diagnosis of neurological; musculoskeletal and movement related functions

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.02 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Sensory Functions and Pain

ISPR8-0824

ASSESSMENT OF THE BLOB AREA AND ECHOINTENSITY RELATIVE TO SUBCUTANEOUS ADIPOSE THICKNESS IN ULTRASOUND IMAGES OF THE UPPER TRAPEZIUS IN PATIENTS WITH MYOFASCIAL PAIN

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Introduction/Background

Myofascial pain is a chronic pain disorder that affects 85% of the general population at least once in their lifetime. Individuals with myofascial pain show patterns of deconditioning, which is associated with weight gain, loss of muscle strength, and increased intramuscular adipose. The area of regions with homogenous echointensity (blob area) in ultrasound images has been previously used to characterize proportions of contractile and non-contractile tissue within muscle. Therefore, the objective of this study was to assess the association between subcutaneous adipose thickness and the echointensity within the blob and size of the blob areas.

Material and Method

Blob echointensity, blob area, and subcutaneous adipose thickness were extracted from twenty-nine ultrasound images of the upper trapezius from healthy participants, nineteen from patients with latent myofascial pain, and twenty-one from active patients. Linear regressions between echointensity and blob area were computed, controlling for adipose thickness within each group. A k-means cluster analysis was performed on blob echointensity, blob area, and adipose thickness within each group to assess for patterns.

Results

There was a significant association between echointensity and blob area while controlling for fat thickness in healthy, latent, and active participants (table 1 & visual representation figure 1). The association between fat thickness and echointensity or blob area was significant but very small ($r < 0.055$). The k-means cluster revealed 3 clusters within each participant group that differed at the third cluster between groups.

Group	Pearson's coefficient
Healthy	-0.44
Latent	-0.45
Active	-0.47

Table 1. Correlations between blob echointensity and blob area controlling for subcutaneous adipose thickness

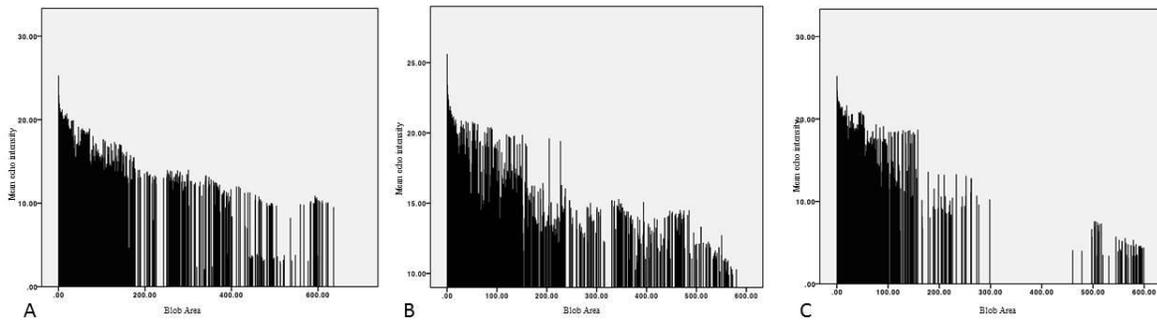


Figure 1: Visual representation of blob area and mean echo intensity in A) healthy B) latent C) active groups

Healthy	Cluster 1	Cluster 2	Cluster 3
Blob Area	0.86	110.42	395.64
Echointensity	20.53	9.96	13.42
Fat Thickness	2.98	3.87	3.28
Latent	Cluster 1	Cluster 2	Cluster 3
Blob Area	0.69	150.54	436.66
Echointensity	21.30	14.98	12.68
Fat Thickness	3.58	3.85	3.76
Active	Cluster 1	Cluster 2	Cluster 3
Blob Area	0.91	110.82	557.07
Echointensity	20.91	13.98	4.64
Fat Thickness	4.08	4.07	4.43

Table 2. K-means cluster results for blob echointensity, blob area, and subcutaneous adipose thickness

Conclusion

There seems to be a pattern of larger blob areas with lower echointensity in the muscle images as they progress between healthy to latent to active, that is not associated with fat deposition. This enlarging region may represent non-contractile regions with the muscle associated with the pathophysiology of myofascial pain such as inflammatory exudate.

Keywords

musculoskeletal conditions;diagnosis of neurological;musculoskeletal and movement related functions

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.02 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Sensory Functions and Pain

ISPR8-0827

DIFFERENTIATING VARYING DEGREES OF CENTRAL SENSITIZATION IN CHRONIC WIDESPREAD PAIN USING QUANTITATIVE ULTRASOUND

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Introduction/Background

Chronic widespread pain affects almost 11.4-24% of the general population. Central sensitization (CS) is thought to be the mechanism underlying chronic pain. The goal of this study was to determine whether ultrasound texture features (statistical measure of echointensity patterns) can differentiate chronic pain patients with varying degrees of CS, as our previous work has shown that texture features can differentiate patients with myofascial pain.

Material and Method

Thirty patients with chronic widespread pain that fulfilled the 2016 fibromyalgia diagnostic criteria were included in the study. Patients completed the CS inventory, a questionnaire that indicates the degree of CS—mild, moderate, severe, and extreme. Patients' upper trapezius muscle was then imaged using B-mode ultrasound. Ninety-one texture features were extracted from the acquired images, and a principal components analysis (PCA) was performed to reduce the features into components that accounted for a large proportion of the variability among the images. A MANOVA and post hoc analyses were then performed on the features with the top three loading factors to determine whether they could differentiate patients with mild, moderate, severe, or extreme central sensitization.

Results

The PCA identified eight components that account for 95% of the variability among the images. The MANOVA and post hoc analyses revealed that all extracted features could differentiate between two or more of the groups, and twelve variables could specify group membership (table 1 & a visual representation in figure 1).

Differentiation	Texture Features
Differentiates mild CS from moderate, severe, and extreme	LGRE
Differentiates moderate CS from mild, severe, and extreme	Blob mean
Differentiates severe CS from mild, moderate, and extreme	IMC2 13 degrees, Sum entropy 135 degrees, Sum of Squares Variance 0 degrees, SRE, RP, RLN, Average, Blob count
Differentiates extreme CS from mild, moderate, and severe	Difference variance 45 degrees, IMC2 135 degrees, Sum Average 0 degrees, SRE, RP, RLN

Table 1: MANOVA results that differentiate between the groups.

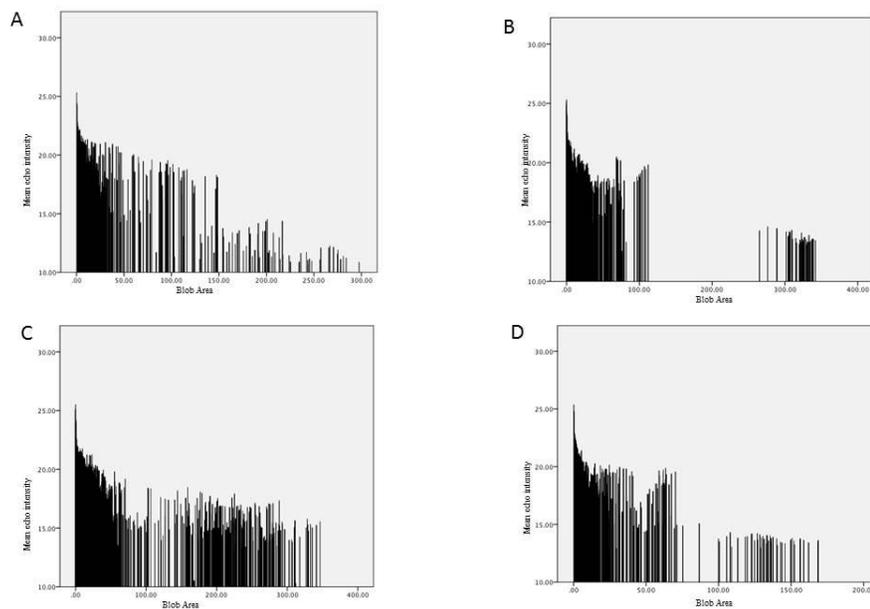


Figure 1: Visual representation of blob area and mean echo intensity in A) mild B) moderate C) severe D) extreme groups

Conclusion

Texture feature analysis of the upper trapezius muscle can differentiate varying degrees of CS using a clinical classification system. Texture feature analysis of muscle should be further explored as a diagnostic marker of chronic widespread pain severity and development.

Keywords

musculoskeletal conditions;diagnosis of neurological;musculoskeletal and movement related functions

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.02 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Sensory Functions and Pain

ISPR8-0828

QUANTITATIVE ULTRASOUND USING TEXTURE ANALYSIS OF MYOFASCIAL PAIN SYNDROME IN THE TRAPEZIUS

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Introduction/Background

Myofascial pain syndrome (MPS) is a prevalent pain disorder characterized by myofascial trigger points (MTrP), which are stiff contracted regions within a taut band of muscle. Clinically MTrPs can be differentiated in two groups, latent and active. Active MTrPs induce spontaneous pain whereas latent MTrPs do not. Clinicians disagree on the criteria that differentiate active and latent MTrPs, necessitating an objective method for their differentiation. Our previous work has shown that ultrasound texture features can differentiate between patients with MPS and healthy individuals in the upper trapezius muscle. The objective of this study was to determine whether ultrasound texture features can differentiate between active MTrPs, latent MTrPs, and healthy individuals in the upper trapezius muscle.

Material and Method

We collected B-mode ultrasound images of the upper trapezius muscle from 18 latent, 19 active, and 24 healthy participants. Ninety-two Haralick, Galloway, and histogram related texture features were extracted from the images. A principal components analysis (PCA) was performed to reduce the features into components that accounted for the most variability among the images (Table 1). A MANOVA and post hoc analyses were then performed to determine whether healthy, latent, or active group membership could be differentiated by the reduced factors (Table 2).

Component	Top Three Loading Texture Features for Each Component	% of Variance Captured by Component
Component 1	Autocorrelation 90 Degrees, Autocorrelation 135 Degrees, Difference Variance 45 Degrees	29.99%
Component 2	Inverse Difference 0 Degrees, Entropy 45 Degrees, Sum of Squares 135 Degrees	29.55%
Component 3	Information Measure of Correlation 2 45 Degrees, Sum of Squares Variance 0 Degrees, Difference Entropy 135 Degrees	10.88%
Component 4	Contrast 135 Degrees, Difference Entropy 90 Degrees, Maximum Probability 45 Degrees	9.07%
Component 5	Skew, RP, RLN	6.95%
Component 6	LBP Entropy, GLN, Cluster Prominence 135 Degrees	3.84%
Component 7	Cluster Prominence 90 Degrees, Correlation 0 Degrees, Correlation 45 Degrees	3.12%
Component 8	Blob Count, Blob STD	1.52%
Cumulative Variance	94.92%	

Table 1: A summary of the components and the highest ranked three features.

Can differentiate between healthy, latent MTrP, and active MTrP groups	Can differentiate between healthy and latent MTrP groups	Can differentiate between healthy and active MTrP groups	Can differentiate between latent and active MTrP groups
Correlation 0 Degrees	Entropy 45 Degrees	Autocorrelation 90 Degrees	Autocorrelation 90 Degrees
Correlation 45 Degrees	Inverse Difference 0 Degrees	Autocorrelation 135 Degrees	Autocorrelation 135 Degrees
Cluster Prominence 90 Degrees	Sum of Squares Variance 135 Degrees	Contrast 135 Degrees	Contrast 135 Degrees
Cluster Prominence 135 Degrees	GLN	Difference Entropy 90 Degrees	Entropy 45 Degrees
Difference Entropy 135 Degrees	RP	Difference Variance 45 Degrees	Difference Entropy 90 Degrees
Information Measure of Correlation 2.45 Degrees	RLN	Maximum Probability 45 Degrees	Difference Variance 45 Degrees
Sum of Squares Variance 0 Degrees	Skew	LBP Entropy	Inverse Difference 0 Degrees
Blob Count	LBP Entropy		Maximum Probability 45 Degrees
Blob STD			Sum of Squares Variance 135 Degrees
			GLN
			RP
			RLN
			Skew

Table 2: Texture features that differentiate between the clinical groups as listed above.

Results

The PCA identified eight components that explain 95% of the variability in the images. The features with the three highest loading factors in each component were included in the MANOVA, for a total of 23 features. All features could differentiate between at least two of the latent, active, or healthy groups.

Conclusion

Ultrasound texture features can differentiate between upper trapezius tissue in patients with active and latent MTrPs, and can differentiate these clinical groups from healthy tissue. Ultrasound should be further explored as a clinical diagnostic modality for differentiating MPS patients.

Keywords

musculoskeletal conditions; diagnosis of neurological; musculoskeletal and movement related functions

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.02 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Sensory Functions and Pain

ISPR8-1969

USEFULNESS OF WERIUM® DISPOSITIVE FOR DESIGNING THE MOST EFFECTIVE METHOD OF INTERVENTION IN PATIENTS WITH NECK PAIN: A PILOT STUDY.

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Introduction/Background

Neck pain is one of the most common reason of consultation in Rehabilitation, especially after traffic accidents. Apart from pain, there are a number of symptoms that usually accompany the pain, like restricted of mobility, headache and dizziness. Of these, the only objectivize factor is restriction of mobility.

Werium dispositive is an evaluation system to capture patient movements. It can quantify the range of movement in all axes. Moreover, it also can quantify the variability of movements, providing valuable input about veracity and patient's cooperation. It is not a diagnostic test, it is a tool to support the patients diagnosis.

The aim of this work is to demonstrate that WeriumÒ dispositive can provide useful information for designing the most effective method of intervention in patients with neck pain.

Material and Method

A prospective, analytical and observational study. All patients with neck pain diagnosed in any of Medical Rehabilitation Centre of ICOT group were selected.

All patients were evaluated by the doctor and physiotherapist and divided into two groups. Control groups received the common treatment, based on trigger point treatment. Intervention group received a specific treatment routed to improve range of motion.

Results

A group of patients were discarded because they were uncooperative. All patients of both groups improved the measurement in the range of movement from the first ten physiotherapy sessions. The intervention group obtained more improvement in the specific range that was individually treated, but we did not have enough patients to draw statistically significant results, we must to increase the sample size. A calibration problem was founded in one dispositive and it was solved on the go.

Conclusion

Werium dispositive could be a successful tool for designing more effective intervention's methods in patients with neck pain, further studies are needed to follow up theses promising results.

Keywords

cervical pain;evaluation;range of movement

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.03 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Voice and Speech Functions

ISPR8-2183

MUSICAL COMMUNICATION-COMMUNICATIVE MUSIC VIKTORIA TOTH K. DR. KATALIN KANTOR CHILD REHABILITATION DEPARTMENT, HOSPITAL OF JOSA ANDRAS, NYIREGYHAZA, HUNGARY

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Introduction/Background

There can be several reasons for the lack of communication or delayed speech- development: damage in the CNS, autism, social or audiological or psychological problems. After finding out about the causes -during the rehabilitation- with the use of music therapy I promote and create the environment, where non-verbal and verbal communication begins and is achieved. It is of vital importance to enable the child to express themselves, to get in touch with others and understand others, irrespective of the causes hindering these activities. By using music one can express ideas without the limitations of speech, and this is how music becomes the tool of communication.

As for the therapy, it gives the opportunity for us to start working in a pre-speech or without-speech environment. Communication can take place without the active participation of the communication partner or without their intention to participate, e.g. seriously injured people: by musically reflecting and following their movements, mimics and body postures. The symbolism of musical instruments and sounds enable music to improve communication and following pre-verbal communication, speech can start to develop.

Another vital field of the application of music therapy is forwarding emotional contents and messages, actualising feelings.

All these can be the starting points and the beginnings of healing processes of overcoming conflicts and traumas: it reduces anxiety and releases hindrance. Music crosses boundaries by acting as a medium between two players, creating a mutual third party. An important feature of music in therapy is activity, emotional participation, joint experience and going through catharsis. It is not seeking after definite results; technical perfection is neither a condition, nor an objection.

Material and Method

x

Results

x

Conclusion

x

Keywords

music therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.04 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Cardiovascular, Haematological, Immunological, and Respiratory Systems

ISPR8-0313

DOES THERAPEUTIC EDUCATION OPTIMIZE THE REHABILITATIVE MANAGEMENT OF HEMOPHILIAC PATIENTS?

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Introduction/Background

Hemophilia is a hemostatic disorder that causes hemorrhages in the joints and muscles. Physical exercise is often put in place to facilitate convalescence after bleeding, and to improve joint function in the presence of arthropathy.

An Implementation of a personalized therapeutic education program (TEP) for the hemophiliac patient to help them acquire and maintain skills to improve their quality of life and prevent the complications inherent in the disease. Sensitization, information and learning sessions concerning illness, treatment, physiotherapy and self-education were planned and organized in collaboration with fellow hematologists.

Objective: To assess the contribution of TEP in improving hemophilia patient's knowledge about disease management and prevention of comorbidities.

Material and Method

12 hemophilia patients participated in TEP sessions. Sessions were individual or collective provided by a multidisciplinary team. The educational tool is represented by slides, videos containing information (Arabic and French), diagrams and images.

A summary booklet of the main simplified self-exercises to be performed at home and the frequency of their achievement was provided to each patient in order to improve observance and adherence to the program.

Results

12 adult hemophiliacs: - 11 patients with hemophilia A (10 cases of severe hemophilia and 01 case of minor hemophilia), - 01 case of severe hemophilia B; the average age of patients is 30.67 years with extremes of 17 and 40 years. 100% of patients were unaware of the importance of self-rehabilitation exercises. 80% were unaware of the risk of the disease's complication. 60% did not know the importance of rehabilitation in improving life quality. 50% were unaware of the precautions to take in case of acute bleeding.

Conclusion

The TEP is considered as an essential element in the management of hemophilic patients, but currently remains a very marginal approach in the care process, hence the interest of integrating it into our therapeutic arsenal.

Keywords

Hemophilia;therapeutic education;comorbidity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.04 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Cardiovascular, Haematological, Immunological, and Respiratory Systems

ISPR8-0587

CARDIOPULMONARY REHABILITATION IN A PATIENT WITH THYROID STORM COMPLICATED BY DECOMPENSATED HEART FAILURE DURING VENTILATOR WEANING

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Introduction/Background

Thyroid storm is a medical emergency characterized by decomposition of one or more organ systems. Associated cardiac involvement carries poor prognosis. Patients with thyroid storm complicated by decompensated heart failure have higher overall morbidity and mortality rates. Cardiopulmonary rehabilitation can enhance lung ventilation and activity endurance.

Material and Method

We collected his history, physical assessment, nursing care with physical activity, and performed literatures review.

Results

This paper described the nursing experiences of caring for a 33 y/o male patient with thyroid storm complicated by decompensated heart failure during ventilator weaning at our intensive care unit. The caring period was from May 8, 2017 to July 1, 2017. During the hospitalization, nursing records, medication, fluid intake, vital signs and peripheral edema were used as indicators to assess the improvement of heart failure symptoms. Systematic execution of cardiopulmonary rehabilitation in conjunction with dietary and medical therapy was given to progressively enhance the patient's cardiopulmonary functions. During this period of hospitalization, we provided physical activities, with individualized rehabilitation program and maintaining support system to help him wean off the ventilator. The patient had successfully wean off the ventilator and was extubated on June 23, 2017. He was later transfer to the

general ward on July 1, 2017. After education of next phase cardiopulmonary rehabilitation and cardiologist follow-up, he was discharged home on August 4, 2017.

Conclusion

Hyperthyroidism and thyroid storm affect cardiac circulation. Cardiopulmonary rehabilitation, especially exercise-based rehabilitation, is a crucial strategy to improve activity tolerance in heart failure patients. Exercise-based rehabilitation can be applied to increase functional capacity, delay the progression of disease and reduce re-admission rate or mortality rate. We wish to share our nursing experience as a reference for peers when facing similar cases.

Keywords

Cardiopulmonary Rehabilitation;Heart Failure ;Ventilator Weaning

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.04 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Cardiovascular, Haematological, Immunological, and Respiratory Systems

ISPR8-0799

THE DISTRIBUTION OF LUNG VENTILATION OF HEALTHY SUBJECTS PLACED IN VARIOUS POSITIONS, BY THE METHOD OF IMPEDANCE TOMOGRAPHY

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Introduction/Background

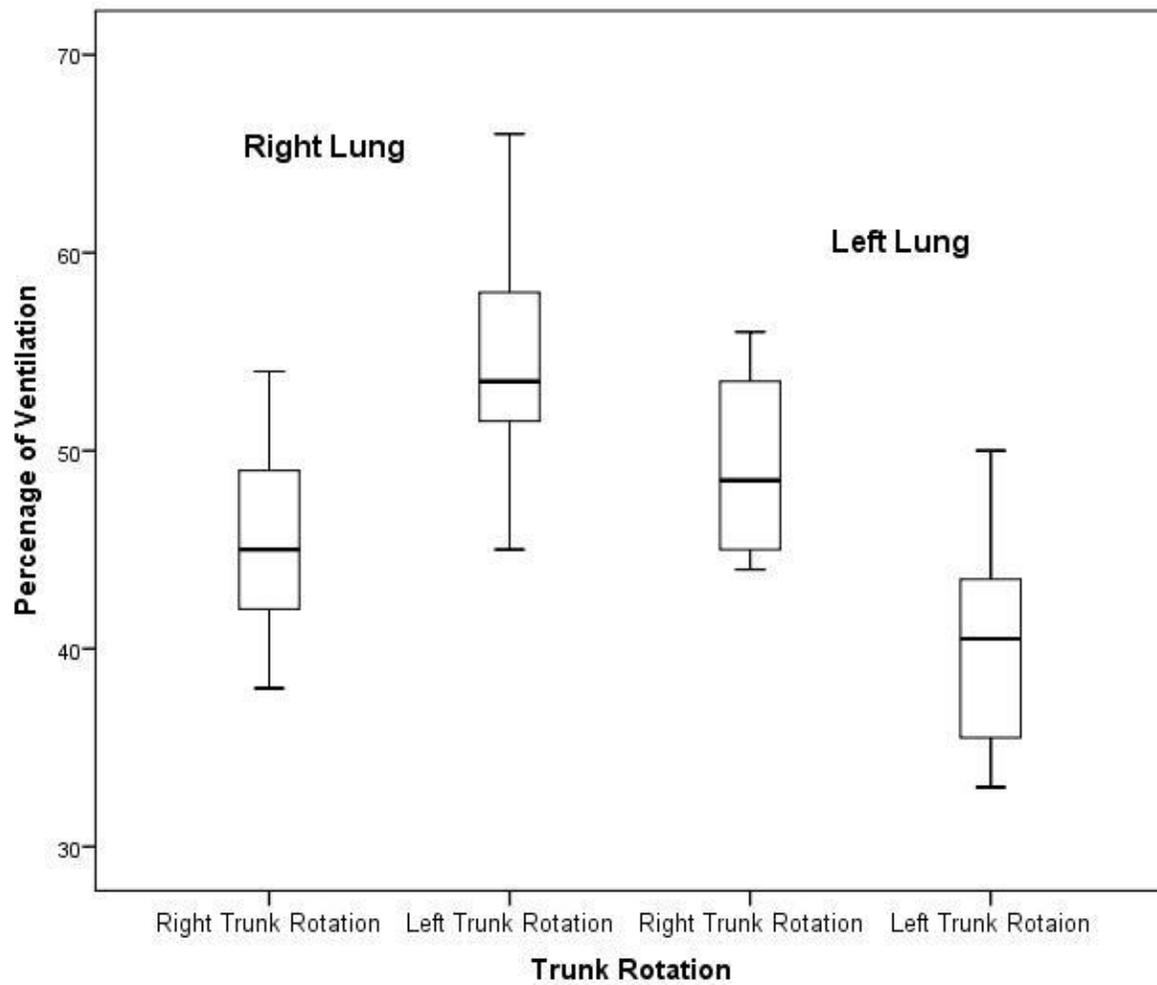
Impedance tomography is a modern method for real time monitoring of the air distribution during lung ventilation, as it can record the changes of lung impedance during breathing and via a mathematical processing creates a visual image representing the changes of lung ventilation. The aim of this study is to record the percentage distribution of lung ventilation in healthy subjects, in several positions. The results of this study can be used for explaining the fluctuations of oxygenation in cases such as bronchial drainage or for the interpretation of pulmonary ventilation in pathological cases such as scoliosis.

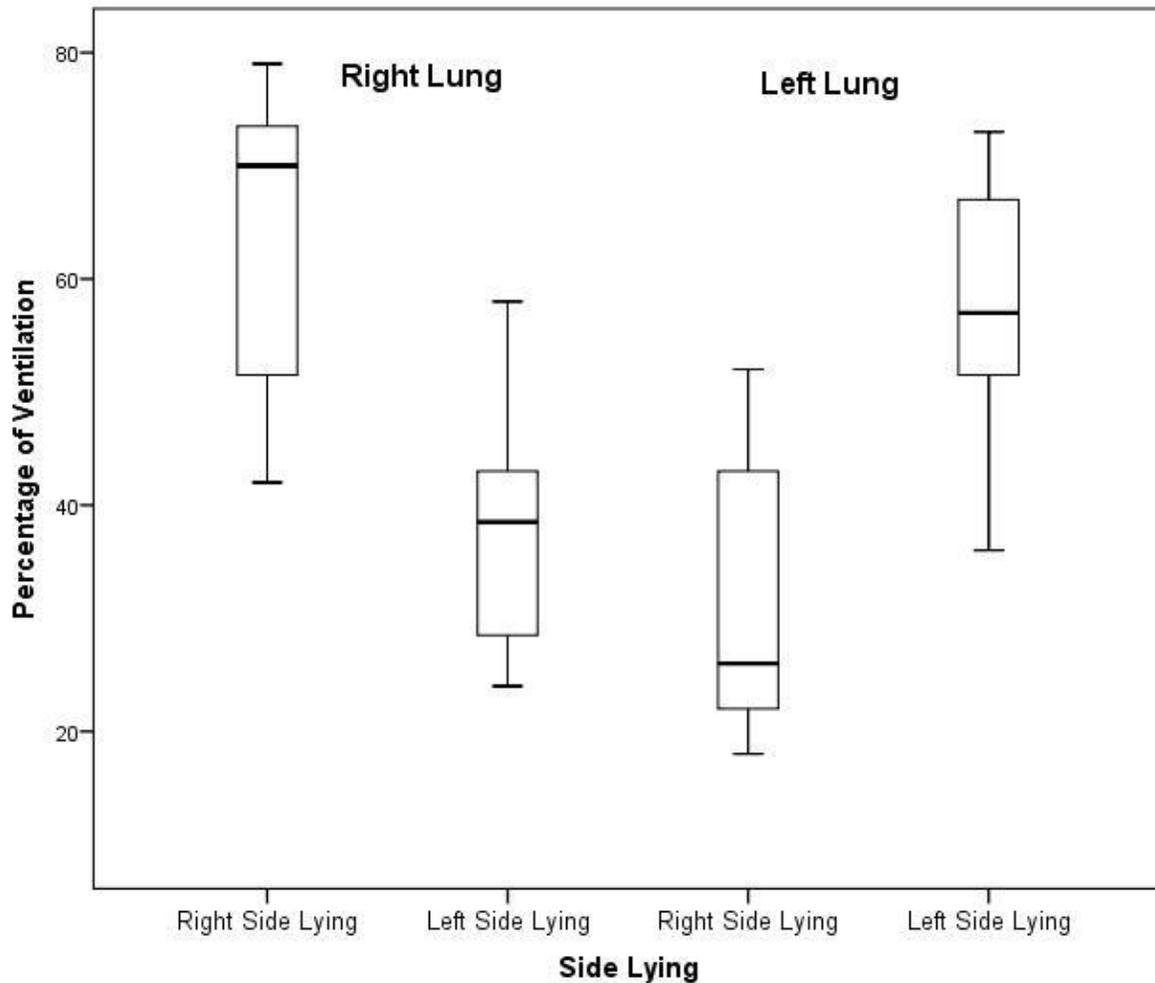
Material and Method

Eight young, non-smoking, healthy volunteers, without a previous respiratory disease, were monitored by impedance tomography. They were placed in the following positions: Sitting, Supine, Trendelenburg, Right Side Lying, Left Side Lying, Prone, Semi-Fowler's position 30°, Semi-Fowler's position 45°, Right Trunk Rotation and Left Trunk Rotation. The recorded data were used to compare the percentage of the air distribution between the anterior and posterior thoracic segment and between same lung (right or left) of each object in each position.

Results

The anterior-posterior percentage of the air distribution during lung ventilation did not show any remarkable changes in any position and in any angle of head elevation of the bed, while statistically significant differences were detected comparing the percentage of the air distribution in each lung on the lateral decubitus positions and on the trunk rotations (Mean±SD: 9 ±3.85 p=<0.001, 9.25±4.73 p=0.001 respectively)





Conclusion

In normal healthy young individuals, head elevation of the bed does not have any impact on the regional lung ventilation. On the contrary the side lying positions seems to favor the dependent lung and the trunk rotation appears to compress the same to the rotation side lung, with a significant impact on its ventilation.

Keywords

Impedance Tomography; Distribution of lung ventilation; Healthy subjects

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.04 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Cardiovascular, Haematological, Immunological, and Respiratory Systems

ISPR8-1460

THE INFLUENCE OF COOLING DOWN EXERCISE AFTER STEADY LOADING EXERCISE AT THE ANAEROBIC METABOLIC THRESHOLD INTENSITY ON AUTONOMIC NERVOUS ACTIVITY

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Introduction/Background

Cooling down exercise is known to promote the recovery of the internal homeostatic condition, and the exercise intensity of 50–75% of the anaerobic metabolic threshold (AT) is reportedly effective in removing lactic acid from the blood. This study aimed to determine the suitable intensity of cooling down exercises after steady loading exercise at the AT for recovering autonomic nervous activity using heart rate variability analysis.

Material and Method

A cardiopulmonary exercise test using a cycle ergometer was conducted to calculate the AT using the V-slope method in 10 healthy adult men (age, 22.0 ± 5.1 years). At least 2 days after the test, subjects performed exercises using the ergometer for 20 min at the AT intensity. Then, they were asked to perform cooling down exercises at 50% (50CD) or 75% (75CD) of the AT level for 10 min. Wireless electrocardiograms were continuously recorded during the exercise, and autonomic nervous activities were assessed based on heart rate variability. High-frequency components (HF) were used as an indicator of parasympathetic nervous activity.

Results

The average value of HF before exercise was 704 ± 161 ms², and the value during exercise significantly decreased to 123 ± 30 ms². These values, just after 50CD and 75CD, were 571 ± 207 ms² and 223 ± 75 ms², respectively. Significant differences were not observed between HF values before exercise and after 50CD, however, the HF value after 75CD was significantly lower compared to the HF value before exercise ($p < 0.001$).

Conclusion

Cooling down exercises at 50% of the AT level for 10 min was shown to be effective for the recovery of the parasympathetic nervous activity. Moreover, it was suggested that cooling down exercises at 75% of the AT level involved excessive movement for autonomic nervous activity recovery.

Keywords

heart rate variability;cooling down exercise;anaerobic metabolic threshold

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.04 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Cardiovascular, Haematological, Immunological, and Respiratory Systems

ISPR8-1462

INFLUENCE OF POSITIONS ON THE BED ON VOLUNTARY COUGH STRENGTH IN THE HEALTHY SUBJECT

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Introduction/Background

Cough strength is important for airway clearance. Some studies have shown that poor cough strength is a risk factor for extubation failure in patients receiving mechanical ventilation. Cough peak flow (CPF) is often measured for evaluation of voluntary cough strength. It has been reported that CPF is higher in the sitting position than in the supine position. However, it is unclear whether the difference of position on the bed such as supine position and prone position would influence CPF. Therefore, the purpose of the present study was to investigate the difference of voluntary cough strength in some positions on the bed in the healthy subject.

Material and Method

We measured CPF, chest circumference at maximal inspiratory level, chest circumference at maximal expiratory level, blood pressure and pulse rate in three positions, that is, supine position, prone position and prone position with a pillow under abdomen. We calculated the difference between chest circumference at maximal inspiratory level and that at maximal expiratory level, and defined it as the thoracic expansion difference.

Results

The subjects of this study were 50 normal adults. The CPF, chest circumference at maximal inspiratory level and chest circumference at maximal expiratory level were significantly higher in prone position with a pillow under abdomen than in supine position. There were no differences in the thoracic expansion difference and blood pressure among three positions. Pulse rate was significantly higher in prone position and prone position with a pillow under abdomen than in supine position.

Conclusion

This study suggests that voluntary cough strength would increase in prone position with a pillow under abdomen.

Keywords

cough peak flow;prone;positioning

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.05 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Digestive, Metabolic, and Endocrine Systems

ISPR8-0425

IS SUBCLINICAL HYPOTHYROIDISM LINKED TO LOWER FUNCTIONAL OUTCOMES MEASURED BY FUNCTIONAL INDEPENDENT MEASURES (FIM)?

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Introduction/Background

Subclinical hypothyroidism (SCH) is a common finding in the cohort of rehabilitation patients. However, there is no reported study on how this population performs in the rehabilitation setting. We hypothesized that patients with SCH may have lower level of rehabilitation gains. The aims of this study are to: (1) quantify the incidence of subclinical hypothyroidism in rehabilitation patients; (2) review functional outcomes of patients with subclinical hypothyroidism; (3) seek correlation between the level of thyroid function and rehabilitation outcomes.

Material and Method

This was an observational retrospective cohort study of all patients receiving rehabilitation over 2 years from Jan 2015 till Dec 2016. Quantitative data were based on thyroid function tests at admission, Chart audits, and Functional Independent Measures (FIM). Data analysis involved an unpaired *t*-test and logistic linear regression.

Results

Overall, 653 patients (306 M and 347 F) were included in the study with a mean age of 74 (± 12.8). While 553 patients had a Thyroid Stimulation Hormone (TSH) within normal limits, 100 patients were found to have an abnormal TSH, of which 81 presented with SCH (TSH 4.6~19.9), 5 with profound hypothyroids (TSH ≥ 20) and 14 with hyperthyroidism (TSH ≤ 0.2). The incidence of SCH was 12.4%. All patients with SCH had improvement in function with an FIM gain 26.9 (± 19.6), compared to 23.8 (± 18.9) of those patients with normal TSH. The efficiency of rehabilitation was similar in both groups. An interesting finding of note was that those with hyperthyroidism had low FIM scores at both admission and discharge however there was no significant difference in rehabilitation efficiency from other groups. There was no significant difference in length of stay across all groups.

Conclusion

All patients with SCH have obtained functional gains following rehabilitation treatment. Those with hyperthyroidism have lower FIM scores with the efficiency of rehabilitation being similar in all groups.

Keywords

subacute hypothyroidism;functional outcomes;rehabilitation efficiency

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.05 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Digestive, Metabolic, and Endocrine Systems

ISPR8-1080

PREDICTION EQUATION FOR BODY FAT IN SPINAL CORD INJURED PATIENTS

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Introduction/Background

Body Mass Index (BMI) is the one method to determine cardiovascular risk which is the common cause of death in spinal cord injury. Previous study reported that patient with spinal cord injury had lower total lean mass and higher total fat mass than the normal person with the same body mass index. Therefore, this study aimed to develop and validate equation for predicting percentage body fat in spinal cord injured patient.

Material and Method

Cross-sectional descriptive study was conducted among sixty paraplegic patients for development group and 31 paraplegic patients for validation group. Demographic data including body weight, height and body mass index (BMI) were retrieved. All patients were evaluated percentage of body fat (%BF) using Dual Energy X-ray Absorptiometry (DXA). Regression equation for %BF was created from the data in development group. After that, the equation was evaluated for accuracy in the validation group.

Results

Only BMI showed significantly correlated with %BF ($p < 0.001$). The suggested equation by stepwise multiple regression analysis was: $\%BF = (1.477 \times BMI) - 0.091$ ($R^2 = 0.396$, $p < 0.001$). When the equation was validated in the validated data group, the correlation coefficient of the predicted and DXA-measured %BF was $r = 0.704$ ($p = 0.003$). Bland and Altman analysis showed mean differences -1.49% with the limits of agreement ranged from -18.6% to 15.6% .

Conclusion

This study suggested the simple equation which might be helpful for evaluation of percentage of body fat in spinal cord injured patients.

Keywords

Body mass index; Body Fat; Spinal cord injury

Conflict of interest

Disclosure statement:

This study was granted by Faculty of Medicine, Khon Kaen University.

E-Poster Session - July 9-12 - Exhibition Area

C1.05 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Digestive, Metabolic, and Endocrine Systems

ISPR8-2123

KINEMATIC ANALYSIS OF THE MOVEMENT OF THYROID CARTILAGE AND HYOID BONE DURING SWALLOWING

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Introduction/Background

The movement of hyoid bone has been reported to be related in diagnosing dysphagia. In clinical setting, it could be evaluated by video fluoroscopic swallowing study (VFSS) that induces radiation exposure. In contrast with hyoid bone, the thyroid cartilage is easily seen through anterior neck. We hypothesized that the movement of thyroid cartilage correlates with that of hyoid bone and can be used as a parameter for swallowing evaluation. The purpose of this study is to investigate if the movement of thyroid cartilage and hyoid bone is correlated and to collect basic data for using thyroid cartilage as a parameter for swallowing evaluation.

Material and Method

Total 25 subjects' VFSS images with normal swallowing function were analyzed by specially developed software. Positions of laryngeal prominence and margin of the hyoid were automatically extracted. Two sets of the loci were obtained in all frames of VFSS. X- and Y-coordinates showed anterior-posterior axis and superior-inferior axis. Pearson correlation coefficients for X- and Y-coordinate components were computed respectively.

Results

X- and Y-coordinates of thyroid cartilage and hyoid bone moved in a similar pattern. Pearson correlation coefficient of X- and Y-coordinate components was from 0.611 to 0.981 which meant movement of thyroid cartilage and that of hyoid bone was strongly correlated.

Conclusion

We could analyze the movement of thyroid cartilage and hyoid bone by specially developed software and concluded that the movement of thyroid cartilage and hyoid bone was strongly

correlated. This study implies that analysis of thyroid cartilage can be used as a parameter for swallowing evaluation.

Keywords

Dysphagia;Thyroid cartilage;VFSS

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.06 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Genitourinary and Reproductive Functions

ISPR8-1774

PREVALENCE AND MANAGEMENT OF URINARY TRACT INFECTION IN AN INPATIENT REHABILITATION UNIT

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Introduction/Background

Urinary tract infections (UTIs) are a regular complication in rehabilitation units due to impaired mobility, neurological conditions, catheters and constipation. National Institute of Clinical Excellence (NICE) released guidelines for management urinary tract infection in 2015; key aspects include treatment for UTIs, indications for investigation and requirement for urology referral.

Aim is to review prevalence of UTIs in a rehabilitation unit, compare management with national and local guidelines and to compare with data from 2015 to establish if there has been improvement.

Material and Method

Retrospective study of admissions Jan 2017-Dec 2017 identifying patients treated for UTI or urosepsis during inpatient stay. Data compared with previous audit in 2015.

Results

54 admitted in 2017, 26% (14/54) were treated for UTI. This is an improvement from 35% in 2015.

64% (9/14) female

Most common organism e.coli (7/14), other organisms' isolated pseudomonas, coliform and klebsiella.

21% (3/14) recurrent UTIs, 2 had ultrasound of renal tract and referral to urology as recommended. One had a neurogenic bladder with urinary retention. Another had renal calculi. The third with recurrent UTIs did not receive further investigation.

28% (4/14) had persistent bacteriuria, only 1 was referred to urology, although this is recommended by NICE.

21% (3/14) had catheters and were treated for urosepsis. In 2015, 40% patients with UTI had a catheter.

2 were immunosuppressed; all were on laxatives for constipation.

42% (6/14) were treated in accordance with local protocol: nitrofurantoin or trimethoprim. Other were treated as per sensitivities or in discussion with microbiology.

Conclusion

A reduction from 35% to 26% of patients treated for UTI during inpatient rehabilitation. Also a reduction in those with a catheter associated UTI, and supports our strategy of early removal. Indications for further investigation and urology referral need to be considered, including persistent bacteriuria. Most patients as expected had risk factors for UTI. All were treated appropriately.

Keywords

urinary;infections;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2551

QUANTIFYING MUSCLE VOLUMES AND SHAPES IN HUMANS USING MRI: A SYSTEMATIC REVIEW OF VALIDITY AND RELIABILITY

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Introduction/Background

Assessment of muscle sizes, shapes and changes over time have significant clinical and research implications in rehabilitation. The aim of this study was to report the evidence of metrological properties for methods quantifying skeletal muscle volumes and 3D shapes using MRI.

Material and Method

A systematic review was conducted. Pubmed, web of science, Cochrane, Scopus databases were searched using relevant keywords and inclusion/exclusion criteria. A customized scale was used to evaluate the articles quality.

Results

Thirty articles were included. Six involved pathological subjects. Manual, and partially or completely automatic methods were respectively assessed in 24 and 10 articles. Manual slice-by-slice segmentation reliability was good to excellent (8 articles), its validity against dissection was good (1 article). It was used as a gold standard in the other articles. Reduction of the number of manually segmented slices increased the volume error (6 articles). With methods using one slice with or without muscle length, volume errors were between 4.8% and more than 20% (11 articles). Depending on the slice(s) chosen for these techniques, the error varied. Regarding partially or completely automatic methods, use of a method based on the deformation of a parametric specific object with manual segmentation (DPSO) (5 articles) decreased the number of manually segmented slices for a chosen error. Other automatic methods associated different techniques (statistical shape, atlas/images based) (4 articles), with validity evaluated in one article for each. Reliability data were lacking for all the techniques except manual slice by slice segmentation.

Conclusion

In healthy populations, errors in volumes and shape estimations increased with the simplification and shortening of the methods for manual segmentation. Automatic segmentation techniques were promising but metrological evidence was lacking except for DPSO. These data will help in choosing the appropriate segmentation techniques for measuring muscle properties for treatments responses and diseases progression evaluation in rehabilitation.

Keywords

MRI;muscle volume and shape;metrological properties

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2540

DIAGNOSIS AND REHABILITATION OF LOCOMOTOR FUNCTION OF CHILDREN WITH CEREBRAL PALSY BASED ON BIOMECHANICAL CONTROL

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Introduction/Background

Nowadays cerebral palsy (CP) takes one of the leading places in the structure of child disability.

Material and Method

Methods:

1. Computer tensodynamography
2. Rheovasography

The study involved 90 children aged between 8 and 12 years

The main group consisted of 60 children with special needs.

The control group consisted of 30 children without any special needs.

Results

It has been proved that, during the jump of children of the main group there was an increase in pressure on the support to the lateral direction during the repulsion phase, they required more time to perform the initial phase of the jump due to the involvement of additional compensatory mechanisms to ensure the stability when landing. Thus, special attention should be given to the improvement of their coordination abilities and removal of muscle hypertonus. During physical exercises, it is recommended to focus on stretching and to enhance power quality of lower extremities. This approach will improve their motor adaptation. Moreover, regional hemodynamics reaction on locomotor load among children with special needs has been assessed. It has been shown, that children of the main group have a specific functional reserve of regional blood flow in proximal lower extremities. After locomotor load in the main group, there was an increase of pulse blood filling and blood flow velocity in hips, whereas the vegetative maintenance of distal extremities was decreased, which caused venous outflow.

Conclusion

Thus, children with special needs have a decreased vegetative maintenance mostly in distal extremities; in proximal extremities, there exists a specific functional reserve. It enables to recommend loading hip muscles and unloading shin muscles while forming locomotion adaptive stereotypes.

This research was conducted owing to grant, issued by Russian Science Fund (Project No. 16-18-00016).

Keywords

diagnostics;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2626

GENDER AND LATERALITY DIFFERENCES ON MEASUREMENTS OF ACROMIOHUMERAL DISTANCE (AHD) AT REST AND AT SHOULDER ABDUCTION USING MUSCULOSKELETAL ULTRASOUND IN ASYMPTOMATIC FILIPINO ADULTS

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Introduction/Background

Musculoskeletal ultrasound is increasingly becoming a popular tool in the diagnosis of musculoskeletal disorders with the shoulder as one of the most routinely scanned joints. Common causes of shoulder pain, such as subacromial impingement syndrome and rotator cuff tendinopathy, have been shown to be associated with reduced acromiohumeral distance. This study aimed to determine mean ultrasonographic acromiohumeral distance and compare measurements between male and female Filipino adults, dominant and non-dominant side, at neutral shoulder position and at 60° abduction. Secondly, it aimed to determine interrater reliability of ultrasonographic measurements.

Material and Method

This study employed a cross-sectional observational study design. AHD was measured on both shoulders of forty one volunteers, 15 males and 26 females with mean age 22.1 and 22.3 respectively, at neutral shoulder position and at 60° of passive abduction by two different raters.

Results

For the dominant side, mean AHD at neutral was 11.40 mm (SD 1.16 mm) for males and 10.65 mm (SD 1.22 mm) for females (p-value <0.05). At 60° passive abduction, AHD decreased to 9.96 mm (SD 1.10 mm) for males and 9.49 mm (SD 1.43 mm) for females. For the non-dominant side, the mean AHD at neutral was 11.15 mm (SD 1.13mm) for males and 10.70 mm (1.20 mm) for females. At 60° abduction, mean AHD was 9.86 mm (1.13 mm) for males and 9.36 mm (1.54 mm) for females (p-value > 0.05). Comparison of the dominant and non-dominant sides showed no significant difference at both shoulder positions. ICC values for the all the measurements ranged from 0.848 to 0.913.

Conclusion

Results of this study suggest that measurement of AHD may have gender differences, but is similar between the dominant and non-dominant side. Musculoskeletal ultrasound was found to

have excellent interrater reliability to measure AHD at both neutral position and at 60° of passive abduction.

Keywords

ultrasonography;shoulder

No conflict of interest

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ISPR8-0108

CORRELATION BETWEEN PARAVERTEBRAL MUSCLE FAT INFILTRATION IN MAGNETIC RESONANCE IMAGING AND LUMBAR CANAL STENOSIS

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Introduction/Background

Lumbar central canal stenosis (CCS) is one of the common diseases which increases by aging. We used quantitative image processing program to assess fat infiltration in paraspinal muscles especially multifidus as a diagnostic tool and its correlation with severity of CCS.

Material and Method

About 59 women with focal L4-L5 CCS as case group and 64 women as control group were enrolled. The bilateral multifidus innervated by L5 was assessed by image processing program. Moreover, Oswestry disability index (ODI) questionnaire was filled out by individuals.

Results

The mean \pm Standard deviation (SD) of fat tissue deposition percentile in multifidus muscle of case and control group were 45.87% \pm 23.42 and 36.48 % \pm 13.05, respectively. (P value<0.05). Besides, it correlated with severity of canal stenosis. A cut-off value of 46.7% fat percentile were measured for clinical diagnosis of canal stenosis severity. The fat infiltration did not correlated with weight of the participants in both case and control groups. We showed that age had effect on the fat degeneration totally, however it did not correlate with fat deposition in case and control group separately (Pearson correlation coefficient $r=0.19$ for case and $r= 0.18$ for control group and P value>0.05).

Conclusion

It has been suggested that percentile of fat infiltration by our image processing program is a good diagnostic tool of CCS besides clinical symptoms of the patients. 46.7% cut-off value can be used in clinical setting for diagnosis critical stage of CCS.

Keywords

Magnetic resonance imaging; Spinal canal stenosis

No conflict of interest

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ISPR8-2649

IMAGING MUSCLE STIFFNESS POST STROKE

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Introduction/Background

Post-stroke spasticity develops a result of CNS injury, but secondary non-neural changes can contribute to upper limb muscle stiffness. The hyaluronan hypothesis postulates that an increase in the concentration of hyaluronan, a glycosaminoglycan (GAG) in the extra-cellular matrix (ECM) of muscles, may contribute to muscle stiffness in spastic patients. This study sought to provide imaging evidence of the hyaluronan hypothesis.

Material and Method

Five post-stroke patients (3 males, 2 females, age= 46 ± 15) and five healthy control subjects (3 males, 2 females, age = 27 ± 2) underwent Dixon based water-fat imaging and 3D-T1rho relaxation mapping of upper arm muscles were used to determine intramuscular GAG content. The MRI study was conducted on a 3T clinical scanner (Prisma, Siemens Healthcare, Germany). Following the MRI, the patients underwent off-label intramuscular hyaluronidase injections (Hyalenex, Halozyme Therapeutics, Inc.) for clinical treatment. Post-injection MRIs were conducted approximately two weeks after the treatment. Two tailed student t-tests were used for comparing the groups. A paired t-test was used for the pre- and post-injection comparison.

Results

Following the hyaluronidase injections patients reported significant relief from muscle stiffness and showed increased arm movement. Figure 1 shows a representative T1rho map in a control subject and stroke patient pre- and post-injection respectively. The hyaluronan concentration in the biceps and triceps was significantly higher in patients pre-injection, and was reduced post-injection. Note the change in muscle shape from triangular to more circular as in controls post-injection in the patient.

Conclusion

3D T1rho mapping of the muscle can be used to detect intramuscular GAG content (hyaluronan) non-invasively. The muscle micro-environment can contribute to muscle stiffness, and injections

of the enzyme hyaluronidase can be used to restore normal muscle microenvironment and reduce muscle stiffness post stroke.

Keywords

muscle;imaging;spasticity

Conflict of interest

Disclosure statement:

PR is cofounder Movease. NYU has filed a patent for the use of hyaluronidase for treatment of muscle stiffness.

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ISPR8-2697

RELATIONSHIPS BETWEEN COEFFICIENTS OF IMPAIRMENTS AT LOWER LIMB MUSCLES IN CHRONIC SPASTIC PARESIS – COULD THE MUSCLE DISEASE IMPACT ON THE NEUROLOGICAL DISEASE?

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Introduction/Background

At the onset of hemiparesis, muscle tissue is normal and spastic overactivity is nil. Later, motor function becomes gradually hindered by: spastic myopathy (part of soft tissue contracture) and co-contraction, in addition to paresis. Relationships between these remain unclear. This retrospective study explores correlations between muscle shortening on one hand, and, spastic co-contraction and agonist paresis on the other hand.

Material and Method

Eighty participants with chronic hemiparesis (29W, 51(±13) years (mean(±SD)), time since lesion, 6.4(±3.2) years) were assessed through the Five Step Assessment, at least three months after any botulinum toxin injection, in six key lower limb antagonists: soleus (SO), gastrocnemius (GN), gluteus maximus (GM), hamstrings (HS), vastus (VA), rectus femoris (RF). Coefficients of impairment were calculated as: coefficient of shortening ($C_{SH}=(X_N-X_{V1})/X_N$; X_N , normally expected amplitude; X_{V1} , angle of arrest upon slow stretch), coefficient of weakness ($C_W=(X_{V1}-X_A)/X_{V1}$; X_A , maximal active range of motion). For each muscle and for the mean of the six muscles, bivariate correlations between C_{SH} and C_W were explored, using Pearson's coefficients.

Results

The mean C_{SH} are as follows: C_{SH-SO} , 0.15±0.05; C_{SH-GN} , 0.17±0.04; C_{SH-GM} , 0.14±0.08; C_{SH-HS} , 0.06±0.05; C_{SH-VA} , 0.09±0.05; C_{SH-RF} , 0.13±0.07. C_W strongly correlated with C_{SH} across the six muscles ($r=0.30$, $p=0.006$). This correlation was also found individually for GN ($r=0.43$, $p<0.0001$), GM ($r=0.22$, $p=0.04$) and HS ($r=0.21$, $p=0.052$).

Conclusion

While causality is not explored in this study, one may speculate that spastic myopathy (assessed through coefficient of shortening) may play a role in neurologic impairments, potentially by chronic modifications of afferent volleys to the spinal cord.

Keywords

spastic co-contraction; spastic myopathy; chronic hemiparesis

No conflict of interest

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ISPR8-0182

SUPPLEMENTAL THERAPEUTIC ROBOTIC BALANCE EXERCISE IN ACUTE ACQUIRED BRAIN INJURY REHABILITATION A RANDOMIZED, BLINDED STUDY

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Introduction/Background

Acquired brain injury (ABI) affects balance and may interfere with ambulation. A new robot that allows balance training while standing or sitting is now available (Hunova®) and in clinical trials. Hunova® consists of a programmable mobile platform and seat to exercise standing or seated using passive or active mode for balance and proprioceptive exercises.

Material and Method

40 subjects with ABI participating in inpatient rehabilitation, ≥ 18 years of age with a MAS ≤ 3 . *Intervention* - Patients participated in conventional therapy compliant with IRF mandates of 3 hours of one-to-one therapy. Participants were randomized to 30 minutes therapy of static (control) or 30 minutes of active training (intervention) aimed at balance and proprioception up to 5 days per week.

Tolerability; length of stay; FIM; FAC; MAS; 10 meter walk test; 5 times sit-to-stand and trunk control test were measured. Stabilometry using Hunova was performed before and the end of the treatment.

Results

In this ongoing study, we have enrolled 7 subjects. 5 male, average age 56. Average FIM gain total was 27.9 points and FIM efficiency was 1.3.

Conclusion

Findings in this ongoing study provide a proof-of-concept that an additional balance exercise in combination with mandated multi-disciplinary therapies in acute stroke population is feasible and may result in improved outcomes. The interventions can be provided with a single therapist hence may reduce costs.

Keywords

balance;gait;stroke

No conflict of interest

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ISPR8-0192

ABSOLUTE RELIABILITY OF ULTRASOUND ASSESSMENT IN MEASURING TIBIOFIBULAR SEPARATION

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Introduction/Background

We developed a method for measuring the tibiofibular separation space using ultrasound (US). However, the absolute reliability is unclear. The purpose of this study was to clarify the reproducibility and error range of the measurement of tibiofibular separation by US.

Material and Method

Two physiotherapists measured both the feet of 10 healthy participants [5 males and 5 females with a mean age of 25.9 ± 4.8 years (SD)], with no history of ankle problems. Participants slightly flexed their knee in supine position with the ankle was fixed at 35° plantar flexion (PF) and 20° dorsiflexion (DF). Imaging and measurement were randomly performed twice by each examiner using an US (F37, Hitachi Co, Tokyo, Japan). During US scanning, the probe was vertically aligned with the axis of the lower thigh, and the outer side of the tibia was the most protruding part on the side of the fibula. The fibula was aligned horizontally. The recorded image was analyzed only by examiner A using image analysis software (Image J). The interclass correlation (ICC) (1.1), ICC (2.1), Bland–Altman analysis, and minimal detectable (MDC)95 were applied to determine statistical significance. ICC statistical analyses were performed with PASW Statistics 18.

Results

For examiner A, ICC (1.1) was > 0.9 in all image analyses. Both ICC (1.1) and ICC (2.1) in PF and DF conditions were > 0.9 . As a result of Bland–Altman analysis, there was no addition / proportional error. MDC95 was 0.62 mm and 0.64 mm in interclass reliability and interclass examiner, respectively.

Conclusion

As a result of performing absolute reliability (Bland–Altman analysis and MDC95) in addition to ICC, showed high inter-examiner reliability, with no addition / /proportional error. It was found that the error range was ≤ 0.64 mm. The method used in this study was considered to be a reliable method for evaluating tibiofibular separation.

Keywords

Ultrasound; Absolute Reliability; Tibiofibular Separation

No conflict of interest

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ISPR8-0208

POSTURAL CHANGES IN CANOE SPRINT ATHLETES: THE IMPACT OF TWO DIFFERENT ACTIVE RECOVERY METHODS

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Introduction/Background

Canoe paddling technique requires an asymmetric and cyclic muscular work, as athletes paddle on the right or left side of a canoe, that predispose athletes to muscle imbalance and injuries. The purpose of the present study was to analyze the postural profile of 10 elite sprint canoeists and evaluate two different active recovery methods using a biophotogrammetry technique and a physical test protocol.

Material and Method

Ten males (22.30 ± 3.68 years old, 177.30 ± 3.62 cm stature, 77.36 ± 5.06 kg body mass) were evaluated using a postural assessment software (SAPO), that quantified the anthropometric imbalances, and performed two times an intermittent training protocol on a sprint canoe ergometer followed by an active recovery method and a maximal 500m test to evaluate the effectiveness of the recovery. The athletes performed two randomized moments that differed in the active recovery method: paddling on the usual side or paddling on the paradoxical (opposite) side.

Results

There were significant imbalance findings in the measured corporal distances between relative heights of contralateral anatomical points: tragus (3.26 ± 1.52 cm), acromion (2.43 ± 1.55 cm), middle knee joint (5.67 ± 3.25 cm) and lower angle of the scapula (3.86 ± 3.16 cm). The half-body corresponding to the side of the stroke was always the highest. There were no significant differences in the performance in terms of time, mean power and blood lactate concentration in the maximal 500m test regardless of the type of active recovery performed after the training session.

Conclusion

Canoe practice leads to postural changes and, since there were no significant differences in the performance using the two different active recovery methods, it would be useful to implement

the paradoxical active recovery as a practice of the canoeists daily training, making a symbiosis between recovery and postural compensation at sportive and medical level.

Keywords

posture;exercise;performance

No conflict of interest

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ISPR8-0336

UTILITY OF THE COBS BIOFEEDBACK PLATFORM IN THE REHABILITATION OF CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

Background: The Cobs Biofeedback Platform is an information and training response team that can be used in the early diagnosis, evaluation and rehabilitation of balance disorders; very frequent in children with Cerebral Palsy (CP). Objective: To evaluate the therapeutic response of the COBS Biofeedback platform in the rehabilitation of the balance of children with CP

Material and Method

Explanatory, experimental, longitudinal and prospective study; with Experimental Group, Intervention (n = 35), application of 20 training sessions in COBS platform simultaneous to the program of action of the service; Control group, Control (n = 35), application of the service action program. Ashworth Scales and Gross Motor Function were applied at the beginning and end of the treatment. The results obtained before and after in each group were compared by Wilcoxon Signal Range Test, declaring as a significant difference a value of $p \leq 0.05$

Results

Results: Average age 7.71 (± 2.2) years, 51% of the sample was female, spastic diparesia and genuflexus predominated as the most frequent deformity with 62.9% and 38.6% respectively, standing and the evolution of the patients in the experimental group were evaluated as satisfactory with great statistical significance

Conclusion

Conclusions: Patients with spastic CP using the COBS platform evolve better than patients with conventional therapy

Keywords

No conflict of interest

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ISPR8-0431

IS SPASTICITY OR SPASTIC COCONTRACTION OF THE ELBOW FLEXORS ASSOCIATED WITH THE LIMITATION OF VOLUNTARY ELBOW EXTENSION IN ADULTS WITH ACQUIRED HEMIPARESIS?

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Introduction/Background

Muscle overactivity, including spasticity and spastic cocontraction, is an involuntary motor unit recruitment participating in the spastic paresis syndrome after cerebral injury. Spasticity is defined as velocity-dependent increase in tonic stretch reflexes. Spastic cocontraction refers to increased antagonist muscles recruitment triggered by the volitional command of agonist muscles. This study aimed to clarify the association between spasticity and spastic cocontraction of elbow flexors and to study their contribution to the limitation of active elbow extension in hemiparetic adults.

Material and Method

Ten adults with acquired hemiparesis and ten healthy participants were included. Surface EMG recorded from elbow muscles during elbow isometric extension contractions was used to compute the index of cocontraction (ICC) for each participant, while spasticity, limitation of active elbow extension, and upper extremity Fugl-Meyer Assessment (FMA-UE) score were obtained in hemiparetic participants. Non-parametric Spearman correlations were performed to investigate the relationship between ICC and i) limitation of active elbow extension, ii) elbow flexors spasticity and iii) FMA-UE.

Results

Our results showed significant ICC in three hemiparetic participants compared with healthy participants, and significant associations between cocontraction and i) active elbow extension limitation ($r_s = 0.81$, $p < 0.001$) and iii) Fugl-Meyer Assessment score ($r_s = - 0.53$, $p=0.017$) in hemiparetic participants. No significant correlation was found between spasticity and active elbow extension limitation.

Conclusion

Our results are the first to show that spastic cocontraction directly contributes to elbow extension deficit in adults with acquired hemiparesis, and further confirm that spasticity and spastic cocontraction have different functional repercussions with regards to impaired motor function. Our findings support the conclusion that spastic cocontraction, rather than spasticity, has significant functional repercussions on impaired active motor function in hemiparetic adults. Therapeutic innovations should be directed toward reduction of spastic cocontraction to improve motor function in acquired hemiparesis.

Keywords

Upper limb;Muscle hypertonia;Hemiplegia

No conflict of interest

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ISPR8-0437

THE ABNORMALITIES OF THE HIP AND KNEE JOINTS IN PATIENTS WITH POSTERIOR TIBIALIS TENDON DYSFUNCTION; COMPARISON WITH HEALTHY AGE-MATCHED CONTROLS

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Introduction/Background

Loss of the longitudinal arch and progressive hindfoot valgus are common clinical observations in the foot deformities of patients with posterior tibial tendon dysfunction (PTTD). The biomechanical abnormalities in patients with PTTD have been described, but few studies have investigated biomechanical chains of adjacent joints. Therefore, we examined the abnormalities of hip and knee joints through the gait analysis in subjects with PTTD.

Material and Method

We compared 19 PTTD patients (average age: 67.1) with 30 age-matched control subjects (average age: 65.1). Subjects' demographics was showed in Table1. Gait analysis was performed with a nine-camera motion-capture system and four force plates, using the VICON Plug-In-Gait and VICON Nexus software. Temporal-spatial parameters were compared between PTTD and control subjects, and joint angle and joint moment data were compared between the affected limb, the contralateral limb, and the right limb in control subjects.

Table 1: Subjects' demographics			
Subjects	PTTD (n=19)	Control (n=30)	P value
Age (years)	67.1 (9.7)	65.1 (2.4)	0.267
Height (cm)	155.7 (8.0)	155.1 (7.5)	0.807
Weight (kg)	62.7 (11.1)	54.6 (9.9)	0.014
BMI (kg/m ²)	25.1 (4.2)	22.7 (3.7)	0.011

PTTD: posterior tibial tendon dysfunction, BMI: body mass index, Numbers express the mean value (SD).

Results

Subjects with PTTD had increased stance phase ratio and decreased stride length, cadence, and gait speed. The limbs of subjects with PTTD showed increased knee internal rotation at lording response, which was biased to abduction in the knee joint during the gait cycle, and irregular hip flexion and knee extension moment in the terminal stance, especially in the contralateral limb.

Conclusion

We believe that the subjects with PTTD have an increased risk of knee osteoarthritis in both the affected and contralateral limbs.

Keywords

posterior tibial tendon dysfunction; foot deformities; gait analysis

No conflict of interest

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C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-0573

VALIDITY OF SMARTPHONE-BASED POSTURAL CONTROL ASSESSMENT FOR CHRONIC ANKLE INSTABILITY

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Introduction/Background

Decreased postural control ability are commonly found in who suffer from chronic ankle instability. Identifying decreased postural control ability could help to make an appropriate rehabilitation plan and reduce the possibility of recurrent ankle sprain. With newly emerging technologies, utilizing the inherent sensors in smartphones may provide a method of easy-access and portable alternative for postural control assessment. The purpose of this study is to establish the level of validity of smartphone-based postural control assessment.

Material and Method

Thirty-eight participants, with at least one ankle instable, were assessed using the smartphone application developed for recording built-in accelerometer data. Zenfone 3 smartphone was positioned at the middle of the shin. Participants completed 4 trails of single leg stance balance test each in eyes opened and eyes closed conditions, while simultaneously recording data from force platform, which was considered as the golden standard of postural sway assessment tool. Correlation between smartphone and force platform was evaluate using SPSS 20.0, and statistical significance was set as $\alpha < 0.05$.

Results

Pearson's correlation coefficient of eyes opened condition in medial-lateral direction between smartphone-based assessment and force platform was 0.700 ($p < 0.005$), and 0.759 ($p < 0.005$) in anterior-posterior direction. Pearson's correlation coefficient of eyes closed condition in medial-lateral direction between smartphone-based assessment and force platform was 0.734 ($p < 0.005$), and 0.803 ($p < 0.005$) in anterior-posterior direction.

Conclusion

Our results show that the smartphone assessment has good correlation compared to the force platform when recording the performance of single leg stance balance test. The smartphone-based assessment shows potential as an easy-use and accessible tool to assess postural control ability.

Keywords

smartphone;assessment;chronic ankle instability

No conflict of interest

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ISPR8-0582

THE EFFECTIVENESS OF A NEW NON-DRUG METHOD OF WALK REHABILITATION IN PATIENTS WITH PARKINSON'S DISEASE.

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Introduction/Background

Gait disorders in PD manifest as disorders of walk initiation, speed of walking, length and height of the step. As PD progresses the phenomenon of freezing joins and often leads to falls. The phenomenon of freezing often occurs while switching from one movement program to another (when turning, the overcoming of a threshold, passing through a door).

The article presents the results of the research of the effectiveness of the new non-drug method of walk rehabilitation, based on strengthening the back push of the foot. The idea of the method is mechanical activation of the moment of foot lifting from the surface. This device is fixed to the legs of patient and due to the mechanism providing adjustment of force and speed of push of the legs, it helps to lift foot from the floor in the early phase of movement, thus increasing the length and speed of step.

Material and Method

The study included 10 patients with PD, 2-3 stage by Hoehn-Yahr, akinetic-rigid form. The median age was 65 [51:75] years. Each patient had 14 sessions of 20-30' for 2.5 weeks using the method under discussion. Before and after the course of rehabilitation, research methods were: neurological examination, objective assessment of balance function using the Computer Stabilometry (CS), objective assessment of gait using «laser analyzer of kinematic gait parameters» (LA-1), Unified Parkinson's Disease Rating Scale (UPDRS) and Dynamic Gait Index.

Results

Statistically significant changes were determined before and after the course. After the course the time of step increased (LA-1): before the course of rehabilitation it was 0.52 [0.47:0,53] seconds, after - 0.67 [0,6:to 0.78], p=0.01. Positive dynamics was in accordance with UPDRS. Before rehabilitation it was 14.0 [12,4:16,2], after - 18.6 [17,1:19,8], p=0.01.

Conclusion

The original method showed the effectiveness in restoring gait disorders in patients with PD.

Keywords

Parkinson's disease;gait disorders;rehabilitation

Conflict of interest

Disclosure statement:

The study was carried out with the support of the regional state autonomous institution "Krasnoyarsk Territory Fund to Support Native and Scientific and Technical Activities"

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ISPR8-0606

THE USE OF STANDARDIZED MODULAR MULTIFUNCTION COMPLEX FOR REHABILITATION OF PATIENTS WITH DISEASES AND INJURIES OF THE CENTRAL AND PERIPHERAL NERVOUS SYSTEM

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Introduction/Background

The purpose of the study was to explore the possibility and effectiveness of rehabilitation trainer



Material and Method

The study involved 1,700 people aged 55 to 65 with ischemic stroke in the area of blood supply of the left middle cerebral artery. Lessons began after 18 days after the stroke. To assess the results of rehabilitation we used scales and questionnaires.

Trainer "Captain" consists of seven functional blocks. Patients performed ten exercises on the simulator. Classes were held 3 times a week for 60 minutes with the instructor and independently. The findings were assessed before the first train, and on the sixtieth day.

Results

All patients noted positive dynamics in the rehabilitation process. Injuries weren't recorded.

3-4 points during the initial examination fell to 2-3 points when re-examined by the modified Rankin scale. NIHSS: 7-8 points dropped to 4-5 points. MMSE: 26-27 points increased to 27-28 points. The Barthel index: 20-25 points increased to 50-60 points. Visual Analog Scale, VAS: 10-35 points increased to 60-85 points. The duration of rehabilitation was reduced by 30%. Disability patients decreased to 25-30%, motor function in hands improved to 45-80%, in the legs – by 70-85%, statelocomotor function increased by 45%. **Conclusion**

The use of multifunctional rehabilitation trainer "Captain" is effective for complex rehabilitation of patients with stroke. The efficiency of the simulator is confirmed by objective data. Training on the simulator helps restore movements of the upper and lower extremities. The simulator is available to patients and does not require constant monitoring by experts during training. Use of the simulator "Captain" allows you to cut costs, continue rehabilitation at home, increase the motivation of the patient to quickly return to the social environment and proceed with the previously performed labour activities.

Keywords

rehabilitation;stroke;motor function

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-0634

STUDY OF MUSCLE ACTIVATION DURING IN-WATER GAIT OF SCI PATIENTS USING SURFACE EMG

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Introduction/Background

We compared muscle activation during in- and out-of-water gait of SCI patients to understand the influence of the aquatic ambient on rehabilitation programme.

Material and Method

20 healthy subjects and 20 SCI patients were enrolled. All patients had retained walking ability (AIS C and D, lesion level C4-L2, age 18-70 years) and could ambulate independently for a minimum of 5m with or without walking aids. We analyzed, with an surface 8 channel wireless EMG, the following muscles of the right leg: rectus femoris, vastus medialis, vastus lateralis, gluteus maximus, gluteus medius, biceps femoris, tibialis anterior, gastrocnemius medialis.

Results

In both healthy and affected subjects in water the walking speed decreases whereas the duration of gait cycle increases. Furthermore in SCI patients we found out an increase of the swing phase. Comparing in- and out-of-water results for SCI subjects the maximum muscle activation peak in water occurred before than on dry land; at the opposite in healthy subjects we registered that the maximum muscle activation peak occurred earlier out of the pool.

Conclusion

The in-water gait cycle is much more similar between SCI and healthy subjects than the out-of-water one. These results suggest that aquatic ambient could positively influence muscle recruitment in SCI patient. Moreover these data give us the opportunity to design water-based exercises that can enrich the tailored rehabilitation programme for every patient.

Keywords

Gait Analysis;Water;Electromiography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-0646

ELECTRICAL IMPEDANCE MYOGRAPHY ALTERNATION AFTER NEUROMUSCULAR ELECTRICAL STIMULATION COMBINED CYCLING TRAINING IN CHRONIC STROKE

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Introduction/Background

Electrical impedance myography (EIM) considered as a sensitive diagnostic tool for neuromuscular diseases with no invasive operation and little patients' cooperation was increasingly studied. However, the application of EIM in stroke is relevantly few. The aim of this study is to detect muscle inherit properties changes in affected side compared with unaffected side as well as the immediate alternation after neuromuscular electrical stimulation combined cycling training in chronic stroke.

Material and Method

Eleven chronic stroke survivors are recruited for cycling training combined with neuromuscular electrical stimulation at the most tolerated stimulation intensity simultaneously on rectus femoris (RF), tibialis anterior (TA), hamstrings (HS) and medial head of gastrocnemius (MG) for one hour per day and three training days a week. All the survivors received EIM assessment before and immediately after the training. EIM estimates the main impedance parameters at 50 kHz, which consists of resistance (R), reactance (X) and phase angle (θ).

Results

Statistical analysis demonstrated the EIM parameters changed as follows, compared with unaffected side, R has significant increase only in TA ($p=0.02$), X significantly increased in RF ($p=0.001$), TA ($p=0.03$), MG ($p=0.02$), θ increased in RF ($p=0.007$), TA ($p=0.031$), HS ($p=0.005$), MG ($p=0.005$). And right after the training there is significant X elevation in affected TA ($p=0.01$), and MG ($p=0.007$), and θ elevated significantly in affected TA ($p=0.02$), and MG ($p=0.013$). No significant EIM parameters alternation has found in RF and MG.

Conclusion

Findings of this study revealed significant changes in the muscle intrinsic electrical properties after stroke, probably related to structural modifications caused by fat and connective tissue infiltration damage to the cell membrane integrity. Besides, there is immediate effects of training

on muscle inherit properties alternation, which might because of metabolites accumulation, such as lactic acid right after muscle contraction training and electrical stimulation.

Keywords

Electrical impedance myography;Stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-0685

SMARTPHONE APPLICATIONS FOR RANGE OF MOTION MEASUREMENT IN CLINICAL PRACTICE: A LITERATURE REVIEW OF INCLINOMETER AND GONIOMETRIC TOOLS.

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Introduction/Background

Many smartphone applications have emerged in recent years for patient management, as range of motion tools. In order to use these tools under good conditions, it is necessary for the clinician to know the psychometric qualities.

The aim of this study was to provide a systematic review about validity and reliability (intra and inter-raters) of range of motion angle tests with goniometer or inclinometer smartphone applications.

Material and Method

The research was conducted, in english and french, using keywords « healthy subjects », « phone », « range of motion », validity », « reliability » et « repeatability » on the databases: PubMed, ScienceDirect, Pedro and Kinedoc. A synthesis was carried out and the qualities of each study was evaluated by the Qarel score.

Results

512 articles were identified. Following the selection criteria, 18 articles were included, with 5 for cervical and lumbar motions, 6 for lower limb and 7 for upper limb. These studies included 601 healthy subjects. The mean Qarel score for all studies was 7.61/12 (min:6/max:9). The mean validity (ICC:0.86_[min:0.40, max:0.99]), intra-rater reliability (ICC:0.86_[min:0.05, max:1]), and inter-raters reliability (ICC:0.83_[min:0.07, max:0.99]) were good.

Conclusion

This review highlights the existence of numerous studies on the validity and reliability of smartphone applications to measure angles in clinical practice. All studies presented a consistent methodology with the stated objective and tested validity prior to reliability. The two most studied joints are the knees and shoulders. No studies at the time of the review were found on ankle and finger movements. In clinical practice, goniometric and inclinometric smartphone applications can be used to measure range of motion. However, these applications should be used with caution for cervical and hip rotations, for hallux movements and on the shoulder.

Keywords

Smartphone; Range of motion; Validity and reliability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-0696

DOES FUNCTIONAL MOBILITY VARY AMONG INDIVIDUALS WITH UP TO ONE YEAR AFTER STROKE? AN ANALYSIS USING THE TUG-ABS

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Introduction/Background

The Timed “Up and Go” Assessment of Biomechanical Strategies (TUG-ABS) analyses functional mobility activities of Timed “Up and Go” (TUG) test, showing to be valid and reliable for individuals with stroke. The aim of this study was to evaluate if the performance of functional mobility activities varies between subjects within the first year poststroke.

Material and Method

Thirty-eight stroke subjects (mean age 56.5 years) of both genders and with up to one year of first stroke that caused gait deficits (gait speed < 0.8m/s) participated in the study. Participants were instructed to perform the following activities: standing up from a chair without armrests, walking and circling (180° turns) a cone placed at the 1.35-m mark, walking back and sitting down. The performance of this activities was registered by the Qualisys Motion Capture System. By analyzing the images, TUG-ABS was applied to evaluate: sit-to-stand – STSt, walking – W, turn – T and stand-to-sit – STSi. For statistical analysis, participants were divided into: one group with up to 3 months poststroke (n=21), and another group with 4 to 12 months poststroke (n=17). Study groups were compared with Mann Whitney test for TUG-ABS activities and total TUG-ABS score (TS).

Results

The groups were homogeneous with regard to middle age, cognitive level (Mini-Mental State Examination), neurological status (National Institute of Health Stroke Scale) and walking ability (Functional Ambulatory Category). For TUG-ABS, there was also no difference between groups for the activities: STSt: $P=0.161$; W: $P=0.383$; T: $P=0.052$; STSi: $P=0.542$, and for TS: $P=0.144$.

Table 1. Sociodemographic and clinical data of groups: with up 3 months poststroke (n=21) and with 4 to 12 months poststroke (n=17).

Variable	0 – 3 months poststroke (n=21)	4 – 12 months poststroke (n=17)	<i>P</i>
Age [years]*	55.5 (10.9)	57.8 (9.1)	.501
MMSE score*	23.1 (3.0)	22.4 (4.3)	.558
NIHSS score**	2.0 (1.0 – 4.0)	3.0 (1.0 – 4.0)	.931
FAC score**	3.0 (3.0 – 4.0)	3.0 (3.0 – 4.0)	.794

*Data expressed in mean (standard deviation). P-value: Unpaired t-test.

**Data expressed in median (25th – 75th percentile). P-value: Mann-Whitney test.

Abbreviations: MMSE, Mini Mental State Examination; NIHSS, National Institute of Health Stroke Scale; FAC, Functional Ambulatory Category.

Table 2. Scores of activities included in Timed “Up and Go” Assessment of Biomechanical Strategies (TUG-ABS) for the groups: with up 3 months poststroke (n=21) and with 4 to 12 months poststroke (n=17).

TUG-ABS activities	0 – 3 months poststroke (n=21)	4 – 12 months poststroke (n=17)	<i>P</i>
STSt score	9.0 (4.0 – 9.0)	9.0 (4.0 – 9.0)	.161
Walking score	14.0 (10.0 – 15.0)	14.0 (10.0 – 15.0)	.383
Turn score	10.0 (6.0 – 12.0)	8.0 (6.0 – 12.0)	.052
STSi score	9.0 (5.0 – 9.0)	8.0 (4.0 – 9.0)	.542
Total score	42.0 (25.0 – 45.0)	38.0 (26.0 – 45.0)	.144

Data expressed in median (minimum – maximum). P-value: Mann-Whitney test.

Abbreviations: STSt, sit-to-stand; STSi, stand-to-sit.

Conclusion

Although motor recovery can be influenced by lesion time, the performance of functional mobility activities did not appear to be different among subjects in the first year poststroke. This suggests that biomechanical strategies for performing these activities are developed within the

first three months following stroke, indicating the importance of early intervention for rehabilitation.

Keywords

functional mobility;stroke;rehabilitation

No conflict of interest

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C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-0717

DYNAMIC MOTION AND PRINCIPAL COMPONENT ANALYSIS OF STEP-OVER IN PATIENTS WITH MUSCULOSKELETAL AMBULATION DISABILITY SYMPTOM COMPLEX (MADS)

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Introduction/Background

The functional evaluation criteria of musculoskeletal ambulation disability symptom (MADS) complex include the one-leg standing duration with eyes open and 3-m timed up and go test, but actual measurement is physically difficult for many patients. Thus, it is necessary to investigate a new, safe, and simple evaluation method. Considering that falls are likely to occur when one is stepping over an obstacle, we investigated the association between the musculoskeletal ambulation disability symptom complex and dynamic motions by dynamic motion analysis of “step-over” in healthy subjects and patients with the complex.

Material and Method

This study examined the association between the musculoskeletal ambulation disability symptom complex (MADS) and dynamic motions by performing dynamic motion analysis of “stepping over obstacles”, involving 11 MADS patients (group-M) compared to 10 young (-Y) and 11 elderly (-E) individuals with no health-related problems. All participants stepped over an obstacle with a height of 9 cm by adopting 2 patterns: watching or not watching the obstacle on measurement of each joint angle and toe-obstacle clearance. The obtained values were examined through principal component analysis.

Results

The age, experience of falls, and hip and knee joint angles showed higher absolute values representing factor loading on the first principal component, and this was consistent with the subsequent result of dynamic motion analysis focusing on joint angles: elderly group-E or M members showed greater hip and knee flexion to improve their toe-obstacle clearance. Therefore, the first principal component was considered to accurately represent the

characteristics of the elderly, while the second principle component was likely to represent the characteristics of physical factors and clearance level.

Conclusion

It was clarified that items can be selected by dynamic motion analysis and principle component analysis, which may lead early evaluation of the musculoskeletal ambulation disability symptom complex.

Keywords

MADS; step-over; gait analysis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-0720

IMMEDIATE EFFECT OF RESTRICTED ANKLE DORSIFLEXION ON GROUND REACTION FORCE AND TRUNK ACCELERATION DURING WALKING

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Introduction/Background

Accelerometer is widely used for gait analysis. The gait parameters calculated from trunk acceleration describes the features of gait patterns and represents the whole body motion in walking. However, they cannot evaluate the gait pattern corresponding to gait cycle. The aim of this study was to investigate the validity of an accelerometer for gait analysis corresponding to the gait cycle in healthy subjects on restricted ankle joints, which simulated the characteristic motion of the elderly.

Material and Method

Eight healthy volunteers walked with custom-made ankle braces under the following two conditions: walking without restricted ankle joint (free), and walking with restricted ankle dorsiflexion at 0° (restricted). The walking speed between two conditions was fixed on the same cadence, and tri-axis trunk acceleration on the third lumbar vertebrae and GRF from 4 force plates were measured. The peak of GRF (GRFmax) and its appearance time (GRFmax-t) at mid stance to terminal stance were extracted from the vertical component of GRF on the right foot, the peak of acceleration during the identical phase in GRF (ACCmax), and the amplitude ratio of the autocorrelation function (ACF) were calculated from the vertical component of trunk acceleration. These kinematic parameters were compared between two conditions though the paired t-test ($p < 0.05$). This study was approved by the Ethical Committee of Kawasaki University of Medical Welfare.

Results

GRFmax and the ACF were significantly smaller in the restricted condition compared to the free. GRFmax-t was significant earlier in restricted condition compared to the free. There was no significant difference between the ACCmax for the two conditions.

Conclusion

This immediate effect shows that the restriction to ankle dorsiflexion changes the gait pattern represented in vertical GRF and trunk acceleration. This may suggest that these gait parameters can be used in the evaluation clinical risk such as frailty.

Keywords

Gait analysis;Ground reaction force;Accelerometry

No conflict of interest

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ISPR8-0735

IMPACT OF DIFFERENT EMG NORMALISATION METHODS ON MUSCLE ACTIVATIONS AND COCONTRACTION INDEX IN ADULTS WITH CHRONIC POST-STROKE HEMIPARESIS

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Introduction/Background

EMG normalisation is a key step to draw definite conclusions on physiologically standardized data. In the absence of a consensus in scientific literature, recommendations would be useful for the choice of EMG normalisation method in patients, such as hemiparetics, who present atypical EMG patterns during motor behavior. The aim of this work was to compare muscle activations and cocontraction index (CCI) using different EMG normalisation methods during active elbow extension in healthy participants and patients with chronic post-stroke hemiparesis.

Material and Method

Four adults with chronic post-stroke hemiparesis (Hemi) and five healthy participants (Co) were included. Elbow kinematics and EMG activity of elbow flexors and triceps brachii were recorded during active elbow extensions performed at spontaneous speed. EMG signal was normalised in reference to EMG activity recorded during isometric or isokinetic MVC. Normalised EMG during elbow extension was used to compute muscle activations and CCI, during the acceleration and deceleration phases. Friedman tests were performed with two factors (group and normalisation).

Results

No differences were found between normalisation methods neither for muscle activations and for the cocontraction index in Co and Hemi groups. Greater muscle activations were found in Hemi vs Co ($24.2 \pm 13.4\%$ vs $4.3 \pm 3\%$ and $52.4 \pm 33.2\%$ vs $6.2 \pm 4.3\%$ during acceleration and deceleration phase, respectively). Cocontraction index in acceleration phase was greater in Hemi vs Co ($p < 0.05$), and in Co between acceleration and deceleration phases ($p < 0.05$) (Fig.1).

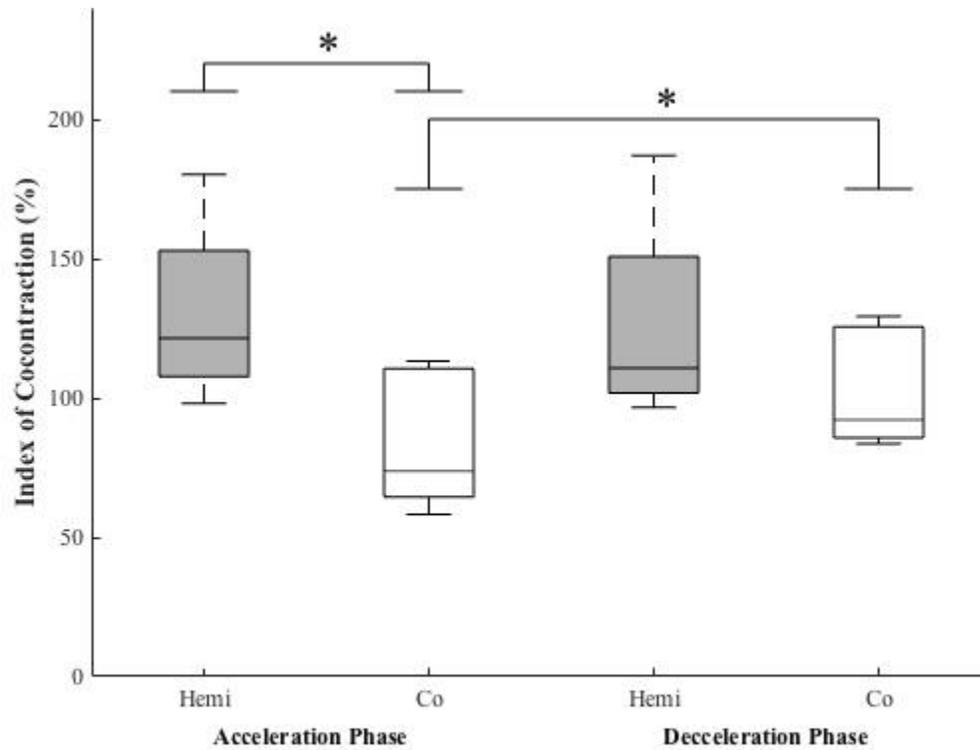


Figure 1. Representative Index of cocontraction for hemiparetic (Hemi, grey) and control groups (Co, white) for acceleration (left) and deceleration (right) phase. * - statistically significant difference at $p < 0.05$

Conclusion

Even if isokinetic MVC-based EMG normalisation accounts for the influence of angle- and velocity-torque relationships, our results on EMG activations and cocontraction index support the use of isometric instead of isokinetic MVC normalisation, and further suggest the need to take into account individual muscle activations to better understand differences in cocontraction between groups and phases.

Keywords

Upper limb; Hemiplegia; Muscle hypertonia

No conflict of interest

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ISPR8-0869

AVAILABILITY OF VESTIBULAR MYOGENIC EVOKED POTENTIAL(VEMP) AND BLINK REFLEX STUDY IN EVALUATING VESTIBULAR PATHWAYS OF PATIENTS WITH CEREBELLAR AND BRAIN STEM LESION

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Introduction/Background

Patients with cerebellar and brain stem lesions present symptoms of vestibular dysfunction, due to involvement of vestibular pathways. To investigate the relationship and availability of the VEMP and blink reflex study with vestibular pathways, we evaluated patients with cerebellar and brain stem lesion, analyzed the results of VEMP and blink reflex studies, which reflects vestibular dysfunction and vestibular nerve pathways.

Material and Method

16 Patients with cerebellar or brain stem stroke diagnosed by MRI were enrolled. VEMP and blink reflex study was performed using Nicolet.Viking IV D[®] and DantecKeypointMedtronics[®]. Clinical evaluation to check vestibular function and Berg balance scale was conducted. Participants were divided into normal and abnormal groups by comparing P13, N13 latency and amplitude of VEMP and latency difference of R1 and R2 of blink reflex, of the affected side against the sound side. McNemar and Wilcoxon rank sum test was done to confirm the correlation of abnormal VEMP, blink reflex studies and Berg balance test scores. (P<0.05)

Results

Participants with abnormal blink reflex, 37.5%(3/8) revealed abnormal VEMP results. 50% (3/6) of participants with abnormal VEMP, also revealed abnormal blink reflex results. Among the patients with brain stem lesion, 53.8% (7/13) showed abnormal blink reflex, while 46.2% (6/13) showed abnormal VEMP. There was no statistical correlation with the results of abnormal VEMP and abnormal blink reflex, but tendency of positive correlation was present. Brainstem stroke patients with abnormal blink reflex showed average of 6 in berg balance score, indicating very severe balance impairment, respectively.

Conclusion

The tendency of positive correlation of abnormal blink reflex and VEMP suggests the overlap of vestibular pathway and brainstem pathway. This infers the possibility of utilizing VEMP instead of blink reflex as an evaluation tool for brain stem lesion, since the VEMP is more painless and simply conducted than blink reflex. Further study with more participants is needed.

Keywords

blink reflex;vestibular dysfunction;cerebellar and brain stem lesion

No conflict of interest

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ISPR8-1056

DOES MUSCLE OUTPUT FUNCTION DECREASE FOLLOWING 12-HOUR IMMOBILIZATION PERIOD ?

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Introduction/Background

Long-term immobilization of skeletal muscle results in a loss of muscle force. Previous research has revealed that one week of immobilization affects maximum voluntary contraction (MVC), MVC potential, low-level force modulation, and corticospinal excitation. Corticomotor excitability is reduced by short-term immobilization, even over days or hours. However, the effect of 12-hour immobilization period on muscle output function is unclear. Therefore, the aim of the present study was to investigate the change in motor function after immobilization of the upper limb for 12 hours.

Material and Method

Twenty subjects were assigned to the following two groups: immobilization, control (n = 10 in each group). The left hand of the subjects in the immobilization group were wrapped with an elastic bandage and further limited the arm movement using an arm sling to the upper extremity for 12-hours. MVC during isometric abduction of the index finger, fluctuation of force (force-fluctuation) during a force modulation task, and twitch force evoked by supramaximal electrical stimulation at rest were measured before (pre-test) and after the immobilization period (post-test). The control group performed these tests, but were not immobilized. The data were analyzed using two-way (time x group) repeated measures analysis of variance.

Results

MVC decreased significantly in the immobilization group in the post-test compared with the pre-test. Force-fluctuation increased significantly in the immobilization group in the post-test compared with the pre-test. Twitch force revealed that a significant main effect for time.

Conclusion

The results of the study demonstrate that MVC and force-fluctuation were affected by 12-hour immobilization period, but twitch force was not affected. These findings have significant

implications for preventing declines in muscle output function with time (for example, during cast immobilization).

Keywords

12-hour immobilization; muscle output function

No conflict of interest

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ISPR8-1108

VARIABILITY OF MOTOR PERFORMANCE AND SYMPTOMS OF MOTOR DISREGARD IN THE USE OF NEUROCOMPUTER TECHNOLOGIES IN THE REHABILITATION OF PATIENTS AFTER A STROKE

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Introduction/Background

Currently, neurobiological feedback technologies based on neurocomputer interfaces are used in the rehabilitation of patients after a stroke (Yekutieli M, 2000). The ability to actively implement the capabilities of interface-brain-computer technology (IMC) remains limited for most patients (Cloutier S. et al., 2015).

Material and Method

Methods. The IMC was used, based on the analysis of EEG patterns and recognition of the synchronization / desynchronization reaction of the sensoro-motor (mu-rhythm) in imagining the movements of the hands of patients. The data of 15 patients (7 men, 8 women), at the age of 64 (62.0, 69.0) years, the duration of the stroke of 8 (5, 19) months, with right hemispheric localization in 7 patients (46%), mild to plegia (MRCWS); with a focus of stroke etiology (ischemic / hemorrhagic), supratentorial localization (CT, MRI); received therapy IMK-an exoskeleton brush with kinesthetic feedback, 9.5 (8; 10) procedures (ClinicalTrials.gov (identifier: NCT02325947)).

Results

Results: only 6 (40%) patients solved the mental motor problem with accuracy of the EEG data (presence of the mu-rhythm) above 70%, 4 (26%) failed to solve the problem. The accuracy of their representations according to EEG data was no more than 20%. The accuracy of the representations of the remaining 5 (33%) patients was in the range of 45-55%. What is consistent with the literature (Ahn & Chan, 2015; Hammer EM, et al., 2014).

Conclusion

The absolute majority of patients with stroke have motor disregard for the affected side. Even with a minimal motor deficit, patients unconsciously prefer to use a healthy hand in everyday life. Such patients need to restore the functional system of formation of target motility by training the lost or altered links of this functional system. The combination of neurocomputer technologies (IMC) and physical training in a certain sequence will facilitate their more successful interaction and will improve the efficiency of rehabilitation.

Keywords

neurobiological technology of feedback;interface-brain-computer

No conflict of interest

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ISPR8-1183

ULTRASOUND ASSESSMENT OF MORPHOLOGICAL MUSCLE AND TENDON PROPERTIES OF THE LOWER LIMB RELATED TO SPASTICITY POST STROKE : A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

Stroke causes neural symptoms such as changes in muscle tone and secondary changes in skeletal muscle properties. The aim of this review was to summarize the evidence related to morphological muscle and tendon [MMT] properties of the lower limb defined by ultrasound in stroke patients with spasticity.

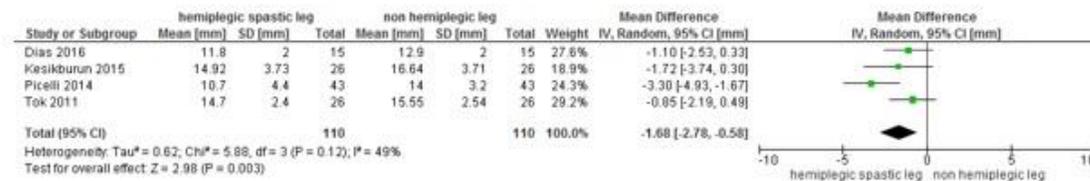
Material and Method

Following databases were searched for observational case control or cohort studies; PubMed, Embase, Scopus, Cinahl, and Cochrane Library. Search terms were (1) stroke or cerebrovascular diseases (and variations) and (2) ultrasound, echography, diagnostic imaging or elasticity imaging techniques (and variations) of the lower limb. Outcomes included (1) muscle thickness, (2) pennation angle, (3) fascicle length, (4) echo intensity, (5) elasticity index or ratio, and (6) tendon length. Inclusion criteria were first-ever stroke adult population (>18y) without musculoskeletal or other neurological pathology affecting the lower limb or peripheral spastic medication. Quality was assessed by the Newcastle-Ottawa scale (NOS). Meta-analysis was performed if possible.

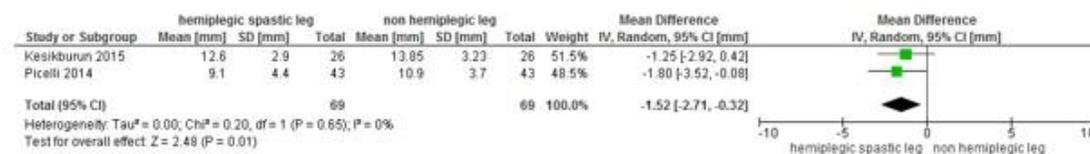
Results

In total 7 studies were included. All studies investigated patients beyond one month post stroke. The investigated outcome parameters showed significant difference for the hemiparetic leg of patients with spasticity compared with the non-hemiparetic leg and healthy people in all seven studies. Due to heterogeneous methodology, the results of only 4 studies could be used for meta-analysis of the outcome parameter muscle thickness. See figure:

- Medial Gastrocnemius



- Lateral Gastrocnemius



Conclusion

Our review shows evidence for changes in MMT properties of the lower limb measured by ultrasound in the hemiparetic leg of patients with spasticity compared with the non-hemiparetic leg and healthy people. Our search demonstrates a lack of studies investigating MMT properties and its evolution longitudinally, early after stroke. Unravelling the evolution of MMT changes after stroke may lead to new spasticity treatment opportunities.

Keywords

ultrasound;stroke;spasticity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1269

PREDICTIVE DIABETIC FOOT ULCER RISK FACTORS CORRELATED WITH ELEVATED FOREFOOT PEAK PLANTAR PRESSURE

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Introduction/Background

Polyneuropathy and foot deformity, such as Claw and hammer-toes (CHT), together with hyperkeratosis, are predictive diabetic foot ulcer (DFU) factors. These factors are correlated with increased forefoot peak plantar pressure (PPP). Increased PPP at metatarsal heads is correlated with forefoot DFU development. The aim of this study was to observe that the presence of CHT, hyperkeratosis and polyneuropathy is correlated with high forefoot PPP (FPPP).

Material and Method

An observational transversal survey with 103 diabetic patients, with or without CHT, hyperkeratosis and polyneuropathy, and without peripheral arterial disease, previous or current DFU and lower limb amputation was conducted. Mean age was 74 years old, 41 male and 62 women. Variables were CHT, hyperkeratosis, polyneuropathy and FPPP of each foot. PPP was obtained through the BIOFOOT/IBV baropodometric system. An analysis of difference between means of two samples was performed.

Results

“Hyperkeratosis” is correlated with higher FPPP than “CHT and hyperkeratosis”, and both with higher FPPP than those who had none of these features.

Table 1

Right foot	N	Mean FPPP	p-value
No “CHT and hyperkeratosis”	19	700,52	-
“CHT and hyperkeratosis ”	64	1421,43	,006
Hyperkeratosis	55	1487,33	,001
Total	103		

Table 2

Left foot	N	Mean FPPP	p-value
No "CHT and hyperkeratosis"	19	840,63	-
"CHT and hyperkeratosis "	64	1420,04	,002
Hyperkeratosis	55	1498,95	,001
Total	103		

There is no significant difference between FPPP of the groups without and with polyneuropathy, both without hyperkeratosis.

Table 3

	Polyneuropathy	Mean FPPP	p-value
Right FPPP, without hyperkeratosis	NO	1087,5	,781
Right FPPP, without hyperkeratosis	YES	1045,5	,781
Left FPPP, without hyperkeratosis	NO	904,4	,781
Left FPPP, without hyperkeratosis	YES	1047,9	,781

Conclusion

Hyperkeratosis is correlated with higher FPPP, independently of polyneuropathy. The mean FPPP of up to 840 KpPa may be considered as indicative of a lower risk of DFU, in this sample and with this baropodometric system.

Keywords

diabetic foot;foot ulcer;plantar pressure

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1276

CUSTOM-MADE IN-SHOE ORTHOSES FOR FOREFOOT PEAK PLANTAR PRESSURE OFFLOADING IN PERSONS WITH DIABETES MELLITUS

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Introduction/Background

High peak plantar pressure (PPP) under metatarsal heads has been correlated with risk of first and recurrent neuropathic foot ulcer. Polyneuropathy and foot deformity (FD), especially, claw and hammer toes deformity are main risk factors of foot ulcer among persons with diabetes mellitus (PwD). It has been reported a 20 % of PPP reduction using orthosis to be effective. The aim of this study was to show the offloading effect of custom-made in-shoe orthoses in this sample.

Material and Method

An observational transversal survey with a 33 PwDM – 66 feet - sample with FD with or without polyneuropathy, without neither previous nor current foot ulcer, was conducted. Every patient received viscoelastic insoles with corrective modifications. Forefoot PPP in both feet was measured with a baropodometric IBV/BIOFOOT system, without and with insoles. The difference between them and its reduction rate was analysed.

Results

Table 1 shows forefoot PPP in each foot without and with insoles and the PPP ratio without/with insoles.

PPP (Kpa)	Whitout insoles	With insoles	Ratio without/with insoles
	Mean	Mean	Mean
Right forefoot	1259,57	673,47	2,43
Left forefoot	1264,51	627,85	3,46

Table 2 shows ratio forefoot/rearfoot PPP in each foot without and with insoles.

Ratio Fore/rear foot PPP	Whitout insoles	Whitout insoles	With insoles	With insoles
	Mean	Mean	Standard deviation	Standard deviation
Right foot	2,67	7,28	2,86	5,16
Left foot	1,46	127729	1,89	2,02

The forefoot PPP reduction in both feet, whenever applying an insole, was statistically significant, according to ANOVA model (right foot p value 0,008; left foot, 0,000).

Conclusion

There was a 50% forefoot PPP reduction applying custom-made in-shoe orthoses, which is considered effective.

These insoles did not transfer pressure from forefoot to rearfoot, in this sample.

Quantifying an offloading effect is worthy to contribute to the preventive foot ulcer measures among PwDM.

Keywords

Diabetes Mellitus;Foot offloading;Orthotic insole

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1304

CLINICAL MARKERS OF CEREBELLAR TREMOR OF THE UPPER LIMB

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Introduction/Background

Hypermetric tremor, from cerebellar origin, directly relate to iterative hypermetria by delayed antagonist correction at each movement, is a frequent neurological disorder, which can cause significant functional and social disability.

Nowadays, the clinical evaluation of tremors relies mainly on subjective rating tools.

The purpose of the study was to develop quantitative markers of hypermetric tremor of the upper limb to help clinicians with diagnosis, follow-up and assessment of treatment effects.

Material and Method

We prospectively analyzed data from two volumetric tests (30 seconds and 5 table-to-mouth tests), a device for evaluating rapid alternating pronosupination movements “the Hand Tapper” (large/small movements ratios) and spiralography (number of spikes per turn and symmetry coefficient). We compared these parameters in three populations: 18 patients (age: 63±16 years) with upper limb cerebellar tremor, 15 patients with Parkinson's disease with predominant tremor (67±7 years) and 18 healthy subjects (age: 63±15 years).

Results

At the volumetric tests, the height of remaining water is measured in the polystyrene cup (90 mm height) after each test. For the 30 seconds posture test (H30) : cerebellar=41,2±8,5 mm, parkinson=82,9±4,5 mm, healthy subjects=90,0±0,0 mm, (p cérébelleux vs parkinson=2.10⁻⁵) and for the 5 table-to-mouth back and forth movements test (HX5) : cerebellar=27,3±7,6 mm, parkinson=88,7±0,3 mm, healthy subjects=89,9±0,1 mm (p cerebellar vs parkinson=10⁻¹¹).

At the “Hand Tapper”, the large/small pronosupination movements ratios (L/S) were : cerebellar=65,0±4,6%, parkinson=50,2±2,2%, healthy subjects=47,9±3,0% (p cerebellar vs parkinson=0.01).

At the spiralography, the number of spikes per turn were : cerebellar= $10,7 \pm 1,7$; parkinson $6,1 \pm 1,3$; healthy subjects= $2,0 \pm 0,3$ (p cerebellar vs parkinson=0.03).

Conclusion

The height of remaining water on volumetric tests, L/S ratios with Hand Tapper, and the number of spicules on spiralography seem to be representative markers of cerebellar hypermetry, compared to "parkinsonism".

Explorations of diagnostic performances of these parameters and correlations with the severity of the tremor will be the subject of a future analysis.

Keywords

cerebellar tremor ;assessment;clinical markers

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1340

A NEW METHODOLOGY TO RE-EDUCATE MUSCLE SYNERGIES OBSERVED DURING GAIT

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Introduction/Background

Analysis of multiple electromyographic activities suggests that central and peripheral neurological structures modulate the relative amplitude and time course of specific muscle groups during gait. Following neurological insult such as stroke, spatiotemporal characteristics of the four muscular modules or synergies identified during gait (C1, C2, C3 and C4) are impaired. The objective of the present work is to develop a new methodology to recruit synergies involved in gait.

Material and Method

The subject is seated with his trunk leaning back and his foot fixed on a multidirectional force transducer, interfaced to a laboratory computer. The centers of rotation of the hip, knee and ankle joints are determined to estimate the lengths of the different segments of the lower limb. In addition, the relative angles between these segments are measured using a goniometer. In order to recruit different muscle synergies during progressive effort, a visual feedback was provided to the subject allowing him to control the direction and magnitude of the static force vector exerted in the sagittal plane of the foot. By measuring the location of the center of pressure exerted and the direction of the force vector applied at the extremity of the lower limb, it is possible to calculate the different moments of force exerted at the hip, knee and ankle using morphometric values of the subject.

Results

Seven healthy subjects were asked to exert progressive static efforts in eight sagittal directions while the activities of eight muscles of the lower extremity were recorded using surface electrodes. The muscle synergies elicited in specific directions during these efforts were highly similar to three of the four modules previously identified during gait (C1, C2 and C4).

Conclusion

It is suggested that this methodology can provide a basis to establish a training program re-educating muscle synergies of the lower limb that are specifically recruited during gait.

Keywords

Biomechanics; Stroke; Coordination

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1479

EFFECTIVENESS OF FUNCTIONAL ELECTRICAL STIMULATION OF GAIT. EVALUATING OF MODIFICATIONS TO THE CENTER OF PRESSURE FOR A HEMIPARETIC PATIENT.

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Introduction/Background

Drop foot is the principal ambulatory anomaly impacting hemiplegic patients. The effectiveness of Functional Electric Stimulation (FES) on gait parameters in hemiplegics has been demonstrated over the medium and long term. Clinical evaluation of this setup and its' effectiveness is not always easy; changes in gait parameters being difficult to measure solely by observation. Ideally, the application of FES should be done along with a 3-D analysis of the patient's gait, which can be a time-consuming procedure. The goal of this study is to evaluate dynamic changes in the center of pressure (COP), measured using an instrumented walkway, when applying FES.

Material and Method

A mono-paretic patient, stable after frontal tumor surgery, was treated with FES of the *fibularis communis* nerve. The evaluation of gait, at a comfortable walking pace, was realized using an analysis of both spatio-temporal parameters and COP, obtained using the GAITRite walkway. The evaluation was conducted, immediately before and after application of FES.

Results

Spatio-temporal gait parameters (walking speed, stride length, cadence) were not modified by FES. Our analysis confirms an immediate 'posteriorization' of the COP upon initial application of FES. Net postero-anterior displacement of the COP was increased by FES.

Conclusion

This study confirms the findings in the referenced literature, where during same-day evaluation, FES is shown to not modify spatio-temporal parameters. These modifications only being manifest during prolonged use. We observed changes in the net displacement of the COP on initial application of FES. This corroborates a recent study which suggests that FES could have an immediate effect on weight transfer and thus increase gait stability. The evaluation of the displacement in the COP could represent a readily observable parameter in gauging the

effectiveness of FES when applied to patients with drop-foot. This parameter could be easily and objectively measured with available tools such as an instrumented walkway.

Keywords

Functional electric stimulation;Hemiparetic;Gait analysis

No conflict of interest

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C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1510

COGNITIVE LOAD DURING A WALKING TASK: A PILOT STUDY

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Introduction/Background

Evidence suggests that gait in complex situation is influenced by executive function in normal ageing. But to our knowledge, no study revealed what measurement is the most appropriate to assess impaired walking in older adults. The objective is to (1) test the feasibility of our protocol and (2) to explore the cognitive load during a simple vs. dual walking task in younger and older adults.

Material and Method

To date, 6 young adults (mean = 26.7 years old; SD = 4.1) were included in this study. Fifteen young adults and 25 older adults will be included by May 2018. Participants are asked to achieve a walking task including four conditions: (1) normal pace walking, (2) subtracting while standing, (3) walking while subtracting and (4) walking while counting forward. Cognitive load is measured by changes in oxygenated and deoxygenated hemoglobin in dorsolateral prefrontal cortex (fNIRS device) and the NASA-TLX questionnaire completed after each condition.

Results

fNIRS analyses are in progress. Preliminary results showed that younger adults felt higher cognitive effort in both conditions 2 and 3 compared to condition 1 (NASAScores_{condition2} (mean SD): 66 18.7 vs NASAScore_{condition1}: 9.5 6.3, $W = -2.2$, $P = 0.03$; NASAScore_{condition3} : 78 14.6 vs NASAScore_{condition1}, $W = -2.2$, $P = 0.03$). No significant differences in speed, cadence and stride length were found between conditions 1, 3 and 4 ($p > 0.05$). No significant differences in subtraction performances were observed between conditions 2 and 3 ($p > 0.05$).

Conclusion

Higher cognitive load in condition 3 in younger adults confirm that our dual task walking is the most cognitively demanding condition. We expect that our fNIRS results in younger adults will be similar to those observed with NASA-TLX questionnaire. However, discrepancies between those two measures are expected in older adults.

Keywords

Dual-task;Walking;Cognitive load

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1513

INTER-RATER RELIABILITY OF INERTIAL MEASUREMENT UNIT GAIT ANALYSIS IN PATIENTS WITH TOTAL HIP OR TOTAL KNEE ARTHROPLASTY.

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Introduction/Background

Individuals undergoing surgery for total hip arthroplasty (THA) or total knee arthroplasty (TKA) often show gait abnormalities. Visual observation is shown to be inadequate for the accurate assessment of gait, pointing out the need for some form of quantitative measurement. (Saleh e Murdoch 1985).

Inertial Measurement Units (IMUs) combine accelerometers, gyroscopes and magnetometers into an algorithm; IMUs are wearable sensors, relatively inexpensive, able to carry out spatiotemporal and kinematic assessment in a quicker and easier way than the gold standard three-dimensional (3-D) motion capture systems and force plates (Gonzalez, et al. 2010).

At the present, no study has investigated inter-rater reliability of IMUs on patient with THA or TKA.

Therefore, the primary purpose of this study is to determine inter-rater reliability of spatial-temporal metrics recorded by IMU in patients with recent surgery of THA or TKA.

Material and Method

Fifty people with THA (N=15) or TKA (N=35) were recruited. The mean time distance from surgery was $12,66 \pm 3,69$ days. Three different operators evaluated all the patients in three different times on the same day. Enrolled patients performed a total of nine timed 10-meter walk tests (10 MWT) while wearing G-SENSOR 2 IMU (BTS Bioengineering, Milan, Italy). The sensor was positioned on the skin projection of vertebrae S1 and S2.

Results

We found no difference among the evaluations performed by three operators. We found excellent correlation regarding cadence (ICC3.k = 0.923, 95%CI = 0.898 to 0.942) speed (ICC3.k = 0.955, 95%CI = 0.940 to 0.966) and step length (ICC3.k = 0.917, 95%CI = 0.891 to 0.937). All the other recorded parameters show good reliability with an ICC3.k > 0.82.

Conclusion

Data reported confirm the feasibility of using inertial systems to perform gait analysis as a routinely tool in clinical field on patients with TKA and THA.

Keywords

IMU; gait analysis; inter-rater reliability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

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ISPR8-1551

SWALLOWING ROUNDS IN PATIENTS WITH DYSPHAGIA

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Introduction/Background

The prevalence of dysphagia in the elderly is high and dysphagia increases the risks of low nutritional status and onset of pneumonia. We have developed the ward rounds to check the swallowing function by using videoendoscopic evaluation of swallowing (VE) for suspected patients with dysphagia (swallowing rounds). The aim of this study was to investigate the effect of swallowing rounds.

Material and Method

Upon requests from ward nurses or clinical departments in our hospital, a full-time certified nurse specialist in dysphagia examined the general condition of patients and performed screening for dysphagia. For patients who required detailed investigations, a transdisciplinary dysphagia care team conducted the swallowing rounds. We reviewed the medical records of 158 patients (mean age 79 years) in whom swallowing rounds were conducted between February and May 2017. The etiology, recommended food and liquid, severity of dysphagia, and onset of pneumonia during intervention were analyzed.

Results

The median duration from admission to the first swallowing round was 13 days (range 2 -112 days). Stroke (17%) and pneumonia (14%) were common in our series. After the swallowing rounds, mechanical soft and thickened food was recommended in 26% of the patients, while paste food in 21%, mechanical soft food in 11%, and nothing by mouth in 11%. Thin liquid was suggested in 23%, honey thick in 16%, and no liquid is allowed in 4%. Eight patients (5.1%) developed pneumonia during hospitalization.

Conclusion

The swallowing rounds was effective to check the swallowing function and to decide the appropriate food and liquid.

Keywords

dysphagia;swallowing rounds;videoendoscopic evaluation of swallowing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1600

VALIDATION OF JOINT ANGLE MEASUREMENTS: COMPARISON OF A NOVEL LOW COST MARKER-LESS SYSTEM WITH AN INDUSTRY STANDARD THREE-DIMENSIONAL MARKER-BASED SYSTEM

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Introduction/Background

Human motion tracking is widely used for assessment of movement dysfunction in orthopaedic patients. Currently, most clinical motion analysis centres use marker based three-dimensional systems as they are deemed to be the most accurate method. However, due to space, costs and logistics they are not available in many clinical settings. This study compared joint angles measured in functional tests using the novel low-cost Microsoft Kinect Perfect-Phorm marker-less system with the established marker based Nexus VICON system.

Material and Method

Ten unimpaired volunteers were fitted with 16 retroreflective markers in the positions specified by the Plug-in-Gait (PiG) lower limb marker set. Participants were asked to make three movements: standing, a squat action and a hip abduction action. The two measurement systems were used simultaneously to measure changes in joint angle. The collection of data from each participant was synchronised manually between each system. Average values for left and right knee flexion (for the squat task) and left hip abduction (for the hip abduction task) were obtained from each system as the average across the steady state, and the relative change between the standing and task sections used as the basis of comparisons of system performance.

Results

When measuring right and left knee flexion, the average difference between the VICON and Perfect-Phorm measurement was 13.2%, with a SD of 19.6. Both overestimation and underestimation of the joint angle was recorded in different participants. Although the average percentage difference during hip abduction tests was lower at -3.9%, the range of error was far greater (SD=75).

Conclusion

From this, it can be concluded that the level of accuracy presented in the new low cost Perfect-Phorm marker-less system is not yet suitable for clinical assessments. However, for general

tests of performance, and for tracking cases where absolute accuracy is less critical, future versions of this software may have a place.

Keywords

Motion capture;Movement analysis;System performance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1633

NEW BALANCING ABILITY TEST METHOD USING DIGITAL EQUIPMENT

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Introduction/Background

There have been many attempts to measure balance ability for a long time. However, most of the clinical tools are not digitized, and there are many discontinuous ordinal variables that make it difficult to analyze. Therefore, we will test a new balance ability test that can solve these problems simply and quickly.

Material and Method

A total of 60 healthy people (men; 30) in their 20-30s were recruited to perform a balance test using a new test method and analyzed gender differences between men and women. The new test method was able to evaluate such things as standing still, standing with eyes closed, standing on a mat, standing with eyes closed, standing on a mat, and evaluating static and dynamic balance ability.

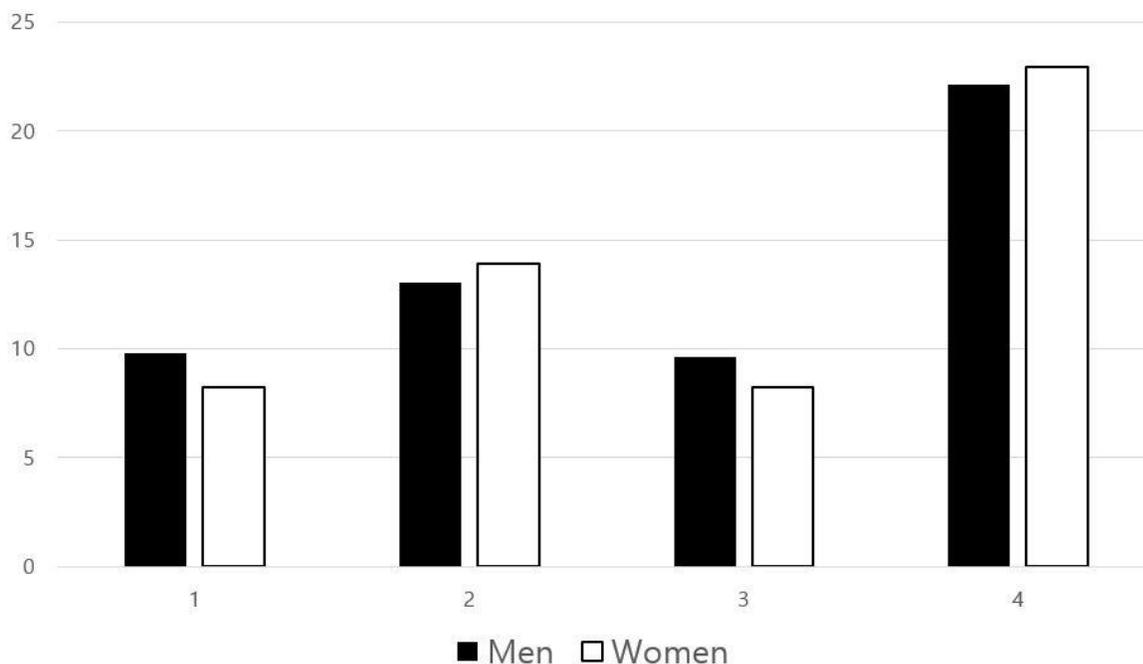
Sequence	1	2	3	4
Method	standing with eyes opened for 30 seconds	standing with eyes closed for 30 seconds	standing with eyes opened for 30 seconds using Balance Pad(19.7" x 16.1" x 2.4", AIREX®. Switzerland)	standing with eyes closed for 30 seconds using Balance Pad(19.7" x 16.1" x 2.4", AIREX®. Switzerland)

Results

In healthy men, regardless of whether they have mat or not, their balance ability is lower than that of women when they open their eyes. However, when the eyes were closed, the balance of women was observed to fall at a higher rate than men.

	1	2	3	4
Men	9.81±4.10	13.06±4.77	9.64±3.15	22.14±7.17
Women	8.22±3.26	13.89±5.32	8.22±2.83	22.95±9.08

FRA balance test



Conclusion

In this experiment, we found that women were more affected by postural balance than men when the eyes were closed. It is also expected that it will be possible to use it in schools or welfare centers because it is helpful to evaluate the balance ability by being close to the eyes and digital measurement in a short time.

Keywords

postural balance;gender difference;Digital healthcare

Conflict of interest

Disclosure statement:

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C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1671

TRUNK MUSCLE STRENGTH AND ENDURANCE ASSESSED BY TWO METHODS IN THE ISOKINETIC DYNAMOMETER FOR ABLE-BODIED AND POST-STROKE HEMIPARETIC PEOPLE

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Introduction/Background

Trunk muscular function has been identified as an early predictor of health-related outcomes post-stroke, revealing unbalance on both sides changing muscular response in the axis of the body. Then, we aimed to compare the isokinetic measures of strength and endurance for trunk movement in antagonistic actions (flexion and extension), starting from the two different methods of assessment (seated compressed [SC] and semi-standing [SS]) for groups of able-bodied (control) and post-stroke hemiparesis (hemiparesis) people.

Material and Method

A cross-sectional case-control study design was performed to compare strength (peak torque and normalized peak torque) and endurance (muscular power and total work) variables took at 60° and 120°/seconds, respectively, from the four observed conditions for a convenience sample composed by 26 volunteers (13 participants by group). The Functional Independence Measurement (FIM), the modified Ashworth Scale (mAS) and Mini Mental State Examination (MMSE) were the secondary variables to characterize the sample. Significant differences were detected by the two-way ANOVA followed by the Bonferroni post-test ($p < 0,05$).

Results

For both groups and in all conditions, the extensor muscles performed around the doubled value recorded from all variables when compared to flexor muscles. Hemiparesis group revealed the expected weakness in comparison with control group, manifesting significant more strength and endurance when assessed by SS method, what was not observed in the control group.

Conclusion

In conclusion, our results suggested that trunk extensor muscles are naturally stronger than flexor and post-stroke hemiparesis people are favored by SS method during isokinetic assessment.

Keywords

Muscle Strength Dynamometer;Stroke;Hemiparesis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1716

THE EFFECT OF THE USE OF A PRESSURE BIOFEEDBACK UNIT ON RECTUS ABDOMINIS ACTIVATION DURING A 'MOTOR CONTROL' STABILITY EXERCISE.

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Introduction/Background

Normally the superficial muscles have the function to work on high load activities to help local and global stabilizers on joint control as they have predominantly fast/fatiguing fibers. But even those muscles have some tonic fibers and sometimes fascial attachments. PBU have been used by physiotherapists as a resource to get better recruitment of muscles during 'motor control' stability training. To study the effect of a pressure biofeedback unit (PBU) on rectus abdominis activation during a 'motor control' stability exercise.

Material and Method

Electrodes were placed on rectus abdominis. 25 females with low back pain between 42 and 55 years old performed five repetitions of a motor control stability exercise on crooked lying. A pressure biofeedback unit (PBU) from Chattanooga brand was used on lumbar spine to control it during the exercise. Subjects were asked to keep it on 40 mmhg. To get EMG data, a Miotool 400 from Miotec brand was used and the rectus abdominals signals were obtained by bipolar surface electrodes according to SENIAM. The mean activation of RMS signal was considered and the significance level adopted were 0,05. The data from this work has to be linked with other evidences as only one muscle could be studied. A one-way repeated measures ANOVA and *post hoc* of Bonferroni ($p < 0.05$) was used.

Results

The muscle activation were 122,32 μ V and 142,43 μ V on right and left sides respectively without PBU. With PBU activation were 214,76 μ V and 223,02 μ V. There were a statistically relevance with $p=0,002$.

Conclusion

PBU seems to help getting a higher activation of rectus abdominis during this motor control stability exercise. We suggest for future works to collect data from other muscles together for a better interpretation.

Keywords

PRESSURE BIOFEEDBACK

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1776

CRITERION VALIDITY OF WEARABLE SENSORS IN LOWER LIMB JOINT ANGLE ESTIMATION: A SYSTEMATIC REVIEW

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Introduction/Background

Motion capture systems are extensively used to measure human joint kinematics. These systems, however, lack portability and can only be used in laboratory settings. Recently, portable and wireless systems, such as inertial measurement units (IMU), have been developed and are seen as an alternative to quantify human movement outside of the laboratory. Several studies have established their psychometric properties. However, the variety of systems used and joints evaluated make it difficult to conclude on the validity of the different systems available. The aim of this systematic review is to determine the **criterion validity of IMUs** for the evaluation of lower limb kinematics when compared to motion capture systems.

Material and Method

Five different databases were screened (Pubmed, Cinhal, Embase, Ergonomic abstract and Compendex). Included articles had to report on criterion validity of IMUs (vs. motion capture systems) of at least one joint in healthy adults. Only articles published after 2005 were considered. Pairs of raters conducted data extraction and critical appraisal using structured tools, and consensus had to be reached.

Results

A total of ten articles was included. Quality ratings of 30% of the studies reviewed were characterized as high, and 70% as moderated (interrater reliability: ICC=0.7). Knee and trunk movements showed moderate to good criterion validity, while hip and ankle movements were characterized as having poor to good validity.

Conclusion

IMU systems are valid to evaluate knee and trunk kinematics. For the hip and ankle, however, the validity varies according to movement studied. The measurement of hip flexion/extension, abduction/adduction and ankle plantar flexion/dorsiflexion with IMU can be considered as valid. For ankle inversion/eversion and hip internal/external rotation, the validity is poor. More studies are therefore needed to optimize the use of IMU for these movements (e.g. different calibration or biomechanical models).

Keywords

Validation;Range of motion;Inertial measurement unit

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1814

VESTIBULAR EVOKED MYOGENIC POTENTIALS IN HEALTHY PEOPLE IN BOGOTA, COLOMBIA.

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Introduction/Background

The vestibular evoked myogenic potentials (VEMP) enable evaluate the vestibular system besides the medial vestibulospinal tract, the medial longitudinal fasciculus and the activation of the cervical musculature, so they could be used for the study of different pathologies that affect the mentioned areas. Currently does not exist reference values for Colombian population and that test is not performed routinely. The aim of this study was evaluated a newfangled diagnostic tool and determine the feasibility of its application and possible normal values for Colombian population.

Material and Method

Prospective longitudinal descriptive study preceded by a pilot test in a group of 100 healthy individuals without comorbidities, in which VEMP were performed by auditory stimulation at 97db and recording in sternocleidomastoid muscle during its voluntary activation quantifying latency for P1 and N1 in addition to the amplitude of the potential and differences of latencies P1 and N1 left/right, statistical analysis was performed using SPSS 24.

Results

The values observed for the electrophysiological variables are correlated with those reported on international literature. The mean for the latency of P1 was 12.54 (SD 1.58), N1 19.49 (SD 2.56), P1 latency difference left/right 0.013 (SD 1.23), N1 latency difference left /right 0.1 (SD 1.91) and the median for amplitude 10.43 (IQR 6.77- 15.08). Weak correlation was observed between age and latency of P1 ($R=0.242$, $P<0.01$) and N1 ($R=0.144$, $P<0.05$).

Conclusion

VEMP can be used reliably, safely and consistently using conventional electrodiagnostic equipment that allows auditory evoked potentials recording using a 97dB click stimulus. Amplitude value is highly variable but there is a correlation between the latency of P1, N1 and age.

Keywords

VEMP;vestibular evoked myogenic potentials ;vestibular reflex

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1833

COUPLING OF POSTURAL SWAY TO SOMATOSENSORY DRIVE: EFFECTS OF UNILATERAL VERSUS BILATERAL LIGHT TOUCH

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Introduction/Background

Lightly touching a stable surface with the forefinger strongly reduces postural sway. Interestingly, bilateral light touch with both forefingers reinforces the postural stabilization. If the touched surface moves periodically, the Center-of-Pressure (CoP) oscillates in coherence with the finger movement. Based on this coupling, we presented in a previous study a closed loop control of the CoP position in the Anterior-Posterior (AP) direction. We were able to drive the CoP around an arbitrary predefined path only by using finger movements. The current objective was to study the influence on this coupling of reinforcing the light touch by asking the participants to put both forefingers on the platform.

Material and Method

Participants stand on a force platform and touch lightly with the index a 1-degree-of-freedom robot, which performs linear displacements in the AP direction. Robot velocity, and thus the finger velocity, is driven proportionally to the error between an arbitrary predefined path and the current CoP position, measured by the force platform and fed back to the robot. The finger-movements/CoP coupling is assessed through the efficiency of the closed loop to drive the CoP. 14 participants repeated 3 times in a random way two closed-loop conditions: one with dominant hand forefinger and the other with both forefingers.

The finger and the CoP positions are recorded and used to compute the tracking error between CoP and a predefined path.

Results

The efficiency of the closed loop is significantly increased (almost halved mean tracking error) with both forefingers compared to one.

Conclusion

This observation extends results with bilateral light touch on a stable surface i.e. bilateral contact increases light touch effect on postural control. Giving more weight to the light touch

leads to a better integration of this reference and thus to a more consistent coupling between finger movements and CoP.

Keywords

light touch;postural control;biofeedback

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1888

PARKINSON GAIT DETECTION USING VGRF

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Introduction/Background

Parkinson Disease (PD) is the second most spread disease worldwide after Alzheimer. It is a neurological disorder affects the function of basal ganglia, producing serious motor and non-motor impairments. Methodologies are employed to diagnose, monitor treatment, and have an early detection of PD constrained with few know symptoms at early stages. Merely, Artificial Intelligence algorithms experienced great improvement reaching around 93% success rate in PD detection throughout literature. This abstract presents neural network-based algorithm for PD detection.

Material and Method

Data collected from 47 subjects in whom 29 are affected with PD. 16 ultraflex sensors distributed on both feet (see figure 1) to collect Vertical Ground Reactional Forces (VGRF) in newton over 2 minutes (see figure 2).

Figure 1: Sensors Distribution Underneath Both Feet

Figure 2: VGRF of Normal and Parkinson Subject

Total VGRF from each foot segmented and turning points a subject encounters at the end of corridor are omitted based on synchrosqueezing technique. Then set of features are extracted including: Forces aggregate sum average-weight ratio, number of peaks attained in step, average duration of step, the slope during heel strike and toe-off, first and last peak-stable zone drop, median value-to-weight Ratio and standard deviation. One hidden layer used in ANN for less time consumption. The number of internal hidden neurons is fifty five based on trial-and-error until contentment result is attained.

Results

100% in both training (70% of subjects) and validation accuracy (15% of subjects) is accomplished. The testing results display 85.7% accuracy in classification in which all normal subjects are classified correctly (see figure 3).

Figure 3: Confusion Matrix

Conclusion

Classifying some Parkinson gait as normal gait indicates high variation within subjects which can be correlated to Hoehn-Yahr scale of PD progress. The overall accuracy is 97.9% making VGRF good element in PD assessment.

Keywords

VGRF;Gait Analysis;Parkinson

No conflict of interest

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C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1943

PROTOTYPE OF SPECIFIC HYDRAULIC ACTING ORTHOSIS IN RECOVERY STANDING AND WALKING IN STROKE PATIENTS

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Introduction/Background

Our research highlight the utility of specific devices to enhance the performances of orthostatism and walking in patients with stroke.

Material and Method

The configuration of the orthosis skeleton, based on composite glass fiber, allows the adjustment of the dimensions and anatomical fit of the patient's lower limb by a telescopic system to make it as ergonomic as possible. The control is achieved by three hydraulic distributors powered by a miniature pump. Feedback from the level of the orthosis joints corresponding to human ones is ensured by three resistive potentiometric transducers. We corrected the posture of the foot, the equine and the muscular imbalance caused by the spasticity. The prototype testing will follow the bioethics rules in volunteer patients by analyzing the following parameters: modified Ashworth scale for spasticity, Tinetti balance and walking scales.

Results

The orthosis achieved the maximum compaction of the available components for the best functionality. For this purpose the support frame is made of composite material based on glass fiber, and the actuators are hydraulic, providing maximum force at the proposed gauge. The power supply of the system in this phase is made from the 220V AC with a power about of 100 W for normal walking on flat ground. An autonomy of several hours is expected. Although the movement is made on a flat ground, but orthosis allows the assisting for climbing and down stairs.

Conclusion

This prototype of orthosis could be the future in rehabilitation of walking in the stroke patient, and it has the capacity to be extend to the other lower limb for paraparetic patients.

Keywords

stroke;walking;orthosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-1977

SETUP OF THE FIRST GAIT ANALYSIS LAB IN MOROCCO: EXPERIENCE OF THE MARRAKECH UNIVERSITY HOSPITAL

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Introduction/Background

A gait analysis laboratory (GAL) must perform within a rigorous clinical governance.

Material and Method

The aim of this work is to describe the experience of the University Hospital of Marrakech in the setup of the first GAL in Morocco and the first patients who benefited from this analysis.

Results

The need to have a GAL is part of the fact that Morocco does not yet have a platform for analyzing movement and walking. It is managed by a multidisciplinary team. Currently about twenty patients, with multiple conditions: neurological and musculoskeletal, have benefited from this analysis.

Conclusion

A GAL is a tool for measurement, quantification, an understanding and functional assessment tool. For a successful GAL, it is necessary to have a multidisciplinary and homogeneous team, and an optimal organization.

Keywords

No conflict of interest

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C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2008

FORCED USE OF THE PARETIC LEG INDUCED BY REPEATED EXPOSURE TO CONSTRAINT FORCE APPLIED TO THE NON-PARETIC LEG OF INDIVIDUALS POST-STROKE DURING WALKING.

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Introduction/Background

Locomotor training has been used to improve walking function of individuals post-stroke. However, the functional gains are relatively small, which may be due to the compensatory movements of the non-paretic leg during locomotor training. Our previous study indicated that applying a constraint force to the non-paretic leg could increase muscle activations of the paretic leg during treadmill walking. It is still unclear whether muscle responses in the paretic leg are acquired through feedback correction mechanisms or feedforward control mechanisms. The goal of this study was to examine electromyography (EMG) responses in the paretic leg to a repeated constraint force applied to the non-paretic leg during treadmill walking.

Material and Method

Fifteen individuals with chronic stroke participated in this study. Subjects walked on a treadmill with no force for 1 minute, i.e., baseline. A controlled resistance force was then applied to the non-paretic leg starting from toe-off to mid-swing through a custom designed cable-driven robotic system for 7 minutes, i.e., adaptation period. The force was released and subjects continued walking on the treadmill for another 1 minute, i.e., post-adaptation period. The magnitude of resistance force was ~18% of MVC of the hip flexion. EMG from 8 muscles of the paretic leg were recorded using electrodes and ankle movement of both legs were measured using position sensors.

Results

Integrated EMGs of ankle plantarflexors and hip extensors during stance phase significantly increased (33-50% increase, $p < 0.01$) during the early and late adaptation periods, and partially retained (17-22%) during the post adaptation period.

Conclusion

Our results suggest that both feedback correction and feedforward control mechanisms may be involved in response to the constraint force applied to the non-paretic leg. Results from this

study may be used to develop a long-term training paradigm to induce a forced use of the paretic leg and improve walking function of individuals post-stroke.

Keywords

locomotion;stroke;forced use

No conflict of interest

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ISPR8-2130

FUNCTIONAL IMPACT OF A NEW PROSTHETIC FOOT DESIGN IN TRANSTIBIAL AMPUTATION, A COMPARATIVE STUDY

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Introduction/Background

Prosthetic feet designs are complex with energy storage and shock absorption characteristics. These feet store energy in the heel and the mid-foot during loading and release energy at push off. Device selection is based on subjective criteria because of a lack of quantitative methods. Studies have compared different prosthetic feet however, did not include functional outcome and rating for comfort. This study evaluated a new prosthetic foot (Pro-Flex XC TS and Pro-Flex LP TS) from Ossur.

Material and Method

Prospective, comparative study that included 10 trans-tibial prosthetic users walking with current foot design vs. the Pro-Flex XC/LP TS.

outcomes included the Prostheses Evaluation Questionnaire, Socket Comfort Scale, 6 MWT Performance, L-Test, Activities-specific Balance Confidence Scale and temporal spatial parameters of gait measured with original prosthetic device and the test devices used for 4 weeks.

Results

With the Pro-Flex XC TS and Pro-Flex LP TS, most subjects demonstrated average 10 % increase in walking velocity, improved scores in the PEQ and 15% increase walking capacity. Improved L test time and swing/stance ratio. Most had improvement in the ABC, with small non significant decrease was reported in 4 subjects.

Conclusion

The newly designed Pro-Flex XC TS and Pro-Flex LP TS foot produce improvement in walking and functional rating as well as benefits in self rated performance and stability. This new foot design should be considered as an excellent choice for patients with functional ambulatory category 2 - 4. Tests of function and satisfaction should be used in future prosthetic foot trials and included in foot prescription

Keywords

prosthetics;gait analysis;functional outcomes

Conflict of interest

Disclosure statement:

Partial support for this research was provided by Ossur

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C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2153

APPS FOR SMARTPHONE AVAILABLE THROUGH DISTRIBUTION PLATFORMS AND VALIDATED FOR GONIOMETRIC MEASUREMENT: A SYSTEMATIC REVIEW

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Introduction/Background

The use of smartphones for medical purposes is increasing due to the steadily growing number of downloadable applications (apps) that transform the mobile phone into a medical device. Apps make use of the inbuilt smartphone to obtain fast measurements useful for clinical practice, in particular for goniometry. Medical apps are an emerging technology that need to be appropriately validated to ensure their safe and effective operation.

The objective of this review was to provide a systematic review of apps validated for goniometry available through distribution platforms, relevant to physical medicine and rehabilitation (PMR) practitioners.

Material and Method

A literature search was conducted by two independent reviewers on relevant articles indexed by PubMed before April, 2017. We selected only research papers published in English. Papers dealing with apps not relevant to PMR or unavailable on the market were excluded. We analyzed the following information for all apps: target population, object of the measure, body segment evaluated, modality of use, operating platform system, and validation results.

Results

The literature search produced 91 papers, 39 of which met the inclusion criteria. The included papers featured 20 different apps: 13 exclusively for upper/lower limb joint angles, 4 for spine, and 3 for both limbs and spine measurement. The 20 apps used the inbuilt smartphone magnetometer, accelerometer or camera to produce angle measurements. The overwhelming majority of the selected apps are available in the App Store for iOS. No goniometric app has been validated in dynamic conditions.

Conclusion

Our report highlights the availability –for angle measurement of diverse body segments– of a large body of validated goniometer apps that physiatrists and other healthcare practitioners can use with confidence in research and clinical practice. There is a need for validation studies on apps focused on goniometric measurement in dynamic conditions, such as during gait or during performance of therapeutic exercises.

Keywords

REHABILITATION;GONIOMETER;MOBILE PHONE

No conflict of interest

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C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2261

AN ANALYSIS OF MOVEMENT PATTERNS DURING REACH AND GRASP IN STROKE PATIENTS: A KINEMATIC APPROACH

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Introduction/Background

This study aimed to evaluate spatiotemporal and kinematic movement patterns during reach and grasp task performance in post-stroke hemiplegic patients and compare the movement pattern according to upper extremity impairment severity.

Material and Method

46 subacute post-stroke patients and 20 healthy participants were enrolled in this study. Spatiotemporal and kinematic data were obtained through 3D motion analysis (VICON) during reach and grasp task performance. The reach and grasp task consisted of four sub-phases: reaching, forward transporting, backward transporting, and return. Movement time, peak velocity, number of movement units, joint angles, range of motion, and sum of the deviation angles from normative data were compared between groups, which were classified by the upper-Fugl-Meyer Assessment (FMA) performance-based impairment scale.

Results

The severe group showed significant longer movement time, lower peak velocity, and a higher number of movement units than the mild group during the reach and grasp task performance ($p < 0.05$). The characteristic compensatory movement patterns, such as shoulder abduction, thoracic posterior tilting, and upward and external rotation motion were significantly larger during forward transporting in the severe group compared to the mild group ($p < 0.05$). The FMA-UE score was significantly associated with the movement time during the forward transporting phase, the number of movement units during the reaching phase, range of shoulder abduction-adduction motion during the reaching and backward transporting phase, range of thoracic upward-downward movement during the forward transporting phase, thoracic internal-external rotation motion during the backward transporting phase, and elbow flexion-extension motion during the return phase in the multivariate analysis ($p < 0.05$).

Conclusion

This study suggests that post-stroke hemiplegic patients have unique spatiotemporal and kinematic movement patterns during reach and grasp task performance according to upper extremity impairment severity. The results of this study may be helpful for interpreting upper extremity motions in post-stroke patients.

Keywords

stroke;kinematics;upper limb

No conflict of interest

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ISPR8-2288

QUANTITATIVE ASSESSMENT ON FOUR MOVEMENTS TO REPRESENT THE HAND FUNCTION IN STROKE

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Introduction/Background

As the hand motor function rehabilitation after stroke has attracted more and more attention, the treatment and assessment of hand function become increasingly important. A more precise assessment of hand function is of great significance for the stroke patients. Methods of assessment include qualitative, semiquantitative and quantitative modalities. It is more meaningful to have quantitative assessment to evaluate the situation, which can produce suitable treatment.

Material and Method

A multi-dimensional visual hand function rehabilitation quantitative assessment system was invented by our team. It used advanced cameras to catch movements of the hand. Both hands of the patients were recorded with their active range of motion(AROM). The AROM was considered to be a symbol of functional movement of the hands. For stroke patients, we chose four typical actions, which were forearm supination, wrist dorsiflexion, thumb adduction and abduction and the four-finger(except for the thumb) adduction and abduction, to represent the hand function of the patients. At the same time, the Fugl-Meyer assessment(FMA) of upper extremity was evaluated to these patients.



Results

For stroke patients with unilateral cerebral injury, AROM of the four typical movements of both the affected and the unaffected hand were recorded through the quantitative system. Normally, we take the unaffected hand as a standard. Percentage from the affected to the unaffected one was also calculated. For each patient, he had a set of quantitative assessment and a result of FMA.

Conclusion

Quantitative assessment in hand function of stroke patients is valuable because a good assessment is the foundation of an effective treatment. The AROM data from the system is found compared to the FMA. The four functional movements can be used to stand for the hand function of the stroke patient. Quantitative assessment on these four movements will be of great value during the rehabilitation process.

Keywords

quantitative assessment;stroke;hand function

No conflict of interest

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C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2293

EEG EVALUATION OF STROKE PATIENTS WITH HAND DYSFUNCTION

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Introduction/Background

EEG-based BCI evaluation was a non-invasive way to assess the brain function of stroke patients. With higher temporal resolution, it can be used to see the brain activation change when patients were asked to perform a specific task like motor imagery(MI). For patients with hand dysfunction after stroke, specific task-based EEG evaluation can not only be used to assess brain function but also be a reference in BCI rehabilitation system improvement suitable for stroke patients.

Material and Method

The research recruited 31 stroke patients with hand and upper extremity motor dysfunction. Patients were asked to perform motor imagery task according to the tips on the screen. EEG signals of stroke patients were recorded. BCI performances of this system were evaluated. We chose 12 and 14 channels to respectively calculate the BCI performances. They total 12 are C3, FC1, FC5, CP1, CP5, P3 in the left hemisphere and C4, FC2, FC6, CP2, CP6, P4 in the right hemisphere. In addition, we add F3 and F4 to a total 14 channels.



Results

We found that in the lower alpha- α , the BCI performance of ischemia was significant higher than that of hemorrhage($P<0.05$) both in the 12 and 14 channels. We also found that the higher the BCI accuracy, the higher FMA score the patient will get($P<0.05$). And there was no statistical significance in other EEG frequencies related to motor imagery task.

Conclusion

The brain activation and BCI accuracy can be used as monitor and assessment for stroke patients. The difference in BCI accuracy between ischemia and hemorrhage may be an improvement reference in BCI system. For hemorrhagic patients, the BCI feedback threshold may be lower in other to get a better interaction. And the correlative result between FMA scores and BCI accuracies suggests that the person with higher hand function, the higher BCI accuracy he may get.

Keywords

BCI;motor imagery;stroke

No conflict of interest

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ISPR8-2295

ASSESSMENT OF ELBOW SPASTICITY WITH SURFACE ELECTROMYOGRAPHY AND MECHANOMYOGRAPHY BASED ON SUPPORT VECTOR MACHINE

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Introduction/Background

The Modified Ashworth Scale (MAS) is the gold standard in clinical for grading spasticity. However, its results greatly depend on the physician evaluations and are subjective.

Material and Method

In this study, we investigated the feasibility of using support vector machine (SVM) to objectively assess elbow spasticity based on both surface electromyography (sEMG) and mechanomyography (MMG). sEMG signals and tri-axial accelerometer mechanomyography (ACC-MMG) signals were recorded simultaneously on patients' biceps and triceps when they extended or bended elbow passively. 39 post-stroke patients participated in the study, and were divided into four groups regarding MAS level (MAS=0, 1, 1+ or 2). The three types of features, root mean square (RMS), mean power frequency (MPF), and median frequency (MF), were calculated from sEMG and MMG signal recordings. Spearman correlation analysis was used to investigate the relationship between the features and spasticity grades.

Results

The results showed that the correlation between MAS and each of the five features (MMG-RMS of the biceps, MMG-RMS of the triceps, the EMG-RMS of the biceps, EMG-RMS of the triceps, EMG-MPF of the triceps) was significant ($p < 0.05$). The four spasticity grades were identified with SVM, and the classification accuracy of SVM with sEMG, MMG, sEMG-MMG were 70.9%, 83.3%, 91.7%, respectively.

Conclusion

Our results suggest that using the SVM-based method with sEMG and MMG to assess elbow spasticity would be suitable for clinical management of spasticity.

Keywords

Surface Electromyography;Mechanomyography ;Spasticity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2301

VALIDITY AND DIAGNOSTIC ACCURACY OF THE FILIPINO VERSION OF THE BOSTON CARPAL TUNNEL QUESTIONNAIRE IN THE DIAGNOSIS OF CARPAL TUNNEL SYNDROME

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Introduction/Background

The Boston Carpal Tunnel Questionnaire (BCTQ) is the most utilized, reliable and valid condition-specific questionnaire for carpal tunnel syndrome (CTS). Recently, its Filipino version (BCTQ-Fil) was developed. The aim of this study was to evaluate its validity and diagnostic accuracy in the diagnosis of CTS using two reference standards: nerve conduction studies (NCS) alone, and physical examination (PE) and NCS combined.

Material and Method

One hundred sixty-six participants were recruited in offices in Manila, Makati, Pasig and San Juan City from September 2015 to September 2016. History and physical examination were done. 117 participants were qualified which included those with clinical diagnosis of CTS based on symptoms of wrist or hand pain, tingling sensation and numbness of hand and/or fingers, and healthy volunteers. Excluded were participants less than 18 years old, women known to be pregnant, presence of history or clinical evidence of an accompanying condition that mimics CTS or interferes with its evaluation, history of underlying disorders associated with CTS, and previous upper extremity surgery. All completed the BCTQ-Fil and underwent NCS.

Results

There was a significant correlation found between the BCTQ-Fil scores and the two reference standards.

Table 1. Correlation between BCTQ-Fil scores with nerve conduction studies (NCS), and physical examination (PE) and NCS combined

Comparative Measures	Spearman's rank correlation					
	SSS Score		FSS Score		Total Score	
NCS	0.24	p < 0.01*	0.24	p < 0.01*	0.26	p < 0.01*
PE and NCS combined	0.34	p < 0.01*	0.21	p < 0.01*	0.32	p < 0.01*

* significant

Using NCS alone, the sensitivities of the Symptom Severity Scale (SSS), Functional Status Scale (FSS) and total scores of BCTQ-Fil were 60.00%, 47.37% and 60.00%, respectively, while specificities were 66.91%, 75.54 % and 64.03%, respectively, shown in table 2.

Table 2. BCTQ-Fil scores in detecting carpal tunnel syndrome (CTS) diagnosed using nerve conduction studies alone

	AUC	Cut-off	Sn (%)	Sp (%)	LR+	LR-
Mild CTS						
SSS	0.56	≥ 1.09	55.58	60.84	1.43	0.73
FSS	0.84	≥ 1.00	100.00	83.73	6.15	1.19
Total	0.57	≥ 1.05	55.58	58.43	1.34	0.76
Moderate CTS						
SSS	0.62	≥ 1.09	68.75	57.80	1.63	0.54
FSS	0.95	≥ 1.00	100.00	63.76	2.76	0.00
Total	0.63	≥ 1.05	68.75	55.96	1.56	0.54
Severe CTS						
SSS	0.72	≥ 1.09	72.73	57.85	1.73	0.47
FSS	1.00	≥ 1.00	100.00	62.33	2.65	0.00
Total	0.71	≥ 1.05	72.73	55.61	1.64	0.49
Overall						
SSS	0.62	≥ 1.09	60.00	66.91	1.81	0.60
FSS	0.63	≥ 1.00	47.37	75.54	1.94	0.70
Total	0.63	≥ 1.05	60.00	64.03	1.67	0.62

AUC: area under the Receiver operator characteristic curve; LR+: likelihood ratio for a positive test result; LR-: likelihood ratio for a negative test result; Sn: sensitivity; Sp: specificity; SSS: Symptom Severity Scale, FSS: Functional Status Scale

Using PE and NCS combined, the sensitivities and specificities were higher, shown in table 3.

Table 3. BCTQ-Fil scores in detecting carpal tunnel syndrome (CTS) diagnosed using physical examination and nerve conduction studies combined

	AUC	Cut-off	Sn (%)	Sp (%)	LR+	LR-
Mild CTS						
SSS	0.68	≥ 1.09	76.92	60.10	1.93	0.45
FSS	0.63	≥ 1.13	57.69	69.23	1.88	0.75
Total	0.68	≥ 1.05	76.92	58.17	60.26	0.45
Moderate CTS						
SSS	0.72	≥ 1.09	83.33	57.02	1.94	0.29
FSS	0.77	≥ 1.13	83.33	67.95	2.57	0.44
Total	0.75	≥ 1.05	83.33	55.26	1.86	0.30
Severe CTS						
SSS	0.92	≥ 1.09	100.00	57.46	2.35	0.00
FSS	0.79	≥ 1.13	83.33	67.54	2.57	0.25
Total	0.90	≥ 1.05	100.00	55.70	2.26	0.00
Overall						
SSS	0.75	≥ 1.09	81.58	66.24	2.22	0.29
FSS	0.70	≥ 1.13	65.79	72.45	2.39	0.47
Total	0.75	≥ 1.05	81.58	61.22	2.10	0.30

AUC: area under the Receiver operator characteristic curve; LR+: likelihood ratio for a positive test result; LR-: likelihood ratio for a negative test result; Sn: sensitivity; Sp: specificity; SSS: Symptom Severity Scale, FSS: Functional Status Scale

These findings were also seen in the AUC values, which was higher when PE and NCS were used as the reference standard (0.70 to 0.75).

Conclusion

The BCTQ-Fil is a valid and accurate tool in the diagnosis of CTS.

Keywords

Filipino Version of the Boston Carpal Tunnel Questionnaire;diagnosis;Carpal tunnel syndrome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2326

THE CHARACTERISTICS OF CORTICAL ACTIVATION DURING HAND LATERALITY TASK AFTER ISCHEMIC STROKE

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Introduction/Background

Motor imagery (MI) has shown its effects as a neuro-rehabilitation strategy. But limited literature emphasized the neural mechanisms during MI in stroke patients. The purpose of this study is to investigate the features of cortical activation during the hand laterality task (HLT) using electroencephalogram (EEG) in stroke patients.

Material and Method

Nine ischemic stroke patients and five age-matched control were recruited. EEG and behavior performances of subjects were recorded in the left/right hand judgement (HLT) which involves visual processing and mental rotation, and provides a good paradigm to study motor imagery and visual perception of hands. Reaction time (RT) and accuracy were used to evaluate the behavior performances; moreover, event-related potential (ERP) with the frequency from 0.5 to 40 Hz was analyzed to investigate the cortical activation. EEG and T1-weighted structural MRI (TR=7.42 ms, TE=3.26ms) were incorporated to reveal the source activity of the cortex during the task.

Results

The RT is significantly longer in patient group than control, while the accuracy has no statistical difference between two groups (Figure 1). The ERP analysis showed that P200 (in parietal zone) and P300 (in central zone) amplitudes were significantly lower in stroke patients (Figure 2). Besides, source analysis shows the inactivation of the frontal lobe during P200 and bias activation during P300 when patients underwent this task.

Fig 1

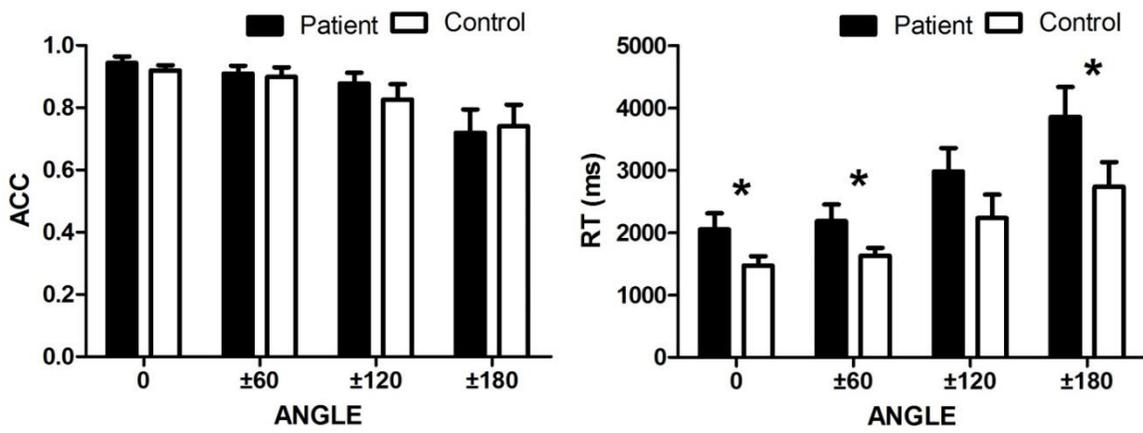
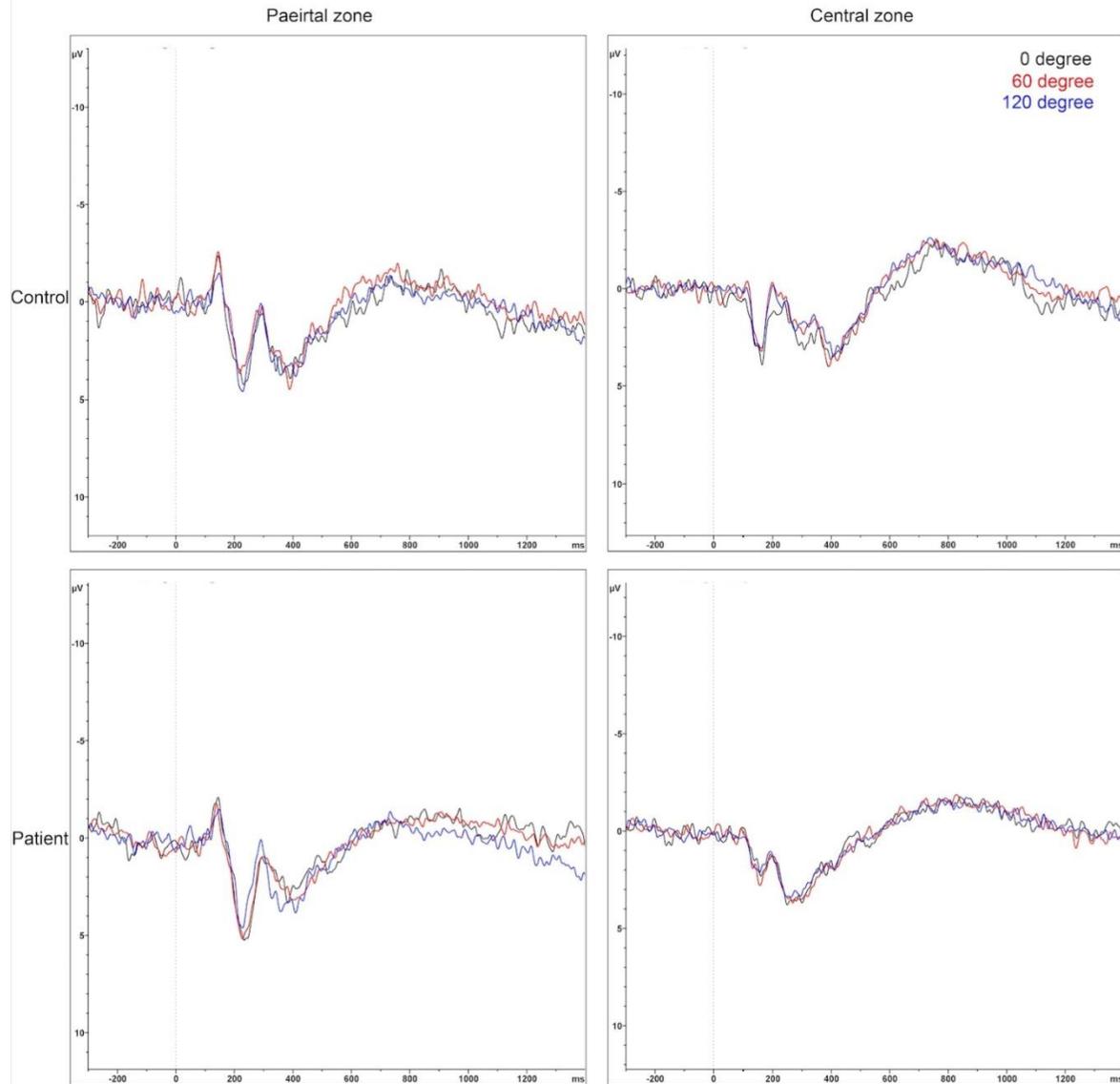


Fig 2



Conclusion

The manifestations of EEG signals during HLT in stroke patients indicated the impairments of visual perception and mental rotation related cognitive processes. It suggested that the underlying neural mechanisms of MI in time course and helped to optimize rehabilitation strategy.

Keywords

Motor Imagery;Stroke;Electroencephalogram

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2336

CHANGES IN LOWER EXTREMITY BIOMECHANICS AND MUSCLE ACTIVITY AFTER SIX-MINUTE FAST-WALK IN INDIVIDUALS WITH FLATFOOT

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Introduction/Background

Flatfoot is a common disorder which is caused by dysfunction of medial longitudinal arch. Individuals with flatfoot usually exhibit symptoms such as fatigue and discomfort after fast walking, and association syndromes to other lower extremity joints. Therefore, it is important to understand how flatfoot affects the biomechanics and muscle activities of the lower extremity, especially after a challenging walking activity.

Material and Method

Fourteen individuals with flatfoot (8M6F, age: 24.5±2.47) participated in this study. All subjects performed maximal voluntary isometric contraction (MVIC) and functional tasks including walking, single-leg standing and sit-to-stand before and immediately after a 6-minute fast-walking protocol. The motion capture (Vicon Motion Systems Ltd, Oxford, UK) system, force plate and the surface electromyography (sEMG) system (MP150, BIOPAC Systems Inc., CA, USA) were used to collect kinematics and muscle activation data respectively. Median frequency and RMS amplitude of EMG, as well as joint angles and moments were calculated and compared using paired t-tests.

Results

Most of subjects showed decrease in median frequency (fatigue) in tibialis anterior, but increase in abductor hallucis after 6-minute fast-walking. Also, during stance phase of gait, ankle joint showed more adduction and hip joint showed more flexion at heel contact, decreased knee extension moments at 30% to 50% of stance phase, and decreased hip internal rotation moments at 30% of stance phase.

Conclusion

Our study found that tibialis anterior became fatigue after 6-minute fast walking, and as a result abductor hallucis increased muscle recruitment to compensate and provide support to the foot arch. Along with the altered biomechanics of the proximal joints, this challenging fast walking protocol could help explain the mechanism of overuse injury and associated syndromes in individuals with flat foot.

Keywords

Flatfoot;Biomechanics;six-minute fast-walk

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2437

SUPPRESSING INVOLUNTARY MOVEMENTS BY MECHANICAL COMPRESSING STIMULATION WITH HARNESS

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Background and Aim.

Muscle tone depends on voluntary movement, but there is a condition that voluntary movement becomes dystonic and exercise does not go well.

We developed a harness device to suppress dystonia with compression from the body surface to improve the performance.

Case. The patient is a 20-year-old Japanese woman with a recent history of Miller Fisher syndrome undergoing occupational therapy. After intravenous immunoglobulin therapy, she started to show dystonia during voluntary movements disturbing her motion, which made her daily activity difficult.

The dystonia made her shoulders adduct, elbows flex and forearm externally rotated. When she walked, her hips were externally rotated with ankle dorsally flexed and externally rotated. We found that pressure on lower inside area of the shoulder blades, and on the planter side of the fourth to fifth metatarsal bones inhibited dystonic movements of the upper and lower extremities, respectively.

Discussion. The aquaplast splint material (APM) resembling a thumb on the harness was an effective device made upper limb movements free from dystonia. A similar device on the foot sole suppressed dystonia of the legs during when she walked. Thus these simple devices made her over-all ADL performance.

No similar case has been reported to date. This case suggests that the use of APM on a harness can help managing dystonia during ADL performance. There are a key points to suppress muscle tones by pressing body surface. There may be other points that can control muscle tones by pressure on body surface with a harness device.

Conclusion. We think that a similar device can be widely used to control troublesome muscle tone abnormalities including spasticity to make patient's ADL better.

Keywords

dystonic;Involuntary movements;Muscle tone

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.07 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ISPR8-2471

INVESTIGATING CHANGES IN GLOBAL CONDUCTION VELOCITY ESTIMATES FROM BICEPS BRACHII MUSCLES OF STROKE SURVIVORS

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Introduction/Background

It has been inferred that stroke-induced alterations of the lower motor neurons and their muscle fibres may contribute to muscle weakness and thus to motor impairment. Although previous accounts have investigated the mechanisms underpinning muscle weakness from muscle fiber conduction velocity estimates, reports about how the global conduction velocity (CV) differ between healthy and paretic muscles post-stroke are uncommon. Thus, in this study we examined side-differences in global CV estimates from biceps brachii muscles of stroke survivors, and their relation with differences between muscles' functions.

Material and Method

Seven chronic post-stroke patients participated in this study. Surface electromyograms were sampled with a grid of 32 electrodes (8x4; 10 mm inter-electrode distance) from biceps brachii. Stimulation electrodes were placed in bipolar configuration as proximally as possible over the muscle. CV values were estimated from differential M waves elicited by supramaximal current pulses. Impairment of biceps brachii functions was assessed with the Fugl-Meyer Assessment scale. Spearman's rank-order correlation was applied to verify the relationship of the healthy/paretic ratio values for CV and Fugl-Meyer values.

Results

There was a significant negative correlation ($Rho=-0.96$; $P=0.003$; $N=7$: Figure) between side-differences in CV values and the functional scores.

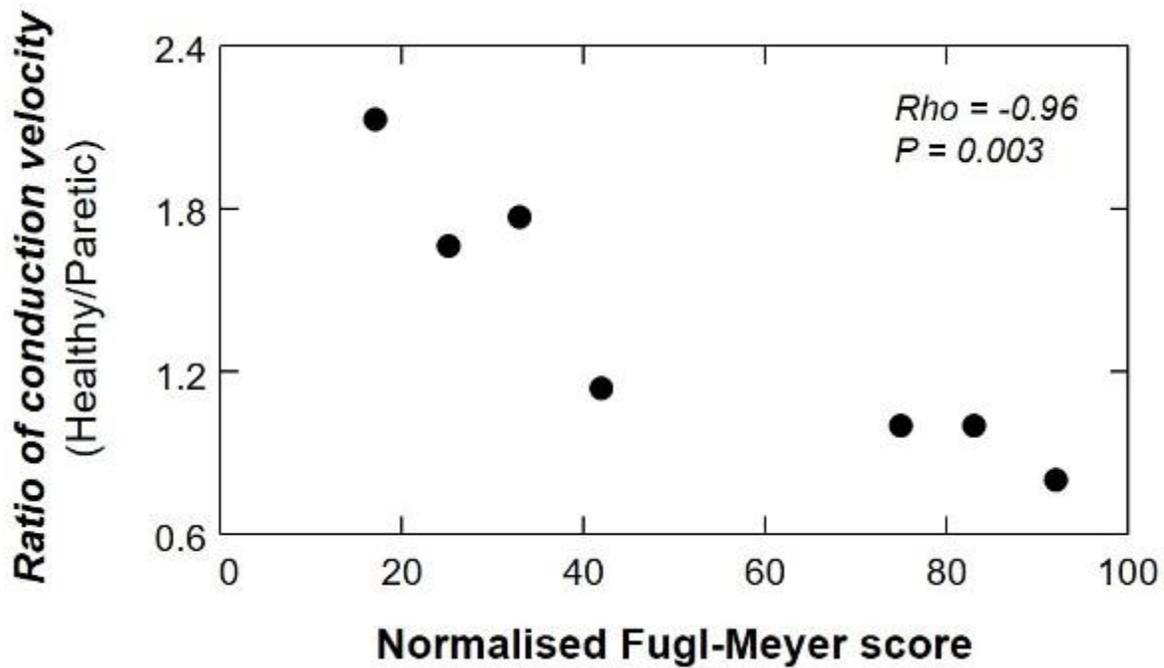


Figure. Scatter plot of side-differences in CV values against the normalised, Fugl-Meyer score.

Conclusion

Marked differences in CV values estimated for the healthy and paretic limbs were associated with highly impaired, biceps brachii function. Conversely, patients with either preserved or recovered motor function exhibited similar CV values for both limbs. Whether these side-differences in CV may be explained by structural adaptations remains an open issue. Current results reveal however the CV values may constitute a relevant index to assess the degree of motor function in biceps brachii motor units.

Keywords

Stroke;Global conduction velocity;Motor unit

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.08 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Skin and Related Structures

ISPR8-1274

WHAT IS THE BEST SET OF MARKERS FOR FACIAL MOVEMENTS RECOGNITION?

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Introduction/Background

Nowadays, motion capture with light and markers is valid tool for medical applications. However, in the face analysis domain, a framework for defining the optimal marker set layout does not exist yet.

Therefore, the objective of this study is to propose an automatic approach to compute the optimized layout with the minimum number of facial marker.

Material and Method

124 distinct face motion captures, acquired through 18 optoelectronic cameras T160 and two Bonita video cameras at a frequency of 100Hz, have been analysed. Every capture contains the 3D coordinates of 109 markers (\varnothing 1.5mm) fixed by a trained physiotherapist on the facial skin surface.

The six facial movements acquired are the closure of the eyes, the forced closure of the eyes, the pronunciation of the sounds [o] and [pɥ], a smile, and a spontaneous smile. These movements have been chosen due to their great importance in analysis of facial expression in healthy, pathological or rehabilitative subject. They take place in different zones of the face involving both the frontal and orbicular zones, and the zones of the lips and the chin.

Then, the distances between each marker and its nearest neighbours are computed and used as input of a recursively two-step KNN classification process, performed on a subset of the previous computed features, selected through a Feature Selection Procedure. The subset that best of all allows an automatic identification of the types of the performed movement is recorded and the marker set layout is extracted from it.

Results

This systematic study has identified a set of 19 markers, shown in Figure 1.

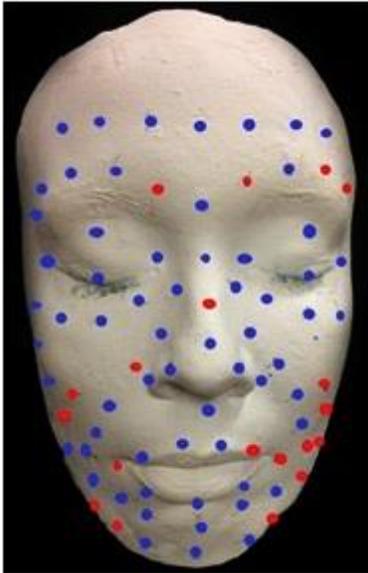


Figure 1 The position of the 109 facial marker during the acquisition. In red the minimum optimum marker layout found by our automated procedure.

Conclusion

The recognition rate obtained is 95%. Hence, the solution accurately records the motion information necessary to discriminate the six facial expressions.

Keywords

Face Analysis; Motion Capture; Marker Optimization

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.08 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Skin and Related Structures

ISPR8-2423

THE ANALYSIS OF TISSUE COMPRESSIBILITY PATTERN USING ULTRASONOGRAPHY IN LYMPHEDEMA PATIENTS AFTER BREAST CANCER SURGERY

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Introduction/Background

To investigate the subcutaneous tissue elasticity by using ultrasonography in lymphedema patients after breast cancer surgery.

Material and Method

Lymphedema patients who took breast cancer operation were included. Thickness of subcutaneous tissue was assessed at two spots; 10cm below elbow (forearm) and 10cm above elbow (upper arm), not only in affected side but also in sound side. By using probe attached to real-time pressure sensor, we could obtain stress-strain (subcutaneous) curves. We defined tissue elasticity as slope of that curve at range of 7.5~15% of strain to avoid toe region. By comparing the elasticity of normal side and that of affected side, lymphedema tissues were classified into 'softer' and 'harder' tissues.

Results

Overall 30 cases of lymphedema tissues and 30 cases of sound tissues were checked. The difference of the elasticity between normal and affected side ranged from -3.98 N/m² to 1.40 N/m². The lymphedema tissues were classified into 17 softer tissues and 13 harder tissues. No demographic and clinical values, including clinical stage of lymphedema, showed statistically meaningful differences between two groups.

Conclusion

Evaluation of subcutaneous tissue elasticity with ultrasonography and real-time pressure sensor could be one of the useful tools for investigation of lymphedema tissue characteristics.

Keywords

lymphedema;ultrasonography;compressibility

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.09 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Assessment of Health Perception and Quality of Life

ISPR8-0373

QUALITY OF LIFE AND PHYSICAL FUNCTIONING IN PATIENTS WITH MYOPATHY

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Introduction/Background

The aim of this research was to investigate the physical functioning of patients with myopathy and to measure its influence on quality of life (QoL). Previous studies have observed a lower QoL in myopathy than in control patients but its relationship with physical functioning as not yet been evaluated. We hypothesized that motor abilities evolution would predict a lower physical and psychological QoL.

Material and Method

25 patients with adult-form myopathy were included: 14 patients with myotonic dystrophy type 1, 6 with facioscapulohumeral dystrophy, 2 with limb girdle muscular dystrophy, 1 with mitochondrial myopathy, 1 with Central Cores myopathy, 1 with Ullrich muscular dystrophy (population description in table, n=25)

They all answered two questionnaires of QoL: Medical Outcomes Short-Form 36 (SF-36) which gives a physical and a mental score and the Quality of Life of genetics neuromuscular diseases (QoL-gNMD) which gives three under-scores: Body symptom, Self-perception, Activity and participation. The physical functioning was evaluated with two measures by physiotherapists: balance with the Berg Scale and walking range with the 6 Minute Walk Test.

	Mean	SD
Sexe ratio	60% female	
Age	49,8	10,3
Disease duration in years since diagnosis	13,4	10,8
Disease duration since first symptom	17	9,69
Functional Independence Measure (FIM)	122,2	4,01

Results

Linear regression analysis showed the 6 Minute Walk Test was significantly predictor of the three scores of QoL-gNMD and the physical score of SF-36. The under-score “Activity and Participation” was also predicted by a balance trouble (Table: regression analysis recapitulative,

**p-value < 0.01). None independent variable was linked with the mental score of SF-36.

	Berg Scale	6 Minute Walk Test
Body Symptom (QoL-gNMD)	0.366	0.568**
Self-Perception (QoL-gNMD)	0.265	0.475**
Activity and Participation (QoL-gNMD)	0.34**	0.690**
Physical score (MOS SF-36)	0.225	0.455**
Mental Score (MOS SF-36)	-0.068	-0.043

Conclusion

Results reveal the negative influence of the physical function lost on QoL, especially the walking range. Effects are observed in body aspects like symptom or social relationship as well as deeper psychological aspects as the self-perception. So, it appears very important to take into account the motor abilities evolution of each patient in order to recommend an adapted rehabilitation, and if necessary, a psychological support to optimally preserve their quality of life.

Keywords

Quality of life;Body Functions;Myopathy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.09 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Assessment of Health Perception and Quality of Life

ISPR8-0676

THE NUMBER OF WALKING STEPS OF JAPANESE YOUNG PEOPLE ARE DECREASING

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Introduction/Background

Walking is the simplest exercises for ordinary person. The Ministry of Health, Labour and Welfare proposed the average number of steps increases 9,000 steps/day from 8,000 steps/day over a ten-year period in Health Japan 21 Project in 2012¹⁾.

The Great East Japan Earthquake occurred on March 11, 2011. Because many citizens were forced to evacuate from their house, it was feared that they were lack of walking steps.

On the other hand, freshmen in university were checked how many steps they walked for the purpose of health education. This study aimed to compare the walking steps between elder residents in temporary housing and freshmen in university, and to clarify the present situation of Japanese walking steps.

Material and Method

The number of steps of 50 elder residents in temporary housing and 50 elder residents living in their own house were measured in December 2014 at Minami-soma City, Fukushima. In addition, walking steps of 350 freshmen in Hiroshima University were counted from May 2015 to May 2017.

Results

The number of steps were 4,200 steps/day with Minami-soma evacuees, 6,300 steps/day with residents living in their own house, 3,590 steps/day with freshmen in Hiroshima University (Table 1).

Conclusion

Ordinary Japanese people walked 7,360 steps/day in 2010¹⁾. It documented that elder residents living in temporary housing are less physically active than those living in their house. Collapse of original community and lacking of motivation to go outside may cause this situation.

However, freshmen's walking step was less than evacuees. Lack of walking steps is critical issue. They will walk less and less in the future, and spend their life depending on medical care. It is necessary to change this negative tendency.

Reference

1) Ministry of Health, Labour and Welfare: a basic direction for comprehensive implementation of national health promotion, 2012.

Keywords

walking;disaster medicine;behavior modification

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.09 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Assessment of Health Perception and Quality of Life

ISPR8-0911

QUALITY OF LIFE AND PARTICIPATION OF MOROCCANS VICTIMS OF THE POISONING WITH ADULTERATED OILS A HALF-CENTURY AFTER THE OUTBREAK

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Introduction/Background

In 1959, the poisoning with adulterated oils is one of the most tragic sanitary catastrophes in Morocco. More than 20,000 persons were affected and a larger number become disabled. 51 years after, many patients continue to report participation restriction and impaired quality of life (qol). This study aims to evaluate the outcome, qol and participation of this population, a half-century after the tragedy.

Material and Method

We conducted a cross-sectional study in 2010. Among 450 survivors, 111 people were included. A structured interview was carried out to investigate the socio-demographic and clinical aspects. The Functional Independence Measure (FIM) and Short Form Health Survey (SF-36) were used to assess activities limitations, participation restriction and qol. To study the relationship between quality of life and disability, a univariate analysis was carried out. The chi-square test was used for inter-group comparisons. A p-value of 0.05 was adopted as the limit for inclusion of a variable in the multivariate analysis.

Results

The average age of the study population is 68+/-99.9 years with a female predominance (56%). The average age at the time of intoxication is 17+/-9.97 years. The majority is married (68.5%), illiterate (58%), without any adhesion to the insurance system (79%) with similar cases in the family (63%). The overall average score for qol is 31.64. Women were significantly more impaired than men. The age of over 65 years, illiterate and the female sex are the 3 factors of participation restrictions and Impaired quality of life in this population.

Conclusion

The improvement of the physical, psychic and social care is an urgent and obligatory action in a "right" approach, to ensure an optimal social participation of this population that has suffered and continues to suffer half a century after the outbreak.

Keywords

Toxic Oil Syndrome;Quality of life;Moroccan outbreak

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.09 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Assessment of Health Perception and Quality of Life

ISPR8-1558

POSSIBLE LIMITS AND IMPROVEMENTS IN THE QUALITY OF LIFE SCALES FOR PATIENTS PRESENTING AFTER-EFFECTS OF A STROKE

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Introduction/Background

The use of scales to evaluate quality of life is common practice in clinical research, particularly in Physical Medicine and Rehabilitation (PMR). Among existing scales, the EuroQoL-5D (EQ-5D) or Medical Outcome Study Short Form (MOS SF-12 or MOS SF-36) are often used, either to characterise a group of persons, or to evaluate their quality of life. Our aim is to highlight certain limitations in the scope of application of knowledge provided by these tools for PMR, among others.

Material and Method

The analysis of the scales was carried out in two stages. Firstly, a sociologist has reviewed the diversity of the sociocultural aspects present in the scales, to notice the missing aspects, which appear significant according to several sociological studies. Secondly, 32 interviews with patients presenting after-effects of a stroke were carried out to confirm and develop these reports.

Results

The problems which will be mentioned concern different aspects of the scales; the items and domains (lack of questions on autonomy and self-image), the list of possible responses (total or episodic lack of the response « I don't know ») and the system of evaluation of quality of life (lack of a personal point of view on the impact on quality of life, and thus on possible improvements induced by treatment, whatever its nature). These faults and limitations are not confined to these four generalist scales, they can be found in other scales.

Conclusion

Our analysis invites future clinicians or researchers to improve existing tools and to develop new ones in order to cover a larger repertoire of important dimensions relating to the existence of persons. With this aim in mind, we will present a new tool for PMR which takes into account the problems outlined.

Keywords

quality of life;stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C1.09 Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Assessment of Health Perception and Quality of Life

ISPR8-2325

VALIDITY AND RELIABILITY OF THE LIFE BALANCE INVENTORY IN CHRONIC STROKE

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Introduction/Background

The Life Balance Inventory is a questionnaire developed to assess congruence between how people want to spend their time in various activities and how they actually spend their time in those activities. Stroke has a major impact on daily activities and life balance might be compromised after stroke. The aim of this study was to validate the Flemish version of the Life Balance Inventory (LBI) in people in the chronic phase after stroke.

Material and Method

The LBI was translated according to the principles of translation and cultural adaptation process of patient-reported outcomes. We recruited 22 first-ever stroke survivors, aged 18 or older and at least 6 months post stroke. The LBI was administered twice, with a time interval of one week. Test-retest reliability of the LBI was examined using intraclass correlation coefficients (ICC) and Bland-Altman plots. Construct validity was assessed by calculating Spearman Rank correlation coefficients between LBI and Hospital Anxiety and Depression Scale (HADS) and Stroke Impact Scale (SIS).

Results

Mean age (+/- SD) of our sample was 60±11 years, mean time post stroke 655±139 days and 14/22 (64%) participants were male. Mean total LBI score was 2.41±0.42 out of 3 on the first occasion and 2.39±0.47 on the second occasion, demonstrating relatively good satisfaction with life balance after stroke. The ICC [95%] for total LBI score was 0.91 [0.77-0.97] indicating good test-retest reliability. Construct validity was supported by moderate association between LBI and HADS ($r_s=-0.46$, $p=0.011$) and between LBI and SIS ($r_s=0.65$, $p=0.002$), as hypothesized.

Conclusion

In stroke recovery and rehabilitation, more attention is warranted to evaluate life balance. LBI results may guide the rehabilitation approach. Psychometric properties for the Flemish version of the LBI are underpinned by the results of this study and support use of LBI in clinical practice and research.

Keywords

Life Balance;Stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-0010

IMMEDIATE EFFECTS OF TAI CHI TRAINING ON COGNITIVE AND HAEMODYNAMIC RESPONSES IN COMMUNITY-DWELLING OLDER ADULTS: A PROSPECTIVE CONTROLLED STUDY

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Introduction/Background

Tai Chi (TC) is a mind-and-body exercise and may improve cognitive functions and cardiovascular outcomes in elderly people. This study aimed to confirm the acute effects of TC training on attention and meditation, perceived stress level, heart rate, oxygenation in blood, and palmar skin temperature in community-dwelling healthy older adults.

Material and Method

Twenty older TC practitioners and 20 age- and sex-matched non-practitioners volunteered to join the TC and control groups, respectively. After baseline measurements were taken for each group, the TC group performed a TC form for 10 minutes while their cognitive states and cardiovascular responses were concurrently monitored. The control group rested for the same duration in quiet standing. Both groups were then reassessed. The participants' attention and meditation levels were measured using a single-channel electroencephalographic device; stress levels using Perceived Stress Scale; blood oxygenation and heart rate using an oximeter; and palmar skin temperature using an infrared thermometer.

Results

Attention level tended to increase during TC and dropped immediately thereafter ($p < 0.001$). Perceived stress level decreased from baseline to posttest in the TC group ($p = 0.005$). Heart rate increased during TC (54.3% of maximum heart rate) ($p < 0.001$) and decreased thereafter ($p = 0.001$). No significant group, time, or group-by-time interaction effects were found in any other outcomes.

Conclusion

While TC training could temporarily improve attention and decrease perceived stress levels, it could not improve meditation, palmar skin temperature, or blood oxygenation among older adults.

Keywords

Chinese martial art;cognitive function;cardiovascular response

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-0030

COMPARISON OF RESPONSES TO TREADMILL EXERCISE LISTENING TO THAI CONTEMPORARY MUSIC AND NO MUSIC IN UNTRAINED ADULT

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Introduction/Background

Living an active lifestyle is important to stay healthy especially in the aging society. Present studies showed Listening to music while exercising can enhance work capacity and delay fatigue. However, most of the research were conducted in trained subjects and used western music such as classical music which were not familiar in Asian countries. This study aimed to investigate the effect of Thai contemporary music on response of treadmill exercise in untrained adults.

Material and Method

30 untrained healthy adults were equally allocated to one of the two sequence groups. The first group were listening to Thai contemporary music selected from four types of music while performing treadmill exercise at 60% of maximal heart rate for 20 minutes, washout 1 week then performed treadmill exercise again without listening to music. For the second group, the sequence of treatment was reversed. Rate of Perceived Exertion, SBP, maximum speed, total distant and enjoyment VAS were recorded for each exercise session.

Results

Mean RPE was significantly lower while listening to music (11.29) comparing with no music (12.37, $p < 0.001$). Mean enjoyment VAS was significantly greater while listening to music (6.92) comparing with no music (4.37, $p < 0.001$). No statistically significant difference regarding SBP, speed and total distant.

Conclusion

Thai contemporary music can decrease RPE and increase enjoyment during treadmill exercise at fixed work load, therefore music may be useful as a tool to assist exercise adherence in healthy untrained adults.

Keywords

exercise response; Music therapy; untrained adult

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-0058

THE USE OF PERIODIZED EXERCISE PRESCRIPTION IN PHYSICAL REHABILITATION: A SCOPING REVIEW OF LITERATURE

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Introduction/Background

The purpose of this review was to describe the use of periodized exercise prescription within the context of physical rehabilitation. This form of exercise prescription, seems to be a possible alternative to the current American College of Sport Medicine (ACSM) model of exercise prescription.

Material and Method

The following databases were searched: The Cochrane Central Register of Controlled Trials, Medline, Pubmed, Cinahl, Science direct, Pedro, Web of science, SPORTDiscus, SAGE and Google Scholar. Methodology used was based on Arksey and O'Malley's five stage scoping review framework. A self-developed data extraction form was developed to gather the necessary information under the following headings: Author(s), year of publication, study location, study design, study population, intervention type (linear or nonlinear periodized programme); stage of rehabilitation; structure of the intervention (i.e. specific phases); dosage of the intervention (i.e. frequency, intensity, time); outcome measures; beneficial / adverse effects; primary result.

Results

Six studies were included in this review. Two studies were RCT's; two were pair matched RCT's; one was a repeated measures design; and one was a quasi-experimental case study. The included papers focused on the following population groups: cardiac; chronic non-specific lower back pain; chronic obstructive pulmonary disorder; and spinal cord injury. Methodological quality and internal validity of the included papers were lacking. Main outcome levels used in the included studies were related to physiological, impairment and quality of life. Programme structure relating to the use of a familiarisation phase; sequencing of exercises; and structuring of specific phases was present. The majority of the included studies failed to indicate in which phase rehabilitation had occurred.

Conclusion

Although there is a lack of consistency with regard to the structure and implementation of a periodized model of exercise prescription in the physical rehabilitation context, it nonetheless seems to be a novel way of prescribing exercise within the rehabilitation setting.

Keywords

periodization;exercise prescription;physical therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-2681

SEASONAL INFLUENCE ON ADHERENCE TO PHYSICAL ACTIVITY AFTER A CARDIAC REHABILITATION PROGRAM - A PILOT STUDY

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Introduction/Background

Cardiac Rehabilitation Programs (CRP) following an acute coronary syndrome have shown to be effective in reducing mortality. The aim of our study is to investigate the seasonal influence on adherence to physical activity after one year of CRP.

Material and Method

We prospectively collected data from all the patients that underwent CRP during one year and divided them in two groups: patients who finished phase II in cold months (October to March), and those who ended in hot months (April to September).

They completed an exercise-based CRP during 6 -12 weeks and were evaluated by a stress test in 3 different moments: ST1 (before the CRP); ST2 (after phase II of CRP) and ST3 (12 months after ST1). We performed a two-sample t-test (*pvalue* 0.05) between the results obtained in stress test (measured through METs achieved) in the two groups in the 3 moments.

Results

During 2016, 102 patients, aged <65 enrolled phase II after an acute coronary syndrome. There were 21 missing cases.

We found no statistically difference between the results of two groups, after one year.

However, all patients (N=81) presented a positive evolution between ST1 and ST2 and also between ST1 and ST3, in this case with a statistically significance (two-sample t-test (*pvalue* 0.05)) corroborating the result.

On the other hand, the overall outcome between ST2 and ST3 was negative or null.

Conclusion

Although we found no difference in our sample, it's still relevant to analyze the seasonal influence in a larger population.

The results also show the importance of the CRP after an acute coronary syndrome and demonstrate the need to implement a phase III or other forms of incentive physical activity after hospital discharge from phase II.

Keywords

cardiac rehabilitation;acute coronary syndrome;physical activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-0698

EFFECTS OF GAIT TRAINING WITH UNILATERAL LEG LOAD ON WEIGHT BEARING ASYMMETRY OF INDIVIDUALS WITH STROKE: A RANDOMIZED CLINICAL TRIAL

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Introduction/Background

Stroke patients have shown expressive asymmetry between the paretic and non-paretic lower limb (NPLL). The aim of this study was to examine the effects of unilateral leg load used as a restraint for the NPLL during gait training on weight bearing asymmetry after stroke.

Material and Method

Thirty-eight stroke patients of both genders and with up to one year of first stroke that caused gait deficits (gait speed < 0.8m/s) participated in the study. Participants were randomized into: treadmill training with load (equivalent to 5% of body weight) on the NPLL (experimental group) and treadmill training without load (control group). Interventions lasted 30 min per day, for 2 weeks (9 sessions). Kinetic data were collected with a force plate, during standing position (static) and during gait (dynamic). Limb loading was evaluated by the mean of vertical component of ground reaction force (GRF), for paretic and non-paretic limbs. Static and dynamic symmetry ratio (paretic GRF/non-paretic GRF) was calculated for both groups at baseline, post-training and after 40-day follow-up.

Results

At baseline, groups were homogeneous with regard to age, time since stroke, neurological status (according to National Institute of Health Stroke Scale) and walking ability (according to Functional Ambulatory Category). Repeated-measures analysis of variance showed no effects over time in static and dynamic symmetry ratio (static: $F=0.985$; $P=0.364$; dynamic: $F=2.005$; $P=0.153$). In addition, ANOVA showed no changes between experimental and control groups in static and dynamic symmetry ratio (static: $F= 0.031$; $P= 0.862$; dynamic: $F= 0.063$; $P= 0.803$).

Table 1 Sociodemographic and clinical data of experimental (n=19) and control (n=19) groups at baseline.

Variable	Experimental Median (25th – 75th percentile)	Control Median (25th – 75th percentile)
Age [years]	57.0 (52.0 – 63.0)	60.0 (47.0 – 66.0)
Time since stroke [months]	3.0 (1.0 – 7.0)	3.0 (2.0 – 7.0)
NIH Stroke Scale [score]	2.0 (1.0 – 4.0)	3.0 (1.0 – 4.0)
FAC [score]	3.0 (3.0 – 5.0)	3.0 (3.0 – 4.0)

Abbreviations: NIH, National Institute of Health; FAC, Functional Ambulatory Category.

Table 2 Static and dynamic symmetry ratio of ground reaction force at baseline, post-training and follow up for experimental (n= 19) and control groups (n= 19).

Static symmetry ratio of GRF	Experimental Mean (SD)	Control Mean (SD)	Experimental – Control Mean difference (95% CI)
Baseline	0.83 (0.28)	0.90 (0.37)	-0.07 (-0.29 to 0.14)
Post-training	0.98 (0.46)	0.90 (0.34)	0.08 (-0.19 to 0.35)
Follow up	0.88 (0.33)	0.94 (0.34)	-0.06 (-0.27 to 0.16)
Dynamic symmetry ratio of GRF			
Baseline	0.88 (0.16)	0.86 (0.18)	-0.02 (-0.09 to 0.13)
Post-training	0.91 (0.13)	0.91 (0.11)	0.01 (-0.08 to 0.09)
Follow up	0.86 (0.16)	0.92 (0.13)	-0.06 (-0.15 to 0.03)

Note: Symmetry ratio equal to “1” indicates perfect symmetry.

Abbreviations: GRF, ground reaction force; SD, standard deviation; 95% CI, 95% confidence interval for difference.

Conclusion

Although load addition might favor the use of paretic limb by restraining NPLL, weight bearing asymmetry has not been changed over time in any group. Once this protocol is innovative,

future studies should investigate other parameters such as training duration and amount of load, to improve weight bearing asymmetry after stroke.

Keywords

treadmill training;load;gait

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-0737

THE EFFECT OF NORDIC HAMSTRING EXERCISE ON PREVENTING HAMSTRINGS INJURY ON HAMSTRING INJURY RATE AND TIME-LOSS INJURY RATE IN HIGH SCHOOL SOCCER PLAYERS IN JAPAN

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Introduction/Background

The Nordic Hamstring Exercise (NHE) has been used for the prevention of hamstring injury among soccer players. Many studies have shown the effect of NHE among professional soccer players but there are a few studies for adolescent amateur soccer players. The purpose of this study was to clarify the effect of the NHE on preventing hamstrings injury by calculating hamstring injury rate and time-loss injury rate in adolescent amateur soccer players.

Material and Method

The subjects were high school soccer players in Japan. They were clustered as a team and randomly assigned into two groups; 156 in the NHE group and 103 in the control group. All of the subjects were measured by physical function, practice and game hour per day, injury detail if happened and time-loss hour for soccer. Hamstring injury rate and time-loss injury rate were calculated. Two groups were compared by unpaired t test at significant level of 5%.

Results

Hamstring injuries occurred in 7 cases; 4 in the NHE group and 3 in the control group. Hamstring injury rate was 0.09 per 1000 athlete-hours in the NHE group while 0.10 in the control group. The relative risk of hamstring injury rate was 1.14. Time-loss hamstring injury rate was 0.11 per 1000 athlete-hours in the NHE group while 0.52 in the control group. The relative risk of time-loss hamstring injury rate was 4.54.

Conclusion

As an effect of the NHE in high school soccer players, time-loss injury rate had stronger impact than the hamstring injury rate. These results indicated that the NHE in high school soccer players may had reduced the severity of hamstrings injury without changing injury rate. It is suggested that importance of investigating hamstrings injury prevention in adolescent amateur soccer players using time-loss injury rate in future.

Keywords

hamstrings injury;injury prevention;time-loss injury rate

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-0755

AEROBIC CAPACITY AND QUALITY OF LIFE OUTCOMES AFTER AN AEROBIC EXERCISE PROGRAM USING AN UPPER BODY ERGOMETER IN DIABETIC AMPUTEES TREATED AT MEXICAN REHABILITATION HOSPITAL.

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Introduction/Background

Background and aim: Amputation in diabetics comes from several complications and with deplored aerobic capacity, furthermore cardiac rehabilitation programs are usually in standing position, unsuitable for them. Aim: evaluate the diabetic amputee's aerobic capacity and quality of life (QoL) after an aerobic exercise program, with upper limb ergometer.

Material and Method

Methods: The design is longitudinal, prospective, comparative and no randomized. It included 23 diabetic pelvic limb amputees. Subjects were separated in two groups: experimental (n=15) and control (n=8). All patients had an exercise testing, with the author's designed protocol and replied SF36 questionnaire. The experimental group completed 24 exercise sessions with an intensity determined through the training heart rate. After, all patients had a final exercise testing and SF36 evaluation.

Results

Results: Both groups were homogeneous in age mean (years); (57.6+12.5) and (52.5+8.0), sex, occupation, education and economic features. (square chi) (p=0.28). Initial aerobic capacity assessed with the initial VO₂peak mean (mlO₂/kg/min) was similar in both groups: experimental group (13.5±3.5), control group (11.5±2.5) p=0.17. The aerobic capacity reached after the program was statistically significant. Final VO₂peak mean (mlO₂/kg/min) for the experimental group was (17.1±3.8), and for the control group was (10.5±3.8), p=0.001. (t student). Initial QoL was similar in both groups. Final QoL mean recorded after training program was (3110.6±384.7) for the experimental group, and (1363.1±770.4) for the control group, statistically significant p=0.0001 (t student), corresponding to 86.7% and 40% of optimal QoL respectively. We observed a significant Pearson's correlation coefficient between initial-final VO₂peak switch, and initial-final QoL switch, r = 0.724 (p = 0.0001).

Conclusion

Conclusion: Aerobic capacity and the QoL improved after arm ergometer training. Cardiac rehabilitation should embrace upper limb exercise testing and training for diabetic amputees.

Keywords

exercise test;diabetic amputees;aerobic capacity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-0910

LATERALITY OF CORTICAL OXYGENATION IN THE PREFRONTAL CORTEX DURING 20 MIN OF MODERATE-INTENSITY CYCLING EXERCISE: A NEAR-INFRARED SPECTROSCOPY STUDY

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Introduction/Background

Exercise therapy is a core component of rehabilitation for patients with cardiopulmonary disease and diabetes. A recent study showed that cognitive function improved after a single episode of moderate-intensity exercise. However, the laterality of cortical oxyhemoglobin (O₂Hb) increases during exercise is unknown. We aimed to evaluate the laterality of O₂Hb changes in the prefrontal cortex (PFC) during 20 min of moderate-intensity cycling exercise.

Material and Method

Twelve healthy volunteers (9 women) participated. After a 3 min of rest, 20 min of exercise was performed at a workload of 50% VO_{2peak}, followed by 15 min of post-exercise rest. The O₂Hb levels in the right (R-PFC) and left (L-PFC) prefrontal cortices were measured using a 34-channel, near-infrared spectrometry system. The O₂Hb levels in each area were expressed as changes from the mean pre-exercise rest phase values. The O₂Hb values in the last 5 min of the 20-min exercise period were averaged in both regions. The laterality index (LI) was calculated using the formula (L-PFC O₂Hb – R-PFC O₂Hb)/(L-PFC O₂Hb + R-PFC O₂Hb). A positive LI indicated that the increase in O₂Hb in the L-PFC was larger than in the R-PFC; a negative LI indicated the opposite.

Results

O₂Hb levels increased during the first 10 min and were maintained over the latter half of the exercise period in both R-PFC and L-PFC. The average O₂Hb values in the last 5 min were 0.066 ± 0.013 mM·cm in the R-PFC and 0.085 ± 0.015 mM·cm in the L-PFC. The average LI of the PFC was 0.16 ± 0.10.

Conclusion

L-PFC-dominant O₂Hb increases were observed during 20 min of moderate-intensity cycling exercises. The L-PFC plays an important role in executive functions and verbal working memory, which might be promoted by 20 min of exercise.

Keywords

cortical oxygenation;prefrontal cortex;laterality

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-1050

EFFECTS OF RESPIRATORY REHABILITATION EXERCISE FOR HIGH LEVEL OF CERVICAL SPINAL CORD INJURY: NOVEL APPROACH

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Introduction/Background

People with high level of spinal cord injury feel a lot of discomfort in breathing ability. However, the rehabilitation exercise program to solve this problem is not activated. Also, the respiratory rehabilitation exercise program developed specifically for those is very scarce. Existing breathing exercises are uncomfortable because the method is tedious and cannot see the degree of improvement. Therefore, it is important to develop a variety of exercise programs that can effectively enhance the respiratory muscle.

The purpose of this study was to investigate the effect of respiratory rehabilitation exercise to improve pulmonary function.

Material and Method

The subject were 7 people with high level of spinal cord injury (C3-6, ASIA A, B). The exercise program developed was consist of 8 weeks of 1-h exercise session 2 days a week. Each session included warm up (stretching), respiratory rehabilitation exercise, and cool down (flexibility and relaxation). The pulmonary functions were measured with digital spirometry meter (Pony FX, Cosmed, Italy). The pulmonary function tests were conducted before and after the 16 sessions of respiratory rehabilitation exercise program.

Results

As a result of respiratory rehabilitation exercise during 8-week for subjects, pulmonary function showed significant changes in inspiratory capacity, vital capacity and inspiratory reserve volume.

Conclusion

We confirmed the positive effect of the respiratory rehabilitation exercise program developed for people with high level of spinal cord injury. The results of this study are expected to be used as basic data for the development of specialized programs for each degree of severity.

Keywords

spinal cord injuries;exercise;spirometry

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-1200

THE EFFECTS OF THE KINESIO TAPING ON THE BICEP MYOELECTRIC ACTIVITY: AN EXPERIMENTAL STUDY

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Introduction/Background

Kinesio Taping (KT), has become more popular in the last decade and is now used by several athletes in different sports. It was shown to be effective in pain control, muscle and joint re-education (through proprioceptive input), in the prevention of lesions or in the improvement of both blood and lymph circulation. Surface Electromyography (EMGs) is a noninvasive technique (surface electrodes are placed on the skin over the muscle or muscle group) that measures muscle activity. The aim of this study is to find the influence of different tensions of KT applications in the myoelectric activation of biceps brachii.

Material and Method

The study design consisted in the evaluation, through the EMGs, of the myoelectric activity of the biceps brachii, in different activity states (rest and Isometric Maximal Voluntary Contraction [MVC]). The assessment was conducted with a sample of 22 participants (11 women and 11 men), ages between 18 and 32 years (mean age 23.00 ± 2.93). Each participant was tested in three different KT application tensions (0% tension, 25% tension and 50% tension). Myoelectric activity was evaluated, at each KT tension, 24 hours after the application of the KT.

Results

Significant differences were not observed in the myoelectric activity regarding the different tensions applied on KT either during rest (0% tension: 0,74 mV vs 25% tension: 0,76 mV vs 50% tension: 0,74 mV; $p = 0,873$) or during MVC (0% tension: 74,08 mV vs 25% tension: 71,44 mV vs 50% tension: 76,84 mV; $p = 0,664$).

Conclusion

The application of KT, regardless of the tension used in its application, doesn't appear to interfere with the in myoelectric activity of the muscle. Therefore, KT may be applied, at the ideal tension according to each clinical case, without interfering with the neuromuscular activity of the muscle.

Keywords

Electromyography;Kinesio Taping;Myoelectric activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-1222

BLOOD SERUM HUMAN CARTILAGE OLIGOMERIC MATRIX PROTEIN (hCOMP) CONCENTRATION IN CLOSED KINEMATIC CHAIN EXERCISES AND PHYSIOLOGICAL CYCLIC LOADING USING ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA)

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Introduction/Background

Patients with high levels of human cartilage oligomeric matrix protein (hCOMP) in serum might indicate increased degradation of articular cartilage. Conflicting studies recommend both open kinematic chain exercises which imposes minimal shock load in joints of arthritic patients to prevent further cartilage degeneration, and close kinematic chain exercises among healthy individuals which can significantly increase serum hCOMP concentration. This study was conducted to establish a scientific basis in choosing between physiological cyclic loading (PCL) and closed kinematic chain exercises (CKCE) for individuals of varying body mass index having weight bearing joint conditions associated with diminishing cartilage turn over resulting from loss of hCOMP after cartilage degeneration.

Material and Method

Blood samples were drawn from 45 healthy male adults before and after intervention. All subjects were randomly distributed to 3 groups with 15 subjects each. Group A performed CKCE for 30 minutes as many repetition as possible, Group B executed (PCL) for 30 minutes at their own pace, while the remaining 15 subjects served as control. The blood samples were centrifuged to separate the serum. The hCOMP in the serum was measured using the ELISA kit at absorbance Optical Density 450 pg/ml.

Results

Table 1. *t*-test of pre and post-intervention serum hCOMP concentration within each group

Group	Pretest (\bar{x}) pg/ml	Posttest (\bar{x}) pg/ml	<i>t</i>	<i>p</i>	Remarks
A	0.667	0.714	1.786293	0.04786	Significant
B	0.611	0.491	-2.754006	0.007761	Significant

Table 2. One-way ANOVA of post-intervention serum hCOMP concentration among the groups

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>f</i> -ratio value 50.00015	<i>P</i> value 0.00001 (significant at <i>p</i> <0.05)
Between treatments	1.88	2	0.9435		
Within treatments	0.7737	41	0.0189		
Total	2.6606	43			

Table 3. Pearson Correlation of BMI and post-intervention serum hCOMP concentration within each group

Group	BMI (X-Values), \bar{x} Kg/m ²	hCOMP (Y-Values), \bar{x} pg/ml	R ² Score	<i>p</i> Value	Remarks
A	22.835	0.714	0.152	0.151839	Not significant
B	23.523	0.419	0.0306	0.532748	Not significant
C	25.563	0.204	0.0301	0.552828	Not significant

Conclusion

There is a significant difference in pre and post-intervention serum hCOMP concentration in CKCE, PCL, and the control group. There was also a significant difference in the post-intervention serum hCOMP concentration among the three groups. In contrast, the BMI and post-intervention serum hCOMP concentration within each group did not show any significant relationship but it was observed that BMI was inversely proportional to the hCOMP serum level 30-minutes post-exercise and resting.

Keywords

human cartilage oligomeric matrix protein;close kinematic chain exercise;physiological cyclic loading

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-1382

EFFECTS OF NEUROMUSCULAR TRAINING ON ANKLE SPRAIN IN JUNIOR HIGH SCHOOL BASKETBALL PLAYERS

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Introduction/Background

In recent years, neuromuscular training (NMT) using a balance board has become a common form of exercise to prevent ankle sprain. Previous studies of effectiveness of this approach have focused on adults, and there are few studies investigating junior high school students. The purpose of this study was to clarify the effect of the NMT using a balance board upon ankle injury in junior high school basketball players.

Material and Method

106 junior high school basketball players without concurrent injuries were recruited. All players were randomly assigned with 40 allocated to a control group and 66 to a NME group. Subjects in the NME group completed an ankle injury prevention program including single calf rising, single leg squat, dribble with single leg, handling with single leg and pass with single leg on the floor for 2 weeks and those on the balance board for the following 6 weeks. Ankle injury rates were calculated and compared by occurrence of injury's per 1000 practice hours in the control and NME groups.

Results

The number of ankle inversion injuries were 17 in the control group and 13 in the NME group. Ankle injury rate per 1,000 hours revealed 4.43 in the control and 1.99 in NME group, respectively. Serious injuries, judged by single calf raise, where time loss to sport exceeded 1-week were 4 in the control group and 1 in the NME group. Average time loss in days in the control group (1.98 ± 0.59) was significantly greater than that in the NME group (1.37 ± 0.17).

Conclusion

Our study showed that NMT using a balance board reduced the occurrence of ankle sprain in junior high school basketball players. In addition, NMT may have contributed to a reduction in the severity of ankle injury.

Keywords

neuromuscular training; ankle sprain; junior high school basketball players

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-1383

FUNCTIONAL MOVEMENT SCREEN SCORE AND BASEBALL PERFORMANCE IN JAPANESE HIGH SCHOOL BASEBALL PLAYERS AFTER CORRECTIVE EXERCISES

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Introduction/Background

In recent years, the Functional Movement Screen (FMS™) has been used for the prevention of disability. Some studies have reported that corrective exercise to improve FMS score is an effective method of preventing injuries (Bodden et al. 2015; Justin et al. 2017). However, measurement instrument to assess FMS™ are not available in high school's. The purpose of this research is to clarify the effectiveness of corrective exercises without specific FMS measurement instruments on FMS score, physical function, and throwing performance in high school baseball players.

Material and Method

High school baseball players were randomly assigned to two groups; 37 in the training group and 34 in the control group. All subjects were evaluated for FMS score, eyes closed single leg stance time, subjective fatigue, as well as pitching ball speed and control at the beginning of the intervention and at 2-months follow-up. Baseball players in training group conducted the corrective exercises 4 times per week for 2 months.

Results

When comparing the 2 groups group, pitching ball control significantly decreased in the training group compared to prior to the intervention. After 2 months, deep squat, hurdle step, inline lunge, active straight-leg raise, trunk stability pushup, rotary stability, total score of FMS, and pitching ball control showed significant better results in the training group compared to the control group.

Conclusion

Results of this study showed that corrective exercises improved asymmetries, trunk stability, movement pattern, proprioception, total FMS score, and pitching ball control without using special instruments following a 2-months training period. Corrective exercises to improve FMS are effective even in high school baseball players without using special measurement instruments.

Keywords

functional movement screen;high school baseball player;corrective exercise

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-1400

DANCE AS AN ADJUNCT THERAPY TO IMPROVE COGNITIVE AND PSYCHOSOCIAL FUNCTIONS IN CHILDREN WITH NEUROLOGICAL IMPAIRMENTS

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Introduction/Background

Neurological disorders such as neuromuscular disease or cerebral palsy have impacts on motor functions but can also lead to cognitive and psychosocial impairments. Recent studies suggest that dance can be an effective approach to improve cognitive and psychosocial functions in different populations. Based on these evidence, we have developed and implemented three dance programs aiming at improving cognitive and psychosocial dimensions in children with neurological disorders.

Material and Method

The dance programs were 10 to 12 weeks long (60 minutes per session, two sessions a week) and included various types of dance. These programs were specifically adapted to the need of children with cerebral palsy (1 program, *pre/post*-test design, n=20) or neuromuscular diseases (2 programs, *controlled pre-post* design, n=19). Dance sessions were provided by physiotherapists, adapted dance teachers and a researcher specialized in dance therapy. Cognitive and psychosocial dimensions were evaluated before and after each dance program.

Results

Attention was improved in children participating in each of the three programs. Emotional aspects of quality of life and rhythmic abilities were improved in children with neuromuscular disease while specific aspects of memory improved in children with cerebral palsy.

Conclusion

Results from these three dance programs provides evidence of cognitive and psychosocial benefits for children with neuromuscular disease and cerebral palsy.

Keywords

Dance; Cerebral Palsy, Neuromuscular disease; Cognition

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-1561

MOTION AND HEART RATE DURING HORSE RIDING THERAPY AND HORSE RIDING SIMULATOR IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

The evidence of efficacy of therapeutic horse riding in children with cerebral palsy is increasing. However, there are limitations in applying it because of scarce of experts for hippotherapy and hassle of going to the place for horse riding. Therefore, some people apply the horse riding simulator instead of horse riding for the therapeutic purpose. The study aimed to determine the difference between the movement and heart rate response on the actual horse and the device.

Material and Method

The participants were 12 children with cerebral palsy (GMFCS level I-III) aged 5-12 years. Five were boys, and eight were bilaterally involved. The body movement was monitored by accelerometer wearing at the waist during the beginner mode of the simulator and the horse riding. Heart rate was monitored by wireless heart rate monitor equipment. Movement of 3 axes, x, y, z, and monitored heart rate was analyzed.

Results

The movement of y-axis was significantly less during the horse riding simulator compared to real horse riding, 300.27 ± 277.22 and 210.71 ± 243.70 , respectively ($P < 0.05$). However, movement of x- and z-axes significantly more during the simulator. The axis x movement were 649.89 ± 337.24 and 1050.44 ± 379.00 , and axis z movement were 840.66 ± 406.85 and 1147.95 ± 414.10 during horse riding and simulator exercise, respectively ($P < 0.05$). The variability of heart rate on equipment was significantly less than the real horse riding ($P = 0.001$).

Conclusion

On a horse, there is a rhythmical up and down movement while the horse is walking. However, on the simulator equipment, the movement of the y-axis was less, but the movement of x- and z-axes was significantly more than the horse riding. Although total vector magnitude of

movement was more on the simulator, the variability of heart rate was significantly more during the real horse riding.

Keywords

cerebral palsy;horse riding therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-1992

DEFINING PLAYER'S PROFILE IN WHEELCHAIR RUGBY: IMPACT OF CLASSIFICATION AND ON-COURT ROLE ON PHYSICAL ACTIVITY LEVEL DURING COMPETITION.

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Introduction/Background

During official competition, Wheelchair Rugby (WR) uses a classification system, defined with 7 levels (from 0.5 to 3.5 points) according to the level of disability. But 2 main roles can be observed on the court: defensive role (generally for player from 0.5 to 1.5 pts) and offensive role (players from 2 to 3.5 pts). Very few studies aimed at defining the on-court player role during competition, using various methods (Morgulec-Adamowicz et al. 2011; Rhodes et al. 2015). This kind of information could be of great interest in order to optimize training programs and players' physical preparation. The aim of the study was to evaluate energy expenditure (EE) and intensity level of WR players during competition, according to the classification and the on-court role.

Material and Method

Fifty-two WR players, from 8 French elite teams and from France national team, were evaluated using a tri-axial accelerometer (SenseWear Armband) during national competition games. This device was previously validated for manual wheelchair users (Abel et al. 2008). Data from game times (4 periods of 8 min) were collected and analyzed, with EE, physical activity (PA) intensity and duration as main outcomes.

Results

Data from 24 defensive and 28 offensive players highlight that the mean intensity level was about 4 ± 1 METs, corresponding to a moderate intensity. Statistical analysis shows significant correlation between the player's classification level and vigorous PA duration ($P=0.04$; $r=0.285$), higher classification level being associated with higher vigorous PA duration. Lastly, offensive players show higher vigorous PA duration, in comparison with defensive players ($p<0.01$).

Conclusion

This work provides supplementary data for the definition of the different WR player profiles. In the current context of an important development of this sport, this could be useful for the individualization of the training programs of WR players, according to player's classification or on-court role.

Keywords

Wheelchair;Physical activity;Player profile

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-1993

“PAS A PAS”: AN INNOVATIVE PROJECT TO PROMOTE PHYSICAL ACTIVITY

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Introduction/Background

General practitioners (GPs) have a key role to promote of physical activity, especially in identifying and counseling persons with a sedentary lifestyle. However, many limitations exist to have a significant impact. “Pas à Pas” (“step by step”) is a pilot project initiated in 2015 by the Canton de Vaud (french-speaking part of Switzerland) to support physically underactive people towards a behaviour change.

Material and Method

“Pas à Pas” allows GPs to refer the PA evaluation, counselling and follow up to specialists in adapted physical activities (APA) through a specific prescription. APA sessions are free and consist in supervised, individualized and motivational primary prevention approach. They create a link between health professionals in contact with sedentary publics and PA offers organized in the regions. Consultant medical experts (internal medicine, public health, exercise and sports medicine) help the successful completion of the project. A « Plan, Do, Check, Act » method allowed to improve the PA referral scheme. Data collected by the specialists in APA have been analysed. Moreover, an external formative evaluation through focus groups and literature review has been realized.

Results

Between the 15.09.2015 and the 16.09.2017, 50 physicians referred 198 patients to the 3 specialists in APA of the project, with a total of 153 patients evaluated. Many interesting strengths and some limitations are highlighted. This project helps the local population to be more active with interesting motivational effects, in accordance with medical literature. Different recommendations have been established for the implementation of the project.

Conclusion

“Pas à Pas” is an innovative project permitting GPs to delegate PA counselling and follow up of their patients to specialists in APA, with well-appreciated results. This project proposes a

practical solution to promote PA, especially in people with noncommunicable diseases and could represent an interesting model to broadcast within Switzerland and others countries.

Keywords

Physical activity;Exercise;Adapted physical activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-2056

EFFECT OF INTRADIALYTIC ISOMETRIC EXERCISE WITH OR WITHOUT NEUROMUSCULAR ELECTRICAL STIMULATION TO IL-15, TNF- α REGULATION, AND FUNCTIONAL CAPACITY IN CHRONIC KIDNEY DISEASE PATIENT

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Introduction/Background

Background and aims: One of the etiology of limited functional capacity in chronic renal disease patient is muscle wasting. Increasing of Tumor Necrosis Factor Alpha (TNF- α) in chronic renal disease causes muscle wasting. Strengthening exercise is recommended by ACSM but it is hard to be done. Contraction of skeletal muscle will express interleukin-15 (IL-15) which is important for metabolism and skeletal muscle function. Isometric exercise and Neuromuscular electrical stimulation (NMES) are easy to be applied intradialytic and can facilitate muscle contraction and has strengthening effect, but their effect in chronic kidney disease patient have not been largely reported yet. This study aimed to prove that intradialytic isometric exercise with or without NMES can modulate IL-15, TNF- α expression and improve functional capacity in chronic kidney disease patient.

Material and Method

Methods: Twenty five chronic kidney disease patient underwent hemodialysis was randomly divided into 3 groups, control group, isometric group, and isometric and NMES group, received treatment twice a week, for 6 weeks. The subject were examined for five times sit to stand test (FTSTS), IL-15 and TNF- α test by immunoassay before and after intervention.

Results

Results: There was increased of FTSTS in isometric group ($p=0,007$) and also combined isometric and NMES group ($p=0,001$). TNF- α in isometric group was increased ($p=0,003$) and also in combined isometric and NMES group ($p=0,025$). Compared to the control group, TNF- α was change significantly in isometric group ($0,017$) and also in combined isometric and NMES group ($0,020$). There was no significant difference in IL-15 levels pre and post experimental in all three groups ($p>0,05$).

Conclusion

Conclusions: Intradialytic isometric exercise with or without NMES for 6 weeks can improve functional capacity and also regulates TNF- α .

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-2174

TAIJIQUAN FOR HYPERTENSION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

Hypertension is the most common chronic disease and the most important risk factor for cardiovascular and cerebrovascular diseases. It not only causes high mortality and morbidity, but also seriously consumes medical treatment and social resources, posing a heavy burden to families and society. Research shows that hypertension is a disease that can be prevented and controlled. Reduce the blood pressure in patients with hypertension, can significantly reduce the occurrence of these complications, significantly improve the quality of life of patients. Originated in China, the ancient boxing taijiquan, due to its significant illnesses and fitness effect, Currently, studies show that taijiquan is conducive to the recovery of cardiovascular system function, can reduce the risk of cardiovascular disease-related factors. However, it has not been evaluated according to the PRISMA systematic review standard. This study aims to assess the current clinical evidence of taijiquan for hypertension.

Material and Method

To evaluate the efficacy and safety of taijiquan for the treatment of hypertension. Methods: Randomized controlled trials (RCTs) regarding taijiquan for hypertension were comprehensively searched via PubMed, EMBASE, Cochrane Library (Central), Ovid and Wanfang databases. CNKI, VIP. Evaluating and researching the quality by Cochrane handbook 5.1.0 and data were analyzed by Review Manager (Rev Man) 5.2. Results: A total of 6 RCTs were included.

Results

he pooled results showed that taijiquan can significantly improve the SBP (SMD= -0.43, 95%CI(-0.62,-0.23), P<0.01), DBP (SMD= -0.48, 95%CI(-0.67,-0.30), P<0.01], P<0.00001), BMI(SMD= -0.11, 95%CI(-0.31,-0.09), P<0.01) . However, there was no difference in quality of life between the two groups of lipids.

Conclusion

Taijiquan could improve the SBP, DBP and BMI in patients with hypertension effectively without any significant adverse effects. However due to the small sample size and lack of long-term follow-up, more RCTs with larger sample size and long-term follow-up were needed.

Keywords

Taijiquan;hypertension;Meta-analysis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-2256

EXERCISE PRECONDITIONING REDUCES CEREBRAL ISCHEMIA/REPERFUSION INFLAMMATORY INJURY IN RATS BY THE TLR4/NF-KB SIGNALING PATHWAY

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Introduction/Background

Exercise preconditioning (EP) induces ischemic tolerance and reduces inflammatory injury; however, the mechanism underlying these effects remains unclear. In this study, the influence of EP on the activity of the toll-like receptor (TLR) 4/nuclear factor (NF)- κ B-signaling pathway was explored in a rat model of cerebral ischemia/reperfusion (I/R) inflammatory injury.

Material and Method

Ischemia was induced in rats using transient middle cerebral artery occlusion (tMCAO) after 3 weeks of EP. Male SD rats (n=54) were divided into sham, MCAO, and EP (EP+MCAO) groups. Following the induction of cerebral I/R injury, rats were scored for neurological deficits. Various techniques were used to evaluate ischemic infarct volume and explore pathological changes in tissue morphology after cerebral I/R injury, wherein the levels of TLR4 and NF- κ B were analyzed. In addition, enzyme-linked immunosorbent assays were used to detect the levels of tumor necrosis factor (TNF)- α and interleukin (IL)-1 β in peripheral serum.

Results

Twenty-four hours after cerebral I/R injury, the neurological deficit scores of animals in the EP+MCAO group were significantly lower than those in the MCAO group ($P<0.05$). A significant reduction in cerebral infarct volume was also observed ($P<0.05$). Pathological analysis demonstrated that ischemic cortical damage was alleviated in the EP+MCAO group, and the number of TLR4- and NF- κ B-positive cells decreased in the infarct region ($P<0.05$). TLR4 and NF- κ B expression was downregulated in the ischemic side ($P<0.05$), and the concentrations of TNF- α and IL-1 β were significantly reduced in the peripheral serum ($P<0.05$).

Conclusion

The present study indicates that EP can improve cerebral I/R-induced neurological deficits in rats, reduce infarct volume, mitigate pathological damage in the ischemic cortex, and exert neuroprotective effects. The mechanism underlying these effects might involve the regulation of the TLR4/NF- κ B signaling pathway and the inhibition of central and peripheral inflammatory cascades during cerebral I/R injury.

Keywords

Exercise preconditioning; Cerebral ischemia/reperfusion; TLR4/NF- κ B signaling pathway;

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.01 PRM Interventions Research - Exercise

ISPR8-2262

EFFECT OF EXERCISE PRECONDITIONING ON CELL APOPTOSIS AND EXPRESSION OF MITOKATP PASSAGE PROTEIN KIR6.2 AND SUR1 IN RATS WITH CEREBRAL ISCHEMIA-REPERFUSION

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Introduction/Background

To explore the effect and mechanism of exercise preconditioning on neurological deficits in rats with cerebral ischemia-reperfusion (MCAO/R).

Material and Method

Thirty-six healthy Sprague-Dawley rats were divided into model group, sham operation group and exercise preconditioning group according to the random number table. Each group consisted of 12 rats (n=12). A rat model of cerebral ischemia-reperfusion (MCAO/R) was established by modified suture method. After 2h, 12h, 24h of reperfusion, neurological impairment was evaluated by neurological deficit score. After 24h reperfusion, the expressions of mitoKATP channel protein Kir6.2 and SUR1 were detected by Western blot, the cerebral cell apoptosis was detected by TUNEL assay.

Results

Compared with model group, neurological deficit scores of rats in exercise preconditioning group were significantly decreased ($P < 0.05$). Compared with model group, exercise preconditioning group Kir6.2, SUR1 protein level and TUNEL-positive cells decreased significantly ($P < 0.05$).

Conclusion

Exercise preconditioning may improve neurological impairment after cerebral ischemia by regulating the expression of mitoK_{ATP} channel proteins Kir6.2, SUR1 and cell apoptosis.

Keywords

exercise preconditioning; cerebral ischemia; mitoKATP channel;

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.02 PRM Interventions Research - Muscle Training

ISPR8-0142

EFFECTS OF STRENGTH TRAINING ON JUMP HEIGHT IN ELDERLY PEOPLE

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Introduction/Background

The aim was to examine the effects of strength training program on jump height (JH) in elderly people. JH represents an important determinant of functional capacity such as walking upstairs or rising from a seated position.

Material and Method

40 participants were randomly assigned to either a training group (n = 20; 66.8 ± 1.97 years), or a control group (n = 20; 68.2 ± 2.91 years). Participants trained 3 times per week for 12 weeks. Each session consisted of 8 exercises with their own body weight. Pre- and post-intervention data were compared using Wilcoxon signed ranks test, with an alpha set at p < 0.05. The JH were assessed using the countermovement jump (CMJ), squat jump (SJ) and arm swing-countermovement jump (ACMJ) performed on a force plate.

Results

There were no significant differences in the pre-training JH (p = 0.405, p = 0.495 and p = 0.095 for CMJ, SJ and ACMJ respectively) between the training group and control group. There was a significant post-training effect only for the CMJ (6.53%; p = 0.032), but not for SJ and ACMJ (p = 0.653 and p = 0.115 for SJ and ACMJ, respectively) in the training group.

Conclusion

The study results showed that the 12-week strength training is a safe, suitable, and efficient strength-training method for elderly people. It may be helpful in preserving leg muscle strength with advancing age and suitable for increasing JH in the elderly people, which may be an important way to increase functional independence and decrease the prevalence of many age-associated chronic diseases.

Keywords

physical activity; quality of life; elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.02 PRM Interventions Research - Muscle Training

ISPR8-0786

INFLUENCE OF DIFFERENT FEEDBACK METHODS ON LATERAL ABDOMINAL MUSCLE THICKNESS DURING THE ABDOMINAL DRAWING-IN MANEUVER

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Introduction/Background

Persons with low back pain (LBP) display delayed activity of the transversus abdominis (TrA). The abdominal drawing-in maneuver (ADIM) reduces delayed activity of TrA in individuals with LBP. Because performing accurate ADIM is difficult in persons with LBP, feedback methods such as real-time ultrasonographic imaging (RUSI) and the pressure biofeedback unit (PBU) are used. RUSI and PBU are expensive and therefore difficult to use as home exercises for ADIM. The TrA draws in the abdominal wall and narrows the waist. Therefore, we hypothesized that winding a tape measure (TM) on the waist and drawing in the lower abdominal to the spine was effective to measure and feel TrA contraction. We aimed to examine the most effective feedback method for TrA contraction using a PBU and TM during ADIM.

Material and Method

Twenty healthy male volunteers (24.2±6.6 years, 169.8±5.2 cm, 65.3±5.1 kg) performed ADIM under three conditions: (1) without feedback (control condition), (2) with feedback, using PBU (PBU condition), and (3) with feedback, using TM (TM condition). A B-mode ultrasound imaging system was used to determine the thickness of the lateral abdominal muscles. Percent changes from pre-ADIM were calculated in each condition. Repeated measure analysis of variance and post-hoc analyses were used to detect differences in thickness of the lateral abdominal muscles between the conditions.

Results

The thickness of TrA was significantly increased in the TM condition than in the control (TM condition: 92.4±43.9%, control condition: 74.1±43.3%, $p<0.01$). No difference in the thickness of TrA was found between the PBU (85.4±43.3%) and TM conditions and between the control and PBU conditions ($p>0.05$). No difference in the thickness of internal and external oblique were found between conditions ($p>0.05$).

Conclusion

The feedback method using TM may be more effective in thickening the TrA during ADIM than without feedback.

Keywords

Abdominal drawing-in maneuver;Feedback method;Lateral abdominal muscle thickness

Conflict of interest

Disclosure statement:

This study was supported by JSPS KAKENHI Grant Number JP16K16454. The authors report no conflicts of interest.

E-Poster Session - July 9-12 - Exhibition Area

C2.02 PRM Interventions Research - Muscle Training

ISPR8-0944

NEW EXERCISE INTERVENTION FOCUSING ON COMPENSATORY STRATEGY IS AN EFFECTIVE TREATMENT FOR PATIENTS WITH MASSIVE ROTATOR CUFF TEAR

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Introduction/Background

To examine the effect of compensatory strategies training for patients with massive rotator cuff tear (MRCT).

Material and Method

Twenty-four subjects with MRCT were recruited to participate three times shoulder assessments and 12 weeks of intervention. After initial assessment, the subjects were assigned randomly into two groups (CS-TE and TE-CS). CS-TE group was provided compensatory strategies (CS) training followed by 6 weeks of traditional exercise (TE) training. In comparison, TE-CS group took 6 weeks TE training followed by CS. All the participants were arranged to attend the second assessments after completing the first 6 weeks of intervention, and the third assessment at the end of 12 weeks of intervention, including measurements of visual analogue scale (VAS), range of motion (ROM) of shoulder, shoulder pain and disability index (SPADI) questionnaire, shoulder and scapular muscle strength (Table 1). In addition, scapular kinematics analysis were performed at initial and 2nd assessments.

Results

After the first 6 weeks training, CS-TE group showed significant important in motion pain measurement, SPADI score, AROM and strength of local muscles at 6th week; however, TE-CS group only showed significant improvement in SPADI score and flexion of shoulder. Moreover, after 6 weeks of the CS training, TE-CS group showed significant improvement in VAS and strength of compensatory muscles and scapular muscles (Table 2). Furthermore, significant improvements in scapular control strategies were only found in CS-TE group after completing 6 weeks of intervention (Table 3), showing significantly increasing scapular external rotation (ER) and posterior tipping (PT).

Conclusion

Our results have supported that CS training is an effective treatment for establishing the compensatory strategies after MRCT and regaining the shoulder function by strengthening the humeral head depressors and scapular stabilizers.

Keywords

compensatory strategies training; massive rotator cuff tear

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.02 PRM Interventions Research - Muscle Training

ISPR8-1097

BUILDING INTERACTIVE COMPUTER PLAY GAMES WITH YOUTH WITH CEREBRAL PALSY: IMPROVING PRACTICE EFFICACY THROUGH BIOFEEDBACK AND USER-CENTERED DESIGN

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Introduction/Background

Interactive computer play (ICP), or serious games, can provide motivational and flexible rehabilitation environments. This is useful for the 1 in 400 children born with Cerebral Palsy (CP) each year, whose daily activities are impacted by impaired motor control. Improvement through traditional rehabilitation is often hindered by low adherence and limited repetitions. This study aims to build an ICP game which offers a motivational and effective environment to supplement reaching and grasping rehabilitation in youth with CP.

Material and Method

Through a user-centered design process, we first met with five youth with CP and four occupational therapists to establish reach and grasp movement priorities. Then, seven youth, age 16-23 years with hemiplegic CP, participated in 1-3 game design sessions. During each design session, participants extended and relaxed their hand to control an ICP game using a forearm muscle activity sensor (Myo Armband). Participants played games with different types of feedback and control mechanisms (detailed in Figure 1). Game versions were iterated

between design sessions.

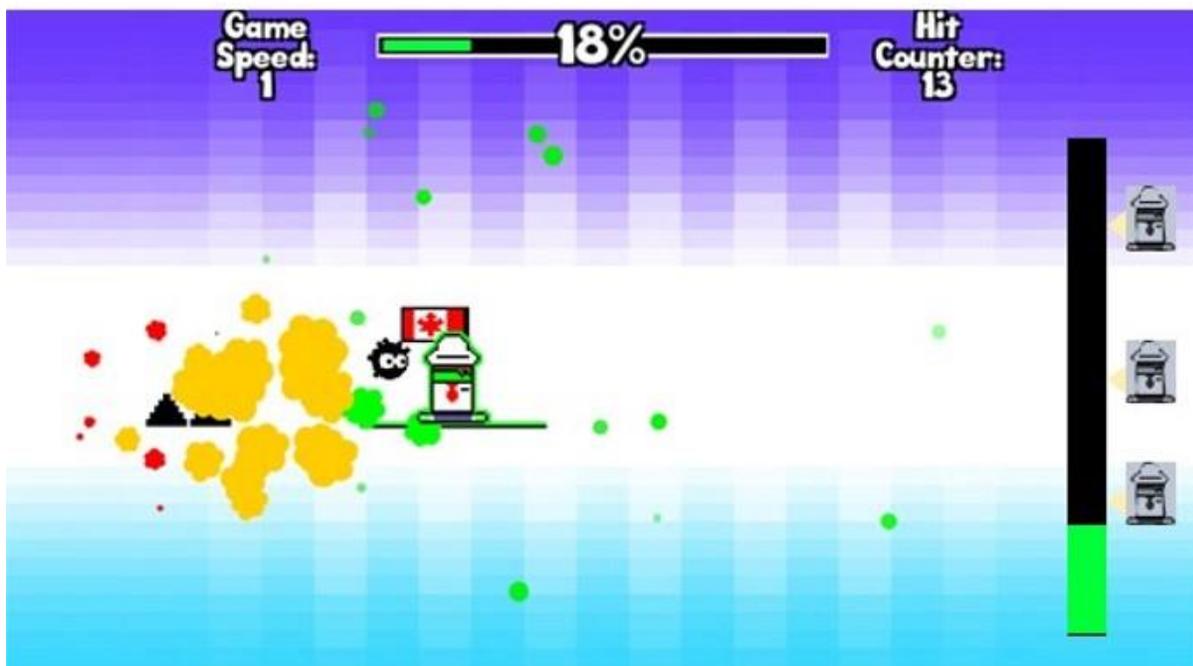
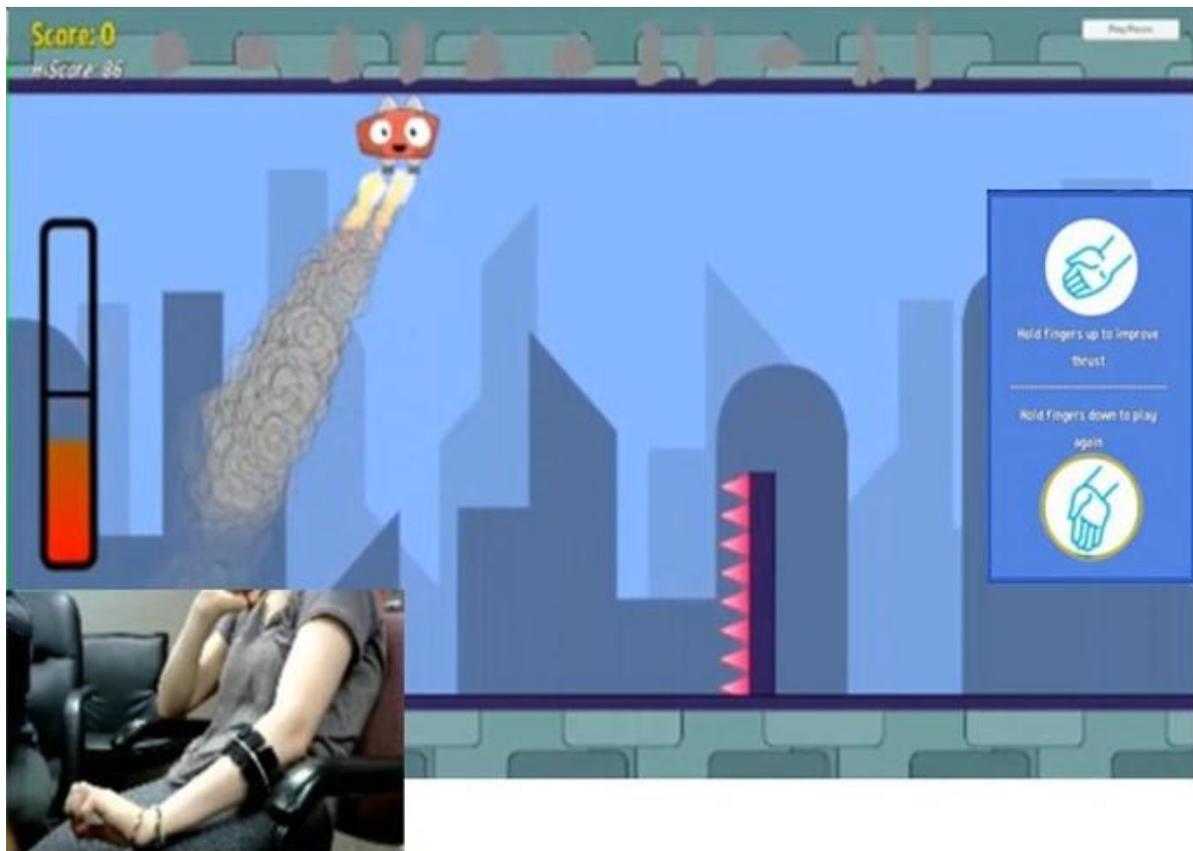


Figure 1. Two examples of the ICP game with different feedback. Top version includes ‘power bar’ (left) of user muscle activity and user choice panel (right). Player insert at bottom left. Bottom version includes upcoming reward achievements bar (right) based on performance.

Results

The top priority identified by youth and therapists was increasing amplitude and endurance of wrist extension while fingers open. Thus, this action was used as the primary game control. At each design session, participants played an average of 15 levels, each lasting 129 ± 56 seconds and requiring 43 ± 19 wrist extension repetitions. In total, during a typical session, participants practiced 645 ± 285 repetitions through the ICP game. User input showed participants were most responsive when feedback directly followed wrist extension (e.g. increased power bar or bonus points).

Conclusion

The user-centered design process engages participants to build practice tools that they find motivating. The ICP game can offer youth with CP the high quantity of repetitions required to improve reach and grasp activities. Next, the game will be used in a home-based pilot study to demonstrate its efficacy for improving reach and grasp activities.

Keywords

Serious games; Home-based training; user-centered design

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.03 PRM Interventions Research - Ergonomics

ISPR8-1727

EFFECT OF A HEALTH PROMOTION SESSION ON THE KNOWLEDGE OF POSTURAL HYGIENE IN 1ST CYCLE OF PRIVATE SCHOOL

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Introduction/Background

School health is a very important area of intervention, considering the prevalence rates and incidence of postural changes in younger age groups. It is pertinent to promote knowledge in this area to prevent these postural changes. Verify the effect of a health promotion session on the knowledge in the 1st cycle students of private school and identify the determinants that influence the Knowledge.

Material and Method

The sample consisted of 46 students from the 1st cycle of private school. A questionnaire on knowledge determinants was delivered to parents / guardians and a questionnaire on postural knowledge was given to students. This questionnaire was applied on the knowledge about the posture of the students, in two moments. The first moment was before the health promotion session and the second was after two weeks of the session, to see if the health promotion session influenced children's knowledge about postural hygiene. Data analysis was performed using Statistical Package for the Social Sciences, version 24. The level of significance was $\alpha = 0.05$.

Results

After the health promotion session, the student's knowledge increase and it was statistic significant ($p = 0.000$). It was also possible to analyse that gender ($p = 0.00$), the environment where they live ($p = 0.001$), pedagogical activities ($p = 0.000$) and sports activities ($p = 0.000$) are determinants that influence knowledge.

Conclusion

This study allowed us to conclude that the health promotion session increased the knowledge about posture in the children of the 1st cycle of private school. It is concluded that gender, environment, pedagogical activities and the sports activities are determinants that influence knowledge.

Keywords

KNOWLEDGE;POSTURE;HEALTH PROMOTION

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.04 PRM Interventions Research - Joint Mobilisation and Manipulation Techniques

ISPR8-0660

INFLUENCE OF THE SPINAL MANIPULATION ON MUSCLE SPASTICITY IN CEREBRAL PALSY, RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Muscle spasticity is an important clinical syndrome of Cerebral Palsy (CP). Recent research indicates possible influence of spinal manipulation (SM), a therapeutic intervention in which a low-amplitude high-velocity impulse of force is applied to the spinal joints, on muscle spasticity. Studies on animal models, electrophysiological H-reflex studies and clinical observations of stroke and CP patients provide data supporting this hypothesis. The aim of our study was to investigate the short-term influence of SM on wrist muscle spasticity and manual dexterity in CP patients in a randomized controlled trial.

Material and Method

After baseline examination, 78 subjects with spastic CP (7-18 y) without contractures or hyperkinetic syndrome were randomly allocated into two groups. Experimental groups underwent SM, control group – imitation of the manipulation. Second evaluation was performed 5 min post intervention. Wrist muscle spasticity was gauged quantitatively with Neuroflexor, a device measuring resistance to passive movements of different velocities. Manual dexterity was evaluated by Box & Blocks test. Nonparametric statistics were used.

Results

In the experimental group muscle spasticity reduced by 2.18 newton: from median 5.53 with interquartile range (IR) 8.66 to 3.35 (IR=7.19), the difference was statistically significant ($p=0,002$). In the control group reduction in spasticity was negligible. The between-group difference in change of muscle spasticity was statistically significant ($p=0,034$). Improvement of manual dexterity was not statistically significant ($p=0.28$).

Conclusion

Study indicates that SM causes reduction of spasticity in patients with CP. Long-term effects of spinal manipulation on muscle spasticity have to be studied.

Keywords

Cerebral Palsy; Spinal Manipulation; Spasticity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-2509

HOW MUCH CERVICAL ORTHOSIS ARE APPLICABLE IN NONINVASIVE MANAGEMENT OF CERVICAL DISORDERS?

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Introduction/Background

Neck pain is one of the most prevalent disorders in the world and became a major public health problem. Cervical collars have been approved to be effective on neck pain and disability as a one of conservative treatments. The purpose of this review was to describe the effectiveness of cervical collars in noninvasive protocols and explain the importance of describe a specific guidelines in prescription cervical collars.

Material and Method

The search was performed in Google scholar, Medline, Science Direct, PubMed, and ISI web of knowledge databases in August 2017 for the keywords, cervical, orthoses, collars, conservative management and pain. Twenty articles were selected for final evaluation.

Results

Five studies indicated that cervical collars have been helpful in the management of different cervical spine fractures in the case of being stable as odontoid, axis and vertebral body of C₂ cervical spine fractures. Four studies suggested cervical collars as a simple conservative treatment that efficiently decrease radiculopathy symptoms. Actually one of the evidence stated cervical collars is as effective in long run as surgical management. Specifically using soft cervical collars would relieve pain in whiplash injuries. Rigid cervical collars are the standard of care for supporting and stabilizing the cervical spine in acutely injured trauma patients. Although, there is an agreement that, plate fixation provides rigid internal fixation and would eliminate the need for a cervical collar postoperatively in the majority of patients.

Conclusion

A number of studies have demonstrated that cervical collars can reduce patient's symptoms and prevent neck pain associated with cervical disorders, including degenerative conditions. Furthermore, they are effective in restricting cervical motion in acute injury, and can be used postoperatively to provide cervical stabilization. The choice of a particular collar should be determined by various factors, including restrictiveness, pressure-relieving capabilities, patient mobility, tissue tolerance, and the patient's ability to communicate discomfort.

Keywords

cervical orthoses;pain;coservative treatment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-0057

EVALUATING THE EFFECT OF A VIBRATING INSOLE ON VIBRATION PERCEPTION THRESHOLD IN A PATIENT WITH TYPE 2 DIABETES AND SENSORY PERIPHERAL NEUROPATHY: A CASE REPORT

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Introduction/Background

The prevalence of Diabetes mellitus (DM) is increasing globally and affects 8.27% of the South African population. South Africa hosts a very young diabetic population with 67% of all diabetics being under the age of 60 years. Sensory peripheral neuropathy (SPN) is a common complication of DM that affects 33% of all persons with DM. Sensory peripheral polyneuropathy is a major predisposing risk factor for developing foot ulcers which can become infected and in turn is the biggest risk factor for lower limb amputation in diabetic patients. An increased Vibration perception threshold (VPT) is indicative of SPN and an increased risk for diabetic foot ulcers. The aim of this case study was to determine if a vibrating insole intervention will effectively reduce VPT in a patient with Type 2 DM and SPN.

Material and Method

A pre-test post-test study design and a Biothesiometer was utilised to evaluate the effect of the intervention on the VPT over seven points on the feet of a single case with known sensory peripheral neuropathy secondary to type 2 DM.

Results

The use of the vibrating insole resulted in a statistically significant ($p = 0.000$) reduction in VPT over seven points of measurement on the foot from baseline to post-intervention. The VPT score increased slightly, but not statistically significantly ($p = 0.051$) during the washout period, but the overall positive effect of the intervention was maintained after a wash-out period of one month.

Conclusion

The significant change from pre-intervention to post-intervention scores might indicate that the intervention might be deemed effective in reducing VPT in this specific group of patients, thus reducing the risk for Diabetic foot ulcers. Further piloting with a bigger sample is however required.

Keywords

Prevention ;Diabetic foot ulcers;Vibration perception threshold

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-0070

ABSTRACT NEED TO BE EDITED - REPEATED INJECTIONS OF BOTULINUM TOXIN A IN RESIDUAL LIMB HYPERHIDROSIS: WHAT EFFECT?

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Introduction/Background

Residual limb hyperhidrosis is a problem frequently encountered in amputations: 66% of the subjects in the Hansen et al. Study. In case of resistance to conventional treatments (appropriate hygiene measures, antiperspirants), it can be treated by botulinum toxin injections in intradermal or intraepidermal.

Material and Method

Objective: To evaluate long-term efficacy of botulinum toxin A in the treatment of residual limb hyperhidrosis.

Type of study and duration: case report, for more than 2 years

Participant: Afro-Caribbean man, 29-year-old, femoral amputee with disabling hypersudation of his residual limb, causing a sliding of his prosthesis.

Intervention: four sessions of superficial intradermal injections of botulinum toxin A in his residual limb, respectively spaced from 14, 9 and 4 months.

Results

Botulinum toxin A reduced residual limb sweat production by -70.5% on average. It reduces discomfort due to perspiration when this discomfort is important. It extends duration of wearing prosthesis when this delay is short on pre-toxin assessment.

On average, it reduces overall discomfort due to sweat by -38.25%, discomfort during work by -37%, and increases delays before removal (+1h39 during work and +3h22 during activities everyday).

Pain related to injection session decreases during the 4th session.

Finally, a progressive decrease in action duration of botulinum toxin A is observed.

Conclusion

This study suggests that botulinum toxin A injections at long-term effectively decrease amount of sweat of residual limb. Embarrassment due to sweat and short wearing time of prosthesis could be improved by botulinum toxin A. However, action duration would decrease over time.

Keywords

residual limb;hyperhidrosis;botulinum toxin

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-0298

ABSTRACT NEED TO BE EDITED - THE EFFECT OF USING 8-WEEK BACK BRACE ON ELECTROMYOGRAPHY ACTIVITY OF YOUNG WOMEN WITH CHRONIC BACK PAIN DURING WALKING

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Introduction/Background

Different braces are designed to stabilize the spinal column in terms of symptoms in spine. One of the common braces to treat back pains is lumbar supporting braces in design of which a support on erector spine muscles is used to keep and support these muscles. This research aims to evaluate the effect of using 8-week back brace on electromyography activity of young women with chronic back pain during walking. Although Some studies have evaluated the effect of back brace on muscle activities in patients with back pain, less have examined the EMG of the muscles during walking while using lumbosacral brace.

Material and Method

In this semi-experimental research, the activity of erector spine muscles, abdominal erector, abdominal external oblique, abdominal internal oblique of 22 women with chronic back pain was evaluated. These women were randomly divided into experimental and control groups. The experimental group used back brace for eight weeks. Before and after using brace, the electromyography (EMG) activity was recorded in both groups. Independent t-test and correlated t-test were used to analyze the data.

Results

In experimental group, EMG activity of erector spine and abdominal erector muscle in midstance of walking was significantly decreased after 8-week using brace ($P < 0.05$). Also, there was a significant reduction in pain after using brace in experimental group ($P < 0.05$) while in control group no significant change was observed ($P > 0.05$).

Conclusion

It can be concluded that using brace can reduce the activity of erector spine and abdominal erector muscles in midstance of walking, and decreasing in back pain may be achieved. Examining kinematic and kinetic characteristics may more reveal the cause of efficacy of back brace in these patients.

Keywords

Back pain;Back brace;Electromyography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-0553

EVALUATION OF THE EFFECTS OF ADDING VIBROTACTILE FEEDBACK TO MYOELECTRIC PROSTHESIS USERS ON PERFORMANCE AND VISUAL ATTENTION IN A DUAL-TASK PARADIGM

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Introduction/Background

Myoelectric prostheses inherently lack tactile feedback. Therefore, users of these devices have to rely on their visual feedback. Since daily tasks are often performed in a dual-task paradigm, e.g. holding a coffee cup while reading a newspaper or folding clothes while watching the television, they pose a cognitive challenge to the prosthesis user.

Our objective was therefore to evaluate the effects of adding vibrotactile feedback to myoelectric prosthesis users on the performance time and visual attention in a dual-task paradigm.

Material and Method

Twelve transradial amputees using a myoelectric prosthesis (age 65 ± 13 years) performed five functional grasping tasks with their prosthetic hand, while controlling a virtual car on a road with their intact hand (see Figure 1). The dual-task was performed twice: with and without vibrotactile feedback. We measured the performance time of each of the grasping tasks and gaze behavior, measured by the number of times the subjects shifted their gaze towards their hand, the relative time they applied their attention to the screen, and the percentage of error in the virtual driving task.

Results

The mean performance time was significantly shorter ($p=.024$) when using vibrotactile feedback (93.2 ± 9.6 s) compared with the performance time measured when vibrotactile feedback was not available (107.8 ± 20.3 s). No significant differences were found between the two conditions in the number of times the gaze shifted from the screen to the myoelectric hand, in the time the subjects applied their visual attention to the screen, and in the total time that the virtual car was off-road with and without vibrotactile feedback, as a percentage of the total game time (51.4 ± 15.7 and 50.2 ± 19.5 , respectively).

Conclusion

Tactile feedback can be an effective addition to myoelectric prosthesis users, improving performance time during grasping and manipulating objects in a dual-task paradigm.

Keywords

Transradial amputation;Vibrotactile feedback;Visual attention

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-0820

A COMPARATIVE STUDY OF POSTURAL GARMENT VERSUS EXERCISES FOR PATIENTS WITH NON-SPECIFIC CERVICAL PAIN: A RANDOMISED CLINICAL TRIAL.

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Introduction/Background

Among health professionals, there is a high prevalence of musculoskeletal disorders. In our hospital, during a one-year period, 18 % of the hospital staff was treated in the Rehabilitation Department, 50 % because of pain in the neck and back. Therapeutic approach to cervical pain should include posture modification and exercise. A new garment, Posture Plus Force®, includes thoracic and abdominal tensional bands for the postural realignment. The aim of this study was to investigate the effects of a postural garment versus exercises in nurses with non-specific cervical pain.

Material and Method

Randomised clinical trial. Nurses and allied health professionals with cervical pain aged 21 to 55 years are allocated at random in two groups for a 3 month period: P+ (postural garment to be worn 2- hours per day) or Ex (5 physiotherapy sessions to learn stretching and strengthening exercises and continue at home on a daily basis). Primary outcomes are pain intensity (visual analog scale) and posture measured with a digitalized scan (SpinalMouse ®) by a blinded observer. All measures are conducted at T0 (pre-intervention), at 30 days, 60 days and 90 days follow-up. Secondary outcomes are cervical pain-related disability, catastrophizing, global perceived effect of treatment and evaluation of garment comfort. Pharmacological treatment and sick leaves are recorded. Physical activity is assessed with the International Physical Activity Questionnaire. Statistical analysis is conducted following intention-to-treat principles, and the treatment effects calculated using linear mixed models.

Results

29 nurses were recruited and 27 completed the study. Pain reductions are observed for both groups although P+ rated VAS lower and needed less drugs over 3 month period. Posture (kyphosis/ inclination) improves more in P+. Treatment perception is superior in P+ although not significant differences were found.

Conclusion

Positive effects are observed in all outcome measures in P+ group. although low in magnitude.

Keywords

cervical pain;posture;Garment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-1020

A SIMPLE MOVEMENT BASED CONTROL APPROACH TO EASE THE CONTROL OF A MYOELECTRIC ELBOW PROSTHETICS IN TRANSHUMERAL AMPUTEES

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Introduction/Background

Common myoelectric control strategy remains complex to use and produce unnatural gestures since it does not allow simultaneous movements of several joints. This is especially an issue for the transhumeral amputees who can use an active elbow in addition to active prosthetic wrist and hand. Since most transhumeral amputees have a mobile residual limb, an interesting approach aims at utilizing this mobility to control the elbow. We thus developed a simple electronic device relying on an inertial measurement unit, that can be interfaced with existing commercial myoelectric elbows and which convert chosen displacements of the residual limb into control signals, offering an intuitive way of controlling an active elbow prosthesis whilst allowing a simultaneous myoelectric control of the wrist and hand.

Material and Method

We performed an experiment with one transhumeral amputee wearing his myoelectric prosthetic (active elbow, wrist and hand) who was asked to grasp and transfer different objects several times while being recorded with a motion capture system. These task were performed twice: with a conventional full myoelectric control and with the proposed movement based control. Several metrics (position error, time, smoothness, along with body compensatory strategies) were used to quantify the performances obtained with these two modes.

Results

Analyses showed that the participant was able to perform the tasks in both condition, but that the movement based control approach allowed a reduction in task time and in exhibited body compensatory strategies, by offering an easier access to adjustments of the elbow posture compared to the full myoelectric control approach.

Conclusion

This work illustrates the potential of using residual limb mobility in the control of prosthetics, to make it more natural and intuitive, and how this can have an indirect but positive impact on the whole body compensatory strategies exhibited by amputated subjects.

Keywords

movement based control;transhumeral amputation;prosthetics control

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-1094

THE EFFECT OF DIFFERENT ANKLE BRACE ON GROUND REACTION FORCE PARAMETERS AND KINEMATIC PARAMETERS

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Introduction/Background

Previous study showed that use of ankle brace increased the risk of other lower extremities injuries in forward jump because of large ground reaction force (GRF) and decreased ankle dorsiflexion angle (AF). However, in lateral landing that was often used during the game or practice in many sports, the risk factor was still unknown. This study aimed clarify the effect of ankle brace on ground reaction force and kinematic parameters among forward and lateral landing.

Material and Method

Ten college female students without a history of knee or ankle injuries participated in this study. The subjects wore an ankle support brace on the non-dominant foot. They performed with three conditions that using soft brace (SB) (SA-1, Japan Sigmax Inc.), semi-rigid brace (SRB) (A-1, Japan Sigmax Inc.), and no ankle brace (NB). The Each participant jumped 50 cm to the forward and lateral direction, landing on one leg from a 20-cm-height box. Two-way analysis of variance was used to analysis the differences in peak GRF (pGRF), time to pGRF (TpGRF), Impulse (N/BW · s), AF, ankle inversion angle (AI), AF moment (AFM), and ankle inversion moment (AIM) among forward and lateral landing. The significance level was set at $p < 0.05$.

Results

pGRF, AF, AI and AIM were not significant difference among each condition. TpGRF were smaller SRB than NB ($p < 0.05$). Impulse were larger SRB than NB and SB ($p < 0.05$). AFM was smaller in SRB than NB ($p < 0.05$).

Conclusion

Large Impulse was thought the higher risk of lower extremities. In this study, Impulse was smaller in SRB than other conditions. In addition, AFM and AIM were smaller in SRB than other conditions. This result showed using ankle brace such as rigid type is effective on return to sports.

Keywords

Ankle Brace;Kinetics;Kinematics

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-1284

EXOMS: A 3D PRINTED EXOSKELETON WITH SPRINGS TO ENHANCE UPPER-LIMB MOBILITY IN NEUROMUSCULAR DISEASE

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Introduction/Background

Many children with neuromuscular disorders have limited motion of their upper limb. To sustain their little upper limb movement possibilities against gravity and offer them more autonomy, the objective of this study was to develop an exoskeleton that would be light, easy-to-make and costless. The application took the form of a case study: the first elected patient in our center to be equipped was a 4 year-old girl with congenital RYR-1 myopathy.

Material and Method

The patient growth and management of her scoliosis led to a under-utilization of her upper-limb. Her muscle weakness limited her prehension capacities. The modeling and drawings were developed thanks to a computer aided design software. The design process led to a 3D printed exoskeleton for the upper limb members (ExoMS), equipped with an anti-gravity mechanism composed of springs. The drawings were printed using a Delta-type printer. Assembly and tolerance of the printed pieces, add-on the existing CTLSO Garchois type brace was excellent. The functional mobility of the patient upper limb was assessed before and after equipment with 7 items of the Melbourne upper limb assessment scale: range of movement, accuracy of reach and placement, dexterity of grasp, fluency of movement.

Results

The assessment of functional mobility of the upper limb with the Melbourn assessment scale showed a significative enhancement for all designated items. The obtained 3D printed ExoMS is a simple, light weight and costless device to facilitate upper-limb motion with patient with neuromuscular weakness.

Conclusion

This clinical and technical multidisciplinary work with the great collaboration of the family motivates us to enhance new possibilities in giving back some precious mobility to patients with neuromuscular disorders.

Keywords

exoskeleton;neuromuscular;orthosis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-1448

CHARACTERISTICS OF 3015 USERS OF LOWER LIMB PROSTHESIS GRANTED BY CORPORACION MAHAVIR KMINA ARTIFICIAL LIMB CENTER IN COLOMBIA

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Introduction/Background

Objective: To describe the clinical, sociodemographic and functional characteristics in users of limb prostheses provided by Corporación Mahavir Kmina Artificial Limb Center (CMKALC) from 2007 to 2017, as well as the causes of amputation or absence of lower extremities in that population.

Material and Method

Methods: A retrospective description of patients who attended CMKALC during ten years, and who were adapted with prostheses for amputation of one or both lower extremities. Statistical methods were used to determine the proportion of patients by level and cause of amputation, as well as the prevalence of these conditions.

Results

Results: 3015 patients were included, 601 women and 2414 men with an average age of 45.5 and 46.7 years respectively. Above the knee was the most frequent level of amputation or limb absence (54.89%); of this group 546 were due to traffic accidents (32.99%), followed by diabetes mellitus with 225 (13.59%). Traffic accidents accounted for 28.95% of total causes of amputation, and diabetes accounted for 18.77%; in the case of landmines, a cause thought to be highly prevalent in Colombia, it accounted for 4.90% of amputations. The average age of amputees due to motorcycle traffic accidents was 35.43 years for women and 38.32 for men, 60.55 and 60.98 years for women and men with diabetes respectively. For landmines, the average age in women was 36.73 years and 34.65 in men. The amputations due to diabetes showed a male to female ratio of 4:1, similar to that reported in other case series. 32.45% of people included in this study had used some sort of prostheses formerly.

Conclusion

Conclusions: The results of this study describe the statistical data and the most important demographic features of the recipients of exoskeletal prostheses with the Jaipur foot and high-density polyethylene, granted by CMKALC during ten years of labour.

Keywords

Exoskeletal prostheses;Jaipur foot;Lower limb amputation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-1591

DURABILITY OF LOWER LIMB PROSTHESES WITH LOW-COST EXOSKELETAL TECHNOLOGY, IN PATIENTS WITH LOWER LIMB AMPUTATION DUE TO ANY CAUSE.

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Introduction/Background

Objective: Identify the time of duration between the first and second low-cost prostheses, donated by an orthopedic equipment shop in Medellín, Colombia, from 2007 to 2017.

Material and Method

Methods: A retrospective description of lower limb amputee patients was performed during a 10 year period. Statistical methods were used to determine the proportion of patients by level and causes of amputation, as well as the prevalence of these conditions.

Results

Results: A total of 3.449 amputees were included in the study, of whom 51.8% presented amputation above the knee and 48.1% presented amputation below the knee. The causes for amputation were classified as 54.82% medical and 45.17% traumatic. Of those with medical causes, 61.6% were neurovascular, followed by 11.8% congenital; in the traumatic ones the traffic accident occupied 65.7%, followed by violence 23.9% (landmines 4.8%). 30% of total patients were previously prosthesis users.

Patients who received a second prosthesis (249) met the following characteristics: 69.8% were between 18 to 60 years old, the level of absence of limb below the knee was the most frequent at 69.8%. The amputation causes: 49% medical and 51% traumatic. Among medical causes, the most frequent ones were 16.06% congenital, followed by neurovascular 20.48%. In those with traumatic causes, traffic accidents represented 34.54%, of which, 5% were on a motorcycle, while violence represented 8.8%, with a minority of 5% due to landmines. The average duration of the first prosthesis was 33.8 (SD +/- 23.1) months.

Conclusion

Conclusions: the results describe the durability of exoskeletal prostheses made with the Jaipur foot and high density polyethylene, and the main characteristics of patients with lower limb amputations, who have been awarded by Corporación Mahavir Kmina Artificial Limb Center in Medellín – Colombia, between 2007 and 2017.

Keywords

exoskeletal prostheses; Jaipur foot; durability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-2012

ULTRASOUND SENSING-BASED INTUITIVE PROPORTIONAL CONTROL: AN EVALUATION STUDY WITH UPPER-EXTREMITY AMPUTEES

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Introduction/Background

Recent studies have shown that unintuitive control is a key factor leading to upper-extremity, myoelectric prostheses abandonment. We have developed a non-invasive modality to extract proportional control signals in the residuum using ultrasound imaging. In this study, we investigate the performance of this technology in upper-extremity amputees.

Material and Method

We recruited 4 amputee subjects (Table I) who currently use myoelectric prostheses. Subjects were instrumented with a portable ultrasound system connected to a low-profile transducer on the volar aspect of their residuum. Ultrasound images were processed in real-time to extract graded muscle activity signal in response to volitional user-intended motions (UIMs). Subjects were trained by iterating each UIM while being provided with visual feedback of ultrasound images and muscle-activity signal. Participants were then given control of an on-screen cursor that responded proportionally to the level of muscle-activity for a particular UIM and asked to reach and hold the cursor at predefined set-points. Control steadiness (standard deviation) and control error (difference between cursor and target) were computed.

Results

All subjects were able to complete the training phase within 15 minutes (25 iterations or less) for at least 4 degrees-of-freedom (DoF), while achieving motion prediction accuracies greater than 88% (Table I). 3 subjects participated in the motion control task. The congenital amputee subject performed 2 motions and the rest performed at least 4 motions with control errors between 2.1% and 9.36% (Table II). Our approach provides direct positional control based on muscle deformation, resulting in improved proprioceptive feedback, unlike myoelectric control. We believe that ultrasound images coupled with the muscle activity signals serve as an intuitive visual feedback mechanism, resulting in reduced training time and improved performance.

TABLE I : Subject demographics and post-training motion prediction accuracy (higher is better)

	Demographics	Motion accuracy (leave-one-out validation)	Degrees-of-freedom
Subject 1	Male with unilateral, transradial, traumatic amputation of left arm	88.6%	5
Subject 2	Male with unilateral, transradial, congenital amputation of left arm	88%	4
Subject 3	Male with unilateral, transradial, traumatic amputation of right arm	96%	4
Subject 4	Male with traumatic, wrist disarticulation of right arm and shoulder disarticulation on the left	100%	5

TABLE II : Control error and control steadiness for motion control task (lower is better)

	Control Error	Control steadiness
Subject 2	9.36%	11.27%
Subject 3	1.15%	17.23%
Subject 4	2.1%	2.96%

Conclusion

We demonstrated intuitive proportional control using ultrasound-based muscle activity sensing paradigm for multiple DoFs with traumatic and congenital amputees.

Keywords

Proportional control;Upper-extremity prosthetics;Ultrasound

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-2188

OPEN-DESIGN COLLAR VS. CONVENTIONAL PHILADELPHIA COLLAR REGARDING USER SATISFACTION AND CERVICAL RANGE OF MOTION IN ASYMPTOMATIC ADULTS

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Introduction/Background

Cervical collars are often prescribed to minimize physiologic loads and movements between the head and thorax by limiting cervical motion; they are also used for supporting a patient's head and reducing the risk of cervical injury resulting from additional spinal movements. One of the problems in orthotic treatment is the unpleasant appearance of the orthosis, which could impede the patient from continuing treatment. Currently, it is essential to consider the importance of the psychologic effect of rehabilitative treatment. The current study aimed to compare the Philadelphia collar and an open-design cervical collar with regard to user satisfaction and cervical range of motion in asymptomatic adults.

Material and Method

Seventy-two healthy subjects (36 women, 36 men) aged 18 to 29 years were recruited for this study. Neck movements, including active flexion, extension, right/left lateral flexion, and right/left axial rotation, were assessed in each subject under 3 conditions—without wearing a collar and while wearing 2 different cervical collars—using a dual digital inclinometer. Subject satisfaction was assessed using a 5-item self-administered questionnaire.

Results

Both Philadelphia and open-design collars significantly reduced cervical motions ($P < 0.05$). Compared with the Philadelphia collar, the open-design collar more greatly reduced cervical motions in three planes and the differences were statistically significant except for limiting flexion. Satisfaction scores for Philadelphia and open-design collars were 15.89 ± 3.87 and 19.94 ± 3.11 , respectively.

Conclusion

This study demonstrated that the open-design collar is more cosmetically acceptable as a semirigid cervical collar compared with the Philadelphia collar, at least for subjects aged under forty years, while it also has optimal restriction potential. Further studies are needed to investigate its effectiveness in restricting cervical intervertebral motion and long-term compliance

Keywords

Cervical Orthoses;Range of motion;Satisfaction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-2377

EFFECT OF C-LEG ON KINEMATIC AND KINETIC PARAMETERS OF LEVEL WALKING IN TRANSFEMORAL AMPUTEES: A REVIEW OF LITERATURE

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Introduction/Background

Growing rate of amputation (more than 1.6 million in U.S that will increase to 3.6 million in 2050)(1) and the complications of using passive prostheses, as falling and more energy consumption, illustrates the relevance of improving more secure technology as microprocessor prosthesis(2, 3).

C-leg is a variable damping, hydraulic stance and swing control, containing sensors, strain gauge, microprocessor and hydraulic components, which simulates eccentric muscles function during gait, aiming to resolve passive prostheses limitations as step length asymmetry, excessive swing phase knee flexion and intact limb overloading(4, 5).

This study aimed to investigate kinematic and kinetic parameters of level walking in C-leg users.

Material and Method

A database search was made between the years 1997 and 2017 under “C-leg”, “microprocessor”, “semi-active prosthesis”, “gait kinematic”, “gait kinetic” and “gait biomechanics”. Database searched included: Cochrane database, PubMed and Medline. Five journal articles were selected.

Results

According to the result of literature, C-leg helped amputees cinematically by: providing loading response knee flexion which helps shock absorbing and decreases load on intact limb and prosthetic side hip joint(6); placing GRF posterior to joint axis, which provides knee flexion in toe-off without delay and attempt(6); and damping excessive swing phase knee flexion(5).

Gait kinetic parameters were also improved, as C-leg increased peak knee flexion moment in loading response, and consequently reduced vertical ground reaction force, hip flexion moment and intact limb moment and power generation(5-7). Due to easy of rotation, knee extension moment increased in preswing(7). Gait smoothness increased because of lower jerk when transferring from stance to swing and vice versa(7) and knee flexion moment decreased in swing phase(5, 8).

Conclusion

Based on the limited evidence, C-leg improved gait symmetry and reduced metabolic rate, compared to passive prostheses, by improving kinematic and kinetic parameters of level walking(6, 9).

Keywords

C-leg;transfemoral amputation;gait biomechanic

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.05 PRM Interventions Research - Prosthetics and Orthotics

ISPR8-2474

CHARACTERISTICS OF LOWER LIMB PROSTHESIS USERS GRANTED BY TWO CENTERS IN INDIA AND COLOMBIA

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Introduction/Background

To describe the clinical, sociodemographic and functional characteristics in users of limb prostheses provided two centers in India and Colombia (BMBSS and CMKALC) from 2007 to 2017, as well as the causes of amputation or absence of lower extremities in that population.

Material and Method

A retrospective description of patients who attended by BMVSS and CMKALC during ten years and who were adapted with prostheses for amputation of one or both lower extremities and upper limbs. Statistical methods were used to determine the proportion of patients by level and causes of amputation, as well as the prevalence of these conditions

Results

19952 patients were included by BMVSS and 3015 patients by CMKALC, in the first center the male:female ratio of were 9:1 while in CMKALC were 4:1, at least the 75% of patients in BMVSS were between 20-50 years, at Colombia's center the 66% were 30-70 years. Above the knee was the most frequent level of amputation or limb absence (40.75% and 50.85%); the most frequent cause at both centers were due to traffic accidents (45.31% and 28.65% respectively), followed by train accidents in India (12.5%) and in the second center were diabetes mellitus with 17.68% while in BVSSS were 1.72%; in the case of landmines, a cause thought to be highly prevalent in Colombia, it accounted for 4.90% of amputations. Satisfaction Level (with Prosthesis, Prosthetist, Training, Services of the organisation) were High (52% vs. 96,7%), moderate (47% vs. 2.7%) and low (1% vs. 0.6%) respectively. Functional Satisfaction High performance (45% and 57.1%), Moderate (46% and 32.71%) and Low (9% vs. 10.28%)

Conclusion

The results of this study describe the statistical data and the most important demographic features of the users of exoskeletal prostheses with the Jaipur foot and high density polyethylene, granted by BMVSS and CMKALC during ten years of labour.

Keywords

jaipur foot;lower limb prosthesis;demography

Conflict of interest

Disclosure statement:

Dr. Jesus Alberto Plata Contreras is the technical Director of the Corporacion Mahavir Kmina Artificial Limb center.

Dr. Pooja Mukul is the Director Jaipur Foot Rehabilitation Center & Technical Director Paul Hamlyn International Center-BMVSS

E-Poster Session - July 9-12 - Exhibition Area

C2.06 PRM Interventions Research - Massage and Myofascial Techniques

ISPR8-0381

INEFFECTIVENESS OF MUSCLE REACTION TIME AND TORQUE OF QUADRICEPS IN TREATING HAMSTRINGS USING DEEP TRANSVERSE FRICTION MASSAGE

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Introduction/Background

Deep transverse friction massage (DTFM) is used to treat pain and restricted range of motion. It is known to decrease nerve excitability and performance. However, few studies have focussed on the function of antagonist muscles. This study aimed to determine the effect of DTFM on the antagonist muscle in comparison with stretching.

Material and Method

Overall, 33 healthy male participants (mean age, 23.1 ± 4.2 years) were randomised into three groups: DTFM ($n = 11$), stretching ($n = 11$), and control ($n = 11$). DTFM was performed on the hamstrings for a duration of 10 minutes. Stretching of 10–40 seconds was statically applied to the hamstrings followed by 20-second rest. The control was provided 10-minutes of rest. Peak torque (PT) at a speed of $60^\circ/s$ and $120^\circ/s$ on quadriceps and hamstrings, respectively, were the outcome measures, and muscle reaction time, namely, pre-motor time (PMT) and electromechanical delay (EMD) on the rectus and biceps femoris. Two-way analysis of variance for repeated measures was used to evaluate statistical significance of all the measured variables.



Results

Therefore, no difference was found between the subjects and within groups in all measurements ($p < 0.05$). The result indicated that adding DTFM or stretching on the hamstrings did not affect PT, PMT, and EMD on the quadriceps.

	Control		Stretching		DTFM	
	pre	post	pre	post	pre	post
60°/sec	153.5±40.8	151.5±42.6	144.1±33.2	133.1±35.5	155.7±47.1	160.3±54.8
120°/sec	113.4±32.8	106.1±29.9	109.2±28.8	103.9±25.7	122.1±40.5	123.7±39.3
PMT	0.46±0.11	0.45±0.15	0.40±0.06	0.43±0.09	0.46±0.11	0.40±0.09
EMD	0.16±0.04	0.16±0.04	0.15±0.03	0.15±0.03	0.15±0.04	0.16±0.04

Mean±SD *: $p < 0.05$

Conclusion

A previous study described reaction time change only when the muscle tendon was treated using DTFM. It was also considered that the difference in treatment site could affect neural mechanisms. In conclusion, this study showed that using DTFM for the treatment of hamstrings improve neither PT nor muscle reaction time on the quadriceps.

Keywords

Deep Transverse Friction Massage; Muscle Reaction Time; Muscle Torque

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.07 PRM Interventions Research - Lymph Therapy (Manual Lymphatic Drainage)

ISPR8-2219

3D LASER SCANNER SENSOR FOR UPPER LIMB VOLUME MEASUREMENT IN BREAST CANCER RELATED LYMPHEDEMA: PRELIMINARY RESULTS OF A REPRODUCIBILITY AND RELIABILITY STUDY

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Introduction/Background

Upper limb volume assessment is the first step in lymphedema diagnosis and rehabilitative management. Circumferential method (CM), the most commonly used limb volumetric method, showed several limitations in common clinical rehabilitation practice and recently a new method using three-dimensional laser scanning (LS3D) has been proposed for limb volume measurement and validated by our group in healthy subjects. Aim of this study was to verify the reproducibility and reliability of LS3D compared to CM in upper limb volume measurement in women affected by breast cancer related lymphedema (BCRL).

Material and Method

We included young women (aged >18 and <45 years) affected by BCRL, with normal weight (BMI >18 and <25 kg/m²). Two raters randomly performed both LS3D and CM upper limb volume evaluation twice in each subject (the mean value of the two CM and LS3D evaluations was used) at baseline and at the end of the rehabilitative lymphedema treatment. CM assessments were performed by two expert lymphotherapists with more than 20 years of experience in lymphedema treatment and blinded to other rater's assessments.

Results

Ten BCRL patients, mean aged 54.3±10.2 years have been enrolled. Both LS3D and CM showed a significant inter and intra-operator correlation in upper limb volume measurement (r²=0.99; p<0.0001). LS3D showed a strong correlation with CM (r²=0.99; p<0.0001); moreover LS3D was significantly quicker in upper limb volume measurement than CM (195±24 sec. vs 258±19 sec; p<0.0001).

Conclusion

Results of this small pilot study suggest that LS3D seems to be a highly reproducible, reliable and easy to use method to evaluate upper limb volume in BCRL patients, as previously evidenced in healthy subjects. Our results suggest a potential implementation of LS3D as a useful tool in lymphedema common clinical rehabilitation practice. Future investigations should address its reliability and reproducibility in different stages of lymphedema.

Keywords

breast cancer related lymphedema;lymphedema;3D laser scanner

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.08 PRM Interventions Research - Heat and Cold

ISPR8-0285

TEMPERATURE CHANGES IN BONE BY THERAPEUTIC ULTRASOUND: AN EXPERIMENTAL SETUP WITH PHANTOMS AND A BOVINE EX VIVO SAMPLE

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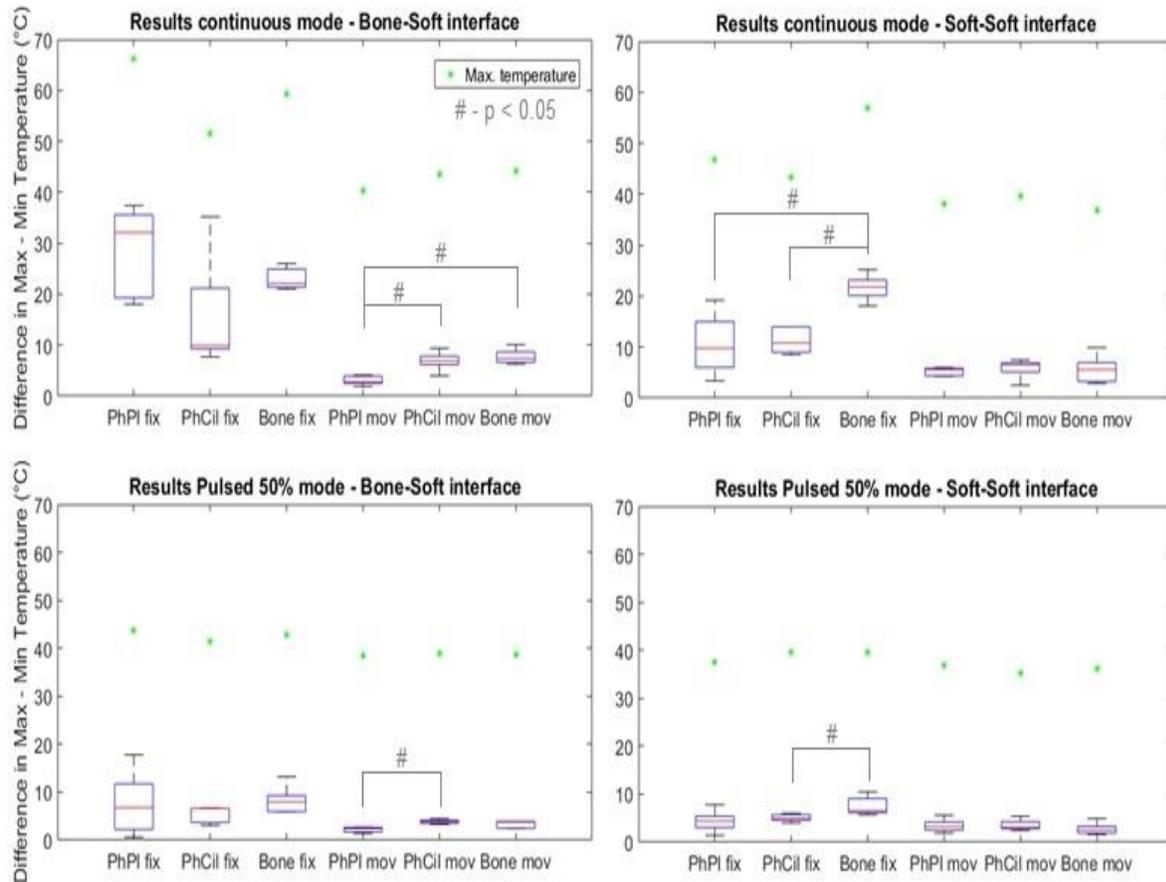
Introduction/Background

Heat distribution in multilayered tissues after therapeutic ultrasound (TUS) stimulation has been investigated in the last decades. However, there are still some concerns regarding wave parameters, dosage and physiological responses, leading to the need for further research. The aim of this study was to assess temperature changes in bone samples and phantoms (mimicking materials) caused by TUS.

Material and Method

It was used a sample of bovine ex vivo femur and two cortical bone phantoms (Sawbones®, USA): a 4-mm thick plate and a 5-mm thick cylinder put under a custom-made two-layered soft tissue phantom, and a TUS probe (1-MHz, intensity SATA of 1 W/cm², continuous or 50%-pulsed regimen) was used in contact with it, in a fixed or moving configuration, for a 5-minutes stimulation. A thermometer captured temperature values with two K-type thermocouples: one in the bone-soft tissue interface, and the other between the two soft tissue layers. Everything was inside a water bath at 36.5°C and experiments were repeated five times. Wilcoxon tests ($p < 0.05$) were used for statistical analysis.

Results



The figure depicts boxplots representing the difference between minimum and maximum temperatures for the five experiments concerning both pulsed regimens and interfaces, for fixed (fix) and moving (mov) transducers. It can be observed that fixed transducer leads to a higher increase in temperature compared to moving transducer, mainly for the continuous mode. The 50%-pulsed regimen raised maximum temperatures to more than 40°C. Some significant differences were observed ($p < 0.05$).

Conclusion

Fixed transducer may be deleterious since it may lead to great temperature increases. Pulsed regimens seem to heat with less intensity compared with continuous applications. Heating by TUS on phantoms may differ from bone samples because of their different thermal constants and geometries.

Keywords

Therapeutic ultrasound;Bone;Heat

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.08 PRM Interventions Research - Heat and Cold

ISPR8-1454

THE OPTIMAL CONDITIONS OF THERAPEUTIC ULTRASOUND ON MUSCLE STIFFNESS OF MEDIAL GASTROCNEMIUS MUSCLE IN HUMAN: A SHEAR-WAVE ELASTOGRAPHY STUDY

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Introduction/Background

Therapeutic ultrasound (TU) is most widely used as biophysical agents to treat contracture in orthopedics rehabilitation. Its effect is to increase range of motion by increasing tissue extensibility. However, no studies have reported the effect of TU on human muscle stiffness (MS). Also, the optimal conditions including frequency, intensity, and duty cycle of TU remain unclear. This study aimed to clarify the optimal TU conditions on MS using ultrasonic shear-wave elastography (SWE).

Material and Method

This study was a randomized cross-over trial. All of the following TU conditions were applied on ten healthy males (mean \pm SD, age 25 ± 2.9 y.o., height 171.2 ± 4.7 cm, weight 63.1 ± 5.1 kg); frequency (1 and 3 MHz), intensity (continued mode: spatial average-temporal average (SATA) intensity of 0.5, 1.0, 1.5, and 2.0 W/cm²; pulsed mode: 1.0, 2.0, and 3.0 W/cm² with 50% duty cycle (i.e., 0.5, 1.0, and 1.5 W/cm²^{SATA})) for 10 minutes. Outcome was the change rate of MS in medial gastrocnemius (MG) muscle by using SWE. Statistical analysis was performed using one-way analysis of variance followed by Bonferroni post hoc test.

Results

MS showed significant differences between the different frequency, intensity, and duty cycle. MS significantly decreased with 1.0, 1.5, and 2.0 W/cm²^{SATA} than 0.5 W/cm²^{SATA} at continued mode, and with 1.0, and 1.5 W/cm²^{SATA} than 0.5 W/cm²^{SATA} at pulsed mode at both 1 MHz and 3 MHz. There was no significant difference in MS between the above five SATA intensities, i.e., 1.0, 1.5, 2.0 W/cm²^{SATA} at continued mode and 1.0, 1.5 W/cm²^{SATA} at pulsed mode.

Conclusion

The optimal conditions of TU to decrease MS in MG were over $1.0 \text{ W/cm}^2 \text{ SATA}$ of intensity for both continued mode and pulsed mode at both 1 MHz and 3 MHz of frequency.

Keywords

Therapeutic ultrasound;Muscle stiffness;Shear-wave elastography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.09 PRM Interventions Research - Hydrotherapy and Balneotherapy

ISPR8-0428

APPLICATION OF FUNCTIONAL HYDROTHERAPY IN THE REHABILITATION OF CHILDREN WITH SPECIAL NEEDS

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Introduction/Background

To move from the passive treatment of injuries to their functional active treatment by combining the functional rehabilitation theory with the rehabilitation technique of hydrotherapy.

Material and Method

To make use of the physical properties of water, take games as the carrier, and adopt the approaches of experimental intervention and experience summary to integrate the management of motion, sensory perception, consciousness and behaviors into the rehabilitation environment of hydrotherapy and develop the multi-sensory fun games as well as the motion and sensory perception training.

Results

By means of the functional hydrotherapy training, the interaction and cooperation between therapists and children with special needs are realized, the organization, time sequence and coordination of physical therapies are optimized, and the motion function is rebuilt with individual functions improved.

Conclusion

The functional hydrotherapy training is based upon the framework of ICF-CY "Individual – Task – Environment", with the realization of various functions as the goal. It combines quite a few physical therapies, arouses the interest of children with special needs in motion and re-learning, and improves the individual function of motion, which conforms to the theory of the environment improving the neuroplasticity in neurophysiology and is regarded as one of the most important physical therapies in the comprehensive rehabilitation treatment in modern children rehabilitation medicine.

Keywords

children with special needs;functional hydrotherapy;rehabilitation application

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.09 PRM Interventions Research - Hydrotherapy and Balneotherapy

ISPR8-0635

FEATURES AND UNIQUENESS OF THE MINERAL SPRINGS WATER OF TSKHALTUBO

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Introduction/Background

Tskhaltubo is beautiful powerful resort in West Georgia. It is located near Kutaisi, where there is a great regional state university and the faculty of medicine, where we have planed comprehensive study of the spring waters of Tskhaltubo and their therapeutic effects. One of the objectives of our study is to conduct clinical trials and statistical processing of the results obtained for the purpose of further developing the methods of balneological treatment based on the unique waters of Tskhaltubo.

Material and Method

A literature review of all available literature is presented in this paper, starting from the time of the beginning of the study of the mineral waters of Tskhaltubo in the late 19th century. Physico-chemical properties of mineral waters were compared and their balneological therapeutic effect was studied.

Results

One of the main specific features of the Tskhaltubo mineral springs is the consistency of physical and chemical properties, as well as the uniformity of all mineral sources, both in physio-chemical and therapeutic properties. Tskhaltubo mineral springs do not contain potent, toxic substances, so they are very soft by action and easily transferred by patients, so they can be used for treatment at any stage of the disease, when the use of other mineral waters is contraindicated

Conclusion

The chemical composition of the Tskhaltubo water is stable and does not change over time, as evidenced by the comparison of chemical analyzes performed in the last 70-80 years.

Some balneologists consider the Tskhaltub water to be radon, thanks to the natural temperature of the mineral water, which allows it to be used in flowing pools without preheating, which promotes the formation of an active deposit on the skin, even if a small amount of radon is present in the water.

Keywords

Tskhaltubo, ;radon;mineral spring

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.09 PRM Interventions Research - Hydrotherapy and Balneotherapy

ISPR8-1563

THE SEQUENTIAL AND PROPEDEUTIC APPROACH FOR BALANCE AND TRUNK CONTROL IN PEOPLE WITH SPINAL CORD INJURY UPPER THAN T7

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Introduction/Background

A good stability in sitting position is essential for people with spinal cord injury (SCI) for carrying out the activities of daily life, for autonomy, for social inclusion, to be able to make transfers, to ensure a good mobility and the ability to push a manual wheelchair. Rehabilitation in water offers many facilities and it can be an excellent tool to re-educate the trunk balance. The aim of the study is to evaluate the effectiveness of rehabilitation treatment in water using sequences of the protocol of the Sequential and Propedeutic Approach method (A.S.P.) on trunk control in SCI people without voluntary abdominal muscles control.

Material and Method

8 patients were recruited: 5 patients with cervical lesion, 3 with dorsal lesion. Evaluations were performed in three phases (T0, T1 and T2 over a maximum period of 4 months) through the Sitting Balance Assessment for Spinal Cord Injury (SBA-sci) and Spinal Cord Independence Measure (SCIM III) scales. The treatment, foreseen in 8 individual sessions of hydrotherapy with the A.S.P method, with frequency once a week, was added in the period T1-T2 in addition to the traditional re-education of the balance of the trunk proposed in a "dry setting" between T0 and T2.

Results

8 subjects completed the program. After the treatment in water (T1-T2) the subjects showed instead a significant increase (-2.02 ± 1.96 , $p < 0.05$). This does not occur with the SCIM III scale T1-T2 (-1.60 ± 1.96 , $p > 0.05$).

Conclusion

The results collected seem to bring out the effective contribution in controlling the trunk of the treatment in water through the A.S.P. method on people with SCI with level upper than T7. This increase does not appear immediately related to an increase in autonomy.

Keywords

Hydro-kinesitherapy;Balance;Water

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.11 PRM Interventions Research - Electrotherapy (including Functional Electrophysiological Stimulation)

ISPR8-2659

EFFECT OF KNEE JOINT ANGLE-BASED, ADAPTIVE FUNCTIONAL ELECTRICAL STIMULATION OF THE PERONEAL NERVE IN SPASTIC PARESIS. A CASE REPORT

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Introduction/Background

Functional electrical stimulation (FES) of the peroneal nerve has long been proposed to improve ankle dorsiflexion during swing phase of gait in hemiparesis. The present study assesses the effect of a knee joint angle-based adaptive FES compared with classical FES and no use of FES on active ankle dorsiflexion during gait. The rationale behind aFES is to amplify dorsiflexor stimulation when it is most needed, to face increased plantar flexor cocontraction as gastrocnemius muscles are stretched by knee re-extension in late swing.

Material and Method

Three subjects with chronic hemiparesis (time since stroke, 4 ± 3 years) underwent gait analysis at comfortable speed with shoes in three conditions: without stimulation (control), with classical FES (cFES) using trapezoidal stimulus intensity pattern and with an adaptive FES (aFES), in which stimulus intensity is indexed on the degree of knee flexion (the more re-extended the knee in swing, the higher the intensity). We compared cFES and aFES on the gain in active ankle dorsiflexion from control condition, during three periods of swing phase (T1 [0-42.5%], T2 [42.5-65%], T3 [65-100%], 10 gait cycles analyzed), and on the stimulation intensity delivered.

Results

For the three patients pooled, the gain in active dorsiflexion from control condition was $+4\pm 2^\circ$ at T1, $+3\pm 1^\circ$ at T2 and $+5\pm 5^\circ$ at T3 with cFES; and $+2\pm 1^\circ$ at T1, $+3\pm 1^\circ$ at T2 and $+5\pm 3^\circ$ at T3 with aFES. Stimulation intensity was $12\pm 10\%$ lower with aFES compared with cFES.

Conclusion

Both classical and adaptive FES increase ankle dorsiflexion during swing phase in hemiparesis. These first case studies suggest higher effect of classical FES compared with adaptive FES in early swing, and similar effects of both FES systems during mid and late swing, while aFES used lower stimulation intensity.

Keywords

Hemiparesis;Ankle dorsiflexion;Neurostimulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.11 PRM Interventions Research - Electrotherapy (including Functional Electrophysiological Stimulation)

ISPR8-0199

EFFECTS OF NEUROMUSCULAR ELECTRICAL STIMULATION COMBINED WITH CONVENTIONAL DYSPHAGIA THERAPY IN AN INCOMPLETE LOCKED-IN SYNDROME PATIENT, ONE YEAR AFTER STROKE: A CASE REPORT

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Introduction/Background

The purpose of this study was to investigate the effects of the neuromuscular electrical stimulation (NMES) combined with conventional dysphagia therapy, in a patient with an Incomplete Locked-in Syndrome (ILIS) presenting with oropharyngeal dysphagia secondary to a bilateral pontine stroke (october 2015). The subject was a 67-year-old man with no history of dysphagia before the stroke. He completed 11 months of neurological rehabilitation, including conventional dysphagia therapy, with no improvement in the dysphagia. He was admitted to our clinic 14 months post-stroke. His Functional Oral Intake Scale (FOIS) score before treatment was 4. The Penetration-Aspiration scale (PA) score before treatment was 8 and the videofluoroscopic assessment (6 months after conventional dysphagia therapy) showed aspiration and pharyngeal residue¹.

Figure 1: Videofluoroscopic assessment 6 months after conventional dysphagia therapy

Material and Method

Intensive rehabilitation swallowing program, involving NMES combined with conventional dysphagia therapy (patient received NMES during lunch and functional exercises)². We performed 4 sessions of 1h each week, over a period of 7 months. Swallowing function was assessed using videofluoroscopic evaluation, FOIS and PA scale.

Figure 2: Electrode placement

Results

After 7 months, videofluoroscopic assessment showed an improved swallowing reflex and reduced pharyngeal residue³. The FOIS score increased to 7 and aspiration decreased from 8 to 5 on the PA scale.

Figure 3: Videofluoroscopic assessment after intensive rehabilitation swallowing program

Conclusion

Our results suggested that the NMES combined with conventional dysphagia therapy, can be effective in the rehabilitation of dysphagia, in ILIS patients, even one year post stroke.

Keywords

incomplete locked-in syndrome;neuromuscular electrical stimulation ;dysphagia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.11 PRM Interventions Research - Electrotherapy (including Functional Electrophysiological Stimulation)

ISPR8-1390

SATISFACTION IN THE MANAGEMENT OF PAIN DURING LABOUR WITH THE USE OF TRANSCUTANEOUS NERVE STIMULATION

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Introduction/Background

There are many factors involved with satisfaction in women during labour. Pain relief is considered one of the weaknesses, in such a way that it could influence the rating of the rest of satisfaction items. The use of Transcutaneous Electrical Nerve Stimulation (TENS), like a non-pharmacologic approach, is an effective and safe technique used during childbirth. Measure for Testing Satisfaction (COMFORTS) scale is a specific questionnaire that includes the most important factors associated with the relation between mother satisfaction and the childbirth experience.

The aim of this work was to analyze factors that can influence satisfaction in pregnant women during labour and its relation with pain management.

Material and Method

A randomized and double-blind controlled trial was conducted. All participants completed the satisfaction scale immediately after childbirth. 63 participants were randomly assigned to one TENS device to relieve the pain, with different dose in each patients group. The primary outcome was to evaluate satisfaction in patients during childbirth and its relation with pain relief. This measurement was made with two scales, the satisfaction level was measured with COMFORTS scale and pain was measured with Visual Analogue Scale (VAS).

Results

The total COMFORTS scale mean score was 171.03 ± 19.69 with an individual item mean of 4.28. Women who have had more than one delivery presented the highest level of satisfaction, followed by nulliparous and those who have had a previous pregnancy. Women who expressed a low level of satisfaction had experienced severe pain. Lower degree of satisfaction was observed in women with severe pain 3.03 ± 1.1 than women with moderate pain, 4.53 ± 0.7 .

Conclusion

Overall, high level of satisfaction during labour was obtained; we recommended the use of TENS for pain relief to improve general satisfaction.

Keywords

Patient Satisfaction;Transcutaneous Electrical Nerve Stimulation;Pregnancy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.11 PRM Interventions Research - Electrotherapy (including Functional Electrophysiological Stimulation)

ISPR8-1480

CATHODAL TDCS OF THE PARIETAL CORTEX COMBINED WITH MIRROR THERAPY IMPROVED HAND DEXTERITY IN A CASE OF FOCAL DYSTONIA.

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Introduction/Background

The role of not-invasive brain stimulation (NIBS) as an add-on treatment to motor training in children suffering from focal dystonia has been described in the literature with contrasting results. The study is aimed at describing the clinical and functional outcome observed in a 13-years-old girl suffering from hand dystonia and undergone NIBS combined with mirror therapy.

Material and Method

We report the case of a 13-years-old girl suffering from hand dystonia following right hemisphere lesion in the basal ganglia area, due to cerebrovascular accident occurred in the infancy. At the basal assessment she showed a complete muscle strength recovery, a quite normal gait pattern, but a complete impairment in left hand dexterity due to hand muscle dystonia. She had already undergone several training protocols, including splint wearing and repeated botulinum toxin injections. These last induced a partial resolution of muscle contraction at rest, without any improvement in hand dexterity. We proposed the following treatment protocol: daily sessions (20 minute each) of cathodal tDCS on the right sensorimotor cortex (P4), 1 mA, followed, in the same morning, by 20minutes mirror therapy, for five consecutive days. Functional status was assessed using the Fugl-Meyer upper limb score at baseline (T0), after treatment end (T1) and one month later (T2). Moreover, a fMRI was performed at T0 and T1, in order to look what brain networks were activated during the left and right limb movements.

Results

The NIBS was well tolerated. No adverse events were complained for. The Fugl-Meyer score increased from 21/66 (T0) to 29/66 (T1) and up to 30/66 (T2). The fMRI showed a significant reduction of brain activation under active left limb movement after treatment.

Conclusion

Parietal cortex inhibition via cathodal tDCS at the lesioned hemisphere was effective at reducing dystonia, improving voluntary movement and inducing the reorganization of brain networks.

Keywords

Dystonia;tDCS;mirror therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.11 PRM Interventions Research - Electrotherapy (including Functional Electrophysiological Stimulation)

ISPR8-2708

SHORT-TERM EFFECTS OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION VERSUS ULTRASOUND THERAPY IN REHABILITATION OF LOW BACK PAIN

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Introduction/Background

Background and aims. Low back pain (LBP) is a very disabling musculoskeletal disorder, with high prevalence in the general population. Although electrical therapy is largely used, studies trying to prove its benefits are very few up to now and they often have contradictory results. The aim of this study is, therefore, to evaluate the short-term effectiveness on pain relief, mobility and functional improvement of transcutaneous electrical nerve stimulation (TENS) versus ultrasound (US) therapy in patients with LBP.

Material and Method

Methods. 60 patients with LBP (age between 30 and 75 years, 34 women and 26 men) participated in this prospective randomized clinical trial. Patients were assigned to TENS group (n=30) or to US group (n=30). Study participants received 10 sessions of TENS or US therapy, 5 days / week, for 2 weeks. All patients were assessed on the first and on the last day of treatment, by: visual analogue scale (VAS) for pain, Schoeber index for mobility, Roland-Morris Disability Questionnaire (RMDQ) for function.

Results

Results. There was no difference between groups in any of the parameters at baseline. At the end of treatment patients in both groups obtained significant improvement in all parameters: pain (VAS decreased from 7.8 ± 1.7 to 4.9 ± 1.2 , $p < 0.001$ in US group, and from 7.5 ± 1.5 to 3.8 ± 1.1 , $p < 0.001$ in TENS group), mobility (Schoeber index increased from 13.9 ± 3.1 to 15.4 ± 3.8 , $p < 0.001$ in US group, and from 14.2 ± 1.7 to 15.6 ± 2.7 , $p < 0.001$ in TENS group), function (RMDQ decreased from 14.8 ± 6.2 to 3.3 ± 1.2 , improvement 70.9%, $p < 0.001$ in US group, and from 13.5 ± 7.1 to 3.6 ± 1.2 , improvement 76.4%, $p < 0.001$ in TENS group). No significant difference was found between the final results of the 2 groups ($p > 0.05$) in any parameter.

Conclusion

Conclusions. TENS and US therapy had similar effects in LBP. Both were effective in relieve pain, increase mobility and reduce disability, representing promising therapeutic options for rehabilitation of LBP.

Keywords

TENS ;ultrasound;low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.11 PRM Interventions Research - Electrotherapy (including Functional Electrophysiological Stimulation)

ISPR8-2108

CLINICAL OBSERVATION OF SELF-DEVELOPED SWALLOW THERAPEUTIC EQUIPMENT FOR STROKE PATIENTS WITH DYSPHAGIA

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Introduction/Background

To observe the effects of self - developed swallow therapeutic equipment on swallowing function and safety for stroke patients with dysphagia.

Material and Method

50 stroke inpatients with dysphagia were randomly divided into two groups. The patients in intervention group received rehabilitation training on dysphagia and swallow therapeutic equipment treatment. The control group only received rehabilitation training on dysphagia. Both were given 5 times a week, and lasted for 4 weeks. Patients in both groups were followed up 2 months after the therapies ended. They were assessed by indirect swallowing test scores and water swallow test scores before and after treatment. The safety of the equipment was observed too.

Results

Either 2 weeks or 4 weeks of treatment, the total effective rate in intervention group is higher than those in the control group; follow-up after 2 months, the cure rate in the intervention group is higher than that in the control group. Comparison of the water swallow test scores between the 2 groups showed: Either 2 weeks and 4 weeks of treatment, the total effective rate in intervention group is higher than that in the control group; follow-up after 2 months, the total effective rate in intervention group is higher than that in the control group. No unpleasant effects of the swallow therapeutic equipment treatment have been found. Only one patient felt pain on the skin of the electrode pasted area.

Conclusion

The self - developed swallow therapeutic equipment treatment combined with rehabilitation training on dysphagia had better effects on improving swallowing function than single rehabilitation training on dysphagia. It is safe

Keywords

Stroke;dysphagia; therapeutic equipment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.12 PRM Interventions Research - Pharmacological Interventions (e.g. Pain, Spasticity, Anti-Inflammatory Drugs)

ISPR8-0476

EFFECTIVENESS OF COMBINED USE OF LEVODOPA AND AMANTADINE ON PROLONGED CONSCIOUSNESS DISTURBANCE DUE TO TRAUMATIC BRAIN INJURY IN CHILDREN -A CASE REPORT-

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Introduction/Background

Prolonged consciousness disturbance associated with traumatic brain injury (TBI) in children is one of the most serious complications for rehabilitation in order to perform cognitive / behavioral therapy. We report two cases of young TBI who got the remarkable recover by combined use of Levodopa and Amantadine.

Material and Method

Case: TBI in two children. Case 1 was a 17-year-old man with diffuse brain injury following traffic accident showing prolonged consciousness disturbance and easy irritability due to damage of bilateral orbital part of inferior frontal gyrus. Case 2 exhibited similar symptoms at 14 years of age.

Method: After admission to our recovery rehabilitation ward, they had daily 6 hours of rehabilitation, and at the same time, and took Levodopa and Amantadine for 10 weeks.

Results

In case 1, the disorder of consciousness was changed from E1V2M4 to E4V5M6 Glasgow Coma Scale, WAIS - III also to VIQ 72 → 96, PIQ 48 → 80, FIQ 58 → 87, FIM improved from 40 to 93, he discharged to his home in 3 months after hospitalization, and then returned to high school. In addition, he succeeded in getting a driver's license. Case 2 also followed a similar course and succeeded in successful recovery.

Conclusion

It is said that deficiency of dopamine, a mediator in the brain, is involved in prolonged consciousness disturbance and easy irritability after TBI of children. It is thought that Levodopa

was converted into dopamine in the brain, and Amantadine was activated dopamine in the brain by enhancing the neurotransmission of dopamine in the brain. It suggests that this therapy will be recommended as one of treatment methods for TBI in children.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.12 PRM Interventions Research - Pharmacological Interventions (e.g. Pain, Spasticity, Anti-Inflammatory Drugs)

ISPR8-0507

MULTI-PROFESSIONAL POST-STROKE CONSULTATION: WHAT ROLE FOR THE PHARMACIST?

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Introduction/Background

In France, following the instruction DGOS / R4 n ° 2015-262 relating to the organization of multi-professional consultations after stroke, consultations involving a neuropsychologist, a specialist of physical and rehabilitation medicine and a pharmacist have been set up on our establishment. Is the choice of a pharmaceutical intervention justified? Its relevance was evaluated through the activity report at 22 months.

Material and Method

For each consultations, the pharmacist collects the treatments prescribed and their knowledge (names, indications, time of taking - (qualitative scale at 3 degrees)), the side effects and the adherence score (MORISKI to 4 items). Self-medication, use of tools to help compliance and knowledge of hygiene and dietary rules are also collected.

Results

111 patients were received in consultation (cancellation rate 22%) equating to 8 consultations per month of 30 minutes. The average age was 52 years old. The average time between stroke and consultation was 5±3 months. The patients had an average of 4.9 lines of medication; 80% had at least one platelet antiaggregant, 23% an oral anticoagulant, 66% a statin and 59% an antihypertensive drug. Associated treatments were prescribed in 92% of cases and 1/3 used self-medication. 44% of patients reported side effects. Mediocre or mean compliance was found in 24% of patients (MORISKI score ≤2) unrelated to patient treatment knowledge (at risk $\alpha = 0.05$) - the latter were considered to be total in 69% of patients. Finally, 21% used a pillbox and 72% knew hygiene and dietary rules.

Conclusion

The role of the pharmacist is essential in view of the number of patients with low medication compliance or poor knowledge. A national multi-center study to measure the impact of

enhanced pharmaceutical support on adherence to treatment of stroke patients is underway (ADMED-AVC study) and will reinforce its position.

Keywords

therapeutic patient education;stroke;national health care programme

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.12 PRM Interventions Research - Pharmacological Interventions (e.g. Pain, Spasticity, Anti-Inflammatory Drugs)

ISPR8-0591

EFFECT OF BUPRENORPHINE TRANSDERMAL DELIVERY SYSTEM AND REHABILITATION ON ACTIVITIES OF DAILY LIVING AMONG PATIENTS WITH NON ONCOLOGIC CHRONIC PAIN

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Introduction/Background

THE BUPRENORPHINE TRANSDERMAL DELIVERY SYSTEM (BTDS) IS INDICATED FOR REDUCTION OF PAIN IN MODERATE TO SEVERE CHRONIC PAIN (CP), WHICH AFFECTS PATIENTS' ABILITY TO PERFORM ROUTINE ACTIVITIES OF DAILY LIVING (ADLS). ADLS ARE FUNCTIONAL ACTIVITIES THAT ALLOW INDEPENDENT LIVING.

THE AIM OF THIS STUDY IS TO EVALUATE THE EFFECT OF BTDS 10 μ g/H ON PAIN AND FUNCTIONALITY IN PATIENTS IN REHABILITATION PROGRAM WITH MODERATE TO SEVERE CHRONIC PAIN.

WE USED THE VISUAL ANALOGUE SCALE (VAS) AND PAIN DISABILITY INDEX (PDI) AT THE BEGINNING (BASELINE) AND 2 MONTHS

Material and Method

TWENTY-FIVE ADULT PATIENTS, WITH MODERATE TO SEVERE PAIN, WITH VAS GREATER THAN OR EQUAL TO 8.

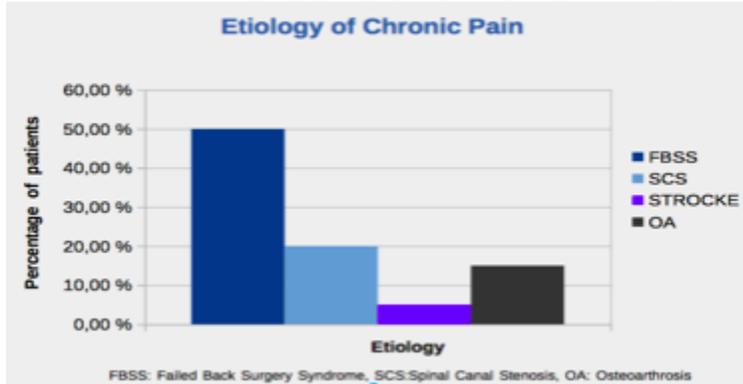
ALL PATIENTS WERE RECEIVING ONLY PHYSICAL THERAPY. ALL OF THEM WERE INDICATED BTDS 10 AND INTENSIVE REHABILITATION PLAN.

WE USED VAS AND PDI BEFORE STARTING (BASELINE) AND AFTER 8 WEEKS, AND 5-POINT TREATMENT SATISFACTION SCORE EVALUATING.

THE DATA WERE ANALYZED WITH EPIDAT 1.4, PERFORMING STUDENT'S TEST FOR COMPARISON OF RELATED SAMPLES.

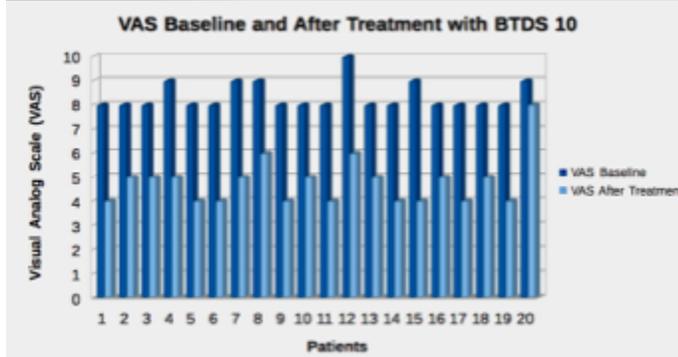
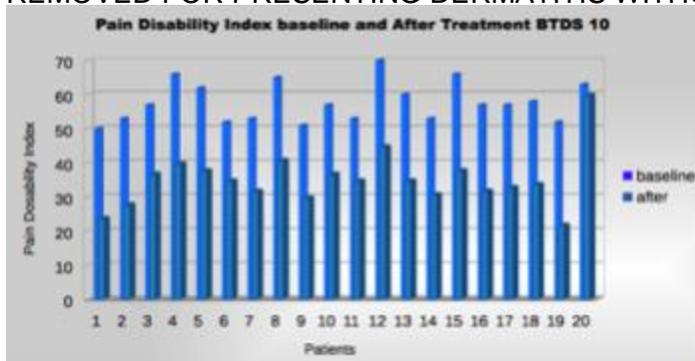
Results

TWENTY PATIENTS COMPLETED THE STUDY.
DIFFERENT ETHIOLOGIES OF CHRONIC PAIN OF THE PATIENTS WERE ADMITED.



AFTER 2 MONTH OF TREATMENT, WE OBSERVED IMPROVEMENT IN ALL PARAMETERS EVALUATED. THE STUDENT TEST WAS STATISTICALLY SIGNIFICANT ($P < 0.05$), FOR PAIN AS WELL AS RELATED FUNCTIONALITY.

REGARDING THE ADVERSE EFFECTS, CONSTIPATION OCCURRED IN 4 PATIENTS WHO RESPONDED TO DIETARY AND LACTULON TREATMENT, AND TWO PATIENTS WERE REMOVED FOR PRESENTING DERMATITIS WITHOUT RESPONSE TO ANTIHISTAMINIC.



Conclusion

THESE RESULTS SUGGEST THAT FOR PATIENTS WITH MODERATE TO SEVERE CHRONIC PAIN, BTDS CAN BE USED SAFELY AND EFFECTIVELY.

Keywords

Buprenorphine;Chronic pain;Rehabilitation

Conflict of interest

Disclosure statement:

Speaker of Mundipharma Latinoamerica

E-Poster Session - July 9-12 - Exhibition Area

C2.12 PRM Interventions Research - Pharmacological Interventions (e.g. Pain, Spasticity, Anti-Inflammatory Drugs)

ISPR8-1245

RETROSPECTIVE STUDY OF PSYCHOTROPIC DRUGS USED IN NEUROLOGICAL REHABILITATION (2010-2016): IMPACT OF A COLLABORATION BETWEEN PRESCRIBERS AND PHARMACISTS

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Introduction/Background

The prescription of psychotropic drugs is common in neuro-rehabilitation. In our establishment it represents 16% of prescriptions. Since 2010, a collaboration between pharmacists, psychiatrists and medical specialists has led to a policy of reducing and supervising their prescriptions. The retrospective study of the psychotropic drugs' consumption compared to the evolution of the type of patients treated with makes possible to evaluate the undertaken measures.

Material and Method

From 2010 to 2016, in addition to its routine analysis, audits and awareness campaign of the psychotropic drugs's prescriptions were regularly carried out by pharmacists to doctors and interns. Over the same period, the data of stays by psychological diagnostic code - psychotic disorders, anxiety, depressive disorders, other - were collected from the DIM (Medical informations department in France). Consumptions of psychotropic drugs (hypnotics, anxiolytics, antidepressants, antipsychotics) were extracted from pharmaceutical management software. For each drug the daily intake was calculated according to the SPC.

Results

The overall number of patients with psychological diagnosis code hospital stays increased by 321% in 6 years. +150% for depressive disorders, +287% for psychotic disorders, +443% for anxiety disorders and +488% for sleep disorders. The daily consumption of psychotropic drugs decreased by 19.9% ; a decrease of 45.3% and 39.4% for hypnotics and anxiolytics respectively, antipsychotics remained stable (0.9%) and antidepressants increased by 21.1%. The Pearson correlation test shows a negative correlation with a phi coefficient -0.7 ($p = 0.06$) between the number of targeted stays and the psychotropic drugs' consumption.

Conclusion

The collaboration between prescribers and pharmacists is successful: the use of psychotropic drugs is decreasing despite a number of ever-increasing stays of patients. The involvement of pharmacists must be continued. As a reinforcement of these results, drug-free therapeutic

alternatives are currently being examined such as relaxation techniques, RESC, psychiatric or psychological care.

Keywords

psychotropic drug;pharmaceutical intervention;prescriptions

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.12 PRM Interventions Research - Pharmacological Interventions (e.g. Pain, Spasticity, Anti-Inflammatory Drugs)

ISPR8-1334

EFFECTIVENESS OF INTRAMUSCULAR INJECTIONS OF BOTULINUM TOXIN INTO AGONIST MUSCLES ONLY ON DISABLING CEREBELLAR TREMOR OF THE HAND

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Introduction/Background

Hypermetric tremors, from cerebellar origin (essential tremor, cerebellar stroke or tumor, multiple sclerosis), directly relate to iterative hypermetria by delayed antagonist correction at each movement and cause significant functional and social disability. Botulinum toxin injections (BoNT) can reduce the amplitude of any tremor, but at the expense of muscle weakening when the injection is performed on both agonists and antagonists contributing to tremor. We measured the functional effects one month after botulinum toxin injections into agonist muscles only (eg pronator injection sparing supinators) in patients with cerebellar tremor causing upper limb disability.

Material and Method

We prospectively analyzed, in 15 patients (age 62 ± 17 years) with upper limb cerebellar tremor, data from two volumetric tests (30-seconds posture and 5-table-to-mouth tests) and Activities of Daily Living self-Questionnaire (ADLQ), before and one month after their last BoNT injection into selected agonist muscles.

The volumetric tests consisted of measuring the amount of remaining water (in mm) in a polystyrene cup (90 mm height), after 30 seconds of posture with the arm outstretched (H30) and after 5 table-to-mouth back and forth movements (Hx5). The ADLQ's score reflects the degree of daily disability caused by the tremor.

Results

Injections were well tolerated based on an open-ended questioning. The amounts of water remaining in the cup on H30 and Hx5 tests were: pre BoNT injection H30= $36,8 \pm 8,9$ mm and Hx5= $24,7 \pm 8,0$ mm ; 1 month post injection H30= $62,5 \pm 6,5$ mm (+70% ; $p=0.005$, t-test pre vs post) and Hx5= $48,6 \pm 8,3$ mm (+97% ; $p=0.004$). The ADLQ's score were: pre injection 59 ± 4 ; post injection 54 ± 4 ($p=0.002$, Wilcoxon signed-rank test).

Conclusion

Our results suggest functional efficiency on upper limb cerebellar tremor of injecting botulinum toxin into one agonist only. Explorations of correlations with tremor electromyographic parameters will be the subject of a future analysis.

Keywords

botulinum toxin;essential tremor;upper limb

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.12 PRM Interventions Research - Pharmacological Interventions (e.g. Pain, Spasticity, Anti-Inflammatory Drugs)

ISPR8-1929

APPROACHES TO BOTULINUM TOXIN FOR CHRONIC PELVIC PAIN AND VAGINISMUS

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Introduction/Background

Botulinum toxin is frequently used for pain conditions, especially those associated with muscle spasm. We reviewed relevant literature for information on botulinum toxin injection techniques into the pelvic floor and describe our methodology for treating endometriosis-related pelvic pain after optimized hormonal/surgical treatment.

Material and Method

PubMed, Embase and Scopus databases were searched using the terms "botulinum toxin" "pelvic pain" and "vaginismus." Data were extracted on the type of report, condition being treated, toxin serotype/brand, dose, dilution, muscle selection, muscle guidance technique, anesthesia, and other methodologic information.

Results

Thirty-nine reports were identified with technical information on botulinum toxin injection for pelvic pain and/or vaginismus; many lacked complete information. Most were open-label prospective reports with only one randomized, double-blind, placebo-controlled study of efficacy; one randomized, double-blind comparison of 2 doses; and 4 technical reports. Cumulatively, these studies provide information for approximately 1300 patients. Pelvic floor muscles were approached transvaginally, transperineally, or transgluteally. Toxin brand, dose, and dilution varied widely. Of 35 protocols providing information on localization method to confirm needle position in muscle, 18 used anatomic landmarks/manual palpation only, 10 used electromyography (EMG), 2 EMG with ultrasound, 1 ultrasound only, and 4 fluoroscopy/CT scanning. Thirteen papers were silent on anesthesia/sedation; 4 studies used no anesthesia. Five papers utilized general anesthesia, 7 conscious sedation, and 5 local anesthesia, without or with conscious sedation/nerve block. Pudendal block was used in 6 studies, sometimes combined with conscious sedation or general anesthesia. One study used only diclofenac for analgesia. Our own approach uses conscious sedation, topical lidocaine, and EMG guidance for transvaginal injection.

Conclusion

There is little evidence to guide practitioners on optimal approaches to botulinum toxin injection for pelvic pain and, importantly, a critical lack of clinical trials addressing the efficacy and safety of this emerging treatment.

Keywords

botulinum toxin;chronic pelvic pain;methodologic approach

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.12 PRM Interventions Research - Pharmacological Interventions (e.g. Pain, Spasticity, Anti-Inflammatory Drugs)

ISPR8-2075

NEURAL RECOVERY RESULTING FROM LOW DOSE CARBON MONOXIDE TREATMENT: ROLES OF ADULT NEUROGENESIS IN INJURED MAMMALIAN SPINAL CORD

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Introduction/Background

We recently reported that non-toxic low dose carbon monoxide (CO) inhalation dose-dependently protected epicenter neurons and white matter in a rat model of T9-10 moderate compression spinal cord injury (SCI). CO treatment significantly improved hindlimb function mainly through sparing neural tissue and antagonizing secondary inflammatory or oxidative damages.

Material and Method

In a subsequent replication study, 500 ppm CO, the most potent dose identified, was administered to SCI rats, starting 4 hours post injury (p.i.) and thereafter 1 h CO inhalation per day for 12 consecutive days. Besides reconfirming CO's therapeutic benefits on locomotion, neuroprotection and neuroinflammation, the effect of CO on adult neurogenesis derived from the central canal ependymal cells was investigated, to test our hypothesis that CO could activate neural stem cells (NSCs) via HO1-p38 MAPK-VEGF and p-nNOS pathways.

Results

There were differentially manifested neurogenic outcomes around the lesion site and lumbar enlargement, respectively, in the CO-treated spinal cords that were discernibly different from the control group exposed to room air (RA). The impact was detectable at 5-6 weeks after CO treatment (i.e., 7-8 weeks p.i.), indicating a possible role of CO-induced neurogenesis in promoting long-term neural repair. Compared to the control epicenters where newborn neural progenitors contributed to augmenting glial scarring, the mean scale of reactive astrogliosis was significantly reduced in the CO-treated spinal cords. Importantly, we observed presence of developing neurons in Rexed laminae (RL) IV-VIII in the CO-ventilated groups only.

Conclusion

Since the quantities of CO-mediated preservation of cholinergic and GABAergic interneurons in the same RL zones were positively correlated with the levels of hindlimb locomotor improvement, our data suggested that in addition to its efficacy for acute SCI, low dose CO may also be devised into a pharmacological treatment to recover function and to ameliorate inflammatory complications (e.g., neuropathic pain and spasticity) for chronic SCI.

Keywords

Spinal Cord Injury;Carbon Monoxide ;Adult Neurogenesis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.13 PRM Interventions Research - Nerve Root Blockades and Local Infiltrations

ISPR8-0392

A BOLD, SAFE, AND NEARLY PAINLESS NEW APPROACH TO INJECTING OF BOTULINUM TOXIN A TO THE SUB-SCAPULARIS MUSCLE TO RELIEVE TIGHT PAINFUL SPASTIC SHOULDERS

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Introduction/Background

Many skilled Botulinum toxin injectors do not regularly offer injections to the sub-scapularis and prefer to inject the much more accessible internal rotator of the shoulder, the pectoralis.

The subscapularis muscle is the strongest of the internal rotator muscles in the shoulder. Spasticity of this muscle results in limited external rotation, abduction and flexion of the shoulder, and causes pain. Many studies report the effectiveness of botulinum toxin and phenol injections into the subscapularis muscle to relieve pain and to improve the ROM of the shoulder. Different injection techniques have been presented, including lateral, medial and inferior approaches. All existing techniques require uncomfortable painful forced scapular winging.

Material and Method



Our new anterior approach, uses a long 25cm needle inserted in the chest and traverses the largely insensate soft tissues under the axillary line. Direct fluoroscopic visualization of the thorax in real time during the injection minimizes the risk of damaging the lung or neurovascular bundle and it does not require an unpleasant positioning of the shoulder. We assure effective delivery to the Motor points crossing the middle of the scapulae which are missed by other techniques.

Results

Our experience on 15 patients has shown the technique to be nearly painless, safe, and effective as demonstrated by pre- and post injection Brief Pain Inventory and Shoulder Pain and Disability Index and videodocumentation of arm elevation

Conclusion

We wish to pursue a crossover RCT where all subjects will get bot Pectoralis + Subscapular muscle injection . One of the 2 will be placebo

Keywords

Shoulder; pain; spasticity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.13 PRM Interventions Research - Nerve Root Blockades and Local Infiltrations

ISPR8-0393

SILENCING PHANTOM LIMB PAIN BY SILENCING THE DRG

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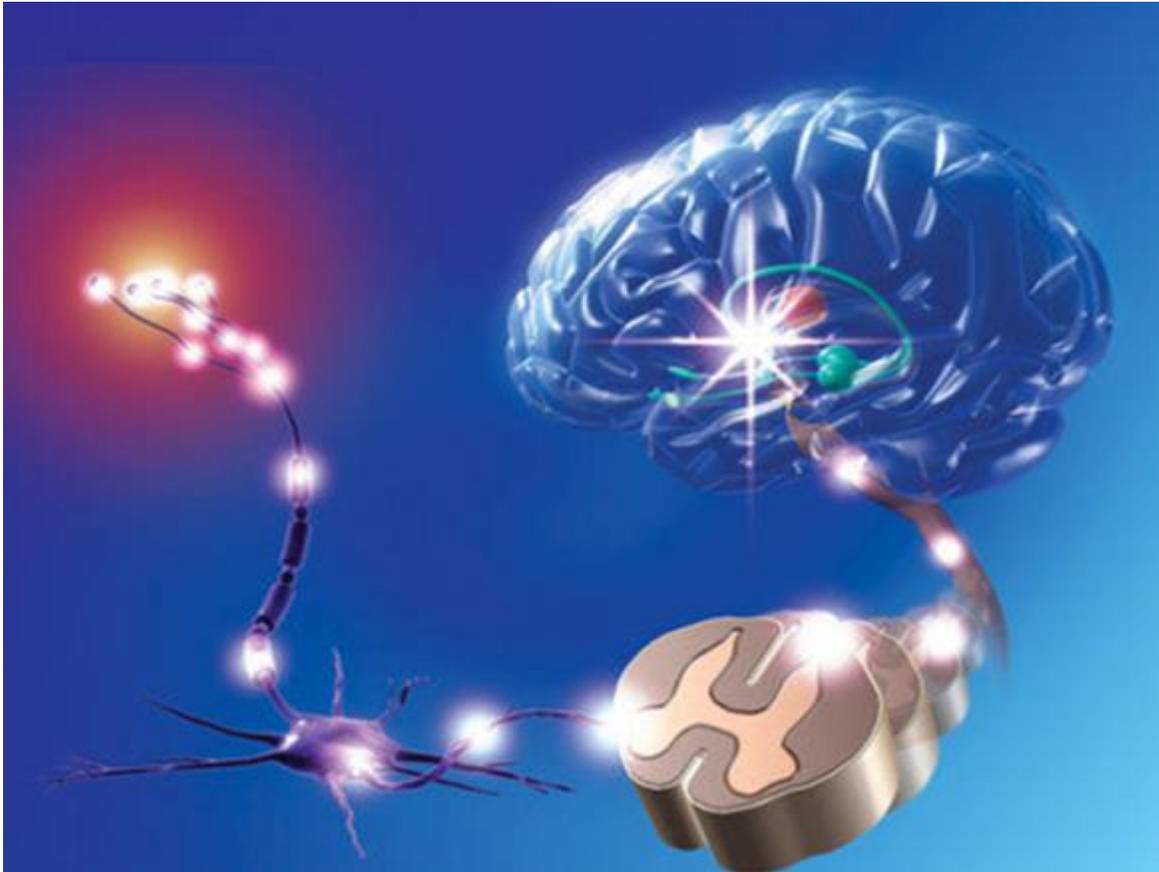
Introduction/Background

Nearly all amputees continue to feel their missing limb as if it still existed, and many experience chronic phantom limb pain (PLP) and non painful phantom limb sensations (nPLS) . What is the origin of these sensations?

Material and Method

We tested the hypothesis that PLP, (nPLS) , is due not to the loss of input but rather to exaggerated input, generated ectopically in axotomized dorsal root ganglia (DRGs) that used to innervate the limb.

In 63 amputees with Phantom Pain and 32 non amputee patients with various Neuropathic pain syndromes , the local anesthetic lidocaine (0.3%) was delivered to the DRG surface via intra-foraminal epidural block. This rapidly and reversibly extinguished PLP and also non-painful phantom limb sensation (npPLS).



Results

Almost all amputees with PNP and/or RLP had immediate complete or near complete disappearance of their PLP + RLP+ npPLS for the duration of the lidocaine and/or steroid block without any detectable anesthetic effect on their stump.

We believe that this work should encourage further investigation to confirm this idea and its therapeutic consequences.

Conclusion

We do not argue that the eventual pain experience ultimately lies in the consciousness of the amputees, but we are confident that we may yet find that effective treatment could be delivered to the periphery. The hope is to create a treatment that will persistently silence the DRG and let

the nerve cell somatosensory function persist and thus obtain profound lasting pain relief without creating deafferentation pain phenomena.

Keywords

Phantom ;Pain;DRG

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.14 PRM Interventions Research - Acupuncture and Complementary and Alternative Therapies

ISPR8-0344

GIVE MUSIC THERAPY A CHANCE IN POST STROKE REHABILITATION

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Introduction/Background

Researching music in the field of stroke rehabilitation[i] is now encouraged and is becoming a field of increasing interest. This study aimed to investigate how patients and caregivers experience music therapy when it is included in routine stroke rehabilitation.

Material and Method

The study was performed among inpatients in a PRM department. Music therapy sessions were included in usual routine care from October 2015 to April 2016. Each patient received 40-min individual sessions of music therapy, twice a week, for at the most 2 months, consisted of listening to recorded music and practicing improvisation with an instrument. The perceptions of caregivers and patients were analysed by using questionnaires specifically designed for the study.

Results

Thirty-one caregivers returned the questionnaire. The feasibility of music therapy was considered good for 90%: sessions were simple to implement, easily integrated into the course of the day and did not disrupt the functioning of the department. All caregivers believed that the therapy may improve practices in stroke rehabilitation and be helpful to the patient. Fifty-three % of the caregivers noted positive improvement in patients, especially in mood, motivation, self-esteem, oral expression and behavior.

Eleven patients followed the program and completed 69 survey cards over 118 sessions. All said they had benefited from music therapy. To describe their feelings after a music therapy session, they often first chose the word "relaxed", "quiet", "alert", "rested", and "light".

Furthermore, with the open question "What does music therapy bring to you?", we observed 3 types of answers: "something else in the hospital care experience", "music discovery, hearing and expressing, playing", and "a kind of creativity with improvisation".

Conclusion

The reaction of the caregiver team was excellent and patient compliance was also excellent. We conclude on the feasibility of music therapy in a PRM department for post-stroke inpatients.

Keywords

music therapy;stroke;physical and rehabilitation medicine

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.14 PRM Interventions Research - Acupuncture and Complementary and Alternative Therapies

ISPR8-0383

ELECTROACUPUNCTURE INHIBITS CARTILAGE DEGENERATION BY INHIBITING MITOGEN-ACTIVATED PROTEIN KINASES IN RATS WITH ACLT-INDUCED OSTEOARTHRITIS

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Introduction/Background

The therapeutic effects of electroacupuncture (EA) on osteoarthritis (OA) are well documented, however, the precise mechanisms of action have not yet been fully elucidated. The present study aimed to investigate the effect of EA on cartilage in an experimental animal model of OA induced by anterior cruciate ligament transection (ACLT) and to examine for concomitant changes in the expression of mitogen-activated protein kinases (MAPKs) in the articular cartilage.

Material and Method

Thirty 3-month-old male Sprague Dawley rats were randomly divided into the following three groups (n=10 each): sham operated group (Control group), ACLT without treatment (ACLT group), and ACLT with EA treatment (ACLT+EA group). One week after ACLT, rats in the ACLT+EA group received 12 weeks of EA treatment. Histological analysis and quantitative real-time polymerase chain reaction were used to investigate the effects of EA on cartilage morphology (quantified using modified Mankin scores) and expression of MAPKs (p38, c-Jun N-terminal kinase (c-Jun), and extracellular signal-regulated kinase (ERK)1), respectively.

Results

ACLT produced coarse cartilage surfaces, fibrous degeneration, and fissuring, all of which were suppressed by EA treatment. Although Mankin scores in the ACLT+EA group were significantly higher compared to the Control group ($p < 0.01$), they were significantly lower than the (untreated) ACLT group ($p < 0.01$). The increase in mRNA expression of p38, c-Jun, ERK1 and MMP-13 observed in cartilage after ACLT was significantly inhibited by EA.

Conclusion

EA appears to prevent the degeneration of articular cartilage, at least partly, through regulation of MMP-13 and inhibition of MAPKs in the cartilage of rats with ACLT-induced OA.

Keywords

Osteoarthritis;Electroacupuncture;MAPKs

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.14 PRM Interventions Research - Acupuncture and Complementary and Alternative Therapies

ISPR8-0556

ACUPUNCTURE IN THE TREATMENT OF FOOT DROP AND SCAR TISSUE PAIN AFTER TRAUMATIC LEG INJURY

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Introduction/Background

Objective: To report the clinical efficacy of acupuncture combined with rehabilitation for foot drop and scar tissue pain after the traumatic leg injury.

Material and Method

A 27-year-old male who suffered a traumatic injury of the right leg with common peroneal nerve transection was operatively treated by neurolysis with the suture of the anterior tibial muscle. Rehabilitation treatment began after wound healing with the peroneal orthosis. Five months later he was referred to our center because of poor motor control while walking. On clinical examination, he suffered from numerous scars in the right anterolateral shin, had stoppage gait with right foot drop, and poor right foot dorsiflexion (manual muscle test (MMT) score 2). Scars were painful on palpation, and he had anterolateral shin hypoesthesia with the numbness of right thumb. Treatment started with electrostimulation of right peroneal nerve, sonotherapy, TENS, and kinesiotherapy which were used during 6 months. After three cycles of therapy, he had a follow-up MMT of 2+. Because of insignificant response to the treatment and the persistence of scar pain, acupuncture was initiated. The Wei Qi technique around the scar tissue was used with the non-concomitant stimulation of points GB34, DM20, and Sp6. The patient received a treatment once a week, with total of 15 weeks.

Results

After the full acupuncture treatment, he is walking without the orthosis, has active right foot dorsiflexion (MMT 4) and feels the thumb better; each scar of the shin is paler with less pain.

Conclusion

In this case report, a combination of acupuncture and conventional rehabilitation resulted in the improved motoric function of right foot after traumatic common peroneal nerve lesion, reduced scar tissue pain, and improved sensibility. Case-control, prospective studies are needed to further investigate the possible beneficial role of acupuncture in this sample of patients.

Keywords

foot drop;acupuncture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.14 PRM Interventions Research - Acupuncture and Complementary and Alternative Therapies

ISPR8-1069

BEE VENOM ACUPUNCTURE FOR SHOULDER PAIN AFTER STROKE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

Shoulder pain is the common complaint among patients with stroke. Bee venom acupuncture (BVA) has increasingly been used for shoulder pain treatment after stroke. The aim of the present study was to summarize and evaluate evidence on the effectiveness of BVA in alleviating the shoulder pain after stroke.

Material and Method

Seven databases were searched from inception through October 2017 without language restrictions. Randomized controlled trials (RCTs) were included if BVA was compared to placebo or other conventional therapy for treatment of shoulder pain after stroke. Assessments were performed primarily with Visual Analogue Scale (VAS).

Results

A total of 138 studies were identified; 4 RCTs met our inclusion criteria. Two of the included RCTs compared BVA with placebo; one compared BVA with acupuncture; and one compared BVA accompanied by standard therapy with standard therapy by itself. Meta-analysis showed that BVA appeared to be more effective than placebo in reducing the shoulder pain after stroke, as assessed by VAS (weighted mean difference, 1.46; 95% confidence interval [CI], 0.30–2.62; $P=0.02$).

Conclusion

Our results suggest that BVA could be effective for treating shoulder pain after stroke. However, further studies are needed to confirm the role of BVA in the treatment of this disorder.

Keywords

Bee venom acupuncture;Stroke;Shoulder pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.14 PRM Interventions Research - Acupuncture and Complementary and Alternative Therapies

ISPR8-1470

THE RELATIONSHIP BETWEEN DIFFERENT STIMULUS OF NIEJI THERAPY AND ACTIVATED MAST CELLS SKIN IMMUNE SYSTEM

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Introduction/Background

It's well known that the traditional Chinese medicine rehabilitation mainly stimulated the body surface skin. What is the relationship between intensity stimulation and local skin cell activation? In this study, different stimulation of Nieji therapy treated the rats on the Governor meridians points, Observed the number of mast cells and degranulation rate.

Material and Method

Twenty four adult male Sprague-Dawley rats were randomized into blank group (BG), little stimulus nieji group (LG), moderate stimulus nieji group (MG) and heavy stimulus nieji group (HG) (n=6 for all groups). The BG had no treatment; however, the LG, MG, LG received the different stimulus with nieji on the spine (Governor pulse), 7 times, 14 times, 21 times. We treated the groups once per day for twenty-one days. After 21 days of treatment drawn we obtained DU14, DU9, DU4 points of Governor Vessel local skin tissue. By the toluidine blue staining of immunohistochemistry to observe the different nieji stimulations on the skin of three points. Observed the variety of mast cells pattern and calculate the total number of mast cells and degranulation rate.

Results

The different nieji stimulus groups compared with BG, the total number of mast cells in papillary layer of DU14 showed high increased expression, which have significant difference ($P < 0.05$). The total number of mast cells in subcutaneous tissue layer of DU14, reticular layer of DU9 and papillary layer, reticular layer, subcutaneous tissue layer of DU4 were higher in the MG and HG than in the BG ($P < 0.05$). With the increase in the amount of stimulation, the total number of mast cells had an increasing trend but had no statistical significance.

Conclusion

Nieji therapy stimulation can affect the mast cells aggregation on the partial skin. The MG and the HG have a significant influence on the total number of mast cells. The effect of Nieji treatment on Mast Cell in the skin mainly in the subcutaneous tissue layer.

Keywords

Traditional Chinese medicine rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.14 PRM Interventions Research - Acupuncture and Complementary and Alternative Therapies

ISPR8-1604

THE USE OF KINESIOTAPING IN HYPOTONIC AND EARLIER REINNERVATION PHASE IN PERIPHERAL FACIAL PALSY . APPLICATION IN ORBICULARIS ZONE

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Introduction/Background

The kinesiology tape (kinesiotaping) is a therapeutic method based in the use of an elastic cotton bandage heat sensible with elasticity between 140–150%. The properties of the bandage simulate a “second skin” with a special design in order to promote the proprioceptive improvements and somatosensory perception in the sensitive receptors of the skin. In the current evidence few researches have been concluding in evaluating the kinesiotaping treatment for correcting the ectropion and/or lagophthalmos in patients with peripheral facial palsy.

The main objective of this technique is to improve proprioception of patients with diagnosis in ectropion and/or lagophthalmos secondary to facial nerve paresis or paralysis and therefore, improve the functionality of periocular muscles in case of reinnervation.

Other important objectives are the neuromuscular facilitation, corneal protection and the subjective comfort of the patient improving eye closure from the early stage of the pathology.

Material and Method

This research consists of a prospective 5 cases study.

The patient received the proper instructions and kinesiology tape was applied.

Results

Up to the date we have compiled data of 3 out of 5 patients, the physical disability index improve 7.71 %.

The social disability index improves 7.9 %. Regarding the subjective perception of the ocular proprioception patients showed an important improvement.

Finally, according to the kinesiotope results using picture analysis, the distance between the lower and upper eyelid improve.

Conclusion

With the kinesiotope treatment patients showed an important improvement in their physical and social disability index as well as heir sensation of ocular movements and their overall wellbeing.

Proven positive outcomes with these patients, future investigations seem indicated to evaluate the kinesiotope for low functioning facial muscles, insisting on ocular occlusal correction-

Keywords

facial palsy;tapping

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.14 PRM Interventions Research - Acupuncture and Complementary and Alternative Therapies

ISPR8-1648

THE USE OF DRY NEEDLE FOR TREATMENT OF MAINTAINED MUSCLE CONTRACTION IN PERIPHERAL FACIAL PALSY. A FUNCTIONAL STUDY.

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Introduction/Background

Based on the clinical and neurophysiologic similarities between the palpable taut band of the myofascial pain and the facial palsy's maintained muscle contraction, we considered treating the latter with dry needling the trigger points found in the physical examination.

To assess the effect of dry needling as a method of treatment for the maintained muscle contraction in patients with peripheral facial palsy, to improve pain and tightness as well as to facilitate movement.

Material and Method

We performed dry needling techniques in the affected side of the face to 5 random patients with facial palsy with maintained muscle contraction and trigger painful points noticed in physical exam. The dry needling technique was applied one or two months after botulinum toxin injection. Generally, dry needling was done over zygomaticus major, zygomaticus minor, levator labii superioris, mentalis, procerus, buccinator, depressor labii inferioris, using a screw technique.

After one week, the patient answered the Patient Global Impression of Improvement Scale and the Clinical Global Impression of Improvement Scale, through which relief of pain and tightness were assessed and the question 'Do you have better face movement after the dry needling?', which was evaluated through a Likert Scale.

Results

The Patient Global Impression Improvement Scale results were "Much improved" in 4/5 patients and "Very much improved" in 1/5 patient. The Clinical Impression of Improvement Scale was "Improved" in all patients.

The assessment of improvement in movement through the Likert Scale was of 5 in all cases.

Conclusion

Patients refer significant improvement in both pain and movement after the dry needling technique.

We consider that the dry needling technique as a supplemental treatment after botulinum toxin may improve maintained muscle contraction and facilitate movement in the affected side of the face.

Keywords

Dry Needle; Maintained muscle contraction ; Peripheral facial palsy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.14 PRM Interventions Research - Acupuncture and Complementary and Alternative Therapies

ISPR8-1766

EFFECT COMPARISON OF DIFFERENT ACUPOINT STIMULATION WAYS IN IMPROVING CFA-INDUCED INFLAMMATORY PAIN IN RATS

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Introduction/Background

This study was performed to compare the effects of different acupoint stimulation ways on CFA-induced inflammatory pain and to explore the possible mechanism.

Material and Method

SD male rats were divided into four groups (n=10): Vehicle+Sham Electroacupuncture (Veh+Sham EA), CFA+Sham EA (CFA + Sham EA), CFA+ EA (CFA+EA), CFA+ Transcutaneous Electrical Acupoint Stimulation (CFA+TEAS). At Day4 after Veh/CFA injection, we used Vonfrey and PWL to test the effect of acupoint stimulation on CFA-induced mechanical allodynia and thermal hyperalgesia before and after treatment in all the groups. At Day5, 1.5 hours before till to the end of the treatment, in the right tibialis anterior muscle of rats, we used microdialysis to collect dialysate to analyse the level of adenosine with high performance liquid chromatography.

Results

At Day4 after injection of CFA, EA and TEAS treatment can obviously increase the pain threshold of CFA-induced inflammatory pain rat model. As the mechanical allodynia show, compared with the Veh+Sham EA group and CFA + Sham EA group, the Vonfrey result of CFA + EA group and CFA+TEAS group were significantly decreased ($P < 0.05$) after the treatment, PWL results also significantly prolonged ($P < 0.05$); But between CFA+EA group and CFA+TEAS group, both Vonfrey and PWL have no obvious difference ($P > 0.05$). At Day5, compare with Vehicle+Sham EA group and CFA+sham EA group, the adenosine of CFA+EA group and the CFA+TEAS group improved obviously ($P < 0.05$), but there is no difference between CFA+EA group and CFA+TEAS group. Also we found the duration of improving adenosine concentrations in CFA+TEAS group are longer than CFA+EA group.

Conclusion

There is no difference between EA and TEAS on alleviating CFA-induced inflammatory pain. The results also suggest that increasing adenosine in the micro dialysate is a possible

mechanical of EA and TEAS on CFA-induced inflammatory pain.but TEAS have a longer effect than EA.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.14 PRM Interventions Research - Acupuncture and Complementary and Alternative Therapies

ISPR8-2194

EFFECT OF CLUSTER NEEDLING OF SCALP ACUPUNCTURE COMBINED WITH REHABILITATION ON DEPRESSION AFTER STROKE FOLLOWING MOTOR APHASIA

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Introduction/Background

Stroke is a common disease, and 21% ~38% stroke patients with aphasia in acute phase.

About 25% of patients with cerebrovascular disease are associated with speech disorders, China reported. It is difficulties for patients with aphasia when communicating with others.

Stroke patients with aphasia easy to lead to depression. In the past, the study of Post-stroke depression was more, but the study of depression in patients with exercise-related aphasia was relatively low.

To explore the effect of cluster needling of scalp acupuncture combined with rehabilitation (Acupuncture-rehab Approach) on depression of stroke patients with motor aphasia.

Material and Method

70 stroke patients were randomly divided into the acupuncture with rehabilitation group and the control group. The cluster needle of scalp point with speech rehabilitation training was used in the acupuncture with rehabilitation group, while speech rehabilitation training was used only in the control group. The degree of depression and aphasia were observed in the two groups 4 weeks after treatment.

Results

4 weeks after the treatment, the classification of aphasia was getting better in the acupuncture with rehabilitation group than in the control group ($P < 0.05$), and the incidence of depression decreased significantly in the acupuncture with rehabilitation group compared with the control group ($P < 0.01$). The score of Stroke Aphasic Depression Scale (SADQ) decreased significantly in the acupuncture with rehabilitation group compared with the control group ($P < 0.01$).

Conclusion

Acupuncture-rehab Approach is an innovative method to treat stroke, and it may improve the depression of stroke patients with motor aphasia.

Keywords

acupuncture-rehab approach;motor aphasia;depression

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-2575

KINEMATIC EVALUATION OF UPPER LIMB MOTOR FUNCTION DURING VIRTUAL REALITY BASED REHABILITATION AFTER STROKE - A SINGLE CASE STUDY

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Introduction/Background

Virtual Reality (VR) based rehabilitation provides intensive, motivating and task-specific training to promote motor recovery of stroke survivors. We aim to show that kinematic analyses of movement data collected during VR-based training can be used to provide objective and continuous assessments of motor performance. This is highly valuable as objective measurements can be used to better quantify patients' needs and adapt their therapy accordingly.

Material and Method

A chronic stroke patient (38 y.o. female, 6 months post-stroke) performed 10 sessions over 5 weeks of VR-based upper limb rehabilitation (MindMotion™ PRO). The VR-based training consisted of functional tasks, such as reaching virtual objects. The system recorded the patient's upper limb movements via a 3D motion tracking camera. Clinical assessments including Fugl-Meyer assessment (FMA-UE) and active range of motion (AROM) were measured at baseline, post-treatment and 4-week follow-up.

Results

We observed an improvement in elbow extension during reaching exercises over the sessions, from a median flexion of 77° to 39° (Fig. 1). We also observed a trend of decreasing trunk forward flexion, suggesting a reduction in trunk compensation. These kinematic results are coherent with observed clinical improvements in FMA-UE (17 at baseline; 24 at post; 26 at follow-up) and elbow flexion AROM (30° at baseline; 20° at post; 0° at follow-up).

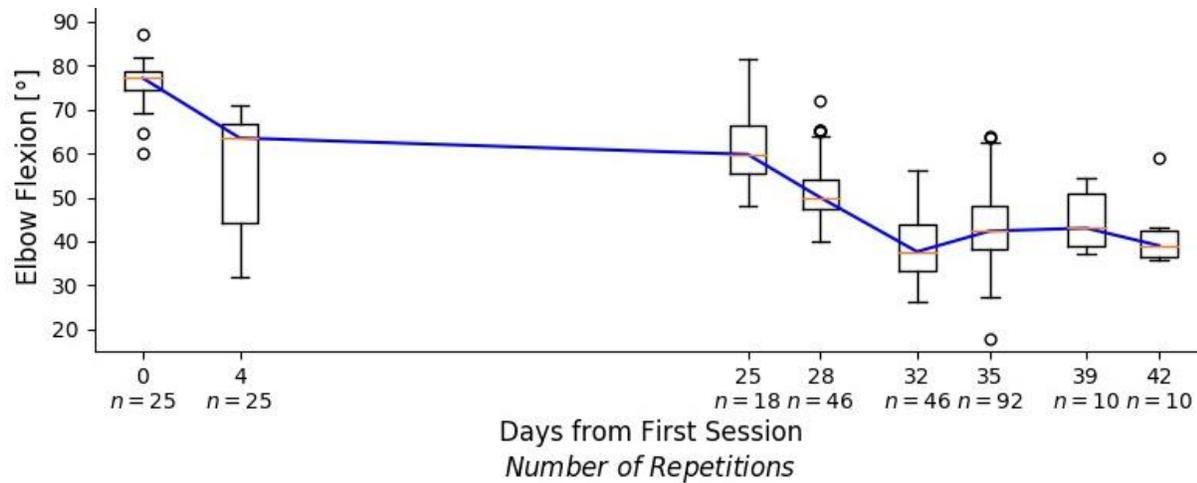


Figure 1: Evolution across sessions of elbow flexion angle recorded during reaching exercises in VR (0° = fully extended elbow).

Conclusion

Kinematic analyses of upper limb movement captured the changes in movement amplitude of elbow and trunk across VR-based therapy sessions. Quantitative measures like kinematics offer new insights into the objective evaluation of motor function during rehabilitation after stroke and other conditions with motor deficits. This could enable the implementation of personalized, and thus optimal, motor rehabilitation therapy.

Keywords

Kinematic assessment; Virtual reality; Stroke rehabilitation

Conflict of interest

Disclosure statement:

The present work was partially funded by MindMaze SA (Switzerland). The authors CD, DPM, GG and TT were employees of MindMaze SA at the time of the study.

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-2677

AUGMENTED REALITY SYSTEM FOR MUSCLE ACTIVITY BIOFEEDBACK

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Introduction/Background

Augmented Reality (AR) has been proved successful in several applications from surgical training to balance rehabilitation. This work aims to develop an AR system for real-time visualization of an index of muscle activity superimposed to the investigated muscle.

Material and Method

The system includes: 1) a video camera, 2) one or more surface EMG (sEMG) detection/acquisition systems, 3) one processing and visualization unit (Figure 1).

The system integrates the information from the video camera and from the sEMG systems (the ARV of the sEMG signal epoch corresponding to the current video frame) and creates an “augmented video frame” by coloring the detection systems, identified within the video frame, with a color representative of the muscle activity (blue for low and red for high sEMG activity). The patient or the clinical operator can see the real-time augmented video on a display.

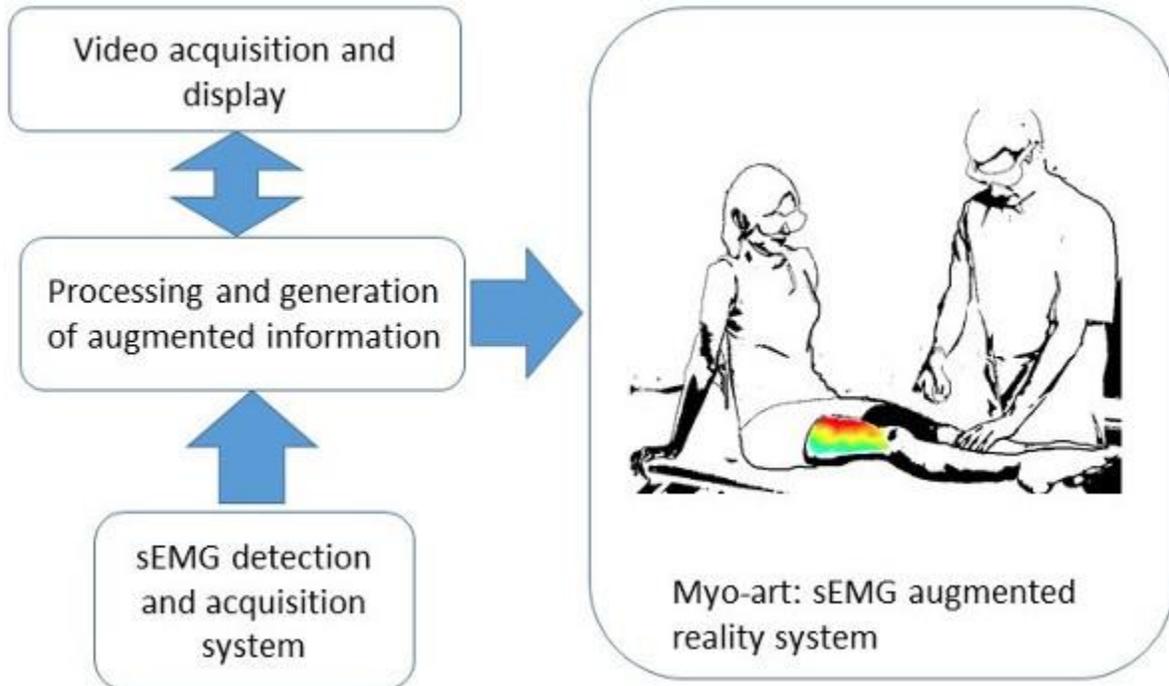


Figure 1. System architecture **Results**

The software can run 1) on a PC using a webcam for video capture and showing the augmented video on a monitor, 2) on a tablet using the integrated camera or 3) on the Epson Moverio BT-300 smartglasses using the see-through modality. Figure 2 shows the AR feedback during a leg extension exercise; vastus medialis, vastus lateralis and rectus femoralis muscles are monitored using a sEMG bipolar system (Due, OTBioelettronica and LISiN). Figure 3 shows the AR system used for the monitoring of sEMG activity distribution in the lumbar muscles using a multi-channel sEMG systems (32 channel amplifier by LISiN).

External examiner view



Subject view



Figure 2. Visualization of muscle activity during a leg extension exercise.

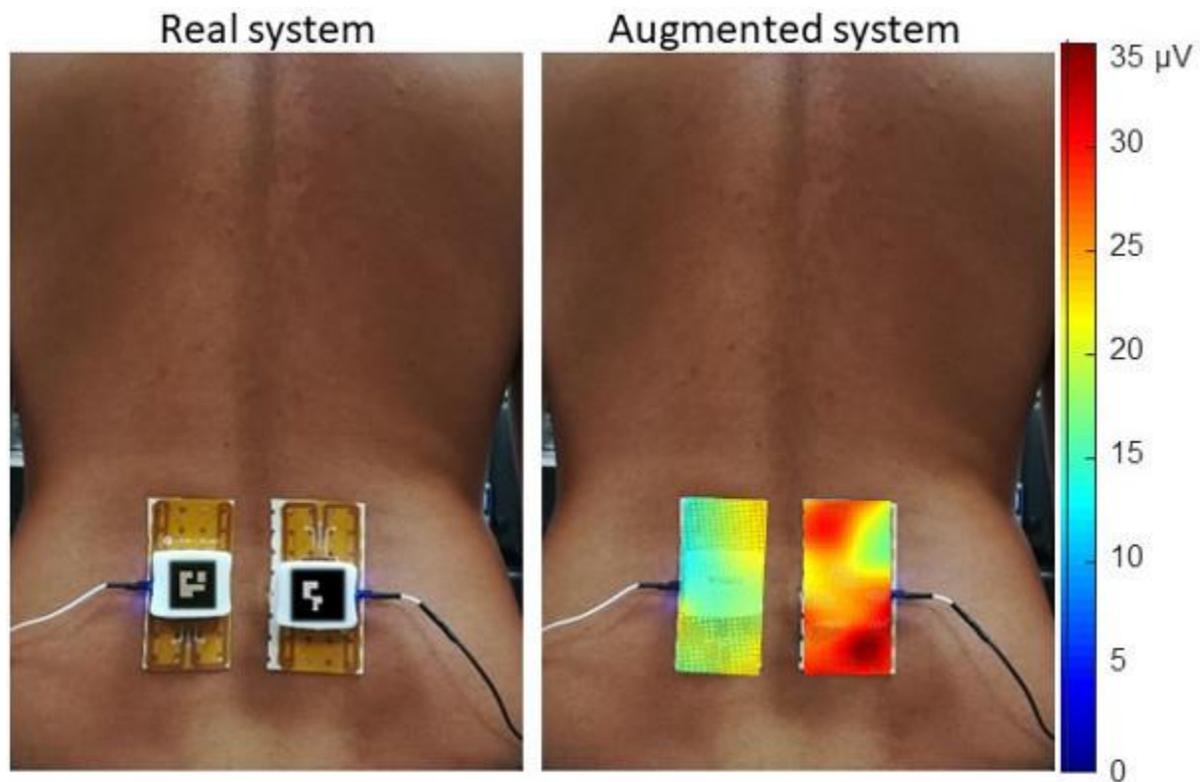


Figure 3. Left: experimental setup for the monitoring of lumbar muscles. Right: AR feedback.

Conclusion

An AR system for the visualization of sEMG activity over the muscles has been developed. The system is currently under validation for augmented biofeedback in sport and rehabilitation in order to verify advantages with respect to standard biofeedback.

Keywords

surface EMG; augmented reality; muscle activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-0854

IMMEDIATE EFFECTS OF VIRTUAL REALITY MENTAL PRACTICE IN SUBJECTS WITH LOW BACK PAIN: A PILOT STUDY

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Introduction/Background

Low back pain(LBP) is one of major reasons that influence people's life quality and lead to dysfunction. Modality therapy or manual therapy were usually used to reduce pain. Mental practice(MP) had been applied to intervene on pain on subject with spinal cord injury, and virtual reality(VR) also had been verify that could reduce chronic pain and kinesiophobia. The purpose of this study is to investigated the immediate effects of virtual reality mental practice(VRMP) for subjects with LBP.

Material and Method

Nine subjects suffered from LBP were recruited (2 males and 7 females, age=33.670±16.560). Each subject had two types of intervention while suffering from pain, one was using VR glasses(Cardboard®) to watch LBP therapeutic exercise video in sitting and asked them to imagine as if they were doing the exercise shown in the video (VRMP); another type asked subjects to rest in sitting as long as the video clip(Rest). Before and after intervention, Visual Analogue Scale(VAS), range of motion(ROM), Oswestry disability index(ODI) and Fear avoidance beliefs questionnaire (FABQ) were assessed. The sequence of two types of intervention was assigned randomly. The data was analyzed by paired t-test and statistical significance was set as $\alpha < 0.05$.

Results

Before interventions, all assessments had no significant differences between VRMP and Rest. After VRMP intervention, VAS, FABQ, ODI and ROM (extension and side bending) showed significant improvements, but there were no significant differences found in Rest. However, in post assessments, only VAS (VRMP 1.330±1.414 vs Rest 2.670±1.581, $p=0.042$) and FABQ (VRMP 26.000±17.270 vs Rest 32.670±11.916, $p=0.029$) had significant differences between two types of intervention.

Conclusion

Our results showed that VRMP had immediate effects on pain relief and kinesiophobia in subjects with LBP.

Keywords

virtual reality;mental practice;low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-1023

IMPLICATION OF MEDICAL THERAPISTS IN THE INTRODUCTION OF INNOVATIVE TECHNOLOGIES: SPECIFICATION OF S'TIM, A REHABILITATION SERIOUS GAME ON A TOUCH TABLE CASE.

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Introduction/Background

Patients with dysexecutive syndrome present cognitive, emotional and behavioural consequences. They are also unable to recognize their disorders which limits their implication in rehabilitation. Improvements are observed but the transfer in daily-life is very limited and patients don't recover their autonomy. In a context where innovation makes the difference, medical specialists found funds from Europe, and foundations to specify and develop an efficient technology to counteract this situation.

Material and Method

A working group constituted by rehabilitation doctors, neuropsychologists, occupational therapists, a PhD Human-Centred Engineer and researchers in Informatics and Information & Communication Science defined a common scope statement project. After observation of patients and therapists, a work on the choice and specification of the technology to use has been done, thanks to feedbacks from the users (Figure1).

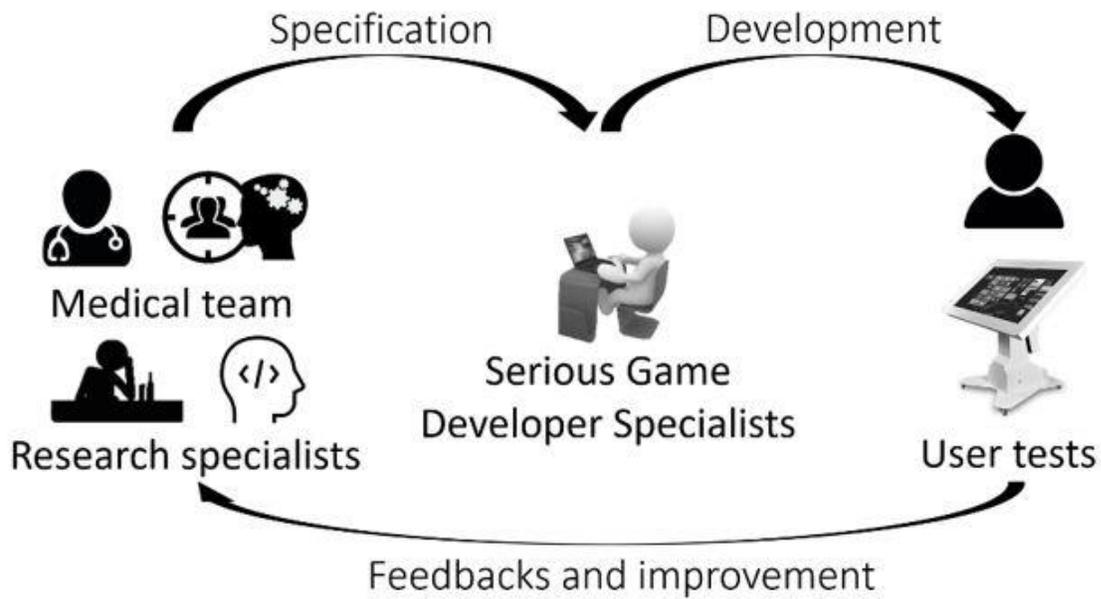


Figure 1: Iterative process

Results

The multidisciplinary group specified and developed a persuasive serious-game to immerse patients in a virtual world with an elaborate scenario including various challenges (Figure2). The chosen device is a robotised 46-inch touch-table, easy-to-use by people of all age.



Figure 2: S'TIM Screenshot

Each detail of the serious-game and its use was discussed with all the experts and take into account the various needs. Furthermore, this device is designed for patients and therapists.

Thus, their implication that started since the beginning of the process reinforces their adhesion and reduces objections or rejections.

Conclusion

This innovating and multidisciplinary program implicate various experts at each stage of the study with an iterative process to incorporate improvements following users' feedbacks. Backed by a communication campaign, more funds were allocated, other rehabilitation centres show their interest to join the study and clinical studies should begin soon.

Keywords

Virtual Reality;Cognitive rehabilitation;dysexecutive syndrom

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-1590

EFFECTIVENESS OF VIRTUAL REALITY TREATMENT AFTER FLEXOR TENDON SURGERY: PRELIMINARY RESULTS

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Introduction/Background

Biofeedback can improve the effectiveness of an intervention as a helpful tool in the physiological process of rehabilitation. In our study, we aimed to investigate the efficacy of Virtual Reality (VR) in the rehabilitation of patients with flexor tendon repair.

Material and Method

Twenty patients with flexor digitorum superficialis (FDS) and/or flexor digitorum profundus (FDP) tendon repair were included in the study and randomized into two groups: VR and traditional treatment. VR was administered with the HandTutor™ device from postoperative 8th week for 3 weeks, 3 sessions per week. Both groups were given splinting and progressively increased exercise as a home program. Before and after treatment, patients were assessed using the Disabilities of the Arm, Shoulder and Hand (DASH) outcome measure and hand grip strength was measured using a Jamar dynamometer. The Wilcoxon signed rank test was used to compare dependent variables and the Mann-Whitney U test was used to compare independent groups.

Results

The mean age of the patients was 35.4 ± 13.8 years. 10% of the patients had FDS, 40% had FDP, 50% had FDS and FDP tendon injuries. There was a significant decrease in DASH scores and a significant increase in hand grip strength in both VR ($p = 0.008$) and traditional treatment groups ($p = 0.003$). In between-group comparisons, no significant difference was found in DASH scores ($p = 0.110$). However, the increase in hand grip strength was significantly greater in the VR treatment than that in the traditional treatment group ($p = 0.030$).

Conclusion

The results of this pilot study support the use of HandTutor™ with traditional therapy in hand rehabilitation after flexor tendon repair and warrant further studies with larger samples.

Keywords

Virtual reality ;Flexor tendon repair ;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-1679

VIRTUAL-REALITY BASED TELE-NEUROREHABILITATION: BALANCING PHYSICAL FIDELITY, CHALLENGE AND IMMERSION

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Introduction/Background

Tele-rehabilitation refers to the use of information and communication technologies to more efficiently provide rehabilitation services to people remotely in their homes or other community-based settings. The goal is to improve patient access to care by receiving therapy beyond the physical walls of a traditional healthcare facility as well as to increase self-practice thus expanding the continuity of rehabilitation care. The recent developments of advanced sensors, graphic and remote monitoring technologies have enabled development of an increasing number of Virtual Reality (VR)-based tele-rehabilitation applications. The inclusion of VR into tele-neurorehabilitation aims, similar to regular rehabilitation, to increase the physical fidelity of the treatment to enable better generalization to real life activities and to increase engagement and motivation by providing the "right" challenge to users by "immersing" them into the therapeutic task. In addition, it allows implementation of principles to increase neural plasticity by providing opportunities for intensive and goal oriented practice. When delivered remotely, this form of VR intervention is challenging, for example, due to the need of the user to learn complex activities without a therapist physically present. An additional challenge is the need to develop applications that will achieve a balance between physical fidelity, level of challenge to the user and immersion, to assure quality of movements when the therapist is not present. The purpose of this presentation is to show evidence-based examples gleaned from our database of more than 200 users (and 5000 on-line sessions) who have used the CogniMotion VR tele-neurorehabilitation services over the past four years. A discussion will focus on the lessons learned while providing this form of intervention remotely.

Material and Method

NA.

Results

NA.

Conclusion

NA.

Keywords

TeleRehabilitation;Virtual Reality;Neurological deficits

Conflict of interest

Disclosure statement:

The CogniMotion System (ReAbility Online, Gertner Institute) is a not-for-profit service in Israel. Plans for marketing the service abroad are now under consideration.

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-1810

SERIES OF CASES ABOUT BRAIN ACTIVATION OF ELDERLY DURING BALANCE TESTS AFTER A VIRTUAL REALITY REHABILITATION PROGRAM: A DECISION TREE METHOD

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Introduction/Background

Virtual Reality based therapy (VR) is a therapeutic approach that has been applied in motor rehabilitation of elderly to restore postural control, since balance is generally impaired by aging. Aging causes a decline in central nervous system function related to information processing speed, which leads to a deficit in the motor performance of elderly. Such impairments reinforce the idea of a relationship between the activation of cortical areas and postural control, culminating in restrictions on the functional independence of elderly. Thus, this study investigates the behavior of cortical activation of elderly women during a static and dynamic balance test after a VR protocol, considering the EEG potential of theta (4Hz - 7.5Hz), alpha (8Hz - 12Hz), beta (13Hz - 30Hz) and gamma waves (above 30Hz).

Material and Method

It is a series of three cases carried out at the Physiotherapy Department of Federal University of Rio Grande do Norte, Natal, Brazil, in which the participants were submitted to a functional EEG assessment before and after 10 sessions of balance training with Nintendo Wii®. A mobile EEG device (Emotiv EPOC) was used to assess brain activity during a static and dynamic balance test. Decision trees were constructed to evaluate how VR could influence brain activation during these tasks.

Results

The decision trees showed that the VR training used increased alpha and gamma activation in both the static ($p = 0.000$; $df = 3$, chi-square= 228.5) and dynamic ($p = 0, 000$; $df = 3$; chi-square: 217.6) tests.

Moment

Node 0		
Category	%	n
■ Pre VR protocol	50,0	168
▨ Post VR protocol	50,0	168
Total	100,0	336

■ Pre VR protocol
▨ Post VR protocol

BrainWave_Dynamic_balance_test

Adj. P-value=0,000, Chi-square=217,663, df=3

≤ 7,250

(7,250, 12,500]

(12,500, 31,750]

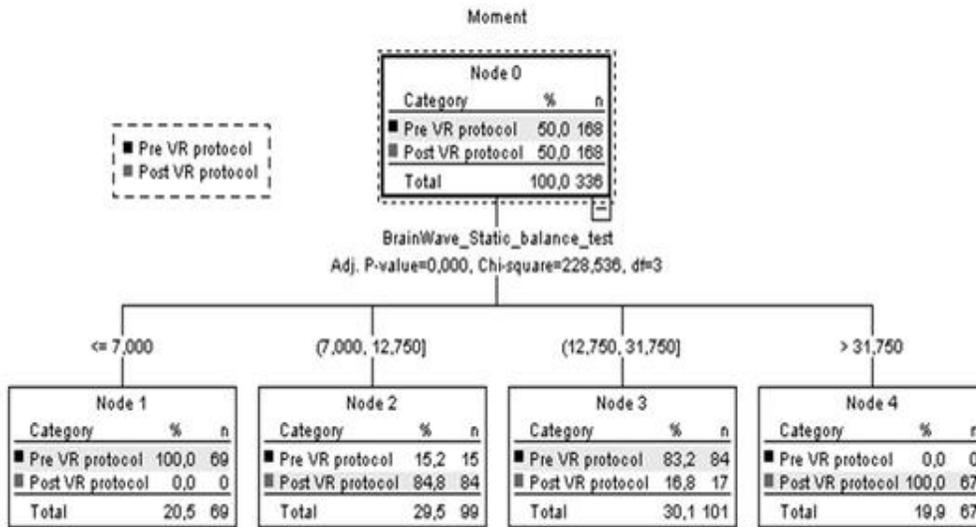
> 31,750

Node 1		
Category	%	n
■ Pre VR protocol	100,0	67
▨ Post VR protocol	0,0	0
Total	19,9	67

Node 2		
Category	%	n
■ Pre VR protocol	17,8	18
▨ Post VR protocol	82,2	83
Total	30,1	101

Node 3		
Category	%	n
■ Pre VR protocol	82,2	83
▨ Post VR protocol	17,8	18
Total	30,1	101

Node 4		
Category	%	n
■ Pre VR protocol	0,0	0
▨ Post VR protocol	100,0	67
Total	19,9	67



Conclusion

These findings may configure the task learning after VR training, since the greater potential of both are related to better motor performances.

Keywords

Physiotherapy; EEG; Virtual Reality Exposure Therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-1813

BIMODAL EEG-FMRI NEUROFEEDBACK FOR STROKE REHABILITATION: A CASE REPORT

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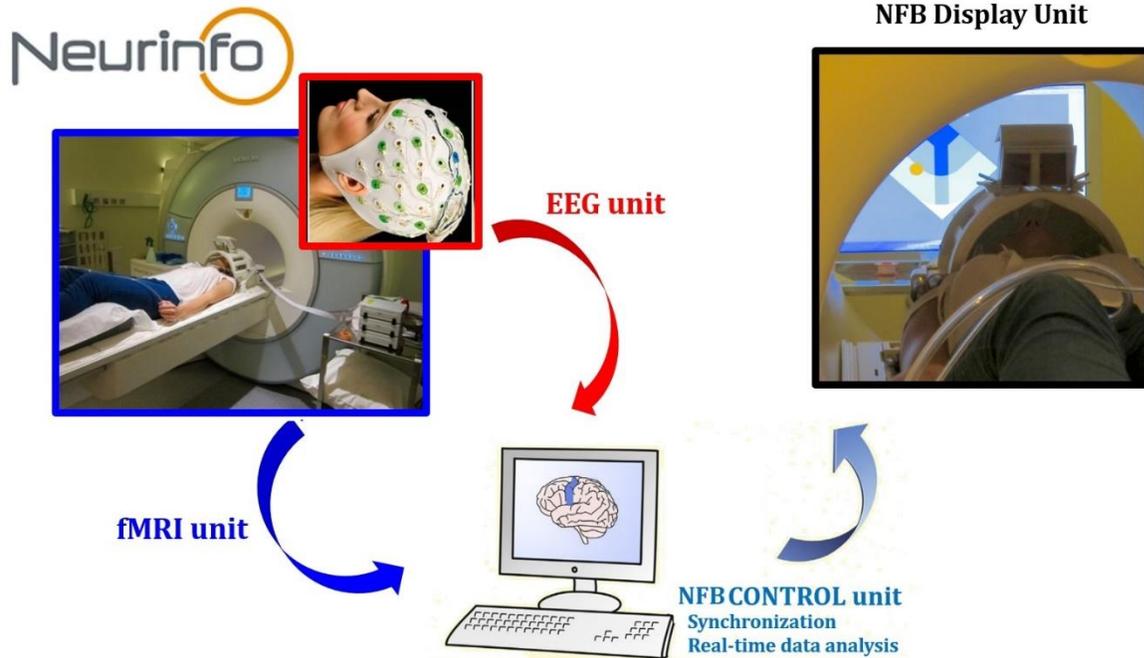
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Introduction/Background

Neurofeedback (NF) consists on training self-regulation of brain activity by providing real-time information about the participant brain function. Few works have shown the potential of NF for stroke rehabilitation however its effectiveness has not been investigated yet. NF approaches are usually based on real-time monitoring of brain activity using a single imaging technique. Recent studies have revealed the potential of combining EEG and fMRI to achieve a more efficient and specific self-regulation, which may be critical in clinical applications. In this case report, we tested the feasibility of applying bimodal EEG-MRI NF on stroke patients.

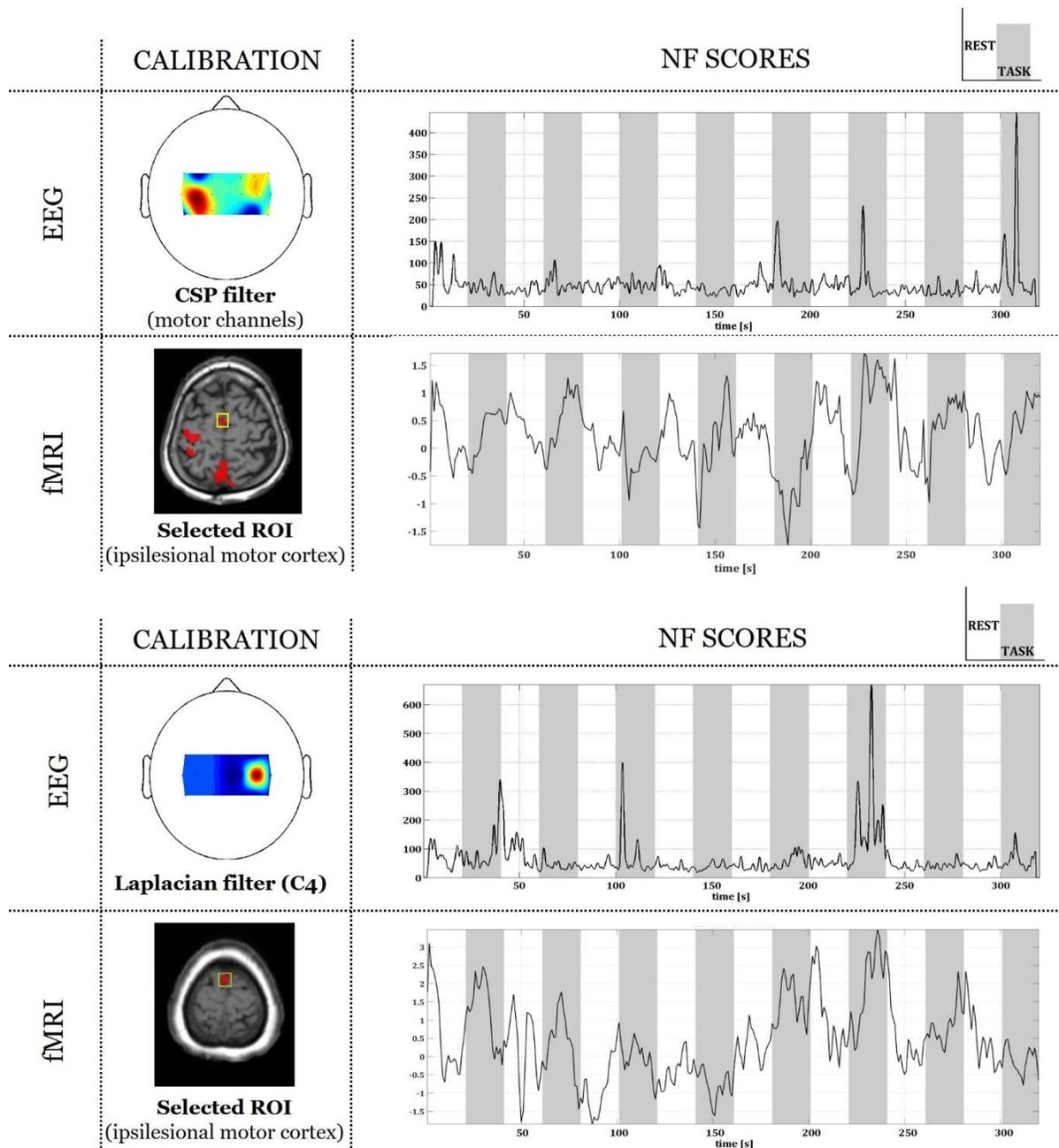
Material and Method

Two chronic patients affected by left hemiplegia (subcortical lesion) participated. The protocol included a calibration step (motor imagery of hemiplegic hand) and two NF sessions (5 minutes each). The experiment was run using a NF platform performing real-time EEG-fMRI processing and NF presentation (Figure 1). The NF metaphor consisted of a ball moving on a gauge proportionally to the average BOLD and EEG activity in regions of interest (ROI) identified over the ipsilesional motor cortex during calibration.



Results

Both patients were able to self-regulate their brain activity during the NF sessions. The EEG activity was harder to modulate than the BOLD activity (Figures 2, 3). The correlation of the BOLD signal with the task varied depending on the ROI targeted and was particularly high for the supplementary motor area. The patients were highly motivated to engage and satisfied with the NF animation, as assessed with a qualitative questionnaire.



Conclusion

We performed two NF experiments involving chronic stroke patients: preliminary results showed the feasibility and the potential of applying EEG-fMRI NF for stroke rehabilitation.

Keywords

EEG-fMRI Neurofeedback; Stroke; Motor Imagery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-2024

THE EFFECT OF VIRTUAL REALITY ON LEFT AND RIGHT MIDDLE CEREBRAL ARTERY CHRONIC STROKE PATIENTS

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Introduction/Background

There is a considerable body of evidence around the use of non-immersive virtual reality as a therapeutic modality in stroke rehabilitation. Studies report its use in isolation, and as an adjunct to traditional physical therapy approaches.

Very little is known about what effect the location of lesion and the participants' stage of recovery can have on the efficacy of VR interventions. We present a study using non-immersive VR in two groups consisting of right-middle or left-middle cerebral artery stroke survivors in the chronic stage.

Material and Method

Seventeen chronic stroke patients participated in this study. Participants performed 30 sessions of therapy with a Virtual Reality system supervised by a physiotherapist. A series of cognitive (MMSE), ADL (FIM and Barthel), motor (MAS, FMA upper and lower limb and MRC), gait (6MWT, Tinetti), spasticity (Asworth), balance (Berg and Tinetti EQ) and depression (GDS) scales were administered to each group of right middle cerebral artery or left middle cerebral artery stroke survivors.

Results

Participants with lesions in the left middle cerebral artery had significant improvements when compared with pre and post scores in the Barthel, FMA lower and upper, Berg and Tinetti. Participants with right cerebral artery lesions showed significant improvements on the Barthel Index and Fugl-Meyer (lower extremity).

Conclusion

We suggest that lateralization may be influencing the different outcomes reported between the right and left cerebral artery stroke groups in this study. We conclude that future VR motor rehabilitation strategies should consider the location of the lesion when designing interventions and call for additional research on this topic.

Keywords

stroke;virtual reality;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-2058

CORTICAL ACTIVATION OF HEALTHY ADULTS DURING A MOTOR TASK PERFORMED IN A REAL ENVIRONMENT AND IN VIRTUAL REALITY: A COHERENCE ANALYSIS OF ALPHA FREQUENCY

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Introduction/Background

Virtual Reality (VR) contributes to neurorehabilitation due to its interactive and multisensory nature. In this sense, studies have been suggesting that brain activity may vary according to the environment – virtual or real. Given the use of mobile EEG devices, there is the possibility of investigating how VR or real tasks influence brain activity. By obtaining the EEG signal, it is possible to explore these variations through a study of coherence between pairs of electrodes. Thus, the aim of this study is to compare alpha coherence in healthy adults during a motor task performed in a virtual and real environment.

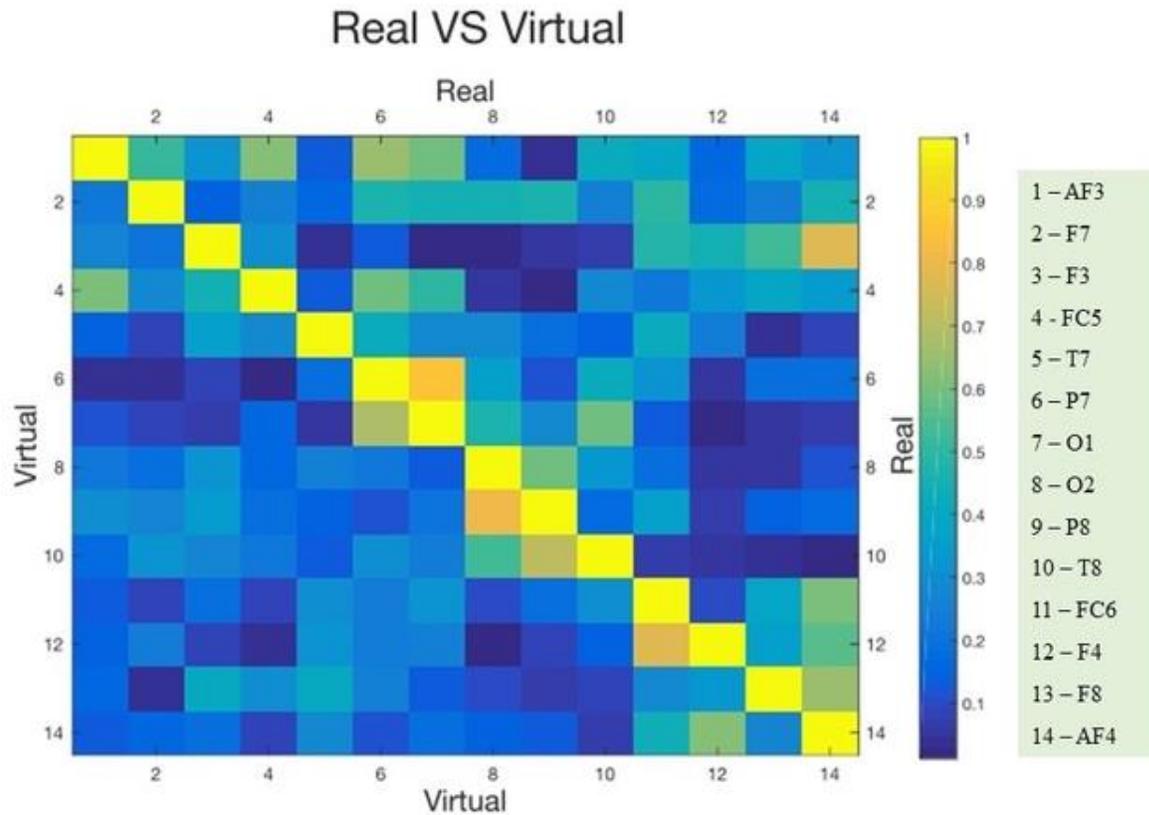
Material and Method

It is a crossover study in which 04 healthy adults were submitted to an EEG assessment during a one-minute task consisted of going up and down a step in a real environment. Then, the subjects underwent a virtual task composed by a Nintendo Wii game called “Basic step”. To perform coherence analysis, a MATLAB script was created considering intra and inter-hemispheric relation of all 14 EEG channels.

Results

The real task caused a more widespread pattern of coherence through the cortex, with low or moderate intensity. In contrast, the virtual task caused moderate to high coherence patterns between specific areas of the brain. In addition, the highest levels of coherence in the real task were observed in the left hemisphere, while in the virtual task, the highest coherence values

were observed especially in the right.



Conclusion

Alpha coherence differs according to the environment that the task is performed - real or virtual. It is known that the greater the neuro-cognitive effort imposed by a task is, the lower the intensity of alpha. Thus, it is suggested that the virtual task required a greater neural effort than the real one.

Keywords

EEG;Physiotherapy;Virtual Reality Exposure Therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-2112

VIRTUAL REHABILITATION FOR UPPER LIMB MOTOR RECOVERY IN STROKE

PATIENTS: CASE STUDY.

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Introduction/Background

Virtual reality is a potential therapeutic tool for motor Rehabilitation in stroke patients. This is a case study which aim was to investigate functional recovery outcomes with TOyRA[®] virtual reality system in stroke patients.

Material and Method

TOyRA[®] uses information from Kinect[™] motion sensor and patient anthropometric measures to create a biomechanical model, providing upper limb kinematic data. Software consists on an interactive therapy system (STI) and a therapy management system (SGT), for managing patient's data, planning therapy sessions, and creating follow-up reports. Study included 3 stroke patients with chronic hemiparesis 3/5. Exclusion criteria were age older than 75 years, unstable medical or psychiatric disease, prior upper limb orthopaedic injuries, and severe cognitive impairment. Study received approval from research and ethics committee. Intervention consisted on 15 therapy sessions, 30 minutes length, based on range of motion virtual exercises, with kinematic evaluation of wrist flexion, shoulder flexion and shoulder abduction. It was followed by an activities of daily living virtual training involving paretic upper limb. Functional independence measure, Fugl-Meyer scale, box and block test, stroke impact scale and adverse effects questionnaire, were used for patients' assessment.

Results

Mean age was 63.3 + 11.6 years. Mean time passed since stroke was 42.6 + 14.7 months. Pre-posttreatment mean difference for shoulder abduction was +34.8°, for shoulder flexion +16.6°. Pre-posttreatment mean difference for upper limb Fugl-Meyer score was 7.7. Pre-posttreatment mean difference for box and block test was + 8.7 blocks/min.

Conclusion

Virtual Rehabilitation improved motor function among study patients with moderate upper limb paresis. No adverse effects derived from therapy were found. Further controlled studies should be addressed. with larger sample size.

Keywords

Rehabilitation;Stroke;Virtual Reality

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-2360

OPTIMIZATION OF THE UPPER LIMBS REHABILITATION FOLLOWING A STROKE BY TELEREHABILITATION COMBINED WITH VIDEO-GAMES

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Introduction/Background

Patients with stroke have difficulty accessing external conventional rehabilitation services. Telerehabilitation combined with video games provides a new approach that may counter the accessibility problem and optimize motor recovery of the upper limbs, even in the chronic phase of the disease. Objectives: 1/Assess the primary effect of the technology on the motor and functional recovery of the upper limbs after a stroke in the chronic phase 2/Describe the experience of stakeholders in using the technology.

Material and Method

A mixed study: pilot randomized trial and a multiple case study. The intervention consists of the provision of remote rehabilitation services using the combination of REACTS as a telerehabilitation system and the Jintronix Inc exergame. We plan to recruit 24 patients, randomly assigned to control group (n= 12, a 2 months home exercise program described on paper) and experimental group (n= 12, a 2 months home program of the combined version of Jintronix and React system, 5 times of 30 minutes per week). In addition to the experimental group, 5 physiotherapists and 5 managers will be recruited by convenience to conduct the case study. The Fugl-Meyer and Motor Activity Log (MAL) Manual scales will be administered 3 times in both groups (before and after the intervention, 1 month after the end of the intervention). Qualitative data will be collected by focus groups and interviews with all the stakeholder groups, 1 month after the end of the intervention. The analysis will be done using Statistica and Nvivo.

Results

We expect to: 1/Collect primary data of the effect of the technology on the functional and motor recovery of the upper limbs, following a stroke 2/ Identify the obstacles and the facilitating factors of the use and the integration of the technology in clinical practice.

Conclusion

This study aims to improve external rehabilitation services offered in the context of stroke.

Keywords

Telerehabilitation;Video-game;Stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.16 PRM Interventions Research - Virtual Reality

ISPR8-2439

IMPROVING LEFT UNILATERAL SPATIAL NEGLECT USING A SERIOUS GAME: A PILOT STUDY

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Introduction/Background

Unilateral Spatial Neglect (USN) is a neurological syndrome usually observed after a right hemispheric stroke in which patients fail to explore the left contralateral space. USN is a factor of bad functional prognosis and is thus challenging more complete assessment and rehabilitation interventions. Virtual reality (VR) has emerged as a promising new tool in both the assessment and rehabilitation of USN. VR permits more ecological conditions, is more engaging and maybe more effective for patients.

In this study, we used the therapeutic serious game “Hammer and Planks” in which the patient should guide a boat for recovering gold coins without hitting rocks by moving his/her trunk laterally. Our aim was to evaluate the improvement of USN using VR in combination to conventional rehabilitation method.

Material and Method

Five neglect patients were included in this study. Neglect was assessed with BIT at 3 different times (baseline, 3 weeks, 6 weeks). Three patients were randomly assigned to the group who received VR rehabilitation in the first 3 weeks, 2 received conventional rehabilitation only in the first 3 weeks.

VR rehabilitation was performed 3 days per week, each session lasting 15-20 minutes. “Hammer and planks” was designed to allow continuous variation of 4 factors (luminance/size of coins, number of coins/rocks, game time) to increase the difficulty (see fig1). **Results**

There was no group effect. In comparison to conventional rehabilitation method, a significant difference was found between before and after rehabilitation with VR ($p < .044$) for the conventional BIT score (see fig.2).

Conclusion

Our preliminary findings suggest that the combination of more ecological and more engaging tool such as VR with conventional rehabilitation method is promising for improving left neglect.

Keywords

Unilateral Spatial Neglect; Rehabilitation; Serious Game

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-2583

THE USE OF THE ROBOTIC DEVICE HUNOVA® AS A REHABILITATION TOOL FOR FUNCTIONAL BALANCE IN INDIVIDUALS WITH SPINAL CORD INJURY

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Introduction/Background

Postural control is a very important and basic requirement in daily human life. The robotic device Hunova® allows to evaluate and practice postural control using different exercises both in upright stance and in seated position. While most functional tasks are not isolated to the trunk, the ones that challenge balance and sitting postural control require a high level of trunk control. When trunk control is impaired the development of less effective compensatory strategies is required. Impaired trunk control functional implications are most evident in neurological conditions, such as spinal cord injury.

Material and Method

This is a preliminary study to explore the possibility of using Hunova® as a tool in Spinal Cord Injury rehabilitation. Thanks to the opportunity to grade exercises complexity we were able to use the device with subjects with different level of lesion and different functional abilities. We trained patients with acute/subacute lesion admitted to our Spinal Cord Unit as well as persons with a stabilized lesion and paralympic athletes.

Results

Preliminary data show that Hunova® is appreciated by users and, at the same time, can be a versatile instrument for balance rehabilitation in Spinal Cord Injury. In individuals affected by incomplete lesion it promotes the use of leg residual muscles activity. Moreover it is interesting to see how athletes show high level of functional balance even in presence of complete lesion.

Conclusion

Hunova® can be considered as a tool for rehabilitation in individuals with Spinal Cord Injury. The device allows to set up focused exercises performed in a pleasant way. The performance of paralympic athletes may lead to the design of sport associated training meant to introduce acute patients to sport activities.

Keywords

Balance;Spinal Cord;Robotics

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-2651

THE PROFILE OF WHEELCHAIR USERS SERVICED ACCORDING TO THE WHO WHEELCHAIR GUIDELINES' EIGHT STEPS

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Introduction/Background

The Lucy Montoro Rehabilitation Network in Sao Paulo, Brazil, used the WHO Wheelchairs Guidelines to standardize wheelchair service provision. 11 wheelchair clinics were established and 180 professionals were trained. This Network delivers comprehensive rehabilitation and provides assistive products to persons with physical disabilities through the universal Brazilian Public Healthcare System.

Material and Method

The study analyses 222 records of the first group of patients serviced according to WHO Wheelchair Guidelines' 8 steps. Patients were seen from July to December, 2017.

Results

62% were male, 38% female, with an average age of 32.57 years; 48% were unemployed or on sick leave; 51% were retired or receiving disability benefits; 84% were not able to walk; 62% were assessed to change their wheelchair and 38% were serviced in order to receive their first wheelchair; 71% were at risk of developing pressure sores.

Among users who already had a wheelchair, previous models were manual (95%), unappropriate to the user(88%), unappropriate to their environment (58%), and unsafe (55%).

27.67% of users used their wheelchairs more than 5 hours/day and 61.48% propelled the wheelchair for less than 1km daily. Indoor and outdoor use was balanced (79.85% and 82.84%, respectively), with a predominance of paved (74.63%) and even (41.49%) terrains.

15.35% of users were able to sit upright without additional postural support. Among the remaining 84.65%, who needed additional support, the most frequent postural deviation was the posterior tilt of the pelvis (22.83%).

25.20% of the 220 wheelchairs prescribed were models for children and 74.80% for adults; 92.68% were manual and 7.32% powered wheelchairs; 27.12% had rigid and 72.88% had folding frames.

Conclusion

The sample shows young, men users, with a severe level of disability, at risk of developing pressure sores, and only travel short distances despite been seated in their wheelchairs for many hours. Their wheelchairs were unsafe and inappropriate for personal and environmental needs.

Keywords

wheelchairs;World Health Organization;epidemiology

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-0475

CLINICAL VALIDATION AND EFFECTIVENESS STUDY OF INNOVATIVE CUSTOM 3D PRINTED FOOT ORTHOSIS USING FOOT IMAGES

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Introduction/Background

A process of capturing foot data using 2D images taken by a smartphone camera and converting it into a 3D model of insoles and 3D printing using fused deposition modelling technology is being developed and holds promise for simplifying the customised foot insole data acquisition and 3D modelling. This study elaborates on clinical and process related issues and outcomes of this developing technology. The main aim of this study was to document the clinical effectiveness of custom made 3D printed orthotics in patients with foot problems attending foot clinic of Department.

Material and Method

Clinical Validation of 3D printed insoles was done by taking patient's feedback after 15 days and 3 months of wearing insole using foot Function Index and 50 feet walk test. Other variables were also analyzed and the iterations for manufacturing and refining of the process studied.

Results

A total of 46 subjects with various foot problems who were given 3D designed and printed insoles according to their prescription completed the study. On average 2-3 iterations were required to get the best outcome. Feedback of the patients was assessed after 15 days and 3 months duration. Paired T test was applied to find out the comparative values showing the differences between Pre-and Post-intervention data of each parameter. The VAS score, Foot Function Index and the 50 feet walk test improved and correlated with increase in duration of use of orthosis.

Conclusion

There were problems encountered during the process of 3D measurement and printing which were worked upon on case to case basis. This is an emerging technology and needs lot of iterations. The current need of the hour is to refine and automate the process and the materials so that it can be a cost effective alternative for fabrication of foot orthotics.

Keywords

foot orthosis;3D printing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-0630

EVALUATION OF RANGE OF MOTION AND STRENGTH OF UPPER LIMBS IN TETRAPLEGIC PATIENTS TO PERFORM SELF-CATHETERIZATION

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Introduction/Background

A functional hand is fundamental for a patient affected by quadriplegia in order to get as independent as possible. We evaluated the ROM and Strength of upper limbs in patients affected by tetraplegia, with stabilized lesion, able to regularly practice intermittent self-catheterization.

Material and Method

We used the device Pablo® Tyromotion, an electronic dynamometer and accelerometer; it allows to collect information about strength and ROM of the body districts analysed. We tested 25 patients (23 males, 2 females); average age 37,5y (min 14 – max 66); average years passed by the injury 9,96 (min 1 – max 36); different lesional levels (C0 n. 1, C2 n. 1, C4 n. 2, C5 n. 13, C6 n. 6, C7 n. 2); different injury etiologies (C0 arteriovenous malformation, C2 spinal cord empyema, others traumatic). Inclusion Criteria: cervical SCI; traumatic and non-traumatic etiology; stabilized lesion; intermittent self-catheterization.

Results

We compared the average values of strength for these movements: Terminal pinch I-II fingers (dx 0,708; sx 0,844 Kg); Terminal-lateral pinch I-II fingers (dx 1,14; sx 1,276 Kg); Interdigital pinch II-III fingers (dx 1,4; sx 1,4 Kg).

Conclusion

We found out how districts and movements not routinely tested, used or trained can preserve a greater potential for what concerns the Sparing Function than other mostly known and studied movements. These data should become a strong input to design devices, for rehabilitation and everyday life, based on a new concept of pinch and function of the hand underlining the importance of clinical experience in the projecting phase of devices.

Keywords

Hand; Strength; Function

No conflict of interest

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C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-0954

SERIOUS GAME FOR REHABILITATION OF THE LOWER LIMB OF HEMIPARETICS PATIENTS AFTER STROKE

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Introduction/Background

Hemiparesis is the classic clinical condition of stroke and is related to important locomotor limitations. The treatment strategies traditionally chosen are limited by the monotony, boredom and repetitiveness of the exercises. Serious games (SG) combine specific physical training with a higher attentional and motivational level, increasing adherence to treatment. The aim of this study was to verify the therapeutic effects of exercise program using a SG developed for evaluation and rehabilitation of hemiparetic patients after stroke.

Material and Method

Non-Randomized Controlled Clinical Trial involving 24 patients (12 men) was conducted. Patients were divided into 2 groups. One group consisted in realize exercises with a SG *mim-Pong* (experimental, Figure 1) and the other group a conventional physical therapy (control). Both groups completed the 20-session treatment protocol. The following variables evaluated were: muscle strength, motor control, motor impairment, spasticity, functional mobility and gait speed. Data were analyzed with descriptive statistics, paired Student's t-test and effect size calculation.

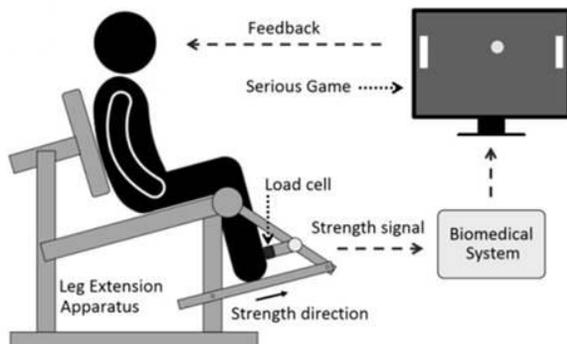


Figure 1: The objective of the *mim-Pong* is to bounce the ball by controlling the bars position with the patient's force applied in a load cell.

Results

Patients did not differ in terms of sociodemographic characteristics at baseline. In the experimental group, significant improvements were observed for all variables (Table 1). Large effect sizes were found for muscle strength of hamstrings, quadriceps femoris and hamstrings scores, Fugl-Meyer Assessment Scale and Modified Ashworth Scale. In the control group the improvements were lower than experimental group with small to moderate effect sizes. Significant differences were found only for game scores (QFS and HS) probably due to learning during the training phase conducted before assessment with the SG.

Variables (n=24)	Experimental group (n=16)				Control group (n=8)			
	Pre	Post	p-value	d	Pre	Post	p-value	d
M. strength of quad. femoris	14.8 (6.6)	21.2 (11.6)	0.002	0.7	14.7 (11.9)	15.4 (12.0)	0.185	0.1
M. strength of hamstrings	5.4 (3.0)	10.2 (4.3)	0.000	1.3	7.1 (6.3)	8.1 (6.0)	0.072	0.2
Quadriceps femoris score	67.8 (18.7)	87.8 (12.8)	0.000	1.2	52.4 (19.9)	65.0 (17.1)	0.003	0.7
Hamstrings score	54.3 (21.8)	78.9 (16.6)	0.000	1.3	51.3 (27.7)	64.8 (25.2)	0.006	0.5
Timed Up and Go	26.7 (14.3)	21.3 (13.1)	0.000	0.4	33.3 (28.4)	28.9 (22.0)	0.247	0.2
Gait Speed Test	0.55 (0.31)	0.71 (0.42)	0.001	0.4	0.66 (0.53)	0.70 (0.54)	0.204	0.1
Fugl-Meyer Scale	21.1 (4.8)	24.3 (3.3)	0.000	0.8	22.4 (6.4)	23.9 (4.6)	0.072	0.3
Modified Ashworth Scale	1.2 (1.2)	0.4 (0.8)	0.001	0.8	1.8 (2.2)	0.8 (1.5)	0.086	0.5

Conclusion

These results suggest that SG promote superior improvements to those obtained with conventional treatment of hemiparetic patients after stroke. This superiority is probably due to increased attention demand and motivation during interventions with SG.

Keywords

Serious Game ;Stroke;Hemiparesis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-0963

STRONGER: A SERIOUS GAME FRAMEWORK FOR POST-STROKE REHABILITATION

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Introduction/Background

The use of Serious Games (SG) in post-stroke rehabilitation has been considered a promising therapeutic resource. Key elements in rehabilitation (intensity, repetitiveness and task orientation), are highlighted by using SG. Moreover, SG improve both patients' attention and motivation during rehabilitation sessions contributing to patients' adherence. However, existing commercial games have been crafted with no concern on clinical efficacy. SG conception orientated on clinical efficacy is fundamental for patients' rehabilitation. Therefore, the aim of this work is to present a conceptual model for SG design/development for post-stroke rehabilitation.

Material and Method

A systematic literature was performed to identify main limitations in games used in the rehabilitation of post-stroke patients. From 309 articles identified 31 respected all inclusion/exclusion criteria and were selected for further analysis. The fields investigated were methodology and multidisciplinary of design, clinical evaluation with patients and game metric properties.

Results

No game design methodologies were observed. Almost half of the studies were conducted by joint authorship of the technology. No information was found about the development team. Only half of the studies evaluated therapeutic outcomes. The relationship between game score and clinical evaluation was not found. To overcome these drawbacks a conceptual model called *STRONGER - SysTems for Rehabilitation based on GamE scoRe* - for SG design for post-stroke rehabilitation was proposed (Figure 1).

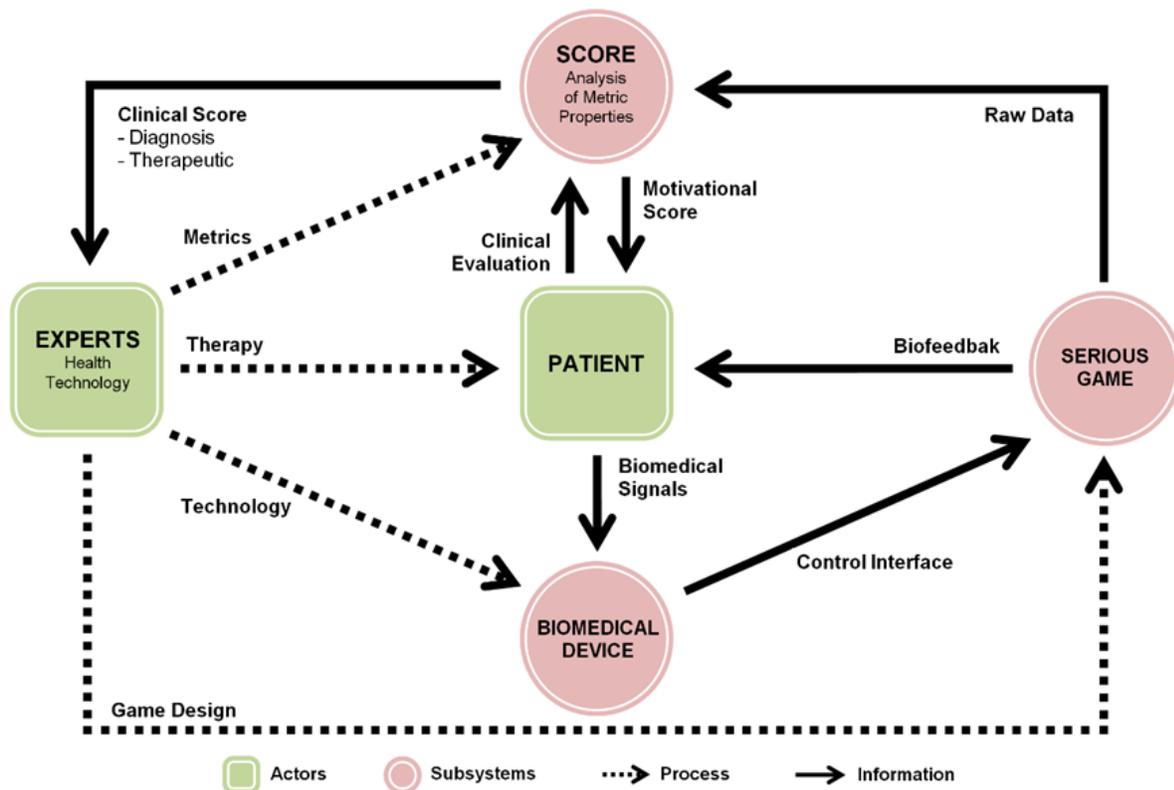


Figure 1. The STRONGER framework.

Conclusion

Regarding the inconsistency of studies in SG, a framework as STRONGER that establishes a relationship among the key stakeholders (experts and patient) and elements (biomedical device, SG and game score) should be used in SG design. The score aimed for clinical evaluation is an innovative aspect. The correlation between game score and clinical tests can lead the biomedical system to become an aid for treatment and evaluation. Although this study has been limited to post-stroke rehabilitation, the proposed model can be extended to other populations.

Keywords

Serious Games ;Stroke ;Rehabilitation

No conflict of interest

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C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-1052

DEVELOPMENT OF RESPIRATORY REHABILITATION EXERCISE DEVICE FOR HIGH LEVEL OF CERVICAL SPINAL CORD INJURY

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Introduction/Background

The high level of cervical spinal cord Injury of the diaphragmatic nerve is impaired and the dysfunction of the respiratory muscles becomes severe. Also, respiratory complications associated with pneumonia account for the highest percentage of deaths (67%).

Material and Method

The purpose of this study is to develop a respiratory exercise device that can improve the lung function by making full use of the residual function of the high level of cervical spinal cord Injury (C3-6, ASIA A-B). In order to develop a new respiratory exercise device as a research method, we conducted the 1: 1 in - depth interviews on the disability experiences and requirements of disabled people to use directly. Through semi - structured interview questions, we investigated the reasons for not exercising at home, difficulties during respiratory exercises, and requirements for respiratory exercises to be developed in the future.

Results

As a result of the research, we developed 3 kind of a respiratory rehabilitation exercise device that can be used for the high level of cervical spinal cord Injury. We performed 16 exercises for 8 weeks using 3 developed devices for 10 high level of cervical spinal cord Injury and then conducted 1: 1 in - depth interviews. The interview results showed that the device was very suitable respiratory exercises of high level of cervical spinal cord Injury. They would like to recommend developed devices to high level of cervical spinal cord Injury, as exercising with others increases their fun, morale, and vitality.

Conclusion

The respiratory exercise devices proposed in this study can be used by a single person or a group of people with a disability and can be used with non-disabled people. In addition, the developed respiratory exercise device can be used in various places other than the hospital

based rehabilitation treatment activity, and it is expected that it will be able to perform continuous respiratory exercise.

Keywords

spinal cord injuries;exercise;devices

Conflict of interest

Disclosure statement:

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ISPR8-1091

OUTCOME OF WALKING SUPPORT MACHINE TRAINING IN GAIT REHABILITATION FOR CHRONIC STROKE PATIENTS

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Introduction/Background

Chronic stroke patients had restriction in mobility and ambulation due to motor weakness, abnormal muscle tone and balance impairment. The locomotor training using partial weight supported treadmill has been shown benefit in stroke patients, but cost is too high. Therefore, innovative walking support machine(CoWalk) (as figure) has been invented by our staffs to improve gait and balance. This study aimed to determine the effect of using CoWalk in gait performance of chronic stroke patients.





Material and Method

Ten chronic stroke patients (≥ 6 months) with functional ambulation categories 1-3 participated in this study. The participants were received gait training using CoWalk for 15 minutes in addition with usual rehabilitation program twice a week, total 45 minutes for each session, for 8 weeks. The physical therapist adjusted percentage of body weight support according to patient's ability. Berg Balance Scale (BBS) and 10 Meter Walk Test (10MWT) were used to measure gait performance by pre-training and after the end of 8-weeks training program.

Results

Most of participants were male (70%) with mean age 67.8 ± 9.3 years. The result showed significantly improved in BBS (BBS_{pre} = 17.3 and post = 23.0; $p=0.01$) and 10MWT (pre = 29.2 s and post = 22.9 s; $p= 0.005$). No adverse event was reported during training.

Conclusion

This study showed benefit of C0-Walk in addition with usual rehabilitation program. However, the further study should be considered to compare with the control group and investigate more gait parameters.

Keywords

chronic stroke;balance;body weight supported

No conflict of interest

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ISPR8-1188

ADAPTATION OF UPPER LIMB MOVEMENT USING EXOSKELETON-BASED TRAINING AND TRANSFER OF CINEMATIC PATTERNS TO UNCONSTRAINED MOVEMENT: A PRELIMINARY STUDY

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Introduction/Background

Robotic technologies offer the possibility for highly specific training of upper limb movements. How exactly the motor coordination imposed during an intervention carries over into unconstrained upper limb activity, however, remains poorly understood. This preliminary study sought to examine the after effects of robotic training on upper limb joint kinematics during reaching.

Material and Method

Using a four degree of freedom upper limb exoskeleton, healthy adult subjects trained on a series of reaching tasks. Shoulder and elbow joint coordination was modified using a viscous corrective force field. Kinematic variables during the different reaching tasks without the robotic device were evaluated using a motion capture system prior to and following the intervention. Movement adaptation was evaluated with respect to subject performance on reaching toward experimental targets as well as untrained targets.

Results

Shoulder abduction profiles and terminal elbow position appeared modified two hours following the training. These changes reflected the joint kinematics forced during the robotic intervention. Furthermore, distance metrics based upon principal components analysis indicated that exposure to the corrective force field had durable effects upon shared coordination between the shoulder and elbow. This shift in movement patterns was observed for both the experimental and untrained targets.

Conclusion

These preliminary results suggest that certain features of upper limb movement, trained using corrective force fields in an exoskeleton, may be retained following the intervention and potentially generalised to prehensile movements in the peripersonal workspace.

Keywords

Exoskeleton;Upper limb;Motor learning

No conflict of interest

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ISPR8-1195

THE MANUAL WHEELCHAIR TILT-REST SKILL: A CROSS-SECTIONAL SURVEY OF AWARENESS AND CAPACITY AMONG WHEELCHAIR USERS

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Introduction/Background

The tilt-rest skill consists of tipping the wheelchair back and allowing it to rest against a solid object with the wheel locks applied (e.g. for pressure redistribution, neck comfort or hands-free activities). The objective of this study was to test the hypotheses that many wheelchair users are unaware of the skill and even fewer can perform it.

Material and Method

We conducted a cross-sectional survey following STROBE guidelines on 49 manual wheelchair users with a variety of diagnoses. The main outcome measures were a questionnaire regarding demographic, clinical, wheelchair and tilt-rest data, as well as skill demonstration by those who reported that they were capable of doing so.

Results

Participants' mean (SD) age was 55.1 (18.2) years, 38 (77.6%) were male, their mean (SD) duration of wheelchair use was 7.0 (10.4) years and their mean (SD) daily time spent in the wheelchair was 9.5 (4.6) hours. Twenty-seven (55.1%) of participants were aware of the skill, 20 (40.8%) reported being able to perform the skill and 16 (33.3%) could demonstrate it.

Conclusion

Just over half of manual wheelchair users are aware of the tilt-rest skill and one-third of them can perform it. Older people are less likely to report being able to complete the skill. These findings have implications for wheelchair skills training.

Keywords

Wheelchair

No conflict of interest

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ISPR8-1220

THE EFFECTS OF LEG ELEVATION ASSIST BAND FOR GAIT DISTURBANCE IN STROKE PATIENTS

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Introduction/Background

Patients with stroke often suffer from gait difficulties. Gait speed was often reduced and maintaining balance during gait was also affected. In swing phase of gait, maximal hip and knee flexion and ankle dorsiflexion are often reduced in sagittal plane. The leg elevation assist band was designed to assist elevation of lower extremity and foot clearing during swing phase. The purposes of this study were to evaluate the effects of leg elevation assist band in patients with hemiplegia due to stroke.

Material and Method

10 chronic hemiplegic patients after cerebral stroke at least 6 months after onset who can walk indoor were recruited. The leg elevation assist band is consisted of chest harness, two elastic band to assist leg elevation and foot part. The band helps to elevate involved foot and leg of the patients. All the patients wore leg elevation assist band and practiced walking indoor for 20 minutes 5 times a week for 2 weeks.

Results

After applying the band, 10 meter walking time improved to 32.6 ± 17.6 seconds comparing 34.5 ± 14.1 seconds without the band ($p < 0.05$). After 1 week, 10 meter walking time improved to 30.9 ± 17.5 seconds comparing 31.8 ± 15.0 seconds without the band ($p < 0.05$). After 2 weeks, 10 meter walking time was 31.9 ± 17.5 seconds comparing 31.2 ± 14.4 seconds without the band. Before the experiment, all 10 patients could not go up the stairs. 2 weeks after training with the band, 4 out of 10 patients could climb up the stairs. They did not show significant change in functional reach test after 2 week training.

Conclusion

The leg elevation assist band could improve the walking speed of hemiplegic patients and the band also had therapeutic effects on walking ability in the patients.

Keywords

stroke;gait

No conflict of interest

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C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-1565

THE REHABILITATIVE VALUE OF PABLO® TYROMOTION FOR THE EVALUATION AND THE FUNCTIONAL RECOVERY OF THE UPPER LIMB AND THE HAND IN SCI PATIENTS

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Introduction/Background

The aim of this work is to verify the possibility to use Pablo® Tyromotion device for the evaluation and rehabilitation of the upper limb of the person with quadriplegia.

Material and Method

9 patients with quadriplegia, lesion level C4-C8, were included in the study. The protocol considered a T0 and T1 evaluation of the upper limb and the hand with the Pablo® device and the Grasp and Release Test modified (GRT mod) and Tetraplegic Functional Test (TFT) scales. At the T1, after 8 rehabilitative sessions performed with Pablo®, a second evaluation was performed with the same items of the first one. The Physical Therapy Patient Satisfaction Questionnaire mod (PTPSQ-1 mod) was also administered to evaluate the patients' appreciation of the use of this kind of device to improve the rehabilitation program.

Results

7 of 9 subjects completed the study protocol. The correlation values were positive for all the grasps and very high especially for the palmar grasp and the termino-terminal pinch. A high statistical significance turns out for all the grasps. The correlation values for the palmar grasp and the termino-terminal pinch in the group with the functional hand set up were negative.

Conclusion

The correlation values obtained indicate that the variables force (Pablo®), number of grasps performed (GRT mod) and functional abilities (TFT) were correlated and if one increases, the others increase too according to the calculated values. On the basis of the PTPSQ-1 data the Pablo® device seems to be appreciated by the patients for what concerns acceptance and pleasantness in use. Pablo® can be considered an evaluative tool complementary to a scale like the GRT mod in subjects that do not take advantage of the functional hand for the grasps.

Keywords

Hand;Technology;Assessment

No conflict of interest

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C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-1605

A STUDY ON ADAPTATION TO GAIT ENVIRONMENT OF POWERD ABOVE-KNEE PROSTHESIS.

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Introduction/Background

This paper studied the estimation of walking steps based on knee joint change of the unaffected side leg to estimate the walking environment of the intelligent transfemoral prosthesis in the future.

Material and Method

Knee joint change was estimated using an inertial sensor by considering the ease of attaching the sensor to the body. In general gait, there are four pole points in the change of the knee joint. These pole point change patterns show reproducibility in the same gait environment and different patterns in the gait environment of different situations. These pole point patterns appear with periodicity in the gait. If this is subdivided step by step, the current step is related to the former and latter steps.

Results

Therefore, this paper is to study the gait step estimation first to estimate the gait environment based on these characteristics in the future. The proposed method is a method of estimating the gait steps based on the pole point according to the angle change of the knee using the state machine.

Conclusion

The inertial sensor has the disadvantages that a delay is caused by a low-frequency filter for eliminating noise, and it is difficult to recognize when the pole point is not detected according to the step of the subject. This requires modification and supplementation of the algorithm. In addition, the gait step detection algorithm proposed in this paper requires comparison and evaluation with other algorithms and further research and experiments are needed.

Keywords

intelligent;powered transfemoral prosthetics;estimation of the gait environment

No conflict of interest

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C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-1928

EFFECTIVENESS OF WEARABLE UPPER LIMB ASSISTIVE DEVICES IN HEMIPARESIS FOR IMPROVEMENT OF FUNCTIONAL ABILITIES: A SYSTEMATIC REVIEW

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Introduction/Background

Assess short-term benefits of wearable devices in activities of daily living (ADLs) and functional tasks, for people suffering from upper-limb impairment due to acquired brain injuries (ABI).

Material and Method

Two independent reviewers conducted a systematic review across Cochrane Database of Clinical Trials, Medline, Web Of Science, PEDro, OT-Seeker and Open Grey databases until November 2017, identifying citations in included studies and systematic reviews. Inclusion criteria included: adults with hemiparesis due to all causes of ABI; wearable devices such as orthosis, prosthesis, exoskeleton, electrical stimulation devices, neuroprosthetics; use of functional outcome measures assessing ADLs and functional tasks with and without device. Methodological quality of articles was assessed according to the Joanna Briggs Institute (JBI) scale for case series.

Results

From 1452 titles initially selected, eleven studies were finally selected (n=95 participants), all focusing on post-stroke hemiparesis. Nine were self-controlled case-series and two were single-case reports. Six studies described functional electrical stimulation devices, three described use of exoskeletons and two passive devices. Command of the nine active devices included electromyography, kinematic data, push-button, inertial unit measurement and force sensors. Quality assessment using JBI Scale found low quality evidence of all studies with heterogeneity of outcomes. One of the two studies describing passive assistive devices demonstrated significant improvement in the size of block lifted during the box and block test (BBT). Only one of the three studies using exoskeleton found significant improvement in the BBT and various functional tasks. Four of the six neuroprosthetics studies found moderate to significant improvement across outcomes.

Conclusion

Considering high heterogeneity of studied assistive devices, small samples sizes and study designs implicating insufficient high quality evidence, it is not possible to either support or reject the use of assistive devices on the ABI population. Further research is needed to investigate the use of these devices on functional outcomes.

Keywords

Exoskeleton Device;Neuroprosthetics;Upper Extremity

Conflict of interest

Disclosure statement:

Funding support by Ipsen-Pharma

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C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-2076

CASE OF PLANTAR ORTHOTICS IN A LOWER LIMB AMPUTEE

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Introduction/Background

Many changes in balance and plantar support appear after amputation of a lower limb. The goal of this work is to provide of modifications using treadmill run times and possibles improvements with the use of orthotics.

Material and Method

One measure of balance using the death I test along with footprint analysing using static and dynamic treadmill run times.

The same tests are administered after wearing plantar orthotics to redistribute loads for at least 15 days.

The static position of the center of gravity was measured.

Prosthetic plantar and heel supports and healthy were measured statically and dynamically.

Statistical analysis of the various parameters is presented.

30 patients agreed to participate in the study.

Results

The characteristics of the population and test results were presented at the former meeting.

Conclusion

The treadmill run times allows the measurement of footprint static and dynamic but also the position of the center of gravity.

After a lower limb amputation the plantar supports are modified.

The plantar orthoses can help to find correct supports.

Keywords

plantar orthotics; lower limb amputee; treadmill run times

No conflict of interest

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C2.17 PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

ISPR8-2161

A REVIEW ABOUT THE ENHANCED REHABILITATION OF KNEE ARTHROPLASTY

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Introduction/Background

Background and aims : Knee arthroplasty is a common and effective intervention to deal with the highest incidence of osteoarthritis. It has increased fast, but its long recovery time and not very satisfactory effects are not in line with the concept of enhanced recovery. So rehabilitation is very important.

Material and Method

Methods A literature search was conducted using PubMed with the search terms “knee arthroplasty AND rehabilitation” published between 2007 and 2017.

Results

results : (1) Preoperative rehabilitation has a certain effect, especially in early postoperative recovery. It can promote patients to resume functional activity as soon as possible. We should be hard to do preoperative rehabilitation. (2) Rehabilitation training should start as soon as possible. On the one hand, rehabilitation training could avoid disuse syndrome that will increase the training difficulty once appeared. On the other hand, early training can prevent or reduce complications such as deep venous thrombosis and the unnecessary treatment. Traditional rehabilitation methods are enough. The high intensity training mode can be used within the limits of patients. The total rehabilitation time is not very important. The training emphasis should be put on the muscle strength of quadriceps. (3) Cryotherapy could relief postoperative pain to some extent, but it is not clear about the reduction of edema.

Conclusion

Conclusions : Rehabilitation could promote the function recovery. It is suggested that rehabilitation training should be started before surgery and rehabilitation should be carried out as early as possible. The appropriate combination of cryotherapy is OK.

Keywords

enhanced rehabilitation

No conflict of interest

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-2531

VALIDITY OF WEARABLE BREATH MONITORING SYSTEM USING STRETCHABLE STRAIN SENSORS IN WALKING

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Introduction/Background

Chronic obstructive pulmonary disease (COPD) patients often have shortened inspiration phase and experience breathlessness even during light exercise. The respiratory rate that reflects breathlessness during exercise is usually measured by a flow sensor with a face mask. Since many COPD patients use oxygen therapy with a nasal cannula and face mask that sometimes inhibit breathing, a less invasive wearable sensor for monitoring respiratory rate is required. This study investigated the characteristics of a new wearable respiratory sensor and its performance was compared with that of a standard flow sensor.

Material and Method

Twenty-four healthy volunteers wore wearable stretch sensors (STRs) while performing a treadmill walking test protocol that included standing and sitting, an incremental walking with and without a stick on treadmill (belt speed was increased from 2 to 6 km/h). Two STRs were symmetrically attached to a band placed around the participant's trunk. Participants wore two sets of the STR bands at the 4th rib level and 10th rib level. Each respiratory cycle including respiration phase was determined by the stretching and shortening cycle of the STR signal. Based on the respiratory cycle, the number of breaths was counted every 1 min. We compared breath counts by the STR and flow sensor using Bland–Altman plot.

Results

Breath counts ranged from 8 to 45 bpm throughout the test protocol. STR signals showed positive correlation with flow signals ($p < 0.05$). In more than 90% of testing periods, the difference in breath counts between the STR and flow sensor was less than 10%. The limit of

the agreement between breath count differences was less than 3 bpm in all movement conditions.

Conclusion

The wearable respiratory monitoring system showed high accuracy and precision for breath counts even while the participants were walking. The results suggest high potential of the system for clinical applications.

Keywords

respiratory rate;wearable sensor

Conflict of interest

Disclosure statement:

The authors of this manuscript declare the following competing interests: this project was funded by a grant from Bando Chemical Industry Ltd. YB is an employee of Bando Chemical Industry Ltd. Bando Chemical Industry Ltd. provided the materials used for the experiment.

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0203

THE ADAPT EUROPEAN PROJECT: THE TRANSDISCIPLINARY DEVELOPMENT OF ASSISTIVE TECHNOLOGY FOR THE BENEFIT OF THE DISABLED PEOPLE

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Introduction/Background

Ageing societies and the increase in chronic disabilities are irrevocable trends in the EU which usually result in a loss of autonomy and increased social isolation. Many people with complex disabilities face increased isolation due to loss of independent mobility because of difficulties of meeting the criteria for the provision of an Electric Powered Wheelchair (EPW) and the availability of an appropriate EPW. Several studies highlight the key role of innovative Assistive Technologies and smart EPW as effective tools to empower disabled people and improve social inclusion. Nevertheless, standardization, interoperability, limited involvement of users, lack of specialist training for health professionals and funding models are which impede the uptake of such innovations.

Material and Method

Within this framework, a transdisciplinary consortium of French and English partners formed the 4 year ADAPT project, starting in May 2017. The aim of ADAPT is to overcome the barriers to the uptake of assistive technology.

Results

The ADAPT project aims to:

- Develop two technologically mature innovative assistive technologies:
 - * A smart EPW with driving assistance to compensate for user disabilities, to monitor and report changes users' health through the internet.
 - * A Virtual Reality EPW simulator platform. This will give the user an immersive experience of the smart EPW and train them to drive in everyday life. Professionals will assess the suitability of the EPW for particular patients and environments and gain understanding from the user perspective.
- Develop training programs for healthcare professionals about innovative assistive technologies.
- Formalize agreements between research institutions and companies ranging from local to international meetings, so as to boost R&D and facilitate the uptake of the ADAPT's results by the market.

Conclusion

This presentation will provide an opportunity to share an overview of the ADAPT project : context, objectives and results.

Keywords

Robotics;Innovative assistive technologies;Virtual reality

No conflict of interest

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0213

HYBRID ASSISTIVE LIMB (HAL) TREATMENT FOR PATIENTS WITH SEVERE THORACIC MYELOPATHY CAUSED BY OSSIFICATION OF THE POSTERIOR LONGITUDINAL LIGAMENT (OPLL) IN POSTOPERATIVE ACUTE PHASE

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Introduction/Background

The purpose of this study was to clarify the safety and feasibility of rehabilitation using the robot suit hybrid assistive limb (HAL) for severe thoracic myelopathy due to ossification of the posterior longitudinal ligament (OPLL).

Material and Method

Eight patients (mean age, 60.9 years) in the postoperative acute or subacute phases who presented with severe gait disturbance before surgery and underwent posterior decompression with instrumented fusion for thoracic ossification of the posterior longitudinal ligament (T-OPLL) were included in this study. Treatment using HAL (about 60 min per session, 2-3 times a week, 10 sessions in total) was started on mean postoperative day 27.5. Gait speed, step length, and cadence for each session were measured with the 10-m walking test. The American Spinal Injury Association (ASIA) motor score (lower extremities) and Walking Index for Spinal Cord Injury (WISCI) II were also evaluated at baseline and after 10 sessions. In addition, the Japanese Orthopaedic Association (JOA) score was calculated over time after surgery.

Results

Ten sessions of HAL treatment were completed in all patients. No serious adverse events related to the locomotor treatment with HAL were noted. Gait speed, step length, and cadence improved over time. Compared with baseline values, WISCI-II and ASIA motor score (lower extremities) after 10 sessions improved. The JOA score improved over time after surgery.

Conclusion

Treatment using HAL can be performed in the early postoperative period without severe adverse events in patients with T-OPLL and severe gait disturbance.

Keywords

robotics rehabilitation;Hybrid assistive limb; exoskeleton robot

No conflict of interest

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0287

PROMISES AND CHALLENGES OF INTERACTIONS BETWEEN FRAIL OLDER PEOPLE AND A HUMANOID ROBOT

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Introduction/Background

Facilitating home support of elderly and dependent people is one the major challenges currently offered to assistive robots. Can a humanoid robot answer needs of persons with frailty and help them stay in their home longer? The objective of the study is to assess usability and perceived usefulness of the human-shaped robot Pepper®.

Material and Method

Fifteen in-patients lived with the robot seven days a week. After a learning phase, they were invited to interact with Peppers® through several implemented applications originally designed to unveil the potential field of use of Pepper. Satisfaction with use, attitudes and opinions were studied via open and closed-ended questions as well as film sequences. Data collection was performed daily from day 0 to 7.

Results

Pepper was mainly seen as a possible ambulatory assistive device, capable

-of following people with walking difficulties and/or cognitive disorders

-of reminding him to take medications and/or to drink and providing him with helpful information. Seven of 10 recall tasks were considered as priorities for 80 to 100% of the participants.

-of alerting in case of a fall, an illness or an emergency. These functions are claimed by at least 80% of the patients.

Comparison of base-line and end-line data has suggested that an emphatic and a reciprocal relation-ship with Pepper had been established. At the end of the experience, 80% stated that use of Pepper was perceived as logical in 2017 and all believed that the future will lie in robotics

while 47% acknowledged that it was a frightening prospect. The overall satisfaction with this experience was rated at least 6 on a 10-point scale by 12 of the 15 participants.

Conclusion

Living with a humanoid robot on a 24 hours/7 days basis was demonstrated to be viable and safe making possible experimentation at home providing that some technological issues are solved.

Keywords

elderly people support;robotics;humanoid robot

No conflict of interest

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0320

EFFECT OF A NOVEL DEVICE WITH LASER POINTER IN PRACTICING POSTURE CONTROL

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Introduction/Background

A simple and efficient method for posture control and preventing falls during walking is needed. We developed a novel device for this purpose using a laser pointer. We should to investigate the effect of this device in posture control.

Material and Method

Thirty-five healthy young women (20.2 ± 0.5 years) were recruited. The device was placed on their right knee with the laser pointing toward the wall surface in front of their patella. The participants could see the position of their patella by looking at the laser point on the wall in front of them. During posture control practice, the participants stood on one-leg on the balance pad for one minute. Posture control practice was performed three days a week for two weeks. The participants were randomized to one of the three following groups: those practicing posture control with the device, those practicing posture control without the device, and those who did not practice posture control (control group). The rectangular area of center of pressure during one-leg standing on the balance pad was measured using a Gravicorder before and after practice to determine the effect of posture control practice. The measurements from the rectangular areas after practice were normalized to before practice [%BP]. For statistical analysis, one-way ANOVA and Bonferroni's multiple comparison tests were performed ($p < 0.05$). This study was conducted with the approval of the Research Ethics Committee of authors' affiliation facility (# 15-079).

Results

The rectangular areas were 64.4 ± 17.1 %BP in the group that practiced posture control with the device, 86.3 ± 23.1 %BP in the group practicing without the device, and 99.6 ± 24.8 %BP in the control group. Participants who practiced posture control with the device had a significantly lower %BP than the two other groups.

Conclusion

These results suggest that this novel device can improve posture control.

Keywords

novel device;laser pointer;posture control

No conflict of interest

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0398

MANUAL WHEELCHAIR: LEVER PROPULSION AND UPPER LIMB PROXIMAL KINEMATIC

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Introduction/Background

Manual propulsion wheelchair with handrail propulsion, always ends up generating musculoskeletal disorders. The objective is to study with numerical simulations, the benefits of using an alternative propulsion system powered by lever.

Material and Method

A numerical approach has been developed to modelize muscles contributions considering a lever propulsion with this new wheelchair prototype. Arm movement has been modeled with AnyBody™ software to visualize the participation of each muscle and proximal upper limb muscular groups. This numerical model has been experimentally validated for the upper limbs. It will be possible to compare muscular group activations for a lever pushing propulsion stage compared to a handrail propulsion.

Results

The results of AnyBody™ simulation, for the propulsion phase, highlight an important muscular activity at the shoulder, anterior and lateral deltoid group levels for lever propulsion. Muscle activity is also observed in the triceps brachial group, long lateral triceps and major pectoralis as well. For an equal resistant load, the muscular activity decreases with the lever system. In addition, overall maximal muscle activity is lower with lever propulsion (13% max activity compared to 24% for handrail).

Conclusion

This study allowed us to develop a upper limb kinematic model that quantifies the activity of the main muscular groups involved in the movement of wheelchair propulsion by lever.

Keywords

wheelchair;propulsion modalities;lever

No conflict of interest

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ISPR8-0459

STUDY ON THE STANDARDIZATION OF THE EVALUATION METHOD FOR REHABILITATION ROBOTS

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Introduction/Background

These days, many rehabilitation robots are used in clinical practice. In order to prove the effectiveness and safety of rehabilitation robots, it is necessary to standardize the method used to evaluate rehabilitation using robots.

The purpose of this research is to create evaluation standards for rehabilitation using robots and to standardize them.

Material and Method

In preparing evaluation criteria for rehabilitation that uses robots, the candidate evaluation items were objectively collected from past articles and academic abstracts. These items were classified into clinical evaluation items, economic evaluation items, safety evaluation items, and evaluation items related to engineering development.

For the first questionnaire survey, we divided the evaluation items into "upper limbs", "trunk + lower limbs", and asked about "measurement experience", "usefulness", "difficulty of measurement" and so on. This questionnaire was carried out at 63 facilities in Japan which are using rehabilitation robots. Based on the results of the first questionnaire, we carried out a second questionnaire survey and selected what seemed to be useful from among the collected evaluation items. Furthermore, we used the selected evaluation items in clinical practice and verified their practicality.

Results

As a result of the questionnaire survey, 27 items of "upper limbs" and 34 items of "trunk + lower limbs" were selected. The validity of the selected evaluation items was also verified. However, there were some problems such as: expensive evaluation tools are required, a large amount of time and labor for evaluation is required, and the sensitivity to rehabilitation using robots is low.

Conclusion

We conducted a questionnaire survey to standardize the evaluation of rehabilitation using robots and selected evaluation items that seemed useful.

We would like to increase the number of cases, narrow down useful evaluation items, and aim for standardization of the evaluation items for rehabilitation robots.

Keywords

Rehabilitation robot;evaluation

No conflict of interest

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0480

DEVELOPMENT AND TESTS OF A LOW-COST DRIVING ASSISTANCE SOLUTION FOR CURB FOLLOWING WITH A POWER WHEELCHAIR IN VIRTUAL ENVIRONMENT AND IN THE PAMELA RESEARCH LABORATORY

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Introduction/Background

People with motor impairments can benefit from the use of a power wheelchair (PWC). However accidents can occur while driving, particularly outdoors. In order to reduce the risk, research has been performed for several years on driving assistance. Here, we present a curb-following shared control method for PWC driving assistance preventing the user from falling down the curb. Drop-offs are detected with distance sensors. Then, a curb-following algorithm is computed and the result is blended with user control, providing a progressive correction of the wheelchair trajectory.

Material and Method

The curb-following method has been developed and tested on a 15cm height sidewalk. In order to test the method in simulation, linear and angular user commands were automatically set to the maximum value towards the curb. Wheelchair commands and wheelchair trajectory were recorded. In PAMELA, the method has been tested with a standard PWC equipped with curb detectors on a 15cm height sidewalk. For this test, an able-bodied participant was driving the PWC on the sidewalk, towards the curb or along the curb.

Results

The trajectory of the wheelchair is modified in order to avoid from falling from the curb. The desired trajectory is respected as long as no negative difference of elevation is detected. When such an obstacle is detected, wheelchair linear and rotational velocities decrease until the wheelchair is parallel to the curb. Then, only the rotational velocity is restrained and the wheelchair can go forward and follow the curb.

Conclusion

The behavior of the system in simulation as well as while embedded on real wheelchair leads to a proof of concept of our method. The shared control model is flexible, computationally inexpensive and independent of the range measurement sensor type. Moreover, this work

showed the versatility of our method of wheelchair navigation assistance and encourages us to go further in our research process.

Keywords

smart power wheelchair;navigation assistance;outdoor navigation

Conflict of interest

Disclosure statement:

This work is carried out as part of the INTERREG VA FMA ADAPT project "« Assistive Devices for empowering disAbled People through robotic Technologies » <http://adapt-project.com/index.php>". The Interreg FCE Programme is a European Territorial Cooperation programme that aims to fund high quality cooperation projects in the Channel border region between France and England. The Programme is funded by the European Regional Development Fund (ERDF)

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0542

FEASIBILITY AND USABILITY OF A NOVEL ROBOTIC WALKER FOR POSTSTROKE GAIT REHABILITATION: A CASE REPORT

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Introduction/Background

Stroke survivors suffer from impaired walking abilities, limited activities of daily living and poor quality of life. Conventional body-weight supported treadmill training can be only administered in clinical settings and the walking pattern on a treadmill is different from overground walking. Therefore, a novel robotic walker was developed to provide body weight support during overground walking for poststroke gait rehabilitation. The purpose of this study was to clinically evaluate the feasibility and usability of the robotic walker in stroke survivors.

Material and Method

Participants underwent four testing conditions in one session: walking with barefoot and walking with the robotic walker with 0%, 10% and 20% of body weight supported at National University Hospital, Singapore. We collected gait parameters and kinematics data. Friedman Test was selected to examine the difference among conditions and Wilcoxon Signed Ranks Test was chosen for further analysis. All statistical analyses were performed by IBM SPSS Statistics for Windows, Version 22.0 ($\alpha = 0.05$).

Results

Three participants (all males, mean age 70.86 ± 4.23 years, mean time poststroke 20.00 ± 3.61 months) provided signed informed consent form and completed the experiment. There was no significant difference regarding gait parameters, but a trend showed that providing body weight support could improve gait parameters. Regarding kinematics data, walking with the robotic walker with body weight support provided significantly improved the range of motion of hip, knee and ankle joints of the unaffected side ($p = 0.029, 0.042$ and 0.042 , respectively) and knee joint of the affected side ($p = 0.042$) compared with no body weight support. The range of motion of knee and ankle joints of the affected side were also improved but not significant.

Conclusion

The robotic walker is feasible and usable for poststroke gait rehabilitation. Larger clinical trials are warranted for testing its treatment effect.

Keywords

Stroke;Walking;Robotics

Conflict of interest

Disclosure statement:

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0586

KINEMATIC ANALYSIS ABOUT FORWARD AND BACKWARD MOVEMENTS WITH THE BALANCE EXERCISE ASSIST ROBOT EXERCISES.

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Introduction/Background

Balance Exercise Assist Robot is a training assist system which combines personal transport assistance robot (robot) ridden in standing position and computer games. The robot moves to reflect the movement of the rider's center of gravity (COG). The purpose of this study is to clarify the kinematic characteristics of the rider required for the forward and backward movements of the robot.

Material and Method

Eleven healthy male subjects participated in this study. The task were forward and backward movement in two conditions; 1) maximum movement required the game using the robot (robot task), 2) maximum COG movement on a flat floor (floor task). Each task was conducted once in 2 seconds, and it was performed ten times. Kinematic data were collected using a 3D motion analysis system and electromyography(EMG). These data were to calculate the displacement of COG, angular displacements of hip, knee, ankle joints and the maximum EMG activities of gluteus medius(GM), rectus femoris(RF), biceps femoris(BF), anterior tibialis(TA), medial head of gastrocnemius(MG), peroneal longus(PL) in right lower extremity. To compare with tasks, we performed a repeated measures ANOVA using a mixed model. The significance level was set at $P < 0.05$.

Results

Both movements, the robot task had a larger COG than the floor task, and the angular displacement of the hip and knee joints were smaller. In the forward movement for robot task, the angular displacements of ankle joint, maximum EMG activities of RF were larger, but MG and PL were smaller than floor task. In the backward movement, the angular displacements of ankle joint, the all the maximum EMG activities except for the GM for the robot were smaller than floor task.

Conclusion

The forward and backward movement on the robot was a large movement with a small physical activity compared with the flat floor.

Keywords

postural control;forward and backward movement;balance exercise assist robot

Conflict of interest

Disclosure statement:

The Balance Exercise Assist Robot used in this study was provided by Toyota Motor Corporation.

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0648

KINEMATIC ANALYSIS ABOUT STAND STILL ON THE BALANCE EXERCISE ASSIST ROBOT EXERCISE: COMPARED OF FLOOR CONDITION

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Introduction/Background

Balance Exercise Assist Robot (BEAR) is a training assist system that combines personal transport assistance robot (robot) ridden in standing position and computer games. The robot moves to reflect the movement of the rider's center of gravity (COG). The aim of this study was to clarify the kinematic characteristics of standing position on the robot.

Material and Method

Eleven healthy male subjects participated in this study. The subjects were requested to keep a standing for 30 sec on the robot (robot task) or the flat floor (flat floor task) each 10 times. Kinematic data were collected using a 3D motion analysis system, the robot's foot pressure sensor or stabilometer and electromyograph. These data were used to calculate the total locus lengths of COG and center of pressure (COP), the total joint momentums of the hip, knee, and ankle, the average muscle activities (gluteus medius: GM, rectus femoris: RF, biceps femoris: BF, anterior tibialis: TA, medial head of gastrocnemius: MG, peroneal longus: PL) in the right lower extremity. To compare between tasks, we performed a repeated measures ANOVA using a mixed model. The significance level was set at $P < 0.05$.

Results

In the robot task, the total locus lengths of COG and COP, total joint momentums of hip, knee, ankle joints and muscle activities of the GM, RF, and TA were larger than flat floor task, but muscle activities of the BF, MG and PL were smaller.

Conclusion

Since keeping the standing on the robot is unstable compared to the flat floor task, active postural control was necessary. From the results of the muscle activity it turned out to be a different postural strategy. Exercise using BEAR is useful as a rehabilitation program aimed at improving postural control.

Keywords

postural control;quiet stance;balance exercise assist robot

Conflict of interest

Disclosure statement:

The Balance Exercise Assist Robot used in this study was provided by Toyota Motor Corporation.

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0671

EFFECTS OF GAIT TRAINING WITH USING HAL® ON GAIT FUNCTIONS OF CHRONIC STROKE PATIENTS.

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Introduction/Background

Recently, the robot-assisted rehabilitation has emerged as a promising new technology for patients with severe lower limb impairment. The effect of rehabilitation including the concepts of repetitive, intensive, task-orientated training, which has been shown to be effective for chronic stroke patients, may be facilitated by using robotics in improving physical functions of patients. The aim of the present study is to investigate whether gait training using a robot suit HAL® (Hybrid Assistive Limb: an exoskeleton robot that enhances the limb motion of the human body by detecting the weak bioelectrical nerve signals) would improve gait functions in chronic stroke patients.

Material and Method

Fourteen patients with chronic stroke in Kyoto University Hospital were participated in the study. They received 8 gait training sessions (60 min/session) using HAL® of double leg type during 3 weeks. Before and after intervention, gait speed (m/s), stride length (m), cadence (step/min), and 2-minute walk distance (m) were measured. Paired t test was used to determine the differences in outcome measurements between before and after intervention. Spearman's rank correlated coefficients were calculated between change percentage of gait speed and change percentage of gait parameter (stride length or cadence).

Results

Gait speed ($0.56 \pm 0.32 \rightarrow 0.71 \pm 0.41$ m/s), stride length ($0.72 \pm 0.32 \rightarrow 0.82 \pm 0.35$ m), cadence ($90.0 \pm 29.4 \rightarrow 98.7 \pm 33.2$ step/min), and 2-minute walk distance ($62.2 \pm 34.7 \rightarrow 77.9 \pm 45.2$ m) increased significantly after the intervention. The change percentage of gait speed was significantly correlated with the change percentage of stride length ($r = 0.75$), but not with cadence.

Conclusion

The results of the present study demonstrated that gait training using HAL® was an effective intervention, especially in improving spatiotemporal gait parameters and gait distance in chronic stroke patients.

Keywords

Robotics rehabilitation;Chronic stroke;Hybrid Assistive Limb

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0712

HAND AND WRIST REHABILITATION WITH ROBOTIC ORTHOSES

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Introduction/Background

The traumatic and non-traumatic pathologies that cause hand and wrist disability, have high incidence and high treatment costs related to the loss of productive life; new technologies are needed to facilitate rehabilitation and assist patients at home.

Material and Method

This is a descriptive study of clinical cases where robotic rehabilitation is applied for hand and wrist passive and active mobilization. the first patient had a complex fracture in the fifth right metacarpal; the second patient had a base fracture in the fourth and fifth right metacarpals; the third patient had severe hand and wrist spasticity after stroke; and the fourth patient had disability caused by traumatic cervical spinal cord lesion on C6 level. The instruments used were medical record, robotic orthoses PRO-Dix and PRO-Wix, exoskeleton EMMRA-1 (figure 1), disability arm shoulder and hand scoring (DASH), visual analogue scale (VAS), ashworth scale, and goniometer. All the patients received physical therapy complemented with robotic orthosis therapy, electronic control of the angle, strength and speed of movement was carried out according to the pain tolerated by the patients.



Figura 1. a) Robotic Orthosis PRO-Dix, b) Robotic Orthosis PRO-Wix, y c) Exoskeleton EMMRA-1

Results

The first and second patients had gain in degrees of movement of the metacarpophalangeal (MP) and the proximal interphalangeal (IFP) joints. The third patient had gain in degrees of movement of the hand and wrist joints and decreased spasticity. The fourth patient had neuronal reeducation process improving quality of life. All patient had pain reduction and

functionality improvement according to table 1.

Table 1. Results of Robotic Rehabilitation

VARIABLES / PATIENTS	First Patient		Second Patient		Third Patient		Fourth Patient	
Measurement Date	27/11/16	25/01/17	02/09/17	15/11/17	20/05/17	28/08/17	01/04/16	01/06/16
Join Extension (Goniometer)	5 MF: - 5°	5 MF: 0°	4 MF: 0°	4 MF: 0°	Muñeca: - 45°	Muñeca: - 10°	Muñeca: 0°	Muñeca: 15°
			5 MF: - 15°	4 MF: 0°				
	5 IFP: 0°	5 IFP: 0°	4 IFP: 0°	4 IFP: 0°	MF: - 45°	MF: - 25°	NA	NA
Joint Flexion (Goniometer)			5 IFP: 0°	5 IFP: 0°				
	5 MF: 5°	5 MF: 45°	4 MF: 70°	4 MF: 90°	Muñeca: 55°	Muñeca: 90°	Muñeca: 45°	Muñeca: 65°
			5 MF: 45°	5 MF: 90°				
	5 IFP: 30°	5 IFP: 90°	4 IFP: 90°	4 IFP: 90°	MF: 55°	MF: 90°	NA	NA
		5 IFP: 90°	5 IFP: 90°					
Function (DASH)	69.85	14.7	54.84	14.7	NA	NA	83.33	63.33
Pain (VAS)	3	2	5	2	8	1	3	0
Spasticity (Ashworth Scale)	NA	NA	NA	NA	4	2	NA	NA
Device	PRO-Dix		PRO-Dix		PRO-Dix and PRO-Wix		EMMRA-1	

Conclusion

Robotic orthoses complement efficiently the rehabilitation process, allow early passive mobilization in post-surgical patients of hand fractures, facilitates the active mobilization in patients with hand and wrist spasticity, and assists object manipulation and rehabilitation at home to paraplegic patients.

Keywords

Exoskeleton; Robotic orthosis; Robotic Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0714

DEVELOPMENT OF PROTOTYPE AND PHANTOM STUDY OF A NEW PORTABLE AUTOMATIC URINARY CATHETERIZATION DEVICE

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Introduction/Background

Neurogenic bladder dysfunction is one of the most important sequelae after spinal cord injury, stroke or multiple sclerosis. Intermittent catheterization (IC) is an effective bladder management strategy for incomplete bladder emptying. However, the patients with impaired hand function are difficult to perform self IC and dependent to caregivers. Thus, we developed a new small-sized portable device for self catheterization.

Material and Method

The new device is composed of two parts; disposable part and operating part. The disposable part would be consist of a penis cap which would contact with glans of penis and contain lubricational system, and a sterilized catheter. The operating part would include a gear and motor which would advance the catheter, and a rechargeable battery.

The penis cap of disposable part would be docked with operating part. Then the operating part would advance the catheter into the penis cap and orifice of the penis. This system would be composed of sponge containing distilled water. As the pre-lubricated hydrophilic catheter used in this system would contact with the sponge, the catheter could be lubricated and glide smoothly into the penis.

Results

In a dummy model phantom study, the catheter was lubricated well and inserted smoothly into the bladder without any complications. We filed a patent for a new device lubrication system.

Conclusion

We confirmed a possibility of the newly developed portable automatic urinary catheterization device that could assist performing the IC. Even a patient with impaired fine motor ability in upper extremity or a caregiver might perform the IC easily using this device.

Keywords

urinary catheterization device

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-0855

USING REAL-TIME PHYSICAL ACTIVITY MONITOR TO DEFINE PATIENTS' RECOVERY: THE SENSING IN AT-RISK POPULATIONS (SARP) STUDY

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Introduction/Background

Accurate assessments of functional improvement play a significant role in rehabilitation success. This study uses a smartwatch based remote sensor system to monitor physical activity in real-time.

Objective: To examine whether longitudinal changes in SARP correlate to changes in physical therapy(PT)/occupational therapy(OT) evaluations; and whether early changes of SARP correlate with functional recovery status.

Material and Method

Design: A prospective cohort study

Setting and Participants: Skilled nursing facility, 174 subjects

Methods: SARP monitored and classified physical activities as Assisted/Non-Assisted Walking and Active/Non-Active Sitting, Standing, and Lying Down, and calculated Energy from motion signals. Activity Tolerance (minutes), Gait (functional independence measurement (FIM) score), and Transfers (FIM score), were extracted from PT/OT records. Changes in SARP were computed based on the second and last day vs. first day differences. Changes in PT/OT activities were computed based on the second and last visit vs. first visit differences. Spearman correlations were performed to determine the association between SARP and PT/OT evaluations. The false discovery rate (FDR) tests were used to correct multiple hypothesis testing with a FDR<0.2 considered significant.

Results

Subjects' mean age was 80.6 years with mean length of skilled nursing stay 23.4 days. Assisted and Non-Assisted Walking functional improvement from SARP were significantly associated with the functional gain of Activity Tolerance (both $p < 0.001$, $\rho = 0.38$ and 0.36 respectively). Real-time changes of Energy were significantly associated with discharge status of Transfers ($p < 0.001$, $\rho = 0.45$). Active Standing and Total Active minutes of the first day from SARP were significantly associated with functional improvement of Gait on Level Surfaces (both $p < 0.001$, $\rho = -0.44$ and -0.42 respectively).

Conclusion

SARP monitors physical functions in real-time accurately and significantly correlates to in-person evaluations. The early changes in SARP significantly correlate to discharge functional status. Moreover, the first day SARP data could predict physical resilience. Future study is ongoing to use SARP in an acute rehabilitation hospital and home settings.

Keywords

Wearable Sensor; Functional Recovery; Older Adults

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-1127

AN APPROACH ON ROBOTIC ASSISTED REHABILITATION WITHIN ROMANIAN BALNEAL RESORTS

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Introduction/Background

The increasing interest in mechatronic/robotic technologies, for medical rehabilitation, changes the upper and lower limb neurological impairments therapeutic approach and introduces in the medical repertoire of methods, beside the current physiotherapists interventions, robotic-assisted medical interventions. Our purpose was to verify in which Balneal Resorts, where can be found traditional balneal rehabilitation interventions, they are now combined with robotic assisted possibilities, revealing a modern and advanced technological development of the medical/clinical units from the Balneal Resorts. This can improve, including medical adressability and increase health tourism in the respective resorts.

Material and Method

Specialty articles (Google Academic/ Scholar Database) was searched for robotic medical rehabilitation. dealing with robotic rehabilitation devices have been searched and analyzed, combined with on the ground quest for information regarding this situation in main balneal resorts in our country.

Results

The main pathology spectra, approachable by robotic devices, evoked in the literature, consists of: stroke, traumatic brain injury, spinal cord injury, Parkinson's disease/ tremor, muscular dystrophy, peripheral nerve lesions, Cerebral Palsy, Multiple Sclerosis, Spinal Muscular Atrophy.

Therapeutical natural factors used for neuro/ locomotor rehabilitation :

- salty and iodine waters (Govora);
- thermo-mineral waters (Felix, 1 Mai, Geoagiu)
- iodurate salty waters (Bazna)
- sulphur salty waters (Calimanești, Govora)

- sulphur thermal waters (Herculane)
- sapropelic mud and salty waters (Techirghiol, Amara, Sovata, Slanic Prahova);

Techirghiol and Baile Felix are the main resorts with expertise in neurorehabilitation and in the recent years have been provided with such robotic devices. **Conclusion**

Balneotherapy is acting by three main ways: thermally, mechanically and chemically. We suggest that the joint use perspective of natural therapeutic factors and physiotherapy with new robotic assistive interventions might increase the clinical importance of balneal resorts, and also include the modern trend of availing robotic assistive equipment to the benefit of patients.

Keywords

balneal resort;robotic assisted rehabilitation;neurological impairments

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-1158

CAN A NOVEL REHABILITATION ROBOT DEVICE CHANGE THE MUSCLE SYNERGY PATTERNS DURING WALKING IN INDIVIDUALS AFTER STROKE?

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Introduction/Background

Rehabilitation Robots for improvement of gait dysfunction with neurological deficits have been developed to regain the adequate gait control. Motor relearning with repetition of assisted motion by robotic devices is assumed to be able to make the efficient motor kinematics and kinetics. However, it is not clear what changes with the motor control via motor relearning process with using robot devices occur during walking in this population. In general, the nerve system was considered to control the motion using a low-dimensional modular organization of muscle activation. We aimed to clarify the effect of the robots for muscle synergy control using non-negative matrix factorization.

Material and Method

Robot Knee Ankle Foot Orthosis (RKAFO) that can control the knee motion during gait was used as robot device to assist to normalize gait kinematics. In 8 participants after stroke, EMG signals from ten leg muscles on both sides were measured before and after robot assist walking for 3 minutes at self-selected speed.

Results

The number of modules on paretic side was less than that on non-paretic side. Furthermore, fewer modules were needed to be account for muscle activation in walking before robot assist than after robot assist. The number of fractionated synergy from before to after assisted gait related to the increase of gait speed by using RKAFO.

Conclusion

Our results suggest the muscle synergy coordination during walking was changed with normal motion induced by using robot assist in post-stroke subjects. And also, increase in number of fractionated synergy was related with higher gait function.

Keywords

Rehabilitation Robots;Stroke;Gait

Conflict of interest

Disclosure statement:

This study is part of the “Kyoto University Center of Innovation project” which is supported by the Japan Science and Technology Agency (JST).

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-1159

THE EFFECT OF AN EXOSKELETON ROBOT ON GENU RECURVATUM DURING GAIT IN PATIENTS WITH CHRONIC STROKE: A FEASIBILITY STUDY

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Introduction/Background

Genu recurvatum is one of the common problems in patients with hemiplegia after stroke. For its improvement, it may be important to manipulate the ankle movement in coordination with the knee during gait. However, no device is available yet that can achieve it. We are developing a new exoskeleton robot that can assist knee and ankle joints simultaneously. This study aimed to test the feasibility of the robot in healthy individuals and patients with stroke, and to investigate its effect on genu recurvatum during gait.

Material and Method

Two healthy individuals and two patients with chronic stroke participated in this study. Healthy individuals received the robot-assisted gait training for 60 min in total. We assessed the safety of the training and muscle activities during gait with or without the robot-assistance. Patients with stroke had moderate lower-limb paralysis and genu recurvatum during gait. They received the robot-assisted gait training for 30 min in total. The robot consisted of a knee ankle foot orthosis and an actuator with pneumatic artificial muscles (Figure. 1). We adjusted the assist parameters to prevent their knee hyper-extension during the stance phase. We evaluated the range of knee joint motion, temporal and spatial parameters during over-ground gait without the

robot before and after the intervention.

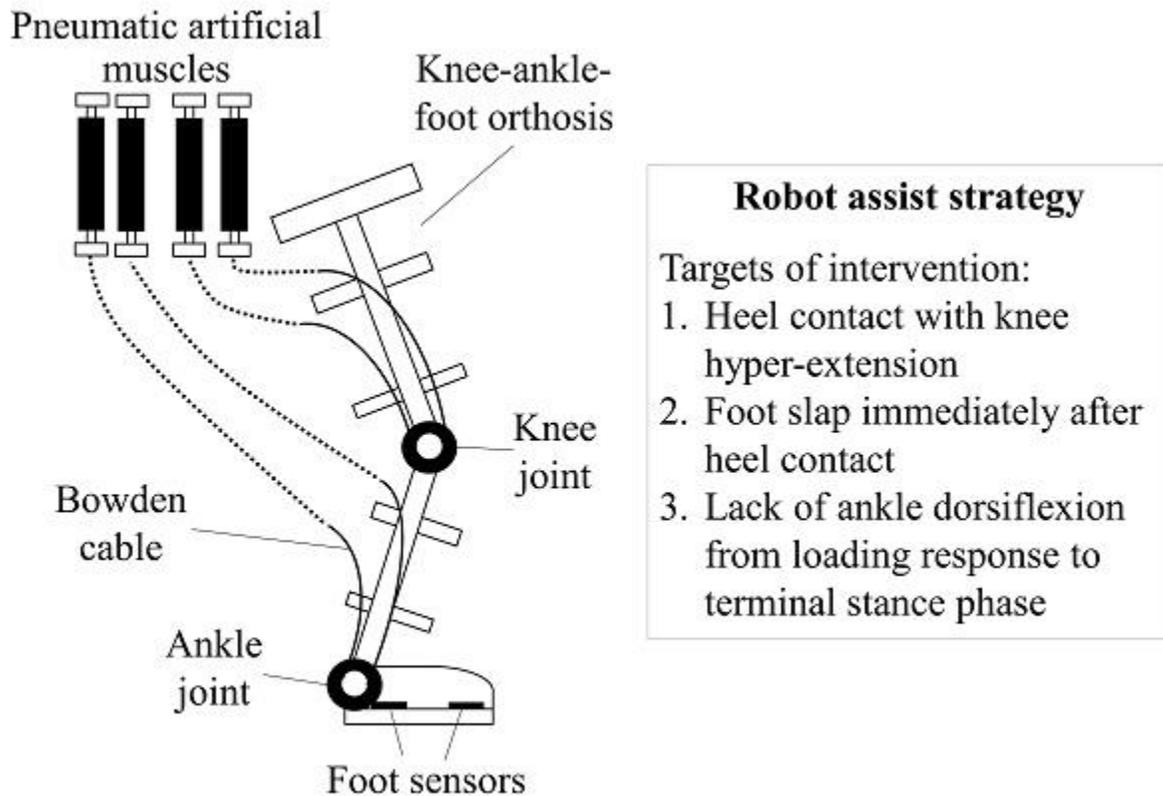


Figure.1 The schema of robot and robot assist strategy

Results

All participants safely completed the training. The robot decreased muscle activities during gait in healthy individuals. One of the patients showed a decrease in the maximum knee extension range during the stance phase, an increase in the maximum knee flexion range during the swing phase, and improvements in the temporal and spatial asymmetries.

Conclusion

The robot which can assist knee and ankle joints simultaneously has a potential to be a new therapeutic device for genu recurvatum in patients with hemiparetic stroke.

Keywords

Knee ankle foot orthosis;Pneumatic artificial muscle;Knee hyperextension

No conflict of interest

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-1199

UPPER LIMB ROBOT-ASSISTED REHABILITATION IN SUB-ACUTE STROKE: SLACKING OR ENGAGEMENT PROMOTION? EVIDENCE FROM PATIENT-ROBOT INTERACTIONS ANALYSIS.

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Introduction/Background

After stroke, interventions based on active repeated movements stimulate neuroplasticity and enhances upper limb motor outcomes. Robotic devices using interactive and adaptive programs offer the ability to perform a large number of movements, including in patients with severe paresis. However, some authors argued that assist-as-needed algorithms would not ensure optimal patient's participation. This retrospective study analyzed robot-patient interactions by measuring motor performance and robotic assistance parameters during robotic sessions.

Material and Method

16 patients (age 51 ± 15) with upper limb paresis due to stroke carried out a 16-session robot-assisted training combined with usual care during the sub-acute phase (time from stroke, 43 ± 15 days). The robotic program (5 days a week) comprised at least 2 consecutive series (S1 and S2) of 320 assisted reaching movements performed in the horizontal plane. Time of series completion, active-assisted motor performance (range of motion, accuracy, smoothness) and robotic assistance parameters during movements' execution were analysed between S1 and S2 every 4 sessions during the training program.

Results

Time of 320-movement series completion, robotic assistance and motor performance were not different between S1 and S2 over the training (table 1).

Table 1 : Intra session parameters (Results are expressed as mean (SD). ^aSeries1 Vs Series2, p < 0.05);
Stiffness: rigidity of the trajectory ($N.m^{-1}$), the greater the rigidity, the more the robot controls the trajectory;
Slottime: time before starting the robotic assistance (s) ; **Initiation:** number of times the robot assists the patient ;
Robot power: power delivered by the robot during the assistance (mWatt); **Movement extent:** minimum distance to the target (mm);
Jerk: regularity of movement ($m.s^{-3}$) ; **Straightness:** average deviations from the ideal trajectory (mm); **Time:** time to complete the first 80 movements of the series (s)

	Series 1 (S1)	Series 2 (S2)
Robotic assistance parameters		
Stiffness (N/m)	247.71 ± 40.87	249.03 ± 36.13
Slottime (s)	1.39 ± 0.34	1.30 ± 0.33
Initiation	5.35 ± 7.25	5.16 ± 6.74
Robot Power (mwatt)	96.21 ± 133.33	92.52 ± 53.96
Motor performance parameters		
Movement extent (mm)	7.45 ± 4.77	7.53 ± 4.40
Jerk ($m.s^{-3}$)	96.00 ± 23.20	92.66 ± 23.01
Straightness (mm)	9.68 ± 2.97	10.08 ± 2.85
Time (s)	192.72 ± 66.09	201.56 ± 82.09

Conclusion

The results indicated that a highly repetitive robot-assisted training for the upper limb can be associated with both sustained active participation and motor performance during robotic sessions. Robotic algorithms might optimize patient's active engagement and motor performance in spite of an unparalleled number of repetitions compared to usual care.

Keywords

Robotic;Stroke;Interaction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-1236

HYBRID BRAIN-MACHINE INTERFACE TO PALLIATE THE MOTOR HANDICAP CAUSED BY DUCHENNE MUSCULAR DYSTROPHY: A CASE REPORT

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Introduction/Background

We describe a hybrid Brain-Machine Interface (hBMI), designed for improving DMD (Duchenne Muscular Dystrophy) patients' autonomy. We assess relevance of our hBMI with 2 DMD patients performing the virtual driving task shown in figure 1. To adapt our hBMI to patients' motricity, it allows hand movement (real or intentional) detection by processing signals from electroencephalography (EEG), electromyography (EMG), and joysticks.

It allows using different applications, by controlling an object (real or virtual) trajectory through movements of right hand, left hand, or both hands simultaneously. Right and left hand movements result in respectively a left and right rotation, whereas both hands movements move the object forward.



Figure 1: Karting driving task

Material and Method

Patients (men, 20/28 years) realized home-based experiments, using a portable equipment, thanks to a collaboration with Lille University Hospital and Centre H el ene Borel (Lille, France). As shown in figure 2 (Left) patient is seating in front of a computer displaying the task and recording 12 EEG signals from the primary motor cortex. Figure 2 (Right) shows EMG electrodes location over each hand.

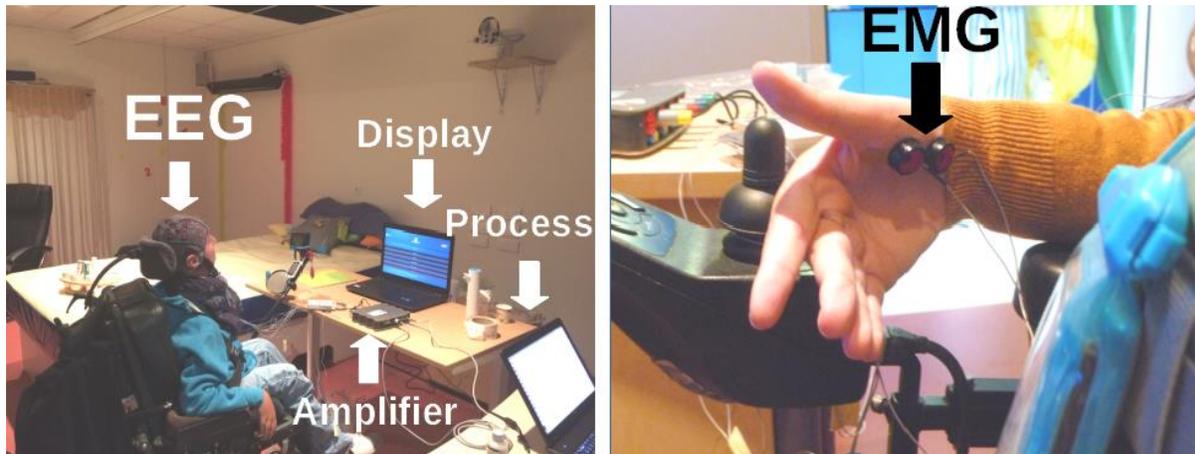


Figure 2: (Left): Hybrid BMI experiment overview. (Right): EMG location

Patients instruction was to make 2 laps, by making hands movements detected in real time by processing EMG signals in OpenVIBE software.

Results

Figure 3 compares patients performing times (in seconds) to those of 10 healthy subjects performing the same task. Patients performances look quite similar to those of healthy subjects, suggesting that our hBMI is relevant for DMD patients. Moreover, we observe a learning effect between the two laps, expecting improvement with training.

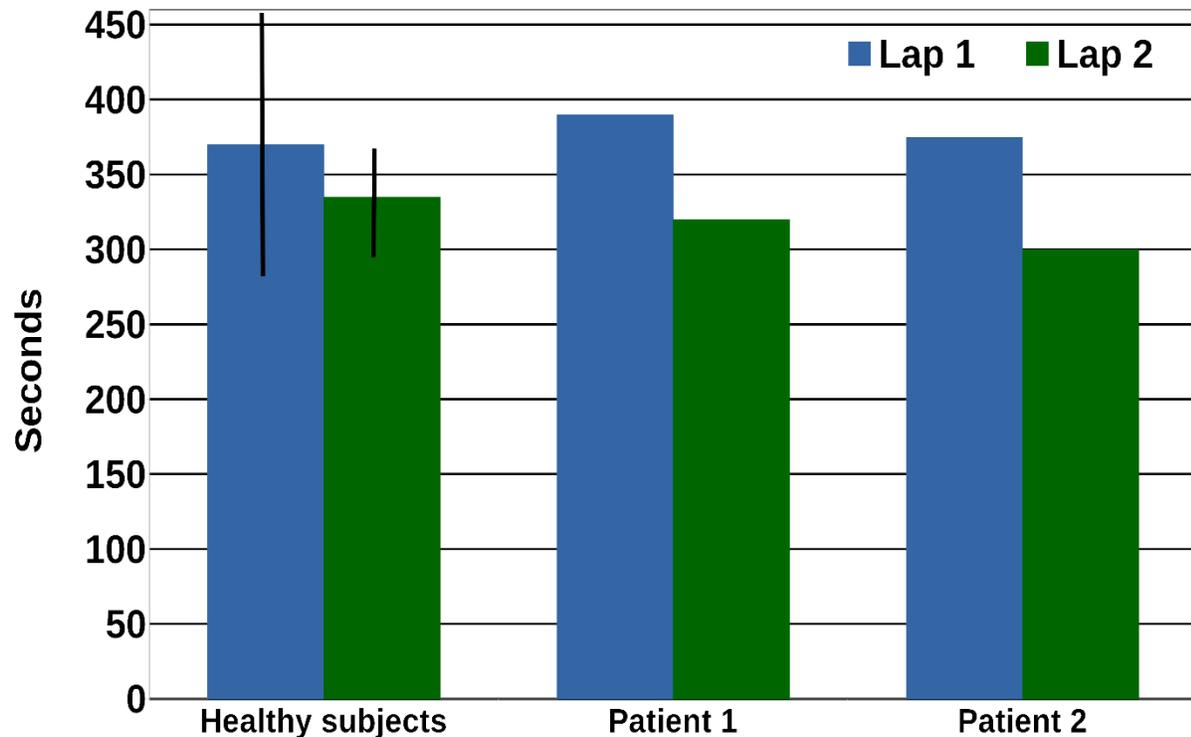


Figure 3: Lap times (seconds) for healthy subjects and DMD patients

Conclusion

After this conclusive preliminary study, we plan further experiments including more DMD patients. Offline EEG processing enables to identify motor-related patterns, necessary to detect movements at the cerebral level, and to propose an interface adapting to patient motricity.

Keywords

Duchenne muscular dystrophy; hybrid Brain-Machine Interface; EMG/EEG signals processing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-1508

SIMPLE REAL-TIME CLOUD-CONNECTED ACTIGRAPHY SOLUTION FOR MONITORING PATIENT ACTIVITY USING MOBILE PHONES

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Introduction/Background

Rehabilitation patient activity is not typically monitored in real-time due to lack of suitable actigraphy devices. We present an open-source actigraphy system with integrated real-time cloud data storage based on mobile phones for potential use in patient activity monitoring and quantitation.

Material and Method

An iPhone program was created to stream an actigraphy score to a cloud data storage service, Adafruit IO, in real-time. The actigraphy score is calculated as vector magnitude from three-axis accelerometer data at 2.5 second epochs.

Results

Actigraphy data was successfully streamed to the cloud storage and visualization platform at up to 30 Hertz, with 60 Hertz possible at a higher cost tier. Data was represented as decimal with two significant digits of precision. No movement at all is normalized to 0. Maximum vector magnitude with moderate walking was 0.39. Maximum vector magnitude with jogging was 1.02. Maximum vector magnitude with the phone in the hand during a throwing motion was 5.47. iOS reported energy draw was low (level 1 out of 20).

Conclusion

In summary, we present an open-source design for a simple and inexpensive real-time cloud-connected actigraphy system for rehabilitation patients. Alternative platforms and devices are discussed, as are security and cost implications. The widespread use of mobile devices and the iOS platform, with optional integration of global positioning coordinates and other phone data, are advantageous compared to purpose-built existing actigraphy solutions.

Keywords

iOS;Actigraphy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-1630

PROPRIOCEPTIVE AND MOTOR TRAINING USING THE HIGH PERFORMANCE ROBOTIC DEVICE HUNOVA: PROTOCOL OF A RANDOMIZED, CONTROLLED TRIAL IN PATIENTS WITH LOWER LIMB POST-TRAUMATIC CONDITIONS.

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Introduction/Background

Lower limb trauma can cause kinetic chains impairments that compromise quality of movement and postural stability. A pilot study is now being conducted in INAIL Rehabilitation Center of Volterra using Hunova, a robotic system for lower limbs and core stability training and evaluation, to examine whether robot-assisted therapy is effective in motor control and gait performance recovery when compared to conventional rehabilitation programs.

Material and Method

Hunova consists of two mobile platforms for exercising in both seated and upright mono and bipodalic conditions. The device can operate in passive, active and assistive mode, detecting compensatory trunk movements with an inertial sensor and giving sensory feedback during exercise.

The ongoing open randomized controlled trial foresees the enrolment of fifty-six patients with functional locomotor impairments following work-related injuries of the lower limbs. Patients are randomly allocated to experimental or control group and receive a 3 weeks rehabilitation program and a pre and post treatment assessment including robotic, clinical and instrumental non-robotic evaluations.

All participants undergo an individualized rehabilitation protocol, tailored to specific patient needs and injury characteristics; the experimental group perform instability and resistive training with Hunova; control subjects follow a training program using traditional non-robotic equipment.**Results**

Robotic therapy was well tolerated and easy to manage. An interim analysis on 37 patients shows that both groups benefited the proposed training protocol and robotic therapy was not inferior to conventional rehabilitation; moreover, patients with distal lower extremity injury show a significantly greater improvement in statistic stability than patients with proximal lower extremity injury.

Conclusion

Hunova allows to measure significant parameters of static and dynamic stability and can centralize a complex progression of exercises to recover trunk control and reactive balance after traumatic injuries. Final results of the study will contribute to explore the rule of robotic therapy in orthopedic conditions.

Keywords

robotics;proprioception;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-1823

PSYCHOSOCIAL IMPACT OF POWERED WHEELCHAIRS ON PARTICIPATION PROFILE OF THEIR USERS

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Introduction/Background

Disability is a worldwide health issue and demands for support with assistive technologies, like powered wheelchairs (PW). The purpose of this study is to assess the psychosocial impact of PW on social participation and quality of life of its users.

Material and Method

From May to October 2017, 30 PW users were interviewed using the Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST), the Psychosocial Impact of Assistive Devices Scale (PIADS) and the Activities and Participation Profile related to Mobility (APPM), in addition to some demographic, clinical and powered wheelchair related questions. Descriptive and correlational statistics were performed.

Results

From the 30 participants sample, 18 were men (60%) and 12 women (40%). The mean age was 40.63, ranging from 23 to 65 years old. Cerebral palsy was the most prevalent diagnosis (37%). All the participant's current PW was being used for at least 1 year. According to the data obtained from APPM, there was an average moderate limitation in social participation, with a mean score of 1.72 (SD = 0.69). The APPM score was negatively correlated with all QUEST scores, meaning the most satisfied users were the ones with a better performance on social participation (with less limitations and, therefore, a lower APPM score). A worst participation profile was noted among the users who use wheelchairs for a longer period. There was no relation between the psychosocial impact of the PW and participation.

Conclusion

According to our findings, the user's social participation doesn't seem to be related with the psychosocial impact of the PW. Although, there was an overall positive psychosocial impact of the powered wheelchairs, and, therefore, an increase in the quality of life of the users. Also, higher levels of satisfaction with the PW characteristics and assistance resulted in better participation outcomes.

Keywords

Powered Wheelchair;Participation;Psychosocial impact

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-1827

PSYCHOSOCIAL IMPACT OF THE MANUAL AND POWERED WHEELCHAIRS ON THE PARTICIPATION. WHAT HAVE AGE AND TIME SINCE DIAGNOSIS GOT TO DO WITH IT?

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Introduction/Background

Recognizing that assistive technology (AT) for mobility play an important role in their users' participation, it will be useful to rehabilitation professionals and services to assess if perceived psychosocial impact of such devices and associated services, systems and policies contribute to enhance lifelong capacity and performance. To build comprehensive rehabilitation services, information on a person's experience in every aspect of his/her life is essential, including the role of psychosocial impact of the wheelchair on functioning and, particularly, in participation. "What have time since diagnosis (years) and age got to do with it?" was the other question addressed in this survey.

Material and Method

From May 2017 to January 2018, 73 wheelchair's users (35 powered and 38 manual wheelchairs), mean age 48.66 +/- 15.68 years, 53.4% female, with mix diagnosis, were interviewed using the Psychosocial Impact of Assistive Devices Scale (P-PIADS), the Activities and Participation Profile related to Mobility (PAPM) and demographics, clinical and questions about the wheelchair.

Results

The participation profiles revealed that 8.2% of the participants present no restrictions, 13.7% mild, 32.9% moderate and 45.23% severe restrictions in social participation. All –PIADS subscales (competence 1.36, adaptability 1.29, self-esteem 1.04) and P-PIADS total (1.25) were positive and moderately correlated to the activities and participation profile. Age and type of wheelchair do not influence statistically the participation, however, number of years on a wheelchair and medium time since diagnosis do.

Conclusion

These results encourage the authors to keep studying the impact of the manual and powered wheelchairs on participation to develop robust evidence for rehabilitation, particularly after finding that age and time since diagnosis do not determine participation of the wheelchair's

users. A wheelchair (manual or powered) correctly prescribed and trained represents an opportunity for improving competency, adaptability and self-esteem of its user at any time since diagnosis and throughout the lifetime.

Keywords

Participation;Psychosocial impact ;Wheelchair

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-1828

ROBOTIC TREATMENT OF THE HAND ACCORDING TO IMPAIRMENT SEVERITY IN PATIENTS AFFECTED BY CHRONIC STROKE: A MONOCENTRIC LONGITUDINAL STUDY

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Introduction/Background

In 35% of cases stroke results in a severe disability of the hand and few studies investigated the effects of a robotic treatment in motor recovery after stroke. The present study investigated the efficacy of a hand rehabilitative treatment by means of Gloreha ® robotic glove in motor recovery in subjects affected by chronic stroke with different impairment.

Material and Method

Monocentric longitudinal study. Chronic stroke subjects were assigned to two groups according to their ability to actively extend or not wrist for at least 20 degrees and underwent respectively active-assisted and passive Gloreha ® treatment of the hand. All subjects were evaluated before and after treatment with Modified Ashworth scale, Upper Extremity Fugl-Meyer Assessment (FM), Motricity Index (MI), Motor Power Scale (MP), wrist goniometric measurement, dynamometric measure of strength, Nine Hole Peg Test, Grip Test, Quick Dash Scale. Treatment was provided for 20 consecutive sessions, lasting 40 minutes each.

Results

Thirteen subjects were enrolled, 6 underwent active-assisted treatment and 7 passive treatment. Active-assisted group showed significant improvement in: MI ("pinch" item $p=0,023$); FM ("shoulder-elbow" section $p=0,026$ and total score $p=0,027$); MP ("hand closure" item $p=0,020$, "dorsal extension" $p=0,014$ and total score $p=0,026$); Ashworth (total score $p=0,039$); strength (dynamometer $p=0,003$). Passive group showed a significant improvement in: FM ("shoulder-elbow" score $p=0,026$, wrist score $p=0,016$ and total score $p=0,017$); MP ("hand opening" item $p=0,011$, "hand closure" item $p=0,011$), FM (total score $p=0,016$); Ashworth (fingers score $p=0,011$, supination score $p=0,008$ and total score $p=0,017$).

Conclusion

Gloreha ® revealed to be well tolerated, able to target hand treatment on differently impaired subjects. Severely impaired subjects can benefit from robotic treatment in terms of spasticity, whereas less impaired in terms of strength and function. The combination of repetitive, intensive, task oriented exercises with the sensory-motor feedback results particularly appropriate, in accordance with action observation therapy.

Keywords

stroke;robot;hand

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-2705

SHOULDER MOTION ASSISTANCE USING HAL (HYBRID ASSISTIVE LIMB) SINGLE-JOINT TYPE FOR IMPROVEMENT OF SHOULDER EXTENSION-FLEXION MOTION IN PATIENTS WITH PARALYZED DELTOID MUSCLES

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Introduction/Background

Patients with paralyzed control of deltoid muscles after neurological disorders tend to have impaired shoulder flexion when raising arm, compensated by excessive activation of trapezius muscles leading to shrugged shoulders. We developed a device for shoulder motion assistance using single-joint type HAL for training of such patients, by extending the HAL's original function of providing joint motion assistance in accordance with bioelectric activation of relevant muscles. We report the development and assessment of the assistance by the device with healthy participants.

Material and Method

The single-joint HAL was fixed to a custom-designed platform and upper arm attachment, and aligned 3 cm below the acromion process. The surface electrodes to induce flexion motion were attached on anterior deltoid. This cross-sectional feasibility study included six healthy adult men with no impairment in shoulder motion (Figure). During shoulder motion with and without the device, activity of selected muscles of the shoulder was recorded using a wireless superficial electromyography device. Shoulder movement was captured using a three-dimensional motion analysis system.



Results

The HAL supported smooth flexion-extension of the arm at the shoulder joint, with no negative effects on vital signs, shoulder fatigue, and shoulder pain. The HAL decreased muscle activity levels, with a 55% decrease in trapezius muscle activity. The upward rotation angle of the scapula was significantly lower with the HAL at 120 degrees of shoulder flexion.

Conclusion

The single-joint HAL provided safe and effective assistance to scapular plane shoulder flexion-extension among healthy adults. Activity of trapezius muscles was significantly reduced during the assisted motion, suggesting that the device might be able to provide an effective method for improvement of patients with reduced control of deltoid muscles accompanied with compensatory excessive activation of trapezius muscles.

Keywords

Hybrid Assistive Limb;shoulder motion assistance;feasibility

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-2093

ROBOTIC REHABILITATION TRAINING WITH A NEWLY DEVELOPED UPPER LIMB SINGLE-JOINT HYBRID ASSISTIVE LIMB (HAL-SJ) FOR ELBOW FLEXOR RECONSTRUCTION AFTER BRACHIAL PLEXUS INJURY

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Introduction/Background

This study aimed to evaluate the effectiveness and safety of using the upper limb single-joint Hybrid Assistive Limb (upper limb HAL-SJ) during elbow flexion training following elbow flexion reconstruction for brachial plexus injury (BPI). We present cases of two patients in whom the upper limb HAL-SJ was implemented 5 and 7 months postoperatively following elbow flexion reconstruction for BPI.

Material and Method

They underwent elbow flexion reconstruction with intercostal nerve-to-musculocutaneous nerve transfer (ICN-MCN transfer) after BPI. Postoperative training using the upper limb HAL-SJ was started from the Manual Muscle Testing (MMT) [1] elbow flexion power to MMT [3] once every week or every 2 weeks. Clinical evaluation included the MMT and active flexion ROM of the elbow joint at the start of every session.

Results

No serious adverse events were observed during the upper limb HAL-SJ training in two patients. Both patients could implement elbow training using the upper limb HAL-SJ even in MMT [1] of their elbow flexion power. Improvement in elbow flexion power of MMT [3] was observed after 15 sessions using upper limb HAL-SJ at 10 months postoperatively in case 1. Remarkable improvements in elbow flexion power were observed, as indicated by improvements in MMT from [1] to [3], after 32 sessions using the upper limb HAL-SJ at 16 months postoperatively in case 2.

Conclusion

Training with the upper limb HAL-SJ was performed safely and effectively in two patients with elbow flexion reconstruction with intercostal nerve transfer after BPI.

Keywords

robotics rehabilitation;upper limb single-joint Hybrid assistive limb;brachial plexus injury

Conflict of interest

Disclosure statement:

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C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-2718

ROBOTIC INTERVENTION RESHAPES GAIT COORDINATION IN MYELOPATHY PATIENTS WITH RESIDUAL MOTOR DISTURBANCES AFTER SURGERY

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Introduction/Background

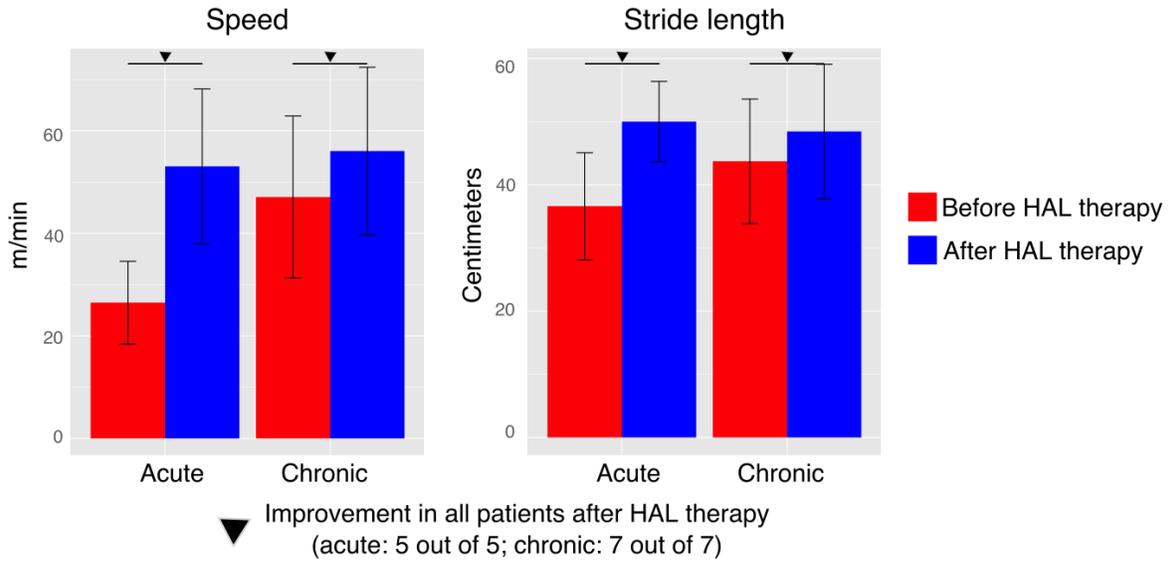
Ossification of the Posterior Longitudinal Ligament (OPLL) of the spine may induce motor impairment due to compressive myelopathy. Despite surgical decompression, some patients have residual motor disturbances; after surgery, there is no available intervention for this population. We propose the use of Hybrid Assistive Limb (HAL) robot to promote gait recovery in OPLL patients after decompression surgery.

Material and Method

Five acute and 7 chronic patients underwent 10 sessions of HAL therapy. Before the first and after the last session, walking performance was evaluated using the 10 meters walk test. To record segmental kinematics, a motion capture system (VICON MX, 100Hz) was used. Data was analyzed regarding the elevation angles described for thigh, shank and foot. Kinematic data from 8 healthy volunteers was used for comparison.

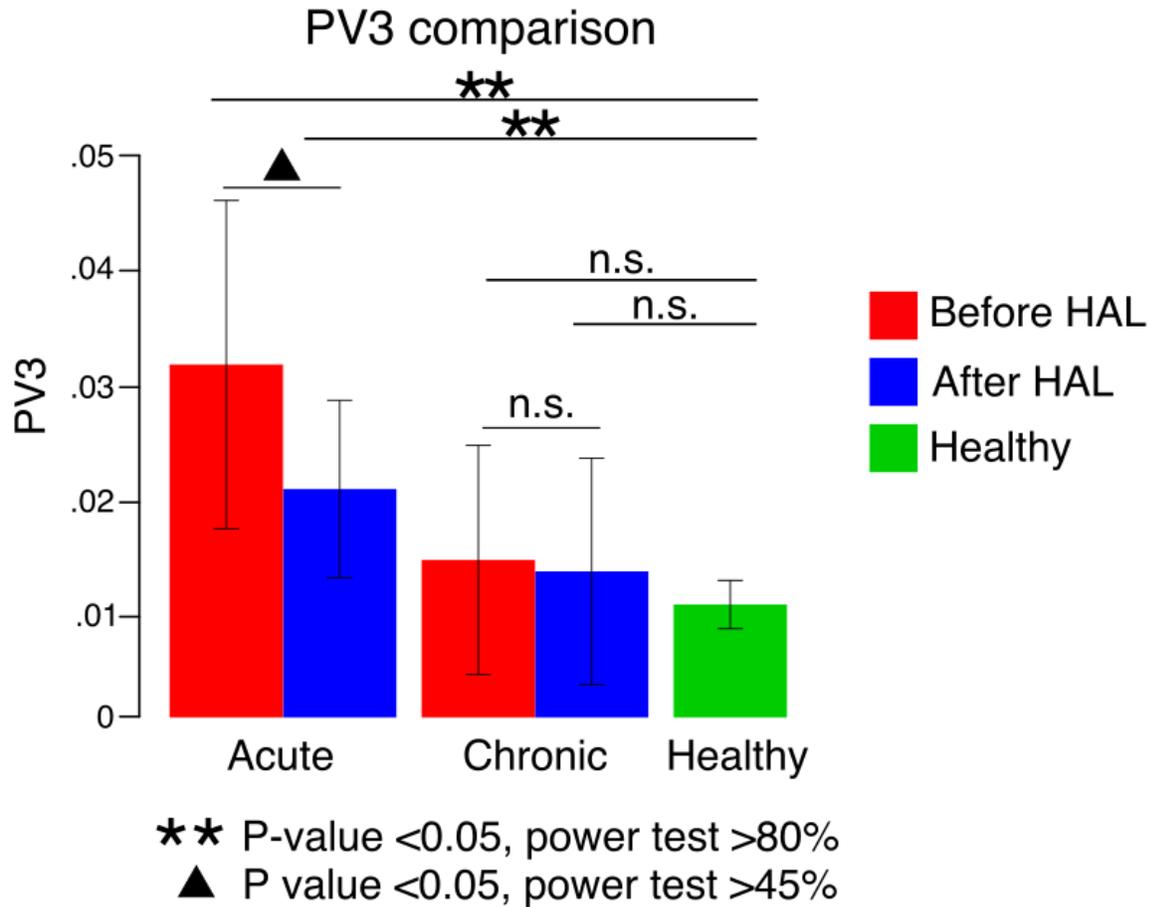
Results

HAL therapy improved the waling performance by increasing the speed and stride length in acute and chronic groups (figure 1).



Kinematics evaluation showed improvement in plane fitting for acute group (PV3 mean; pre: 0.03 ± 0.01 , post: 0.02 ± 0.007 . P-value: 0.02) but not for chronic group after HAL therapy. When compared to healthy, tendency of PV3 recovery was observed for acute group only (PV3 mean; healthy: 0.009 ± 0.002 . P-values; pre-acute Vs healthy: <0.01 ; post-acute Vs healthy: <0.01).

Comparisons between chronic and healthy did not show significant difference (Figure 2).



Conclusion

HAL therapy improved the walking performance of acute and chronic patients. Interestingly, improvement of loop planarity was only found for acute patients suggesting gait coordination recovery. Chronic patients may have achieved a functional level of coordination through previous rehabilitation and daily life activities.

Keywords

Myelopathy; Robotic intervention; Gait coordination

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-2719

GAIT TRAINING WITH A POWERED EXOSKELETON IMPROVE GAIT COORDINATION IN ACUTE STROKE PATIENTS

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Introduction/Background

Stroke is a leading cause of acquired disability in adults. Despite rehabilitation, some patients cannot achieve a functional motor recovery. The Hybrid Assistive Limb (HAL) robot is an exoskeleton able to support and enhance the lower extremities performance of patients using their own bioelectrical signals. We think HAL may help acute stroke patients achieve an adequate motor recovery.

Material and Method

Eight hemiparetic patients underwent 9 sessions of HAL. A motion capture system (VICON MX, 100Hz) was used to record segmental kinematics regarding the elevation angles described for the thigh, shank and foot before the first and after the last session. Data from 9 healthy volunteers was used for comparison.

Results

Reduction of the percentage of variance was observed for the paretic (par) side of patients reaching similar levels to healthy (h) volunteers (P-value: pre-par Vs post-par: 0.039, pre-par Vs h: 0.018, post-par Vs h: 0.49). Tendency of recovery for the non-paretic side also was observed but was still significantly different from healthy group after HAL (P-value <0.01).

Conclusion

HAL improved significantly the planarity of coordination in hemiparetic acute stroke patients. This novel intervention offers a new approach to improve motor recovery in this population.

Keywords

Stroke;Gait coordination;Powered exoskeleton

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-2166

ROBOTIC REHABILITATION TRAINING WITH A NEWLY DEVELOPED UPPER LIMB SINGLE-JOINT HYBRID ASSISTIVE LIMB (HAL-SJ) FOR AN ADULT WITH BIRTH PALSY

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Introduction/Background

The birth palsy is a peripheral nerve palsy resulting in disturbance in activities of daily living (ADL), and it occurs the co-contraction due to nerve misdirection phenomenon, such as co-contraction of between the biceps and deltoid, biceps and triceps. This case study aimed to report the effectiveness and safety of using the newly developed upper limb single-joint Hybrid Assistive Limb (upper limb HAL-SJ) for an adult with birth palsy.

Material and Method

A 40-year-old man sustained the both birth palsy when he was born. He has both brachial plexus palsy (upper type, C5, 6, 7) with co-contraction between the deltoid and biceps. He did not undergo any operations. The rehabilitation training with left elbow exercise using the upper limb HAL-SJ was implemented for 12 sessions 3 every week as an inpatient. At baseline and after the upper limb HAL-SJ training, active flexion ROM of the elbow joint, elbow flexion 10-second testing, and dynamometric testing using a hand-held dynamometer (HHD) for the elbow flexion were evaluated without use of the upper limb HAL-SJ.

Results

The patient completed all 12 sessions of training using the upper limb HAL-SJ. No serious adverse events were observed during the upper limb HAL-SJ training. Improvements in active flexion ROM of the elbow joint, elbow flexion 10-second testing, and HHD for the elbow flexion were observed after 12 sessions using the upper limb HAL-SJ.

Conclusion

The rehabilitation training with the upper limb HAL-SJ could be performed safely and effectively for an adult with birth palsy.

Keywords

robotics rehabilitation;upper limb single-joint Hybrid assistive limb

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-2284

CLINICAL ASSESSMENT OF STAND-UP AND SIT-DOWN MOTION ASSIST BY PERSONAL STANDING MOBILITY QOLO IN PEOPLE WITH SPINAL CORD INJURY

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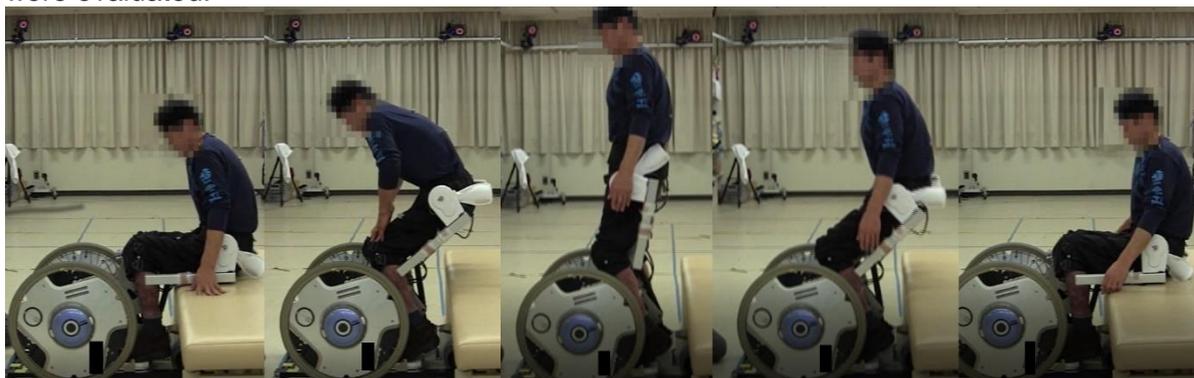
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Introduction/Background

We developed Qolo, a new personal mobility device for those with motor disability in their lower limbs. It assists sit-to-stand and stand-to-sit postural transitions, as well as navigation in standing posture with hands-free operation. Its mechanism to assist postural transition is implemented with passive gas springs without using electric actuators, making it compact, light-weight and low cost. The purpose of this study is to report a clinical assessment of the device with people with spinal cord injury (SCI), and investigate plausibility of the device and discuss further technical improvements.

Material and Method

Four participants with SCI (age: 31-52y, 3 males and one female, neurological level: T10-L3, AIS: A-C, MMT Hip Ext.: 0-1, Knee Ext.: 1-5) were asked to conduct stand-up and sit-down postural transitions using the device (Figure). Feasibility and duration of the assisted motions were evaluated.



Results

Two of the participants conducted stand-up motion by themselves using the device (duration: 14 and 16s). The other two needed external posture support. The main factor that differed in relation to the ability of performing stand-up motion using the device was MMT Knee Ext;

greater than 2 for the group that was able to perform, and 1 for the other. All participants conducted sit-down motion by themselves using the device without external support (10-15s).

Conclusion

Capability of the device to assist posture transition was shown for some SCI people through the experiment. At the same time, greater assistance on the knee joint was found to be necessary. Because the device utilizes voluntary control of the trunk to induce assisted motion of knee and ankle joints for posture transition, we considered that assistance for trunk motion would be helpful for them. For the next step, we plan to introduce a mechanism for lumbar posture stabilization that can support motion of hip in coordination with knee.

Keywords

spinal cord injury;posture transition;mobility device

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-2429

MUSCULAR ACTIVITY CHANGES DURING VOLUNTARY WALKING USING ROBOT SUIT HAL (HYBRID ASSISTIVE LIMB) IN A PATIENT WITH SEVERE SPINAL CORD DISORDER

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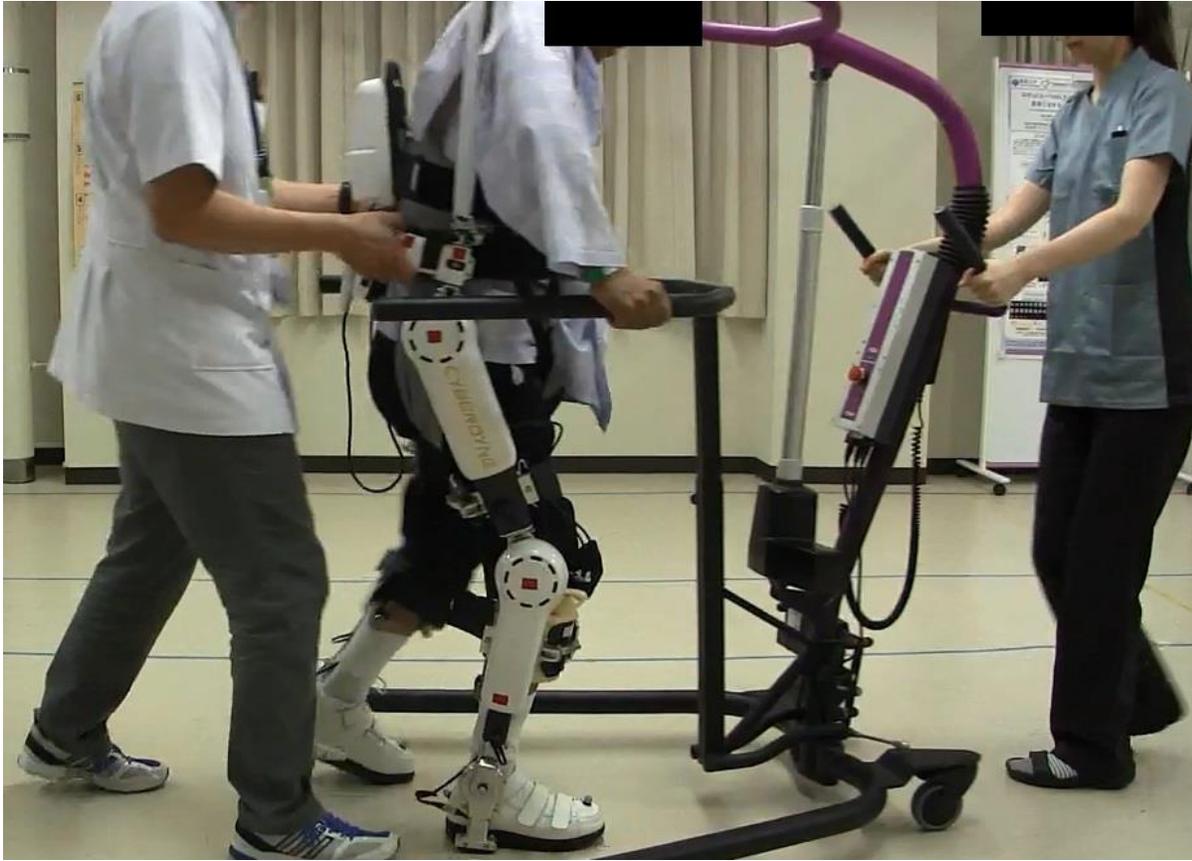
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Introduction/Background

There are several reports on gait improvement after clinical intervention using a wearable robot suit HAL (Hybrid Assistive Limb) in patients with gait impairment after spinal cord disorders. HAL assists motion of the bilateral hip and knee joints during walking in accordance with voluntary joint motion intension of the user, based on bio-electric activation of the relevant muscles. However, movement-physiological or biomechanical detail behind the functional improvement by using the robot has not been discussed enough as far as we know. In this study, gait and muscle activity during walking using the robot are recorded and analyzed in a patient with gait impairment after severe spinal cord disorder.

Material and Method

The participant was a 64 years old man who showed severe sensorimotor dysfunction in the lower limbs, diagnosed as compressive myelopathy after cervico-thoracic ossification of posterior longitudinal ligament. HAL intervention was started 43 days after a decompressive surgery and included 10 sessions in total (Figure). In all sessions, gait and lower limb muscle activity during walking were recorded using a motion capture (VICON MX) and a wireless EMG (Delsys Trigno Lab) measurement systems



Results

Comparing gait with and without HAL through the sessions, the walking speed, the step length and the ratio of swing to stance duration were greater in gait with HAL than without HAL. For the EMGs, activation of quadriceps muscles during stance was smaller and that of gluteus maximus (GMAX) was greater in gait with HAL than that without HAL in later sessions. The amount of increment of GMAX activation using HAL increased throughout the sessions.

Conclusion

Gait and lower limbs muscle activity were recorded through the intervention and analyzed in a patient with severe spinal cord disorder. Walking using the robot provided chances to walk in larger and smoother gait, which might lead to the gait improvement after the intervention.

Keywords

Hybrid Assistive Limb;gait recovery;spinal cord disorder

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.18 PRM Interventions Research - Robots, Aids and Devices

ISPR8-2472

VOLUNTARY ELBOW EXTENSION-FLEXION TRAINING USING SINGLE JOINT HYBRID ASSISTIVE LIMB (HAL) FOR SPASTIC CEREBRAL PALSY PATIENTS

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Introduction/Background

Spastic diplegic patients with cerebral palsy (CP) have difficulty in performing activities of daily lives (ADLs) using their upper arms, due to weakness and abnormal tonus of the relevant muscles. Hybrid Assistive limb (HAL) single joint type for upper limbs is a portable wearable robot developed for elbow motion support. The purpose of this study is to evaluate feasibility and efficacy of HAL for spastic diplegic CP patients.

Material and Method

Two patients enrolled in this study. Case 1 was a 19 year-old male, classified as the Gross Motor Function Classification System (GMFCS); level IV and the manual ability classification system (MACS); level III. Case 2 was a 17 year-old male, GMFCS; level III, MACS; level II. Both had difficulty in voluntary elbow extension in ADLs, such as changing clothes. HAL intervention included 8 sessions. Each session consisted voluntary elbow extension-flexion training using HAL and clinical evaluation. The intervention was done for both sides in Case 1 and for the right side in Case 2.

Clinical assessments were conducted before, during and after the intervention. Surface electromyography was used to evaluate the muscle activities of the biceps and triceps brachii during elbow flexion and extension. The modified Ashworth scale (mAs) score was evaluated before and after each session.

Results

In case 1, co-contraction during elbow flexion decreased during and after HAL session, compared to before. In both cases, voluntary elbow extension and flexion angle increased after intervention. In addition, the mAs score decreased after each session.

Conclusion

In both cases, elbow voluntary extension-flexion training using HAL was safe and feasible. We considered that it contributed to improvement of elbow motion control by reducing co-

contraction of flexor and extensor muscles. It might be a feasible option for rehabilitation in CP patients.

Keywords

cerebral palsy; Hybrid Assistive Limb (HAL); elbow extension-flexion

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.19 PRM Interventions Research - Miscellaneous

ISPR8-0502

EFFECT OF SUPERVISED IMPLEMENTATION OF THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH ON PHYSIOTHERAPEUTIC ELECTRONIC PATIENT RECORDS: A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Documentation of the International Classification of Functioning, Disability and Health (ICF) components in physiotherapeutic electronic health records may improve interdisciplinary productivity and efficiency. We examine the effect of targeted teaching and personalized feedback on physiotherapists' completion of physiotherapeutic patient records and description of these components.

Material and Method

A randomized controlled trial in a tertiary care hospital in Belgium. Ten physiotherapists were included in the intervention group and five physiotherapists were in the control group. The intervention (2015-2016) included targeted teaching and weekly personalized feedback for a period of four weeks regarding reporting of ICF components in electronic patient records. At baseline, after targeted training, after each round of personalized feedback, and at long-term follow-up, electronic patient records for 10 random patients per physiotherapist in the intervention group were reviewed for completion of a physiotherapeutic patient record and reporting of ICF components. Data for the control group were collected at baseline, after the third round of feedback, and at long term follow-up. 670 and 140 patient records from 729 unique patients were reviewed for the intervention and control group, respectively.

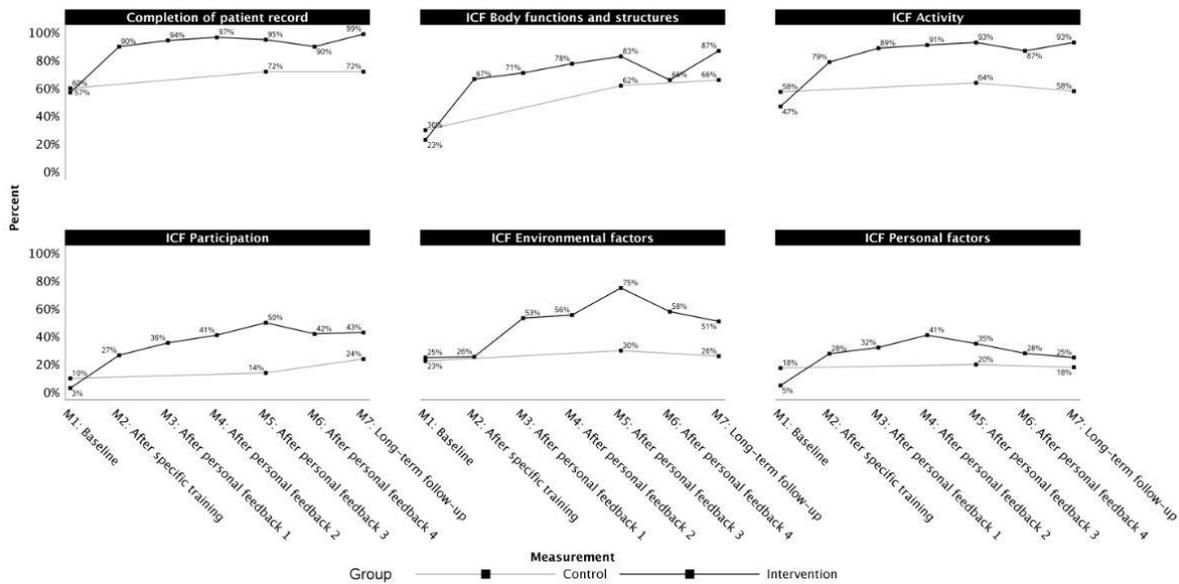
Results

In the intervention group, all outcomes improved (Table 1 and Figure 1). Although reporting declined for several components between personalized feedback and at long-term follow-up, at both occasions patient record completion and reporting of ICF components of activity, participation, and personal factors were significantly higher compared to the control group. For environmental factors, the significant effect after personalized feedback disappeared at long-term follow-up. Reporting of body functions and structures improved similarly across groups.

Table 1 Repeated measures analysis for completion of patient record and reporting of ICF components in the intervention versus the control group.

	Completion of patient record	ICF Body functions and structures	ICF Activity	ICF Participation	ICF Environmental factors	ICF Personal factors
	Est. (SE), P-Value	Est. (SE), P-Value	Est. (SE), P-Value	Est. (SE), P-Value	Est. (SE), P-Value	Est. (SE), P-Value
Intercept	4.55 (2.39), 0.06	-.77 (1.13), 0.49	2.71 (1.11), 0.015	-2.06 (0.78), 0.009	-1.23 (0.80), 0.12	-2.12 (0.54), <0.001
Intervention group	.68 (1.75), 0.70	-.32 (1.09), 0.77	-.75 (1.01), 0.46	-1.65 (0.90), 0.07	.14 (0.75), 0.84	-1.28 (0.64), 0.044
After personalized feedback 3	0.55 (0.43), 0.20	1.83 (0.58), 0.002	.17 (0.47), 0.71	-.08 (0.71), 0.91	.41 (0.50), 0.41	.28 (0.55), 0.61
Long-term follow up	.54 (0.47), 0.25	2.11 (0.60), 0.001	-.12 (0.48), 0.80	.64 (0.66), 0.33	.20 (0.52), 0.704	.17 (0.56), 0.80
After personalized feedback 3 x Intervention	2.68 (1.05), 0.011	1.27 (0.79), 0.11	3.03 (0.77), <0.001	3.67 (0.96), <0.001	1.88 (0.64), 0.004	2.10 (0.75), 0.005
Long-term follow up x Intervention	4.71 (1.65), 0.004	1.46 (0.93), 0.12	3.40 (0.90), <0.001	2.63 (0.94), 0.005	.97 (0.69), 0.16	1.74 (0.76), 0.023

SE= standard error



Conclusion

Targeted teaching and personalized feedback improved completion of physiotherapeutic patient records and reporting of ICF components. Intervention strategies should factor in regular reminders to ensure continued reporting of ICF components in the long term.

Keywords

International Classification of Functioning, Disability and Health; Electronic Health Records; Randomised controlled trial

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.19 PRM Interventions Research - Miscellaneous

ISPR8-1244

EFFICACY OF EXTRACORPOREAL SHOCK WAVE THERAPY FOR LOWER LIMB TENDINOPATHY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

Extracorporeal shock-wave therapy (ESWT), including radial (RaSW) and focused (FoSW) shock-wave types, has been widely used in clinical practice for managing musculoskeletal disorders such as tendinopathy. The difference in therapeutic effects between two shock-wave characteristics with different dosage levels for lower extremity (LE) tendinopathy remains controversial. The purpose of this systematic review and meta-analysis was to determine the difference in effectiveness between RaSW and FoSW as well as between high-dosage (HD) and low-dosage (LD) applications for patients with LE tendinopathy.

Material and Method

A comprehensive search of online databases and search engines, namely Medline, PubMed, Excerpta Medica dataBASE, the Cochrane Library Database, the Physiotherapy Evidence Database (PEDro), and Google Scholar, was performed. We included randomized controlled trials (RCTs) and observational studies reporting the efficacy of ESWT in treating LE tendinopathy. The included articles were subjected to a meta-analysis and risk of bias assessment.

Results

We finally included 19 RCTs, all of which were of high or good methodological quality, with a PEDro score $\geq 7/10$. Meta-analyses revealed significant effects favoring general ESWT at immediate follow-up [pain score: standardized mean difference (SMD) -1.41 , 95% confidence interval (CI) -2.01 to -0.82 $P < 0.00001$; heterogeneity (I^2) = 95%; function: SMD 2.59 , 95% CI 1.54 to 3.64 $P < 0.00001$; $I^2 = 97\%$] as well as at 3, 6, and ≥ 12 months. In sequence, HD-FoSW, HD-RaSW, and LD-RaSW have superior pooled effects on overall clinical outcomes.

Conclusion

ESWT exerts an overall effect on pain and function, particularly in patients with LE tendinopathy. Shock-wave types and dosage levels may have different contributions to treatment efficacy, which must be investigated further for optimizing clinical practice.

Keywords

Extracorporeal shock wave therapy;tendinopathy;function outcome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.19 PRM Interventions Research - Miscellaneous

ISPR8-1401

USE OF OPTOKINETIC CHART STIMULATION TO RESTORE MUSCLE STRENGTH AND MOBILITY IN BED BOUND PATIENTS WITH CRITICAL CARE POLYNEUROPATHY AND OR MYOPATHY: 3 CASE STUDIES

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Introduction/Background

Optokinetic chart stimulation (OKCS) is evolving as a neuro-muscular rehabilitation intervention for non-ambulatory patients critical care polyneuropathy and or myopathy. The aim of the presentation is to show and discuss benefits of OKCS for patients with critical care polyneuropathy and or myopathy.

Material and Method

The optokinetic chart is made of laminated A4 paper and consists of repeated colours of the rainbow. From 20 centimetres in front of a patient's face, the chart was moved from side to side at one cycle per second for 3 minutes. The chart was then moved up and down for 3 minutes and then forwards and backwards for another 3 minutes.

Results

With the OKCS based treatment protocol, recovery from quadriparesis and loss of mobility occurred in an in-patient setting. Three post intensive care unit (ICU) patients with aggregate manual muscle weakness of 1/5 on the Oxford Scale remained bed bound after at between 9 to 12 weeks of conventional therapy. After at least 6 weeks of OKCS, aggregate muscle strength improved to at least 4/5 The Barthel index scores improved from 0/20 for each of the cases to 17/20, 75/100 and 20/20 respectively. All the case studies regained their mobility.

Conclusion

OKCS shows preliminary efficacy in quadriparetic patients with critical care polyneuropathy and or myopathy. Early use of OKCS may prevent the deterioration in muscle strength and function taking place in the first place. OKCS aids what therapists do but does not replace the therapist. Randomised controlled trials are needed to provide evidence for its wider uptake in clinical practice.

Keywords

Critical care polyneuropathy;Critical care myopathy;Optokinetic chart stimulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.19 PRM Interventions Research - Miscellaneous

ISPR8-1973

IMPLANTATION OF SILICONE TUBING IN POSTMASTECTOMY LYMPHEDEMA

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Introduction/Background

Multiple surgical techniques have been described in lymphedema surgery. All of them have great complexity and doubtful efficacy. Rehabilitation and Vascular Surgery Departments have developed a new method which consists in implanting hydrophobic tubing in the affected limb to create an artificial system for draining lymph.

Material and Method

This prospective study involved five patients (January-October 2017) with postmactectomy lymphedema stage IIb (according to the International Society of Lymphology classification) in upper limb, who had no severe pathology associated and who were motivated to following the subsequent treatment. Preoperatively and postoperatively lymphoscintigraphy was performed. The rehabilitation treatment consisted of decongestant therapy (10 preoperative sessions and 15 immediate postoperative) followed by sleeve compression therapy. Surgery was performed under general anesthesia for implanting 2-3 hydrophobic silicone tubing, from the most distal area (radio-metacarpal joint) to the most proximal (scapular region) of the affected limb. Subcutaneous cellular tissue consistency (plicometer), volume (tape measure) cellulitis and upper limb lymphangitis were recorded before and after surgery. Satisfaction was measured by VAS.

Results

Every patient had previous axillary lymphadenectomy. Most affected side was right (80%) Median of age was 59 years (range:45-69). Median of postoperative following-up was 8 months (range:4-13). Median of preoperative cellulitis or lymphangitis episodes was 2 (range:0-4). No patient presented infectious events during postoperative following-up. We found only one postoperative complication: the distal tube implant was cut. Median postoperative volume reduction was 2 cm (range:1-3 cm). Four patients presented significant improvement in consistency (clip reduction: 3 cm) and all patients reported a subjective improvement in quality of life after the procedure (median of VAS=8 [range:7-9]).

Conclusion

This initial experience with this new surgical technique shows promising short-term results in function as well as in consistency and in circumference of the affected limb. It is necessary to validate these results with long-term and randomized studies.

Keywords

lymphedema;rehabilitation;surgery

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.19 PRM Interventions Research - Miscellaneous

ISPR8-2251

INFORMATION AND COMMUNICATION TECHNOLOGY INTERVENTIONS TO ASSIST IN THE EFFECTIVE MANAGEMENT OF FIBROMYALGIA: A REVIEW OF THE EVIDENCE

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Introduction/Background

Clinical practice guidelines in various countries recommend various lifestyle-oriented interventions for the treatment of Fibromyalgia (FM), including patient education, aerobic or other physical exercise, cognitive-behavioral therapy (CBT), and multi-component interventions. These approaches to FM management can be delivered in various forms, and Information and Communication Technology (ICT) may effectively address and some of the challenges faced by those dealing with FM. The purpose of this study was to review the evidence for the effectiveness of existing ICT interventions for FM.

Material and Method

A literature search was performed in PubMed and Google Scholar, with relevant abstracts reviewed for inclusion.

Results

There is high quality evidence to suggest that a number of online interventions, including WEB-SM, "Living Well with Fibromyalgia", MoodGYM, and SMARTLog improve self-management of FM and certain outcomes. Additional research suggests added value for ICT on quality of life in FM in the areas of gaming, smartphone data collection and monitoring by healthcare professionals, integration of electronic health records to improve patient care, and new wearable monitoring technologies.

Conclusion

Users of existing online platforms that deliver evidenced-based multi-component treatment modules for FM and/or of FM symptom tracking systems experience improved outcomes. Moreover, various innovative ICT interventions are being developed with promising preliminary results. A user-centered approach to application development that takes into account the needs of all individuals with FM, regardless of their technological ability, is one key factor resulting in a successful intervention.

Keywords

Fibromyalgia;Information and Communication Technologies (ICT);Review of Evidence

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.19 PRM Interventions Research - Miscellaneous

ISPR8-2330

A FEASIBLE CUSTOMIZED CAMERA-BASED MIRROR VISUAL FEEDBACK APPARATUS IN STROKE PATIENTS

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Introduction/Background

It has been reported that there were kinematic disadvantages, like weight shifting, and perceptive limitations like insufficient embodiment which hindered the effectiveness of a plain mirror based mirror visual feedback (MVF). Some novel MVF apparatuses have been the focus of much interest, but sparse literatures on this topic reported the effectiveness in patients with stroke. The purpose of the study was to investigate the clinical feasibility of a camera-based MVF apparatus in stroke patients.

Material and Method

Eleven sub-acute stroke patients (Age (y): 53.08 ± 11.11 ; Duration (m): 12.00 ± 15.25 ; Male (N): 10; Left paralysis (N): 5) were recruited and received the camera-based MVF intervention as an adjunct treatment among their routines for 60 minutes per day, 5 times per week, lasting for four weeks. The primary outcome was the upper-limb function based on Fugl-Meyer Assessment (FMA); the Brunnstrom stages, modified Barthel Index (mBI), and the Berg Balance Scale (BBS) were the second outcome measures. Moreover, electroencephalogram (EEG) and behavior performance were recorded in the left/right hand judgement. All data was collected before and after intervention.

Results

The Wilcoxon-signed ranks test was employed for the Brunnstrom stages, and pair-t test was used for other measurements. All the patients showed dramatic improvements of upper limb function after the treatment, see Table 1. However, the reaction time and accuracy during left/right hand judgement and the EEG signal analysis emphasized on altered motor pattern have not been completed yet.

Table 1 the outcome of clinical assessment

Outcome	Median [rang]	Z	p
Brunnstrom_Proximal_1	IV [I , VI]	2.232	0.026
Brunnstrom_Proximal_2	IV [II, VI]		
Brunnstrom_Distal_1	IV [I , V]	2.511	0.012
Brunnstrom_Distal_2	V [I , VI]		

Outcome	Mean (SD)	t	p
FMA_Hand_1	8.36 (6.73)	3.051	0.012
FMA_Hand_2	12.09 (7.70)		
FMA_Upper Limb_1	29.91 (18.79)	4.725	0.001
FMA_Upper Limb_2	42.08 (19.06)		
mBl_1	62.28 (32.33)	3.173	0.01
mBl_2	73.55 (30.32)		
BBS_1	27.00 (20.02)	2.729	0.021
BBS_2	36.00 (18.56)		

Conclusion

The camera-based MVF might be a feasible apparatus as an adjunct treatment to improve the motor function, quality of life, balance control and mental reaction in stroke patients.

Keywords

Mirror Visual Feedback;Stroke;Upper Extremity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C2.19 PRM Interventions Research - Miscellaneous

ISPR8-2499

VISUAL REHABILITATION TRAINING REGIMEN PLUS BINAURAL FREQUENCY ENTRAINMENT WITH FREQUENCY FOLLOWING RESPONSE ATTENUATE THE SEVERITY OF MYOPIA

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Introduction/Background

Myopia is the most common refractive vision disorder which causes the refractive image formed by the cornea and the lens to fall in front of the photoreceptors of the retina. There is no widely accepted means of prevention or cure. The study is to apply several possible physical agent modalities on subjects with myopia.

Material and Method

Ten female subjects with myopia (mean spherical equivalent, -5.0 +/- 4.0 D; age 40.5 +/- 15.5 years) participated in the study. A visual rehabilitation training regimen (computer-based eye exercise therapy modified from Bates, Periocular TENS application, Post-occipital Thermotherapy) plus Binaural Frequency Entrainment with Frequency Following Response were performed for 60 minutes for one time and after two weeks.

Results

After 60 min of visual rehabilitation training regimen plus Binaural Frequency Entrainment, participants showed an improvement of 0.15 Snellen VA (R) and 0.15 Snellen VA (L) in uncorrected Visual Acuity. After 2 weeks of visual rehabilitation training regimen plus Binaural Frequency Entrainment, participants showed an improvement of 0.31 Snellen VA (R) and 0.43 Snellen VA (L) in uncorrected Visual Acuity from baseline.

Conclusion

These results show that computer-based eye exercise therapy modified from Bates, Periocular TENS application, Post-occipital Thermotherapy and Binaural Frequency Entrainment acutely and chronically attenuate the severity of myopia. The findings suggest that the combination of visual rehabilitation training regimen and Binaural Frequency Entrainment can be a potential therapeutic approach in improving sight in individuals with myopia. Further studies are required to investigate the underlying mechanism why these physical agent modalities can improve myopia such as via eye muscular relaxation or visual melanopsin.

Keywords

Exercise;TENS;Visual Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

C3 Miscellaneous

ISPR8-2634

USING TWITTER TO IDENTIFY HEALTHCARE CONSUMER SENTIMENT

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Introduction/Background

Twitter is a social networking service, founded in 2006, and now with over 400 million monthly active users. This study was designed to assess the utility of Twitter as a tool for the assessment and comparison of healthcare systems.

Material and Method

Java and R programs were used to capture, analyze, and compare Tweets posted about one academic university hospital system and two community hospital systems in a large metro area in the Southeastern United States throughout 2016. Natural language processing with sentimental analysis was used in conjunction with an object clustering algorithm to categorize and quantify positive versus negative posts regarding care received at these facilities. An analysis of the positive and negative tweets for the academic facility was completed.

Results

Among the 12,579 Tweets captured for 2016, 89.4% were associated with the academic medical center, 9.7% with community hospital #1, and 0.9% with community hospital #2. Relative to annual patient visits, the use of Twitter was 0.31% for the academic hospital, 0.34% for community hospital #1, and 0.03% for community hospital #2. A majority of Tweets were positive for all three hospital systems. Hospital system #2 received the highest percentage of positive and the lowest percentage of negative tweets (Table 1). The subject of positive comments concerning the academic facility were hospital staff, hospital facilities, and hospital services, while the negative comments focused on appointments, wait time, and emergency room visits.

Table 1. Total number and positive versus negative Tweets among hospitals			
	Academic Hospital System	Community Hospital #1	Community Hospital #2
Total number of Tweets in 2016	11,249	1215	115
Annual patient visits (relative use of Twitter)	3,600,00 (0.31%)	356,657 (0.34%)	350,00 (0.03%)
Total number of sentiment-containing tweets	685	69	13
3 positive word tweets (%)	37 (5.4)	3 (4.3)	1 (7.7)
2 positive word tweets (%)	105 (15.3)	12 (17.4)	2 (15.4)
1 positive word tweet (%)	278 (40.5)	32 (46.4)	5 (38.5)
1 negative word tweet (%)	199 (29.1)	15 (21.7)	4 (30.8)
2 negative word tweets (%)	49 (7.2)	4 (5.8)	1 (7.7)
3 negative word tweets (%)	17 (2.5)	3 (4.3)	0 (0)
Overall Positive	420 (61.3)	47 (68.1)	8 (61.5)
Overall Negative	265 (38.7)	22 (31.9)	5 (38.5)

Conclusion

This study demonstrates the utility of Twitter to determine the overall sentiment of a segment of users of competing healthcare systems. In our initial analysis, we were able to compare the largest competitors of our academic system and to assess the topics of the positive and negative comments made by our healthcare system users. Further study and development of computing techniques are needed to fully maximize the potential this tool offers.

Keywords

social media;Twitter in healthcare;healthcare consumer sentiment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.01 Rehabilitation Systems and Services Research - Health Policy and Law (including Medical and Social Model of Disability and Rehabilitation)

ISPR8-0145

SWOT MATRIX ANALYSIS OF PHYSICAL MEDICINE AND REHABILITATION SPECIALTY IN IRAN

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Introduction/Background

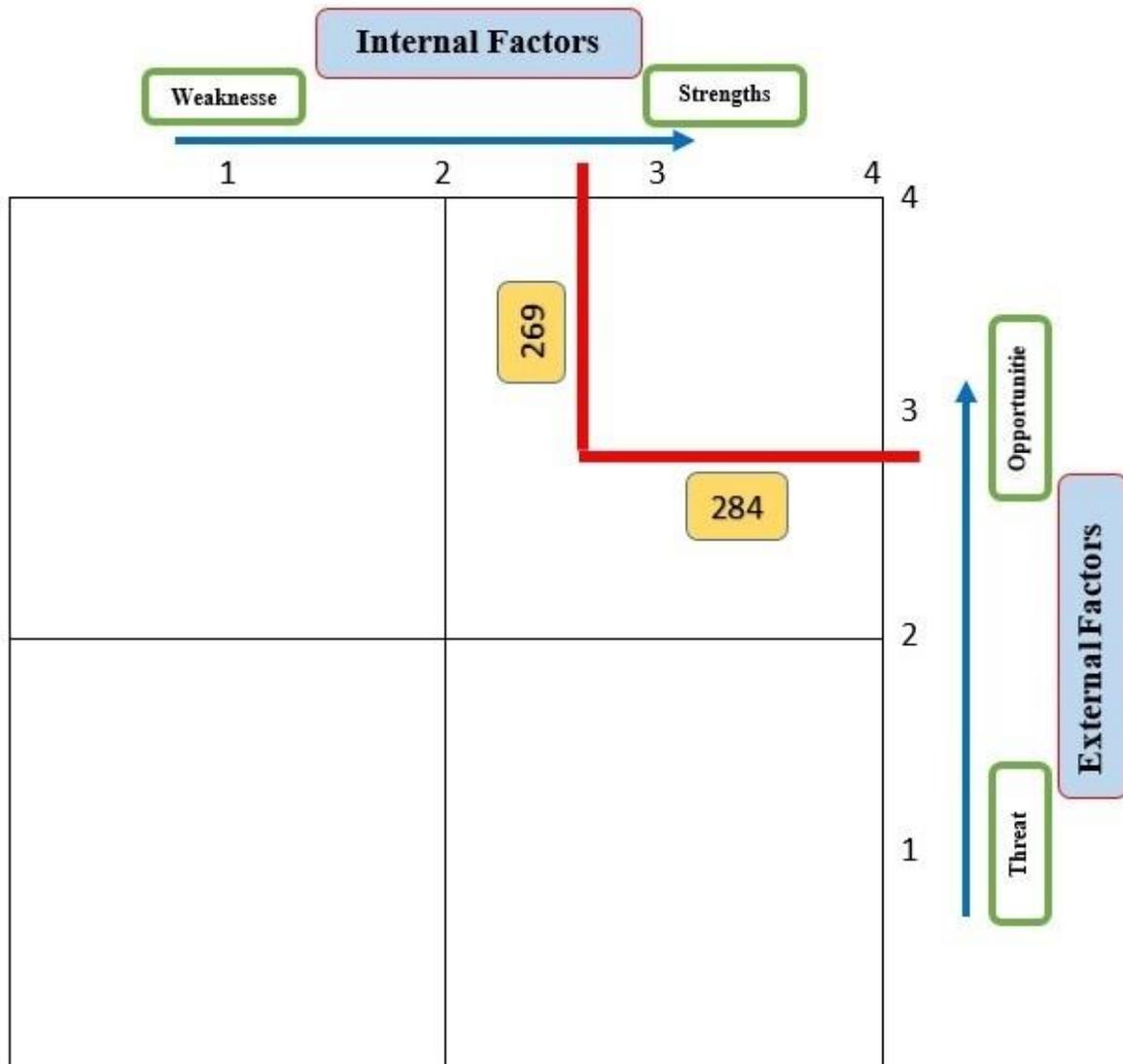
The SWOT investigates the external environment to discover opportunities and threats and the internal environment to understand the strengths and weaknesses. As far as we know, the use of this system to rebuild and improve physical medicine and rehabilitation field has not been considered yet. However, this study aims to: 1) review the results which are derived from SWOT analysis on physical medicine and rehabilitation services, 2) describe how SWOT analysis may provide a new model to improve rehabilitation services.

Material and Method

This was a descriptive-analytical applied research. The qualitative study and SWOT analysis were used as research methods. The participants included 24 academic experts and 9 executive planners. Using convenience and targeted sampling method, the participants were selected from among university professors, experts, and planners in research field. The experts were informed by experienced and trained interviewers and the planners were informed by Association of Physical Medicine and Rehabilitation about study objectives.

Results

After examining and identifying environmental factors (including internal environment factors, i.e. strengths and weaknesses) and (external environment factors, i.e. opportunities and threats), the final factors are provided in tables 1, 2, 3, and 4.



Conclusion

Using SWOT analysis method and comparing the factors, 5 development strategies (SO) were determined using opportunities and strengths; 2 conservative strategies (WO) were determined taking advantage of opportunities and eliminating weaknesses; 2 competitive strategies (ST) were determined using strengths to prevent external threats, and 2 defensive strategies (WT) were determined for development of physical medicine and rehabilitation.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.01 Rehabilitation Systems and Services Research - Health Policy and Law (including Medical and Social Model of Disability and Rehabilitation)

ISPR8-1120

PHYSICAL ACCESSIBILITY OF THE UNIVERSITY OF KWAZULU-NATAL (UKZN) ENVIRONMENT TO PERSONS USING WHEELCHAIRS: A CASE STUDY IN SOUTH AFRICA

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Introduction/Background

There are an increasing number of wheelchair users in South Africa. Despite government efforts to promote equality for all without discrimination, there remain barriers to accessibility that limit full participation by people using wheelchairs at Higher Education Institutions. Modern approaches aligned to the Social Model of Disability and Rehabilitation aim to remove these barriers by including travel time, exertion and ability to complete a task as parameters to assessing accessibility. Furthermore, these new approaches are yet to be applied to UKZN. The aims of this study was to assess the accessibility compliance of buildings to the South African National Standards (SANS) guidelines, to explore whether the travel time between lectures were adequate and to understand the main challenges experienced by students using wheelchairs.

Material and Method

A mixed method, qualitative and quantitative design. Participants were students using wheelchairs registered at UKZN (N=13) in 2015.

Procedures: Part A: Quantitative component measured compliance of Westville and Howard campus facilities according to SANS 10400 Building Regulations. **Part B: Qualitative** component were a questionnaire and an interview was conducted with participants addressing sufficiency of time during the changeover between lectures and challenges faced on campus.

Results

A total of 89 measurements indicated high level of non-compliance to SANS (94.4%). The main reasons for non-compliance for doorways were doorway width, handle type and height at various buildings namely cafeterias, libraries, lecture and examination venues. Lifts did not meet the internal dimensions lacking audible and visual warnings. The allocated lecture changeover time was mostly inadequate. Accessibility to lecture venues was the main challenge indicated by all the students with majority expressing its negative impact on their academic performance.

Conclusion

Westville and Howard campus measured facilities are not up to current standards with accessibility to lecture venues and lecture changeover time being the main challenges faced by wheelchair users.

Keywords

Wheelchair accessibility; Social Model of Disability; National Building Regulations

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.01 Rehabilitation Systems and Services Research - Health Policy and Law (including Medical and Social Model of Disability and Rehabilitation)

ISPR8-2059

RETURN TO WORK AFTER STROKE IN JAPAN: THE COLLABORATION BETWEEN THE MEDICAL REHABILITATION TEAM AND OCCUPATIONAL HEALTH PHYSICIAN

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Introduction/Background

Considering the declining working population in Japan, it's important to promote work style reforms (WSR) to help women, elderly and disabled workers play more active roles in society, as well as raise wages. Japanese Prime Minister Shinzo Abe's latest key policy is this WSR. Promotion of return to work (RTW) after suffering a stroke is one of the important policy of Ministry of Health, Labor and Welfare (MHLW) for the balance support of treatment and professional life associated with the WSR. Then, the MHLW is going to structure the collaboration system between the medical rehabilitation team and occupational health physician in the workplace for RTW after stroke as a medical treatment reward. We introduce and discuss this system on the merits and demerits for RTW after stroke.

Material and Method

We surveyed the guidelines and documents made by the committee of the MHLW.

Results

The process of RTW after stroke is unique to each patient. Employment support for patients who become disabled after stroke comprises two steps: RTW after stroke and resuming work after returning. Many of the stroke patients had returned to work directly from not vocational rehabilitation but medical rehabilitation in Japan. Therefore, the connecting system between a hospital and the workplace is necessary, and the system would be effective by adding a medical treatment reward.

Conclusion

The collaboration system could be effective for RTW after stroke.

Keywords

Stroke;return to work;occupational health physician

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.01 Rehabilitation Systems and Services Research - Health Policy and Law (including Medical and Social Model of Disability and Rehabilitation)

ISPR8-2255

IMPLEMENTATION OF THE MOROCCAN DISABILITY ACTION PLAN: ACHIEVEMENTS, CHALLENGES AND BARRIERS

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Introduction/Background

Following the adoption of the Global Action Plan for People with Disabilities 2014-2021 by the WHO, the National Health and Disability Action Plan (NHDAP) 2015-2021 was presented on the 21st of October 2015 by the Moroccan Ministry of Health with the support of WHO and UNICEF. Two years later, we will outline the achievements and the potential barriers and facilitators for the implementation of the the NHDAP 2015-2021.

Material and Method

The qualitative evaluation process aimed to take stock of the implementation of NHDAP 2015-2021 by establishing direct contact with the main actors involved in its implementation. The exchanges with the consulted interlocutors were intended to collect their assessment of the various NHDAP 2015-2021 measures' implementation.

Results

During the years 2016 and 2017, several actions were carried out, in particular in the field of initial training and continuing education, by the introduction of a module on disability in the curriculum of medical schools and the implementation of a curriculum and training program for occupational therapists. A framework law on the protection and promotion of the rights of people with disabilities has been adopted in Morocco in 2016. Also, a national innovation and disability research award was launched in 2016. The main barriers to the implementation of the NHDAP 2015-2021 are an underfunding and lack of knowledge of the policy makers about the place of rehabilitation in the health care system.

Conclusion

2 years after its adoption, the NHDAP 2015-2021 implementation assessment remains positive despite the barriers and obstacles. The synergic efforts of the different stakeholders and the implication of policy makers are the keys to a successful implementation of the NHDAP 2015-2021.

Keywords

Moroccan disability action plan 2015-2021; Achievements, challenges and barriers,; Implementation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.01 Rehabilitation Systems and Services Research - Health Policy and Law (including Medical and Social Model of Disability and Rehabilitation)

ISPR8-2304

PREVALENCE OF DYSPHAGIA IN CHINA: AN EPIDEMIOLOGY SURVEY AMONG 6102 PARTICIPANTS

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Introduction/Background

Dysphagia is relatively common among older population and patients with stroke, head and neck cancer or neurodegenerative diseases and can have a negative impact on their quality of life. The aim of this study was to explore the prevalence of dysphagia among these people.

Material and Method

The survey used three-step approach consisting of questionnaire screening (Sydney or Ohkuma Swallowing Questionnaire) and clinical evaluation (Kubota's Water Swallow Test) and instrumental assessment (videofluoroscopic swallowing study). The subjects consisted of elderly persons 65 years and older living in the communities/nursing home and three relative phenotypes of patients (stroke, head and neck cancer, neurodegenerative diseases) in the hospitals. We studied these participants whose dysphagia could be assessed by the three-step approach and compared the prevalence of deglutition disorders with age, gender and three Chinese economic regions.

Results

A total of 6102 persons met inclusion criteria. Of all the participants, 2363 (38.7%) were identified as having swallowing abnormalities and showed increased risk of oropharyngeal dysphagia with age. Dysphagia was found 46.3% in stroke patients of acute phase, 56.9% in stroke patients of chronic phase, 40.8% in Alzheimer's disease, 46.2% in Parkinson's disease, 12.5% in Multiple Sclerosis, 50.0% in Amyotrophic Lateral Sclerosis, 35.5% in head/neck cancer. The prevalence of oropharyngeal dysphagia has also been calculated in older persons across different settings, with rates 26.4% in nursing home and 13.9% in community-dwelling older people. This study demonstrates that dysphagia of male is higher prevalent than female in these populations. Comparing three Chinese economic regions, the average prevalence rate of deglutition disorder in the midland (55.0%) was obviously higher than east coast (37.1%) and west (32.5%) of China.

Conclusion

This study demonstrates that dysphagia is highly prevalent among patients with stroke, head and neck cancer or neurodegenerative diseases and the elderly in China. The prevalence of dysphagia were significant correlations with age, gender and economic region.

Keywords

dysphagia;prevalence;epidemiology

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.02 Rehabilitation Systems and Services Research - Health Strategies in PRM

ISPR8-2533

NEGATIVE EFFECTS OF INACTIVITY IN YOUNG PEOPLE

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Introduction/Background

Practical experience over the past years (both medical and sports- related) has led us to look for repercussions with regard to the fact that the number of children with poor body posture, overweight/ obese and age-specific mobility is increasing more and more.

A decrease in overall sports skills is noticed in students from the field of physical education and sports, directly influencing the specific ones, impacting general health status.

Material and Method

Our goal was, aware of physical exercise's vital role, to research the actual state over the past years within specialized institutions and their involvement.

We also wanted to find solutions to support us with regard to the practical, applicable side.

Annual reports issued by Ministry of Health, National Health Assessment and Promotion Center, The National Public Health Institute and National Institute of Statistics etc. revealed the most frequent issues to be: refraction deficits, obesity and posture deficits. The conclusions of these studies aim primarily at bad habits in children and young people with regard to nutrition and physical exercise. Subsequently, public intervention programs were designed and funded by the Ministry of Health and by other public or privately-owned institutions.

Results

Our research showed that there is major preoccupation on national level of state institutions and that the problems we found are the same. However, data linking reveals the need for practical intervention programs, which would act as a prevention measure in children and an improvement or treatment measure in young people and adults.

Conclusion

Also, medical policies need to be correlated with sports ones, multilateral training of the teaching staff is necessary, the number of physical education and sports classes needs to be higher (from 2 to at least 3/week), more compulsory subjects in the curriculum planning need to be introduced, aiming at healthy diet and its benefits over health (physically, mentally and socially).

Keywords

young;inactivity;poor posture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.02 Rehabilitation Systems and Services Research - Health Strategies in PRM

ISPR8-0743

A SITUATION ANALYSIS OF REHABILITATION SERVICE IN INDONESIA

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Introduction/Background

People with disability (PWD) in Indonesia are one of vulnerable groups. They are often neglected in the society. They have also barriers to access many facilities to participate in their social life, including access to health services. Rehabilitation is a health services and strategy that can improve functioning, quality of life and participation of PWD in society. However, it seems rehabilitation services in Indonesia still need to be improved. Before taking any action for an improvement, a situation analysis on rehabilitation services and its provision in the country is a precondition. Thus, this study aimed to collect available data of the current situation related to disability and rehabilitation services in Indonesia.

Material and Method

Rehabilitation Services Assessment Tool (RSAT; Gutenbrunner and Nugraha, 2017) was used as a framework to collect the data systematically. From the collected data, gaps were analyzed. List of generic recommendation to improve rehabilitation services in the country was generated.

Results

Findings show that Indonesia faces enormous challenges in the field of rehabilitation services, including health workforce, service delivery, health information systems, and provision. Results from this situation analysis were used to generate generic recommendations that may be used to further discuss with relevant stakeholders to develop national strategy /action plan in strengthening rehabilitation services in the country.

Conclusion

In the health services, particularly rehabilitation, strengthening rehabilitation services is crucial, including in health workforces and their distributions, coordination among ministries, education, and information about disability and rehabilitation service provision.

Keywords

Rehabilitation service situation analysis;national disability, health and rehabilitation plan, ;rehabilitation services

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.02 Rehabilitation Systems and Services Research - Health Strategies in PRM

ISPR8-1177

DEVELOPMENT OF A CEREBRAL PALSY REGISTER IN A SMALL AREA.

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Introduction/Background

Population registries facilitate the identification of cerebral palsy (CP) cases within a specific geographic population. The aim of our study is to build up a CP register in Andorra. As a small area, data will help to describe all features of CP and to optimise management of resources and patients' follow-up.

Material and Method

Based on the items described in the Survey of CP Registers and Surveillance Systems and on the Surveillance CP in Europe (SCPE) instructions, a population register has been set up. The registry consists of 118 items divided into seven sections: child affiliations, maternal history and parents' information, pregnancy and neonatal period data, diagnoses and classification, neuroimaging tests, therapeutic interventions and others. In order to test its validity, we firstly enter data of patients attending Paediatric Rehabilitation consultations in Navarre and in the Child Development Unit of Andorra, two differentiated and geographically delimited health areas. Data were collected on a face-to-face interview basis. Written informed consent was obtained either from patients or their families. Secondly, information was also obtained from the electronic medical record system of the National Health System.

Results

53 patients (47.1% males, 52.8% females) were evaluated to test the register validity. Data were consistent with published epidemiological features in Europe, except for the incidence (1.2 / 1000 inhabitants) due to limited access to patients. With the Ministry of Health support, we have continued collecting data from patients aged fewer than 25 who contacted the National Health Service.

Conclusion

The use of population registers allows a better knowledge of CP as well as the evaluation and development of prevention strategies and optimisation of care resources with objective data. Our next step will be to obtain data from other sources such as social and educational services, according to recommendations established by the SCPE.

Keywords

Cerebral Palsy;Register;Health management

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.02 Rehabilitation Systems and Services Research - Health Strategies in PRM

ISPR8-1424

MUSIC AS AN ADJUVANT TO OPIOIDS?

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Introduction/Background

International epidemiological studies on opioid use have highlighted the lack of effective complementary therapies capable of reducing the consumption of these dangerous medications. For example, opioids are currently killing an average of 123 people every day in the USA. A national emergency plan to deal with this issue was recently declared in October 2017.

Material and Method

There is therefore an urgent need to propose non-medicinal therapies as an alternative for patients who have to deal with pain on a daily basis. At present, the international literature clearly describes the neurophysiological actions and potential applications of using music for therapeutic purposes in order to manage acute and chronic pain. The impact of music on the localisation and intensity of dopaminergic activity has been demonstrated using neuro-imaging techniques (1).

Results

Both music and opioids stimulate reward circuits in the brain (2). For example, meta-analyses of the Cochrane Database have demonstrated a significant reduction in the preoperative use of opioids if patients can listen to music tailored to their tastes. The recent scientific literature has also described certain digital applications which include innovative algorithms in the field of music care. Use of these new digital applications would optimise the therapeutic efficacy of musical interventions designed to modulate pain and reduce opioid use.

Conclusion

Some digital applications in the music therapy field have demonstrated their efficacy and already enabled a large number of patients with acute and chronic pain to significantly reduce their consumption of medications without experiencing any adverse effects.

(1) Salimpoor VN, Benovoy M, Larcher K, et al. Anatomically distinct dopamine release during anticipation and experience of peak emotion to music. Nat Neurosci. 2011;14:257-62

(2) Chai PR, Carreiro S, Ranney ML, et al. Music as an Adjunct to Opioid-Based Analgesia. J Med Toxicol. 2017;13:249-254.

Keywords

music; anxiety; pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.02 Rehabilitation Systems and Services Research - Health Strategies in PRM

ISPR8-1485

IMPORTANCE OF VEHICLE EMISSION CONTROL FOR VOCATIONAL AND ADL IMPROVEMENT IN MALE PATIENT WITH SEVERE CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) : A CASE REPORT

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Introduction/Background

Prevalence of COPD in Indonesia had reached the number of 3,7% in 2013, most frequent in male and elderly. Since air pollutant is an important risk factors for COPD after smoking, local regulations such as vehicle emission test had been established but still need evaluation in the implementation. Herein we present a case of a male patient employed at outdoor parking lot with disturbed activity of daily living (ADL) due to severe COPD.

Material and Method

A 61-years old male patient was consulted after acute exacerbation of COPD. He had a history of smoking 1 cigarette pack per day for 18 years, stopped at 2010 after his first exacerbation. He had been working for about 20 years in outdoor parking lot with the consequence of daily exposure to vehicle emission. He was unable to change jobs due to socioeconomic factor. He had severe grade COPD (MMRC = 4, CAT = 14) and spirometry showed obstructive result (FEV1: 23%, FVC: 33%). Six minutes walking test was stopped after 4 minutes because of desaturation from 92-94% to 88%. Barthel index of 18 showed his disturbed ADL (bathing and dressing). Patient was encouraged to use face mask at workplace to reduce pollutant exposure, add ventilation, and plants around his house. Patient was also encouraged to routinely walk in the park to increase exposure of oxygenated environment. Routine symptom-limited training with monitoring of Borg scale and oxygen saturation was also implemented to optimize endurance and control breathing training for dyspnea.

Results

Disturbance in ADL still persisted in this patient despite of absence of exacerbations.

Conclusion

Rehabilitation strategy without completely avoiding vehicle emission exposure was not enough to improve the condition of patient with severe COPD. Socialization and implementation of vehicle emission laws still needed to be strongly encouraged by the stakeholders to promote healthy working environment.

Keywords

COPD;Vehicle emission regulation;Vocational

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.02 Rehabilitation Systems and Services Research - Health Strategies in PRM

ISPR8-1529

COLLABORATION BETWEEN INTENSIVE CARE UNIT PHYSICIANS AND PHYSIATRISTS WITH SEVERE BRAIN INJURED PATIENTS: A FRENCH PRACTICE SURVEY

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Introduction/Background

The role of physiatrists with severe brain injured patients and intensive care unit (ICU) teams is often pointed out but remains still partly unknown. We aimed at evaluating, from ICU physicians and physiatrists' points of view, the characteristics of interventions of physiatrists in ICU (especially concerning end-of-life decisions) and their possibilities of development.

Material and Method

A national study using an online survey was performed between January and September 2017, sent to ICU physicians (n=181 answers) and physiatrists (n=35) dealing with severe brain injured patients.

Results

a large majority of ICU physicians (72%) collaborated with physiatrists in their practice, most often non-routinely (78%) on a weekly (30.5%) or monthly basis (36.6%). Physiatrists mainly helped ICU teams in post-ICU orientation of patients (85%), but also in clinical assessment (55%). Considering end-of-life decisions, solicitations of physiatrists were rare in the ICU physicians' point of view (47% on an annual basis), but more frequent in the physiatrists sample (monthly or bimonthly=48%), and was considered as beneficial or necessary for 70% of ICU physicians. Physiatrists and ICU physicians gave the same importance in the end-of-life decision process to clinical and paraclinical examinations, but not to patients socio-economic data. Physiatrists mainly conceived their interventions in end-of-life decisions in complex cases (56%), their legitimacy in this domain was rated as 6.5/10 (10=high legitimacy) by ICU physicians. Improving the collaboration between both specialties was a common desire (of 68% of physiatrists and 88% of ICU physicians).

Conclusion

Physiatrists have a specific and important role to play with severe brain injured patients in ICU, in various domains of action including particularly orientation, assessment or end-of-life decision process. This role should be promoted and better valorized.

Keywords

intensive care unit;brain injury;physiatrist

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.02 Rehabilitation Systems and Services Research - Health Strategies in PRM

ISPR8-1546

BODY MASS INDEX AND PHYSICAL ACTIVITY DURING LEISURE TIME OF THE STUDENTS OF MEDICINE

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Introduction/Background

There is evidence for the importance of promoting a healthy lifestyle and normal-weight in order to reduce health risk. The aim of this study was to examine the association of Body mass index (BMI) and various leisure time physical activities: frequency of playing sport during leisure time (FPSLT), frequency of television watching (FTW), frequency of walking during leisure time (FWLT), frequency of cycling during leisure time (FCLT) and minutes per day spent walking and cycling to get around (MDWC) of the students of Faculty of Medicine.

Material and Method

The study was designed as a cross sectional study that included 76 of students of medicine (60 female and 16 male), average age of 26.4 ± 3.3 years. Instrument used to measure a person's leisure time physical activity of the students was the questionnaire of Baecke et al. Pearson's test of correlation and Linear regression (ANOVA) were used to analyze numerical data. Differences were statistically significant on the level of $p < 0.05$.

Results

Average value of BMI of the students was 22, 2 ± 2.5 kg/m² (range of 18-28.3 kg/m²). Results of Linear regression with the BMI as dependent variable have shown that FCLT is significantly associated with BMI ($t=2,254$, $p < 0.05$). Results of Pearson's test of correlation have shown that there was statistically significant association between age and frequency of FWLT ($r=0.355$, $p < 0.05$), BMI and FCLT ($r=0.395$, $p < 0.05$), and negative association between FTW and MDWC ($r=-0.329$, $p < 0.05$), FTW and FPSLT ($r=-0.418$, $p < 0.001$).

Conclusion

Results of our research show that average value of BMI of the students was in range of normal-weight and that BMI is significantly associated with frequency of cycling during leisure time. There was statistically significant association between age and frequency of walking during leisure time. These findings can be important for planning leisure time physical activity of medical students.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.03 Rehabilitation Systems and Services Research - Rehabilitation Service organisation

ISPR8-0473

AROC – THE AUSTRALASIAN REHABILITATION OUTCOMES CENTRE – USING OUTCOME DATA TO IMPROVE QUALITY AND VALUE OF REHABILITATION

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Introduction/Background

Clinical-quality registries have an important role to play in improving quality of care via monitoring and benchmarking of clinical care outcomes. The inclusion of process measures in the data collection enables exploration of variations in additional aspects of service provision, such as timeliness of access to care and clinical approaches. Additionally, registries which provide outcome reports for specific patient populations (“disease” registries) have been demonstrated to act as a catalyst for improving the quality of care provided, often at a lower cost.

Material and Method

AROC commenced operations on the first of July 2002, a joint initiative of the Australian rehabilitation sector and the Australasian Faculty of Rehabilitation Medicine. Now, 15 years later, AROC holds data describing more than a million episodes of inpatient rehabilitation care in its database, collected from 280 rehabilitation units across Australia and New Zealand. AROC provides regular benchmarking reports to all members, supported by annual quality benchmarking workshops.

Results

The use of benchmarking and decision support tools has improved the efficiency of care whilst introducing a common language and increasing standardisation in practice. In addition, the less direct aspects of registry operations such as the facilitation of networking across the sector, the facilitation of translation of benchmarking results into practice and process changes, the access to the registry data to underpin research in the sector, provide added value and extend the registry from a single dimension initiative to a powerful platform for improving the quality and value of rehabilitation.

Conclusion

The AROC clinical registry is a valuable resource for the rehabilitation sector, and provides an example of how clinical registries can function as powerful platforms for improving health outcomes, potentially lowering health care costs, and increasing health care value. In addition they can act as a data spine to facilitate more efficient, less expensive clinical research studies.

Keywords

Outcomes;Quality;Clinical registry

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.03 Rehabilitation Systems and Services Research - Rehabilitation Service organisation

ISPR8-0813

ADDITIVE MANUFACTURING FOR PROSTHETICS AND ORTHOTICS: FASHION OR TECHNOLOGICAL NECESSITY

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Introduction/Background

In technically developed countries, additive manufacturing is actively developing in production. In particular, it opens new opportunities in the manufacture of prostheses and orthoses.

Material and Method

Currently, the manufacturing process on CNC machines is widely used in the prosthetic and orthopedic industry and is well combined with the prosthesis and orthosis traditional manual manufacturing. There is a fundamental limitation: traditional technology, like its symbiosis with CNC technology, makes it possible to combine materials with different physical properties within a single product only by combining different parts. With additive manufacturing one detail can consist of a variety of materials, providing conflicting requirements for various areas at the design stage. The variety of materials available for the sockets requires the creation of 3D printers of in principle different technologies.

Results

3D-printing does not compete in cost with traditional manufacturing technology. In developing countries, the economic benefits of such technology are not obvious. However, the use of 3D-printing technology is necessary to accelerate the rehabilitation of a large number of victims as a result of wars, regional conflicts and emergency situations - for a one-stage manufacturing of prostheses for a large number of patients.

3D-printing is justified in case of complicated stumps and atypical prosthetics, when the task of stump's comfort in the prosthesis socket can be solved by combining materials with different properties. At present, the speed of socket's additive manufacturing in the best practices is manufactured in 2,5-3 hours, which is comparable with the time by a qualified specialist.

Conclusion

Prospects for the development of 3D printing sockets of prostheses and orthoses are in the plane of development of artificial limbs's remote manufacturing, using 3D-scanning. Additive

manufacturing is part of the digital and "smart" factories of the future, which are parts of a virtual factory – it indicates a great potential of this technology.

Keywords

Prosthetics;Orthotics;Additive manufacturing

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.03 Rehabilitation Systems and Services Research - Rehabilitation Service organisation

ISPR8-0882

CLINICAL AND FUNCTIONAL PROFILE OF PATIENTS ADMITTED FOR REHABILITATION AFTER STROKE 2014-2017, RETROSPECTIVE ANALYSIS OF SINGLE CENTER DATA

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Introduction/Background

Acute stroke care is extremely well organized in Czech republic, with high availability of thrombolysis and thrombectomy treatment and stroke unit care, but only 10-12% of stroke patients are transferred to acute rehabilitation beds. Comprehensive stroke center of our hospital treats up to 900 stroke patients a year. Only 3% of them are admitted to general rehabilitation ward. They represent only 4,6% of all admitted patients.

Material and Method

Retrospective analysis of stroke patients data from 2014 to 2017 was carried out. NIHSS, mRS and Barthel index, time from stroke to admission, from what type of care, days of hospitalisation, rate of complications interfering with rehabilitation and type of care discharged to were evaluated.

Results

Complete data were available for 90 of 115 patients, 60 males and 30 females, age 29 to 89, mean 67, average 63 years. 70% were transferred directly from neurology bed, 12% from nursing facility, 16% came from home and 2 % from another rehab facility. Time from stroke to admission was 8-135 days, mean 25 days. NIHSS reached 0-16, mean value 6 on admission and 4 at discharge. Barthel index spanned 5-100, mean 80 increased to mean 90. Average mRS of 3,3 decreased to 2,9. Length of stay reached 10-30 days, 19 days on average. Complications appeared in 11% of patients, resulting in preterm end of rehabilitation in half of them. 41% of patients were discharged home, 41% to another rehabilitation facility, 12% to acute hospital bed and 6% to nursing facility.

Conclusion

Patients admitted to our general rehabilitation ward belong to younger, more self sufficient population of stroke victims with moderate neurological deficit and good potential for recovery. Parameters analysed above do not explain low percentage of patients after stroke admitted. Retrieved data can encourage more frequent admission of stroke patients who benefit substantially from rehabilitation.

Keywords

stroke;acute rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.03 Rehabilitation Systems and Services Research - Rehabilitation Service organisation

ISPR8-0905

DRAFTING METHODOLOGY OF CLINICAL CARE PATHWAYS: PRACTICAL APPLICATION TO THE CARE PATHWAY FOR THE "PREVENTION, DIAGNOSIS AND TREATMENT OF MOTOR DISABILITY IN PEOPLE AFTER STROKE"

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Introduction/Background

Clinical Care Pathways (CCP) optimize quality of care and resource allocation in health systems. They translate guidelines or evidence into local practice. This work aims to provide a methodological approach for drafting a CCP, referring to a model for the prevention, diagnosis and treatment of post-stroke disability.

Material and Method

The research method is based on a six-stages process: identification of health needs to priorities in the local care system; establish a multidisciplinary working group; selection of guidelines and evaluation of quality with the Grilli criteria, the AGREE and GRADE methodology; integration of gaps/updates among guidelines; adaptation to the local context; regular updating. The output is an integrated flow-chart. Indicators are identified for auditing.

Results

3 international guidelines were selected (NICE 2013, Canadian 2015, AHA/ASA 2016). The US one was excluded because of non-comparable health services in the two countries. Evidence for upper limb robotic rehabilitation was obtained with a narrative review by the authors. Outpatient rehabilitation is the most appropriate context for management of post-stroke disability. Access to outpatients is regulated by the rehabilitation physician, the GP or other specialists involved in stroke care. A clinical and instrumental assessment will provide indication to physical, medical and/or surgical treatments. Cognitive deficits will be already been identified and treated from the Stroke Unit. Follow-up entails clinical and/or instrumental re-evaluations, treatment modifications, or exit from the pathway. The "process" indicators include: number of first accesses; number of visits/year; time to access to service from prescription; number of control visits and retreatment. Among "outcome" indicators there are: complications; number of resolved cases; access within 6 months of the acute event.

Conclusion

This CCP was designed according to international standards for CCPs. Adaptation to the local context led to the development of a codified and univocal pathway with a specialized and personalized care for patients with post-stroke disability.

Keywords

Clinical Care Pathways ;methodology

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.03 Rehabilitation Systems and Services Research - Rehabilitation Service organisation

ISPR8-1122

EXAMINATION OF DISASTER RESPONSES UTILIZING THE DISASTER IMAGINATION GAME (DIG) AT A REHABILITATION CENTER—A STUDY BASED ON PARTICIPANT EVALUATION—

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Introduction/Background

In recent years, various approaches have been taken in order to improve and reinforce the medical system at the time of disasters, such as the development of manuals at the facilities at individual medical treatment locations and simulation trainings against disaster occurrences at various settings. Though the rehabilitation center at our hospital also implements evacuation drills, anticipating fire and earthquake in order to train staff on how to check on patients or transport them. We sensed the necessity to provide reinforcement regarding disaster response and decided to employ the Disaster Imagination Game (DIG) in disaster drills. This study is a report of the change of the disaster preparations enforcement for therapists consciousness after the DIG.

Material and Method

DIG was carried out in the rehabilitation center at our hospital. An anonymous questionnaire survey was conducted on the participants of DIG. We compared the data after enforcement if before DIG enforcement.

Results

For the total of 42 research participants, their self-evaluation score through VAS in self-efficiency regarding their capability to properly respond to disasters came out to be 44.4, which increased from the pre-DIG score. Self-efficiency in other items such as role sharing on the occurrence of disasters, information gathering as well as their response to the anticipated case of transporting patients also increased respectively, whereas their anxiety at the occurrence decreased.

Conclusion

The DIG implemented in this research has improved the participants' self-evaluation in responding at the time of a disaster occurrence. In addition to the fact that the effectiveness of the preparatory training was verified by the nurses' responses in the Great East Japan

Earthquake, the result of this research suggests the strong possibility that repeating DIG as disaster response preparation could lead to a reinforcement of their responding capability.

Keywords

Disaster responses; Disaster Imagination Game; Rehabilitation center

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.03 Rehabilitation Systems and Services Research - Rehabilitation Service organisation

ISPR8-1475

PERSPECTIVES ON HOSPITAL AND COMMUNITY-LIKED EDUCATION PROGRAM FOR COMMUNITY REINTEGRATION IN PATIENTS WITH STROKE AND TRAUMATIC BRAIN INJURY

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Introduction/Background

Most of patients with stroke and traumatic brain injury (TBI) suffer from lack of persistent and appropriate rehabilitation program after discharge. It is needed to develop the hospital and community-linked education program (HCLEP) for community reintegration of patients with brain injury after discharge. Thus, the aim of this study was to investigate perspectives of health professionals in rehabilitation field to decide appropriate items in HCLEP.

Material and Method

In this study, rehabilitation physician, nurse, physical therapist, occupational therapist, social worker, and others were participated (n = 204). An electronic survey was performed to decide education items for community reintegration of patients with stroke and TBI. To quantify the required degree of several items which can be included, Likert 5 point scale was used and a rating average for responses of each item was calculated.

Results

In this study, respondents strongly agreed safety management, functional maintenance and improvement, emergency management, and prevention of secondary disorders as appropriate items of education for community reintegration in patients with stroke and TBI. Personal counseling (n = 97) and small group learning with 3-5 individuals (n = 80) were selected as suitable teaching methods. Participants responded that education content type using video is appropriate (n = 94). Social worker was selected as an appropriate educator (n = 147).

Conclusion

The present results provides fundamental information which be needed to develop HCLEP for persistent rehabilitation in patients with stroke and TBI. Further studies are needed to reach a consensus of professionals or patients for specific items included in the education contents.

Keywords

community reintegration;hospital and community linked education program;stroke and traumatic brain injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.03 Rehabilitation Systems and Services Research - Rehabilitation Service organisation

ISPR8-2706

EVALUATING INTERDISCIPLINARY CARE COORDINATION AND TEAM FUNCTIONING IN INPATIENT REHABILITATION TO IMPROVE PATIENT OUTCOMES: RECENT FINDINGS FROM A MULTIYEAR QUALITY IMPROVEMENT PROJECT

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Introduction/Background

While the interdisciplinary team is an established and proven component of rehabilitation services, rehabilitation professionals often struggle to generalize findings from clinical research to make and sustain improvements in team processes and service delivery.

Material and Method

For three years a Working Group of rehabilitation faculty and hospital service directors in a 50 bed rehabilitation hospital in the U.S. have been meeting to evaluate and improve interdisciplinary care coordination and rehabilitation team functioning with the goal of improved patient outcomes. Here, we report the latest findings of this ongoing quality improvement initiative – a two part (quantitative, qualitative) survey (N= 110). The survey was modified from previously reported measures of team functioning to capture broader issues of interdisciplinary care coordination. In addition to core inpatient team members, (PT, OT, RN, SLP, AT, Neuro-psychology, MD), staff working in admission liaisons, nursing staff who do not routinely attend team conference, hospital administrators, residents, and weekend covering attending physicians participated.

Results

Analysis of the revised scales supported the previous data on the reliability and validity of the five scales of Teamness (cronbach's Alpha = .942); Team Effectiveness (.935); Supervisor Support (.905); Physician Engagement (.782) and Shared Leadership (.956). Qualitative examination revealed concerns of the integration of nursing service and admissions liaisons with overall care coordination, along with concerns on managing patients with high medical acuity and the administrative push for higher census. The Working Group is developing action plans based on this survey and specific findings will be discussed.

Conclusion

Results from the survey support prior quantitative domains of team functioning. Subgroup differences on the five scales will be discussed. Qualitative measures reveal tensions between

care coordination, staffing levels, needs for a higher census, and concerns of patient acuity. The action plans developed by the Working Group from the survey are presented.

Keywords

Team Effectiveness;Care Coordination;Quality Improvement

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.03 Rehabilitation Systems and Services Research - Rehabilitation Service organisation

ISPR8-2098

INTEGRAL MANAGEMENT OROPHARYNGEAL DYSPHAGIA

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Introduction/Background

Dysphagia is a symptom that indicates difficulty in swallowing. The etiology of dysphagia is multiple. Patients with dysphagia were referred to different hospital services (Otorhinolaryngology (ENT), Rehabilitation, Nutrition...). These referrals involved, multiple appointments. From October 2013 with the idea of providing accessible and comprehensive care to the patient, we have a unified dysphagia clinic creating a multidisciplinary practice in which after the joint assessment of the patient, we decide the optimal treatment for each case. In the case of hospitalized patients, a circuit has been generated to speed up the assessment and treatment of oropharyngeal dysphagia, which is occasionally performed bedside when the patient's condition so requires.

Material and Method

We analyze patients referred in 2017. Their diagnosis, etiology, treatments applied and number of medical visits needed .

Results

During 2017,97 patients have been referred to dysphagia multidisciplinary practice. 57.3% of patients dysphagia was of Neurological etiology (Vascular 21%, Neuromuscular 18.3% Demyelinating diseases 5% Extrapyrarnidal 1% Others 12%; Otolaryngology pathology 18% (Oncological 15% and Non-oncological 4%)

424 in-hospital consultations have been carried out, 80% of those performed at the ENT department. Nutritional status assessment showed, 30% of moderate malnutrition . After the joint consultation, dietary recommendations were indicated in 44%, modification in the texture of the diet in 22%, prescription of speech therapy in 30% and gastrostomy in 4%. Following the consultation, In 55% of the cases, only one visit was necessary to diagnose and give a therapeutic orientation. The remaining 45% required follow-up.

Conclusion

We consider that multidisciplinary joint visits are high-resolutive, as they imply fewer visits per patient with lower health care costs and provide higher quality care.

Keywords

Dysphagia; multidisciplinary team

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.03 Rehabilitation Systems and Services Research - Rehabilitation Service organisation

ISPR8-2726

POS-PROSTHETIC GAIT TRAINING AMONG UNILATERAL TRANSFEMORAL AMPUTEES. A SISTEMATIC REVIEW

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Introduction/Background

The post-amputation rehabilitation of the lower limb is usually focused on the use of prosthesis to restore the ability to walk. Patients with transfemoral amputation (TFA) are mainly impaired due to lack of muscles that control the knees and depend on a prosthetic knee joint. Interventions to reduce gait deviations and improve the quality of life of lower limb amputees include proper prosthesis prescription and participation in physiotherapy for gait training and neuromuscular re-education. Specifically, gait training is capable of improving spatiotemporal parameters, joint kinematics and bioenergetic efficiency during gait of above knee amputees. However, to our knowledge, there is no established guideline based on evidence of better specific practices for gait training after transfemoral amputation. The aim of this study was to systematically evaluate the literature to determine the strength of evidence supporting gait training interventions to further guide practices and research related to therapeutic gait training for unilateral transfemoral amputees.

Material and Method

This systematic review accessed three databases and followed the Cochrane Collaboration protocol.

Results

We were unable to identify any randomized clinical trial that compare different kind of gait training specific for unilateral transfemoral amputees.

Conclusion

There are still only a few studies and researches endorsing therapeutic practices in the rehabilitation of amputees. Of the few randomized clinical trials, most are about below-knee amputees or they assess all lower limb amputees as one, not taking into consideration the specific bio-mechanical, etiological and psychosocial differences among transfemoral amputees. Lately, the investments in research have been commonly directed to pharmacological and technological interventions. However, it is of the utmost importance that

methodological studies are conducted in this field of rehabilitation, aiming the prevention of newer deficiencies and promoting gain in functionality and quality of life to the patients.

Keywords

amputees;gait;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.04 Rehabilitation Systems and Services Research - Rehabilitation Economics

ISPR8-2031

ROLE OF HEALTH INSURANCES IN MEDICAL COVERAGE OF PHYSIOTHERAPY AND REHABILITATION MEDICINE IN IVORY COAST

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Introduction/Background

The medical coverage of rehabilitation and rehabilitation care of persons with disabilities is few times limited to a partial kinesitherapy acts management, despite the multitude of situations generating disability and handicap in our context.

Objectives: Determine the insurance and mutual health insurance role in the repayment of physiotherapy and rehabilitation medicine care expenses **Material and Method**

It was a prospective study using questionnaires structured around physiotherapy and rehabilitation medicine activities submitted to twenty-five insurance companies and mutual health insurance companies from January to March 2016.

Results

Almost all insurance companies had a medical adviser, 80% of whom had notions about the PMR activities. Twenty percent of insurance and mutual insurance companies routinely rejected reimbursements for physiotherapy and the rejection reasons were dominated in most cases by the non-guarantee of rehabilitation in 89% of cases. The majority of insurers and mutual health insurers (76%) only reimbursed physiotherapy care, of which 35% had a reimbursement ceiling of 20 sessions depending on the disability.

Conclusion

Discussion: Our regularly insured patients in a situation of disability are confronted to a refusal of physiotherapy and rehabilitation acts, further aggravating their exclusion and their stigmatization in the Ivorian society.

Conclusion: Insurance companies and mutual health insurance companies, that are supposed to be essential supports for their clients in particular and the general population well-being, by contributing to alleviate the medical expenses, sometimes become obstacles to the improvement of their health quality of life by restricting reimbursements for physiotherapy and rehabilitation care.

Keywords

Health insurance;Physiotherapy;Rehabilitation medicine

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.04 Rehabilitation Systems and Services Research - Rehabilitation Economics

ISPR8-2105

REVIEW OF COST-EFFECTIVENESS OF NON-OPERATIVE TREATMENT IN LATERAL EPICONDYLITIS

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Introduction/Background

Lateral Epicondylitis (LE), often termed “tennis elbow” is defined as acute tenderness or strain of the wrist extensor muscles at or near their lateral epicondyle origin or directly over the epicondyle. It is associated with continued stretching of forearm extensor musculotendinous structures with an annual incidence between 1% and 3% in the general population.

The conservative treatments for this complaint are vary and this is the therapist who decides which one is the best by the situation of patient. Health care center and also the patient undergo to the huge amount of costs for each treatment, therefore it would be very economic to know the cost effectiveness of conservative interventions for LE.

Material and Method

A literature search was conducted in computerized bibliographic databases like: PubMed, Google Scholar, Science Direct, Medline, Cochrane Library. The search identified the cost efficacy of interventions for LE. The studies were inspected if the design was original and review articles and if the type of the interventions were conservative.

Results

Although the interventions are different in cost and benefit in patient, there is no relevant or statistically significant differences in effectiveness between the interventions. More than 40 treatments for the tennis elbow have been described in the literatures, but it is the wait and see policy recommended by them.

Conclusion

Physiotherapy showed more beneficial effects than the wait and see policy and brace, but the two last intervention are slightly less costly. With regards to cost effectiveness, none of the interventions was found to be superior.

As no treatment strategy has yet been shown to be superior, therefore cost may be a decisive factor in deciding which treatment is to be preferred for tennis elbow.

Keywords

Cost-Effectiveness;Non-Operative Treatment;Lateral Epicondylitis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.05 Rehabilitation Systems and Services Research - Community-Based Participation Research

ISPR8-0657

STUDY OF OCCUPATIONAL DYSFUNCTION AND DAILY ACTIVITIES USEFUL IN THE PREVENTION OF FRAILITY IN ELDERLY PATIENTS WITH ATRIAL FIBRILLATION

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Introduction/Background

The prevalence of atrial fibrillation (AF) in people aged over 75 is 9%. People in this age-group are at a high risk of frailty, cerebral infarction and heart failure. A psychosocial perspective is needed for the prevention of frailty. Occupational dysfunction (OD) is a factor that directly affects psychological issues. We conducted a comparative study of OD and daily activities.

Material and Method

In terms of study design, this is a cross-sectional study conducted in a single facility. A total of 47 people with non-valvular atrial fibrillation aged over 75 were enrolled in this study (mean age: 81.3±4.9; 25 men). Frailty index scores were interpreted as follows: 0 (Healthy (H)); 1 – 2 (Pre-frailty (PF)); ≥3 (Frailty (F)). Information regarding daily activities (driving; frequency of going out; frequency of telephone use; exercise habits; hobbies) was collected using questionnaires and assessed using Classification and Assessment of Occupational Dysfunction (CAOD). Daily activities, CAOD total scores and secondary factors (occupational imbalance; occupational deprivation; occupational alienation; occupational marginalization) were compared among 3 groups using ANOVA.

Results

Significant differences among the 3 groups were observed in driving, exercise habits, CAOD score, occupational deprivation and occupational alienation. Differences in daily activities were observed between individuals in the H and F groups. Significant differences in OD were observed in individuals in the H group compared to those in the PF and F groups. Not significant differences were observed between individuals in the PF and F groups in terms of OD.

Conclusion

Daily activities tended to become more limited as the severity of frailty increased. On the other hand, marked OD is experienced in the pre-frailty group, and it is useful to treat OD early to prevent exacerbation.

Keywords

Community-based rehabilitation;frailty;Occupational Therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.05 Rehabilitation Systems and Services Research - Community-Based Participation Research

ISPR8-1113

HEALTH STATUS AND QUALITY OF LIFE IN PEOPLE WITH PHYSICAL DISABILITY

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Introduction/Background

Physical disabilities may either be congenital or caused by accidents or diseases later life, deteriorate the quality of life. The aim of this study was to investigate the factors based on three types of health definition (physical, mental and social) presented by World Health Organization (WHO) that affect quality of life on people with physical disabilities.

Material and Method

In total, two hundreds forty one subjects who were Seoul in South Korea residents and registered to the local government with physical disability aged from 40 to 69 were participated in this study. We performed face to face interview and self-administered questionnaire. The questionnaires consisted of socioeconomic status, physical function, participation, depression assessment and quality of life. We operationally defined activities of daily living (ADL), participation part of domain in WHO Disability Assessment Schedule 2.0 (WHODAS 2.0) and Center for Epidemiological Studies Depression (CES-D) as physical, social and mental health. Stepwise regression model were conducted to identify related factors of quality of life in people with physical disability. Socioeconomic status, ADL, score of participation and CES-D score entered into the regression model.

Results

For the 241 individuals with physical disability, 51.0% were female, 47.7% were aged 60 to 69, 71.0% were unemployed and 32.4% were graduated high school. ADL ($\beta=0.025$, $p<0.001$), participation in social activities ($\beta=0.150$, $p<0.01$) and CES-D ($\beta=0.256$, $p<0.001$) were significantly associated with quality of life. In addition, the employment status ($\beta=0.167$, $p<0.01$) affected quality of life in individuals with physical disabilities.

Conclusion

Our findings suggest that employment status associated with quality of life and positive correlation and association between physical, social, mental health and quality of life in people with physical disability. We expected to be a foundation for promoting of health policy for people with physical disability.

Keywords

physical disability;quality of life;health

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.05 Rehabilitation Systems and Services Research - Community-Based Participation Research

ISPR8-1487

DEVELOPMENT AND APPLICATION OF INDIVIDUALLY CUSTOMIZED HEALTH PROMOTION PROGRAM USING CLASSIFICATION ALGORITHM BY THE RESULTS OF HEALTH ASSESSMENTS FOR PEOPLE WITH DISABILITIES

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Introduction/Background

It is difficult to find specific guidelines in terms of what kinds of and to what extent health promotion services should be applied to individuals with disabilities for improving their health in community settings. Further the health promotion service has restrictively provided for a few individuals with disabilities, because of limited human resources. We developed individually customized health promotion program, according to the results of health assessments, to suggest necessary kinds of health promotion services and proper amount of it for improving health of the individuals with disabilities, and examined its feasibility.

Material and Method

Thirty-three participants aged 59.69 years enrolled the study. Blood pressure, fasting blood sugar, neutral fat, cholesterol, and BMI were administered as general health factors. Modified Barthel Index, Mini-Mental State Examination, and Patient Health Questionnaire-9 were administered as disability-specific health factors. Participants were classified into the three groups: intensive support group, motivation group, and education group by the classification algorithm using results of assessments related to general and disability-specific health factors. Intensive support group participated in group-based multi-component programs including exercise, psychology, and nutrition classes each for 50min/d, 1d/wk, for 8 weeks. Motivation group received three-time individual counseling. Education group received education only once regarding general health knowledge.

Results

For within group analysis, intensive support group showed improvement trends in all of the assessments, excluding blood pressure, although not significantly. Motivation group showed greater improvement compared to education group in neutral fat ($p = 0.015$). Intensive support group showed greater improvement compared to motivation group in BMI ($p = 0.028$).

Conclusion

The newly developed individually customized health promotion program is feasible to apply the individuals with disabilities in community. Three classified groups according to health assessments may enable disabilities to receive necessary kinds of health promotion services at a proper amount for improving their health.

Keywords

health promotion;disability;community

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.05 Rehabilitation Systems and Services Research - Community-Based Participation Research

ISPR8-1875

RESULTS OF OCCUPATIONAL THERAPY IN A NEW COMMUNITY SUPPORT PROJECT FOR FRAIL OLDER PEOPLE IN JAPAN

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Introduction/Background

The total population in Japan was 126 million as of 2016. 27% of them (34 million) were over 65 years old persons. 6 million persons were certified by the municipal government as being in need of care. A new community support project (CSP) aimed at health promotion for the frail elderly people resident in community began. In that project, occupational therapists is expected to work in support of instrumental activity of daily living (IADL). We examine the result of occupational therapy in the CSP.

Material and Method

31 OTRs who has worked in the CSP participated in this survey. They were required to provide a client information, including Frenchay Activities Index (FAI, Holbrook, 1983) score, EQ-5D-5L score, a content of personal goals of IADL. This study design was pre-post design without a control group. Also, in order to clarify the results, the achievement rate of each personal goal was calculated. This survey was initiated after approval of the Ethics Review Committee.

Results

We collected 108 client information. Examples of personal goals of IADL include the following: “visit the family grave on foot”, “hike on the mountain trail with my friend once a month”, “cook with a microwave”, “shop in a local store”, “go to a nearby hot spring by bus”, “make a friends”. 80% of these personal goals were achieved. There were significant improvements in FAI score.

Conclusion

This result proves that occupational therapists work effectively in the CSP.

Keywords

Community-based practices;Activities of Daily Living;Frail older people

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.06 Rehabilitation Systems and Services Research - Miscellaneous

ISPR8-2700

A SURVEY ON SURVEYS: HOW A NATIONAL SCIENTIFIC SOCIETY OF PRM INVESTIGATED ITSELF TO IMPROVE ITS ACTIVITY

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Introduction/Background

One of the common objectives of the Scientific Societies is the collection and dissemination of information on the activities of its members, as well as on their needs in relation to the improvement of the quality services and the support they may expect from the Society itself.

Material and Method

In 2015, SIMFER launched a program of surveys to get information on the competencies and type of clinical activities carried out by its members in their usual practice, and of the characteristics of patients referred to the rehabilitation services in different settings. Some surveys were specifically addressed to the members of SIMFER, other were developed in cooperation with other scientific societies or academic or research institutions. Newsletters/newsletters were sent to each "active" member, explaining the scope of the survey and asking to complete questionnaires using web-based applications. The surveys addressed clinical or organizational aspects, and were proposed by the Executive Committee or the Scientific Committees.

Results

Since 2015, 13 surveys have been carried out, 10 of them specifically addressed to its members, the other including other specialists or rehabilitation professionals. The number of respondents varied from 28 (1 survey addressed only to members of specific committee) to 798 (approx. 42% of the "active" members of SIMFER). The subject of the surveys were: clinical problems (10 of which: prevalence of conditions in rehab settings: 4; therapeutic approaches: 2; mixed: 3); research in PRM (1 survey); organization/methodology (2)

Conclusion

The surveys were found to be a valuable tool to get information on many aspects of the clinical practice, their differences in the various settings and in the different Regions of the Country, and in highlighting many critical aspects that could be improved with the intervention of the Scientific

Society.

They also provided relevant informations which would be useful in the communication with patients, other professionals, policy makers and the community at large

Keywords

SURVEY;SCIENTIFIC SOCIETY

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.06 Rehabilitation Systems and Services Research - Miscellaneous

ISPR8-0243

FACTORS ASSOCIATED WITH ACTIVITY LIMITATIONS IN ELDERLY PEOPLE: A SYSTEMATIC REVIEW

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Introduction/Background

Independence in performing activities of daily living (ADLs) is a central aspect of functioning. Elderly people often experience different kinds of impairments and limitations in their various life areas. So, the objective of this systematic review is to identify activity limitations and associated factors in elderly people.

Material and Method

We systematically searched four electronic databases (Scopus, EBSCOhost- CINAHL & MEDLINE, and PubMed) and bibliographies for relevant studies published between 2000 and 2017. Of the initial 629 identified articles, 37 met inclusion and exclusion criteria and were analyzed. The content analysis involved categorizing the factors into six domains representing factors associated with activity limitation.

Results

In multiple studies, elderly people exhibited significant activity limitations. Six domains were significantly associated with activity limitations in elderly people. These included socio-demographic factors, chronic health conditions, mental health status, health behaviors, psychosocial factors, and health-related factors. Older age (in 21 studies) and female gender (in 19 studies) were the most prevalent factor for activity limitation. In addition, stroke, arthritis, eye diseases, diabetes, anxiety, depression, cognition, physical inactivity, and poor mobility exhibited high evidential strength.

Conclusion

This review revealed various demographic, health conditions, mental status and behavioral factors associated with activity limitation among elderly people. Our findings may help to establish priorities for future research, and assist early detection and health and social program planning efforts for those at higher risk of activity limitation.

Key Word: Activity Limitation, Associated Factors, Elderly people

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D1.06 Rehabilitation Systems and Services Research - Miscellaneous

ISPR8-1581

PHYSICAL ACTIVITIES OF WORKERS IN HOSPITAL

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Introduction/Background

Appropriate physical activity can be a great help for a healthy life and increases work efficiency in the workplace. In this study, we tried to measure the amount of physical activity of workers in St. Vincent's hospital using the accelerometer (Actigraph wGT3XBT). The purpose of this study is to identify the relationship between physical activity and several factors such as a type of work, commuting method, marital status, and gender.

Material and Method

We enrolled doctors, nurses and other workers including medical staffs who work at the hospital. All participants wore the Actigraph for 7 days and consumed kcal per hour, numbers of steps and the intensity of physical activities were analyzed with a simple questionnaire including personal health status. Among them, 16 volunteers repeated the study to see if any improvements were made after counseling for activity enhancement.

Results

No significant difference was found in the amount of physical activities of the workers depending on gender, marital status and commuting methods to work. However, subjects with kids showed higher average kcal per hour than those without a kid, and the steps counts were significantly higher in the other worker's group than doctors and nurses. Interestingly, no single participant reporting vigorous intensity physical activity suggesting the general lack of physical activity in people working at the hospital. In the additional study for 16 volunteers, there was no significant enhancement from the previous results.

Conclusion

We found there was no significant difference in physical activities of the workers in the hospital according to sex, marital status, and commuting methods. So for increasing the physical activities we need constant attention for physical activities in daily life. Additionally, high intensity exercise was found to be insufficient for all subjects suggesting that workers in the hospital need to increase their physical activities.

Keywords

Exercises; Occupational health;Physical Activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.01 Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation (including Acute, Post-Acute and Community Rehabilitation Services)

ISPR8-0127

REHABILITATION CAPACITY-BUILDING IN DEVELOPING COUNTRIES

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Introduction/Background

Despite the prevalence of disability in low-and-middle income countries (LMICs), the clinical skills of rehabilitation workforce are not well described. We report health professionals' perspectives on clinical skills in austere settings and identify context-specific gaps for workforce capacity.

Material and Method

An exploratory-descriptive, cross-sectional, pilot survey of healthcare professionals working in rehabilitation in hospital and community settings conducted in Pakistan, Morocco, Nigeria and Malaysia. A situational-analysis survey-tool captured cross-sectional assessment of clinical skills required in various rehabilitation settings. Participant responses were coded in a line-by-line process, and clustered into common terms based on International Classification of Functioning, Disability and Health (ICF) framework to classify skill-categories in target domains.

Results

Survey respondents (n=532) from Pakistan 248, Nigeria 159, Morocco 93 and Malaysia 32 completed the survey. The participants were: physiotherapists (52.8%), nurses (8.8%), speech and occupational therapists (8.5%, 5.3%), other medical doctors (5.5%), rehabilitation physicians (3.8%), and prosthetist/orthotists (1.5%). The 10 most commonly used clinical skills reported were prescription of physical activity and medications, transfer-techniques, daily-living activities, allied health interventions, patient/carer education, comprehensive patient-care, diagnosis/screening, behaviour/cognitive interventions, referrals, assessments and collaboration. Most responses linked with ICF categories in activities/ participation, and personal factors.

Conclusion

The survey tool identified task shifting amongst healthcare professionals. The core skills and gaps reflected general rehabilitation practice, rather than discipline-specific skills.

Keywords

Rehabilitation;Capacity-building;Low-and-middle income countries

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.01 Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation (including Acute, Post-Acute and Community Rehabilitation Services)

ISPR8-0130

ROLE OF NEUROPSYCHOLOGY IN LEVEL 2A REHABILITATION UNIT

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Introduction/Background

Neuropsychological assessment and evaluation is essential following acquired brain injury. The valuable clinical information obtained from the neuropsychological assessment can guide the rehabilitation team in goal setting and discharge planning. The neuropsychologist also plays a significant role in managing the challenging behaviour after any neurological insult to the brain.

Blackheath Brain Injury Rehabilitation Centre (BBIRC) consists of two wards, Heathside Neurodisability Unit (HNDU) with 18 beds and Thameside Brain Injury Rehabilitation Unit (TBIRU) with 16 beds. HNDU is a level 2a specialist rehabilitation service. These individuals typically present with greater physical needs. The aim of this study was to explore the role of neuropsychology in the level 2a specialist rehabilitation service.

Material and Method

All patients referred for neuropsychology assessment from September 2015 to July 2017 from HNDU were included in the study. To inform how psychology resources were allocated, further information was gathered about the number of TBIRU beds occupied during this period, as well as the number of psychologists each month.

Results

Our results showed that psychology resources provided to HNDU have consistently exceeded 20% since November 2015. Most frequent reason for referral to Psychology was for cognitive assessment (42%) followed by mood intervention (31%), and behaviour management (16%).

Conclusion

Our study concluded that there is range of reasons for referral and rate of referral per month. There is a regularly high demand for Psychology on Level 2a rehabilitation unit in a variety of areas.

Keywords

neurorehabilitation;neuropsychology;resources

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.01 Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation (including Acute, Post-Acute and Community Rehabilitation Services)

ISPR8-2643

QUALITY IN DEMENTIA CARE: A CROSS SECTIONAL STUDY ON THE BIO-PSYCHO-SOCIAL COMPETENCIES OF HEALTH CARE PROFESSIONALS.

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Introduction/Background

Professionals in dementia-care ought to be able to work within a Bio-Psycho-Social model. The objectives were to examine whether dementia-care is delivered in a Bio-Psycho-Social way, to explore the influencing factors and to evaluate the factorial validity of the 'Bio-Psycho-Social-Dementia-Care scale'.

Material and Method

413 healthcare-professionals completed the 'Bio-Psycho-Social-Dementia-Care scale'. Differences between groups (settings, professions, years of experience) were calculated with a student's t-test and one-way ANOVA. The factor structure of the scale was evaluated using a confirmatory factor analysis.

Results

The factor-analysis confirmed the 5 subscale-structure (1) networking, (2) using the client's expertise, (3) assessment and reporting, (4) professional knowledge and skills and (5) using the environment. (No significant differences were found between professionals in residential care and community care for the subscales 'networking' and 'using the client's expertise'. Professionals in residential care score higher than community care for 'assessment and reporting' ($p < 0,05$) and 'professional knowledge and skills' ($p < 0,01$) but lower for 'using the environment' ($p < 0,001$). The juniors score higher for 'professional knowledge' compared to seniors ($p < 0,01$) and the seniors score better for 'professional experience' ($p < 0,01$). The Cure and Care disciplines and the Therapy disciplines had higher values in 'assessment and reporting' compared to the Social Support disciplines ($p < 0,001$ and $p < 0,001$). The Therapy disciplines scored higher in 'using professional knowledge and skills' compared to the Social Support group ($p = 0,021$) and the Cure and Care disciplines ($p < 0,001$). The Social Support disciplines scored higher in 'using the environment' compared to the Therapy disciplines ($p < 0,001$) and the Cure and care disciplines ($p < 0,001$).

Conclusion

The Bio-Psycho-Social-Dementia-scale is a valid tool and offers opportunities not only to rate, but also to improve Bio-Psycho-Social functioning in dementia-care: increase interdisciplinary collaboration, facilitate assessment, combine the strengths of the different professions and install a heterogeneous team with regard to age and experience.

Keywords

dementia care; measurement tool; bio-psycho-social model

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.01 Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation (including Acute, Post-Acute and Community Rehabilitation Services)

ISPR8-2671

HOLISTIC REHABILITATION SERVICES FOR WAR VICTIMS IN GEORGIA

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Introduction/Background

War and related migration becomes more and more actual in worldwide. Georgia is war affected country with about 500 000 victims of war and 20 % of occupied territories by Russia, with ongoing aggression alongside of para – military villages. Aim of study was: assessment of rehabilitation services for elaboration of conception for comprehensive, multilateral system of rehabilitation in War affected Country.

Material and Method

Methods include assessment of effectiveness of multi – disciplinary rehabilitation services, including medical, psychological, social and legal assistance. Study was conducted among t n 120 war victims, including in – take and follow us assessment.

Results

Different target groups were identified: IDPs, civilians living in para military regions and population still living in occupied regions. In 84 % of 120 were identified physical disturbances, together with mental /psychological outcomes of trauma that mainly were revealed in PTSD symptoms with other stress – related disorders.

Conclusion

Assessment of effectiveness of services and interventions revealed necessity of complex – holistic approaches in buildup of national wide rehabilitation services for war affected population. At the same time a holistic rehabilitation should include not only multi – disciplinary attitude during rehabilitation, but also different levels of services, including crisis interventions, long term rehabilitation, community based follow up interventions, with client centered approaches, build up with key role of timely and territorial accessibility.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.01 Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation (including Acute, Post-Acute and Community Rehabilitation Services)

ISPR8-0219

TRANSLATING EVIDENCE INTO ACTION: AN INTERVENTION FOR INCREASING VITAMIN D SUPPLEMENTATION IN A DEFICIENT REHABILITATION POPULATION

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Introduction/Background

Inadequate vitamin D is highly prevalent, affecting approximately 42-77% of the general United States population. Vitamin D deficiency (VDD) increases the risk of osteoporosis, falls, and fractures. Acute inpatient rehabilitation patients have several risk factors for VDD, and the adverse effects of VDD may hinder long-term functional gain.

Material and Method

Prospective cohort study, evaluating patients admitted before and after a screening intervention as part of a quality improvement initiative at an academic, freestanding acute inpatient rehabilitation hospital. This study included a convenience sample of patients admitted two months pre-intervention (n=128), and patients admitted two months post-intervention (n=129). Providers obtained a routine serum vitamin D level on admission (universal screening), then utilized a standard supplementation protocol. Vitamin D insufficiency (VDI) was defined as a 25-hydroxyvitamin D (25(OH)D) level of 20-29.9 ng/mL, and VDD as <20 ng/mL. The prevalence of VDD and VDI in the post-intervention population was evaluated, as well as changes in vitamin D screening and supplementation rates pre- and post-intervention.

Results

Pre-intervention, 10.2% of patients were screened for VDD, with 23.1% found to be VDI and 46.2% VDD. Post-intervention, 89.9% of patients were screened, with 31.9% found to be VDI and 47.4% VDD. Pre-intervention, 88.9% of all screened patients were on vitamin D supplementation at discharge versus 75.0% post-intervention. In both uni- and multivariate analyses, we found increased risk of VDD was significantly associated with African American race (OR 7.3, 95% CI, 1.56-34.2, p=0.12) and age younger than 65 (OR 13.6, 95% CI, 2.5-73.8, p=0.002). Diagnoses in the "other neurologic" category were associated with decreased risk of VDD (OR 0.01, 95% CI, 0.001-0.193, p=0.002).

Conclusion

Given the high prevalence of VDD in an acute inpatient rehabilitation hospital, a routine screening and standardized supplementation protocol may be a good practice to improve quality of care.

Keywords

vitamin D;quality improvement;acute inpatient rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.01 Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation (including Acute, Post-Acute and Community Rehabilitation Services)

ISPR8-0328

A RETROSPECTIVE REVIEW OF OUTPATIENT CASES SEEN AT THE FIRST PHYSICAL MEDICINE AND REHABILITATION CLINIC IN A TERTIARY HOSPITAL IN GHANA

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Introduction/Background

There are an estimated 4.2 million persons with disabilities in Ghana. Physical Medicine and Rehabilitation services were however non-existent until 2016. The first outpatient PM&R clinic began at the Komfo Anokye Teaching Hospital, a tertiary hospital, with support from the International Rehabilitation Forum (IRF). It is run by a PM&R physician being trained by the IRF. Consultations are held at the clinic once a week. This study analyses comprehensively the cases seen at the clinic in the first year of its establishment.

Material and Method

Outpatient consultations that took place from June 2016 to May 2017 were identified from the clinic's records. Demographic information and diagnoses made were recorded and analyzed.

Results

A total of 208 cases were seen with 108 (51.9%) females and 100 (48.1%) males. An average of 4 cases were seen on each clinic day. Ages ranged from 5 weeks to 88 years with an average age of 42 years. The most common diagnosis made was stroke with hemiparesis 63 (30.2%) followed by back pain 41 (19.7%), arthritis 30 (14.4%), cerebral palsy 18 (8.7%), talipes equinovarus 11(5.3%) and complications of fracture management 17 (8.2%). The rest of the diagnoses included Bells palsy 9 (4.3%), Erbs palsy 4 (1.9%), spinal deformities 3 (1.4%) and others 12 (5.8%). All the cases seen were referrals from health professionals.

Conclusion

Though challenging, we have been able to start and sustain a PM&R outpatient service in a developing country. There is however the need to expand the clinic to care for patients with disabilities in other parts of the country with increased awareness creation on the existence of such services. More PM&R physicians need to be trained as the ratio of a PM&R physician to persons with disabilities is currently 1:2,100,000 in Ghana.

Keywords

rehabilitation service;evaluation;Ghana

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.01 Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation (including Acute, Post-Acute and Community Rehabilitation Services)

ISPR8-1066

A LITERATURE REVIEW OF OCCUPATIONAL THERAPY IN POST-ACUTE HOSPITAL IN JAPAN - 43 CASE STUDIES FROM 2012 TO 2016 -

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Introduction/Background

There are approximately 1300 rehabilitation hospitals in Japan where patients receive 3 to 4 months of intensive rehabilitation (post-acute care). A rehabilitation team is primarily involved in helping patients improve their function, skills for both activities of daily living (ADL) and instrumental activities of daily living (IADL). To ensure best quality in rehabilitative care, it is necessary for professionals to always base their actions on existing evidence. Fortunately, the Japanese Association of Occupational Therapy (JAOT) has a registry system for case studies which members can both access and use as a venue for sharing knowledge and practice. Herewith, this paper aims to examine the occupational therapy process in post-acute care in Japan.

Material and Method

Using the registry system, we searched case studies relating to post-acute care and occupational therapy within the years 2012 to 2016. The search parameter was "physical rehabilitation practice". Moreover, a key word "post-acute practice" must be in the case's title or main body.

Results

The search revealed 47 case studies, but 4 cases did not meet the set criteria. After tabulating and classifying the 43 case studies, it revealed that the case studies focused on cases of people with stroke, spinal cord injury, traumatic brain injury, and fracture. The occupational therapy evaluation used were ROM, sensory test, Br-Stage, or FIM, while the intervention methods were ROM exercise, Basic motion exercise or ADL exercises. A small percentage of the studies focused on IADL functions and training.

Conclusion

Occupational therapists need to engage in the occupations they want to, need to, or are expected to do (WFOT 2012). So we have to support life as well as patient function. But there were few studies. I think we need to identify the evidence of occupational focus practice in post-acute hospital.

Keywords

Occupational Therapy;Post acute;Intervention program

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.01 Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation (including Acute, Post-Acute and Community Rehabilitation Services)

ISPR8-2419

CORRELATION BETWEEN INITIAL LEFT VENTRICULAR FUNCTION AND PREDISCHARGED 6 MINUTE WALKING DISTANCE IN PATIENT WITH ACUTE CORONARY SYNDROMES IN INTENSIVE CARDIAC CARE UNIT

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Introduction/Background

Acute Coronary Syndromes (ACS) is a spectrum of conditions compatible with acute myocardial ischemia and or infarction due to abrupt reduction in coronary blood flow. It can manifest as ST-Elevation Myocardial Infarction (STEMI), Non ST-Elevation Myocardial Infarction (NSTEMI) or Unstable Angina Pectoris (UAP). It can cause decrease function of the left ventricle which can be measured by Ejection Fraction (EF) through Echocardiography. In CiptoMangunkusumo Hospital, phase I Cardiac Rehabilitation were given in Intensive Cardiac Care Unit (ICCU) and Six Minutes Walking Test (6MWT) were done before patients discharged to get 6 minutes walking distance (6MWD) that can be used as a prognostic tools. This study aims to find correlations between initial left ventricular function measured by ejection fraction and predischarged 6MWD in patients with ACS.

Material and Method

This is a retrospective study. Forty three subjects were diagnosed with ACS, admitted at ICCU on January-May 2017 were divided into 3 groups (STEMI, NSTEMI and UAP). Echocardiography were done initially on the ICCU. All patients underwent phase I rehabilitation. The 6MWT were done on the last day of hospitalization, before discharged.

Results

Twenty one patients (49%) were diagnosed with STEMI, 8 patients (19%) with NSTEMI, and 14 patients (32%) with UAP. The mean age were 52 ($\pm 9,6$). All data were normally distributed. The mean EF were 48 ($\pm 2,0$) % in STEMI, 43 ($\pm 3,7$) in NSTEMI and 62 ($\pm 2,5$) in UAP. The mean 6MWD were 290 ($\pm 19,4$) meters in STEMI, 274 ($\pm 27,8$) in NSTEMI and 330 ($\pm 23,0$) in UAP. There were no correlations of EF and 6MWD.

Conclusion

There are no correlations between initial left ventricular function and predischarged 6MWD in patient with ACS in ICCU settings. The mean 6MWD in STEMI and NSTEMI group were lower than 300 meters indicating worse prognosis compare to UAP group.

Keywords

cardiac rehabilitation;acute coronary syndromes;six minutes walking distance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.01 Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation (including Acute, Post-Acute and Community Rehabilitation Services)

ISPR8-2445

COGNITIVE ASSESSMENT OF PATIENTS WITHOUT BRAIN INJURY AT ICU DISCHARGE, COMPARISON WITH MILD AND MODERATE TRAUMATIC BRAIN INJURY PATIENTS. PRELIMINARY RESULTS.

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Introduction/Background

Significant cognitive impairment after ICU stays in up to 40% of patients without any initial brain damage has been reported. This is a part of the Post Intensive Care Syndrome, alongside motor and psychiatric dysfunctions. In these studies, cognitive evaluation scores are found similar to scores for patients with moderate traumatic brain injury. However, the precise nature and magnitude of the cognitive disorders are not well described.

We decided to deepen analysis of cognitive disorders in non-brain injury patients at ICU discharge (No-BI) and develop a comparison with mild and moderate traumatic brain injury patients (TBI). **Material and Method**

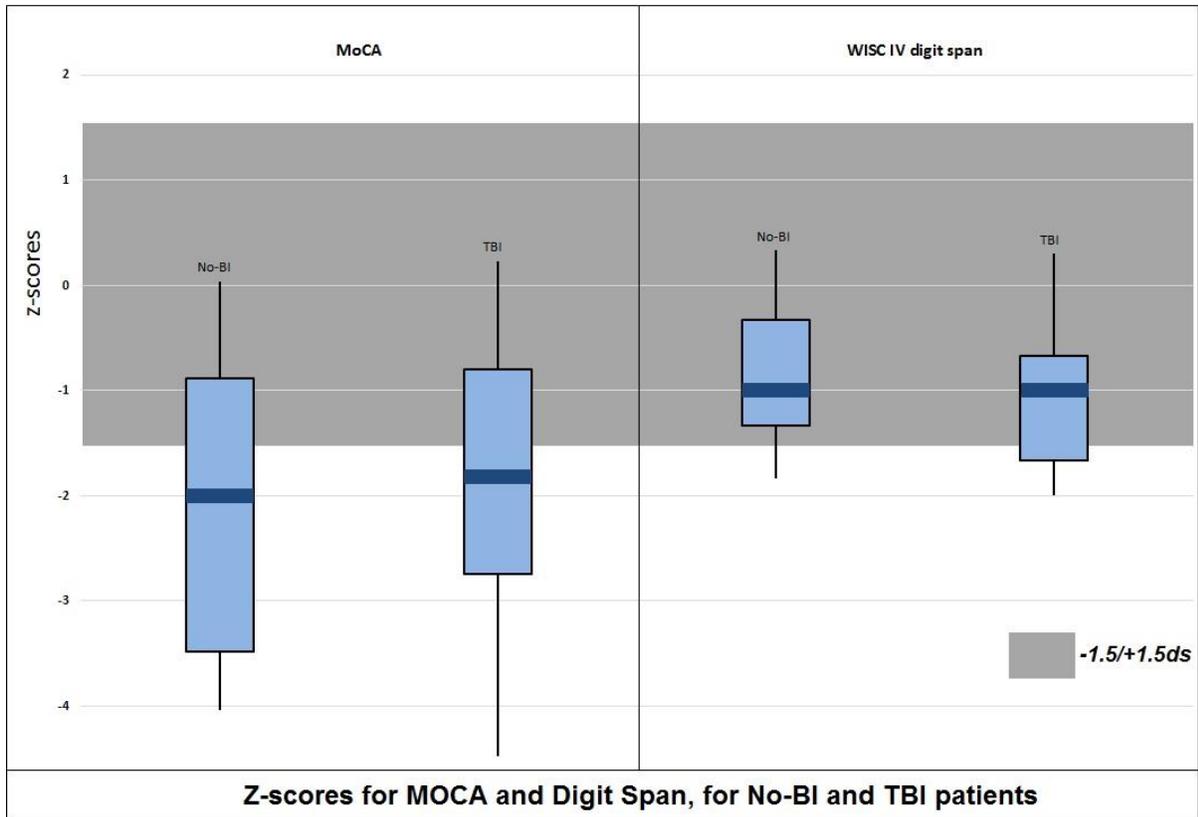
After ICU stay (≥ 48 hours), we administered outcome measures (GOSE, DRS) and neuropsychological tests to assess global cognitive functioning (MOCA), working memory (digit span), spatial neglect (line bisection), selective attention and speed processing (bells cancellation) to No-BI and TBI patients.

Patients with history of neurologic or psychiatric troubles were not included. For each patient, we noted age, gender, initial Glasgow Coma Score (GCS), type of disease, and intubation and sedation periods in ICU.

Results

We tested 16 No-BI and 32 TBI. GCS and intubation period were significantly lower for TBI compared to No-BI (respectively $p=0.04$ and $p=0.01$).

The median GOSE for both groups was 5 (lower moderate disability). Neuropsychological measures showed no significant difference between No-BI and TBI patients. Only MOCA (No-BI: 21 ± 5 and TBI: 21 ± 5) and digit span (No-BI: 7 ± 2 and TBI: 7 ± 2) are significantly lower than normality ($p < 0.001$ for both, figure).



Conclusion

We found no neuropsychological difference between No-BI and TBI patients, confirming the hypothesis that these two populations have comparable global cognitive functioning and working memory impairment at ICU discharge. We need more patients to improve these results. A new evaluation at 12 months will allow to discuss a possible recovery.

Keywords

ICU;cognitive;outcome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.01 Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation (including Acute, Post-Acute and Community Rehabilitation Services)

ISPR8-2490

HOME BASED FUNCTIONAL EVALUATION OF UPPER EXTREMITY STROKE SURVIVALS AFTER 6 MONTHS DISCHARGE FROM HIGH INTENSITY NEUROREHABILITATION PROGRAM AT REHABILITATION CENTRE KLADRUBY

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Introduction/Background

The aim of the work was to evaluate a current condition upper extremity (UE) of stroke survivals after 6 months discharge from high intensity neurorehabilitation program at Rehabilitation Centre Kladruby.

Material and Method

The study included patients with a diagnosis of first stroke in the subacute phases, who were hospitalized in intensive comprehensive neurorehabilitation program at Rehabilitation center Kladruby. All stroke patients were screened for eligibility. Inclusion criterion were moderate to severe hand movements impairment equivalent to a score two or three of a possible six points on the Motor Assessment Scale (MAS) items 7, able to follow commands, either with verbal instructions, demonstration or other non-verbal cues. 15 patients were screened at a time T0 (admission), T1 (after 1 month) and T2 (after 6 months post discharge in home environment).

Results

Primary outcome measures showed up improvement in 53,33% patients and worsening in 13.33% for Box and Block Test (BBT), MAS in item 7 showed up improvement in 46,67 % patients and worsening in 13.33%, MAS in item 8 showed up improvement in 40 % patients and 60% patients remains same at a time T2.

Conclusion

During Home based functional evaluation of UE at a time T2 was taken as well dataset about access to local and community rehabilitation care. Data showed up none to minimum access for psychology and speech language pathology care. Occupational therapy was accessible for 27% stroke survivals and conventional physiotherapy and physical therapy for 91% stroke survivals. Despite this findings stroke survivals are improving after intensive inpatients neurorehabilitation in home settings with poor access to rehabilitation in long term evaluation. Our thought is that access to early intensive neurorehabilitation could contribute to continuous hand function improvement even in home environment.

Keywords

Stroke;neurorehabilitation;Rehabilitation Service Evaluation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.02 Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation (e.g. Home-Based Rehabilitation)

ISPR8-2672

RESULTS OF A COMMUNITY-BASED PEER MENTOR PROGRAM FOR SCI: FEASIBILITY AND COST ANALYSIS

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Introduction/Background

Individuals with spinal cord injury (SCI) are at high risk of developing pressure ulcers and depression. The purpose of the study was to develop and evaluate the feasibility and cost of a community-based peer mentor program to prevent and manage pressure ulcers and untreated depression for individuals with SCI.

Material and Method

Design:

Mixed methods: Non-randomized feasibility study with randomized cost analysis

Setting: Safety-net rehabilitation center and participants' homes/communities in an urban metropolis

Participants: Forty ethnically/racially diverse patients from underrepresented backgrounds from a rehabilitation center in an urban metropolis

Inclusion criteria: 18 years or older; SCI; at high risk of developing a pressure ulcer and/or depression. Control group was matched by age, gender, and SCI level/severity to intervention group

Intervention: 6-month community-based peer program to reduce pressure ulcers and untreated depression

Outcomes:

- 1) Feasibility study: a) Pressure ulcer risk; b) Depression; c. Program adherence
- 2) Cost analysis: Cost of healthcare
- 3) Interview: Report of participants and mentors

Results

All outcomes exhibited a positive trend in favor of pressure ulcer prevention; management of pressure ulcers and depression; self-management; and community reintegration (t-test for pre-post scores; n=20 intervention participants). The intervention was cost effective as compared to traditional services. The healthcare services rendered by the control group cost \$500,000 more than the intervention group during the study phase (cost analysis; n=40; included a randomized standard care control group). Most pressure ulcers were healed and prevented from surgeries. Factors/themes were identified for successful future programming (interviews; n=20 intervention participants).

Conclusion

The community-based peer mentoring program was feasible to administer and cost effective. Based on the cost analysis and use of the key factors/themes identified, this type of program could minimize the cost of burdensome health issues, maximize appropriate use of services, and improve the health and quality of life of individuals with SCI.

Keywords

Stroke;Community based;Comprehensive rehabilitation intervention

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.02 Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation (e.g. Home-Based Rehabilitation)

ISPR8-2686

LIVE WELL AFTER STROKE: METHODS OF A COMMUNITY-BASED, OCCUPATIONAL THERAPIST- LED, LIFE MANAGEMENT INTERVENTION

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Introduction/Background

Stroke is one of the leading causes of disability across the world. Post-stroke disability results in physical, cognitive, and emotional deficits leading to activity limitations and participation restrictions for individuals with stroke. Suffering a second stroke further compounds the devastating impact of stroke related disability. Lifestyle programs have shown effectiveness in preventing stroke; however, few individuals with stroke are able to participate in such programs, especially if they are from disadvantaged populations. The purpose of this study was to develop a comprehensive and intensive life management intervention for stroke survivors from racially/ethnically diverse, underrepresented populations by inculcating sustainable health-promoting behaviors, improving health-related quality of life, and mitigating recurrent stroke risk factors.

Material and Method

Design: Formative Evaluation: Interviews

Setting: Safety-net rehabilitation hospital and participants' homes and community

Participants: Ten ethnically/racially diverse patients from underrepresented backgrounds from a rehabilitation center in an urban metropolis

Intervention: 6-month life management intervention with one-on-one sessions with an occupational therapist in the participants' home and monthly group sessions in the community. Intervention focused on changing lifestyle habits to reduce secondary stroke risk factors and improving health-related quality of life through knowledge acquisition, self-management skill practice, self-efficacy/ confidence to change, motivation to change, and habit formation.

Main Outcome Measures: Interview narratives and content and narrative from session notes.

Results

Based on the information gleaned from the narratives, the intervention was revised in the following areas: manual outline and content, foundational components, and treatment theory structure revisions (active ingredients, mechanisms of change, target outcomes).

Conclusion

Based on the findings of the feasibility study narratives, the life management intervention was revised to capture more effective methods and content to assist individuals with stroke to make healthy lifestyle habit changes, mitigating secondary stroke risk factors and improving health-related quality of life. The program was feasible to administer in a US safety-net healthcare system.

Keywords

stroke;community based;rehabilitation program evaluation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.02 Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation (e.g. Home-Based Rehabilitation)

ISPR8-0779

ACTIVITY AND MOBILITY USING TECHNOLOGY (AMOUNT) REHABILITATION TRIAL: SUPPORT AND HEALTH COACHING DURING THE COMMUNITY PROGRAM

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Introduction/Background

The need for rehabilitation is growing although there are limited resources to meet this demand. Use of affordable technologies to enable health professionals to prescribe and monitor rehabilitation remotely may be one strategy to meet this demand. *Aim:* to describe physiotherapy support provided to participants using technology to improve mobility and physical activity in the post-hospital phase of the AMOUNT rehabilitation trial (n=300).

Material and Method

Process evaluation including participants (mean age 70 (SD 18); 52% male; 54% with neurological conditions limiting mobility) randomised to the intervention group (n=149). Intervention was additional to standard rehabilitation, prescribed using a protocol which matched games/exercises from eight technologies to the participant's mobility limitations. Technologies included video and computer games/exercises, tablet applications and activity monitors. Participants were taught to use the technologies during inpatient rehabilitation and were then discharged home to use the technologies ≥ 5 days a week for the remainder of the 6-month trial. Trial protocol required the physiotherapist to provide support every 1–2 weeks using a health coaching approach. Intervention datasheets were audited to determine frequency, duration, mode and type of support provided.

Results

Participants used on average 2 (SD 1) technologies in the post-hospital phase, with 95% of participants using an activity monitor. Physiotherapists had contact with participants on average 15 (SD 5) times (approximately every 11 days), of which eight were phone calls (11min duration), six home-visits (46min duration) and one other. Contact primarily incorporated health coaching (68%) with 8% of contact specifically for technology support. Topics discussed during

health coaching included discussing data from prescribed technologies (79%), physical activity and mobility status (70%), adherence (64%) and goal setting (47%).

Conclusion

A health coaching model to support technology-based rehabilitation post hospitalisation is feasible. Some support can be provided remotely limiting the need for frequent home visits.

Keywords

randomised controlled trial;health coaching;technology

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.02 Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation (e.g. Home-Based Rehabilitation)

ISPR8-1037

SIMILARITY STUDY OF THE AR-BASED MOTION ANALYSIS AND THERAPIST'S MANUAL ROM MEASUREMENT

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Introduction/Background

AR program is comfortable and easy to use medical evaluation. In medical evaluation, Range of motion is a methods to measure of patients joint motions and important tools in physical therapy. Nowadays, AR program is being used to measure patients ROM. The purpose of this study is to compared the results of ROM between AR program and electric goniometer.

Material and Method

Forty students participated in the study. This study used AR-based motion analysis and Electro goniometer to measure ROM of each joint[Figure 1],[Figure 2]. Each volunteer performed three different motion. At this time research measured each joint ROM used motion analysis and electro goniometer. For analysis methods, Measured ROM using motion analysis and lector goniometer used paried t-test. The significance level of all statistical analysis was set at $p<0.05$.



Figure 1. ROM measurement

A : Motion analysis
B : Electro goniometer



Figure 2. Motion

A : M1 : 45° shoulder abduction and 45° hip abduction in standing position
B : M2 : 90° shoulder abduction, 90° elbow flexion, 90° hip flexion and 90° knee flexion in standing position
C : M3 : 90° shoulder flexion and 90° knee flexion in standing position

Results

Mean and standard deviation values of the motion M1, M2 and M3 is shown in [table 1]. According the result, the ROM significantly difference with the 90° shoulder abduction measured motion analysis and electro-goniometer($p<0.05$). However, no significant difference were observed another motion at the M1, M2 and M3 position except the shoulder

abduction 90° ($p>0.05$).

position	angle of joint	motion analysis	electro goniometer	<i>p</i>
M1	45° shoulder abduction (°)	44.80 ±6.91	47.27 ±11.20	.303
	45° hip abduction (°)	45.55 ±7.86	46.05 ±10.02	.618
M2	90° shoulder abduction (°)	86.62 ±9.88	90.05 ±8.76	.007*
	90° elbow flexion (°)	89.52 ±11.73	92.27 ±9.62	.052
	90° hip flexion (°)	91.82 ±13.18	74.77 ±10.26	.261
	90° knee flexion (°)	96.52 ±9.96	80.70 ±11.06	.552
M3	90° shoulder flexion (°)	90.35 ±8.64	87.65 ±7.71	.530
	90° knee flexion (°)	89.57 ±8.84	84.85 ±9.41	.781

* Significant difference ($p<0.05$).

Conclusion

ROM measurement of the used AR-based motion analysis and electro goniometer has similarly results. And both plane showed coefficient of reliability $p<0.5$. So in this study, upper extremity`s except 90° shoulder abduction and lower extremity`s measured ROM used each tools has no signification. However only 90° shoulder abduction has significant difference. In conclusion, motion analysis is easy to use and save the evaluation time.

Keywords

Augmented reality; Range of motion; motion analysis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.02 Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation (e.g. Home-Based Rehabilitation)

ISPR8-1202

FEASIBILITY STUDY OF A COMMUNITY-BASED INTERVENTION IN THE CHRONIC PHASE OF TRAUMATIC BRAIN INJURY

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Introduction/Background

Few studies have investigated treatment needs and rehabilitation options in the chronic phase of traumatic brain injury (TBI). A Norwegian study showed unmet needs for rehabilitation services up to five years after TBI in the domains of emotional, cognitive and vocational functioning (Andelic et al., 2014). Patients highlighted the need for support to gain insight into emotional and cognitive problems and job skills, and the need to develop long-term efficient coping strategies. Hence, efficient interventions in the community setting are needed in the chronic phase of TBI. Winter et al. (2016) developed an individually fitted goal oriented in-home-program guided by the person-environmental fit model. The aim of the present study is to evaluate the feasibility of this intervention adapted to a Norwegian setting. The goal setting process, as well as the achievability and acceptability of the intervention will be discussed. In preparation for a planned randomized control trial, the inclusion criteria, measurements and translated intervention manual will also be evaluated.

Material and Method

Persons that sustained a severe TBI in 2009-2010 in Oslo and Akershus, Norway, were invited to participate. Three main self-reported activity problems (target outcomes) were established at baseline assessment. During eight intervention sessions over a four-month period, therapists and participants together developed targeted SMART (Specific, Measurable, Achievable, Realistic/Relevant and Timed) goals with Goal Attainment Scaling (GAS) and created evidence-based compensatory strategies to mitigate the reported problems. Outcome measures will be evaluated 4 and 12 months after baseline.

Results

Eight subjects with persistent TBI-related symptoms were included. Preliminary target outcomes were related to memory, planning/organizing, emotional regulation, sleep, depression, communication and physical functioning. More detailed results of the target

outcomes, feasibility of the intervention and 4 months results with GAS will be presented at the Congress.

Conclusion

Conclusions will be presented at the Congress.

Keywords

Rehabilitation;Traumatic Brain Injury;Community-based intervention

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.02 Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation (e.g. Home-Based Rehabilitation)

ISPR8-1534

A REVIEW OF CURRENT WEARABLE TECHNOLOGY AND INNOVATIONS FOR REHABILITATION FOLLOWING HIP AND KNEE REPLACEMENT.

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Introduction/Background

Total knee replacement (TKR) and total hip replacement (THR) are highly successful operations for controlling pain, restoring function and enhancing quality of life for patients with hip and knee osteoarthritis. However approaches to rehabilitation following surgery vary greatly and evidence is limited with regard to successful interventions. There is a wide variety of new technologies and wearable sensor devices currently being marketed, which are proposed to assist with rehabilitation following joint replacement. However, very little is known about how these technologies work, how they differ, and whether they are effective.

Material and Method

A search was conducted of the PubMed database of studies from January 2000 to October 2017. The Review was structured using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. Search terms included: hip arthroplasty, hip replacement, hip prosthesis, knee arthroplasty, knee replacement, knee prosthesis, rehabilitation, recovery, trackers, devices, wearables, and sensors. Studies included those that were published in English language and examined portable wearable technologies capable of providing feedback to the end user following hip or knee replacement surgery.

Results

Five studies met the eligibility criteria, and all used an accelerometer and a gyroscope for their technology. A review of the studies found very little evidence to support the efficacy of the technology, although they show that the use of the technology is feasible.

Conclusion

Wearable technology is being promoted by companies as a way of improving rehabilitation following THR and TKR surgery. However, this review finds very little evidence to support its efficacy. Future work should establish which wearable technology is most valuable to patients, which improves patient outcomes, and the most economical model for deploying the technology.

Keywords

Total knee replacement;Total hip replacement;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.02 Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation (e.g. Home-Based Rehabilitation)

ISPR8-2092

PHYSICAL HEALING STANDARDS DURING THE STAGES OF REHABILITATION EXERCISE PROGRAMS FOR FUNCTIONAL DISABILITIES RESULTING FROM ACCIDENT INJURIES

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Introduction/Background

The objective of the rehabilitation of physical exercise should enhance the speed and efficiency of the return of motor functions affected after accident injuries, which affect the efficiency of the motor system. The hope is to reduce functional motor disabilities, allowing the person to return to the level of professional activities and sports to the previous life. The results of this study shows the weakness of the outcomes of the injured after the rehabilitation of accident injuries. As such, the goal of the research is to determine the standards of physical recovery and indicators of verification between the stages of rehabilitation programs for functional disabilities resulting from accident injuries.

Material and Method

After completion of the review of the qualifying objectives and the exercise content for each stage of the physical and motor rehabilitation programs, a number of transitional criteria were assumed from a qualification stage to the next stage, and indicators were developed to measure the criterion. These criteria were presented to physical and medical rehabilitation experts and practitioners to express their views on these criteria.

Results

Three basic criteria were achieved in the initial rehabilitation phase. **The second phase** was achieved by five basic criteria; including improving the fixed strength of the muscles by 15-20%, improving the motor range of flexing the joints from 5-10 degrees, loading at least 50% of the body weight on the injured side, improving the fixed balance on the end Injured, and improved walking with reduced auxiliary tools. The number of standards in the **third phase** was 8, the **fourth phase** was 10 and the **fifth phase** was 13 standards.

Conclusion

When designing rehabilitation exercises programs for functional disabilities resulting from accident injuries we should rely on the criteria of transition, and not to move from one stage to another only after meeting the standards and measurement indicators.

Keywords

Physical healing standards ;functional disabilities ;accident injuries

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-2537

DIRECTED ACYCLIC GRAPH (DAG) TO ANALYSE THE IMPLEMENTATION OF A CLINICAL PRACTICE GUIDELINE WITH A TELE-REHABILITATION PROGRAM AFTER LOWER LIMB AMPUTATION: INSIGHTS FOR EPIDEMIOLOGIC RESEARCH

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Introduction/Background

The graphical and algebraic formulation of the Directed Acyclic Graph (DAG)(1) are useful tools to analyse how the combined effects of multiple variables affect rehabilitation outcomes. Based on systematic reviews, this lecture shows how multi causal interactions affect Odds Ratios/Risk Ratios in rehabilitation for the amputee.

Material and Method

To facilitate the understanding, the lecture takes the recommendations derived from The Clinical Practice Guideline (CPG) for the surgery and rehabilitation after lower limb amputation.(2) These analyses are a core step of the methodology of an ongoing randomized controlled trial (RCT) (Colciencias Research code 57229) that analyzes the effect of TeleRehabilitation as a Knowledge Translation strategy to implement the CPG -patients' version-(3) and to evaluate the adherence of persons with recent amputations to such CPG recommendations and the change in their health status.

Results

A classical way to explore the effect of a treatment is to draft a linear path between an exposure (exercise) and the outcome (recovery of walking) (Figure 1). Therefore, the statistical analysis lacks an accurate detection of other multi-causal effects.(4) A real effect of an exposure (adherence to stump care) could be obscured by multiple variables (i.e. stump edema) on the final effect of the outcome (healed stump) (Figure 2)

Conclusion

To understand real impacts, clinicians and researchers face the challenge of the simultaneous effects of treatments (adherence to exercise) and their interaction with multiple comorbidities (cognition, deconditioning, diabetic polyneuropathy and stump quality), as it happens in real life. These comorbidities modify the relationship between the intervention (rehabilitation) and the outcome (walking). The DAG causal diagrams (confusion, interaction, collinearity or mediator variables) (5)(6) allows a landscape to analyse multi causal effects and facilitates the individualization of research results at the physician's desk.

Keywords

TeleRehabilitation; Research methods for multicausality; Amputee Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-0356

TELEREHABILITATION OF PATIENTS WITH INJURIES OF THE LOWER EXTREMITIES

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Introduction/Background

Background. Orthopedic rehabilitation is a subspecialty that involves the care of patients who have complex musculoskeletal problems. After the injury in the body of the patients, physiological constants are temporarily violated, causing protective, restorative and compensatory reactions. Currently not sufficiently studied sequential algorithm of dosed loads on the injured extremity after immobilization and postoperative treatment of patients, not studied physiological and pathophysiological response for the sequence and dose of axial load on the limb.

Material and Method

All patients were undergo generally accepted methods of rehabilitation in hospital. Patients trained with the method of assessment of pain on a 10-point scale, the method of measuring the volume of soft tissue and compared it with healthy limb before and after each stage of the exercise.

Results

In a telerehabilitation program participated 27 patients with injuries of the lower extremities affected more than 2 months ago. The system of remote monitoring includes device with sensors (with 6-axis sensor, pulse-oximetry, temperature sensor), fixed to the injured limb and software. During the telemonitoring physician controls the adequacy of execution of exercises and has the ability to adjust the load depending on the functional state of the limb. Software allows monitoring the exercises time, the frequency of active movements of injured limb, pulse.

Conclusion

Telerehabilitation is good alternative for providing access to specialty care for the growing number of patients with traumatic injuries. Telerehabilitation system and dosed load algorithm can be used in a complex rehabilitation of patients with injuries of the lower extremities. This will improve the quality of life in this group of patients and significantly reduce the cost of the rehabilitation period.

Keywords

telerheabilitation;telemedicine;musculoskeletal disorders

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-0357

TELEREHABILITATION OF PATIENTS WITH INJURIES OF THE ELBOW JOINT OF THE UPPER EXTREMITIES

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Introduction/Background

The international orthopedic community aims to achieve the best possible outcome for patient care by modifying rehabilitation methods and using telemedicine technology. Therefore, the overarching theme of this paper is to acknowledge the gold standard in implementation of the telemedicine technology for rehabilitation of the patients with injuries of the elbow joint of the upper extremities. Currently not sufficiently studied sequential algorithm of movement activity on the injured upper extremity after immobilization, not studied physiological and pathophysiological response during rehabilitation.

Material and Method

Consecutive patients were recruited over a two-year period. 67 subjects with upper extremity elbow joint injuries were enrolled in the study. Thirty-eight patients from the control group underwent traditional rehabilitation procedures for a 2-weeks period after completion of immobilization. 29 subjects were enrolled in the telerehabilitation group for a 2-weeks period after completion of immobilization and were trained with a set of exercises for home use. Home remote monitoring for the 29 test subjects included use of a device with 6-axis sensor, pulse-oximetry, temperature sensor, that was fixed to the injured forearm. During the execution of exercises data from device's sensors goes to the doctor and displayed as digital data and graphs.

Results

During the telemonitoring physician controls the adequacy of execution of each stage of rehabilitation exercises and has the ability to adjust the amplitude of movements in real time depending on the functional state of the limb and pain syndrome. Software allows monitoring the exercises time, the frequency of active movements of limb, the number of active movements, pulse. The orthopedic during telerehabilitation took significantly less time to consult patients than the traditional rehabilitation. Patient satisfaction was higher for the telerehabilitation than for the orthopedic traditional rehabilitation.

Conclusion

Telerehabilitation is good alternative for providing access to specialty care for the growing number of patients with upper extremity elbow joint injuries.

Keywords

telemedicine;telerehabilitation;injuries of the elbow

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-0884

EFFICIENCY OF LASER FOX III IN THE TREATMENT OF ONYCHOMYCOSIS, REHABILITATION HOSPITAL JULIO DIAZ, HAVANA, CUBA

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Introduction/Background

Onychomycosis is a health problem, it is considered the most difficult to treat superficial mycosis, in Cuba it constitutes 10% of the superficial mycoses in patients who come to dermatological consultations. Podiatry care is part of rehabilitation services in our country, it is the government's interest to introduce new technologies, the Julio Díaz hospital is an excellent place to try new treatment modalities.

Objective: To evaluate the therapeutic efficacy of LASER FOX III in the treatment of onychomycosis.

Material and Method

Experimental study in 100 patients diagnosed with onychomycosis treated in the podiatry area of the Julio Díaz Hospital, between January 2016 and January 2018. Frequencies and percentages were used, mean, standard deviation, minimum and maximum value were calculated. A homogeneity test was applied (Chi-square), contrasts of parametric hypothesis were performed, unilateral with a student T statistic, Pearson's linear correlation was used to establish a relationship between variables of interest.

Results

The average age was 54.0 ± 11 years, the female sex predominated (77.4%), the mycological study showed as more frequent filamentous fungi (59.5% control group and 64.3% experimental group). In the inter-group analysis there were no differences in the evolution of the patients, both treatments were equally effective ($p = 0.557$), all patients started with positive mycological studies and the treatments ended with 59.5% of negative results. 58.3% of the sample obtained satisfactory results, by groups the highest percentage of positive results was from the control group (61.9%), against 54.8% of satisfactory results of the experimental, difference not significant ($p = 0.389$).

Conclusion

The treatment with LASER FOX III is as effective as the pharmacological treatment for symptomatic relief, decrease of the severity index of onychomycosis and elimination of the fungal agent.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-1580

SMARTPHONE APPLICATION FEASIBILITY TEST FOR ACTIVITY DAILY LIVING IN STROKE

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Introduction/Background

This study aims to investigate the validity of a smartphone application for post-stroke ADL (activities of daily living) management based on an evaluation by users and experts.

Material and Method

The research design was done according to the ADDIE (Analysis-Design-Development-Implement-Evaluation) model. In the analysis phase, we researched and analyzed other applications and items to investigate stroke patients' disease-related knowledge and devise contents for the smartphone application to be developed. In the design phase, we wrote a list of ADL and created a database and scenarios based on expert meetings. In the development phase, we created and configured the contents. In the implementation phase, we downloaded the application on the smartphones of 33 users and 30 experts, taught them how to use it, and asked them to use the application for four weeks. In the evaluation phase, we investigated the content validity and reliability of the application and evaluated the usability of the application. Data were analyzed using the SPSS 21.0 software. Users' and experts' evaluation scores were analyzed using descriptive statistics. Content validity was tested with content validity index (CVI), and reliability was tested with Cronbach's alpha.

Results

The results were as follows. Users gave an average rating of 2.93 out of 4 for the application for managing ADL of stroke patients. Experts' evaluation was 3.14 out of a score of 4. The experts were more satisfied with the application than did the users. The overall CVI of the application was .93. and the overall Chronbach alpha was .85, indicating that both validity and reliability were high.

Conclusion

The STROKE CARE application confirmed that it is easy to use videos about the information needed for stroke patients and management of ADL without restriction of time and space. We speculate that the STROKE CARE application is usable and would be helpful for stroke patients to manage ADL.

Keywords

Application; Feasibility test; Stroke patients

Conflict of interest

Disclosure statement:

This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. 2017R1C1B5017978)

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-1592

EARLY REHABILITATION OF DISTAL RADIUS FRACTURE THROUGH REHAND: AN INNOVATIVE DIGITAL TOOL.

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Introduction/Background

Distal radius fractures are very common and estimations point out an increase incidence of 50% by 2030. Home program exercises are predominantly used in clinical practice. Evidence shows that these programs need to be personalized, progressive, controlled and early implemented. There is a period of time patients have to suffer without treatment before be attended by rehabilitation services.

We propose the use of ReHand to accelerate rehabilitation treatments, provide patients with personalized exercises programs and allow rehabilitation services to monitorized this process. ReHand is an app tablet which implement exercises based in new paradigms of sensorimotor system and a dashboard that allows rehabilitation services to monitorized patients.

Material and Method

Urgency and rehabilitation services of Hospital Virgen Macarena and Hospital Virgen del Rocio will select patients with diagnosis of distal radius fracture to be enrolled in a prospective clinical trial comparing those who received ReHand home exercise program with those enrolled in the rehabilitation services. When trauma services remove the splint one group will received ReHand and the other group will be send to rehabilitation service where will be provide with traditional home exercise program guided by paper sheet. Outcomes: dexterity (Nine Hole Peg Test), grip strength, sensorimotor assessment (Joint Position Sense), arc of motion for wrist flexion and extension and functionality (Patient Rate Wrist Evaluation Scale). Assessments take place at 3 weeks and at 3 month. This study is part of a multicenter study of Andalusian Public Health System.

Results

Currently we are in analysis data and evaluation results phase. According to our preliminary studies we expect have significant results time before the congress.

Conclusion

According to our preliminary outcomes we will be able to conclude that ReHand is an effective tool for to improve the functional status of the hand after a distal radius fracture with better outcomes than traditional method.

Keywords

Tele-rehabilitation;Distal radius fracture;Early-Rehabilitation

Conflict of interest

Disclosure statement:

I am part of the health research and development team of ReHand.

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-1634

EFFICACY OF MOBILE HEALTHCARE APPLICATION AND WEARABLE DEVICE IN IMPROVEMENT OF EXERCISE CAPACITY IN PROSTATE CANCER PATIENTS UNDERGOING HORMONE THERAPY

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Introduction/Background

Androgen ablation therapy (ADP) in prostate cancer patients may cause complications such as cardiovascular disease, metabolic syndrome and fatigue. The study aimed to evaluate the effect of regular rehabilitation exercise using smart after care in improvement of exercise capacity in prostate cancer patients undergoing ADP.

Material and Method

The prostate cancer patients under ADT with age of or over 40 years were recruited and randomly allocated. The exercise group was provided with a smart aftercare program application and wearable device, providing general health information, nutritional and medication care and rehabilitation program which was adjusted in level according to the test results at 6 weeks follow up. The patients visited at time of enrollment, 6 weeks and 12 weeks and their physical performance status (2 minutes' walk test, 30-second chair stand test, grip strength test, short physical performance battery) was tested. The quality of life and satisfaction

was evaluated with questionnaires (EORTC QLQ C30, PR 25) and body composition was additionally measured.

Results

After 12 weeks, the exercise group showed significant improvement in social functioning ($P=0.016$) as well as in appetite loss ($P=0.048$) (Table 1). Both groups showed significant improvement in urinary symptom, whereas the exercise group additionally showed significant improvement in sexual functioning ($P=0.032$). In the aspect of physical performance, both groups showed significant improvement in 30s chair stand test and 2 minutes' walk test after 12 weeks of smart aftercare program, whereas the exercise group had additional significant improvement in right hand grip strength ($P=0.047$) and reduction in body fat percentage ($P=0.003$)(Table 2).

Table 1. Change in quality of life of prostate cancer patients after smart after-care

EORTC QLQ-C30	Control group			After-Care group			p [†]
	Baseline	12 wks	p [*]	Baseline	12wks	p [*]	
Global health status	61.4±21.7	62.3±24.9	0.887	62.3±19.3	67.1±17.5	0.690	0.461
Functional scales							
Physical functioning	79.3±15.8	80.0±12.9	0.852	80.3±12.2	83.0±10.5	0.321	0.584
Role functioning	80.7±20.9	86.0±19.5	0.083	81.4±17.9	83.3±18.9	0.695	0.531
Emotional functioning	78.9±18.5	81.1±26.6	0.662	86.6±17.4	91.7±12.1	0.119	0.120
Cognitive functioning	78.1±16.7	79.8±23.3	0.630	78.7±12.5	83.3±12.8	0.263	0.676
Social functioning	75.4±21.8	86.0±18.6	0.083	76.9±21.5	91.7±13.1	0.016	0.067
Symptom scales							
Fatigue	32.2±23.4	29.2±21.7	0.490	28.4±16.3	24.7±12.9	0.357	0.463
Nausea/vomiting	5.3±12.5	5.3±11.2	1.000	4.8±11.8	4.8±11.7	1.000	0.426
Pain	14.9±25.4	15.7±18.8	0.834	12.1±17.1	9.3±13.1	0.251	0.365
Dyspnea	22.8±31.5	12.3±16.5	0.111	22.7±27.1	11.9±16.7	0.092	0.110
Insomnia	26.3±28.5	24.5±29.1	0.772	24.3±16.2	20.4±23.2	0.086	0.184
Appetite loss	10.5±19.4	11.1±22.3	0.749	10.9±7.9	3.7±15.7	0.048	0.069
Constipation	19.3±20.2	17.5±17.1	0.667	20.4±25.9	24.1±27.5	0.430	0.586
Diarrhea	14.0±20.2	10.5±15.9	0.542	13.7±20.8	11.6±12.8	0.579	0.155
Financial difficulties	47.3±32.0	21.1±27.7	0.007	37.0±30.0	9.6±12.8	<0.001	0.013

* p-value between baseline and 12 weeks

† p-value between two groups

Table 2. Change in physical function of prostate cancer patients after smart after-care

Functional outcomes	Control group			After-Care group			p [†]
	Baseline	12 wks	p*	Baseline	12wks	p*	
Body composition							
Skeletal muscle (mean ±SD, kg)	28.8±2.6	28.4±2.6	0.164	28.9±3.1	29.4±2.5	0.140	0.791
Body fat ratio (mean ±SD, %)	28.2±6.4	29.1±6.1	0.177	27.7±4.1	23.9±5.6	0.003	0.022
Grip strength							
Right (mean±SD, kg)	28.7±9.6	29.1±9.7	0.741	33.3±7.0	36.5±7.2	0.047	0.038
Left (mean±SD, kg)	30.6±8.3	30.1±8.4	0.774	33.3±5.3	34.6±6.1	0.128	0.167
30sec chair stand test (mean±SD, /30sec)	16.9±4.4	19.5±6.6	0.002	17.7±3.9	22.4±4.6	0.009	0.092
2min walking test (mean±SD, m)	173.9±28.5	182.9±33.7	0.007	173.7±19.6	210.0±21.8	0.002	0.042
SPPB (mean±SD, scores)	11.6±0.8	11.5±1.3	0.461	11.8±0.4	12.0±0.0	0.168	0.244

* p-value between baseline and 12 weeks

† p-value between two groups

Conclusion

The smart aftercare program is a safe, highly satisfied method that also helps increase compliance among participants. Therefore it is an effective method in prostate cancer patients under hormone therapy in improving exercise capacity and general health related quality of life.

Keywords

Smart after-care; Prostate cancer; Hormone therapy

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-1683

THE EFFECTIVENESS OF TELEHEALTH FOR THE TREATMENT OF CHRONIC SHOULDER PAIN IN WHEELCHAIR USERS WITH SPINAL CORD INJURY: A PROTOCOL OF RANDOMISED CONTROLLED TRIAL

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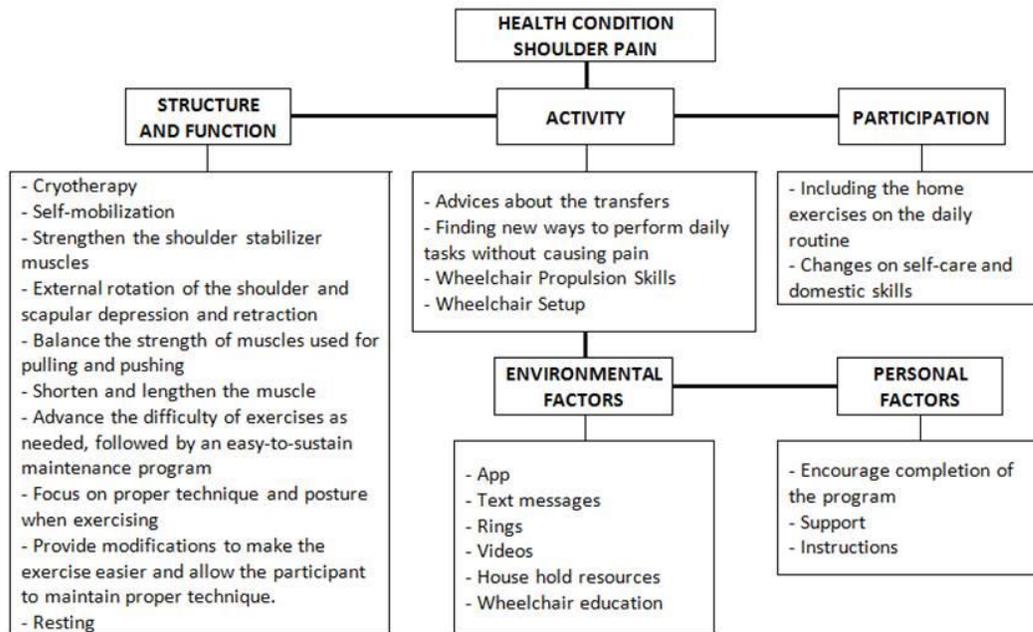
Introduction/Background

Shoulder pain is a debilitating and highly prevalent problem for people with spinal cord injury. Home exercise programmes are typically a compilation of exercises provided to patients on paper handouts. The objective of this study is determine the effect of advice and a home exercise programme delivered through an App, text messages and weekly telephone contact versus no intervention on chronic shoulder pain during performance of daily activities.

Material and Method

The trial will be a pragmatic single-centre, single-blinded between-participant randomised controlled trial. Eligible participants will be randomised to one of two groups (Intervention group or Control group). Intervention group will receive advice and a home exercise program along with encouragement, reassurance and support delivered through an App, text messages and weekly telephone contact for 6 weeks. At the initial face-to-face session (only that) the physiotherapist will provide advice and reassurance, and prescribe a home exercise program using freely available web-based software (www.physiotherapyexercises.com). The exercise program will be sent to participants' mobile device as an App. Participants will be encouraged to exercise six time a week and use the App to record their exercise adherence. Adherence will be remotely monitored and used as a reference for each weekly phone call and text message. Control group will receive no treatment. A sample size of 72 will be required to provide an 80% probability of detecting a between-group difference equivalent to 15 points on The Wheelchair Users Shoulder Pain Index

(WUSPI).



Results

A Redcap database has been set up to capture the results. Recruitment will commence in May 2018 and finish in April 2018.

Conclusion

The results will provide precise estimates of the effects of a low cost way to manage shoulder pain in this population. If effective, this intervention could be rolled out in different countries.

Keywords

SCI, TeleRehabilitation, Telehealth, shoulder pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-1838

TELECOMMUNICATION TECHNOLOGIES FOR DISTANT CONTROL OF THE PATIENTS AFTER STROKE.

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Introduction/Background

Many patients after stroke can't continue professional rehabilitation in the remote regions of Russia. Telerehabilitation via the telecommunication technologies will provide continuous rehabilitation for the patients at home in the most effective period of the impaired function's recovery.

Material and Method

18 patients, 1 month \pm 10 days after ischemic stroke. Released from the hospital patients had right-sided hemiparesis up to 3 points (Muscle Strength Grading Scale); walking was possible with bilateral support – 5 and 6 points (Hauser Walking Index); 3 and 4 points (modified Rankin scale); cognitive disorders ~ 21,2 (MMSE); dependence in activities of daily living ~ 68.7 points (Barthel scale). 9 patients continued to train by themselves at home (control group), 9 patients had distant sessions under physiotherapist and neuropsychologist control via protected video link during 3 months, 3 times/week. Assessment was done on the 30th – 45th - 90th days of treatment.

Results

After 3 months of treatment 5 patients of the main group had changes in Hauser walking index from 6 to 5 points, in 4 patients - from 5 to 4. Memory-intellectual functions increased at 5,5 points. 8 patients changed the MMSE grade to a slight cognitive impairment. Patients became more active in daily living at 24,2 points, the control group only at 13 points. Only 1 patient had changes from 5 to 4 points in control group. Cognitive functions of 7 patients were improved at 1,5 points, 2 patients had a positive shift by 3 points. Assessment in Rankin scale for both groups remained the same.

Conclusion

Continuous distant control by the medical specialists and positive results of treatment are good stimulating and motivating factors for rehabilitation. We can do preliminary conclusion on the efficacy of the telemedicine technologies in the Stroke patient's rehabilitation at home. Expansion of the study to obtain reliable results is needed.

Keywords

Tele-rehabilitation;stroke;Telecommunication technologies

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-2088

BUILDING A GLOBAL TELEMEDICINE PLATFORM BASED ON BASIC ETHICAL PRINCIPLES OF BENEVOLENCE AND BENEFICENCE TO OVERCOME THE REGULATORY AND LEGAL BARRIERS

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Introduction/Background

Advances in telemedicine technology provides an opportunity for rehabilitation practitioners and clients with chronic illness and disabilities to interact, efficiently and cost-effectively. Existing telemedicine platforms are franchised to physicians with restrictive contracts thus limiting the choices to recipients and the scope of usage of telemedicine in general and tele-rehabilitation in particular. The internet is by its very nature, international and can enable the markets for cross border services to grow rapidly. Healthcare typically poses a greater risk to patient safety than other e-commerce services and underpinned by a complex set of regulations. 1

Material and Method

The main objective is to build a freestanding telemedicine application platform for global usage based on basic ethical principles of benevolence and beneficence to overcome regulatory and legal barriers. The aim is to connect clients with chronic illness and disabilities with their trusted rehabilitation practitioners through internet. The trusted practitioners could recruit global talent and globally available technologies to help their client. The second goal is to expand the use of innovative tele-rehab technology.

Results

The result of the extensive research and sample contracts drawn by global legal experts will be presented. The innovations in, globally compliant, encryption technology to protect client's medical information, will also be presented.

Conclusion

Telemedicine developers need to venture into such innovations, to promote global health and use the available advances and affordable technology

1. <http://www.osborneclarke.com/insights/overcoming-the-hurdles-to-the-adoption-of-telemedicine/>

Keywords

Telemedicine;Global;Ethical

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-2422

CLINICIAN PERSPECTIVES OF AN AVATAR-DIRECTED SCHEDULING AND MEMORY AID

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Introduction/Background

An avatar-directed scheduling and memory aid app (Anna Cares™) was identified as a potential solution to scheduling difficulties in busy rehabilitation services. However, there are well documented difficulties with clinician acceptance and uptake of technology. This study investigated clinician perspectives of Anna Cares for use within two rehabilitation teams.

Material and Method

Two focus groups were conducted with sixteen clinicians from various disciplines working in two rehabilitation settings at a metropolitan hospital in Adelaide (SA, Australia). Focus groups aimed to explore, clinicians' perceptions of acceptability and usefulness of the app, and their attitudes towards this type of technology in general. Clinicians also completed self-assessed technology proficiency, perceived usefulness, and perceived ease of use scales.

Results

Clinicians described time constraints and the reliable scheduling of therapy sessions to be of significant importance, and they welcomed technology that could assist with this. They liked the concept of the avatar and found the app novel and fun. However, the preparation of the app for use with patients was problematic and time consuming. The more experienced clinicians found the app more difficult to use ($r=.586$, $p=.027$) and did not see the app as beneficial to their patients nor did the technology add value to delivery of care. There was a significant relationship between age and mean value for ease of use ($r=.540$, $p=.046$) but no significant relationship between age or experience, and the mean score for usefulness. Nor did there appear to be a relationship between self-assessed level of technology proficiency and either perceived usefulness and perceived ease of use.

Conclusion

Although clinicians appreciated the concept of an avatar-directed scheduling and memory aid, they did not see it as a useful tool in the provision of scheduling assistance in short-term rehabilitation services.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.03 Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment (e.g. Tele-Rehabilitation)

ISPR8-2459

USING IPHONE AS RELIABLE INSTRUMENT FOR CERVICAL RANGE OF MOTION MEASUREMENTS

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Introduction/Background

TABLE 3 Intra-rater reliability Intraclass Correlation Coefficient, Confidence Interval (95% CI), Standard error of measurement(SEM) and Minimum detectable change(MDC)							
Movements		Flexion	Extension	Right	Left	Right	Left
				Lateral Flexion	Lateral Flexion	Rotation	Rotation
CROM	ICC	0.764	0.841	0.923	0.895	0.921	0.805
	95%CI	0.454-0.904	0.628-0.931	0.819-0.967	0.535-0.946	0.820-0.968	0.54-0.915
	SEM	3.972	4.759	2.243	2.413	2.871	3.682
	MDC	9.240	11.071	5.218	5.614	6.679	8.566
iPhone	ICC	0.753	0.840	0.887	0.870	0.868	0.755
	95%CI	0.425-0.895	0.556-0.924	0.705-0.948	0.42-0.933	0.695-0.944	0.404-0.889
	SEM	6.147	3.928	2.398	2.281	3.435	3.388
	MDC	14.3	9.138	5.579	5.306	7.991	7.882
Inter-rater reliability Intraclass Correlation Coefficient, Confidence Interval (95% CI)							
CROM	ICC	0.79	0.905	0.965	0.905	0.909	0.84
	95%CI	0.515-0.907	0.728-0.954	0.912-0.984	0.79-0.961	0.794-0.961	0.639-0.933
iPhone	ICC	0.5	0.86	0.919	0.886	0.803	0.796
	95%CI	-0.131-0.771	0.477-0.928	0.803-0.963	0.533-0.941	0.54-0.911	0.535-0.912

Cervical range of motion evaluation as an integral part of the physical examination and functional evaluation of patients with musculoskeletal disorders, through which clinicians identify joint and muscle limitations to select the appropriate therapeutic plan. Currently the use of smartphone applications has become increasingly popular since they are more convenient than other tools, are user friendly, do not require trained users, and are more cost effective than other tools. Thus, the purpose of this study was to compare the reproducibility and accuracy of clinometer and the compass applications on iPhone smartphone to those of the CROM device, as the gold standard for non-invasively evaluating cervical movements.

Material and Method

The CROM device and iPhone 6S were used for evaluations. Two examiners, who were PhD candidates in orthoses and prostheses, conducted the assessments. Cervical range of motions

in three planes were evaluated as the subject sat upright on an 18-inch chair with the knees at 90° of flexion, feet flat on the ground, arms relaxed at the sides, and head and neck in a neutral position.

Results

Based on data obtained of 24 healthy subjects, both instruments, the CROM device and applications of iPhone showed excellent intra-rater reliability for all three planes. For the CROM device and iPhone applications assessments, the inter-rater reliability in the all three planes were excellent except in flexion measurement by clinometer application, which was moderate. The validity analysis of the iPhone showed very high or high correlation for all movements, except for flexion. Comparison of the measurements taken using the iPhone, with the ROM measured obtained using the CROM device, as demonstrated on the Bland-Altman plots, revealed that the iPhone showed a higher ROM for extension and lower ROM for other movements.

Conclusion

The iPhone clinometer and compass applications had acceptable absolute and relative reliability for neck movements in all planes.

Keywords

Cervical spine;Range of motion;Reliability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.04 Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

ISPR8-0035

CURRENT PRACTICE PATTERNS IN THE MANAGEMENT OF BELL'S PALSY AMONGST PHYSIOTHERAPISTS IN NEPAL: A CROSS-SECTIONAL STUDY

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Introduction/Background

Bell's palsy (BP) is an idiopathic, acute, unilateral paralysis of the face in a pattern consistent with peripheral facial nerve dysfunction, affecting 1 in 60 people. Evidence for physiotherapy management of BP is heterogeneous and limited. Current clinical practice guidelines recommend tailored facial exercises including mime therapy for patients with persistent weakness and recommend against the utilization of electrical stimulation in BP. No studies have looked at current physiotherapy treatment patterns for BP management. The aim of this study is to find out current physiotherapy practice patterns in the management of Bell's palsy in Nepal and to compare current practice with guidelines.

Material and Method

A questionnaire was distributed to registered physiotherapists throughout Nepal utilizing various internet platforms and in person. Information collected included demographics, level of education, years of experience, and management strategies utilized for treating BP. Descriptive data analysis was completed utilizing SPSS 16.0.

Results

Total number of participants was 116. The majority (78%) of physiotherapists prefer to use electrical stimulation for management of Bell's palsy. Only 34% of physiotherapists utilize mime therapy. Most (72%) physiotherapists believe that their management is in line with current evidence-based practice.

Conclusion

The majority of Nepali physiotherapists utilize electrical stimulation for the management of BP, and also believe their current management is inline with evidence-based practice for BP. These dichotomous findings suggest that further education and standardization of physiotherapy management of BP in Nepal is needed.

Keywords

bell's palsy;physiotherapy;practice pattern

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.04 Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

ISPR8-2562

ACCESSIBLE TEMPORARY HOUSES, REHABILITATION PLANNING IN EARTHQUAKE AREAS IN UMBRIA: ASSESSING FUNCTIONING PROFILES IN PERSONS WITH DISABILITIES

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Introduction/Background

This study comes from needs of people with disabilities after the earthquake in central Italy in 2016.

People with disabilities that lose their house undergo changes in living conditions, housing, social life and health services. That leads to a reduction in activities, in assistance skills of families, in participation and in quality of life.

We plan to project Accessible Emergency Housing Solutions (SAE) in accord with "design for all" criteria, to assessing people with disabilities, to provide and personalize Accessible SAE, to plan rehabilitative interventions solutions to improve participation, quality of life in the new life context post earthquake.

Material and Method

The project involves the Rehabilitation Department of USL Umbria 2, the Assistive Technology Products Centre, Health Districts, Municipalities, Umbria Region Civil Protection.

We defined appropriate tools based on ICF, adapted to the specific needs in earthquake emergency, to systematically assess disability related problems.

We used a direct semi-structured interview to collect informations about health, functioning, family context and assistance need.

We created functioning profiles to define the appropriateness of SAE's assignment and house adaptation needs to improve accessibility.

Results

We included 194 people with disabilities candidate for Accessible SAE; 102 people had functional limitation or other conditions that required adapted temporary accessible houses, personalized and with appropriate size.

783 SAE will be realized in earthquake areas, 102 of them (13%) will be Accessible SAE. People will be checked after the entrance in the Accessible SAE to define the impact of them on quality of life and to plan eventual rehabilitation and assistance programs.

Conclusion

The application of ICF based assessment tools improved disability management, allowing the identification of accessible housing, technologies and rehabilitation needs to improve participation and social inclusion.

The study shows the importance of standardising the assessment of disability in a more complete biopsychosocial framework to support disability in disaster areas.

Keywords

Accessible Emergency Housing Solutions; Rehabilitation planning in earthquake areas; ICF based assessment in nature disasters

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.04 Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

ISPR8-0044

SAVING FUTURES: DEVELOPING AN INTEGRATED MODEL OF REHABILITATION AND PAEDIATRIC HIV CARE TO FOSTER SUCCESS AT SCHOOL

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Introduction/Background

Background: The study will assess the acceptability, practicality, preliminary efficacy of an integrated model of rehabilitation and paediatric HIV services in order to improve diagnosis and interventions for disability among children living with HIV. The model will integrate data entry and management tools, improving identification, referral and linkage to care, with an intervention manual that can be used by trained lay health professionals. The study targets cognitive disabilities to improve school readiness and success.

Material and Method

Methods: Phase one will inform the design of an optimal integrated model of rehabilitation and paediatric HIV care. The study will first undertake a formative investigation of the factors relating to integrating rehabilitation with paediatric HIV services from the perspective of caregivers and health professionals. It will use qualitative methods, including in-depth interviews and focus group discussions. The knowledge from this phase will inform the design of the model in phase two and phase three will pilot the integrated rehabilitation and paediatric HIV model at the study site. The pilot intervention will be formally evaluated.

Results

Results: The results from this study will determine whether the model has potential for widespread application in South African paediatric HIV care and what further modifications are needed.

Conclusion

Conclusion: The study results will also inform South Africa's current efforts to strengthen early interventions for children with disabilities and will be an important and critically needed step in the use of rehabilitation to strengthen paediatric HIV care in the region.

Keywords

HIV;rehabilitation;paediatrics

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.04 Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

ISPR8-0126

GLOBAL DISABILITY ACTION PLAN 2014–2021 (GDAP): THE WAY FORWARD

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Introduction/Background

An estimated 80% of persons with disability (PwD) live in low- and middle-income countries (LMICs), with significant burden of disease and subsequent disability. The WHO Global Disability Action Plan 2014–2021 (GDAP), provides a list of specific actions and metrics for the empowerment of PwD, including strengthening/extending rehabilitation, assistive-technology, support services, and community-based rehabilitation. The aim of this study was to identify potential barriers for implementation of the GDAP in LMICs.

Material and Method

The Flying Faculty rehabilitation team from the Royal Melbourne Hospital, Australia conducted intensive workshops at medical/academic institutions in LMICs for healthcare professionals from various local Physical Medicine and Rehabilitation (PM&R) facilities. A modified Delphi method identified challenges for future implementation to address gaps identified.

Results

Despite differences in the healthcare system and practices in LMICs, the challenges reported in four countries, at both macro (governmental/policy makers) and micro levels (community/social/individual) were similar. Common strategies were implemented to address challenges: limited knowledge of disability services, PM&R workforce, guidelines and accreditation standards; coordination amongst healthcare sectors; social issues; data and research; legislation and political commitment. Support of potential facilitators were: need for strong leadership; advocacy of disability-inclusive development; investment in infrastructure/human resources; coordination/partnerships in healthcare sector; and research.

Conclusion

Disability care and rehabilitation is an emerging priority in LMICs to address the needs of people with disability. The GDAP framework provides guidance to facilitate access and strengthen PM&R services.

Keywords

Global Disability Action Plan;Low- and middle-income countries ;Rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.04 Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

ISPR8-0817

CAPACITY BUILDING FOR REHABILITATION PROFESSIONALS IN EASTERN UKRAINE : TOWARDS IMPROVED COMPREHENSIVE AND INCLUSIVE CARE FOR INJURED AND VULNERABLE PERSONS AFTER HOSPITALIZATION.

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Introduction/Background

Eastern Ukraine is subject to a status of " frozen " armed conflict currently leading since a few years to increasing pressure on equitable access to Rehabilitation services for the population in need either displaced or not . The Health Cluster for Eastern Ukraine aims to improve the technical capacity of the health services delivered through upgrading the training of rehabilitation professionals throughout the trauma care pathway as well as addressing the needs of Injured and disabled people through expansion of adapted services at regional and community level .

Material and Method

Training periods were conducted in general hospitals based on WHO guidelines , Minimum Standards for Rehabilitation and particular courses and topics for management of injured in complex settings . This was completed with practical demonstrations and bed side teaching putting emphasis on the need for patient education and psychosocial needs after discharge.

Results

The rehabilitation workforce targeted by the training is in demand for specific capacity building in post acute management of trauma care to allow an optimal recovery of the patient , preventing post operative complications , providing personalized patient education and psychosocial advise before discharge to the community .Early mobilisation and stimulation leads to shorter lengths of stay when needed trained workforce of PT , OT and special educators are available .

Conclusion

Ongoing Health and Rehabilitation Strategy Reforms in Ukraine should include early comprehensive physical rehabilitation in trauma centers , filling gaps at the level of community follow-up and be completed with psychosocial services for the beneficiaries of the health system. The particular ongoing strain that Eastern Ukraine is experiencing should be paid more attention too in regard to access to services in an adapted manner proper to the specific context .

Keywords

Complex emergencies ;early physical rehabilitation ;Comprehensive psychosocial trauma care

Conflict of interest

Disclosure statement:

This activity was financed and made possible by WHO health Cluster support project for Eastern Ukraine and implemented by a staff from Humanity and Inclusion NGO .

E-Poster Session - July 9-12 - Exhibition Area

D2.04 Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

ISPR8-0851

2017 BANGLADESH LANDSLIDES: PHYSICAL REHABILITATION PERSPECTIVE

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Introduction/Background

This report characterizes traumatic rehabilitation injuries due to the 2017 Bangladesh landslides. Emergency care for rehabilitation conditions provided by field respondents, at receiving community treatment centers, district and at regional hospital(s) is described. Recommendations to improve rehabilitative care in future landslides are provided.

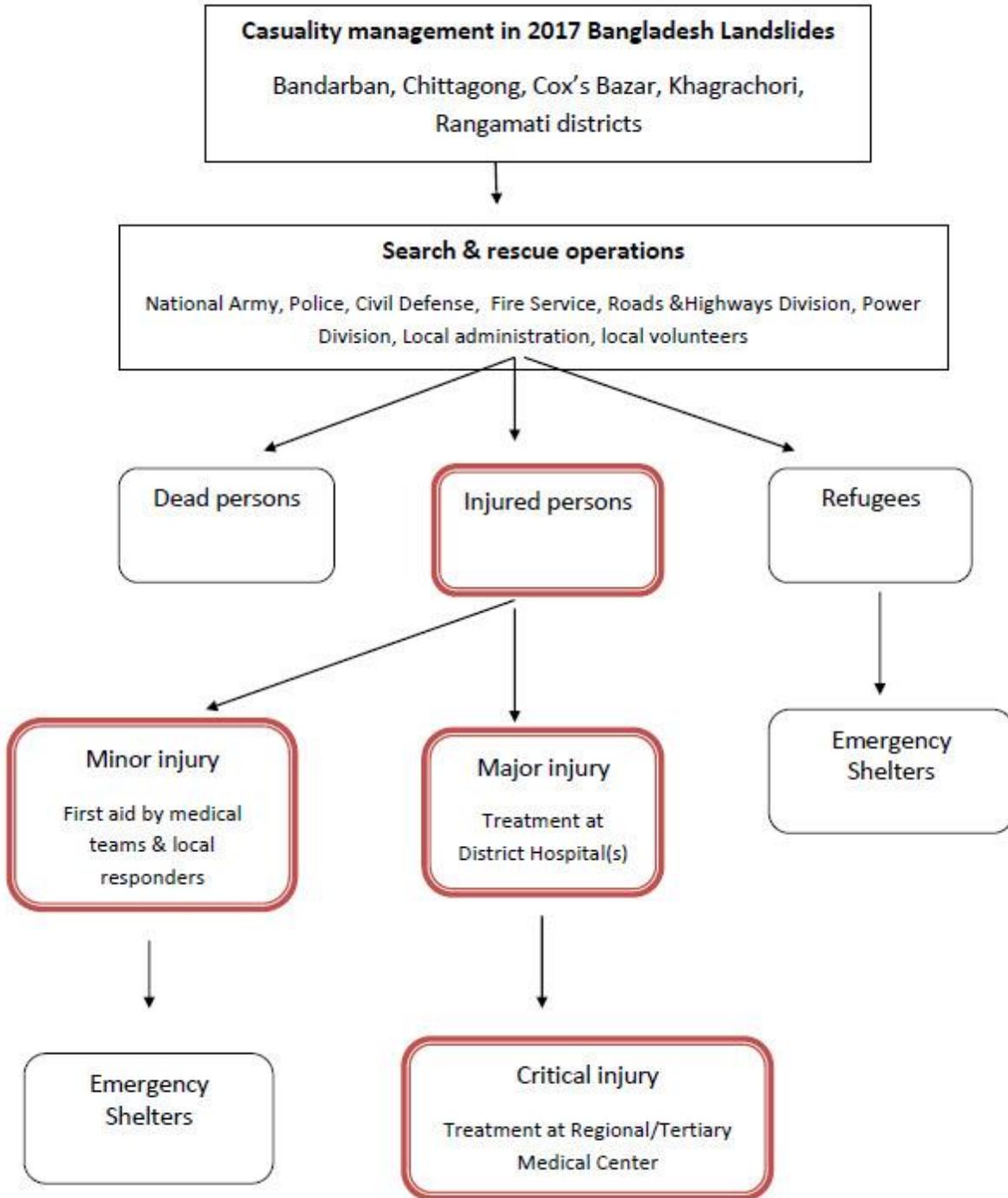
Landslides are triggered by external processes including earthquakes, rainstorms, and slope disturbance by humans. Humans are highly vulnerable to the high energy forces of sliding earth and debris which can result in severe traumatic physical injury and death. Landslides triggered by torrential seasonal monsoon rain began early June 2017 and severely affected 42,000 persons in several hilly and coastal districts of Bangladesh. **Material and Method**

An electronic literature search was performed to identify relevant articles on landslides in Bangladesh, Southeast Asia, and other developing countries. Reports from government and non-governmental sources including relevant hospital admissions data were obtained and analyzed. Information was also obtained through personal communications with local health and emergency management officials and from local and international media sources

Results

The 2017 Bangladesh landslides resulted in 172 deaths and 11 missing persons. Thousands of persons received first aid from responding medical teams. Of the 194 persons admitted to district hospitals for severe injuries, 33.50 % of injuries treated were musculoskeletal conditions. Twelve (12) persons with critical injuries including long bone fracture, spinal injury, and head injury were referred to a regional tertiary hospital for management by neurology, orthopedic

surgery, physical Rehabilitation medicine and psychiatry specialists



Conclusion

Landslides can result in severe traumatic injuries. Rehabilitative treatment with involvement of physiatrists should be provided at all levels of emergency care. Specialized rehabilitation

response teams should be employed in landslides and other severe natural disasters in Bangladesh

Keywords

Bangladesh Landslides Rehabilitation;Disaster

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.04 Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

ISPR8-1298

GLOBAL ADVOCACY FOR WOMEN WITH DISABILITIES: FORGING INTERNATIONAL RELATIONSHIPS

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Introduction/Background

The promotion of global advocacy, international research and service, multi-cultural education, and encouraging rehabilitation professionals to work and intern overseas are areas that our field would benefit from expanding on. Specifically, women and girls with disabilities around the world and the organizations that serve them are looking to collaborate and communicate internationally, for the sharing of ideas and resources, and to receive support. “Women and girls with disabilities represent more than 500 million people (the population of the European Union) and they face, on a daily basis, violations to their human rights; including, forced sterilization, forced abortions, violence and abuse, lack of access to sexual and reproductive health services, among many others” (Women Enabled International, 2016, p. 2).

Material and Method

The presenter hopes to engage in conversations with conference attendees about the ways that we as individual professionals/students and as a field can be more deliberate and organized in our efforts to reshape the idea of inclusiveness to promote ideas of global citizenship. The presenter is currently engaged in international research herself, as it relates to services and experiences of women with disabilities.

Results

This poster will feature findings from the Global Disabled Women’s Rights Advocacy Report (2016), which was the result of international surveys and interviews to gain information about current advocacy efforts and organizations for women and girls with disabilities around the world. This included an assessment of programmatic resources and needs.

Conclusion

Women with disabilities and their service providers want to work collaboratively, enhance their skills and demand their rights. This highlights a need to develop mechanisms for collaboration, strategies for organization capacity building and increased funding for these organizations. Across interviews, barriers to productive collaboration were found to be Capacity,

Communication, Competition, Funding, Language Barriers, Leadership, Qualified Staff, Time, and Willingness to Collaborate.

Keywords

Disability;Developing countries;Women

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.04 Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

ISPR8-1544

REHABILITATION STRATEGIES AFTER 2004 ACEH EARTHQUAKE AND TSUNAMI DISASTER IN INDONESIA: CASE REPORT

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Introduction/Background

December 26, 2004 an earthquake with a magnitude of 8,9 SR US followed by tsunami has hit the west and north coast of Nangroe Aceh Darussalam (NAD) province and North Sumatra region in Indonesia. Hundreds of thousands has been dead, many more have been injured, it also caused damaged to almost every infrastructures including health services.

Health problem related to earthquake and tsunami other than respiratory problems are multiple bone fractures, peripheral nerve injuries, severe infected wounds, gangrenes which often lead to amputation of the injured limbs. The only rehabilitation centre in Aceh province at Zainoel Abidin hospital in Banda Aceh, have been damaged seriously including all equipments for mobility and the prosthesis-orthosis workshop. Many limb amputee persons, has great need for prosthesis so they can walk and do their daily living activity. Prosthesis manufacture need special skill and are individually design.

Material and Method

After early assessment, a special rehabilitation medicine team together with an international NGO, work for relief after disaster, made and distribute free prosthetic-orthotics.

Results

From april 24, 2005 till March 29, 2006 the rehabilitation medicine team and prosthetic-orthotic technicians has made seven visits to Banda Aceh and approximately for three to four days on each visit. The team made and give one hundred fifty (150) free prosthesis-orthosis appliances for 134 amputee. All these prosthetic-orthotic appliances was made at the orthotic-prosthetic laboratory. Departement of Rehabilitation Medicine, Cipto Mangunkusumo teaching hospitals in Jakarta.

Conclusion

There is a great need to rebuilt rehabilitation medicine services in Aceh with its infrastructures, equipments and specialized trained person such as rehabilitation medicine specialist and prosthetic-orthotic technician. Long term plan from rehabilitation medicine view are to develop a

mobile limb workshop for rehabilitation medicine services, so an outreach program can be done more effectively.

Keywords

Tsunami and Earthquake;Limb Amputee;Rehabilitation Medicine Disaster Team

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.04 Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

ISPR8-2138

REPORT ON 2016 EARTHQUAKE IN CENTRAL ITALY .THE JOB OF SIMFER FROM 2016 TO 2018.

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Introduction/Background

A big earthquake Richter scale 6,0 hit central part of Italy 24 august 2016 and after a lot of less strong earthquakes again in October and November 2016 and January 2017. The regions were Lazio, Marche, Umbria and Abruzzo. Simfer began his job immediately in all the parts of EQ. Especially in the villages of Arquata and Pescara del Tronto (Marche), Amatrice (Lazio), Norcia e Cascia (Umbria). Who is speaking as responsible of SIMFER for the relief in natural disasters with the collaboration of MDs in Rehabilitation of the areas of EA, went after 3 days in the crater of EA and start to organize activities for the disable people .

Material and Method

All the chiefs of Rehabilitation departments of the EA areas were activated for maintain both therapists and MDs present for the needs of people, but they were active also in the place where the inhabitants went after disaster. We were operative in agreement with italian civil safeguard and other institutions.

Results

With the help of NGOs and associations we can built a compound for primary care and rehabilitation in the territories of Arquata del Tronto (Marche). The Simfer tent for rehabilitation was active in Cascia (Umbria), while we are again in construction of the compound in Amatrice because of in this part the aids have been more difficult for complete destruction of the village.

Conclusion

So as in earthquakes of Aquila (2009) and Modena (2012) SIMFER has been present and active also in this EA both with his MDs in rehabilitation to help local teams and also with advices of his experts .

Keywords

Earthquake;SIMFER;ITALY

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.05 Comprehensive Rehabilitation Intervention Research - Technology Transfer

ISPR8-1412

TECHNOLOGY TRANSFER OF INTERACTIVE APPLICATIONS FOR PHYSICAL REHABILITATION IN NEURODEGENERATIVE DISEASES

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Introduction/Background

Technology transfer is a permanent challenge in rehabilitation. Academic and corporate initiatives are generating an increasing number of alternatives and therapeutic tools supported in technology which should be transferred to the market via the commercialization and real use of the product with a social impact.

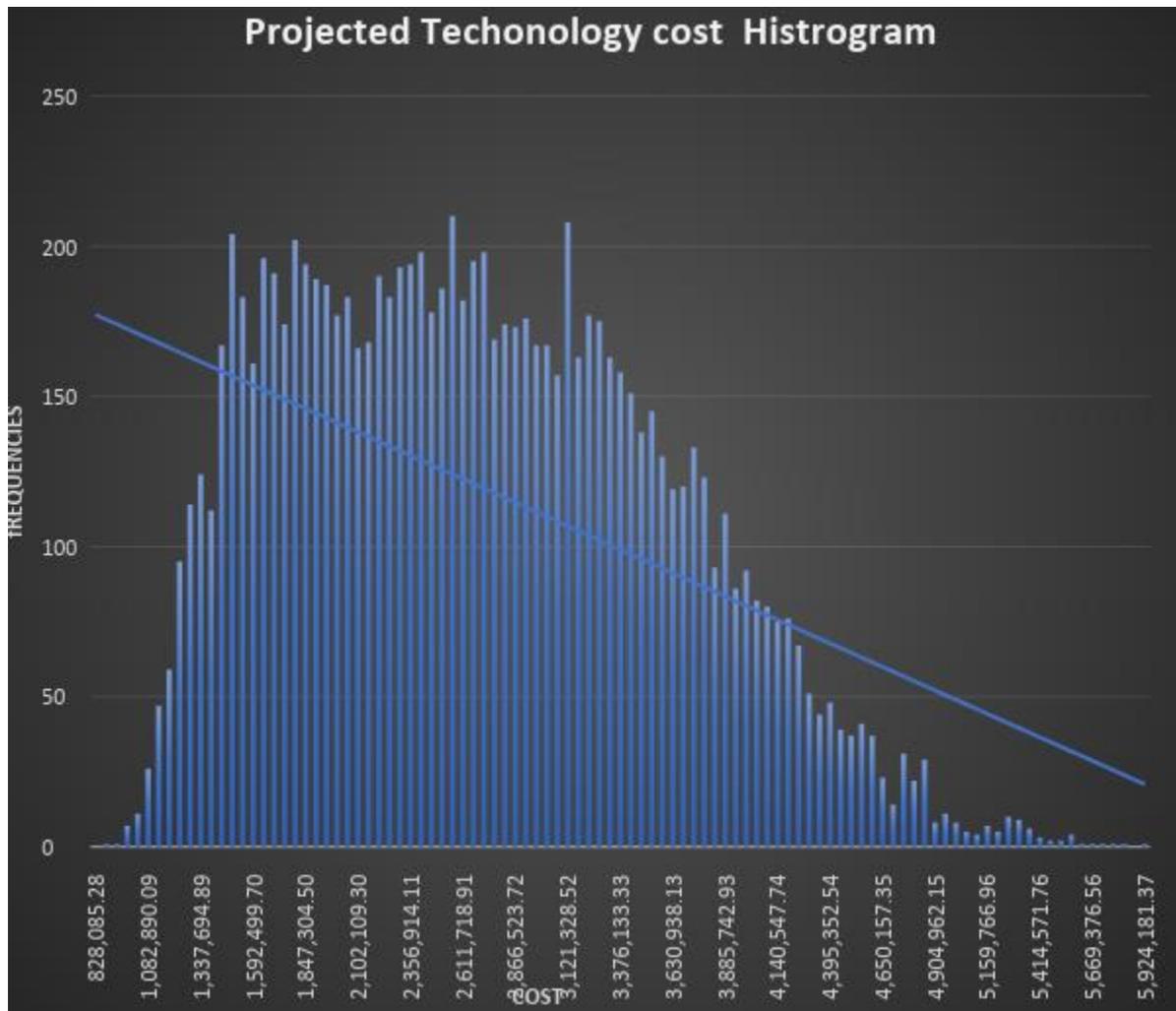
Material and Method

For this purpose, it is necessary to pose an effective transfer strategy from the exploratory stage in academic contexts (R&D) to real clinical practice. This paper presents a case study of vertical technology transfer applied to low-cost computer vision devices for the assessment and rehabilitation of balance and movement in people with multiple sclerosis.

Results

This work defines, from simulation, the potential commercialization of the technology in the market, the economic impact for the developers and the potential beneficiaries and interested parties in the offer of physical rehabilitation services based on computer vision and virtual reality, considering the technology developing costs, potential revenues for the service provider, size of the target population, growth projection and costs of patent registration. To do so, the service providers future income is estimated by exploring a representative set of scenarios, according to a predefined distribution of parameters.

Conclusion



This analysis is carried out through an approach based on Monte Carlo method, which shows a range between 828,085.28 and 5,924,181.37 USD for the commercialization of the technology developed in the world market (Figure 1).

Keywords

Feasibility ;Rehabilitation technology;Physical rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.06 Comprehensive Rehabilitation Intervention Research - Patient and Proxy Education

ISPR8-0874

THE EFFECT OF HEALTH EDUCATIONAL APP ON IMPROVING STROKE RELATED KNOWLEDGE AND QUALITY OF LIFE IN PATIENTS WITH STROKE : A RANDOMIZED CONTROLLED TRIAL

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Introduction/Background

Background : Up to date, the stroke knowledge of Taiwanese people is insufficient leading to lots of cost wasted. Furthermore, there are more and more stroke patients with poor health and quality of life. Therefore, in order to prevent stroke patient from stroke again, allowing stroke patients understand the risk factors of stroke is an important issue in the practical field of long-term care.

Purpose : This study had developed an APP that provides health education about preventing stroke patients from stroke again. That can improve stroke knowledge and quality of life in stroke patients.

Material and Method

Method : This study employed a single-blind, randomized controlled trial design. Seventy-six stroke patients were randomly assigned to the health educational APP intervention experimental group (n=38) and traditional paper control group (n=38). Subjects of this study had all been diagnosed a stroke and been tested with Mini-Mental Status Examination scoring more than 24. After 10-30 days of the health educational APP intervention, the Stroke Knowledge Questionnaire and EuroQOL Instrument will be filled. **Participants** : 76 individuals (30 in experimental group ; 33 in control group) were diagnosed stroke and MMSE scores >24. **Intervention** : 10-30 days of the health educational APP were intervened to improve the stroke knowledge and quality of life. **Measurements** : The primary outcome was the stroke knowledge, assessing by the Stroke Knowledge Questionnaire. The secondary outcomes were quality of life, assessing by the EuroQOL five dimensions questionnaire (EQ-5D) .

Results

Results : Our results supported that the health education APP produced significant improvement in stroke knowledge between groups but the EQ-5D has no significant improvement.

Conclusion

Conclusion : The findings supported the clinical efficacy of the health educational APP in stroke patients to improve knowledge and quality of life.

Keywords

Stroke;Health education;Mobile health

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.06 Comprehensive Rehabilitation Intervention Research - Patient and Proxy Education

ISPR8-1948

“NOTHING ABOUT ME, WITHOUT ME”. USING USER-CENTRED DESIGN TO DEVELOP EVIDENCE-BASED SOLUTIONS TO COMMON PROBLEMS IN MOTOR NEURONE DISEASE

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Introduction/Background

Supportive care in motor neurone disease (MND)/ amyotrophic lateral sclerosis aims to promote independence and sustain life using assistive devices and interventions such as non-invasive ventilation. Success of these solutions depends on patient and carer acceptance and self-management but this is often hindered by the solutions' failure to fulfil patients' expectations or meet the complex and changing needs of those with MND. One reason for this problem is that they are not designed with the end-user in mind.

Material and Method

Patients and carers highlighted the lack of a suitable collar for those with neck weakness. They also concurred with recent evidence that identified the need to provide better, evidenced based information to facilitate decision making, acceptance and self-management of gastrostomy feeding and non-invasive ventilation. Collaborations with patients, carers, clinicians and technology developers adopted iterative, user-centred design methods to develop and evaluate potential solutions based on research evidence and technology expertise and the lived experience of MND.

Results

The Sheffield Head-Up collar was developed and evaluated in a total of 126 patients with MND and other diseases. This affordable and adaptable collar was demonstrated to provide increased support while providing a greater range of movement, flexibility of use, and improved appearance and comfort and was preferred to traditional collars in 80% of users.

MyTube (www.mytube.mymnd.org.uk) and MyNIV (www.myniv.mymnd.org.uk) websites use patient, carer and clinician stories to deliver evidence-based information about considering,

starting and living with a gastrostomy and non-invasive ventilation. These websites are freely available and are now used by clinicians, patients and carers to support decision making.

Conclusion

Involving end-users, clinicians and designers in all stages of development of new solutions is key to ensuring that solutions will be acceptable, effective and evidence-based. We recommend ways in which the experiences of these experts can be harnessed in product design.

Keywords

motor neurone disease;user-centred design;self-management

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.06 Comprehensive Rehabilitation Intervention Research - Patient and Proxy Education

ISPR8-1949

THE EFFECT OF SINGLE TEACHING SESSION ON PHYSICAL ACTIVITY IN PEOPLE WITH INTELLECTUAL IMPAIRMENT

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Introduction/Background

Physical activity, health and quality of life are interrelated. A lot of scientific researches declares that people with intellectual impairment have lack of physical activity. Teaching shows to be effective to improve physical activity in different groups. The aim of study was to evaluate effect of single teaching session on physical activity and physical capacity of people with intellectual impairment.

Material and Method

The study was accomplished at daily activity and employment center for disabled people in Trakai. 50 adult people with mild and moderate intellectual impairment were included in this study. Quality parameters of physical activity, physical capacity were evaluated. The subjects were assigned to two groups: experimental (n=25) and control (n=25). The experimental group received single teaching session and printed recommendations of physical activity, while control group have got only printed recommendations of physical activity. Quality parameters of physical activity, physical capacity were evaluated after one month.

Results

Physical capacity by Harvard step test results showed that both groups were of average fitness. Single teaching session have improved physical activity, physical capacity in experimental group statistically significantly ($p < 0,05$). Improvement of physical activity and physical capacity was observed also in control group, but without statistical significance ($p > 0,05$). No statistically significant difference between experimental and control group results of physical activity and physical capacity was found ($p > 0,05$).

Conclusion

Even single teaching session had positive effect on improvement of physical activity in persons with intellectual impairment. Further investigations are needed to determine optimal educational program for this vulnerable group.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.06 Comprehensive Rehabilitation Intervention Research - Patient and Proxy Education

ISPR8-2441

IMPORTANCE OF PATIENT EDUCATION THE MANAGEMENT OF LOW BACK PAIN

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Introduction/Background

Interdiction identify the information's needs of people with low back pain (LBP) is very important. LBP is very common and information's of disease is very important for patients and management of LBP. Available online LBP resources are limited.

The aim of this study is to identify knowledge of patients with LBP

Material and Method

42 patients did questioner about LBP, what is acute, chronic pain, how to recognize disease, how to manage with LBP.choosing a answer.

Results

Results 20% of patients chose answers I don't know, about 50% give correct answer

Conclusion

Education for patients with LBP is necessary. This research suggests that patients with LBP do not have relevant information's about LBP and do not know how to manage, and reduce sick level. Patient education appears to reduce the negative consequences of fear-avoidance behaviour and thus promote treatment compliance in LBP patients

Keywords

low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.07 Comprehensive Rehabilitation Intervention Research - Miscellaneous

ISPR8-0474

IMPLEMENTATION AND EVALUATION OF A REHABILITATION SPECIFIC PATIENT EXPERIENCE SURVEY

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Introduction/Background

Rehabilitation specific patient experience surveys could enhance opportunities for sub-acute facilities to identify factors critical to the provision of optimal rehabilitation care. However, currently in Australia there is no commonly utilised rehabilitation specific patient experience survey. A literature review identified only one relevant instrument, the Client-Centred Rehabilitation Questionnaire (CCRQ)¹.

The project aimed to evaluate the CCRQ for use in the Australian context and modify it if indicated; assess the validity and reliability of a modified CCRQ; explore the relationship between self-reported patient experiences of rehabilitation and rehabilitation outcomes, such as functional improvement and length of stay as measured by the Australasian Rehabilitation Outcomes Centre; and survey senior rehabilitation staff at each participating facility regarding the utility of reports provided to them based on the survey data.

Material and Method

Data was collected using:

- Focus groups
- Multi-site patient survey
- Senior rehabilitation staff telephone interviews

Results

The CCRQ demonstrated good face validity with some minor modifications to item wording indicated for the Australian context.

A total of 408 completed surveys were returned. Based on analysis of the responses the modified CCRQ demonstrated good construct validity and internal consistency reliability.

Analysis provided support for a number of modifications to further improve reliability.

The validity of the survey was further supported by survey item responses being independent of patient demographics, facility sector and patient outcomes.

Senior rehabilitation staff feedback from all participating units (20) was very positive regarding the facility reports provided. The rehabilitation specific focus and level of detail was regarded as a point of difference compared with their usual patient experience surveys.

Conclusion

A modified CCRQ is a reliable and valid instrument providing actionable data that organisations could use to support and inform their commitment to person-centred rehabilitation care.

References

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Keywords

rehabilitation specific patient experience survey

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D2.07 Comprehensive Rehabilitation Intervention Research - Miscellaneous

ISPR8-1353

WHAT WORKS FOR WHICH RIDERS, AND TO WHAT EXTENT? EVALUATING THE EFFECTIVENESS OF A NEW ZEALAND THERAPEUTIC RIDING INTERVENTION USING A SINGLE-CASE EXPERIMENTAL DESIGN

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Introduction/Background

Therapeutic horse riding (THR) is a complex intervention using horses and horse-related activities to positively influence health in people who experience disability. It is difficult to meaningfully evaluate the effectiveness of complex rehabilitation interventions with parallel randomised controlled trial methods when used in isolation. Reducing intervention complexities to simple variables for the purposes of minimising bias can enhance claims regarding causal associations between variables, but can result in difficulties translating the findings from these studies to 'real world' clinical practice where complexity is a certainty. This study aimed to evaluate the effectiveness of a therapeutic horse riding (THR) intervention using a single-case experimental design (SCED).

Material and Method

A randomised, multiple-baseline SCED replicated across 12 participants, was used to quantitatively evaluate in which riders, and to what extent, changes in balance, functional performance, social responsiveness, quality of life and participation outcomes occurred as a result of the 20-week THR intervention. Analysis of data included analysis of individual participant responses (i.e., visual analysis, descriptive nonparametric approaches, analyses considering baseline stability evaluated with Mean Phase Difference and Slope and Level Change procedures) and between participant responses (i.e., Modified Brinley plots, estimation of effect sizes).

Results

An inconsistent intervention response to THR was seen across participants in the SCED. Participation outcomes measured using the Canadian Occupation Performance Measure (COPM) demonstrated the most consistent positive between-phase difference (performance score ES = 1.23; satisfaction score ES = 1.11). However, when taking baseline data stability into account these improvements only reached clinical significance for two of the participants.

Conclusion

Being involved in THR may improve participation outcomes for some children who live with the experience of disability. SCED's provide a rigorous but clinically meaningful way to evaluate the effectiveness of complex rehabilitation interventions in real world.

Keywords

Single-case experimental design;Therapeutic horse riding;Participation outcomes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.01 Education and Training in Rehabilitation - Undergraduate Medical Education

ISPR8-0116

DEVELOPMENT OF A MODEL OF CLINICAL EDUCATION: A PROPOSAL FOR PHYSIOTHERAPY UNDERGRADUATE STUDENTS AT THE UNIVERSITY OF KWAZULU-NATAL (UKZN), SOUTH AFRICA

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Introduction/Background

This project is aligned to a current need for healthcare within a South African (SA) context to address resource poor climates in rural and Peri-urban settings, shifting focus from an over served urban region. Traditionally, clinical education for undergraduate physiotherapy students has been centered on acute services in large teaching urban hospitals closer to the university (McMahon S., et al 2013).

Aim: To develop a model of clinical education for undergraduate physiotherapy students at the UKZN in order to prepare graduates who are socially responsible and responsive to the unique health care needs of SA.

Material and Method

Phase one will inform the design of an optimal integrated model of clinical education. A cross sectional analytical study which will follow qualitative methods, including in-depth interviews and focus group discussions. The participants will involve clinicians, clinical educators and physiotherapy students from the University of Kwa- Zulu Natal. The knowledge from this phase will inform the design of the model in phase two.

Results

The results from this study will determine whether a model of clinical education can be developed and implemented in the School of Health Science in the Physiotherapy discipline. This model will be embracing a call to develop healthcare professionals who are competent and prepared for the changing dynamics of healthcare in a developing world.

Conclusion

It is envisaged that this study, the first to develop the model of clinical education for physiotherapy students in Kwa-Zulu Natal in a decentralised clinical training platform at UKZN, would not only contribute to effective service delivery but may also serve to inform an inter-professional programme within the SHS and tertiary institutions in similar settings.

Keywords

Decentralised clinical training;Health science;physiotherapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.01 Education and Training in Rehabilitation - Undergraduate Medical Education

ISPR8-0913

MOROCCAN GENERAL PRACTITIONERS' KNOWLEDGE AND EDUCATIONAL NEEDS IN DISABILITY

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Introduction/Background

The general practitioner (GP) is the first-line interlocutor of people with disabilities (PwD), and his involvement in the care process is necessary to optimize the care of PwD. This work aims to assess the knowledge, attitudes and practices of GPs on disability in Morocco and to measure their degree of involvement in the management of disability.

Material and Method

This is a cross-sectional study with a descriptive aim, which was carried out throughout Morocco and has targeted GPs both in the public and private sectors, as well as 7th year medical students. The assessment of the knowledge, attitudes and practices of GPs concerning disability was carried out using a questionnaire of 26 closed and semi-open questions.

Results

457 GPs were included, 65.6% were female, 41.4% were in the public sector. The average age of participants is 34.6+/-11 years. The average years of experience is 11.4+/-9. 41.2% had PwD in their entourage. 92.3% of GPs had no idea about the prevalence of disability in Morocco, 91% never received training on disability. 17.9% of GPs have never heard about physical medicine and rehabilitation (PRM), and 56.7% do not know any PRM. 6.5% of participants believed that the GP had an important role in the medical care of PwDs. 54.5% of GPs find contact with PwD rather difficult, and 32.6% feel discomfort with them. 72% of doctors complained about the lack of means and training. 51% had issues with communication. 66.3% of physicians refer PwD to physiotherapists for a specialized medical care, while only 24.2% refer them to RPM.

Conclusion

This study clearly highlights the need to integrate specific modules on disability into the curriculum of medical studies. It is crucial to train more GPs to be able to attend to PwD and to make them aware of the existence of PRM and knowledge in the field.

Keywords

EDUCATIONAL NEEDS IN DISABILITY;GENERAL PRACTITIONERS' KNOWLEG;MOROCCO

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.01 Education and Training in Rehabilitation - Undergraduate Medical Education

ISPR8-1452

THE APPLICATION OF PROBLEM BASED LEARNING METHOD (PBL) IN CLINICAL TEACHING OF MOTOR APHASIA

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Introduction/Background

In the 1950s, problem based learning-based learning (PBL) has been used in medical education. PBL is student-centered and teachers help students guide them to ask questions. However, few studies have been reported on clinical teaching of aphasia by PBL. In this study, we have explored the effect of PBL in the motor aphasia teaching about clinical theory and practice.

Material and Method

One hundred students were enrolled in this study and were divided into 2 groups based on teaching methods. Group A included students who had theory combined with practice with a PBL teaching method, whereas group B included those with a traditional teaching method. The teaching time of the two groups was 4 weeks. Items for evaluation included written examination, skill assessment and questionnaire survey at the end of teaching.

Results

There were significant differences in the written examination and skill assessment between the two groups before and after teaching. When compared with the traditional teaching, a PBL teaching method had a higher working sense of responsibility and doctor-patient communication based on the questionnaire survey by the patient's assessment, and a higher satisfaction about clinical theory and practice teaching from the student.

Conclusion

We found PBL teaching had a significant advantage over the traditional teaching method in the motor aphasia of stroke teaching about clinical theory and practice.

Keywords

problem based learning;clinical teaching;motor aphasia

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.01 Education and Training in Rehabilitation - Undergraduate Medical Education

ISPR8-1724

REHABILITATION IN THE CORE GRADUATE MEDICAL CURRICULA AT UNIVERSITY OF SÃO PAULO SCHOOL OF MEDICINE: THE STUDENT'S PERCEPTION

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Introduction/Background

Rehabilitation is a key health strategy for the 21st century. Increase the number of medical graduates aware of rehabilitation competencies and skills is a success indicator of strengthening and extending the provision of rehabilitation services. Our objective was to evaluate a novel teaching method to third year medical students based mostly in student-centered techniques. This course was offered at Faculdade de Medicina da Universidade de São Paulo, Brazil.

Material and Method

One hundred sixty-eight third year medical students responded an anonymous survey evaluating their perception of a 12-hour discipline on Rehabilitation. The Discipline was developed collaboratively in the 2017 Medical Teaching and Learning Innovation Program. Teaching materials were available to students at an educational platform to promote interaction and collaboration. The didactic curriculum was presented in the case-method format. Students performed the anamnesis and physical examination, with emphasis on the functional semiology, developing a treatment plan with functional goals, under the supervision of physical and rehabilitation medicine specialists, who mentored the activities. Members of the multidisciplinary team participated in the discussions. Rehabilitation interventions were performed as needed. Students were requested to produce and to present a mental map of the evaluated cases.

Results

95.3% of the students responded the anonymous survey. 88.2% of the responding students considered rehabilitation as an important discipline in medical training. For 90.8% of the students, the overall assessment for the course was "very good" or "good" and 59.6% requested the increase in its duration.

Conclusion

Third year medical students perceive rehabilitation as an important discipline in medical education. The overall assessment for the course was "very good" or "good", and there is a request for the increase in its duration from more than half of the students. Improvement of course methodology in rehabilitation may improve to attract more medical students to rehabilitation specialty.

Keywords

Medical Education;Rehabilitation;Core Curricula

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.01 Education and Training in Rehabilitation - Undergraduate Medical Education

ISPR8-1882

GAME ON: THE BENEFITS OF MAKING GAMES FOR LEARNING MEDICINE

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Introduction/Background

Over a billion people are estimated to live with disabilities (15% of the world's population). In 2011, WHO produced the World Report on Disability that recommended improve human resource capacity through effective training of health professional staff including medical undergraduated students. Beside this, gamification has been used as a educational strategy for medical education. Gamification is the use of games to promote engagement and enjoyment of problem-solving in non-game situations. So, in line with these ideas, we have implemented an active learning strategy based on games construction by medical students to improve their knowledge about three important disable conditions: Duchenne´s muscular dystrophy, Dyslipidemia and Osteoporosis.

Material and Method

An interdisciplinary team of faculty mentored student game developers to design educational game prototypes. It included the phases of analysis, design, development, and evaluation. A 10-question survey was coupled with group discussions and literature review addressing key points about health conditions. Hundred medical students of first semestre of medical course divided into groups of five students each were engaged to create and produce games based on science data collected from the survey. Rounds of playtesting and feedback supported the process.

Results

At the end of a semestre a formal evaluation test about the 3 clinical conditions was applied. The degree of student retention of knowledge and skills in this subject varied from 80 to 95%, showing that this active learning technique was efficient.

Conclusion

Students find them engaging and enjoyable. This coordinated model is feasible and could improve the disability education into undergraduate medical education. Build, play and create a game with your peers is an example of educational gaming as an innovative active teaching strategy in medicine. Thus, the teacher does not work with only 1 type of teaching methodology, but with a combination of different methodologies. It does not replace curricular practice, but helps.

Keywords

undergraduated medical education;physical and rehabilitation medicine;active learning

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.01 Education and Training in Rehabilitation - Undergraduate Medical Education

ISPR8-2710

INTRODUCING COMPETENCE IN CARING FOR PATIENTS WITH DISABILITIES IN THE MEDICAL SCHOOL CURRICULUM

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Introduction/Background

According to the World Health Survey (2004), around 785 million (15.6%) of people 15 years and older live with a disability, of whom 110 million people (2.2%) have very significant difficulties in functioning. Without training, healthcare providers tend to underestimate the abilities and quality of life of patients with disability, as well as minimize their autonomy and capacity for self-care. In a survey of medical schools, 50% of deans reported that disability training is not a high priority, and 61% reported that their graduates were competent to treat. However, 81% of medical students reported no clinical training in disability, and a majority of seniors and graduates expressed inadequate competency in the care of patients with disabilities. In a study by O'Fallon and Hilson (2005), it was found that physicians rated performing disability assessment to be the most daunting task out of 12 common clinical procedures

Material and Method

N/A

Results

Several recommendations have been put forward to improve health of people with disabilities. Two surgeon general reports (2002, 2005), IOM, and the WHO World Report on Disability (2011), has recommended improving the knowledge, skills, and attitudes of healthcare providers towards patients with disabilities. Healthcare providers need to understand the nature and prevalence of disability; health and health-care disparities; and the role of the physician in preventing secondary conditions and improving quality of life. This should include didactic instruction of knowledge and etiquette, patient panels, use of standardized patients with disabilities, clinical experience, and formative exams in transfer and communication. Home visits and community service are an important tool in increasing familiarity and sensitivity.

Conclusion

By increasing the prioritization of disability in the medical school curriculum, the hope is that people with disabilities will move towards a greater parity of care as their non-disabled counterparts.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.01 Education and Training in Rehabilitation - Undergraduate Medical Education

ISPR8-2170

PHYSICAL MEDICINE AND REHABILITATION LEAGUE OF FACULDADE DE MEDICINA DA UNIVERSIDADE DE SAO PAULO: AN INNOVATIVE MODEL OF UNDERGRADUATE TEACHING AND LEARNING

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Introduction/Background

Current medical education strategies are based on OSCE, self-assessment, clinical teaching, lectures and textbooks. The predominant method of learning anatomy, for example, consists primarily of reading textbooks and attending classes. Recently a new model of complementary education to graduation has become popular in Brazil: the Academic Leagues of Medicine. The Physical Medicine and Rehabilitation League of the University of São Paulo Medical School (PMR League of FMUSP) aims to complement this traditional method and also provide students with practical activities to improve their knowledge in clinical practice in physical medicine and rehabilitation. We aim to describe the educational, evidence-based assistance, community extension and research experiences gained through PRM League and the rate of medical student's exposure to the field after its implementation.

Material and Method

PMR League of FMUSP counts on teaching activities, research projects and university extension to the community. The PMR League of FMUSP promotes the development of educational materials to the population, such as the "Postures' Manual" adopted in the social project of districts' revitalization in São Paulo; it also promotes theoretical classes correlating anatomical data with clinical cases and patient care activities. PMR League of FMUSP students and physicians are responsible for the preparation of classes, patient care, research and innovation projects at the Institute of Physical Medicine and Rehabilitation (IMREA).

Results

Medical students from the second to fourth grade take part of the PMR League mentored by attending physicians and residents. There was a 150% (from 10 to 35 medical students) increase in the number of members during the first year of activities, with growth prospects still higher in the coming years.

Conclusion

PMR League of FMUSP with its activities, introductory course and classes, had a positive influence on student's interest and learning. It may represent a successful initiative for enhancing physical and rehabilitation medicine teaching.

Keywords

Continuing Medical Education;Graduate Medical Education;Undergraduate Medical Education

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.02 Education and Training in Rehabilitation - Specialist Training

ISPR8-1258

THE NEUROUROLOGY MULTIDISCIPLINARY TEAM MEETING AS A POTENTIAL TEACHING TOOL DURING THE THIRD CYCLE OF MEDICAL STUDY

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Introduction/Background

The Neuro-urology is a medical speciality, practiced by numerous urologists and doctors in physical medicine and rehabilitation (PMR), and corresponds to a need in terms of medical formation. In our hospital, during their studies, the interns in the Urology and PMR departments participate in weekly Neuro-Urology Multidisciplinary Team Meetings (MTM). This meeting could be a teaching place of this speciality. Our objective was to restructure MTM so that interns acquire skills to take in charge neurological urinary disorders, and also to evaluate the interest of the MTM as a teaching tool.

Material and Method

Inter alia, to restructure MTM, we taught a specific lesson at the beginning of the semester, distributed a booklet on neuro-urology and the meetings were more livened up. The assessment consisted of an anonymous evaluation by the interns of their perception of their knowledge, results expressed in median, and an assessment by the teacher of their knowledge from 2 clinical cases, results expressed in number of objectives acquired. It concerned 2 groups of interns: those before the intention of transforming the MTM (G1), with an evaluation only at the end of the semester (E1); and those who benefited on the restructured MTM (G2), with evaluations at the beginning and the end of the semester (E2 and E3).

Results

The G1 interns perceived themselves at ease (median at 4.5) but their knowledge was not so good (6 objectives acquired / 17). The G2 interns progressed, they significantly improved their own evaluation (median which went from 2 to 5/7, $p=0,018$) and their knowledge, the number of objectives acquired passing from 6 to 14/17.

Conclusion

This work has shown the feasibility of transforming MTM as a teaching tool in the field of neuro-urology for interns.

Keywords

Neuro-Urology;Multidisciplinary Team Meeting

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.02 Education and Training in Rehabilitation - Specialist Training

ISPR8-2213

THE RELATIONSHIP BETWEEN STUTTERING SEVERITY AND TYPES OF INFLECTIONAL MORPHEMES STUTTERED IN 15-35 YEAR-OLD STUTTERERS WITH MILD TO MODERATE SEVERITY

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Introduction/Background

Stuttering is considered as one of the most important speech disorders and general cognition among speech and language disorders (1). Persian-speakers with a stuttering problem demonstrate a different degree of prolongation, silence or block at the beginning and remedial review in different ages based on stuttering severity with stuttering changes from sentence and types; namely, the length, meaning and complexity of the word influences fluency deficit intensity.[H1] The purpose of this study was to investigate the relationship between stuttering severity and type of inflectional morphemes stuttered in 15-35 year-old stutterers with mild to moderate severity.

Material and Method

20 stutterer participated in this study. 10 stutterer with a mild stuttering problem and 10 stutterer with a moderate one. Participants' speech was recorded while they narrate a story (about 400 syllables) in a natural setting for 3-5 minutes. Then the speech was analyzed and the types of inflectional morphemes which stuttered were identified. Stuttering severity was also measured utilizing the SSI4 scale. Statistical analysis data was done by SPSS software and Spearman correlation test.

Results

Data analyses indicated that there is a direct and significant relationship between moderate stuttering severity and inflectional morphemes in particular types of verb prefixes ($p = .024$), and there is a direct and linear relationship between mild stuttering severity and inflectional morphemes in type of verb prefixes ($p = .008$), whereas this relationship was not statistically meaningful ($p < .05$). Additionally, there is no significant statistical relationship between mild to moderate stuttering severity and inflectional morphemes) plural, indefinite, comparative and superlative, transient maker and identity verbs) ($p < .05$).

Conclusion

Results demonstrated the severity of stuttering was related to length, meaning and consonant complexity of morphemes . As stuttering severity reduced (mild and moderate), the effect of inflectional morpheme's type on stuttering, reduced.

Keywords

stuttering;inflectional morphem

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.03 Education and Training in Rehabilitation - Continuous Medical Education and Professional Development

ISPR8-2586

SUPPORTING THE IMPLEMENTATION OF EVIDENCE-BASED PRACTICES IN REHABILITATION: THERAPISTS' PERCEPTION OF A KNOWLEDGE TRANSLATION INITIATIVE

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Introduction/Background

The implementation of best practices in cognitive rehabilitation after acquired brain injury is challenging, as it involves complex and individualized interventions. This project aims 1) to develop a tailored and multifaceted intervention to support the implementation of best practices in rehabilitation and 2) to evaluate participants' perception of this intervention.

Material and Method

Case studies were conducted within two teams (n=11 and 14 clinicians) including occupational therapists, neuropsychologists, speech and language pathologists and educators from two rehabilitation centers. Each team prioritized one evidence-based practice to implement. Learning tools, including videos, pocket cards and summary sheets for caregivers, patients and staff, were created based on the results of two rapid reviews. Interactive workshop was also developed for each team with high level activities based on Bloom's taxonomy. Participants' perception of the material developed and their satisfaction with the intervention were documented using focus group discussions and questionnaires.

Results

The overall mean level of satisfaction regarding the intervention was high (i.e. 88%). Interactive activities fostering exchanges between colleagues were seen as important strengths. Participants also had a positive view of the material. Videos were appreciated for their short duration (20 minutes), clarity and practical demonstrations. As time constraints emerged as an important barrier for evidence-based practice, participants underlined the importance that the print-based material (i.e. pocket cards and summary sheets) be concise and concrete in order to see its use being maximized.

Conclusion

This work suggests that interventions relying on interactive activities and social opportunities along with short, clear, and concrete material have the potential to support the implementation of an evidence-based practice.

Keywords

Knowledge translation; Brain injury rehabilitation; Evidence-based practices

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

D3.03 Education and Training in Rehabilitation - Continuous Medical Education and Professional Development

ISPR8-2650

EVIDENCE BASED PRACTICE: WHAT THERAPISTS SAY ABOUT IT?

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Introduction/Background

The significance of evidence based practice (EBP) can not be overstated. However, literature on the perception of occupational therapists and physical therapists toward EBP, is scarce. The purpose of this survey study was to examine occupational and physical therapists's attitudes toward evidence based practice.

Material and Method

A total of 47 among 261 practicing occupational and physical therapists in a health care system in the Midwest responded to the questionnaire previously developed by Rubin and Parrish, 2011. Follow up reminders were implemented to achieve a higher response rate.

Results

The results of the study showed that therapists maintained an overall positive attitude toward EBP, reported familiarity with the EBP process and an overall positive attitude toward EBP. In addition, therapists reported intend to engage in the EBP process but their current engagement was a little less than "some of the time." However, therapists reported slightly lean unfeasible to engage in the EBP process. Barriers to engaging in EBP included time, access, and the constraints of the responders' practice setting.

Conclusion

Overall, the findings of this study showed that therapists hold positive perception on evidence based practice and such findings are consistent with previous research. The current study suggests practicing occupational therapists and physical therapists in general have positive perception on evidence based practice, particularly in the area of familiarity with EBP, the intend to and current engagement of EBP. Therapists, however, identified many factors that contribute to their negative perception on feasibility of the EBP in their day to day practice.

Administrative support, decreased productivity pressure, adequate education and training are essential in ensuring and promoting EBP, a key ingredient in help achieve triple aims of health care services.

Keywords

Evidence based practice;Occupational Therapy and Physical Therapy;Attitudes toward evidence based practice

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.03 Education and Training in Rehabilitation - Continuous Medical Education and Professional Development

ISPR8-0870

PREPARATORY COURSE TO HAPTIC SENSORY DISCRIMINATION SKILLS

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Introduction/Background

Due to considerable interindividual variability in terms of haptic threshold, the use of valid, practicable test and training systems is particularly relevant before and during manual therapy training and further training. The active sensory discrimination skills of participants need to be continuously assessed and, where necessary, appropriately trained.

The implementation of reliable haptic test and training systems in curricula contributes to assuring the quality of training standards and ultimately to optimizing patient care.

Material and Method

Based on literature review a special preparatory course to the haptic sensory discrimination skills is introduced.

Results

Crossings of the competence areas are fluent partly and the main focus lies for the haptic sensory discrimination skills on the method competence.

The number of the training sessions compares to the individual learning progress. Per single training a temporal extent of from 60 to 90 minutes should be kept because of the decrease of the attention and concentration achievements and by consideration of work everyday conditions. Under certain circumstances, they can also be used in the self-study context. Learning evaluation must be constructively for positive results. Instead of teaching commenting of the performance, success must be aware.

Conclusion

This test and training systems offer the option of measuring and training the haptic sensory discrimination skills of healthy individuals under objective and reproducible conditions. As part of this, the systems are oriented as far as possible to explorative occupational situations, while at the same time guaranteeing the scientific merit of a reproducible test situation. However, the consolidation of skills and knowledge requires adequate timetabling by lecturers, a clear

definition of tasks, and reflection on performance, whereby simulation in the skills laboratory should be integrated in the curriculum.

Keywords

Haptic;Curriculum;Patient care

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.03 Education and Training in Rehabilitation - Continuous Medical Education and Professional Development

ISPR8-2146

BOTULINUM NEUROTOXIN-A USAGE AND TRAINING IN CERVICAL DYSTONIA AND SPASTIC PARESIS: FIRST RESULTS FROM THE IXCELLENCE NETWORK® SURVEY

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Introduction/Background

Botulinum neurotoxin-A (BoNT-A) is commonly used as first line treatment for Cervical Dystonia (CD) and Spastic Paresis (SP). The Ixcellence Network® (IN) international survey aims to describe the current situation of training and practices among physicians performing BoNT-A injections.

Material and Method

A self-completion questionnaire, written by a multidisciplinary steering committee, was completed by experts managing patients with SP and CD, selected from the IN faculty, regarding their experience, training and confidence in different BoNT-A injection techniques and rehabilitation methods. Here we present a partial analysis of the 17 first respondents' answers. Additional results from a database of more than 700 practitioners (IN attendees) will be available for the congress.

Results

Seventeen physicians specialized in physical medicine and rehabilitation (9/17), neurology (7/17) and neuropsychiatry (1/17) completed the questionnaire. They reported a mean experience of 22 years in their field (from 14 to 30 years) and 18 years in BoNT-A injection (from 5 to 25 years).

All received training prior to first injection, complete with dedicated sessions on guidance techniques: 15 on ultrasound, 11 on anatomical landmarks, 6 on electrostimulation (ES) and 7 on electromyography (EMG). In their current practice, BoNT-A injection was mostly performed without guidance or using ultrasound (16/17 respondents vs 11/17 for ES or EMG).

Fifteen physicians also attended specific training on rehabilitation methods for SP (11), CD (1) or both (3).

Overall, physicians who followed specific training in injection techniques or in rehabilitation reported greater self-confidence in using them.

Conclusion

Training on injection technique and rehabilitation for SP and CD management is variable. Nevertheless, attending specific courses was associated with greater self-confidence. Moreover, physicians mainly used the techniques and methods for which they were trained. These first results highlight the relevance of training in this field.

Keywords

Education and Training in Rehabilitation; Continuous Medical Education and Professional Development; Spasticity Management

Conflict of interest

Disclosure statement:

I received honoraria for scientific advisory, lecturing, peer training and research grants from Allergan and Merz. I also received honoraria from Ipsen to lecture in symposia, training courses and advisory board participation and participated in several clinical studies sponsored by Ipsen.

E-Poster Session - July 9-12 - Exhibition Area

D3.03 Education and Training in Rehabilitation - Continuous Medical Education and Professional Development

ISPR8-2147

IMPROVING MANAGEMENT PRACTICES OF CERVICAL DYSTONIA AND SPASTIC PARESIS: 5 YEARS' EXPERIENCE OF IXCELLENCE NETWORK®, AN INNOVATIVE INTERNATIONAL EDUCATIONAL PROGRAM

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Introduction/Background

Botulinum neurotoxin-A (BoNT-A) is a well-established treatment for cervical dystonia (CD) and spastic paresis (SP). However, proper BoNT-A administration requires specific training. The Ixcellence® Network is a high-level training program developed for physicians using BoNT-A to improve patient care. Here, we describe the impact of the program on the attendees' practice.

Material and Method

A Steering Committee composed of 6 experts in the management of CD and SP was convened to design the network, choose the centres and trainers, and validate the contents of the 9 training courses. Training courses were designed in order to encourage innovative methods and approaches to patients' management, including diagnosis, tailored treatment and rehabilitation.

To assess the program quality and impact, attendees received a first questionnaire at the end of each course (T0), and a second one by email six months later (T6).

Results

Since the program launch in 2012, 728 physicians have been trained. Of the 615 physicians who answered the T0 questionnaire, 77% reported an excellent general level of satisfaction, 93% stated that they were provided with new information and 95% reported that the training achieved their personal objectives.

Regarding the long-term impact of the program, of the 211 physicians who provided feedback 6-months after attendance, 92% confirmed that the training had changed their daily practice and

helped improve their self-confidence. Of the 105 respondents who attended courses between January 2015 and December 2016, 83% reported having shared some of the information learned during the training with their colleagues (45% through daily practice, 24% by sharing documents, 8% by organizing a meeting, 6% by another way).

Conclusion

By attending Ixcellence Network® training courses, physicians are able to further develop their specialised skills, and are provided with the expertise to train their peers at a local level.

Keywords

Education and Training in Rehabilitation; Continuous Medical Education and Professional Development; Spasticity Management

Conflict of interest

Disclosure statement:

I received honoraria for scientific advisory, lecturing, peer training and research grants from Allergan and Merz. I also received honoraria from Ipsen to lecture in symposia, training courses and advisory board participation and participated in several clinical studies sponsored by Ipsen.

E-Poster Session - July 9-12 - Exhibition Area

D3.04 Education and Training in Rehabilitation - Training in Science and Research

ISPR8-2511

ORGANIZATION AND FUNCTIONING OF COCHRANE REHABILITATION FIELD

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Introduction/Background

Cochrane Rehabilitation Field (CR) is a worldwide network aiming to act as a bridge between Cochrane and Rehabilitation community and stakeholders. CR specific goals are to undertake Knowledge Translation and to progress the methods for evidence synthesis in order to make them appropriate with the needs of people with disabilities and daily clinical rehabilitation practice. The aim of this paper is to describe the Organization and Functioning of the Field.

Material and Method

Currently, 294 people from 52 different countries are part of CR. The organization includes: Director (responsible for the Knowledge Translation strategy); Coordinator (responsible of the Networking Strategy); Executive Committee; Advisory Board.

Results

The Communication Committee created the website (www.rehabilitation.cochrane.org) and is in charge of constantly updating it. It set up a YouTube channel, a Facebook page and a Twitter account. It is also responsible for the preparation of the Newsletter and of the production and dissemination of blogshots, a concise synthesis of the main message of Cochrane Evidence in Rehabilitation.

The Publication Committee has been working on the creation of Cochrane Corners in rehabilitation National and International scientific journals

The Education Committee is responsible for the preparation of Cochrane sessions and workshops at Rehabilitation Meetings, 4 Workshops and 10 sessions at National and International Meetings have been realized so far.

The Reviews Committee has been selecting all Cochrane Reviews relevant for rehabilitation, it has been developed and tested a systematic search strategy which is providing material for the other Committees.

The Methodology Committee has been working for the improvement of the methods to synthesize evidence.

Conclusion

Cochrane Rehabilitation is growing fast and more and more people are joining the different committees with the aim to obtain the same results of disseminating evidences.

Keywords

Organization;Rehabilitation;Network

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.04 Education and Training in Rehabilitation - Training in Science and Research

ISPR8-1463

FACE SCALE RATING OF PERCEIVED EXERTION DURING CARDIOPULMONARY EXERCISE TEST

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Introduction/Background

This study aimed to investigate the correlation between the face scale and the heart rate (HR), exercise load, and oxygen uptake ($\dot{V}O_2$) during cardiopulmonary exercise testing.

Material and Method

This was a prospective, observational study of face scale rating of perceived exertion (RPE) and HR, exercise load, $\dot{V}O_2$ during cardiopulmonary exercise testing. A total of 30 healthy college men and 21 healthy college women were included. Subjects performed a cardiopulmonary exercise test with ramps and an increment increase in workload of 20 watts/minute using a stationary bicycle. We recorded the responses of subjects using a face scale for RPE, HR, exercise load, and $\dot{V}O_2$ every minute during the cardiopulmonary exercise test.

Results

In men, there was a significant positive correlation between the face scale RPE and HR ($\rho=0.856$, $p < 0.01$), exercise load ($\rho=0.888$, $p < 0.01$), and $\dot{V}O_2$ ($\rho = 0.878$, $p < 0.01$) during the cardiopulmonary exercise test. Similarly, in women, there was a significant positive correlation between the face scale RPE and HR ($\rho=0.885$, $p < 0.01$), exercise load ($\rho=0.908$, $p < 0.01$), and $\dot{V}O_2$ ($\rho=0.895$, $p < 0.01$) during the cardiopulmonary exercise tests.

Conclusion

This study showed that there was a significant positive correlation between the face scale RPE and HR, exercise load, and $\dot{V}O_2$. The face scale proposed in this study was related to physiological parameters, which suggests that it may be used to determine the intensity of exercise in healthy adults.

Keywords

Exercise test;Heart rate;Perceived exertion

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.05 Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ISPR8-0162

SIMULATED E-LEARNING APPROACHES IN UNDERGRAD PHYSIOTHERAPY TRAINING FOR BOTH KNOWLEDGE AND SKILLS. A CASE REPORT.

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Introduction/Background

Traditionally, physiotherapy training is highly skill-based. Intensive tangible supervision is expected in undergrad physiotherapy training. The training of physiotherapy profession is experiencing unprecedented pressures with a significant growth in demand for training and shortage of clinical instructors in universities. The problem will affect the quality of healthcare graduates as well as the healthcare service.

The application of simulated training technology is getting more recognition in healthcare education; it is suggested to be a possible alternative to the traditional clinical training. Not only the scientific knowledge but also skill-based training can be facilitated by the technique.

Material and Method

This presentation is going to share and demonstrate several computer-based simulating approaches used in undergrad physiotherapy training including the 180-simulating video for skills training, electronic scoring system and computer-based scenario-mock-up exam. The interventions are cost-effective and well available as common resources. In addition, quantifiable data can be collected through the systems for the analysis of the students' progress.

Results

Instructors and students feedback of the e-learning week have been recorded. The data reflects the cost-effectiveness of the simulated e-learning approaches for undergrad physiotherapy students.

Conclusion

The use of computer-based simulated teaching can be an alternative to improve the quality of training in large classes of students in healthcare programmes.

Keywords

Physiotherapy;E-learning;Simulation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.05 Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ISPR8-0256

DEVELOPMENT OF ESSENTIAL STANDARDS FOR THE TRAINING OF COMMUNITY REHABILITATION WORKERS IN LOW RESOURCE SETTINGS

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Introduction/Background

One of the objectives of the WHO Global Disability Action Plan 2014-2021 is to strengthen rehabilitation and Community Based Rehabilitation (CBR). In order to achieve this goal, the training of Community Rehabilitation Workers (CRW) is crucial. However, results of the last World CBR Congress show a lack of recognition of this professional group, looking at accountability and training with certificates. This is partially related to their wide range of skills and duties

Material and Method

In september 2017 a research protocol was conducted at community rehabilitation programmes in 6 low and middle income countries. It consisted of workshops with the management team (31 members) and CRW (78), field visits and Focus Group Discussions with the beneficiaries (182). The protocol looks at the needs of the beneficiaries, training received and activities carried out by CRW, and their support system. It uses an open question method, categorising and stratifying the responses according to their relative importance along the process.

Results

Training of CRW is inconsistent with the variety of interventions needed in the field, which leaves the users insecure. The needs of the beneficiaries are multifaceted, and activities carried out by CRW only partially reflect a needs based approach. Competencies regarding economic empowerment, disability specific issues, psychosocial support and inclusion are underaddressed. Also, a mismatch was found between activities carried out most often and activities determined as most important

Conclusion

This research protocol identified gaps and priorities for the development of a standardised training content for CRW. We describe minimal standards that answer the needs of a person with a disability living in the community of a low resource country

Keywords

Training;Standards;Community Rehabilitation Worker

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.05 Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ISPR8-0908

PHYSICAL ACTIVITY AND CANCER: THE VIEWS AND KNOWLEDGE OF PHYSIOTHERAPISTS IN MOROCCO.

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Introduction/Background

As part of cancer care, physical activity (PA) increases the chances of healing and survival, and improves the quality of life of patients. The practice of PA must be done by a trained and experienced professional. This study aims to identify Moroccan physiotherapists' current knowledge and practice in recommend PA for cancer care and barriers to such prescription and to investigate their views on PA for cancer patients.

Material and Method

An online cross-sectional survey was distributed to the Moroccan physiotherapists in december 2017. An instrument was created, which included dichotomous question with multiple responses according to the Likert scale. The questionnaire explored physiotherapists' views on the role of PA for patients with cancer and physiotherapists' prescription of PA for cancer patients.

Results

A total of 49 physiotherapists, including 23 (47%) women, completed the study. 57% (n=28) of physiotherapists have less than 5 years of professional experience and 49%(n=24) practice in the public hospital. 71 % (n=35) of physiotherapists have never or rarely prescribing PA for cancer care. In all, 90%(n=44) of physiotherapists agreed with the statement «PA increases the chances of healing and survival, decreases the complications and side effects of cancer and its treatment and improves the quality of life of patients », while 84% (n=41) of physiotherapists agree with the statement «Cancer patients must remain physically active». 34 (70%) agree that physicians are convinced of the importance of PA in the cancer care. However, 82% (n=40) of physiotherapists are unable to recommend physical activity because they did not have training in PA and oncology rehabilitation.

Conclusion

The majority of physiotherapists perceived PA to be of benefit for cancer patients. Physiotherapists' knowledge seems to be insufficient to inform, and encourage cancer patients to use PA. There is a need for a specific module on PA and cancer rehabilitation in education and training of physiotherapists.

Keywords

Physical activity;Physiotherapists ;Cancer rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.05 Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ISPR8-0966

N95 MASK FITTING TEST ON THE REHABILITATION THERAPISTS

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Introduction/Background

N95 masks offer protections from airborne diseases like Tuberculosis (TB). Our hospital has a specialized ward for TB patients, and from the context of preventing inpatients disease syndrome, we receive quite a number of rehabilitational consultations on these patients. On the other hand, we were pointed out by the doctor from other institutions that there was concern about the increased risk of TB infection by rehabilitation therapists even with the N95 mask on. From this, we thought that there was a need to consider countermeasures and guidance to prevent possible leakage due to misalignment in N95 mask wearing during rehabilitation work. To set up simulated training scenes among rehabilitation staff, and to consider appropriate mask use and personal protection measures during rehabilitation work.

Material and Method

We assessed 23 staff in total, including 14 PTs, 4 OTs and 5 STs. Under the cooperation of our hospital ICN, we measured the mask leakage rate (%) before and after the simulated training using laboratory mask fitting tester MT-03 (manufactured by Shibata Science). Leak rate of 5% or more was judged as "leaked". The content of the training activity was established, and when the mask adhesion was in doubt, a corrective measure was given during the training.

Results

In the mask fit test before simulated training, 15 out of 23 (65%) were able to fit N95 mask without leakage. Eight people had insufficient mask adhesion at the nose and/or jaw. In the fit test after the simulated training, 12 people (52%) had mask leaks. In the ST group, who were performing the swallowing training operation, 4 out of 5 (80%) had mask leaks.

Conclusion

Since this mask fitting test was experience based training, and the examinee gets immediate feed back, it was an opportunity to reconfirm the correct wearing of the N95 mask.

Keywords

N95 mask;rehabilitation work;personal protecton

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.05 Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ISPR8-1266

EFFECTIVENESS OF THE WHEELCHAIR SKILLS TRAINING PROGRAM: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background

The Wheelchair Skills Program (www.wheelchairskillsprogram.ca) is a set of assessment and training protocols – the Wheelchair Skills Test (WST), the questionnaire version of the WST (WST-Q) and the Wheelchair Skills Training Program (WSTP). Evidence has been accumulating about the important role that wheelchair skills training has in the wheelchair-provision process recommended by the World Health Organization. The objective of this study was to conduct a systematic review synthesizing the evidence for the effectiveness of the WSTP.

Material and Method

We searched PubMed, the Cochrane Library, CINAHL and Embase databases, as well as grey literature, up to October 10, 2017. We selected studies that were randomized controlled trials (RCTs) assessing the effectiveness of the WSTP. Two independent reviewers screened articles and extracted data. Methodological quality was assessed using Cochrane's Risk of Bias Tool. Meta-analyses (including sub-group analyses) were conducted for the WST and WST-Q total capacity scores. We qualitatively assessed retention, WST/WST-Q subtotal and individual-skill capacity scores and other identified outcomes. The quality of evidence was determined using the Grades of Recommendation, Assessment, Development and Evaluation (GRADE) approach.

Results

Thirteen RCTs (581 participants) were included for analysis. The level of evidence was of moderate quality. The WSTP increased the post-training WST/WST-Q total capacity scores by 14.0% (95% CI: 7.4, 20.8; $p < 0.0001$) compared to no treatment, standard care or educational controls, a relative increase of 21.2%. Subgroup analyses showed that training was more effective for new wheelchair users. Retention of training effects was suggested by the absence of significant declines between tests post-training and at follow-up. The WSTP was found to have positive effects on some other outcomes. No serious adverse events were reported.

Conclusion

There is moderate quality evidence that the WSTP is a safe intervention that has a clinically meaningful effect on WST/WST-Q capacity scores and some other outcomes.

Keywords

Wheelchair;Skills training;Systematic review and meta-analysis

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.05 Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ISPR8-2068

EFFECT OF PATIENT SUPPORT ON PSYCHOLOGICAL AND ACTIVITY OF DAILY LIVING IN PATIENTS WITH EARLY SPINAL CORD INJURY

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Introduction/Background

To observe the effect of adding the patient support on the psychological and activity of daily living of patients with early spinal cord injury on the basis of conventional rehabilitation intervention and psychological therapy.

Material and Method

60 patients with early spinal cord injury were randomly divided into group A (conventional physical therapy), group B (conventional physical therapy + psychotherapy), group C (conventional physical therapy + psychotherapy + patient support). Each group has 20 patients. The Hamilton Anxiety Scale (HAMA), the Hamilton Depression Rating Scale (HAMD), the Modified Barthel Index (MBI), Spinal Cord Independence Measure III (SCIM III) were used for evaluation of the three groups before and 6 weeks after treatment. Using PRO-KIN Computer-based Proprioception Test and Training System to measure sitting peripheral area.

Results

After 6 weeks of treatment, HAMA score, HAMD score, MBI score and SCIM III score of group A and B are both have statistically significant than before ($P < 0.05$). The HAMA score, HAMD score, MBI score and SCIM III score in group C were significantly better than those before treatment ($P < 0.01$). There was statistical significance between the fourth week and the initial test results ($P < 0.05$). There was significant statistical difference between the sixth week and the initial test results ($P < 0.05$). The peripheral area score of the group B was better than that of the group A after 6 weeks treatment ($P < 0.05$). The peripheral area score of group C was significantly higher than that of group A ($P < 0.01$).

Conclusion

Patient support combined with conventional rehabilitation intervention and psychological therapy of early spinal cord injury patients is a worthy promotion as better effect on mental health, the ability of activity of daily living, functional independence and sitting position balance.

Keywords

Patient support; Spinal cord injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.05 Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ISPR8-2735

THE OPPORTUNITIES AND GAPS IN REHABILITATION EDUCATION IN LOW INCOME COUNTRIES

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Introduction/Background

There is an increasing prevalence of disability worldwide. This is associated with a concomitant increase in the need for rehabilitative service globally. This is particularly true for low and middle-income countries. In some parts of the world such as the continent of Africa, the imbalance between available services and the needs of the population can be viewed as a crisis. As such there have been efforts to optimize the formulation and delivery of educational content in these parts of the world.

This literature review aimed at identifying current models of education delivery to rehabilitation professionals in low income countries and possible future directions in this arena.

Material and Method

A literature review was performed using Medline, Cinahl, and PreMedline databases, with filters for English language from 1996 – week 3 of December 2017. The search terms were PT/OT/PM&R (physical therapy, occupational therapy, physical medicine and rehabilitation) Education/Training in Developing Countries and Educational Models in Medical Education in Developing Countries. This was performed with the aid of a medical librarian. Additional search terms were used to identify educational models / efforts for prosthetists and orthotists in low income countries.

Results

The literature regarding PT and OT in low income countries far exceeds, the amount of articles on educating / training physiatrists in these settings. Similarly, there is a relative paucity of articles on educating / training prosthetists / orthotists in this setting.

Conclusion

There is significant opportunity for improvement in the absolute amount of physiatric and prosthetist / orthotist training in low income countries but also the incorporation of technological advances such as additive technology (3-D printing), telemedicine / telehealth, quality improvement techniques, simulation training, and local as well as international partnerships.

Abstract topics: D3 Education and training in rehabilitation

Keywords

education;low-income;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.05 Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ISPR8-2253

IMPLEMENTATION OF THE OCCUPATIONAL THERAPY IN MOROCCO: FROM THE NEEDS ANALYSIS TO CURRICULUM DESIGN DEVELOPMENT

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Introduction/Background

The creation of Occupational Therapy Curriculum Design in Morocco is one of the priorities of the 2015-2021 National Health and Disability Action Plan. This study aims to describe the main steps of the first year of the project of the Implementation of the occupational Therapy in Morocco which began in 2016, and which aims to strengthen human resources for health and rehabilitation and physical rehabilitation workforce.

Material and Method

We conducted a study of the mapping of the supply of care and the need for occupational therapy as well as reflection workshops with the experts and stakeholders involved in this project.

Results

An occupational therapy curriculum program of 3 years training has been designed, adapted to the Moroccan context and based to the international standard. This occupational therapy curriculum program has been accredited by the WFOT and the first year starts in september 2017.

Conclusion

The creation of the occupational therapy education is a first and a big step in the implementation of occupational therapy in Morocco. The success of this project requires the collaboration of stakeholders and policy makers to overcome all the barriers.

Keywords

Occupational Therapy;Curriculum Design ;Moroccan Health and Disability Action Plan 2015-2021

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.05 Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ISPR8-2412

EFFECT OF INTERNATIONAL REHABILITATION VISITING STUDENT PROGRAM ON STUDENTS' PROFESSIONAL DEVELOPMENT

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Introduction/Background

One of the important and enduring strategies that developing countries take in advancing education and training of rehabilitation students and professionals is fostering international partnerships, improving the quality of international education provision, and encouraging partnerships with foreign education institutions. The purpose of this presentation is to describe and examine the effect of an international visiting student program in a university of USA on students' professional development. A total of seventy students in rehabilitation from China participated in the three month summer visiting student program that included a combination of didactic coursework, clinical observation, and cultural immersion in the past three summers.

Material and Method

The outcomes of the program were evaluated annually through a mixed methods approach incorporating a single group pre/posttest analysis and focus group discussions. The quantitative portion of the study incorporated the use of two instruments: the Team Skills Scale (TSS) (Hepburn, Tsukuda, & Fasser, 2002), and one subscale of the Cultural Competence Health Practitioner Assessment (CCHPA) (National Center for Cultural Competency, 2014). Qualitative data collection included videotaped interviews with participants at the end of the CRISP prior to the participants returning to China. The participants were asked open-ended reflection questions by a CRISP staff moderator.

Results

The results of quantitative data analyses revealed significant differences between pre and post tests suggesting the summer program had significant impact on students' team work skills and cultural competence. The results of qualitative data analysis echoed the findings of the quantitative data.

Conclusion

Findings of the program evaluation revealed that international immersion programs is one of the effective stepping stones to help prepare and develop rehabilitation professionals for countries in which rehabilitation is less developed. The willingness of educational institutions to commit to working with partners in another country is vital to initiate the collaboration.

Keywords

Therapists Education and Training;International Collaborations;Professional Competence

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D3.05 Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ISPR8-2480

BUILDING THE CAPACITY OF WHEELCHAIR SERVICE PROVIDERS IN THE STATE OF SAO PAULO, BRAZIL

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Introduction/Background

In 2014, when launching the Wheelchair Service Training Package (WSTP) in Portuguese, the three first trainers of the Physical and Rehabilitation Medicine Institute (IMREA) of the University of Sao Paulo Medical School General Hospital trained 20 trainers from Brazil, Mozambique, Cape Verde, Angola, Guinea Bissau and East Timor. After training the staff of IMREA and taking part in the WSTP Training of Trainers in 2016, the Institute expanded WSTP training to facilities in the countryside through the Lucy Montoro Rehabilitation Network, thus decentralizing wheelchair service provision according to the WHO Guidelines on the Provision of Manual Wheelchairs in Less Resourced Settings. This Network is a State-level program that delivers comprehensive rehabilitation services and provides assistive products to persons with physical disabilities in the State of Sao Paulo through the universal Brazilian Public Healthcare System. The study analyses the educational process that built the capacity of 180 rehabilitation professionals.

Material and Method

Based on WHO's WSTP modules (basic, intermediate and manager's), a cascade strategy was used to train 7 core teams of trainers from different rehabilitation facilities and expand it to 180 rehabilitation professionals in 11 facilities. The analysis of the educational process used a structured satisfaction questionnaire and a knowledge evaluation.

Results

The project trained 180 professionals and created 11 wheelchair clinics abiding by the WHO Wheelchair Guidelines. 97% professionals were approved. 98.48% trainees acknowledged the training offered new knowledge (even though they were all experienced health and rehabilitation

professionals) and 89.39% rated it as very good or excellent. Trainees indicated it would result in changes to their daily practice (64%) and behaviour (18%).

Table 1. Course trainees according to their professional background.

Conclusion

The cascade strategy based on WSTP was successful at building the capacity of rehabilitation professionals about the WHO Wheelchair Guidelines and decentralizing wheelchair service provision.

Keywords

Wheelchairs;World Health Organization;epidemiology

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D4.01 Rehabilitation Management and Administration - Rehabilitation Service Management (including Integrated Care and Service Concepts)

ISPR8-0275

THE USE OF TOTAL CONTACT ORTHOSES IN PATIENTS WITH FOOT PROBLEMS IN FOOT CLINIC, SIRIRAJ HOSPITAL

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Introduction/Background

To study the use rate, result and concomitant factors of the use of total contact orthoses in Foot Clinic, Siriraj Hospital which has not been studied before.

Material and Method

Studying from patient records and interviews with patients who had foot problems without impairment of foot sensation and received TCO from Foot Clinic between July, 2015 and April, 2016. First interview, patients were asked information before use and latter about the latest TCO after use in first 1 month.

Results

One hundred and fifteen participants were recruited but eight lost to follow up. The majority had chronic plantar fasciitis (26.2%), posterior tibial tendon dysfunction (25.2%), hallux valgus (21.5%) and metatarsalgia (21.5%). The use of TCO defined as the participants had to use for more than 3 days/week and for more or equal to 50% of daily walking and standing duration was 67.3%. Using TCO can provide walking stability (p -value=0.008). For patients with metatarsalgia, using TCO can significantly reduce pain (p -value=0.002). Many factors found associated with the use of TCO including receiving TCO for more than first pair (Odds ratio=4.09, 95% CI 1.51- 11.05), ability to find proper shoes that fit with TCO (Odds ratio=0.36, 95% CI 0.15- 0.89), level of convenience of putting on/ taking off shoes with TCO \geq 9 (Odds ratio=2.66, 95% CI 1.16-6.12), level of comfort satisfaction during TCO use \geq 9 (Odds ratio=3.61, 95% CI 1.55-8.40). The latter two factors are found to be associated with the use of TCO from stepwise logistic regression analysis (adjusted Odds ratio=3.39, 95% CI 1.18- 9.71, 3.02, 95% CI 1.07-8.47 respectively).

Conclusion

The use of TCO in Foot Clinic was 67.3%. Using TCO could result in walking stability. Patients who received more than first pair of TCO and had comfort satisfaction level \geq 9, were more likely to use TCO.

Keywords

Total Contact Orthoses;Use of TCO;Foot problem

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D4.01 Rehabilitation Management and Administration - Rehabilitation Service Management (including Integrated Care and Service Concepts)

ISPR8-0491

FEASIBILITY AND EFFECTIVENESS OF DIABETES PEER COACHES

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Introduction/Background

This was a two-year project funded by a grant from the Lawson Foundation involving a university and 11 Diabetes Centres. One hundred nine persons with type 2 diabetes or who were familiar with type 2 diabetes (e.g., family member) were trained to use Self-Management behavioural change strategies and to navigate the healthcare system. Diabetes educators recruited 115 adults with type 2 diabetes who were experiencing difficulty.

Material and Method

Coaches and subjects were paired and over a 6-month period coaches telephoned subjects once each week and engaged in a 30 minute conversation. Both the coaches and subjects completed questionnaires at baseline, and at 6 and 12 months. A one-way repeated-measures analysis of variance was used to investigate change with 14 measures. To investigate process, a grounded theory qualitative analysis was conducted to obtain information on how the coaching process worked.

Results

The analysis showed statistically significant improvements in A1C, patient activation, depression, self-efficacy, communication with health care professionals, and diabetes empowerment. Improvement levels were sustained at 12 months and these results were not influenced by covariates of age, gender, number of chronic health conditions and education level. The study also obtained information on recruiting coaches and participants, training coaches, pairing coaches with participants, length and intensity of the intervention, liaising with diabetes health professionals and monitoring and supporting coaching integrity.

Conclusion

This pilot “pragmatic” study demonstrated that peer coaches are acceptable to clinicians and clients and have an important role in the continuity of care for persons experiencing chronic conditions. At study completion the program protocol was modified slightly and is currently being

implemented on a permanent basis to persons experiencing various types of chronic condition, and the program is currently being evaluated in a randomized controlled trial.

Keywords

Chronic health condition;continuity of care;peer coaching

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D4.01 Rehabilitation Management and Administration - Rehabilitation Service Management (including Integrated Care and Service Concepts)

ISPR8-0572

REVIEW OF CURRENT LEGISLATIVE DOCUMENTS ON REHABILITATION SERVICES IN MONGOLIA

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Introduction/Background

As technical advancement increases efficiency of acute medical care and survival rate, the demand for evidence-based, accessible and comprehensive rehabilitation in health systems grows. For the progress in rehabilitation service in Mongolia the established legislative policy is required. It was considered that the review of all currently effective legislative policy documents is essential for practicing medical professionals.

Material and Method

To review all currently effective legislative policy documents, including laws, acts, decrees, guidelines and any regulation documents on rehabilitation service

Results

Rehabilitation service was stated in one provision in the State Policy on Health, in ten provisions in the Law on Health, in ten provisions in the Law on Medical Care Services, in three provisions in the Law on Health Insurance, in six provisions in the Law on Social Welfare. Classification of activities of specialists, general and qualified competency indexes of physician and other professionals in rehabilitation were approved by the Order of the Minister of Health. There are five currently effective regulation documents on rehabilitation services.

Conclusion

The provision in the Law on Medical Care Services, as an independent field of medical service, indicates the biggest achievement in the policy and further development of our field.

Keywords

Conflict of interest

Disclosure statement:

For the progress in rehabilitation service in Mongolia the established legislative policy is required

E-Poster Session - July 9-12 - Exhibition Area

D4.01 Rehabilitation Management and Administration - Rehabilitation Service Management (including Integrated Care and Service Concepts)

ISPR8-1303

ASSESSMENT OF THE QUALITY OF REHABILITATION SERVICES AND SYSTEMS: FEASIBILITY STUDIES

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Introduction/Background

The assessment of the quality of rehabilitation at different levels (individual, specialist, department, institution, territory, etc.) is a complex process. There are several methods that allow assessing at a certain level. However, the end-to-end assessment does not exist in a unified manner.

Material and Method

The system for assessment of the quality of rehabilitation services has been elaborated. It allows at an individual level to compare the average rates of the categorical profile regarding to the International Classification of Functioning, Disability and Health and to assign a weight characteristic to the result. It makes possible to conclude: good, satisfactory, no results; at the level of the department based on the average weight index of the individual assessment the efficiency of the department activity is calculated; at the level of the organization it is calculated on the index of the departments, etc. Starting from the second level, it is necessary to take into account the variance of the rates, which shows the presence / absence of significant deviations in the process of the rehabilitation and to assess the stability of the results that were obtained.

Results

Testing of the developed approach was started in 2017 in the pilot regions of the Russian Federation (Sverdlovskaya Oblast and Permskiy Kray) in the framework of improving the rehabilitation system in the country and will be completed in 2018.

Conclusion

The results indicate the high effectiveness of the proposed approach from the point of view of monitoring and management of the rehabilitation services and systems at the macro level.

Keywords

rehabilitation system; rehabilitation services; assessment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D4.01 Rehabilitation Management and Administration - Rehabilitation Service Management (including Integrated Care and Service Concepts)

ISPR8-2218

DEVELOPMENT OF SCI SERVICES IN MADAGASCAR

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Introduction/Background

Madagascar, a country of 24 million people, until 2013 did not have any SCI services. For the only two neurosurgery services, one in the capital in Antananarivo and one in the province in Fianarantsoa, the management of spinal cord injury was limited to initial surgical fixation of the fractured vertebrae for those who could afford it. 8 doctors gained the Diploma in Rehabilitation Medicine in 2013 through a joint collaboration between the University in Antananarivo and Leeds University, UK with the support of the charity Optin.

Material and Method

Retrospective method by situation analysis of SCI services before 2013.

Results

Data from two years suggests that the service is beginning to have a positive impact. The rates of secondary complications are comparable to other reports from the region. A 2015 study in Ethiopia found 22.5% of patients with SCI developed pressure ulcers, compared to 11.5% in Madagascar in 2016 (9).

The other notable developments are the multidisciplinary team in collaboration with neurosurgical team.

Challenges:

- • Lack of SCI Rehab services in Madagascar
- • Poor access to online resources.

Future:

- • Centre of excellence for SCI rehab in Antananarivo
- • Develop SCI services in Fianarantsoa..

Conclusion

SCI services in Madagascar are continuing to develop, with an emphasis on clinical knowledge and systematic management rather than advanced technology. These developments are a source of considerable pride, in spite of poor transport infrastructure and the low level of healthcare funding. Other countries now acknowledge the positive advancements in Madagascar, which is leading the way for rehabilitation services across Africa (1).

Keywords

me3

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D4.01 Rehabilitation Management and Administration - Rehabilitation Service Management (including Integrated Care and Service Concepts)

ISPR8-2737

INVOLVING VOLUNTEERS IN THE REHABILITATION PROCESS: LESSONS FROM THE PERSONALIZED CITIZEN ASSISTANCE FOR SOCIAL PARTICIPATION (APIC)

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Background and aims: Critical in promoting older adults' health and preventing disabilities, social participation includes social and leisure activities, e.g., doing physical exercises, visiting friends and volunteering. To support the development of social participation, the Personalized citizen assistance for social participation (APIC) is an intervention that involves stimulation with a non-professional volunteer fostering the establishment of an egalitarian relationship. Although it can complement and extend professional healthcare services, little is known about the strengths and challenges of involving volunteers in the APIC and, more broadly, in the rehabilitation process. This presentation aims to explore the experience of involving volunteers in the APIC.

Methods: In six studies among adults with acquired brain injuries (mixed-method; n=9), older adults with loss of autonomy (mixed-method, multiple case & pragmatic multicentre randomised controlled trial designs; n=19+5+25), and aging adults with visual impairment (mixed-method; n=13) or psychosocial and mental health issues (multiple case; n=5), APIC has been experienced in a research context, and implemented in community organizations and one rehabilitation centre. Semi-structured individual or group interviews were conducted with volunteers who also kept a diary.

Results: Volunteers provided weekly three-hour personalized stimulation sessions over at least six months, targeting significant social and leisure activities. The strengths and challenges of involving volunteers in the APIC depended on their interest and helpfulness. Main issues concerned reaching, engaging and supporting volunteers throughout the APIC. Volunteer training and supervision once a month, through a group meeting that included a rehabilitation professional, were essential.

Conclusions: While social participation should be fostered, it is important to have a better understanding of the impacts of the involvement of volunteers in the APIC and other similar rehabilitation contexts. Strategies to properly reach, train, involve and support volunteers are important to ensure a positive experience for the patient and everyone involved in the rehabilitation process.

Keywords

Document not received

E-Poster Session - July 9-12 - Exhibition Area

D4.03 Rehabilitation Management and Administration - Structures and Processes in Rehabilitation Institutions

ISPR8-2597

UTILIZATION OF HIGH-TECH VERTICALIZATION EQUIPMENT FOR WHEELCHAIR DEPENDENT SCI PATIENTS DURING INPATIENT REHABILITATION AT HAAPSALU NRC BETWEEN 2016 - 2017

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Introduction/Background

Since 2012 Lokomat Pro, Erigo and tilt-beds have been used at Haapsalu Neurological Rehabilitation Centre (HNRC) for verticalization of spinal cord injured (SCI) patients. In 2017 HNRC underwent a structural reform during which the former profession-based departments were turned into diagnose-based units, aiming to provide more efficient and patient-centered services and to increase the use of expensive high-tech equipment by at least 10%. The goal of this retrospective study is to assess the effect of the reform on the use of high-tech instruments and to clarify the motivation of patients and hospital staff in providing these services.

Material and Method

HNRC's medical software Medisoft Liisa and standard statistical methods were used for data collection and analysis. Qualitative interviews of staff and patients were used to obtain information on motivation. All SCI patients treated in HNRC between 2016-2017 irrespective of the cause of injury and financing conditions were included in the present study. All patients eligible for verticalization were wheelchair dependent. Eight tilt beds were used in 2016 and twelve in 2017 in spinal rehabilitation unit for verticalization.

Results

In 2016 and in 2017 the number of SCI patients in spinal rehabilitation unit was 422 and 474 respectively. Erigo was used 33840 minutes in total for 115 patients in 2016 and 50220 minutes for 178 patients in 2017. In 2016 Lokomat Pro was used 6846 minutes for 44 patients and 11745 minutes for 56 patients in 2017. Tilt-beds were used 16140 minutes for 51 patients and 33630 minutes for 101 patients in 2016 and 2017. From 1535 scheduled tilt-bed standing sessions 1121 were performed in 2017 due to the low motivation of patients.

Conclusion

The use of high-tech equipment for verticalization increased by 52,3% between 2016 and 2017. The utilization of tilt-beds increased by 108,3%, but patient empowerment remains a challenging task for the staff.

Keywords

robotics;organisation of services;verticalization

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D4.04 Rehabilitation Management and Administration - Miscellaneous

ISPR8-1571

EFFECT OF HORSE RIDING THERAPY ON QUALITY OF LIFE AND GROSS MOTOR FUNCTION IN CHILDREN WITH CEREBRAL PALSY

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Introduction/Background

Therapeutic horse riding is one of the popular alternative therapy other than physical therapy for improvement of posture and gross motor function. There are increasing references about the benefit of hippotherapy on motor function. However, their evidence on quality of life is not sufficient. The study aimed to find the effect of horse riding therapy (HRT) on both gross motor function and quality of life in children with cerebral palsy.

Material and Method

The participants were 12 children with cerebral palsy (GMFCS level I-III), and their mean age was 6.5 ± 1.9 (ranged 5-12) years recruited from university rehabilitation hospital. Five were boys, and eight were bilaterally involved (Table 1). The gross motor function measure (GMFM) test, pediatric berg balance test (PBS), and Child Health Questionnaire – parent form 50 (CHQ-PF50) were evaluated before and after the 8 weeks of HRT schedule (30minutes/session, total 16 sessions).

Results

Total score of GMFM-88, GMFM-66, and PBS did not show significant change after 16 sessions of HRT ($P > 0.05$). However, GMFM-D dimension which deals with various aspects of standing showed significant improvement after 8 weeks of horse riding therapy, the mean score (SD) from 27.9 (11.1) to 29.8 (10.7) ($P = 0.006$) (Table 2). And various score dimensions of CHQ-PF50 showed no significant difference during and without HRT; Physical functioning, Role/Social Emotional/Behavioral, Role/Social Physical, Bodily Pain and Discomfort Scale, Behavior Scale, Mental Health Scale, Self Esteem Scale, General Health Perception Scale, Emotional Impact on Parent Scale, Parent Impact Time Scale, Family Cohesion, Family Activities, Physical Summary Score, Psychosocial Summary Score ($P > 0.05$).

Conclusion

After 8 weeks of HRT, the standing function was significantly improved in children with CP. However, balance and walking score and quality of life score did not improve significantly.

Keywords

cerebral palsy;hippotherapy;horse riding therapy

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D5 Miscellaneous

ISPR8-0018

USING SENSORY BASED INTERVENTIONS TO FACILITATE ACCELERATED EMOTIONAL, PHYSICAL AND ACADEMIC LEARNING ATTAINMENT

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Introduction/Background

The Pace Centre is an early intervention and educational facility for children aged 0 – 14 years with motor disorders. A transdisciplinary team of teachers, therapists, conductors and learning support assistants enables the provision of a bespoke therapy and learning environment to meet the individual needs of the child within the classroom.

Having a motor disorder can lead to deprivation of typical sensory experiences that are necessary for children to develop emotionally, physically and academically (Ayres 2005). Therefore, incorporating individualised sensory based interventions (SBI) into our daily programmes are integral to facilitate the child's learning.

Material and Method

Skilled observation and where appropriate, structured assessments of sensory processing are utilised alongside liaison with parents and other professionals to inform which SBI may be of benefit and whether individualised Ayres Sensory Integration (ASI) may also be suitable.

SBI may take the form of whole group but differentiated accordingly, programmes that include the considered use of vestibular, proprioception and tactile sensory input to support arousal, attention, engagement and muscle tone/ postural stability. During the school day SBI are also incorporated by having a variety of seating and movement opportunities available to support the sensory needs of the child to facilitate their learning; ranging from sitting on a platform swing during a lesson to pushing oneself on a scooter board to move throughout the school.

Results

See below

Conclusion

Data collected from termly reviews of Individual Educational Profiles which measure physical and academic attainment support the beneficial use of SBI to enable and facilitate accelerated emotional, physical and academic learning attainment.

Keywords

Cerebral Palsy ;Sensory Integration;Learning

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D5 Miscellaneous

ISPR8-0045

“TREATING A PATIENT SHOULD BE APPROACHED IN A HOLISTIC MANNER”: COLLABORATION OF DOCTORS AND PHYSIOTHERAPISTS IN THE REHABILITATION OF PEOPLE LIVING WITH HIV

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Introduction/Background

A team based approach to medical management of people living with HIV is imperative to promote coordinated, comprehensive and continued care in order to facilitate reintegration into daily life and community living. Doctors and physiotherapists are key role players involved in the management of the impairments and disability related to the HI-virus and its treatment. The paper explores the collaboration of doctors and physiotherapists in the rehabilitation of people living with HIV in a semi-rural healthcare setting in KwaZulu-Natal, South Africa.

Material and Method

A qualitative approach using a semi-structured interview guide was employed to interview six doctors and two physiotherapists.

Results

Five themes emerged from the analysis- namely biomedical versus biopsychosocial approach; scope of practice challenge; multidisciplinary team enigma; institutional structure limitations and recommendations from healthcare professionals.

Conclusion

Both groups of professionals believed that a lack of understanding into scope of practice and role of the associate profession in the multidisciplinary team led to poor referrals and lack of collaboration. Furthermore, shortage of personnel and resource limitations posed barriers to effective team interaction. Timely, appropriate referrals, good communication and understanding of roles were suggested as endorsements to improved collaboration for future practice.

Keywords

HIV;collaboration;rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D5 Miscellaneous

ISPR8-0589

REINTEGRATION IN NORMAL LIFE, IMPACT ON LIFE SATISFACTION AND MODERATE ROLE OF SELF-CONCEPT AND COPING STRATEGIES

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Introduction/Background

Recent studies confirm relationship between reintegration in normal life and life satisfaction at persons with limb amputation. In this study, within the illumination of reintegration in normal life and life satisfaction relationship, mediation role of self-concept, coping strategies, and optimism were considered.

Material and Method

Sample consisted of 80 males with leg amputation, between 31 and 57 years old.

For the purpose of the study were used tests : Reintegration in Normal Life Questionnaire Scale , Life Satisfaction Scale, SC-4 was used in estimation of self-concept primary domains, Coping Inventory of Stressful Situations and optimisms scale.

In order to examine complex relationship between considered constructs mediation analysis were performed. At the first step impact on RNL index on general self-concept, coping strategies and optimism were mediator variables. In the second step life satisfaction was dependent variable, while self-concept, and coping strategies and optimism were varied in position of mediator variables.

Results

Results show significant direct effect of RNL index on general SC, while direct effect is not significant. Coping strategies and optimism dimensions does not contribute in establishing significant total effect on general self-concept. There is no direct RNL index impact on Life satisfaction, but total impact when moderate variables are included (Self-concept primary domains) is significant. Physical, Emotional and Competence self-concept significantly moderate both life satisfaction aspect. With coping strategies and optimism in moderate variables position, direct and total effect of RNL index on general SC are both significant. Emotion oriented coping styles, and pessimism show significant impact on both, general and situational life satisfaction.

Conclusion

Findings suggest that reintegration of people with leg amputation in normal life does not just directly effect life satisfaction. Moderate role of self-concept, coping and coping strategies is confirmed. Specific role of primary self-concept domains, coping strategies and optimism dimensions are to are be discuss.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D5 Miscellaneous

ISPR8-2175

THE POST-RETIREMENT WORK SUPPORT FROM AN OCCUPATIONAL PERSPECTIVE: A LITERATURE REVIEW OF ISSUES WITHIN THE SILVER HUMAN RESOURCES CENTER IN JAPAN

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Introduction/Background

The number of working elderly in Japan has been increasing, and one-fifth of workers in 2016 were older than 60 years. Silver Human Resources Center (SHRC) is a Japanese organization provides post-retirement work. SHRC has a purpose resembles the philosophy of occupational therapy: to support retirees improve their well-being. The aim of this research is getting suggestions from an occupational perspective for post-retirement work support through a literature review of issues within the SHRC.

Material and Method

The research was conducted in Cinii Articles with a keyword: "Silver Human Resources Center". 31 Japanese studies were extracted from 211 results based on "aims" and "methods" description and 55 labels refer to issues of SHRC were extracted from them. The labels were analyzed based on a categorizing method to reveal the relation each other.

Results

5 categories occurred. <A better matching of jobs with human resources> was a systematic issue of SHRC, and taking on this issue was important for <increasing active working>. In addition, a difficulty of proactive management by members and gathering new members were also identified as issues, and it was needed <to be matured as an organization>. This maturing was related to the propulsion of community-based efforts and being a place enables local residents to spend time with others. It means <to be a part of every day>, and efforts <to be a part of every day> and for <increasing active working> were expected to expand to support <not only member's working but also their lives>.

Conclusion

Analyzed issues of SHRC seem to include an occupational perspective: to support one's occupation from personal history and environments. Therefore, occupational therapy may be able to contribute preventing from occupational crisis due to change ways of spending life after

retirement. One of the important tasks is revealing the subjective experience process of life changing with retirement.

Keywords

adaptation;retiree(s);literature review

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

D5 Miscellaneous

ISPR8-2404

INFLUENCE OF ENVIRONMENTAL FACTORS ON WELL-BEING AND CARE BURDEN OF ELDERLY FAMILY CAREGIVERS: A BAYESIAN STRUCTURAL EQUATION MODELING APPROACH

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Introduction/Background

In Japan, the magnitude of the care burden and difficulties with continuity of in-home care among elderly caregivers have been reported, but support systems for elderly family caregivers remain insufficient. This study aimed to test a hypothetical model holding that environmental factors influence elderly family caregivers' well-being and care burden.

Material and Method

Participants were 60 family caregivers of elderly people with care needs who were aged ≥ 60 years (24 men and 36 women; mean age, 75.7 ± 8.9 years). The study was approved by the Kibi International University Ethical Review Board (No. 17-16). Participants underwent a demographic survey, the Comprehensive Environmental Questionnaire (CEQ), a short version of the Japanese version of the Zarit Caregiver Burden Interview, and the Visual Analogue Scale of Happiness, and the generated hypothetical model was assessed by means of Bayesian Structural Equation Modeling (BSEM).

Results

When the hypothetical model was assessed using BSEM, environmental factors were found to influence the well-being more strongly (standardized coefficient [sc] = .406) than the care burden (sc = -.377). Factor loading of environmental factors was largest in family environment, followed by secure living environment, and interactive environment. In addition, the gender of the caregiver also influenced the care burden (sc = -.324) and well-being (sc = -.275). The posterior predictive p-value of the final model was 0.170.

Conclusion

This study assessed a hypothetical model holding that environmental factors influence elderly family caregivers' well-being and care burden, and that the gender of the caregiver is a covariate. Women's care burden was strong, while men's well-being was low. Accordingly, by supporting an interactive environment, a secure living environment, and a family environment as mapped by the CEQ, it may be possible to improve the well-being and mitigate the care burden of elderly family caregivers.

Keywords

Elderly family caregivers;Environment;Well-being

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E1 Theory and Models of Functioning (e.g. Disability Creation Process)

ISPR8-2593

RELEVANCE OF ENVIRONMENTAL FACTORS TO FACILITATE PARTICIPATION OF PATIENTS IN REHABILITATION

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Introduction/Background

The introduction of the ICF model as a basis for rehabilitation provides new perspectives on rehabilitation practices. According to the ICF, participation can be enhanced via different pathways, including interventions on environmental factors. Aim of the presented project was to systematically compile present knowledge on environmental factors that could be a target for interventions in inpatient rehabilitation to improve patient participation.

Material and Method

First, we have conducted a document analysis comprising icf core sets, clinical rehabilitation guidelines or standards, and health classifications on interventions to identify the array of rehabilitation interventions related to environmental factors. Second, these interventions were linked to the ICF environmental factor codes resulting in a linking table that can be used to identify commonalities and potential blind spots of possible intervention targets. Third, after the conduction of an expert workshop eight focus groups with rehabilitation professionals from different fields of inpatient medical rehabilitation were conducted. Fourth, another two expert workshops were conducted to develop a list of possible targets for the development of interventions and recommended course of action for future projects.

Results

The project resulted in a substantial number of different recommendations. They relate to the fields of new technologies, to measures that help to sustain rehabilitation effects in daily living, to the work place, to the reference to language and cultural diversity, to the home environment of the patients, to matters of de-acceleration, to individualisation of rehabilitation, to the way patients deal with their own resources and roles, to explicit environmental strains, and to the specific use of products and technologies.

Conclusion

This project used a theoretical perspective on rehabilitation to inspire new approaches to rehabilitation interventions that target environmental factors with the aim to improve participation of patients. A substantial number of proposals have been developed that could be used as a starting points for further projects.

Keywords

icf;environmental factors;participation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E1 Theory and Models of Functioning (e.g. Disability Creation Process)

ISPR8-0212

FACTORS INFLUENCING MOTOR IMAGERY IN CHILDREN

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Introduction/Background

Developmental disorder is widely recognized as communication and learning disabilities. However, motor development should also be meticulously evaluated. Some reports have indicated that children with motor developmental disabilities show lack of skill and stiffness. In particular, there are numerous reports on awkwardness of motor imagery. However, the maturity process of motor imagery has not been fully clarified. The present study was designed to comprehend factors influencing motor imagery in children.

Approval for this study was granted by the Ethics Committee of Tokyo Metropolitan University.

Material and Method

The subjects were 96 healthy elementary school students (male:58, female:38, mean age:8.7, SD=1.9) without any specific diagnosis. They were asked for their age, and the average time spent on a sport every day. The motor imagery of these children was estimated by the following methods. The motor imagery was evaluated by expected walking time. First, the children indicated their expected time to walk 8m. Next, their actual walking time is measured. The difference between these times was assigned as a dependent variable. The age and the average time spent on a sport were assigned independent variables. The relations between the dependent variable and independent variables were analyzed using the Pearson's methods. The significance level was set at 10%.

Results

The children's expected time was as follows. Expected time: mean 6.9sec, SD= 2.3. Actual walking time: mean 7.3sec, SD= 1.8. The difference between these times (prediction error): mean 1.6sec, SD= 1.3. The correlative analysis showed that the correlation coefficient between age and prediction error was -0.3 ($p<0.1$); the correlation coefficient between the average time spent on a sport and prediction error was -0.2 ($p<0.1$).

Conclusion

The results of the present study suggested that motor image maturity correlates with the children's age. In addition, daily experience in sport influences motor image maturity.

Keywords

pediatrics;Development;MOTOR IMAGERY

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E1 Theory and Models of Functioning (e.g. Disability Creation Process)

ISPR8-0551

THE RELATIONSHIP BETWEEN ANTICIPATORY POSTURAL ADJUSTMENT AND STEPPING DIRECTION IN HEALTHY ADULTS

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Introduction/Background

The anticipatory postural adjustment (APA), one of postural controls, has two functional significance: to control posture in advance and prepare activity for main motion. The aim of this study was to clarify the relationship between anticipatory postural adjustment and stepping directions in healthy adults by focusing on the reverse response phenomenon. This study was approved by the Ethics Committee of Tokyo Metropolitan University.

Material and Method

The subjects, eight healthy adults (male: 3, female: 5, mean age: 21.8, SD= 0.7, right-footed: 7, left footed: 1), initiated stepping on a force plate. The step directions were straight ahead; 0, 30, 60 and 90° in both feet, and the step length were 20% of body height. The maximum moving distance of center of posture (COP) which was established by the right and left composition of COP at rest and APA was calculated by using the Pythagorean. The kinetic variables during APA phase (from the initiation of COP displacement to heel-off of the swing limb) were measured using a 3D motion capture system and the floor- reaction- force measuring device. The comparisons were analyzed using a two-way repeated measures ANOVA. The significant level was set at 5%.

Results

The result of two-way repeated measures ANOVA showed a main effect between the dominant foot and non-dominant foot ($p < 0.05$), and stepping directions ($p < 0.01$). In addition, the result of multiple comparison showed a significant difference between dominant and non-dominant foot at 0°.

Conclusion

These results showed stepping direction relates with the maximum moving distance of COP, and the maximum moving distance of COP of the non-dominant foot step is shorter than that of the dominant foot. Therefore, it is suggested that stepping on non-dominant foot is likely to be unstable in forward gait.

Keywords

anticipatory postural adjustment;postural control;stepping direction

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E1 Theory and Models of Functioning (e.g. Disability Creation Process)

ISPR8-1501

ADDUCTOR MAGNUS IS JUST AS MUCH AN ANTIGRAVITY MUSCLE AROUND HIP JOINT AS GLUTEUS MAXIMUS

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Introduction/Background

The adductor magnus (AM) is the third largest muscles, and also monoarticular muscle in the lower limb. The purpose of this study was to compare the AM with the gluteus maximus (GM) and the hamstrings (semimembranosus SM, semitendinosus ST, and long head of the biceps femoris BF) in terms of how these muscles generate extension torque during antigravity movement and to assess whether or not the AM plays a role as a primary antigravity muscle.

Material and Method

Ten healthy young men took part in this study, approved by the ethics committee. Squatting activities were selected for an anti-gravity movement. Each subject performed unloaded squats maintaining the trunk as upright as possible with either the hips in neutral rotation or the feet shoulder width apart, or letting the trunk flex naturally with either the hips in neutral rotation or the feet shoulder width apart. Kinematic data were taken with a motion capture system (VICON) and floor reactions were recorded with force plates (Kistler). We determined muscle torques by optimization calculation. The skeletal model used was SIMM.

Results

In task1 and task2, lacking trunk flexion, GM and AM exerted much greater hip extension torques than did hamstrings. In task3 and task4, with the trunk naturally flexed, SM and BF were much more contributory, whereas ST exhibited relatively little torque in either task.

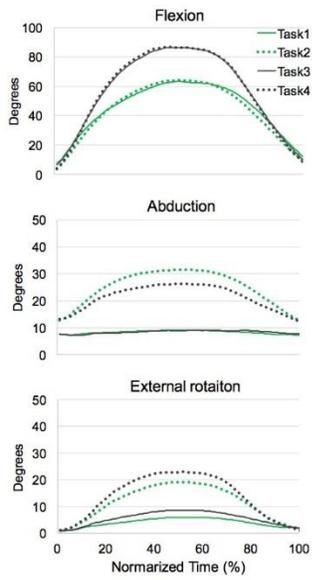


Figure 1. Hip joint angles during four squatting tasks.

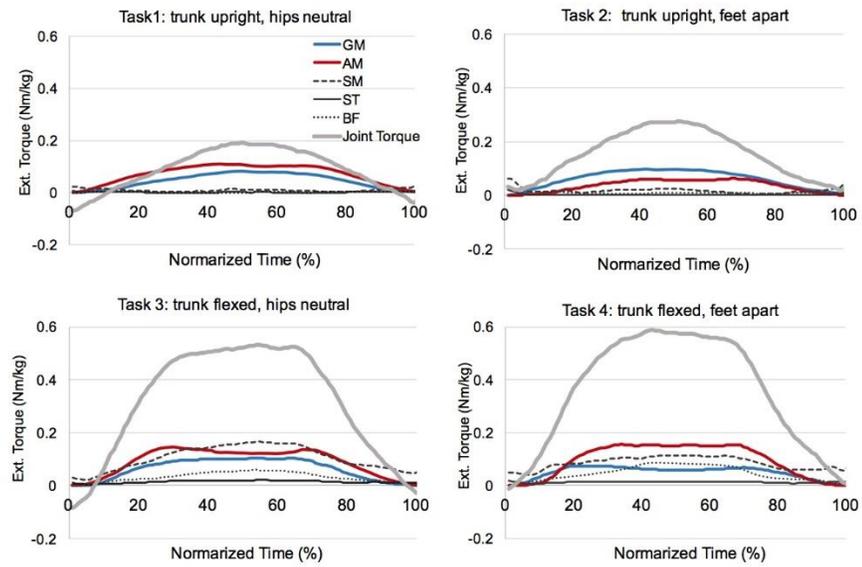


Figure 2. Hip extension torques of five muscles during four squatting tasks.

Conclusion

Given that the antigravity function of the AM is more like that of the GM than of the hamstrings, the AM might more appropriately be considered a primary antigravity muscle than an ancillary one.

Keywords

Antigravity Muscle; Adductor Magnus; Gluteus Maximus

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E1 Theory and Models of Functioning (e.g. Disability Creation Process)

ISPR8-1579

CONCEPTUAL UNDERSTANDING OF HUMAN BEING TO REDEFINE REHABILITATION MEDICINE

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Introduction/Background

What is rehabilitation medicine? What is its aims and goals? These fundamental questions were rarely asked in rehabilitation medicine, although it has been practiced every day for decades. Since the practice of rehabilitation medicine affects physical, mental, and social aspect of patient at the same time, an interdisciplinary research of human being is required to understand what practitioners of rehabilitation medicine really do and should do. As a preliminary result of such research, this article focuses on philosophical understandings of human being, functioning, and disability with regard to ICF and also endeavor to establish a theoretical framework for rehabilitation medicine.

Material and Method

Pairs of concepts defining human being, living, life in general, and their relationships with rehabilitation medicine are discussed on the basis of French philosophy of medicine from the 18th century to the present, in particular that of Pierre-Jean-Georges Cabanis (1757-1808) and Georges Canguilhem (1904-1995).

Results

From the theoretical consideration of French philosophy of medicine and rehabilitation medicine, an analogical framework between philosophical concepts and ICF is found. Furthermore, new aims and goals of rehabilitation medicine can be established under the name of 'REHAB SMART' (Sustaining Movement And Restorative Thinking) as shown in the following. [Table attached]

According to the chart, living human being consists of not only functioning, but also disability. Disability should thus be understood as diversity and not as criteria of discrimination. Eventually, rehabilitation medicine should aim to recover self-identity of patient by restoring patient's neural and social network.

Conclusion

In order to ensure more successful practice of rehabilitation medicine, its basic concepts, underlying aims and goals should be examined with the help of philosophical understandings of

patient as a holistic human being. Such broad and fundamental considerations will enforce the integrity of theory and practice in rehabilitation medicine.

Keywords

rehabilitation;functioning;theory

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E1 Theory and Models of Functioning (e.g. Disability Creation Process)

ISPR8-2345

EXPANDING PANJABI'S STABILITY MODEL TO EXPRESS MOVEMENT: A THEORETICAL MODEL

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Introduction/Background

The expanded model of Panjabi's stability model views functional movement as a synergy between the body-wide systems of stability and mobility; thus adhering to fundamental movement philosophies of holistic mind-body disciplines such as yoga, Pilates, Feldenkreis and Alexander.

Material and Method

The justification to regard full-body functional movement as a combined stability/mobility effort is derived from the observable clinical environment. It is clinically recognised that the stability and mobility systems are present and identifiable throughout the body in different joints and muscles and their synergistic interactions. The literature has reported that the neural system manages harmonious movements by accurately sequencing the activation timing between these two systems. Since movement requires both stability and mobility forces, the Panjabi model requires a generalization to express movement through a matching of mobility system with the same subsystems as the original stability model created.

Results

The expanded model suggests that the quality of a functional movement is determined by the ability of both the stability and mobility systems and their subsystems to work harmoniously. Conversely, malfunction of either system, or their subsystems, will deleteriously affect all other subsystems and consequently overall movement quality.

Conclusion

This expanded model ensures that clinical focus is placed on the body-wide synergy between the stability and mobility systems. Consequently, relevant exercises can be prescribed accordingly as specific intervention techniques. In physical therapy settings this may initially be in parallel with non-functional methods, including passive manual interventions or modalities. However, basic level training of full-body, pain-free functional movements should commence as soon as physically possible. As symptoms decrease, the exercises progress to be more complex and challenging in the direction of the relevant impaired full-body functional movements as diagnosed in the clinical examination.

Keywords

Low back pain;Musculoskeletal rehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E1 Theory and Models of Functioning (e.g. Disability Creation Process)

ISPR8-2365

INTENSIVE MULTIFACTORIAL NEURORREHABILITATION SYSTEM. 29 YEARS OF EXPERIENCE IN CUBA. INTERNATIONAL CENTER FOR NEUROLOGICAL RESTORATION.

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Introduction/Background

With the introduction of neurotransplants in Cuba in 1987, and the inauguration of the Ibero-Latin American Center for Transplantation and Regeneration of the Nervous System in 1989, a new modality of rehabilitation with variants of continuous and intensive stimulation was needed to accelerate the process of neuroplasticity in the cells transplanted to the brain of patients with Parkinson's disease. From the attempts of a group of professionals in Neurosurgery, Neurology, and Nursing, and with the gradual introduction of specialists from different branches of rehabilitation, through the use of repetitive and intense physical exercise, what we know today as System of Intensive Multifactor Neurorehabilitation (SNMI). The purpose of this exhibition is to show how, over the last 29 years, the SNMI was organized and developed under the principles of neuroplasticity, the basic principles of international rehabilitation, and sports training applied to therapeutics, combining with different physiotherapeutic procedures, with the use of advanced technologies. It has been applied to hundreds of patients, with different neurological diseases, from more than 90 countries. It also shows the scientific evolution, national expansion, and current situation, concluding with its future perspectives and possibilities of exchange with other institutions.

Material and Method

Description of the casuistry of patients treated in these 29 years, according to clinics

Results

The most significant sample is in the patients of the Neuropediatric, Raquimedular and Movement Disorders clinics.

Conclusion

In 29 years of work in neurorehabilitation, CIREN has treated more than 1000 patients, in different pathologies and neurological sequelae. An integral intervention is carried out, with the application of novel technologies, and the realization of specific programs

Keywords

Rehabilitation System;INTENSIVE MULTIFACTORIAL NEURORREHABILITATION
SYSTEM;Neurorehabilitation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E2 Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

ISPR8-2630

TOWARDS A SYSTEM-WIDE IMPLEMENTATION OF THE ICF CLINICAL DATA-COLLECTION TOOL: THE FLEMISH-DUTCH CONSENSUS RESULT OF DEVELOPING SIMPLE, INTUITIVE DESCRIPTIONS OF THE GENERIC AND REHABILITATION CORE-SET.

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Introduction/Background

The ICF is considered as a tool to enhance the quality of rehabilitation delivery. Though its use can be further enhanced by developing tools that are feasible in practice, not increasing the administrative burden, but adhere to the quality-standards. As part of the international study, this project aimed to develop simple and intuitive descriptions of the ICF Generic and Rehabilitation set for use in The Netherlands and Belgium.

Material and Method

A two-stage consensus process was conducted with experts from the Netherlands and the Dutch speaking part of Belgium. Firstly, the English simple and intuitive descriptions of each ICF category were translated into Dutch by 4 rehabilitation and ICF experts. Secondly a consensus conference comprised three voting rounds and three working groups. Participants first voted on whether they agreed with the initially translated descriptions; a consensus of 75% was aimed for (Vote A). Descriptions that were considered ambiguous were divided among the three groups who were asked to propose alternative descriptions for the allocated categories. Subsequently, the alternatives were voted in a plenary session aiming for 75% consensus (Vote B). When categories were still considered ambiguous, every group was asked to develop alternative descriptions for all categories. Participants then voted in plenum which of the three proposed descriptions they preferred (Vote C).

Results

Twenty-Four clinicians, comprising PRM-physicians, physiotherapists, occupational therapists, nurses, speech/language therapists and psychologists (from various regions in Flanders and The Netherlands experienced in acute, post-acute and/or community rehabilitation) participated in the consensus process in Breda in September 2017. One ICF category achieved consensus in vote A, sixteen ICF categories were accepted in vote B. Thirteen descriptions were decided in the third round.

Conclusion

This translation process led to a Flemish-Dutch version of the simple intuitive descriptions and is now ready for implementation in rehabilitation practice.

Keywords

ICF; Simple intuitive description; Consensus meeting

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E2 Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

ISPR8-2637

MOVING FORWARD TOWARDS PARTICIPATION: KEY-ISSUES TO BE CONSIDERED FOR APPLICATION IN CLINICAL PRACTICE.

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Introduction/Background

Rehabilitation services are increasingly targeting involvement in daily life. Within the ICF this is referred to as participation. Questions regarding its conceptualization have been raised and a consensus is lacking.

Material and Method

In a first phase a critical review of the literature was performed to detect recurring conceptual problems in applying participation and to detect how researchers deal with these. This led in the second phase to a systematic review to identify how participation measures are operationalized.

Results

Phase 1 resulted in possible solutions to overcome 4 recurring key-limitations: (1) how to deal with ambiguity and vagueness about the term itself, (2) how to differentiate between activity and participation (3) what is the current empirical knowledge about the subjective aspects of participation (4) what are the different ways to measure participation. Phase 2 resulted in 18 instruments operationalising participation in different ways: (a) unidimensional; the frequency of performing activities (b) unidimensional; the limitations in experiencing participation when performing activities (c) multidimensional; multiple subjective dimensions when performing activities and (d) multidimensional: objective and subjective dimensions.

Conclusion

Notwithstanding an increasing body-of-knowledge some issues still remain blurred and specifically how participation is measured is subject to debate. This leads to difficulties to use participation in clinical practice. However: insight in current body-of-knowledge and awareness of shortcomings might inspire professionals aiming it's application.

Keywords

ICF;Participation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E2 Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

ISPR8-0169

ON THE PRESENT USE OF ICF IN MEDICAL PUBLICATION

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Introduction/Background

The aim of the study is to record the present use of ICF with respect to publications, types of reports and diagnostic groups.

Material and Method

Search was performed using PubMed for International Classification of Functioning, Disability and Health or ICF for 2011 and 2016. The areas for journals were grouped using Web of Science. Type of studies and diagnostic groups were recorded.

Results

280 and 274 papers were found for 2011 and 2016 respectively. Most common areas for publications were Rehabilitation (46,1%, 43.4%), Public, environmental and occupational health (8.6%, 6.6%), Paediatrics (5.0%, 6.6%), Clinical neurology (5.0%, 5.9%). Most common journals were Disability and Rehabilitation (10.4%, 16.1%), Journal of Rehabilitation Medicine (10.0%, 5.5%), BMC Public Health (5.4%, 0%). Most common diagnostic groups were Neurological (20.4%, 28.5%), Paediatric (13.9%, 13.1%) and Musculoskeletal (13.6%, 13.1%) and general use of ICF (26.8%, 22.6%). Around 60% of the papers were original reports, the rest being reviews, special reports or editorials. ICF was used as a conceptual background in original reports (22.9%, 29.6%), in reviews etc. (25.4%, 21.9%) and to describe instruments or subjects with codes in original reports (39.6%, 35.0%) and reviews etc. (10.7%, 11.3%). ICF was in original reports used for outcome assessments (1.8% and 2.2%), but no such reports were found among reviews.

Table 1 Most common areas according to Web of Science for journals (total numbers and in parenthesis percentage of total) with papers on ICF.

	2011	2016
Rehabilitation	129 (46.1)	119 (43.4)
Public, environmental and occupational health	24 (8.6)	18 (6.6)
Pediatrics	14 (5.0)	18 (6.6)
Clinical neurology	14 (5.0)	16 (5.9)
Health care science and service	10 (3.6)	3 (1.1)
Rheumatology	8 (2.9)	7 (2.6)
Orthopedics	8 (2.9)	5 (1.8)
Geriatrics and gerontology	3 (1.1)	6 (2.1)
Critical care	1 (0.4)	4 (1.5)

Table 2 Most common journals (total numbers and in parenthesis percentage of total) with papers on ICF.

	2011	2016
Disability and Rehabilitation	29 (10.4)	44 (16.1)
Journal of Rehabilitation Medicine	28 (10.0)	15 (5.5)
BMC Public Health	15 (5.4)	0 (0)
Physical Therapy	10 (3.6)	3 (1.1)
Am Journal of Physical Medicine and Rehabil	9 (3.2)	5 (1.8)
Journal of Occupational Rehabilitation	9 (3.2)	0 (0)
Prosthetics and Orthotics International	8 (2.9)	0 (0)
International Journal of Rehabilitation Research	6 (2.1)	5 (1.8)
Archives of Physical Medicine and Rehabilitation	6 (2.1)	5 (1.8)
Spinal Cord	6 (2.1)	3 (1.1)

Table 3 Type of use of ICF (total numbers and in parenthesis percentage of total) in published papers.

	2011	2016
Original reports, total n	179	193
Conceptual background	64 (22.9)	81 (29.6)
Use of ICF codes to describe instruments or persons	110 (39.3)	96 (35.0)
ICF for outcome assessment	5 (1.8)	6 (2.2)
Reviews, special reports, editorials etc., total n	101	91
Conceptual background	71 (25.4)	60 (21.9)
Use of ICF codes to describe instruments or persons	30 (10.7)	31 (11.3)
ICF for outcome assessment	0 (0)	0 (0)

Conclusion

The use of ICF and journals for publication has been rather constant between 2011 and 2016. Variations in use of publication journals may to some extent depend on topic issues. Few papers have yet appeared where ICF is used for outcome assessment.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E2 Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

ISPR8-0515

COMPREHENSIVE ICF CORE SET AND ICF CORE SET-DERIVED ACTIVITIES AND PARTICIPATION QUESTIONNAIRE FOR PATIENTS WITH SYSTEMIC SCLEROSIS: RESULTS OF THE SCISCIF STUDY

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Introduction/Background

We aimed to develop a comprehensive International Classification of Functioning, Disability and Health (ICF) core set for systemic sclerosis (SSc) and to conceive an original ICF core set-derived questionnaire assessing activities and participation in patients with SSc.

Material and Method

The development of the ICF comprehensive core set followed 2 steps. In the first step, meaningful concepts related to SSc were collected from 3 sources: focus groups of patients (N=13), experts (N=10), and literature (200 articles selected). In the second step, concepts were linked to the relevant ICF categories by 2 independent reviewers according to prespecified linking rules. Finally, understandable questions related to activities and participation were derived from the corresponding categories of the comprehensive ICF core set by a sociologist of the French ICF Research Branch.

Results

146 ICF categories were collected from focus groups, 22 from experts and 48 from literature. After fusion of the sources and removal of duplicates, the comprehensive ICF core set included 169 ICF categories at the second level with 43 categories on body functions, 15 on body structures, 52 on activities and participation and 48 on environmental factors. A 65-item questionnaire was derived from the categories on activities and participation.

Conclusion

We developed a comprehensive ICF core set that offers a relevant conceptual framework for SSc patients' care and health policy. Using an original approach, we conceived an ICF core set-derived questionnaire assessing activities and participation. A brief version of the questionnaire is in development, and may enhance the usability of the ICF in clinical research and in patient's care.

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Keywords

Systemic sclerosis;ICF;Activities

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E2 Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

ISPR8-1114

PHYSIOTHERAPISTS KNOWLEDGE, ATTITUDE, PERCEPTION AND PRACTICE OF THE INTERNATIONAL CLASSIFICATION OF FUNCTION (ICF), DISABILITY AND HEALTH IN GERT SIBANDE DISTRICT, MPUMALANGA PROVINCE; SOUTH AFRICA

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Introduction/Background

Globally physiotherapists are required to be on par with the latest in evidence based research and treatment techniques in order to provide the best practices and quality healthcare to their clients. As such, is the implementation of International Classification of Function (ICF) in daily physiotherapy practice, endorsed by the World Confederation for Physiotherapy (WCPT), since 2003. However, little is known about the extent of ICF use in daily South African and international physiotherapy practice in order to maintain international standards.

This research was aimed at exploring the level of understanding, attitudes, perceptions and extent of use of the ICF framework by Physiotherapists in the private and public sector in Gert Sibande District. Barriers and opportunities for using ICF framework, were also investigated.

Material and Method

A prospective, explorative study, utilizing a mixed method (qualitative and quantitative) design. The objectives were accomplished by employing a semi structured self-administered questionnaire, supported by a focus group discussion.

Results

Gert Sibande physiotherapists (n=32) possessed some knowledge of ICF, whilst maintaining negative perceptions and attitudes towards ICF, resulting in minimal to no use of ICF. The only significant difference between the public and private health sectors, was perceptions ($p < 0.05$), which revealed public service physiotherapists to perceive ICF as favourable. Significant barriers to ICF use were, high patient loads resulting in time constraints during patient assessments, lack of knowledge, information, and comprehension of the framework.

Conclusion

ICF has not yet reached full maturity, however its benefits and many uses in health care and the profession of physiotherapy are continually expanding. It would be negligent of South African physiotherapists to ignore the recommendations of WHO and WCPT, therefore further education in ICF knowledge and improved application skills, is deemed the first step in promoting the frameworks use and indefinite benefits to South African physiotherapy and quality health care.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E2 Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

ISPR8-2729

OPERATIONALIZATION AND INTER-RATER RELIABILITY OF A SET OF RELEVANT ICF CATEGORIES FOR ADULT PATIENTS TREATED FOR CANCER AT HOSPITAL DISCHARGE

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Introduction/Background

The biopsychosocial model of the ICF comprises more than 1400 categories. These categories need to be operationalized, to guarantee clinical applicability, through the development of instruments that describe the functioning and disability of patients in different contexts or health conditions. **Aim:** To describe the process of operationalization and subsequent verification of the inter-rater reliability of a set of ICF categories for adult patients treated for cancer at hospital discharge

Material and Method

Corresponds to an observational validation study. A previous process of systematic review and expert consensus selected 24 ICF categories, which were operationalized in a formal decision-making consulting different experts in the subject - health professionals with experience in the clinical management of patients with cancer. Subsequently, these operationalized categories were exposed to verification of inter-rater reliability by two trained raters in a sample of 31 patients with different types of cancer in two public Hospitals in Santiago, Chile. This study was approved by the Ethics Committee.

Results

24 CIF categories were operationalized using a scale of 0 to 4 corresponding to the CIF scale. The average age of the participants was 54.2 (of = 19) years. In relation to inter-rater reliability, the only item that did not present a correlation between both evaluations was d240 regarding stress management. In this way, this item was excluded from the instrument because it was very ambiguous. The other items obtained significant correlations that varied from $r = .916$ to $r = 1.0$ (perfect correlation).

Conclusion

This process resulted in the operationalization of 23 CIF categories relevant to the context of patients hospitalized for cancer, which obtained good inter-rater reliability. More research is suggested investigating other psychometric properties of this set of operationalized categories.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-2608

ARABIC TRANSLATION AND VALIDATION OF THE DASH INDEX

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Introduction/Background

Objective.— To translate and validate an Arabic version of the “Disabilities of the Arm, Shoulder and Hand scale” (DASH) for use in a Tunisian population with periarticular pathologies of the shoulder

Material and Method

Patients and methods.— the Method of “forward/backward translation” was performed for translation. Have been included in this study patients with periarticular pathologies of the shoulder. Clinical measures included the assessment of pain and functional disability by the functional visual analogue scale (VAS). Adaptations were carried out after a preliminary test including 15 patients. The interrater concordance was evaluated by intraclass correlation coefficient (ICC) and Bland and Altman method; the validity of construct was assessed using the Spearman correlation coefficient and the factorial analysis followed by orthogonal rotation. The internal consistency of each factor was graded by the study of Cronbach alpha coefficient.

Results

Results.— This study has included eighty people. The interrater agreement was good (ICC = 0.80) confirmed by Bland and Altman Method. The validity of convergence studied on the analysis of Cronbach alpha coefficient assessed on all items was 0.701.

Conclusion

Conclusion.– The Arabic version of the DASH index for Tunisian population has good methodological qualities. Further studies with other Arabic-speaking populations will assess its applicability

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-2641

SELF-REPORTED OUTCOME MEASURES FOR LBP ADAPTED TO ARABIC

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Introduction/Background

Patient reported outcomes are frequently used in clinical practice, epidemiologic studies and researches.

Cross –cultural adaptation of existing questionnaires to arabic is important for a number of reasons as exploring the impact and prevalence of low back pain in Arabic societies..

Objectives

To identify the available cross cultural adaptations to Arabic of questionnaires for low back pain and describe the psychometric properties of these adapted questionnaire

Material and Method

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Methods

A search on Medline and Google scholar for the terms back pain and lowback pain combined with the terms questionnaire, index, scale and outcome measures and Arabic

The data of the psychometric properties was extracted.

Results

Five questionnaires adapted to Arabic were identified :the Oswestry Disability Index (ODI), the Roland Morris Disability Questionnaire (RMDQ), the Fear Avoidance Beliefs Questionnaire (FABQ), the Japanese Orthopedic Association Back Pain Evaluation Questionnaire(JOABPEQ) and the Back Beliefs Questionnaire (BBQ)

The crosscultural adaptations were performed using the "forward/backward " translation method.

All the adaptation have been evaluated for the test- retest reliability ,internal consistency and construct validity with adequate acceptance .

Conclusion

The Arabic version of these questionnaires are reliable tools that enables clinicians and researchers to assess and compare consequences, functional disabilities, and clinical outcomes of different interventions for LBP

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-0151

ACTIVITY LIMITATION OF CLINICALLY SLOW ELDERLY INDIVIDUALS

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Introduction/Background

Objectives: quantify the activity limitation (AL) of clinically slow elderly individuals (CSE); and, investigate the inter-relationship of AL status with body function and participation restriction.

Material and Method

In a retrospective study at a PMR clinic, 28 community dwelling elderly individuals participated (age range 65-85 years old) labeled as clinically slow (defined as < 2.2 miles per hour by 6-Minute Walk Test).

The PROMIS-57 v1.0 physical function sub-scale (PROMIS-PF) from the National of Institute (NIH) toolbox was designated as the patient-reported outcome (PRO) to describe activity limitation (AL). The clinician-derived Performance-based Assessments (PBA) also were used to describe AL and included the Dynamic Gait Index (DGI) and Berg Balance Scale (BBS). The PROMIS-57 v1.0 fatigue (PROMIS-FA) and sleep disturbance (PROMIS-SD) sub-scales assessed body function, and the satisfaction with social role sub-scale (PROMIS-SSR) quantified participation restriction.

Results

Data met normality assumptions; mean differences were examined among variables using ANOVA with age as a covariate. Age did not differ significantly among participants. Descriptive statistics and significance tests are provided for each variable, followed by a Pearson Correlation analysis split by gender (significant $p \leq 0.05$). The mean (SD) score were as follows (female, male): PROMIS-PF T-scores 34.10 (5.70), 40.14 (8.82); DGI 13.76 (3.91), 22.10 (3.60); BBS 39.88 (8.28), 48.8 (7.06); PROMIS-FA 55.71 (12.30), 56.10 (3.97); PROMIS-SSR 51.53 (9.15), 46.50 (9.68). In females, PROMIS-PF correlated with PROMIS-FA ($r = -.474$, $p = .04$). In males, DGI correlated with PROMIS-FA ($r = -.771$, $p = .042$).

Conclusion

CSE tend to have moderate to severe AL and moderate PR, while their body function tend to be within population mean. The AL of CSE had a statistically significant correlation with the body function (specifically fatigue) in both genders. These findings support the importance of

assessing AL in these individuals, along with the BF and PR. Further research should be conducted on the inter-relationship relationships of BF, AL, and PR in other geriatric syndromes.

Keywords

activity limitation; frailty; community dwelling elderly

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-0190

VALIDITY STUDY OF ALBERTA INFANT MOTOR SCALE

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Introduction/Background

Alberta Infant Motor Scale is an assessment tool to evaluate the gross motor development of the infant between birth until independent walking. It is a clinical practical assessment tool to be used and has been used broadly. The aim of this study was to examine the concurrent validity of Alberta Infant Motor Scale (AIMS) in Chinese with gross motor scale of Peabody Developmental Motor Scale II (PDMS-II) when used in high-risk infants.

Material and Method

One hundred and eighteen high-risk infants with the average age of 7.76 ± 3.93 months (from 2 to 17 months) were recruited to this study. Three investigators experienced in AIMS and PDMS-II participated in this study. Each investigator administered the AIMS and PDMS-II to the infants within one week and recorded the assessment results. The raw scores of AIMS and PDMS-II-GM for each infant were analyzed for the concurrent validity.

Results

The Pearson correlation coefficient of AIMS with PDMS-II was 0.97. For the 0~4 month group, the Pearson correlation coefficient was 0.94. For the 4~8 month group, Pearson correlation coefficient was 0.95. For the 8~12 month group, Pearson correlation coefficient was 0.94. For the >12 month group, Pearson correlation coefficient was 0.91.

Conclusion

The AIMS in Chinese had high concurrent validity with PDMS-II when used in high-risk infants at very early age.

Keywords

Alberta Infant Motor Scale; validity; high risk infant

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-0246

RATER RELIABILITY OF THE EXTENDED INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH CORE SET FOR STROKE

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Introduction/Background

The extended International Classification of Functioning, Disability and Health core set for stroke (eICFCS-stroke) is an assessment tool for describing stroke-related health. However, there were no reports of its use in Thailand. Before this core set could be applied to Thai population, there was a need to investigate its quality of measurement. This study aimed to evaluate rater reliability of the eICFCS-stroke in Thai population.

Material and Method

Participants were 43 community-dwellers with stroke (27 males and 16 females, mean age \pm SD 65.6 \pm 10.6 years). Raters were 2 physical therapists who independently assessed the participants and filled in the eICFCS-stroke with a qualifying scale ranging from 0 (no problem/facilitator/barrier) to 4 (complete problem/facilitator/barrier) or the qualifiers 8 (not specified) and 9 (not applicable). The ratings were based on information obtained through interviews with the participants and their caregivers, observations and physical therapy examinations. Rater reliability was analyzed by using the percent observed agreement and the weighted kappa for each category.

Results

Based on the kappa coefficients and respective confidence intervals, the results revealed that of 166 categories of the eICFCS-stroke, 123 (74.1%) and 119 (71.7%) had intra- and inter-rater reliability, respectively.

Conclusion

Most categories of the eICFCS-stroke had rater reliability when assessing within the context of Thai community. However, reduction of some categories which were difficult to make a judgment in the community as well as reduction the number of qualifiers and simplification of the "environmental factors" categories should be considered to improve the efficient use of this core set.

Keywords

ICF core set;reliability;stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-0348

PSYCHOMETRICS STUDY OF ALBERTA INFANT MOTOR SCALE AND PEABODY DEVELOPMENTAL MOTOR SCALE IN HIGH RISK INFANTS

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Introduction/Background

The aim of this study was to compare the psychometric properties of Alberta Infant Motor Scale (AIMS) with gross motor scale of Peabody Developmental Motor Scale II (PDMS-II) when they were used in high-risk infants.

Material and Method

Fifty-eight high-risk infants with the average age 4.46 ± 0.97 months (from 2 to 6 months) were recruited to this study. Three investigators experienced in AIMS and PDMS-II participated in this study. Each investigator administered the AIMS and PDMS-II to the infants and recorded the assessment results. Forty-seven high-risk infants were followed-up till two years old. The diagnosis at two years old and the first scale assessment result were used to investigate the sensitivity, specificity, positive predictive value and negative predictive value of AIMS and PDMS-II.

Results

When used in high-risk infants in an early age, the AIMS's sensitivity was 0.857, specificity was 0.731, positive predictive value was 0.720, and negative predictive value was 0.864. For the PDMS-II, the sensitivity was 0.524, specificity was 1.000, positive predictive value was 1.000, and negative predictive value was 0.722.

Conclusion

The AIMS is a sensitive monitor tool to evaluate the motor development of high-risk infants at very early age compared with PDMS-II. It needs to dynamic monitor for the high-risk infants.

Keywords

Alberta Infant Motor Scale; motor development; assessment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-0421

SYSTEMWIDE ROUTINE CLINICAL ASSESSMENT OF FUNCTIONING BASED ON THE ICF IN CHINA: INTERRATER RELIABILITY, CONVERGENT, KNOWN GROUP, AND PREDICTIVE VALIDITY OF THE ICF GENERIC

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Introduction/Background

Based on WHO's International Classification of Functioning, Disability and Health (ICF), the ICF Generic-6 is a minimum set of information on functioning to be routinely collected across health conditions and settings. This study aimed to validate the ICF Generic in daily routine clinical practice in Mainland China. Specific objectives were to a) analyse the interrater reliability, b) convergent validity, c) known group validity and d) predictive validity of the ICF Generic.

Material and Method

Data from 4,510 patients with various diagnoses from 50 hospitals located in 20 provinces of Mainland China were collected by nurses who applied a 0 (no problem) to 10 (complete problem) numeric rating scale to each of six ICF categories of the ICF Generic at admission and study endpoint. 703 patients were rated independently by two investigators. Interrater reliability was evaluated with intraclass correlation coefficients (ICC). Convergent validity was evaluated with Spearman correlation coefficients between ICF Generic and SF-12 items. Known group-validity was examined by comparing discharge scores between different discharge destinations. Predictive validity was determined by employing ICF Generic baseline scores for estimating length of hospital stay and cost of in-hospital treatment.

Results

The interrater reliability of items and score of ICF Generic was good with ICCs ranging from 0.67 to 0.87. Spearman correlation coefficient analysis showed that ICF Generic items were correlated with respective SF-12 items. Discharge scores of patients differed significantly by discharge destination. ICF Generic admission score was a significant predictor of length of stay and treatment cost.

Conclusion

The ICF Generic administered in combination with a 0 to 10 numeric rating scale is a reliable and valid tool for the collection of minimal information on functioning across various clinical settings.

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-0564

QOL-GNMD AND PATIENT REPORTED FUNCTIONING IN GENETIC NEUROMUSCULAR DISEASES : A NEW RASCH TOOL

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Introduction/Background

The "Quality of Life in genetic Neuromuscular Disease" questionnaire (QoL-gNMD) is a new patient reported outcome (PRO) measure tool specifically designed for patients with a slowly-progressive neuromuscular disease with genetic predominant muscular damage. The QoL-gNMD has been developed in 3 domains: "Impact of Physical Symptoms", "Self-perception" and "Activities and Social Participation". The objective was to construct and develop a PRO tool, easy to use in clinical settings, and validated by rasch model theories.

Material and Method

QoL-gNMD was developed using focus groups consisting of expert patients meeting (5 focus group, n = 41, item bank) and then a quantitative construction phase (n = 150, principal component and RMT analysis). The french version of the QOL-gNMD (26 items) was administered to patients recruited in 9 tertiary hospitals dedicated to genetic neuromuscular diseases. Each QoL-gNMD domain is measured on a T score metric i.e. a normal distribution with a mean of 50 and a standard deviation of 10. High values represent good quality of life. Standard errors of measurement were estimated and adjusted using rasch model theories (RMT). For each QoL-gNMD domain we estimated, face validity, test retest reproducibility, concordant validity and the conditional minimum detectable changes.

Results

315 patients were recruited for psychometric assessment. Each domain showed good psychometric properties (person separation index > 0.7, test-retest ICC>0.7) and fitted the partial credit model (RMT). Concurrent validity was assessed using the WHOQOL-BREF. Estimated conditional MDC were calculated for each possible measure change.

Conclusion

QoL-gNND is an rasch operational validated measure. QoL-gNMD English version is available but needs psychometric validation.

Dany A, Rapin A, Lavrard B, Saoût V, Réveillère C, Bassez G, Tiffreau V, Péréon Y, Sacconi S, Eymard B, Dramé M, Jolly D, Novella JL, Hardouin JB, Boyer FC. The quality of life in genetic neuromuscular disease questionnaire: Rasch validation of the French version. *Muscle Nerve*. 2017;56(6):1085-1091.

Keywords

Neuromuscular disease;genetic;patient reported outcome

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-0681

THE EFFECT OF EDUCATIONAL LEVEL IN THE COMPARISON OF PRE-INJURY HEALTH-RELATED QUALITY OF LIFE (HRQOL) WITH HRQOL OF A DUTCH REFERENCE POPULATION

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Introduction/Background

Differences between retrospectively collected pre-injury Health-related Quality of Life (HRQoL) data and population norms might be partly explained by differences in the distribution of educational level between cohorts. The first aim of this study was to examine whether retrospectively collected pre-injury HRQoL of the Dutch general hospitalized trauma population, is identical to HRQoL of a representative sample of Dutch individuals stratified by age, gender and educational level. Second, we examined the role of educational level in this comparison.

Material and Method

This study was part of a longitudinal survey among trauma patients admitted to the hospital between August 2015 and November 2016. Pre-injury HRQoL was collected by using the EuroQol-5D-3L (EQ-5D-3L) questionnaire. The reference cohort comprises a representative sample of the Dutch population. HRQoL was compared between the injury cohort (n=3032), reference cohort (n=1839) and general population norms by using descriptive statistics. The effect of educational level in the comparison between the injury cohort and reference cohort was investigated by entering educational level in the multiple regression model after age and gender. Outcome measures were EQ-5D-3L tariff, EQ-VAS and the five domains of the EQ-5D-3L.

Results

In general, the injury cohort reported better recalled pre-injury HRQoL compared to the HRQoL of the reference cohort and compared to the general norm population after adjustment. The $\geq 10\%$ increment of the Beta after the addition of educational level in the multiple regression analysis suggested that educational level is a confounder for HRQoL.

Conclusion

Even after adjustment for age, gender and educational level trauma patients report a better pre-injury HRQoL score compared with the HRQoL of the reference cohort. To make a reliable

comparison between an injured cohort and a reference group it is strongly advisable to adjust for educational level besides age and gender.

Keywords

trauma;pre-injury Health Related Quality of Life;educational level

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-0655

COMPATIBILITY TEST BETWEEN THE SIX MINUTES WALKING TEST AND FOUR METER WALKING TEST

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Introduction/Background

Functional capacity is an important parameter in Physical and Rehabilitation Medicine to be assessed, it represents general function of a patient in living their daily activity, and it can be rate with a walking test. Six-minute walking test (6MWT), using fifteen to thirty meter track is the most common test to be used world wide, but the limitation in working space makes this test difficult to be executed. Aside from 6MWT, distance based test such as four-meter walking test is more practical and therefore used. Hence, a research is needed in order to do a compatibility test between four-meter walking test and the 6MWT in healthy adult patients in Indonesia.

Material and Method

This descriptive study is done by examining 61 healthy and sedentary Indonesians age 18-50 years old. Subjects are then examined for a full general check-up. After fulfilling the inclusion criteria, subjects will then perform three tests, 6MWT and four-meter walking test in six and eight meter track. Results will then compared to assess the compatibility between each tests.

Results

Mean results for the 6MWT is 1.602 m/s for male and 1.462 m/s for female. Mean results for the four-meter walking test with six meter track is 2.114 m/s for male and 1.908 m/s for female. For the four-meter walking test with eight meter track is 2.108 m/s for male and 1.986 m/s for female. Compatibility test result using Bland Altman method between the 6MWT and four-meter walking test shows scatter dots with the limit of agreement closed together which shows a compatibility between the 6MWT and four-meter walking test with both track.

Conclusion

The four-meter walking test with both six meter and eight meter track can be use to assess functional capacity as well as 6MWT.

Keywords

Six Minutes Walking Test;Four Meter Walking Test;Functional Capacity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-0808

EVALUATION OF THE FUNCTIONALITY OF OBESE GRADE III USING THE BRAZILIAN FUNCTIONALITY ÍNDEX-IF-BR

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Introduction/Background

The IF-Br is a tool designed to classify the human functionality, pointing out the possible external factors that may act as barriers to the performance of their daily activities and their social participation. IF-Br is a generic instrument and can be applied to all kind of disabilities. It is considered 41 activities and participations, extracted from The International Classification of Functioning (ICF), that describe the way which the individual carries out his daily activity (functionality) being divided into 7 domains: sensory; communication; mobility; personal care; domestic life; education; work; economic life:socialization and community life.The goal of this study was to evaluate the functionality of a group of Grade III obese person using The Brazilian Functionality Index-IF-BR.

Material and Method

Twenty-three people accepted to participate in the interview to complete the IF-Br form. The inclusion criterion of was the diagnosis of Grade III obesity. The exclusion criterion was to oppose the application of the instrument. The questionnaires were applied in 3 distinct days, two of them at the Clementino Fraga Filho University Hospital and one day at Self-esteem Rescue Group and Citizenship of the Obese (GRACO), a non-profit organization to support the obese. The data were analyzed through the SPSS program.

Results

The average functionality of the studied population was 86.59%. Comparing the domains, we observed that the most affected were mobility (average functionality value of 78.26%) and education (78.47%).

Conclusion

According to the data analyzed in this small sample we can conclude that people diagnosed with grade 3 obesity have a negative impact on their functionality.The domain of greatest loss of functionality was mobility.

Keywords

Obesity;Functionality;Mobility

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-0825

A SUITABLE SCREENING TO ASSESS SELF-EFFICACY IN CLINICAL ROUTINE AND STUDIES? PSYCHOMETRIC PROPERTIES OF THE SHORT-FORM GENERALIZED SELF-EFFICACY SCALE (GSE-6) IN REHABILITATION

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Introduction/Background

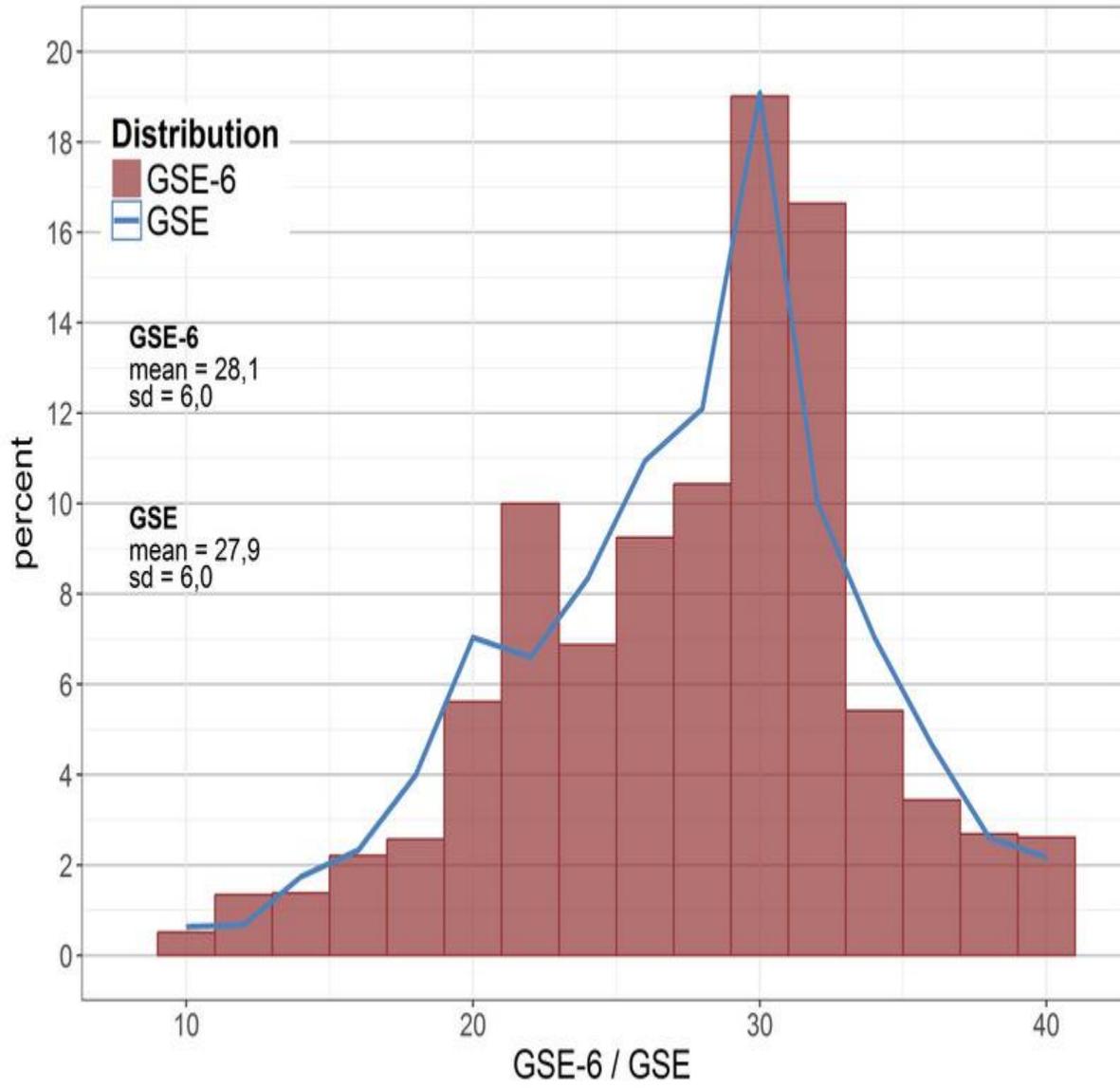
Self-efficacy plays a key role in explaining and predicting health behavior (e.g. physical activity, nutrition, substance consumption) which are addressed in multimodal rehabilitation. The 10 item General Self-Efficacy Scale (GSE) is a widely used instrument to assess self-efficacy (Schwarzer, 1995). For economic reasons, it is not always possible to apply the GSE. Therefore, this work aims to determine psychometric properties of the recently introduced short form GSE-6 (Romppel, 2013) in rehabilitation patients.

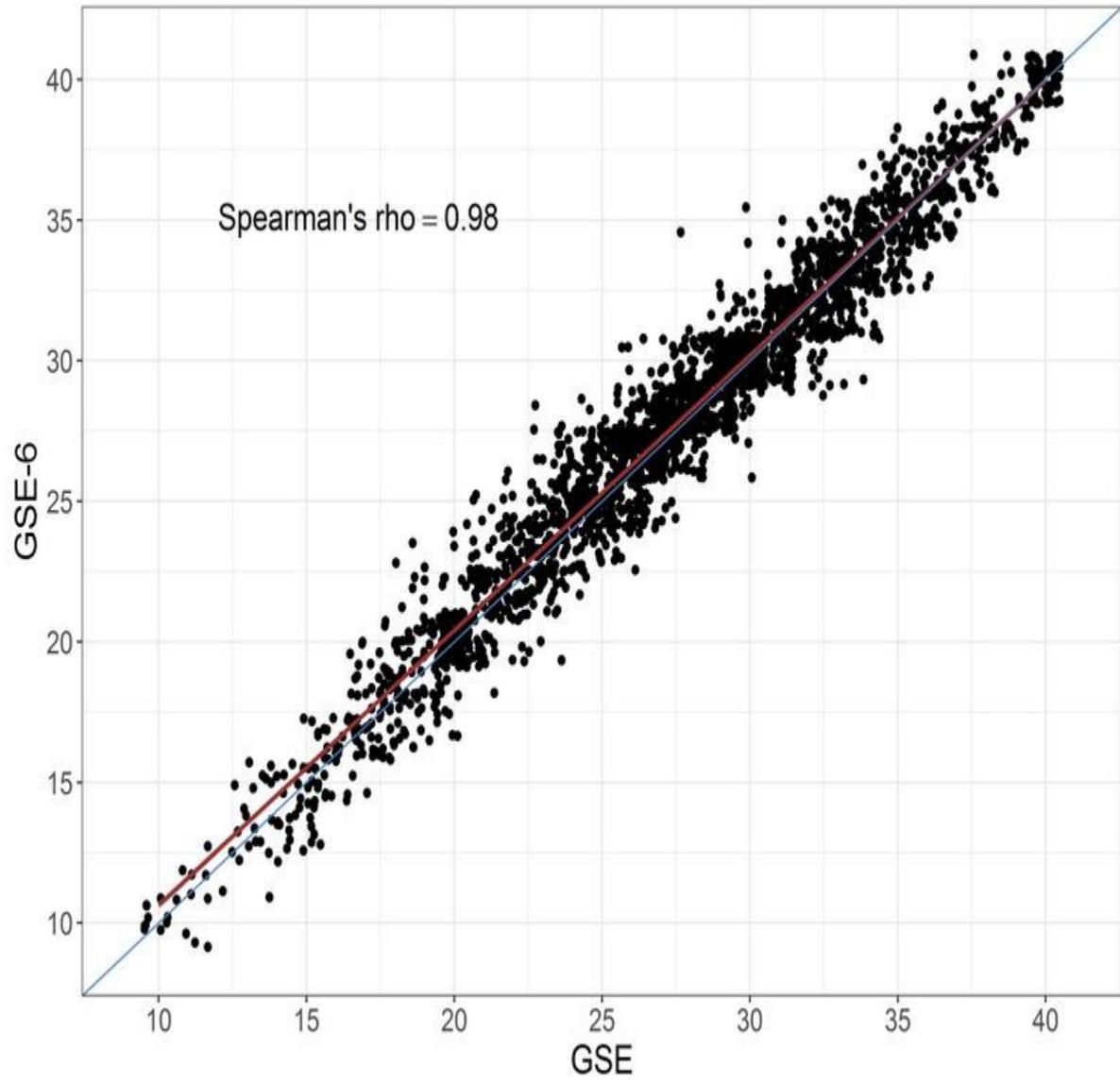
Material and Method

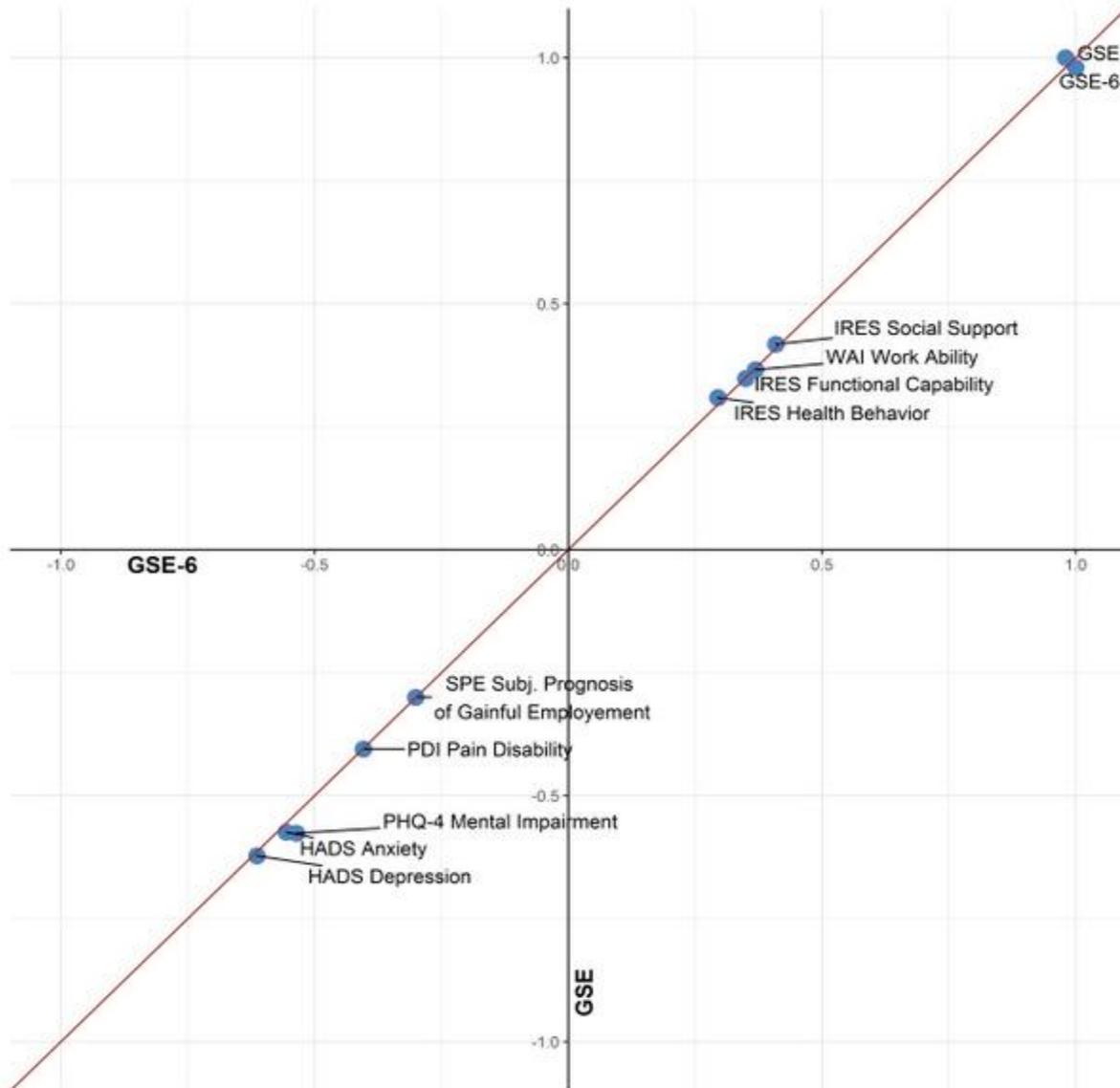
GSE and other relevant impairments and resources were assessed by postal mail in a nationwide study in Germany in 2,530 patients aged 20 to 65 years prior to rehabilitation (Brünger, 2017). Psychometric properties were calculated by comparing the short and original version (GSE-6/GSE). The concurrent validity is reported with Spearman correlations to other impairments and resources. Confirmatory factor analyses (CFA) demonstrate the factorial validity.

Results

Distribution and mean sum scores of both scales were comparable. Floor and ceiling effects were low (Fig. 1). The mean discriminatory power ($r_{ix}=0.70/r_{ix}=0.74$) and internal consistency were similar ($\alpha=0.89/\alpha=0.93$). GSE-6/GSE were correlated with $r_s=0.98$ (Fig. 2). The correlations of GSE-6/GSE to other impairments and resources were almost identical (Fig. 3). Stratified analyzes by gender and diagnosis groups provided analogous results. Multigroup CFA confirmed the one-dimensional structure of both scales independently of gender, age and diagnosis group.







Conclusion

Psychometric properties of GSE-6 and GSE were comparably good. Thus, an application of the short version in rehabilitation across all major diagnosis groups seems possible without relevant losses compared to the original version. It allows for a significant reduction in time and may facilitate the assessment of self-efficacy for screening purposes in clinical routine and studies.

Keywords

self-efficacy;assessment;validity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-1085

CHANGES IN THE HEALTH STATUS AND PATIENT REPORTED DISABILITY AFTER MULTIMODAL LOW BACK PAIN REHABILITATION

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Introduction/Background

Multimodal rehabilitation concepts based on the biopsychosocial model significantly improve patient reported outcomes in chronic low back pain (cLBP) but so far there is no study investigating the health status before and after such intervention.

Material and Method

1463 patients (65% females) aged 18 to 90 years [mean 50,8 (SD 6,8) years] suffering from nonspecific chronic low back pain performed six months of therapy comprising muscle strength and proprioceptive training, psychological interventions, and education in a referral outpatient rehabilitation center twice weekly. They answered the Roland Morris Disability Questionnaire (RMDQ), the Pain Disability Index (PDI), and rated their pain on a visual analogue scale (1-100) prior to (t1) and at the end of rehabilitation (t2). A preliminary study revealed that the most relevant activity and participation categories of the brief International Classification of Functioning, Disability and Health (ICF) core set for low back pain can be predicted from the RMDQ and the PDI with good performance.

Results

314 patients (21,5 %) dropped out from rehabilitation. RMDQ improved from 9,27 to 5,85, the PDI from 20,3 to 17,0, and the pain score from 49,7 to 25,2. D530 `toileting` was reported with low frequencies and was thus excluded from recording. The percentage of patients reporting impairment in the various activity and participation categories differed when 85% of the patients had difficulty with d415 `maintaining a body position` and 34% with walking `d450`. All categories improved from t1 to t2.

Conclusion

Multimodal rehabilitation improves patient reported disability measurement scores beyond minimal clinically important differences. Assessment of the activity and participation ICF

categories helps to track the aspects of the individual functional status enabling specific goal setting and treatment guidance and it shades light to the effects of the rehab communities therapeutic doing to the overall health state of cLBP patients.

Keywords

ICF;chronic low back pain

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-1112

QUANTIFYING THE CHANGES IN ACTIVITY LEVEL OF NEUROMUSCULAR PATIENTS USING THE ACTIVLIM QUESTIONNAIRE: A 5-YEARS STUDY

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Introduction/Background

The ACTIVLIM questionnaire was developed to measure global activity performance of neuromuscular patients (NMPs). It also has the potential to assess real life improvement resulting from new coming therapies. For this purpose, long term follow-up data are mandatory. Such data are currently absent from the literature. The aim of the present study is to compare ACTIVLIM measures of NMPs from the Belgian Neuromuscular Disease Registry (BNMDR) between years 2011 and 2015.

Material and Method

Data from 1064 NMPs who completed the ACTIVLIM questionnaire in 2011 and 2015 were extracted from the BNMDR. RUMM 2030™ was used to obtain their global activity performance level on a unidimensional and linear measurement scale. The Wilcoxon signed rank tests and paired t-tests were used to compare ACTIVLIM measures obtained in 2011 and 2015 for the whole sample and for the 9 most prevalent diseases in BNMDR.

Results

In the whole sample, 64% of NMPs showed a deterioration of their activity ($p \leq 0.012$; effect size (ES) = -0.32). The magnitude of deterioration was the most important for Duchenne muscular dystrophy (74% of them deteriorated; $p < 0.001$; ES = -0.46), limb-girdle muscular dystrophy (74% deteriorated; $p < 0.001$; ES = -0.44), hereditary spastic paraplegia (66% deteriorated; $p < 0.001$, ES = -0.41), and amyotrophic lateral sclerosis (69% deteriorated; $p < 0.001$; ES = -0.40). Deterioration was significant but less important for myotonic dystrophy type 1 (63% deteriorated; $p < 0.001$; ES = -0.32), spinocerebellar ataxias (67% deteriorated; $p < 0.001$; ES = -0.31), facioscapulohumeral dystrophy (59% deteriorated; $p = 0.016$; ES = -0.23), and hereditary motor and sensory neuropathy (60% deteriorated; $p < 0.001$; ES = -0.22). For patients with chronic inflammatory demyelinating polyneuropathy (CIDP), no deterioration was observed ($p = 0.939$; ES = -0.01).

Conclusion

This is the first study focusing on activity level of NMPs using ACTIVLIM across a 5-year period. As expected, most patients showed deterioration in their activity. Among the most prevalent neuromuscular diseases, CIDP patients showed a different evolution of their global activity performance.

Keywords

Neuromuscular diseases; assessment; activity

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-1144

TOWARDS AN ICF-BASED ASSESSMENT OF PHYSICAL AND MENTAL FUNCTIONS IN PATIENTS WITH INTELLECTUAL DISABILITY

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Introduction/Background

The DSM V emphasizes the need of using standard clinical methodologies to classify the functioning of patients with intellectual disability (ID) rather than just their Intelligence Quotient (IQ). It was underlined the influences of step length over height ratio (ρ) and smoothness (μ) on motor performance in patients with ID during running. The International Classification of Functioning, Disability and Health (ICF) provides an international language for describing human functioning. Our aim was to characterize in term of ICF the kinematics and intellectual indices of patients with ID.

Material and Method

We included young adults with ID (with at least $IQ \geq 20$) referring to a residential or semi-residential care facility. We collected data on the IQ from the psychiatric evaluation. Moreover, we asked all patients to perform 30m linear sprint test and 30m two change-of-direction sprint test, wearing an inertial sensor placed on L5/S1 vertebrae, in order to assess on agility (α), and running kinematics (β). In order to obtain data on these two parameters (derived from specific formulae), we compared the results of subjects with ID to control subjects, matched per age, gender, and physical activity. We evaluated these three outcomes (IQ, α , and β) in all participants, according to the qualifiers of three specific ICF codes: b117: intellectual functions, d4503: walking around obstacles, d4552: running.

Results

Eight patients with ID, mean aged 39.75 years, 7 males and 1 female, were evaluated in terms of ICF (see Table 1).

Table 1. Patients with a specific qualifier for ICF codes matched to the outcome measures.

b117 ICF qualifier: n (%) of patients	IQ	d4503 ICF participation qualifier: n (%) of patients	α	d4552 ICF participation qualifier: n (%) of patients	β
4: 0 (0.0%)	<20	4: 0 (0.0%)	96% -100%	4: 0 (0.0%)	96% -100%
3: 1 (12.5%)	20-34	3: 0 (0.0%)	50% - 95%	3: 0 (0.0%)	50% - 95%
2: 4 (50.0%)	35-49	2: 1 (12.5%)	25% - 49%	2: 2 (25.0%)	25% - 49%
1: 3 (37.5%)	50-69	1: 6 (75.0%)	5% - 24%	1: 4 (50.0%)	5% - 24%
0: 0 (0.0%)	>70	0: 1 (12.5%)	0% - 4%	0: 2 (25.0%)	0% - 4%

Conclusion

The ICF in concert with the use of wearable tools might better evaluate and quantify physical and mental functions patients with ID, even because the only IQ does not give a complete description of ID functioning.

Keywords

intellectual disability;ICF;functioning

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-1332

FUNCTIONAL EVALUATION OF APHASIC PATIENTS USING THE BRAZILIAN FUNCTIONALITY INDEX - IF-BR, IN SMFR- UFRJ

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Introduction/Background

The IF-Br is a tool created to describe the functionality of a person, pointing out the possible external factors that can act as barriers to the performance of their daily activities and their social participation. IF-Br is a generic instrument and can be applied to all types of deficiencies. The instrument is composed by 41 activities and participations, extracted from the ICF, that describe the way in which the individual carries out his daily activities and his social activity (functionality), being divided into 7 domains: Sensorial, Communication, Mobility, Personal Care, Domestic Life, Education / Labor / Economic Life, Socialization and Community Life. Aphasia is a language disorder that happens when you have brain damage, affecting the production or comprehension of speech and the ability to read or write. The goal of this study is describe the functional index impact in the aphasic patients group in a university hospital rehabilitation service and to characterize their performance in daily activities and their social participation.

Material and Method

Application IF Br between 7 aphasic patients from the neurological rehabilitation area. The inclusion criterion: patients with significant language change and comprehension.

Results

The average functionality in all domains was 68%. The most affected domains were communication with value 60% and mobility 70%, followed by socialization 68%.

Conclusion

Aphasic patients, from this sample, in addition to presenting deficits in the communication domain, have their functionality compromised in the domains of mobility and socialization.

Keywords

Aphasic;Functionality;Communication

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-1344

VALIDATION FOR COLOMBIA OF THE QUESTIONNAIRE MEASURING FUNCTIONAL CAPACITY IN PATIENTS WITH HEART FAILURE AND ITS CORRELATION WITH WHODASII

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Introduction/Background

The Duke Activity Status Index (DASI) is a self-administered questionnaire that measures functional capacity in an economical and simple way; allows follow-up and is useful in clinical practice

Objectives: to make validation for Colombia of the questionnaire Duke status index in patients with heart failure.

Material and Method

The translation and cultural adaptation of the Duke Activity Index (DASI) into Spanish was done. A total of 135 patients were included, with which the content validation was done with a confirmatory factor analysis. The validity of the convergent and divergent construct and the criterion validity were assessed by comparing groups of the New York Heart Association (NYHA) and correlations with the quality of life questionnaire “ Minnesota Living with Heart Failure Questionnaire”, the generic scale of quality of life SF-36, and a disability assessment questionnaire from the World Health Organization (WHO-DAS II). Internal consistency and interobserver and intraobserver reliability were evaluated. Sensitivity to change was assessed at 1.3 and 6 months.

Results

In the content validity the scale was adjusted to two domains, in the convergent and divergent validity it was verified with significant correlations of the DASI with the scales which it was compared. The criterion validity of the DASI with the NYHA classification showed adequate relation, although it is not statistically significant. In internal consistency the Cronbach's alpha

coefficient was 0.69, the intraclass correlation coefficients for inter-evaluator and intra-evaluator reliability were 0.81 and 0.90, respectively.

Table 1. Correlation between DASI and WHODASII

	DASI correlation coefficient	P value
Understanding & communication	-0.38	0.001
Mobility	-0.55	0.001
Personal Care	-0,43	0.001
Interpersonal relationships	-0,44	0.001
Daily life activities	-0,48	0.001
Labor activities	-0,61	0.001
Social participation	-0,44	0.001

Conclusion

This Spanish version of the Duke Activity Index (DASI) is valid and reliable for patients with heart failure in Colombia. There is a good correlation between DASI and WHODAS II.

Keywords

Heart Failure;Functional status;Duke activity status index

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-1524

DEVELOPING A COMMON METRIC OF GENERIC AND CONDITION-SPECIFIC DISABILITY SCALES IN PEOPLE WITH RHEUMATOID ARTHRITIS AND STROKE

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Introduction/Background

Aim is to develop a common reference metric of functioning incorporating generic and health condition-specific disability instruments and to test whether this common metric is invariant across two health conditions belonging to a musculoskeletal (rheumatoid arthritis=RA) and a neurological (stroke) disorder.

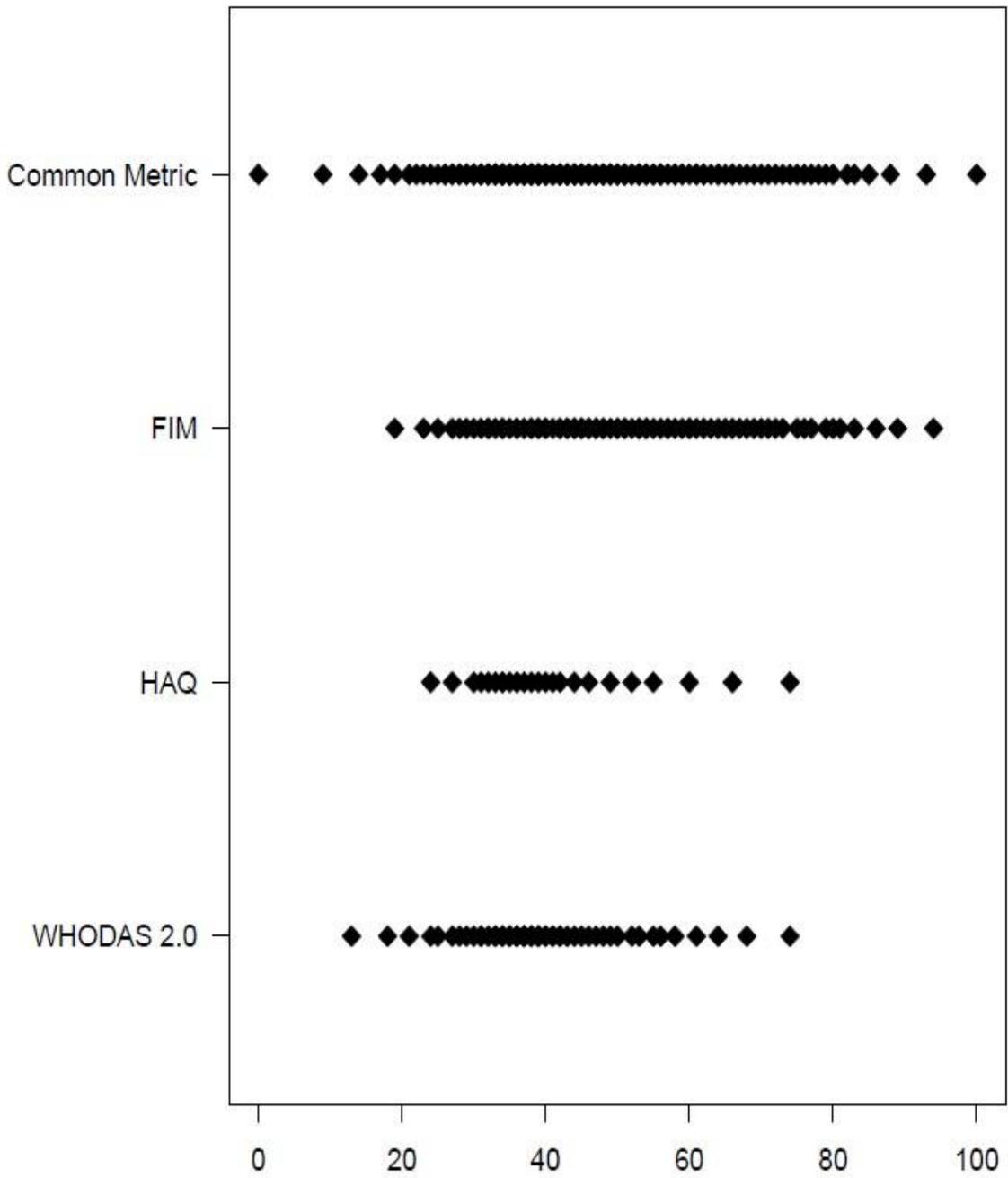
Material and Method

A psychometric study using secondary data analysis of 487 people; 61.4% with RA and 38.6% with stroke was performed. In RA sample 25.4% were male, and in stroke sample 53.7%. Generic instrument, included in the analysis was World Health Organization Disability Assessment Schedule (WHODAS 2.0) whereas condition-specific instruments were Health Assessment Questionnaire (HAQ) in RA, and Functional Independence Measure (FIMTM) motor scale in stroke. The International Classification of Functioning, Disability and Health (ICF) Linking Rules were used to examine the concept equivalence between the included instruments, and a scale-banking approach based on the Rasch measurement model was applied to examine score equivalence between these instruments. Only scales (or domains) that resulted in content and score equivalence were included in the reference metric.

Results

Three sub-domains of WHODAS 2.0 and all items of HAQ and FIMTM motor scale were linked to the ICF chapters d4-Mobility, d5-Self-care and d6-Domestic life. The scale banking of these items resulted in good model fit ($\chi^2_{(df=21)}=22.755$; $p=0.357$) with good reliability (PSI=0.891), indicating that a reference metric across these three instruments was available. Operational range of each scale in reference to the common metric is shown in Figure which supports that

co-calibration of 3 scales resulted in an improved coverage of the measurement continuum.



Conclusion

This study provides evidence for, and the transformation table to enable direct comparisons among instruments measuring physical functioning commonly used in RA (HAQ) and stroke (FIM™ motor), as well as in people with disability in general (WHODAS 2.0).

Keywords

outcome assessment;stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-1674

MODELING HEALTH INFORMATION FOR MEASUREMENT OF HEALTH STATE DESCRIPTIONS CODED BY ICF: REQUIREMENTS FOR SOFTWARE DEVELOPMENT

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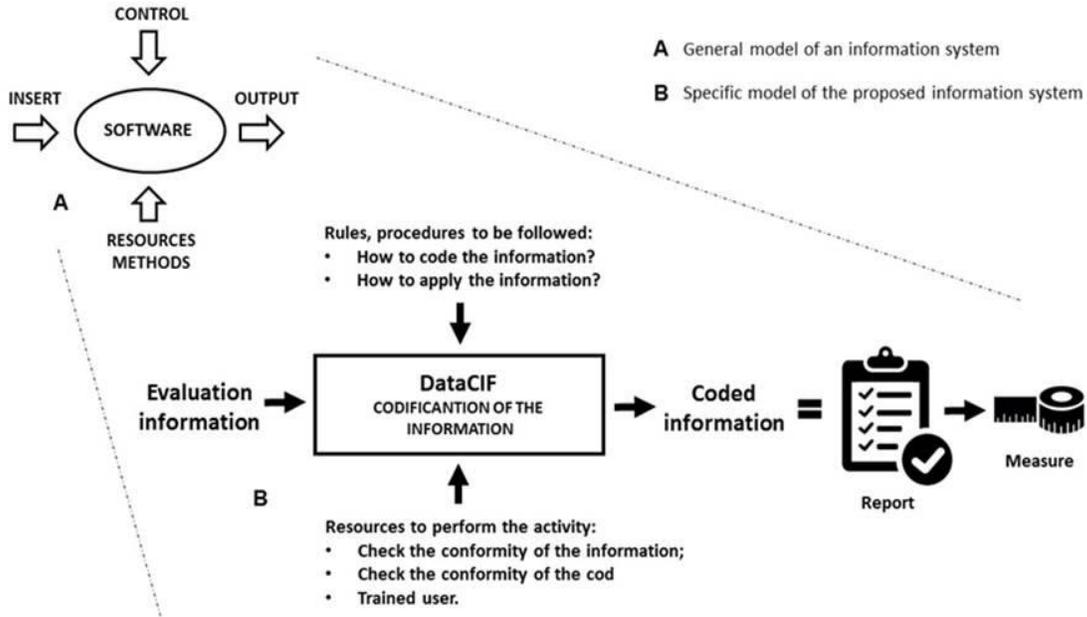
Introduction/Background

The International Classification of Functioning, Disability and Health (ICF) proposes an organization that is based on coded and qualified information distinguishing functioning and disability codes. The aim of this study was to develop a tool able to use information converted into qualified codes proposed by the ICF to establish a measure of the health-related states for individuals and populations, and that represents reliable and valid indices for investment in health information systems.

Material and Method

We outlined a cross-sectional study with descriptive and exploratory aims for technological development, including quantitative and qualitative approaches to collective speech content analysis, and modelling of data of in a single case report. We perform three stages: (1) modelling of data coming from the information reported in the case to identify codes and qualify them; (2) survey of the requirements and face validation through focus group, which was heard the demands of future users of the software, beyond to establish a list of useful requirements for

(3) development of the computer program.



Results

The sequence of events followed the simulation model, producing theoretical results, conceptual, graphics and numeric components. The simulation revealed that the measure may be better represented by a three-dimensional model which considers the events over time, the ratio between functioning and disability codes and discrete events representing health condition hallmarks.

CONCEPTION

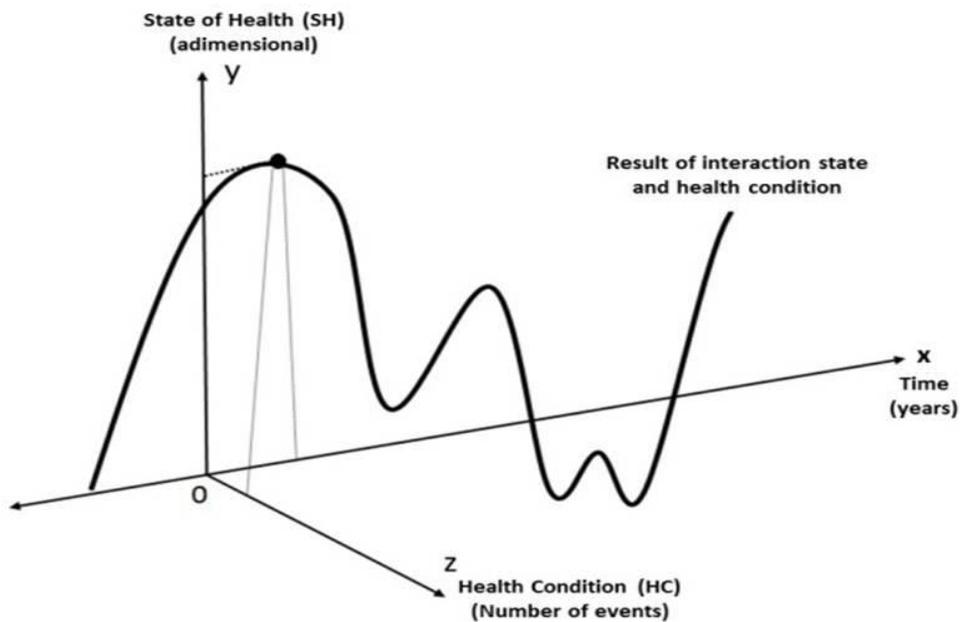
- A** Objective: measure of health status
- B** Definition: health information system
- C** Formulation of the model: representation by figures and tables
- D** Model representation: case study
- E** Conceptual Model: concretization of the abstract model

IMPLEMENTATION

- F** Input data: data modelling
- G** Implementation of the model
- H** Computational Model: DataCIF
- I** Verification and validation: to be fulfilled

ANALYSIS

- J** Operational model: to be fulfilled
- K** Experimentation of the model: to be fulfilled
- L** Experimental results: to be fulfilled
- M** Analysis and redefinition: to be fulfilled



Conclusion

The model was validated by the focus group (face validation), resulting in a list of requirements that contributed to development of the preliminary version of the desired product: the DataCIF.

Keywords

System of information in health;ICF;Determinants of health;state of health

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-1681

CORRELATION BETWEEN FUNCTIONAL MOVEMENT OF LOWER EXTREMITY AND ANKLE MOVEMENT AND WALKING

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Introduction/Background

The purpose of this study is to investigate the factors related to ankle movements when functional unstable movements of the lower limb are repeated. In addition, we want to find out the difference in the muscle activity when the motor control changes during the gait.

Material and Method

In this study, Y-Balance Test (YBT) was performed. Anterior categorization of functional disturbances in 25 patients with a difference of more than 4 cm between the left and right of the Anterior reach distance (ARD) or a composite reach distance (CRD) of 89% or less. For the ankle movement, the items of Isometric Contraction (IC), Weight-bearing ankle lunge test (WBLT) and One leg stand (OLS) were measured. The Electromyography, (EMG) test was performed by walking on the treadmill for 10 seconds and then using the mean value of the EMG data obtained from three consecutive strides in the middle.

Results

First, Correlation between lower extremity functional instability and ankle functional movement element. The correlation coefficient of ARD with IC was .477, and the correlation coefficient of ARD with WBLT in the ankle was .754, which showed a statistically significant correlation ($p < .05$), ($p < .001$).

Second, we investigated the muscle activity of the lower limb during functional walking instability group (Anterior reach distance (ARD), Composite reach distance unilateral (CRDU), and Composite reach distance bilateral (CRDB)). Statistical significance was found only in Right Medial Gastrocnemius (RMG) (Mann-Whitney U = 24, $p < .05$) in the ARD group (difference of more than 4 cm, difference less than 4 cm).

Conclusion

It is important that the rehabilitation program for functional movement improvement focus on improvement of control mobility through IC and WBLT in the Inner and Outer range. In particular, ARD and CRDU are essential to reduce instability of lower extremity muscles through motor relearning of three muscles (Left lateral gastrocnemius, Left Medial Gastrocnemius, Right Medial Gastrocnemius).

Keywords

Functional lower extremity instability;Ankle movement;Electromyography

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-1685

DEGREE OF DISABILITY ANALYSIS IN 21 HEMIPLEGICS AFTER STROKE BY IF-BR (BRAZILIAN FUNCTIONALITY INDEX), AT SMFR-UFRJ

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Introduction/Background

The IF-BR is a tool created to classify the degree of disability in Brazilian citizens. Being generic, it evaluates external factors that act as barriers and analyses the patient's performance in daily tasks. It contains 41 activities taken from The International Classification of Functioning (ICF), divided in 7 major domains: Sensorial, Communication, Mobility, Self-care, Domestic Life, Education/ Work/ Economic Life, Socialization and Community Life.

Stroke is the neurological syndrome most prevalent in adults and elders and the main cause of death in the world, according to WHO. It is also the leading cause of disability in Brazil, with an annual incidence of 108/100 thousand inhabitants. The objective of the present study is to compare the disability degree measured by IF-BR to other validated instruments of analysis.

Material and Method

Instruments used: Motor Domain from the Functional Independence Measure (FIM) and Rivermead Assessment; Population: 21 stroke patients with hemiplegia; Inclusion Criteria: stroke > 6 months; Statistical package used: SPSS 2.0 version. All patients signed the informed consent term.

Results

12 females, 9 males. Average age: 57 years old. Predominance of right-sided hemiplegia (18 patients). IF-BR domain: Sensorial – 91, Communication – 73, Mobility – 64, Self-care – 83, Domestic – 61, Education - 72, Socialization – 89%. FIM: 85 and Rivermead: 13.

There was significant correlation between FIM and mobility and Self-care domains from IF-BR, ($p < 0,01$), Domestic Life and communication ($p < 0,05$); and between Rivermead and Mobility, Socialization, Self-care and Domestic Life ($p < 0,01$) and Communication ($p < 0,05$) domains.

Conclusion

There was significant correlation between FIM's and Rivermead motor domains and some IF-BR domains, particularly associated to motor activity.

Keywords

Hemiplegic;Functionality ;Stroke

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-1760

REGISTRY OF THE FUNCTIONING OF PATIENTS IN THE ELECTRONIC CLINICAL RECORD AT THE NATIONAL INSTITUTE OF REHABILITATION OF MEXICO

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Introduction/Background

The National Institute of Rehabilitation in Mexico has an electronic clinical record system in which health conditions are classified with ICD-10, in 2013 the functioning / disability registry is started according to Mexican regulations, where it is indicated that for the generation of statistics on the level of health and disability must meet the guidelines established by the WHO in the ICF in the overall functioning of people. The objective of this work is to make known the implementation of the registry of the diagnosis of functioning / disability (DFD) in an electronic clinical record (ECR).

Material and Method

The DFD is recorded in the following notes of the ECR: initial note of external consultation, note of admission and hospital discharge. Characteristics of DFD: 1) Diagnosis of the four components. 2) Possibility of a wide range of n number of codes for each component. 3) Inclusion of the ICF catalog up to a second level. 4) Text writing is predictive. 5) Use of the raters from 0 to 4. 6) Mandatory use, without filling this section cannot record the medical note.

Results

Different analyzes have been carried out with different objectives: the functioning of the people served according to their health condition, their functioning during the time of their treatment, quality in the registry of functioning by the health person, among others .

Conclusion

The main conclusions are: a) Continuation in the training of the ICF among the health personnel, since it is observed that some registered codes are not "congruent" with the health condition, as well as codes with terminations 8 and 9 ("other specified" and "unspecified" ") That indicate the quality of health information. b) Development of the methodology to assess and

qualify disability, since the registration does not conclude the degree of disability of the person served.

Keywords

Disability;record;functioning

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-2300

ON THE CHARACTERIZATION OF THE PERCEPTIVE-MOTOR STYLE USING OPTICAL MOTION SYSTEM

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Introduction/Background

Proper walking and running forms are important to improve speed and efficiency while reducing the risk of injury. Good walking and running conditions are characterized by a series of biomechanical and neurophysiological variables (posture, coordination, flexibility, respiratory rhythm). That said, everyone has a different perceptivo-motor style and therefore the question is to what extent these differences are idiosyncratic and/or detrimental and at what point they should be readjusted.

Material and Method

In order to investigate these questions, we quantified the body movements of 18 subjects during walking at three different velocities (comfortable walking, imposed walking velocity of 4 km/h and maximum speed) and running (maximum speed) on a treadmill. The Cartesian Optoelectronic Dynamic Anthropometer (CODA) motion analysis system was used to capture the vertical, horizontal and rotational movements by tracking 24 markers' position in real-time at rest and during these three conditions. The markers were positioned on the head, shoulders, sternon, lower back, tibias, ankles and feet.

Results

We calculated the skeletal configurations of the subjects at rest and when the body mass reached its highest point, which coincided with the period of unipodal support. These configuration were not correlated with velocity, sex, age, height or weight while some correlation was observed with the expertise of running in the population. We also studied on the dynamics of each marker and their intra and inter-individual variability during walking and running.

Conclusion

Our data showed that the skeletal configuration was distinct at rest, during walking and running but differed amongst subject. Our result showed that the dynamics were very variable both at the intra and inter-individual level in the frontal, sagittal and horizontal plane and tend to

decrease from the lower extremities to the head. These differences could be used to characterize the perceptive-motor style of each investigated subject.

Keywords

Optical Motion System;Running style;perceptive-motor style

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-2352

IMPLEMENTATION OF CLINICAL QUALITY MANAGEMENT INCLUDING STANDARDIZED REPORTING AND INDIVIDUALIZED MANAGEMENT DURING FIRST REHABILITATION OF PATIENTS WITH SPINAL CORD

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Introduction/Background

Clinical quality management (QM) during acute and post-acute rehabilitation after newly acquired spinal cord injury (SCI) remains challenging due to complex impaired functioning including bio-psycho-social aspects. International societies developed recommendation for standardized reporting with respect to the international classification of functioning (ICF). However, there is still a lack of implementation of these recommendations. Therefore, this study aims to analyze reasons and create strategies to implement these guidelines in daily practice.

Material and Method

Situation analyses, consensus process and requirement analyses of clinical QM in a specialized SCI rehabilitation centre.

Results

SCI specific and validated assessments were applied consequently after newly acquired SCI when a controlling system existed (e.g., Spinal Cord Injury independence Measure III: SCIM III) and partly with recommendation (e.g., International Standards for the Neurological Classification of Spinal Cord Injury (ISNCSCI)). The individual management appeared complex and could not be easily reported in a standardized and comparable way. The leadership decided to use a consensus process to develop an assessment standard according to national and international requirements (Common Data Elements, EMSCI, SwiSCI, ICF Core Sets, association of national quality (ANQ)). For data and process based management the information technology (IT) had to fulfil different requirements (reminder system, clear visibility, connectivity of information). Education tools in specific health professional groups concerning the goal-orientated use of assessments were needed to increase knowledge and to use the assessments. Improvement in patient-centred communication and interdisciplinary team culture optimized the individualized rehabilitation management.

Conclusion

Implementation of QM during acute and post-acute care after SCI succeeds when respecting national and international standards, when clinical IT systems are integrated in the decision

making, when health professionals are aware of patient-centred communication and continuous education covering these aspects takes place. Change management may happen when representatives of all intended groups are engaged and adequate resources available.

Keywords

Spinal Cord Injury;Quality Management;Assessment

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-2382

VARIATION OF THE PHYSICAL CONDITION IN SOLDIERS DURING A 4-MONTH OPERATION IN MALI

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Introduction/Background

The aim was to assess the variation of the physical condition in french soldiers during a 4-month operation in Mali.

Material and Method

48 soldiers from two operational units were subjected to a series of physical tests before leaving for Mali, then just before their return to France 4 months later. The different studied parameters included : weight, fat mass, extensibility of spine and lower limbs, duration of Shirado's test and chair position with a ballast of 20 kg, number of push-ups and squats in 2 minutes, prehension strenght. In addition, subjects were asked to fill out 5 questionnaires : overtraining screening questionnaire of the French Sports Medicine Society, Hospital Anxiety and Depression Scale (HAD), Pittsburgh Sleep Quality Index (PSQI), numeric scale for motivation and state of form.

Results

Number of squats in 2 minutes, PSQI and prevalence of sleep troubles were observed increasing in a significative way, while duration in chair position and shirado's test, prehension strenght, weight, fat mass , motivation and self perception of state of form were observed decreasing in a significative way. No modification were observed in number of push-ups, extensibility, HAD and overtraining screening.

Conclusion

Hardiness of life condition during operations, quality of food and hydration, climate, modifications in sport training, physical constraints, family remoteness, psychological stress related to combat and insecurity constitue some of hypothetical parameters likely to influence the variation of the physical condition in soldiers during an operation. This study appears like the first having succeeded in carrying out tests on a operation field. This involved choosing tests which could be performed in insecurity and heat conditions. For exemple, endurance in running were consequently excluded. These first results offer a reflection tool to adapt the physical

training of soldiers and to determine point of vigilance, in order to maintain the physical and psychological capabilities of soldiers.

Keywords

Physical condition; soldiers in operation

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-2402

RESEARCH ON EARLY INTERVENTION FOR 3-6 YEARS OLD CHILDREN WITH DISABILITIES BY FUNCTIONAL ASSESSMENT SCALES UNDER ICF THEORY AND PRACTICE

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Introduction/Background

Abstract: (Objective) To assessment handicapped children's physical and mental function in the early rehabilitation as well as the effect of rehabilitation.

Material and Method

(Method) The assessment tools and ICF were matched through content analysis, questionnaire investigation, group interview, action research basing on the ICF and ICF-CY classification systems, Then Functional assessment scales were developed. 251three-six years old children with disabilities were investigated by functional assessment scales and the applicability of the scale were examined for three-six years old children with disabilities

Results

(Results) Basing on the clinical research, this paper constructs the functional assessment scales for 0-6 year old children with disabilities which can apply to the early rehabilitation. Full scale contains seven subscales: sensory perception, motor abilities, communication, cognition, emotion and social adaptation. Every subscale includes several items. The assessor can set down the goals for children with disabilities according to their physical and mental functions. Meanwhile, the effect of rehabilitation can be text regular by using this assessment scale with three graded score from unable to completely will. The full scale can assess the every domain's function of child with disabilities.

Conclusion

(Conclusion) The scale can not only evaluate 3-6 years old disable children's physical and mental function and the effects of rehabilitation but also apply to develop individualized rehabilitation programs and early intervention program.

Keywords

Functional assessment;early intervention;ICF

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-2457

A STUDY ON THE BALANCE ABILITY OF THE ARCHERS

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Introduction/Background

Stability must be the basis for good performance. The purpose of this study is to provide an athletic program by measuring and evaluating the balance of archers ' athletes from 24(yrs:22.38±4.28) eligible to compete in the Olympics

Material and Method

Participants grouped 12 qualified athletes for the second national selective match in 2018 and general in 12 athletes, used the MFT3 check(Booyteamwork, German) to analysis balance

Results

The results of this study second national selective match athletes better then general athletes on left-right stability($p < .05$). And then, there was no statistically significant difference between left-right sensorimotor system, front-back sensorimotor system and stability

Conclusion

In conclusion, this study shows that the participants in the second round of the national team competition have shown better results stability, and that they continue to supply a relationship between athletic performance, core-stability and strength program.

Keywords

balance;archer;performance

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E3 Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ISPR8-2505

A STUDY ON CHILDREN'S DEVELOPMENT OF AUDITORY CONCEPTS

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Introduction/Background

The concept of auditory sound is the function of the temporal cortex of human brain. The main function is to identify what the voice is and discriminate the volume, distance, length, and sequence of voice. The auditory concept is the basis of auditory comprehension and social communication. Many children with developmental delay have difficulty on perceiving the sound. In the past studies, many studies focused on the language comprehension or expression, however, in the research of Auditory Concepts is very lacking, so this study is mainly to explore the development of Auditory Concepts, with the important factors of Auditory Concepts.

Material and Method

The participants were 4 to 6 years old in kindergarten, and the non-random sampling method was used to select 8 schools. A tool of "the computerized assessment for Auditory Concepts" was used as a research tool for this study. There were 6 subtests including the concept of Activity of Daily Living (6 items), Mechanical Sound (12), Human Sound (12), Transportation Sound (7), Animal Sound (11), and Auditory Perception (27). A total of 615 valid samples were collected, aged between 4 and 6 years ($M = 49.45$ months, $SD = 9.6$). The descriptive, t test, one way ANOVA were used to analyze the research data.

Results

Results showed that there was no difference of children's gender on the 6 subtests for Auditory Concepts. For the effect of age, the performance of the 6-year-old children is significant greater than 5-year-old children, the performance of the 5-year-old children is significant greater than 4-year-old children for 6 subtests and the total of the Auditory Concepts. The average total score of auditory concept for the children with 4, 5, and 6 years old was 42.86 ($SD=12.81$), 52.36($SD=12.64$), 57.51 ($SD=9.77$) respectively.

Conclusion

The conclusion is that children's Auditory Concepts has a developmental effect.

Keywords

Auditory Concepts;preschooler;development

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-2512

THE IMPACT OF ENVIRONMENTAL FACTORS ON ACTIVITY AND PARTICIPATIONS OF PERSONS WITH SPINAL CORD INJURY IN KOREA

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Introduction/Background

There is lack of data on the lived experiences of persons with spinal cord injury (SCI) which may lead to lack of proper health policy and service provision for optimal functioning in their everyday lives. To resolve this issue, International spinal cord injury (InSCI) survey was launched in 28 countries in 2017. In this study, we aim to describe the impact of environmental factors on the activity and participation in persons with SCI based on the InSCI survey conducted in Korea.

Material and Method

Korean version of InSCI survey questionnaire was used for data collection which consists of 125 items that cover relevant information on all aspects of lived experience according to the ICF categories. Community dwelling adults who have sustained traumatic or non-traumatic SCI were recruited using the databases of National Rehabilitation Center and Korean Spinal cord injury Association. For the data analysis, items on 'environmental factors' were grouped into three categories of 'accessibility', 'service provision', and 'attitudes of others' by using factor and reliability analysis. Items on activity and participation were grouped into four categories – 'coping issues', 'health management', 'physical activity', and 'transportation' by using the same analysis. Multivariate regression was used for the analysis of the impact of the environmental factors on the four categories of activity and participation.

Results

A total of 892 out of 6047 eligible people participated in the survey through online and paper-pencil version questionnaires. Multivariate regression analysis showed that environmental categories ($p < 0.05$) except 'attitudes of others' ($p = 0.755$) had statistically significant impact on activity and participation of persons with SCI.

Conclusion

As the first community survey for persons with SCI in Korea, InSCI study may reveal many aspects of the lives of persons with SCI. It has shown that indeed accessibility and proper service provision is important in activity and participation of persons with SCI in Korea.

Keywords

Spinal cord injury ;survey;environmental factors

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-2701

DEMOGRAPHIC PROFILE OF AN IN-PATIENT AMPUTATION REHABILITATION PROGRAM AT A TERTIARY HOSPITAL, HOSPITAL DAS CLINICAS HCFMUSP, FACULDADE DE MEDICINA, UNIVERSIDADE DE SAO PAULO

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Introduction/Background

The loss of a limb causes decrease of function and independence. Rehabilitation is necessary to reintegrate patients into their communities. The aim of this study was to describe the demographic profile of patients from the amputee in-patient rehabilitation program at the Instituto de Medicina Fisica e Reabilitacao (IMREA) HCFMUSP. The results of the study will be used to improve the program.

Material and Method

This study included patients from the amputee in-patient rehabilitation program during the period of November 2014 to December 2017. A descriptive analysis was done on the profile of the patients. Data was obtained from a review of medical records.

Results

A total of 116 patients were analyzed. The average age was 43 years and the initial Functional Independence Measure (FIM) of 112.6. Forty percent of the population was from the capital of São Paulo, 40% from the other cities of the state of Sao Paulo and 20% from de metropolitan area of São Paulo and other states. Regarding gender: 80% were male and 20% were female.

Considering only the traumatic amputations, a total of 68 patients (59% of the study population), the gender proportion changed to 90% male and 10% female. Sixty two percent of the traumatic amputations were caused by motorcycle accidents. Amputations related to vascular diseases, infections and tumors were 26 (22%), 16 (14%) and 6 (5%), respectively.

Traumas	n	
Motorcycle accident	42	62%

Other vehicle accident	6	9%
Trampling by car	5	7%
Trampling by: motorcycle or other vehicle	5	7%
Falls	4	6%
Other	6	8%
Total	68	100%

Conclusion

The results of this study show that the male gender composes the majority of the analyzed population. Main cause of amputation is traumatic due to motorcycle accidents. This proportion is also observed in other developing countries profiles, thus reflecting the need for intervention policies for road safety.

Keywords

Demographic profile;Amputation;Rehabilitation program

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-0408

SEVERE AND MODERATE INJURIES IN PEOPLE OVER 60 YEARS OF AGE CAUSED IN TRAFFIC ACCIDENTS IN MEDELLIN (COLOMBIA)

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Introduction/Background

Each day 3,400 people die in the world in a Traffic Accident (TA) and tens of thousands suffer injuries or acquire a disability every year(1). Ninety percent of the deaths associated with TA occur in developing countries, even though they only have 54% of the vehicles in the world(2). In Colombia, in 2016, 45,256 non-fatal injuries and 7,280 fatal injured were recorded by a TA. With a rate of 92.84 injured and 14.93 deaths per 100,000 inhabitants(3). Children, pedestrians, cyclists and older adults are the most vulnerable public roads users and represent almost half of the deaths on the roads of the world(1). The aim of the study was to describe the conditions of the persons with moderate or serious injuries happened in traffic accidents in Medellín, Colombia and his metropolitan area in 2015-2016.

Material and Method

Descriptive study according to the severity of the injury, the sociodemographic characteristics, the characteristics of the TA, pain, disability (WHO-DASII) and quality of life (SF-36) of the people injured, in the first month after accident.

Results

247 patients were included, 93.1% with moderate injuries. 94.1% of the serious injuries happened when a pedestrian was knocked down. 73.6% of the injuries happened for trampling, 71.2% were pedestrians and in the 60.7% of the cases a motorcycle was involved. The most affected corporal regions were the extremities, the most affected domains of the WHO-DASII were the domestic activities, the activities out of the house and the mobility. The physical function, physical performance and change in health were the most affected domains of the SF-36.

Table 1. Social and demographic characteristics of the population according to the severity of the injury

	Severity of the injury		
	Moderate (NISS 4-15)	Severe (NISS >16)	Total
	n=230	n=17	n=247
	# (%)	# (%)	# (%)
Age (Mean and e.d)	70,2 (7,0)	74,2 (8,2)	70,5 (7,2)
Mens	113 (49,1)	13 (76,5)	126 (51,0)
Coexistence			
Alone	35 (15,2)	1 (5,9)	36 (14,6)
Family	192 (83,5)	16 (94,1)	208 (84,2)
Friends and others	3 (1,2)	0 (0,0)	3 (1,2)
Studies			
From 0 a 5 years	150 (65,2)	11 (64,7)	161 (65,2)
From 6 a 11 years	63 (27,4)	6 (35,5)	69 (27,9)
More than 11 years	17 (7,4)	0	17 (6,9)
Job			
Remunerated job	98 (42,5)	6 (35,3)	104 (42,1)
Unpaid work	1 (0,4)	1 (5,9)	2 (0,8)
Housewife	62 (27,0)	2 (11,2)	64 (25,9)
Retired	54 (23,5)	7 (41,2)	61(24,7)
Unemployed	15 (6,4)	1 (5,9)	16 (6,4)
Disability before the accident	79 (34,3)	5 (29,4)	84 (34,0)
Physical	16 (20,3)	1 (20,)	17 (20,2)
Cognitive	2 (2,5)	0	2 (2,4)
Visual	43 (54,4)	3 (60,0)	46 (54,8)
Auditory	9 (11,4)	0	9 (10,7)
Mental	1 (1,3)	0	1 (1,2)
Multiple	8 (10,1)	1 (20,0)	9 (10,7)

Table 2. Disability measured with the WHO-DASII according to the severity of the injury.

	Severity of the injury		
	Moderate (NISS 4-15)	Severe (NISS >16)	Total
	n=230 mean (e,d)	n=17 mean (e,d)	n=247 mean (e,d)
Domains			
1. Understanding and communicating	7,7 (14,0)	14,7 (27,2)	8,2 (15,3)
2. Getting around	52,7 (38,4)	69,4 (35,8)	53,8 (38,4)
3. Self-care	44,4 (29,9)	42,9 (38,5)	44,3 (30,5)
4. Getting along with people	4,0 (10,0)	6,3 (9,5)	4,1 (9,9)
5a. Domestic activities	62,2 (42,4)	60 (45,1)	62,1 (42,5)
5b. Life activities	76,1 (37,3)	61,2 (49,2)	75,2 (38,0)
6. Participation in society	45,3 (26,5)	49,2 (29,3)	45,6 (26,7)
Overall Score - workers	41,0 (20,82)	34,0 (21,0)	40,6 (20,8)
Overall Score - no workers	34,3 (19,20)	47,4 (24,73)	35,2 (19,82)

NISS: New Injury Severity Score

Conclusion

The majority of patients suffered moderate and severe injuries when being run over as pedestrians, in most cases by a motorcyclist. There is a significant decrease of in the quality of life and functioning.

Keywords

Accidents, Traffic;International Classification of Functioning, Disability and Health;New Injury Severity Score

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-0749

ANALYSIS OF VARIOUS HEALTH RELATED FACTORS CORRELATES MOST WITH DEPRESSION IN CHRONIC NEUROLOGICALLY DISABLED: A CROSS SECTIONAL STUDY

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Introduction/Background

We know depression comes out after any neurological conditions even as a normal way in all human being at any age and further may give hurdle for the life span of the people;but there is a dearth of literature which identifies the factors most strongly associated with depression in neurological conditions.Here we try to identify the correlation between depression and various associated factors such as cognitive, functional, social status and quality of life in neurologically disabled and to find out the factor which affects depression most.

Material and Method

We included 42 participants diagnosed with stroke, head injury, spinal cord injury and Parkinson's disease of least had 6 month of duration, aged between 20-79 year of both genders and used to assess depression, cognitive function, activities of daily living , social support and quality of life were Beck Depression Inventory(BDI), MMSE, BARTHEL INDEX(BI),Multidimensional Scale of Perceived Social Support (MSPSS), WHOQOL-BREF respectively; then divided the participants accordingly to the individual condition in four groups. We did an overall correlation between the above variables for all subjects and then according to individual neurological condition.

Results

Data was analyzed using SPSS 17.0 version shows that are clinically depressed with very less cognitive impairments, mild functionally disabled with poor social support and have poor quality of life. Our study showed significant ($p < 0.05$) correlation between depression and other factors with all neurological conditions except head injury.The correlation between BDI with BI, MSPSS and WHOQOL-BREF showed significant results except MMSE.

Conclusion

From the results it can be concluded that the majority of the patients have depression related to reduced QOL, poor social support and functional status in the same order. So intervention should emphasize the importance of the patient's QOL and social support also. The future researches are required to be done with large sample size and homogeneous subjects to validate current hypothesis.

Keywords

Depression, QOL, Social Support; Functional Status, Cognition; Neurologically Disabled

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-0857

LOWER EXTREMITY BIOMECHANIC ASYMMETRY IN FEMALE ATHLETES PERFORMING DROP-LANDING TASKS

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Introduction/Background

Anterior cruciate ligament(ACL) injury occurs frequently in sports such as skiing and basketball .To analyze the differences in causes of ACL injuries between both legs is essential to elucidate mechanism.The purpose of this study is to compare the differences in knee joint biomechanics during drop landing maneuver between left and right legs.

Material and Method

Sixteen healthy female college recreational athletes (age 21.1 ± 1.6 years; height 163.8 ± 3.8 cm; mass 54.8 ± 5.6 kg) were asked to perform drop landing; the knee flexion and valgus angles as well as the electromyographic activity of the vastus lateral, vastus medial, biceps femoris, and semimembranosus muscles of left and right legs were analyzed during the maneuver. The results were averaged for three successful maneuvers. Paired t tests were conducted to assess differences in the kinematics, kinetics, and EMG data between left and right exercise.

Results

There were significantly reduced in maximum knee valgus angle, maximum knee valgus torque and vastus medial muscle activity during drop landing of the left leg compared with right($P < 0.05$). However, the muscle activity of the long head of biceps femoris in the left leg is greater during drop landing compared with right ($P < 0.05$). There are no difference on knee flexion angle at initial contact, knee extension torque at initial contact, vastus lateral and semimembranosus muscle activity.

Conclusion

ACL injury may be occur more frequently on right leg compared to left leg.

Acknowledgements

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Keywords

asymmetry; drop landing; biomechanical

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-1299

MULTICENTRIC STUDY OF EPIDEMIOLOGICAL AND CLINICAL CHARACTERISTICS OF PERSONS INJURED IN MOTOR VEHICLE ACCIDENTS IN MEDELLIN, COLOMBIA: COMPARISON BETWEEN PATIENTS UNDER AND OVER 60 YEARS.

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Introduction/Background

In Colombia, the mortality rate per 100,000 inhabitants due to road accidents was 19.98 between 18 and 39 years and 33.11 over 65 and non-fatal injuries was 142.08 (18-39 y) and 80 over 65. In the world 23% of injuries involve a motorcycle and in Colombia more than 50% of deaths and injuries are related to motorcycles. Rates in Colombia increased between 2010 and 2016. The aim was to compare the epidemiological and clinical characteristics, the quality of life and functioning outcomes in Medellín from patients under and over 60 years.

Material and Method

Prospective, descriptive, cross-sectional study from 1081 patients from two cohorts, 834 under and 247 over 60 years old, in which they were described the sociodemographic characteristics, TA characteristics including severity with the New Injury Severity Score (NISS), pain, disability (WHO-DASII) and quality of life (SF-36).

Results

Comparison cohort of 18 to 60 years Vs over 60 years. Men were 75.8% vs. 51%, studied more than 6 years 86.1% Vs 55.8%, collision as cause 54.9% Vs 9.3%, runover as cause 25.1% Vs 73.6%, motorcycle driver 58.4% Vs 8.0%, pedestrian 17.5% Vs 71.2%. In both cohorts the most affected domains of quality of life were physical performance and function, in the group of young people the emotional performance was more affected. In both cohorts, the most affected domains in functioning were activities outside the home, housework, and moving in one's environment. See table1. and fig 1.2.



Conclusion

In Medellin most of the young adults have traffic accidents when they drive a motorcycle and collide with a vehicle, on the contrary, older adults suffer accidents when they are runover by motorcycles as pedestrians. All suffer important consequences in their quality of life and functioning. Colombia is losing the battle against road insecurity. It is a tragedy and a challenge for public health.

Keywords

Traffic accidents;Health-Related Quality Of Life

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-1620

EXAMINING THE COMPLEXITY OF FUNCTIONING IN PERSONS WITH SPINAL CORD INJURY ATTENDING FIRST REHABILITATION IN SWITZERLAND: PRELIMINARY RESULTS

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Introduction/Background

The aim of the first rehabilitation of persons with Spinal Cord Injury (SCI) is the optimization of functioning. Thus, a comprehensive understanding of the interaction between impairments in body functions, including impairments in mental functions, and limitations in daily activities is fundamental for an informed decision making amongst health professionals and patients throughout the rehabilitation process. Functioning has been scarcely studied in the context of SCI. This project aims to examine the associations between the health condition, functioning, and personal factors in persons with SCI attending first rehabilitation.

Material and Method

Data from the national clinical Swiss Spinal Cord Injury Inception Cohort Study were used. Functioning was operationalized through impairments in body functions and daily activity limitations. Items from existing instruments, including ISCoS International SCI Data Set, the Hospital Anxiety and Depression Scale, Brief Pain Inventory, and SCI Independence Measure III were used to collect the respective data. As personal factors, age and sex were considered. Structural equation models were used to estimate the relation between impairments in body functions and limitations in daily activities and to test the moderation effect of personal factors. The models were controlled for etiology and lesion level as measured by the American Spinal Injury Association Impairment Scale.

Results

The preliminary results show the expected negative effect of impairments in body functions on limitations in daily activities. Nevertheless, this effect relies mainly on the impairments in body functions than on the impairments in mental functions. Therefore, the role of impairments in mental functions as moderators of the described effect requires further analysis. A moderation effect of personal factors is analysed.

Conclusion

The analysis is currently ongoing but results will be available for presentation in July. This study will provide evidence for understanding the complexity of functioning in first rehabilitation of persons with SCI so to inform the rehabilitation process.

Keywords

Functioning;Clinical Decision Making;First Rehabilitation Spinal Cord Injury

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-1675

IMPLEMENTATION OF THE MODEL DISABILITY SURVEY IN PEOPLE FROM VARIOUS CULTURAL BACKGROUNDS IN A DEVELOPED COUNTRY; THEIR ACCESS TO WORK, AND HEALTHCARE; FACILITATORS AND BARRIERS

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Introduction/Background

Various studies were completed in the developing countries however this is the first one to be carried out in a developed country with a universal healthcare system

Material and Method

Study design: community based descriptive study

Settings: community dwelling in the greater Melbourne region, catchment area of Royal Melbourne Hospital

Participants: 100 consecutive recruited community residents has been interviewed

Procedure:

After an informed consent was obtained, participants will be were required to fill and answer the standard MDS questionnaire.

The Alpha version of the MDS comprises two questionnaires:

- *Household questionnaire* (answered by the head of the household) with two modules: household roster: targeting a short description of the household and all household members and, the children module: targeting disability and health conditions in children.
- *Individual questionnaire* (answered by a randomly-selected adult member of the household) with eight sections: socio-demographic characteristics, work history and benefits, environmental factors, functioning, health conditions and capacity, health-care utilisation, and satisfaction, personality and well-being.

The WHO coding system for the individual questionnaires of the MDS will be used to quantitatively measure each participant's response.

Results

Many people with disability have less access to healthcare system, improved access to transport means and recreation facilities. Vocational opportunities are presented to individual with disabilities less than expected. Household with a person with a disability have greater difficulties and less freedom because of the caring responsibilities

Conclusion

Although Australia has an equitable universal healthcare system, people with disability were still disadvantaged and inferior to the persons without disability in their access to work, education and healthcare system

Household with a person with a disability have a negative impact on the other family members in their educational and vocational interest

Keywords

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-1687

STATE OF HEALTH AND UNDESIRABLE OUTCOMES OF PEOPLE PRACTICING PARALYMPIC SPORTS: A PROSPECTIVE COHORT STUDY

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Introduction/Background

In a general context, a health condition of people dealing with chronic diseases or injuries are better represented by a biopsychosocial model. As a result, they face the impact of these health conditions in their daily lives, experiencing impaired functions and structures of the body, limited activity, and restricted participation. It is believed that adapted sport contributes positively for the presented context. However, participation in sports not only promotes favorable outcomes to health-related states, but also increases the exposure to risk factors that may predict undesirable situations. From this, we aimed to identify the health-related state parameters from people facing disabilities who practice Paralympic sports, exploring disabilities in biopsychosocial domains that could be predictors of undesirable outcomes in sports.

Material and Method

We carried out a prospective longitudinal observational design by qualitative and quantitative approach, through interviews and questionnaires, respectively, applied for the coaches and athletes of Paralympic sports linked to a Special Physical Education Training Center, from June to September 2017.

Results

Sixty-nine athletes performing 12 sports pointed out causal relations between the self-care and the reported undesirable outcomes, producing theoretical, graphical and numerical results.

Conclusion

Our analysis showed that there are causal relationships between one of the explored domains of the health-related states and reported undesirable outcomes, evidencing that good scores reported in self-care by people with disabilities practicing sports may predict undesirable outcomes.

Keywords

sports for people with disabilities;state of health;undesirable outcomes

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-1689

EVALUATION OF DISABILITY AND QUALITY OF LIFE IN ADULTS OVER 60 YEARS OLD INJURED IN TRAFFIC ACCIDENT IN THE CITY OF MEDELLIN-COLOMBIA

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Introduction/Background

Traffic accidents (TA) are increasing problem worldwide, affecting this population's health, disability, quality of life and the health care system's budget, being this population the most vulnerable regarding frequency, severity and mortality. In 71,2% of the cases the injured were pedestrians. Aim: evaluate the quality of Life and disability in adults over 60 years of age injured in TA with moderate and serious injuries happened in traffic accidents in Medellín, Colombia and its metropolitan area in the years 2015-2016 with a 3 months follow up.

Material and Method

It is a prospective cohort study according to the severity of the injury, measured by the NISS (New Injury Severity Score), to evaluate disability (WHO-DAS II), and quality of life (SF-36), by interviews at 1 and a 3 months follow up. The patients were treated with surgical, medical and rehabilitation interventions according to the protocols of each institution.

Results

Of 247 patients, 241 of them (97.6%) fulfilled the 3 month follow up. The functioning improved with significant changes ($p < 0.05$). The differences in means were; daily life activities [-36.28 (49.99)], self-care [-30.12 (29.64)], mobility [-20.28 (31.72)], social participation [-11.65 (28.95)]. The domains; understanding and communicating and interpersonal interactions showed small changes. Table 1.

Regarding quality of life, the SF-36 domains that improved with significant changes ($p < 0.05$) were: physical functioning, differences in means [25.02 (26.15)], role-physical [13.80 (36.46)], bodily pain [13.73 (33.82)], and social function [13 (41.09)]. Role emotional, general health,

mental health and vitality did not show significant clinical changes. Table 2.

Table 1 - Comparison of the WHO-DAS II domains after 3 months of injury.

Domains	Initial (n=247) Mean (SD)	3 months (n=241) Mean (SD)	Paired differences Mean (SD)	P value
Understanding and communicating	8,11 (15,1)	10,48 (15,75)	2.36 (17.13)	0,033
Mobility	53,32 (38,64)	33,04 (30,89)	-20.28 (31.72)	0,000
Self-care	44,19 (30,49)	14,07 (20,06)	-30.12 (29.64)	0,000
Interpersonal interactions and relationships	4,15 (10,04)	2,97 (10,83)	-1.18 (14.12)	0,197
Daily activities	58,46 (39,25)	22,18 (28,63)	-36.28 (49.99)	0,000
Social participation	45,23 (26,67)	33,58 (25,13)	-11.65 (28.95)	0,000

Table 2: Comparison of the SF-36 domains after 3 months injury.

Domains	Initial (n=247) Mean (SD)	3 months (n=241) Mean (SD)	Paired differences Mean (SD)	P value
Health change	21,68 (23,59)	32,78 (22,22)	11.1 (29.9)	0,000
Bodily pain	43,37 (29,28)	56,74 (26,55)	13.73 (33.82)	0,000
Role-emotional	57,71 (38,21)	54,86 (37,18)	-2.85 (47.15)	0,000
Role-physical	14,25 (24,90)	28,05 (31,48)	13.80 (36.46)	0,035
Physical functioning	23,76 (28,62)	48,78 (30,62)	25.02 (26.15)	0,000
Social function	43,64 (33,41)	56,64 (32,96)	13 (41.09)	0,000
General health	64,32 (17,91)	61,29 (19,00)	-3.02 (20.63)	0,024
Mental health	63,71 (21,49)	65,41 (21,5)	1.7 (26.3)	0,316
Vitality	63,01 (20,70)	67,26 (21,28)	4.25 (24.69)	0,008

Conclusion

Although there was an improvement in functioning, three months later, the domains remain considerably affected. Quality of life continues even more altered than functioning in this group of people over 60 years. There was an improvement in the physical aspect but not in the emotional.

Keywords

Quality of life ;Traffic accidents;Disability

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-1901

THE RELATIONSHIP BETWEEN MENTAL HEALTH AND QUALITY OF LIFE IN CHILDREN WITH TRAUMATIC BRAIN INJURY THREE MONTHS AFTER THE INJURY

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Introduction/Background

Objective: To explore the relationship between mental health and quality of life (QoL) in children with traumatic brain injury (TBI) from Guadalajara, Mexico three months after the injury.

Material and Method

Methods: Forty six children with mild to severe TBI from Guadalajara, Mexico completed measures of mental health (anxiety and depression) and QoL 3 months after TBI. Anxiety and depressive symptoms were measured with the Anxiety Scale for Children Revised (CMAS-R) and Children's Depression Inventory (CDI). QoL was measured using the Pediatric Quality of Life Inventory (PedsQL), which is composed by four subscales: physical, emotional, social and school functioning. For this analysis emotional functioning subscale was removed to avoid conflicts with mental health scales. The majority of the sample was men (67%) and the average age was 10.48 (SD=2.7).

Results

Results: A canonical correlation analysis between the mental health variables and QoL variables revealed that the two sets of constructs were significantly related, $r = .50$ (24.8% overlapping variance), $\lambda = .62$, $\chi^2(6) = 19.81$, $p < .005$. The standardized canonical coefficients for the mental health variables showed that anxiety loaded most highly (-.687) followed by depression (-.499). The standardized canonical coefficients for the QoL variables showed that social functioning (.774) loaded above the cutoff of .40. This pattern of shared variance suggests that children with TBI who had high anxiety and depression also tended to have lower social QoL.

Conclusion

Conclusions: Intervention programs for children with TBI in Mexico should include techniques to reduce anxiety and depression symptoms which could improve children' social quality of life.

Keywords

Mental Health;Quality of Life;Pediatric TBI

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-2233

EPIDEMIOLOGY OF DISABILITY AND PARTICIPATION IN MOROCCO: RESULTS FROM 2014 NATIONAL HOUSEHOLD SURVEY.

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Introduction/Background

According to the World Health Organization, Over a billion people are estimated to live with some form of disability. A good quality data on disability are essential to policy makers in order to establish tailored programs for persons with disabilities (PWDs) based on the specific needs of each category. In low- and middle-income countries, data on disability are very scarce. The aim of this study is to determine the prevalence of disability and participation in Adult Moroccan population, and its distribution according to socio-demographic characteristics and geographical regions.

Material and Method

A national Survey was conducted in 2014, including a sample of 47,275 adult participants drawn from 16,044 households from urban and rural areas proportioned to population size. The sample's socio-demographic characteristics were collected in a face-to-face interview. Then it was screened for disability using the Washington Group Short Set of Questions on Disability.

Results

Overall disability prevalence among Moroccan adult population was 9.5%, with important geographical disparities. Older age, lower education rates, unemployment, being single, and living in rural areas, were associated with higher disability prevalence rates. Visual and motor deficiencies were the most common disability modalities, and the prevalence of moderate to extreme disability, that is associated with more significant functioning limitations, was 2.6%.

Conclusion

The study was conducted and funded by the Moroccan government as part of a National action plan on Disability.

Keywords

Prevalence of Disability;Low and middle income countries;Moroccan household survey

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E4 Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

ISPR8-2469

EPIDEMIOLOGY AND INITIAL MANAGEMENT OF TRAUMATIC BRAIN HAEMORRHAGES IN THE ELDERLY – A SINGLE CENTRE OBSERVATIONAL STUDY

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Introduction/Background

Traumatic brain injury (TBI) can be a debilitating injury at any age, with significant morbidity and mortality attached. The rehabilitation needs are complex especially in the elderly population, when complex multiple co-morbidities are often present, resulting in difficult initial management and on-going rehabilitation decisions. We sought to investigate the epidemiology of traumatic brain haemorrhage in patients aged 75 and over who were referred to a regional neurosurgical unit over a 6-year period.

Material and Method

Patients aged 75 or over referred with an acute or chronic subdural haemorrhage, extra-dural or subarachnoid haemorrhage between November 2010 and November 2016 were identified from the neurosurgical on-call database of a single tertiary centre. Data was correlated to show severity of TBI based on initial GCS score; GCS 13-15 mild TBI, 9-12 moderate TBI and <8 severe TBI. Outcome measures to include transfer to the neurosurgical unit; locally managed and follow up were recorded.

Results

A total of 4182 patients over 75 were referred, of which 3354 (80%) were referred with a traumatic brain haemorrhage. These made up 10% of all neurosurgical referrals of any age (n=34850). Severity of TBI at referral: mild 81% (2715), moderate 8% (277) and severe 11% (362). Acute subdural haematoma accounted for 39% (1295) of referrals; chronic subdural haematoma 49% (1659); extradural haematoma 1.5% (50) and traumatic subarachnoid haemorrhage 10% (322). 21% (690 patients) were transferred to the major trauma centre from the referring hospital. The majority of neurosurgical transfers (608; 88%) were for management of chronic subdural haematoma – 580 (95%) of which were for urgent transfer to the neurosurgical ward for consideration of operative management.

Conclusion

Traumatic brain haemorrhages account for the majority of elderly trauma neurosurgical referrals. Most are managed locally with potentially unknown and unmet physical or cognitive rehabilitation needs.

Keywords

Elderly Traumatic brain injury;Epidemiology of Intracranial haemorrhage

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E5 Functioning Impact Assessment (e.g. Prediction of the Implications of Policy and Legislation on Functioning)

ISPR8-0152

DESCRIPTIVE ANALYSIS OF COMMUNITY DWELLING ELDERLY INDIVIDUALS WITH LOW FALLS RISK: UTILIZATION OF THE STEADI TOOLKIT FROM THE CENTER FOR DISEASE CONTROL AND PREVENTION (CDC)

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Introduction/Background

The study objectives were: to investigate the fall risk and physical performance of community dwelling elderly individuals with low falls risk using the CDC's STEADI (Stopping Elderly Accidents, Deaths, & Injuries) toolkit: STEADI screening measure and recommended Clinical Observation Assessments (COA); and, to describe the multi-morbidity burden and physical function of such individuals

Material and Method

In a retrospective study at a PMR clinic 17 elderly community-dwelling subjects (age range 60-79 years old) participated. The outcome measures were: the patient-reported STEADI measure assessed falls risk factors (low fall risk defined as STEADI score <4). The COAs consisted of the Timed-Up-and Go (TUG) and 30-Second Chair Stand Test (CST). The Self-Administered Co-Morbidity Questionnaire (SCQ) described the multi-morbidity burden, and the PROMIS-57 v1.0-Physical Function (PROMIS-PF) quantified the activity limitation.

Results

Data met normality assumptions. Mean differences were examined among variables using ANOVA with age as a covariate; age did not differ significantly among participants. Descriptive statistics and significant tests are provided for each variable. No variables demonstrated a gender effect (perhaps because of small n for females). A Pearson Correlation analysis ($p < .05$) among variables was also conducted. The mean (SD) scores were as follows: STEADI 0.944 (1.21); TUG 16.0 (6.79); CST 10.07 (2.73); SCQ 6.47 (3.28); and, PROMIS-PF 41.48 (9.15). No significant correlations were found, specifically the STEADI score did not correlate with COA, SCQ, and PROMIS-PF.

Conclusion

Community dwelling elderly individuals with low falls risk tend to have low multi-morbidity burden, mild activity limitation, slow gait speed, and fair lower extremity power – independent of age and gender factors. The study showed the limited use of CDC-recommended COAs in individuals with low falls risk. Future studies should address the appropriate performance-

based assessments (PBA) in these individuals with low falls risk as categorized by the CDC's STEADI measure and contrast these PBA with those current CDC-recommended COAs.

Keywords

fall risk;physical performance;STEADI screening measure

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E6 Ethical Issues and Human Rights

ISPR8-2688

EVALUATION OF ATTITUDES TO DISABILITIES IN THE PERSPECTIVE OF PEOPLE WITH PHYSICAL DISABILITIES: A CROSS-SECTIONAL STUDY IN A TERTIARY REHABILITATION INSTITUTE

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Introduction/Background

People with disabilities, estimated at one billion worldwide, deal with a wide variety of facilitators or barriers that improve or limit their functionality and quality of life, narrowing or widening the difference between their performance (real) and their capacity (ideal). Attitudes, positive or negative reactions towards disability, influenced by culture, media, concepts and beliefs, impact directly their social inclusion. The aim of this study was to better understand and to measure attitudes toward disabilities, reported by people with disabilities followed at the Instituto de Medicina Fisica e Reabilitacao, Hospital das Clinicas HCFMUSP, Faculdade de Medicina, Universidade de Sao Paulo, Brazil.

Material and Method

68 patients, aged between 18-65 years, without cognitive impairments, with one of the following diagnosis: amputee, paraplegia, tetraplegia or hemiplegia, were exposed to the following evaluations: sociodemographic, Attitudes to Disabilities Scale for physical disabilities (ADS-D) and the Hospital Anxiety and Depression Scale (HADS). The collected data was associated with data from medical records, such as time since disability and Functional Independence Measure (FIM).

Results

The average and standard deviation of the total ADS-D score was 61.294 (8.74), statistically higher than previous studies in developing countries (Brazil $p = 0.0067$ and China $p < 0.0001$). Correlation was found between ADS-D and: depression (HADS) and self-reported income. No correlation was found between ADS-D and time since disability or FIM.

Conclusion

In spite of having a more positive perception than previous studies, the population of the study reported attitudinal barriers. Lower incomes and depression were associated with lower ADS-D scores.

Keywords

people with disabilities;attitudes;surveys and questionnaires

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E6 Ethical Issues and Human Rights

ISPR8-2386

PAIN MANAGEMENT AND THE BURDEN OF PAIN AMONG ASYLUM SEEKERS IN DETENTION

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Introduction/Background

Prolonged detention of refugees and asylum seekers is known to have negative effects on individual's physical and mental health. There is growing evidence that the management of health complaints and common health conditions is much poorer among detained and community-dwelling refugee populations. In the wider community, chronic pain is a common and debilitating condition that can impact on emotional well-being, physical functioning and overall quality of life. To date no formal research has been conducted examining the incidence, burden and management of persistent pain among those in detention.

Material and Method

Throughout 2015-2017, voluntary humanitarian visits to an immigration detention centre in Sydney, Australia were conducted. Informal interviews were conducted verbally with detainees who wished to discuss medical issues, including pain and pain management.

Results

Interviews were conducted with 22 male detainees (aged 19-61). 19 reported to be suffering from persistent pain (86%), resulting from a variety of afflictions including gunshot wounds, trauma such as motor vehicle or boating accidents, assault, inflammatory arthropathies, dental problems and undiagnosed visceral pain. Described pain patterns largely mirrored those commonly seen in trauma settings including the military setting, with a high incidence of chest and pelvic pain. Of those with pain, 31% reported they had no access to any medication or treatment for their pain, including simple paracetamol. Many individuals reported associated psychiatric symptoms including depression, anxiety, post-traumatic stress disorder (PTSD) and sleep disturbances, which they believed were exacerbated by their ongoing pain.

Conclusion

Anecdotal evidence uncovered a considerable and debilitating chronic pain burden among detainees that is currently being inadequately managed and is compounding the traumatic experience of being in detention. There is a notable social and moral imperative to further investigate and address this issue.

Keywords

pain management;refugee health;asylum seeker health

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E7 Miscellaneous

ISPR8-0204

THREE-DIMENSIONAL MOTION ANALYSIS OF THE 2ND CERVICAL SPINOUS PROCESS AT END RANGE CERVICAL ROTATION IN DIFFERENT SCAPULAR POSITIONS USING 3D DIGITIZER

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Introduction/Background

It has been reported that passive elevation of the scapulae significantly decreases neck pain and increases cervical range of motion. However, it is unknown whether upper cervical rotation is influenced by different scapula positions or not. The study used a 3D digitizer to determine three-dimensional motion analysis of the 2nd cervical (C2) spinous process at end range cervical rotation with the scapula in different positions.

Material and Method

30 healthy adults (21.2±0.8 years) participated in this study. Different scapula positions were adopted bilaterally and passively placed at (1) normal resting position, (2) depression, (3) adduction (4) abduction, with a neutral gleno-humeral joint in sitting. Under each scapula position, bilateral end range cervical rotation (degree) and displacement of the C2 spinous process [mm] were analyzed by a 3D digitizer device. End range rotation was analyzed by the vector from the left to right mastoid of the occipital bone related to the vector from the left to right acromial angle. Displacement of the C2 spinous process was calculated as the change in distance between the mastoid process and the point of intersection from perpendicular line from the C2 spinous process to the line between both mastoids at neutral and end range of cervical rotation.

Results

The results of our study indicate that there were no significant differences between end range cervical rotation and displacement of the C2 spinous process relative to the occiput in any scapular position. However, displacement of the C2 spinous process relative to the occiput was significantly correlated with range of cervical rotation under all scapular positions ($p < 0.05$).

Conclusion

Flexibility of upper cervical rotation would be influenced on end range cervical rotation regardless of scapular positions.

Keywords

Cervical rotation;Scapula position;3D digitizer

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E7 Miscellaneous

ISPR8-0233

EVALUATION OF PULMONARY FUNCTION BEFORE, DURING AND AFTER WATER IMMERSION

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Introduction/Background

Water has been used for the treatment of Diseases since Ancient times and Hydrotherapy has been presenting a great development due the number of researches and attention of scientific community and because of its capacity to restore and maintain health.

The purpose of this project is analyze the effects of water immersion on the pulmonary function of healthy young adults and assess the variables before, during and after immersion.

Material and Method

The experiment used 16 individuals with age of $21,4 \pm 1,6$ years immersed until the Xiphoid process. In order to provide an objective measure, Spirometry test was performed pre-immersion, 5 and 60 minutes during and 5 minutes post-immersion.

Results

During research major alterations were observed, like the reduction of the Expiratory Reserve Volume and Functional Residual Capacity, possibly caused by hydrostatic pressure acting on the Diaphragm and limiting Chest expansion. It was observed significant decrease on the Forced Vital Capacity ($4,17 \pm 0,9$ to $3,69 \pm 0,7$) and Forced Expiratory Volume during First second ($3,83 \pm 0,7$ to $3,27 \pm 0,5$) after water immersion. It is also concluded that the time of immersion does not have an influence on the pulmonary function, with pulmonary values returning to its normal levels after getting out of water.

Variable	Pre-immersion	5 Minutes Immersed	60 Minutes Immersed	Post-immersion
FVC (l/m)	$4,17 \pm 0,9$	$3,85 \pm 0,9$	$3,69 \pm 0,7$	$4,0 \pm 0,9$
VEF1 (l/s)	$3,83 \pm 0,7$	$3,44 \pm 0,3$	$3,27 \pm 0,5$	$3,65 \pm 0,7$
VEF1/FVC (%)	$93,1 \pm 5,6$	$91 \pm 4,8$	$90 \pm 4,2$	$90,7 \pm 4,7$

Conclusion

It is concluded that water properties such as Hydrostatic Pressure and Temperature have an effect in the respiratory and hemodynamic system. However, the explanations for the immediate return of pulmonary function levels after water immersion is not yet seen in the literature.

Keywords

Immersion;Pulmonary Function;Spirometry

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E7 Miscellaneous

ISPR8-0654

THE EFFECT OF ANTICIPATION OF AN ONGOING CONNECTION WITH OTHERS ON BRAIN ACTIVITY OF NEUTRAL FACE RECOGNITION

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Introduction/Background

In humans, information about the face is very important for first impression formation and establishing interpersonal relationships. We investigated the effect of anticipation of an ongoing connection with others on brain activity and neutral face recognition using functional magnetic resonance imaging (fMRI).

Material and Method

Sixteen young, right-handed females participated in this study (mean age \pm standard deviation: 21.7 ± 3.2 years, range 20–34 years. They were healthy undergraduate or graduate students with no history of significant medical, psychiatric, or neurological disorders. All gave written informed consent to participate, and Tokyo Metropolitan University Research Ethics Committee (No. 17048) approved the study. During fMRI scanning, subjects were shown photographs of people with neutral facial expressions (72 neutral photographs from the face database that made by the university of FEI). Subjects were asked to consider each photograph under the following conditions: Condition 1, “I will meet the person in this photo only once.”; Condition 2, “I will meet the person in this photo multiple times.” Each photo was presented for 8 s. The total fMRI duration was 408 s. All functional imaging data were preprocessed and analyzed using SPM8 implemented in MATLAB (significance set at an uncorrected $p < 0.001$). We estimated brain activity differences between the 2 conditions.

Results

The left caudate nucleus was significantly activated in Condition 2 compared with Condition 1. The right substantia nigra had a significantly different blood-oxygen-level dependent response in Condition 1 compared with Condition 2.

Conclusion

The anticipation of an ongoing connection could affect the first impression formation process in the human brain.

Keywords

human brain;fMRI;neutral face recognition

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E7 Miscellaneous

ISPR8-0656

RELEVANCE OF METACOGNITION AND BRAIN ACTIVITY TO DECISION-MAKING TASKS RELATED TO SELF-REFLECTION

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Introduction/Background

Daily life requires many decisions. People with high metacognition may effectively and quickly make decisions. We used functional magnetic resonance imaging (fMRI) to examine the neural basis of the relationship between metacognition and self-related decision-making.

Material and Method

Tokyo Metropolitan University Research Ethics Committee (No. 14072) approved this study. Participants included 13 young, healthy, right-handed people (mean age \pm standard deviation: 21.38 ± 1.12 years, range 20–24 years). Before fMRI scanning, explicit self-esteem and metacognition were assessed using the Rosenberg Self-esteem Scale (RSES) and Metacognitive Awareness Inventory (MAI), respectively. Using a computer mouse, subjects answered decision-making task questions, which were randomly presented during scanning. Condition 1 (self-related decision-making) asked, “If given these 2 types of work, which would you do first?” Condition 2 (word decision-making) asked, “Which of the 2 words is longer?” The 2 presented words were randomized and the same for each condition. We analyzed differences between these conditions using SPM12 implemented in MATLAB R2017a. We also analyzed the correlation between the MAI scores (Factor 1: monitoring; Factor 2: control; Factor 3: metacognitive knowledge) and RSES scores and the averaged parameter estimates in the spherical region of interest.

Results

The left orbitofrontal cortex, left superior frontal gyrus, left inferior frontal gyrus, left angular gyrus, left temporal pole, bilateral middle temporal gyrus (MTG), and left hippocampus were activated in self-related compared with word decision-making. MAI Factor 1 and 3 scores were negatively correlated with the MTG ($r = -0.84$ and $r = -0.71$, respectively; $p < 0.05$). MAI Factor 2 was not significantly correlated with any activity.

Conclusion

The negative correlation between MAI Factor 1 and 3 scores and MTG activity disagrees with previous reports that MTG is involved in higher subjective confidence ratings. Moreover, metacognitive control may be regulated by other brain areas.

Keywords

human brain;decision-making;self-reflection

Conflict of interest

Disclosure statement:

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E-Poster Session - July 9-12 - Exhibition Area

E7 Miscellaneous

ISPR8-0733

CHANGES IN THE MOTOR FUNCTION IN CHILDREN WITH TYPICAL DEVELOPMENT OF DIFFERENT AGE GROUPS

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Introduction/Background

Early intervention is effective for children with developmental delay. However, there are few longitudinal follow-up studies on the motor development in infant and toddler. This study aims to explore the changes in the motor function in children with typical development of different age groups.

Material and Method

This study was a follow-up study. Participants were from Kids in Taiwan: National Longitudinal Study of Child Development & Care (KIT). Children with typical development were classified into infant (6 months old, n=500) and toddler (3 years old, n=500) groups. Motor outcomes were measured by Developmental Motor Screening Scale for Preschool Children (DMSSPC) at baseline and follow-up (six months for infant and twelve months for toddler). DMSSPC includes gross motor (stability and locomotion, body coordination) and fine motor (grasp and manipulation, visual motor integration) domains. Analysis of covariance (ANCOVA) was used to compare the differences in the changes of motor outcomes between the infant and toddler groups. A $p < 0.05$ is considered as statistically significant difference.

Results

ANCOVA showed infant group had greater changes in gross motor, fine motor, and total scores than toddler group ($\eta^2=0.919-0.942$, $p<0.001$). Furthermore, infant group had greater changes in stability and locomotion, body coordination, grasp and manipulation, visual motor integration than toddler group. ($\eta^2=0.545-0.908$, $p<0.001$).

Conclusion

These findings suggest infants have a greater potential of motor changes than toddlers. Therefore, infants may have greater brain plasticity in motor development than toddlers.

Keywords

Children;motor function;follow-up study

No conflict of interest

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E7 Miscellaneous

ISPR8-0877

EFFECTS OF HOME ENVIRONMENT ON CHANGES IN THE MOTOR DEVELOPMENT FOR TYPICAL-DEVELOPMENT INFANTS AND TODDLERS

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Introduction/Background

Motor functions are affected by the home environment in childhood. This study aims to identify the home environment factors in the motor development of infants and toddlers.

Material and Method

This follow-up study had involved 1000 typical-development children, classifying children into infant group (6 months old, n=500) and toddler group (3 years old, n=500). Participants were from Kids in Taiwan: National Longitudinal Study of Child Development & Care (KIT). Developmental Motor Screening Scale for Preschool Children (DMSSPC), including body coordination (BC), stability and locomotion (S&L), visual motor integration (VMI), and grasp and manipulation (G&M) domains, was used to assess motor development at baseline and follow up (infants: 6-months follow up and toddlers: 12-months follow up). Home Environment Scale (HES), including parent response (PR), parent participation/learning stimulation (PP/LS), physical environment (PE), child acceptance (CA), speech stimulation (SS), learning material (LM), and environmental diversity (ED), was measured at baseline. Pearson correlation was used to analyze the correlation between HES and DMSSPC at baseline and change scores of DMSSPC (DMSSPC score at follow-up - DMSSPC score at baseline).

Results

Nearly all HES domains had significantly positive correlations with DMSSPC domains at baseline in infant group. In toddler group, HES domains had significantly positive correlations with DMSSPC domains, except PE with VMI and S&L, and CA with VMI and S&L. Additionally, HES domains except PE and CA had significantly negative correlations with change scores of G&M in infant group. While only PP/LS and ED had significantly negative correlations with change scores of G&M in toddler group.

Conclusion

A better home environment is associated with greater motor development in most domains. However, a better home environment is linked to lesser changes in G&M development,

especially infant groups. These findings may suggest providing a good home environment is important for motor development, especially infant groups.

Keywords

home environment; motor development; child

No conflict of interest

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E7 Miscellaneous

ISPR8-0893

EFFECT OF POSTURAL CONFIGURATION ON UPPER LIMB FUNCTION

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Introduction/Background

Whole body configuration is thought to affect upper limb (UL) performance based on the assumption that posture precedes movement, whereas the forthcoming task goal determines postural configuration. However, it is not well documented how different postural modalities benefit UL motion. The aim of the current study was to examine the effect of postural configuration – sitting versus standing – on a fast and accurate (i.e., under Fitts' law constraints) point-to-point hand movement, and to compare performance results in different conditions. We hypothesize that standing and sitting will not differ neither in terms of temporal or spatial UL kinematics

Material and Method

Twenty-three healthy adults performed an UL Donders-type task in sitting and standing positions and data were collected for off-line analysis of the following performance variables describing the hand movement: movement time, peak velocity, straight-line deviation, response time, and number of no-go errors. In addition, center of pressure (CoP) displacement was collected in four conditions: sitting and standing, with and without arousal manipulation. Galvanic skin response (GSR) was measured to assess the possibility of arousal changes that may interact with posture and underlie differences in hand performance

Results

No statistically significant difference was obtained between sitting and standing in regard to any of the UL performance variables. Yet, different arousal level was found among the two grouping conditions; however, no difference in arousal was found between sitting and standing ($F=19.39$; $p<0.001$). Finally, CoP displacement onset was found to be earlier in the two standing conditions compared to the two seated ones ($F=41.67$; $p=0.044$)

Conclusion

Postural configuration does not affect the UL task. Rather, the underlying control variables as reflected by the early onset of CoP displacement in standing compared to sitting

Keywords

Upper limb function;motor control;posture

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E7 Miscellaneous

ISPR8-0958

INFLUENCE ON POSTURAL CONTROL AND AUTOMATIC NERVE ACTIVITY USING SIMPLE VIRTUAL REALITY SYSTEM

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Introduction/Background

Virtual reality (VR) environments can be used to stimulate movement, motor imagery, and affect. We developed visual stimuli to generate fear under a simple VR environment using a smartphone. This study aimed to evaluate the influence of automatic nerve activity and standing postural sway within this VR environment.

Material and Method

Seventeen healthy adults were instructed to stand on a stabilometer with an outward-facing camera mounted to the VR headset. The subjects were evaluated with or without VR stimuli for each of the following conditions: (1) control (no VR), (2) gazing a human in front of oneself on VR, and (3) gazing a ball coming toward oneself on VR. Body sway while standing upright was recorded for 60 seconds with 200 Hz sampling. Heart rate variability was measured by a wearable heart rate sensor, and the low-to-high frequency (LH/HF) ratio was calculated for sympathetic nerve activity during each condition. At the end of each condition, we evaluated “surprises” and “fears” subjectively felt under each condition using a visual analog scale (VAS). We compared the results from each of these conditions with Kruskal–Wallis and Steel–Dwass test. The level of significance was set at $p < 0.05$.

Results

The results revealed that fear-VAS was significantly higher under condition 3 ($p < 0.05$). Additionally, the LF/HF tended to higher, and total length of the body sway tended to smaller than other conditions.

Conclusion

Using a simple VR system, we observed that fear stimuli induced motor inhibition, such as “freezing” by activating the limbic system.

Keywords

postural control;automatic nerve activity;virtual reality

No conflict of interest

E-Poster Session - July 9-12 - Exhibition Area

E7 Miscellaneous

ISPR8-1191

GLOBAL ROTATIONS OF THE CERVICAL SPINE DURING ARM FLEXION

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Introduction/Background

Anatomical and biomechanical studies showed that total maximal arm flexion was limited to 150°, nevertheless an asymptomatic subject is able to raise his arm up to the vertical. Some studies highlighted that arm flexion involved trunk 3D rotations, but no study has yet assessed with accuracy the kinematics of the cervical spine during arm flexion. The aim of the present study is thus to evaluate the 3D head rotations during arm flexion in asymptomatic subjects.

Material and Method

Observational study: 3D head and trunk rotations were assessed in ten healthy, right handed subjects during maximal unilateral left arm flexion using a Polhemus Fastrak electromagnetic device. The 3D rotations were measured at 30°, 90°, 140° of maximal active and passive arm flexion, respectively. 3D rotations at the different levels of arm flexion and for active and passive conditions were compared using Bayesian ANOVA.

Results

Head and trunk rotations increased with active and passive arm flexion. Head and trunk kinematic patterns were opposite at maximal arm flexion: relative to the trunk, the head 3D rotations showed flexion, ipsilateral bending and contralateral axial rotation whereas trunk was in extension, contralateral lateral bending and ipsilateral axial rotation. Compared to passive condition, active maximal arm flexion involved significant less head and trunk lateral bending and axial rotation, consequently, the head orientation was better stabilized in space.

Conclusion

Maximal arm flexion involves a kinematic pattern of 3D head rotations opposite to the kinematic pattern of 3D trunk rotations. The rotations in the cervical spine could either be a way to compensate trunk rotations in order to maintain the orientation of the head supporting horizontal gaze and/or the result of the synergic organization of movement by the central nervous system.

Keywords

3D kinematics;neck;trunk

No conflict of interest

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E7 Miscellaneous

ISPR8-1283

STRESS RELATED GROWTH AND RESILIENCE AMONG CAREGIVERS OF ALZHEIMER'S PATIENTS

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Introduction/Background

Alzheimer's disease (AD) often causes severe social and psychological burden to the patients' caregivers. In this study we examined the inter-relationships between caregivers' burden, stress related growth (SRG), resilience and the cognitive and emotional status of AD patients receiving cholinomimetic treatment.

Material and Method

A prospective study in which 17 caregivers of patients with AD treated in a memory clinic were recruited. Evaluations of the patients' cognitive and behavioral state were performed using the MMSE, Alzheimer's disease assessment scale-cognitive (ADAS-Cog) and Mindstream computerized program and Neuropsychiatric inventory questionnaires, respectively. Caregivers' characteristics were evaluated using the stress related growth, resilience, and burden of disease questionnaires. Evaluations were performed at baseline, 6 months after and at 1 year of cholinomimetic therapy.

Results

The mean age of the caregivers was 68 ± 13 years, 59% of them were women. During the year of treatment, a decline was noted in the cognitive and behavioral state of most patients. Among caregivers, a trend towards increased SRG, resilience and disease' burden was observed. Also, among caregivers, greater disease burden was associated with greater levels of SRG and resilience in the second and first evaluation but not at baseline. Lower levels of SRG among caregivers were associated with greater decline in cognitive abilities of patients, as measured by a reduction in ADAS-cog. No correlation was found between any of the cognitive measurements of patients and resilience or disease burden among caregivers.

Conclusion

Similar to our findings in medical personnel treating survivors of political violence, also in caregivers of Alzheimer's patients, greater levels of traumatic stress were related to greater stress related growth. This trend became more evident during the year of follow up. We also found that the decline of cognitive abilities of patients was related to lower levels of SRG of caregivers. These findings need to be further authenticated in future studies.

Keywords

Alzheimer's disease;caregivers;Stress related growth

No conflict of interest

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E7 Miscellaneous

ISPR8-1682

DEVELOPMENTAL MOTOR SCREENING SCALE FOR PRESCHOOL CHILDREN: AN ITEM RESPONSE THEORY ANALYSIS

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Introduction/Background

Developmental Motor Screening Scale for Preschool Children (DMSSPC) exhibits high reliability and validity. This study aims to analyze this tool by Item Response Theory (IRT).

Material and Method

Data of this study were collected from Kids In Taiwan: National Longitudinal Study of Child Development & Care (KIT). Four hundred and fifty children's parents (216 boys and 234 girls) from New Taipei City were recruited. DMSSPC includes gross motor (stability and locomotion, body coordination) and fine motor (grasp and manipulation, visual motor integration) domains. The ConQuest software was used to perform the IRT analysis, including difficulty estimates and mean square error (MNSQ).

Results

After IRT analysis, the difficulty estimates of DMSSPC were -3.33 - 1.85, and the MNSQ values were 0.53 - 1.76. The difficulty estimates for the DMSSPC ranged from -2.08 - 1.99 for the fine motor and from -3.43 - 2.33 for the gross motor. The MNSQ values of fine motor and gross motor were 0.52 - 1.83 and 0.50 - 1.59, respectively.

Conclusion

According to the IRT analysis, the difficulty estimates and MNSQ values of DMSSPC were within reasonable limits. Future studies will develop the Computerized Adaptive Testing (CAT) of DMSSPC based on the IRT results.

Keywords

preschool children;motor development;Item Response Theory

No conflict of interest

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E7 Miscellaneous

ISPR8-2238

INSPIRATORY MUSCLE RESISTANCE IN OBESE AND EUTROPHIC INDIVIDUALS

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Introduction/Background

Obesity seems to be related to reductions in the inspiratory muscle strength. However, the effects of obesity on inspiratory muscle resistance have not been studied yet. The objective of this study was to compare the inspiratory muscle resistance between obese and eutrophic individuals.

Material and Method

Participated 20 obese (31 ± 6 years old, 10 men, 37.5 ± 4.7 kg/m²) and 20 healthy subjects (29 ± 8 years old, 10 men, 23.2 ± 1.5 kg/m²). Inspiratory muscle strength was measured by a manovacuometry through the determination of the maximum inspiratory pressure (MIP). Inspiratory muscle endurance was determined by an incremental test with an initial load of 50% MIP and increments of 10% MIP every 3 minutes until the individual was unable to continue the test.

Results

Obese (470 ± 326 sec) showed a reduction in inspiratory muscle resistance compared to eutrophic individuals (651 ± 215 sec, P = 0.04). Inspiratory muscle strength did not differ between groups (Obese = 120 ± 45 cmH₂O; Eutrophic = 118 ± 31cmH₂O, P = 0.81). Inspiratory muscle endurance test induced a similar increase in systolic, diastolic and mean arterial

pressure, as well as in heart rate in obese and eutrophic individuals (Table 1).

Table 1. Hemodynamic responses during the inspiratory muscle resistance test

	Obese (n=20)		Eutrophic (n=20)		P	P	P
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>	<u>Obese vs Eutrophic</u>	<u>Pre vs Post</u>	<u>Group vs Time</u>
SAP (mmHg)	133±12†	143±2*	117±12	127±15*	0.001	0.001	0.964
DAP (mmHg)	84±12†	93±14*	77±8	81±8*	0.004	0.001	0.097
HR (bpm)	84±15†	92±22*	79±9	87±10*	0.001	0.003	0.814

SAP: Systolic arterial pressure; DAP: Diastolic arterial pressure; HR: Heart rate.

* P < 0.05 vs Pre ; † p < 0.05 vs Eutrophic.

Conclusion

Obeses show reduction in inspiratory muscle resistance compared to eutrophic individuals, but the hemodynamic responses did not differ between groups.

Keywords

obesity; inspiratory muscle resistance; arterial blood pressure

No conflict of interest

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E7 Miscellaneous

ISPR8-2347

THE ORIGINS OF WESTERN MIND-BODY EXERCISE METHODS

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Introduction/Background

Over recent decades holistic mind-body exercise methods have gained international popularity and importance in the management of musculoskeletal disorders. The scope of this historical research paper was to investigate from the last two centuries: the origins of Western mind-body methods, their philosophies, exercises and relationship with mainstream healthcare.

Material and Method

Research was limited to readily available published documents from internet sources. The search engines used were: Medline, Google, Google Books, Google Scholar, YouTube, Kindle and AbeBooks.

Results

Within a several decades at the turn of the Twentieth century a cluster of mind-body exercise methods emerged and flourished from at least six pioneering founders: Edwin Checkley, Jørgen Peter Müller, Frederick Matthias Alexander, Minnie Randell, Joseph Pilates and Margaret Morris. Each method was based upon similar philosophies and exercises. This renaissance of independent mind-body schools cooperated in part with mainstream medicine and physiotherapy and mirrored the science and art renaissance of the period. Though mostly forgotten today, these methods enjoyed celebrated success by medical and health practitioners and millions of followers.

Conclusion

This research revealed a forgotten chapter in the recent history of physical rehabilitation. Rediscovering the grand existence of the Western mind-body exercise movement may, after due scientific validation, facilitate current official healthcare establishment recognition of this training as an integral entity. This could widen research opportunities and consolidate approaches towards: optimal musculoskeletal rehabilitation, injury prevention, promotion of healthy active lifestyle environments in the modern world and enhancement of natural pain-free human athletic appearance, feel and performance.

Keywords

Functional exercises; Preventative medicine; Active lifestyle

No conflict of interest

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E7 Miscellaneous

ISPR8-2392

PERIPHERAL CHEMOREFLEX SENSITIVITY IN PATIENTS WITH HEART FAILURE AND PRESERVED INSPIRATORY MUSCLE STRENGTH

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Introduction/Background

Individuals with chronic heart failure (CHF) and inspiratory muscle weakness exhibit an exacerbated peripheral chemoreflex sensitivity (PCS) in relation to patients with preserved inspiratory muscle strength. However, it remains unclear whether patients with CHF and patients with preserved inspiratory muscle strength show PCS similar to healthy individuals. The objective of this study was to compare PCS between patients with CHF and preserved inspiratory muscle strength and healthy individuals.

Material and Method

Ten subjects with CHF (55 ± 8 years old) and 10 healthy subjects (54 ± 7 years old) matched for sex and age participated in this study. All subjects showed preserved inspiratory muscle strength, which was measured through a pressure transducer. PCS was obtained through the technique of transient hypoxia induced by the inhalation of pure nitrogen, which was repeated for 10 times. PCS was calculated by linear regression analysis between maximal ventilation and lower oxygen saturation.

Results

PCS in patients with CHF and preserved inspiratory muscle strength ($1.09 \pm 0.95 \text{ L}\cdot\text{min}^{-1}\cdot\% \text{ SaO}_2^{-1}$) did not differ from healthy subjects ($0.70 \pm 0.73 \text{ L}\cdot\text{min}^{-1}\cdot\% \text{ SpO}_2^{-1}$; $P = 0.31$). There was a significant association between PCS and inspiratory muscle strength ($r = 0.58$, $P = 0.006$), however only 19% of variance in PCS may be explained by inspiratory muscle strength.

Conclusion

Patients with CHF and preserved inspiratory muscle strength show PCS similar to healthy individuals.

Keywords

Chemoreflex; Inspiratory muscle weakness; Chronic heart failure

No conflict of interest

