



Abstracts book

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Abstracts book

Improving drug history anamnesis at the emergency department (ED) by hospital pharmacists and registration of interactions between patients' different types of medication

J. van der Schoot and S. Peeters

Introduction

Medication errors may have a significant impact on the quality of care at the ED and more specifically on patients' outcome, hospital admission, increase in healthcare costs and preventable morbidity. Potential interactions between different types of medications often are not well known by treating physicians. Therefore, drug interactions are underestimated or neglected frequently.

Methods

Since 4 March 2019, hospital pharmacists have been working on the ED for 4 h during working days. They obtained the best possible medication history (BPMH), focussing on patients with an age of 65 years or older and polypharmacy and/or poly-pathology. The electronic patient record in our hospital contains a module for medication, which notices drug interactions and divides potential drug interactions into different categories ranging from mild to severe risk. In our project, we focus on moderate and severe potential interactions.

Results

In our regional hospital at about 21.000 patients visit, the ED annually. From 4 March 2019 until now, hospital pharmacists composed a BPMH in more than 700 patients.

Our results show that 29.8% of the selected patients had brought a list of their medication, 6.5% had a list composed by their pharmacist, 17.2% had a medication list composed by their general practitioner, and 12.2% of the patients had a medication list from their residential care center. The hospital pharmacists contacted the patient's pharmacist in 61% of the cases and the treating general practitioner in 14.6% of the patients.

We found moderate or severe potential drug interactions in a substantial part of patients. Most common types of drug interactions involved inducing or inhibiting CYP-enzymes and interactions affecting QTinterval. In 78% of the drug interactions, the hospital pharmacist contacted the emergency physician and in 36% of the cases, the treatment has been modified on the ED. When hospital pharmacists obtained a BPMH, up to 6% of the drug interactions detected were the likely cause of hospital admission.

Conclusion

Hospital pharmacists composing the BPMH on the ED made medication history more reliable. More accurate medication history led to awareness that moderate or severe potential drug interactions are more common than expected.

Further investigation is necessary to study the effect of drug interactions on the clinical outcome of patients as well as the best way to modify patients' medication in case of drug interaction.

Retrospective analysis of compliance with advanced life support guidelines in a large nonuniversity, teaching hospital

T. Fizez, G. Vermeulen, S. Van Boxstael and P. Vanelderen

Introduction

In literature, traditional face-to-face learning of advanced life support (ALS) is advocated to be equivalent to e-Learning ALS (e-ALS) [1]. In our centre, simulation-based ALS training for nurses and fellows was given by a dedicated team. Emergency specialists are actively involved in this training. For the staff of the critical care department (anesthesiology, intensive care

and emergency department), electronically based ALS training was provided.

Objectives and methods

A survey among critical care workers (staff: 10, fellows: 10, nurses: 10) assessed their compliance with the guidelines of ALS. We want to investigate the efficiency of e-ALS compared to that of traditional training [2,3].

Results

Over all cases, 67%, 82% and 81% of staff, fellows and nurses respectively answered all questions correctly. Knowledge of Hs and Ts of ALS as mnemonic to help recall major contributing factors to pulseless arrest is poorly known by all groups. In contrast, all recent updates are well known, especially by nurses and fellows.

Conclusion

This small survey underlines the importance of practical active learning sessions concerning ALS. It also underlines the lack of knowledge of H's and T's in all groups participating in the survey. In the future staff

members will be trained in practical sessions and a follow-up survey is planned afterwards.

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Feature selection and generation for predictive capacity analytics of emergency departments

T. Bouré, S. Van Poucke, S. Van Boxtael, D. Mesotten, M. Vanhoof and P. Vanelderen

Introduction

Overcrowding in emergency departments (EDs) is a global problem and related to the variations of patient in- and outflow, the number of examination rooms available and the staffing capacity.

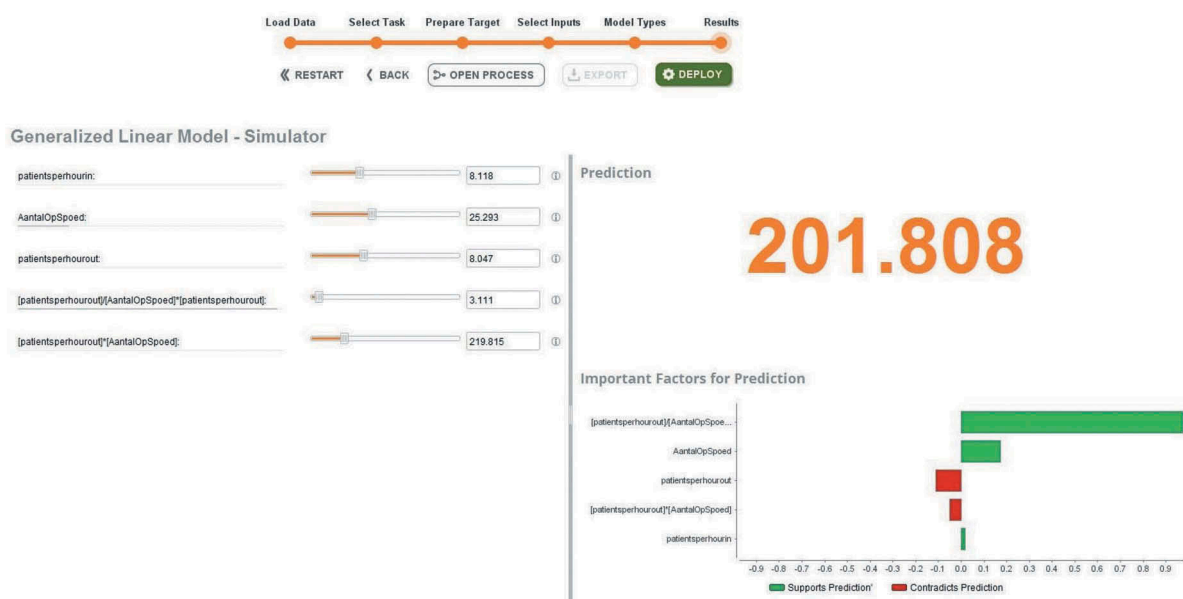
Additionally, a variety of time-related factors such as seasonality impede precise prediction of the length of stay (LOS) for each individual patient. Machine learning and predictive modelling techniques facilitate finding the crucial balance between the number of essential attributes with a predictive impact and the effect this has on the error rate of a predictive model.

Materials and methods

Patients (n = 68,989) admitted to the ED of the Ziekenhuis Oost-Limburg, Genk, Belgium were included. Per patient, LOS, number of patients admitted (PPI) and discharged (PPO) in the same hour, number of patients occupying the ED (PA), hour relative to day (H), day of the week (D), week relative to year (W), Manchester triage color (M) (Green 48.8%)

Results

Descriptive statistics were (min–max, average \pm SD): LOS (2–599 min, 201.5 \pm 115.9 min)



Discussion and conclusion

Artificial intelligence (AI) based on machine learning algorithms are able to predict LOS of patients admitted to EDs. A simulator (Figure 1) enables

LOS prediction on the spot. Current technology enables the generation of synthetic parameters, with more predictive power. Commodity services providing 'AI as a service' are entering the medical arena.

Concordance between drug prescription and intake of painkillers in a context of acute low back/neck pain

E. Delloye, J. Masabarakiza, V. Wauters and F. Dupriez

Introduction

Acute low back/neck pain is a common trigger of consultation in the emergency department (ED). It is the first cause of consultation for musculoskeletal complaints in industrialized countries. Nonsteroidal anti-inflammatory Drug (NSAID) is the first-line treatment and can be associated with a myorelaxant. According to clinical experience, Belgian emergency physicians often prescribe an association of acetaminophen, NSAID and tramadol. Regularly, the diazepam is advised to ease myorelaxation. In Belgium, the physicians prescribe boxes of drugs containing at least 10 pills. This minimal number varies depending on the painkiller. This study is meant to enlighten the number of pills left after resolution of symptoms at 10 days.

Method

Multicenter observational prospective study. Inclusion criteria: adult patient presenting to the ED with complaints of acute low back/neck pain determined by the ED physician as of muscular origin, returning home after the ED consultation and having signed a consent form. For 10 days, patients were contacted by phone to evaluate the number of pills left according to the drug prescribed and to assess the resolution of symptoms.

Results

A total of 101 patients were included. Forty-one were secondary excluded either unreachable, still sympto-

matic, or did not take the treatment. Measures were done on percentage values the absolute number of pills prescribed being different in each box. The mean percentages of left pills were for the paracetamol 53% (CI 95%: 45,7%-61,9%); the NSAID 52% (CI 95%: 44,4-61,4); the tramadol 63% (CI 95%: 57,4-6) and the diazepam 66% (CI 95%: 52,8-73,5). Statistical analysis according to the Agostino and Wilcoxon tests gave a significant result for each medication ($p < 0.0001$).

Discussion

The number of pills left after treatment and amendment of symptoms for each prescribed drug is significant. A selection bias comes from the exclusion of patients still symptomatic. Yet, after 10 days of evolution, those patients should probably be oriented to a general practitioner in order to confirm the diagnosis or undergo further investigations. Information bias is also present in this study, the patients being informed of the outcome studied.

Conclusion

A significant number of remaining pills represent a risk for auto-medication. The use of boxes and left drugs are an accountable waste surplus and an unnecessary investment for the patient. A solution could be to prescribe a number of pills for a determined amount of time instead of standard boxes.

Risk factors associated with complications presented by patients consulting to the emergency department within the year following a bariatric surgery

S. Leponce, D. Rans, F. Charara, K. Gonsette and F. Guérisset

Introduction

When faced with the global epidemic of obesity, bariatric surgery is increasing. It brings a lot of complications,

which are more difficult to diagnose following the anatomical changes due to surgery. The aim of our study is to identify the risk factors (RF) associated with the complications presented by patients who underwent

bariatric surgery in the past 12 months preceding their visit to the emergency department (ED).

Methods

Retrospective study of ED consultation records of patients who underwent bariatric surgery in the past 12 months in a University Medical Center (UMC). Complications were divided into primary and secondary complications. An association was searched for each RF described in the literature.

Results

We reviewed the records of 694 patients operated in the UMC between 2015 and 2017. Of the 187 included consultations, 28 were due to a primary complication, 45 to a secondary complication (Table 1). Among the RFs analysed, only age and

leukocytosis were significantly associated with the occurrence of a primary complication, with cut-off values of 38 years old and 10160 leukocytes/mm³. At last, the performance of an injected CT was significantly associated with the discovery of a primary complication ($p = 0.05$).

Conclusion

The risk of ED visits for patients who underwent bariatric surgery in the previous 12 months was increasing with age. Age >38 years old and leukocytosis >10,160/mm³ were associated with a primary complication. With a negative predictive value of 91.5%, the absence of these two criteria could be associated with a low probability of primary complication. Injected CTs generally allowed us to diagnose a primary complication. These results need to be confirmed on a larger scale, ideally with a prospective study over a larger sample size.

Tab 4: Diagnoses made at the end of the 187 consultations

Primary complication	n (%)	Secondary complication	n (%)	Other diagnoses	n (%)
Anastomotic ulcer	15 (8,0)	Gallstone migration	12 (6,4)	No final diagnosis	53 (28,3)
Internal hernia	6 (3,2)	Esophagitis	8 (4,3)	Viral enteritis	15 (8,0)
Occlusion	3 (1,6)	Faint	7 (3,7)	Nephrolithiasis migration	13 (7,0)
Stenosis	2 (1,1)	Gastritis	6 (3,2)	Pyelonephritis/cystitis	10 (5,3)
Surgical site abcedation	2 (1,1)	Skin damage (minor infection, suture loosening or seeping)	6 (3,2)	Therapeutic incomppliance (post-surgery)	4 (2,1)
Fistula at the surgical site	2 (1,1)	Acute pancreatitis	5 (2,7)	Constipation	3 (1,6)
Digestive perforation	2 (1,1)	Umbilical hernia	3 (1,6)	Diverticulitis	3 (1,6)
Sepsis of digestive origin	2 (1,1)	Parietal pain	3 (1,6)	Colitis	3 (1,6)
Failure of internal sutures	1 (0,5)	Acute cholecystitis	3 (1,6)	Pregnancy and vomiting	3 (1,6)
Adhesion	1 (0,5)	Minor evisceration	2 (1,1)	Undefined hepatic pathology	2 (1,1)
		Wall hematoma	1 (0,5)	Mesenteric adenitis	2 (1,1)
		Hypoglycemia	1 (0,5)	Ovarian cyst rupture	1 (0,5)
		Reactional pleural effusion	1 (0,5)	Iterative vomiting	1 (0,5)
		Upper gastrointestinal bleeding	1 (0,5)	Appendicitis	1 (0,5)
				Intestinal neoplasia	1 (0,5)
				Hepatitis	1 (0,5)

Tetanus prophylaxis: 'how can we improve'?

G. Bavestrello Piccini and J. C. Cavenaile

Introduction

Patients presenting to the emergency department (ED) with wounds prone to tetanus infection, receive prophylaxis according to their immune status, which in our ED, can be known through the use of a Point of Care Testing (POCT) and the Tetanos Quick Stick (TQS).

In July 2018, we conducted an observational study on the quality of the prophylactic measures adopted

in our ED for tetanus prevention, to observe whether the guidelines were correctly followed. We observed that, among the 942 patients who tested negative to the rapid test (TQS), and were therefore not protected, 161 (17.1%) did not receive a booster vaccination.

We hence carried out an awareness campaign, through several seminars displaying the results of the study, in order to raise awareness among the

practitioners (doctors and nurses) involved in the vaccination of patients in our ED.

In order to observe whether an improvement in the quality of healthcare had occurred, we re-conducted the study 12 months later.

Materials and Methods

We took into consideration the data of 2907 patients who referred to the ED of the Brugmann University Hospital between the 01 July 2018 and the 30 June 2019 with wounds potentially at risk for tetanus infection.

Results

In the 12 months covered by the study, 2907 patients presented with wounds at risk.

Among the 858 non-protected patients, 111 patients did not receive a booster (12.9%).

On the other side, among the already vaccinated patients, 19 (0.93%) received an unmotivated vaccine dose.

Discussion

Tetanus prophylaxis guidelines in our ED are simple and well defined, but nonetheless they are often not respected.

An amelioration has been observed after the awareness campaign that has been carried out.

It is also important to take into account the new practitioners, especially in the EDs of University Hospitals which have a greater turnover of medical staff, who are sometimes not aware of the guidelines in vigor in the ED in which they practice.

As it has been observed, guidelines indeed vary from region to region and sometimes even from hospital to hospital.

Conclusion

A continuous training of the personnel allows a remarkable improvement in the quality of healthcare and prevention. In conclusion, a standardization of the guidelines for tetanus prevention should be the final aim in order to improve healthcare in the EDs.

Professional well-being in emergency physicians

F. Somville, M. Stiers, E. Franck and P. Van Bogaert

Objectives

This cross-sectional study examines first whether emergency physicians differ from a comparison group of surgeons in terms of job and organizational characteristics and second to what extent these characteristics are determinants of professional wellbeing outcomes in emergency physicians.

Methods

Belgian emergency physicians (n = 346) were invited to participate in this study. Forty-three percent of the eligible participants completed a questionnaire. The survey instrument contains 48 questions on determinants (personal characteristics, job conditions (JDs), organizational and environmental work conditions) as well as 39 questions on outcomes (job satisfaction, turnover intention, subjective fatigue, psychological distress, work-home interference, work engagement) by means of the Leiden Quality of Work Questionnaire for Medical Doctors, the Checklist Individual Strength, the Brief Symptom Inventory and the Utrecht Work Engagement Scale. Hierarchical multiple regression analyses were used to examine the association between the determinants and each of the outcomes.

Results

Emergency physicians reported higher job demands, a lower job control and less adequate work conditions compared to the group of surgeons. High job demands increased turnover intention, subjective fatigue, psychological distress, work-home interference in emergency physicians, but lack of job control, lack of social support from the supervisor and inadequate communication also contributed in an unfavorable way to some of these outcomes.

Conclusion

Emergency Medicine departments must reduce the constant exposure to high job demands by allowing emergency physicians to have enough time for physical and psychological recovery. Work motivation improving by increasing job control over job demands by giving emergency physicians more decision latitude and autonomy, improving good communication and teamwork and adequate social support from the supervisor and providing good material resources. These interventions can improve professional well-being outcomes in emergency physicians.

Table 3. Summary of hierarchical regression analysis of *emergency physicians*: personal characteristics (block 1), job characteristics (block 2) and organizational variables (block 3) as predictors: Job satisfaction, Turnover intention, Subjective Fatigue, Psychological distress, Work home interference, Work engagement

	Job satisfaction			Turnover intention			Subjective fatigue			Psychological distress			Work home interference			Work engagement		
	ΔR ²	β	Sign	ΔR ²	β	Sign	ΔR ²	β	Sign	ΔR ²	β	Sign	ΔR ²	β	Sign	ΔR ²	β	Sign
Block1: sociodemographic	0.00			0.03			0.05**			0.08***			0.03			0.01		
Age		-0.01	n.s.		-0.17	***		-0.04	n.s.		-0.10	n.s.		0.06	n.s.		0.10	n.s.
Gender		-0.02	n.s.		0.00	n.s.		-0.18	***		-0.17	***		-0.11	n.s.		-0.02	n.s.
Workregime		0.01	n.s.		0.02	n.s.		0.04	n.s.		0.05	n.s.		0.13	0.07		0.04	n.s.
Block 2: job characteristics	0.47***			0.44***			0.35***			0.27***			0.19***			0.29***		
Job Demands		-0.06	n.s.		0.18	**		0.41	***		0.42	***		0.35	***		-0.13	n.s.
Job Control		0.30	***		-0.24	n.s.		-0.27	***		0.01	n.s.		-0.09	n.s.		0.31	***
Social Support supervisor		0.10	n.s.		-0.19	**		0.17	0.06		0.05	n.s.		0.11	n.s.		-0.04	n.s.
Social Support colleagues		0.12	n.s.		-0.08	n.s.		-0.03	n.s.		-0.10	n.s.		-0.06	n.s.		0.16	n.s.
Block 3: organizational factors	0.07***			0.03**			0.05**			0.04*			0.09***			0.05*		
Social Harassment		-0.07	n.s.		0.02	n.s.		-0.01	n.s.		0.07	n.s.		-0.13	n.s.		0.05	n.s.
Personnel resources		0.03	n.s.		-0.12	n.s.		0.13	n.s.		0.15	n.s.		0.11	n.s.		0.11	n.s.
Material resources		0.11	n.s.		0.04	n.s.		-0.07	n.s.		0.02	n.s.		-0.02	n.s.		0.16	*
Work agreements		-0.07	n.s.		0.04	n.s.		0.06	n.s.		-0.08	n.s.		-0.04	n.s.		-0.18	0.06
Communication		0.29	***		-0.17	**		-0.27	***		-0.22	***		-0.34	***		0.11	n.s.
	R ²	0.54		R ²	0.50		R ²	0.45		R ²	0.39		R ²	0.31		R ²	0.35	
	Adj. R ²	0.51	***	Adj. R ²	0.46	**	Adj. R ²	0.40	**	Adj. R ²	0.33	*	Adj. R ²	0.26	***	Adj. R ²	0.27	*
	model			model			model			model			model			model		

Abbreviations: ΔR² change in R² values from one model to another, R² model R² values in one model, Adj. R² model adjusted R² values in one model, β beta resulting standardized regression coefficients, Sign significant, n.s not significant, * Correlation is significant at the 0.05 level, ** Correlation is significant at the 0.01 level, *** Correlation is significant at the 0.001 level, the bold data are significant

Ventilation generated by manual chest compressions declines during cardiopulmonary resuscitation: evidence of small airways closure?

M. Vanwulpen, C. Duchatelet, M. Wolfskeil, C. Van Daele and S. Hachimi-Idrissi

Introduction

Chest compressions performed during cardiopulmonary resuscitation (CPR) have been shown to generate limited passive tidal volumes [1]. In animal studies, ventilation provided by this mechanism has been observed to decline during ongoing CPR [2]. Previously, the authors suggested this to be caused by dynamic changes in chest compliance [3]. Recent experimental models of cardiac arrest have attributed this decline to chest compression induced small airways closure, a proposed pathophysiological mechanism which could be limiting oxygenation and ventilation during CPR [4,5]. The goal of this study was to determine if passive ventilation generated by manual chest compressions declined during resuscitation of adult cardiac arrest patients, indicating the existence of small airways closure.

Materials and methods

Adult non-traumatic cardiac arrest patients treated by a prehospital medical team were included. A custom airflow sensor was connected to the endotracheal tube. Manual chest compressions were performed, real-time CPR feedback was available. Expiratory tidal volumes generated by 15 chest compressions performed before (period 1), and after 5 min of CPR

(period 2) were compared. Statistical analyses were done using an independent samples *t*-test.

Results

Five patients were included in this study, four were male. The mean age was 59 years (range 52–86 years). Return of spontaneous circulation was achieved in three patients. In one patient, resuscitation was terminated 3 min following connection of the airflow sensor. In this patient, tidal volumes generated by chest compressions before and after 2 min of CPR were calculated (patient 4, Table 1). In all patients, tidal volumes were significantly smaller ($p < 0.05$) following a period of either 2 or 5 min of CPR. Results per patient are shown in Table 1. Data from the CPR feedback device showed compressions of adequate depth were performed in all cases, due to technical limitations we were unable to synchronise this data with airflow data.

Conclusion

In this small sample of adult non-traumatic cardiac arrest patients, passive ventilation generated by manual chest compressions declined during ongoing CPR. Based on previous findings in experimental models, this is likely to be caused by small airways closure [3,5]. Further research, studying more patients, whilst

Patient	1	2	3	4	5
Return of spontaneous circulation	yes	yes	no	yes	no
Interval between analysed periods of compressions in minutes	5	5	5	2	5
Mean expiratory tidal volume in ml \pm SD (period 1)	30 \pm 6	49 \pm 13	70 \pm 12	19 \pm 5	35 \pm 11
Mean expiratory tidal volume in ml \pm SD (period 2)	12 \pm 1	27 \pm 12	45 \pm 19	14 \pm 5	17 \pm 9
Difference between mean expiratory tidal volumes in ml (95% CI)	18 (15 - 21)	22 (11 - 32)	25 (12 - 37)	5 (1 - 9)	18 (15 - 21)
Mean chest compression rate in compressions per minute \pm SD (period 1)	104 \pm 6	127 \pm 4	107 \pm 3	117 \pm 7	118 \pm 3
Mean chest compression rate in compressions per minute \pm SD (period 2)	108 \pm 5	125 \pm 2	109 \pm 3	105 \pm 3	115 \pm 2

Table 1. Return of spontaneous circulation, interval between analysed periods, calculated expiratory tidal volumes, difference between expiratory tidal volumes and chest compression rates per patient. SD = standard deviation, CI = confidence interval

performing synchronised measurements of chest compliance and chest compression depth, is necessary to confirm these findings.

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Burnout, work engagement among emergency physicians

F. Somville, G. Vander Mieren and H. De Smedt

Introduction

A number of studies report to physicians as group with a high-risk for burnout. There is an increasing alertness for the problem of stress and burnout among emergency physicians (EPs). The purpose of this study was to examine the prevalence of burnout, work engagement among EPs, and to understand both individual and work engagement consequences.

Materials and methods

In the cross-sectional study, a total of 436 questionnaires were sent to EPs in Belgium. The questionnaires asked respondents information about their work conditions and work-related feelings, and also included sociodemographic characteristics. We used the Maslach Burnout Inventory.

Table Burnout Work Engagement :

Association between Belgian and American and Canadian Emergency Physicians %

Burnout and UWES	Belgian Emergency Physicians %	American Emergency Physicians %	Canadian Emergency Physicians %
OLBI (Burnout)			
Exhaustion	75,7	60,0	46,0
Disengagement	67,4	78,0	93,0
Burnout	61,6	65,0	60,0
Job Satisfaction	69,0	65,0	76,0

Results

EPs were found to be confronted with burnout. In this study, 76.5% of the sample fell within the high level of emotional exhaustion, 66.0% within the high range for disengagement. Fifty-nine percent of EPs were highly engaged with their work, and 69% were satisfied with their jobs. In comparison with American and Canadian EPs, there is a similar burnout rate.

Discussion We assume that the score on job satisfaction does not directly indicate that all EPs have

a burnout. We notice that our sample is somewhat in the line of the scores seen by the American and Canadian EPs.

Conclusion

EPs are especially at risk of burnout. This not only personally touches the EPs, but can also impact the quality of their work. Medical environment should act on the findings of this study and invest in supportive interventions and psychological counseling for EPs on demand to reduce burnout.

Burnout, stress and personality amongst emergency physicians

F. Somville, G. Van der Mieren and B. Wellens

Introduction

Earlier studies refer to physicians as a group with a high-risk for burnout. However, less attention has been paid to personality factors underlying this psychological syndrome. There is an increasing alertness for the problem of stress and burnout among emergency physicians. Occupational stress factors were found to be related to burnout, an outcome that is supposed to be moderated by personality.

Aim

This study aims to examine the limited body of evidence concerning Type D personality and burnout in hospital physicians, more specifically emergency physicians. To investigate this topic, we examined stress, burnout and Type D personality within the physicians' activity, while also taking the job-related and organizational elements into account.

Methods

During this cross-sectional study, data were collected using self-report questionnaires. The 436 who

participated were selected from Flemish and Walloon hospitals across Belgium. The departments and physicians surveyed were selected at random and subdivided in 212 emergency physicians, 162 hospital physicians and 61 residents.

Results

Type D personality ranged from 30.5% in hospital physicians, up to 28.5% in emergency physicians. In addition, even when corrected for job-related and organizational factors, emergency physicians with Type D personality were 7 times more likely to have a high risk for burnout.

Conclusion

This study suggested that Type D might be a vulnerable personality in emergency physicians for the development of burnout. Therefore, it might be appropriate to aim this individual factor in further interventions to improve the well-being of emergency physicians.

Burnout and UWES	Total sample N = 436 %	Hospital Specialists N = 162 %	Emergency Physicians N = 212 %
OLBI			
Exhaustion	76,0	67,2	75,7
Disengagement	66,0	72,5	67,4
Burnout	58,0	58,0	61,6
UWES score mean (SD)	3,90 (1,06)	3,87 (1,13)	3,91 (1,06)

The effect of out-of-hospital troponin point-of-care testing on the time to diagnosis of non-ST elevation myocardial infarction

H. Abasbassi, S. Van Boxtael, B. Van Bylen, D. Mesotten, W. Boer, J. Vundelinckx, S. Van Poucke, P. J. Van Asbroeck, R. Haesendonck, M. Vanderlaenen, T. Fizez, J. Van Zundert and P. Vanelderen

Background

In an earlier study we demonstrated a significant time gain in the diagnosis of non-ST elevation myocardial infarction (NSTEMI) using bedside troponin point of care (POC) tests in the emergency department [1]. In the present study, we built on these results and expanded the troponin POC testing for NSTEMI to the pre-hospital setting. We hypothesized that this would further decrease the time of diagnosis.

Materials and methods

In this prospective study, patients with an out-of-hospital suspected NSTEMI (typical chest pain ≥ 20 minutes without ST-elevation on ECG) were included after informed consent. Blood samples were tested for troponin levels during transport to the hospital (handheld Cobas h232 POC system®, Roche Diagnostics, Switzerland), in the emergency room workstation (tabletop AQT90 FLEX®, Radiometer, the Netherlands) and in the central laboratory (Cobas® e602, Roche Diagnostics, Switzerland). The time of acquisition of troponin levels with the three devices was used to compute the time between the different devices. The data were analyzed with one-way ANOVA (Kruskal–Wallis test with Dunn’s post hoc test for multiple comparisons). Data are presented as mean \pm standard deviation (age) and median [interquartile range] (time gain). The study was approved by the ethics committee of the

Ziekenhuis Oost-Limburg (17/075U) and was registered on clinicaltrials.gov (NCT03400553).

Results

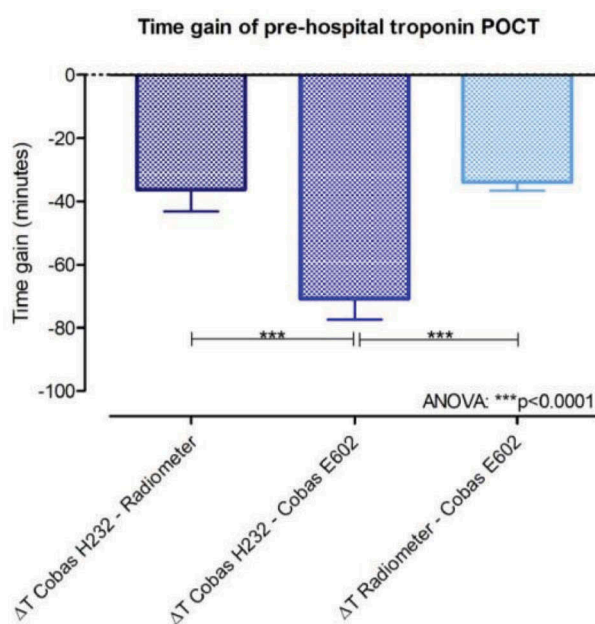
A total of 66 patients were included over a 2-year period (age 70 ± 13 years, 44% women). Ten patients (15%) presented with an NSTEMI. The time gain in troponin acquisition between the Cobas H232 and AQT90 vs the Cobas e602 was 66 [47–79] min and 35 [25–47] min, respectively ($p < 0.0001$). Moreover, when the Cobas H232 was compared with the AQT90, 29 [23–39] min were gained. There were no false positive or negative results with the Cobas H232 compared to the Cobas e602. Troponin acquisition with the Cobas H232 was possible in each patient.

Discussion

This study showed that prehospital acquisition of troponin using the POC Cobas H232 is feasible and significantly decreases the time to diagnosis of NSTEMI.

Reference

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Communication: key point in disaster medicine. Lessons learned from previous terrorist attacks and future directions

M. Willems, H. De Cauwer and F. Somville

Introduction

Communication is a key in efficient disaster management. However, in many major incidents, communication failure led to improper scaling up, safety concern for the emergency responders, logistical problems, and disaster management inefficiency.

Methods

We reviewed the reports on mass casualty incidents due to terrorist attacks, based on PubMed archived medical/paramedical reports, or on governmental reports.

We included the terrorist attacks in Tokyo 1995, Oklahoma 1995, Omagh 1998, New York 2001, Myrmmanni 2002, Madrid 2004, London 2005, Oslo/

Utoya 2011, Boston 2013, Paris 2015, Berlin Christmas market 2016, Zaventem/Maalbeek 2016, Manchester 2017 and London 2017.

Results

In most incidents, communication failure was reported. Some failures had a significant impact on casualty number. Outdated communication equipment, overwhelmed communication services, failure due to damaged infrastructure by the terrorist attack itself, and lack of training were the major issues.

Discussion

Communication failure is reported in many mass casualty incidents. In many cases, communication between the

Failure of/ Incident	Tokyo 1995	Oklahoma 1995	Omagh 1998	New York 2001	Myrmmanni 2002	Madrid 2004	London 2005	Utoya 2011	Boston 2013	Paris 2015	Berlin 2016	Brussels 2016	Manchester 2017	London 2017
Mobile phone network failure	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	No
Radio network failure	Yes	Yes	No, but not available	Yes	Yes (same day software update)	No	Yes	Yes	No	Yes	Yes	Yes	No	No
Network infrastructure damaged by attack	No	No	Yes	Yes	No	No	Yes	No	No	No	No	No	No	No
No or inadequate communication between different services	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Lack of training in using radio	No	No	No	No	No	No	No	Yes	No	No	no	Yes	no	No
Inaccurate allocation of patients to hospitals (some overwhelmed, some overstaffed)	yes	yes	no	Yes	Yes	Yes	No	yes	No	Yes	no	yes	no	No
Insufficient intrahospital transfer of patients	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
Lack of information for receiving hospitals	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	no	No
Troops not used	No	No	No	No	No	Yes, heli	No	No	No	No	No	Yes	Yes	Yes
Safety concerns for ems responders	Yes	Yes	No	Yes	Yes	Yes (I tent)	Yes	Yes	Yes, one ER evacuated	Yes	Yes	Yes	Yes	Yes
Relocation of triage because of (false) safety concerns	No	Yes, false	No	Yes	No	No	No	Yes	No	No	No	Yes, twice, one false	No	No
More casualties because of communication failure	Yes	No	No	Yes	No	No	No	Maybe	No	No	No	No	No	Maybe
Casualties in EMS responders	No	No	No	Yes	No	No	No	No	no	No, but been shot at	No	No	No	No

different responding actors (police, fire department, ambulance personnel) was poor or nonexistent. Malfunctioning of (outdated) telecommunication services, inadequate training in using communication devices, and unfortunate damage of telecommunication network infrastructure contribute to inefficient information gathering, wasting time in delivering first aid, in inefficient using personnel and logistics, scaling up, scaling down, etc.

Conclusion

Government should provide sufficient resources to equip hospitals, emergency departments, and ambulance services with communication systems and backup systems and invest in training. An Europe-wide registration system is warranted. We provide some proposals for improvement.

The evolution of ED admissions due to alcohol intoxication in a student city: a retrospective double-centre study

M. Van Damme, H. Quintens and S. Verelst

Introduction

Alcohol abuse is a major healthcare problem, which contributes substantially to healthcare costs.

Alcohol-related problems cause many physical and mental health issues with a possibly fatal outcome. In this regard, the emergency department (ED) plays an important role in detecting and timely treating these patients. However, the annual increase of intoxicated patients presenting at the ED imposes a high burden on an often already saturated department.

The present study aimed to analyse the evolution in incidence of patients admitted at the ED due to alcohol intoxication in the city of Leuven over the past decade.

Materials and methods

This retrospective observational study was conducted at the two hospitals in the city of Leuven. The study included patients older than 10 years of age admitted to the ED between 2008 and 2018 with a primary history of alcohol intoxication. Patients with another primary diagnosis were excluded.

Results and discussion

Over the last decade, the number of ED visits due to alcohol intoxication annually increased with 2.8%. The largest group was represented by the 50–59 years old.

The proportion of adolescents and young adults (10–29 years) remained stable, accounting for 32% of all admissions. The number of 60–69 years old patients slightly increased, and the number of 40- to 49-year-old patients slightly decreased. Of all patients, 80% was admitted once over the 10-year period. The remaining 20% was repeatedly admitted, and was as a group responsible for half of the admissions.

The total male-to-female ratio remained stable at 2:1. The proportion of women was however deviant in two age groups: 10–19 years old (6.4% higher than the male-to-female ratio), and 30–39 years old (7.5% lower).

Median blood alcohol concentration (BAC) levels of all age groups remained stable over the years, with slightly higher BAC levels detected in male patients (2.21 g/L) compared to female patients (2.07 g/L). The highest BAC levels were detected in patients in their fifties (average: 2.3g/L).

Conclusion

The increasing number of alcohol-intoxicated patients imposes a rising burden on the ED. Patients in their fifties represented the largest group and also showed the highest BAC levels. However, repeated admissions were seen in all age groups. Therefore, a standardized method of identification of individuals at risk is necessary which should focus on all age groups.

An overview of tram tracks-related cycling injuries in Ghent, Belgium

P. Leune, E. Steen, P. De Paepe and C. Lyphout

Introduction

In cities with trams as public transportation, tram tracks are often shared with other road participants like cyclists. Besides the obvious risk of direct collisions, there is also a risk to bicycle wheels getting

stuck in tram tracks, causing cyclists to fall. There is a paucity of data on the incidence and severity of tram tracks-related cycling injuries. The aim of this study is to get insight into the incidence, severity and characteristics of tram tracks-related cycling

injuries, potentially defining significant 'hotspots' in the Ghent city area.

Materials and methods

A one-year, multicenter, prospective, observational study was conducted. All patients presenting to the emergency departments of all four Ghent hospitals with tram tracks– related cycling injury, were included. Data on patient demographics, circumstances of the accident and type of injury were collected.

Results

A total of 149 patients were included with a median age of 31 years. Forty-two patients had fractures, wounds requiring sutures in 39 patients, bruising in 79 patients and abrasions in 49 patients. Only five patients required admission. No patients died or suffered life-threatening injuries. Women (65.1%) presented more frequently than men (34.9%). Forty-three percentage of all accidents happened in autumn ($p < 0.001$). Mean number of days off work was 2.7 days, significantly increasing to 6.56 days when sustaining a fracture or

dislocation ($p = 0.02$). Most accidents happened in autumn ($p < 0.001$). However, there is no significant difference in the number of accidents in wet or dry conditions.

Discussion

Cycling accidents seem to happen frequently, and official data based on police reports, appear to underestimate true incidence rates. Almost 50% of all patients were absent from work at least 1 day with significantly more days off work when sustaining a fracture/luxation. These injuries result in costs, not only to the public health system, but also have a significant potential for economic impact, to patient and employer. Out of 114 registered locations, 84 (73.68%) accidents occurred in the city centre. We could identify multiple hotspots where accidents happen most frequently.

Conclusion

Tram tracks are potentially dangerous and may lead to clinically important injuries and significant number of days off work.

Door-to-imaging times in stroke patients presenting to ED by ambulance or private transportation: a retrospective analysis of a prospective registry

X. Willaert, P. Vanelderen, B. Van Bylen, R. Haesendonck, P. J. Van Asbroeck, D. Mesotten and S. Van Boxtael

Introduction

Acute ischemic stroke is a time-critical medical condition in which delays in care negatively impact patient outcomes. Expeditious recognition and prompt imaging by means of head CT are crucial steps towards a timely diagnosis and therapy. We examined if stroke patients arriving by ambulance had a shorter 'door-to-imaging' time than those arriving by private transportation.

Materials and methods

The stroke registry of our tertiary stroke center was retrospectively reviewed to identify the means of transportation and presentation to the emergency department (ED) of patients admitted between 01 March 2019 and 01 October 2019. A total of 269 subjects were identified. Patient characteristics (age and NIHSS scale upon admission), door-to-CT times and CT results according to stroke diagnosis (TIA, stroke, intracerebral hemorrhage and stroke mimic) were recorded from the registry. Eight in-hospital stroke patients and 27 secondary referrals for thrombectomy were excluded.

We hypothesized that 'door-to-imaging' time would be shorter in the ambulance group (AMB) than in the private transport group (PRIV). Data are presented as medians + interquartile ranges (IQR) and compared by the Mann–Whitney U test.

Results and discussion

Of the 234 patients, 111 (47%) arrived by ambulance and 123 (53%) arrived by private transportation. In the AMB group, median age and NIHSS were 77 years (IQR 65–84) and 5 (IQR 2–15), respectively, while in the PRIV group, median age and NIHSS were 72 years (IQR 60–81) and 1 (IQR 0–3), respectively (table 1). The difference in NIHSS scores between both groups is reflected by a higher number of true stroke and intracerebral hemorrhage patients in the AMB group, while the PRIV group is characterized by a higher rate of patients with TIA and stroke mimics (Figure 1 – chi-square test, p -value $< .05$). The median 'door-to-CT' time in the AMB group (31 min, IQR 18–58) was significantly lower than the median 'door-to-CT' time in the PRIV group (58 min, IQR 39–90).

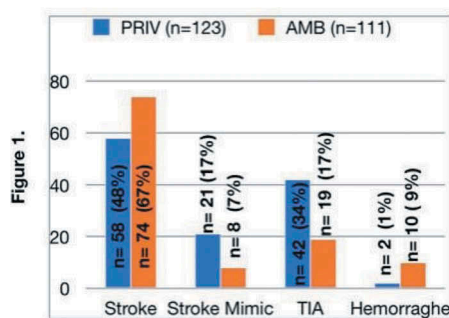


Table 1. Age, NIHSS, door-to-CT times.

	MINIMUM	0.25 PERCENTILE	MEDIAN	0.75 PERCENTILE	MAXIMUM
PRIV - AGE (years)	32	60	72	81	92
PRIV - NIHSS	0	0	1	3	27
PRIV door-to-CT (min)	8	39	58	90	956
AMB - AGE (years)	28	65	77	84	95
AMB - NIHSS	0	2	5	14,75	34
AMB door-to-CT (min)	6	18	31	58	913

Conclusion

Stroke patients presenting to the ED by private transportation appear to be at risk for delayed diagnosis in comparison to those presenting by

ambulance. Clinicians need to be aware of this finding and make efforts to further reduce door-to-CT times in patients presenting by private transportation.

The use of peripheral nerve blocks for trauma patients: a survey in Belgian emergency departments

L. Puype, M. Desmet, V. Van Belleghem, H. Dries and S. Verelst

Introduction

Pain is a common symptom in the emergency department (ED). Peripheral nerve blocks (PNBs) can offer specific advantages for the trauma patient. This study aimed to evaluate to what extent PNBs for trauma patients are performed in the Belgian EDs.

Materials and methods

This cross-sectional survey was conducted from February to July 2019. The medical chiefs of the EDs of 124 acute care hospitals in Belgium were contacted by telephone regarding the use of PNBs after trauma in their ED. The survey assessed the use of a peripheral nerve block (PNB) based on a 26-item questionnaire. These questions had items related to the type of hospital and ED.

Results

The response rate of the survey was 90%. In 84% of the hospitals, PNBs were performed after trauma. A similar proportion (90%) had a specific pain protocol for trauma patients. In 6% of the ED, PNBs were formally integrated in a multimodal analgesic protocol. Hip fractures were considered the main indication and ultrasound (US) was the preferred technique.

However, the majority of the blocks were performed in the operating theatre (68%). According to our respondents, the main reason why they did not perform blocks in their ED, was a lack of training. Intralipid was readily available in 50% of the EDs.

Discussion

Although the vast majority of the hospitals perform PNBs after trauma, they are rarely incorporated in pain protocols for trauma patients. However, the majority of ED physicians are convinced of the added value of PNBs. Lack of training, time constraint and logistic challenges are the most important reasons why PNBs are not performed in Belgian EDs. Currently, the majority of PNBs are performed in the operating theatre. Providing PNBs early after arrival at the ED increases the quality of care and should not be delayed. Therefore, PNBs are ideally performed in the ED.

Conclusion

Our survey demonstrated that the vast majority of ED physicians is convinced of the added value of PNBs. Although PNBs are frequently performed after trauma, they are rarely incorporated in pain protocols for trauma patients.

Breathing as a stress reduction technique for medical staff in the ED: friend or foe?

D. Hannosset and J. Van kerkhoven

Introduction

The emergency department (ED) is a stressful environment in which medical staff aim to provide high-quality care for all patients. Excessive stress causes reduced concentration, slowed decision time and impaired team performance, therefore threatening optimal patient care. The physiological response to stress is a reduced heart rate variability (HRV). This is the beat-to-beat variation in heart rate and reflects the activity of the autonomic nervous system. The goal of this literature review was to research the influence of breathing as a stress reduction technique on HRV and stress.

Methods

The databases PubMed and Science Direct were searched using the following MeSH terms and keywords: heart rate variability, stress reduction techniques, breathing, slowed breathing.

Results

Unlike the heart rate, breathing is the one manifestation of the autonomic nervous system that we can control with the aim of reducing the stress level by decreasing sympathetic activity and increasing parasympathetic activity. That is why the army and Navy use 'box breathing', the yogi

use Pranayama breathing and top athletes use several paced breathing techniques to ameliorate their performance. One aspect of voluntary modification of the breathing pattern is the respiratory rate. Slowed breathing increases HRV and reduces stress. Several studies showed that cardiorespiratory synchronization occurs at 0.1 Hz (6 breaths per minute).

A second important modulator for the autonomic effects of controlled breathing is the i/e ratio. Van Diest et al. and Strauss-Blasche et al. showed that a ventilatory pattern with a low i/e ratio increases some parameters of HRV. It reduced stress but also induced more relaxation and more positive energy.

Discussion

One can argue whether breathing as a stress reduction technique is feasible during acute stress situations in the ED. It is not known when we should use it and how we should implement this technique in our daily practice.

Conclusion

Several studies show that slowed breathing is a way to reduce stress. Further research is necessary to examine if controlled breathing reduces stress and enhances performance in medical staff in the ED.

Evaluating the performance of the Fresno shoulder dislocation rules (FSDR), Québec shoulder dislocation rules (QSDR) and the Fresno-Québec Rules (FQR) in anterior glenohumeral dislocation (AGHD): a retrospective study

G. Laubier, A. Penaloza and M. Thoma

Introduction

The AGHD is the most frequent joint dislocation encountered in the emergency room (ER). The usual practice of systematically obtaining pre- and post-reduction X-rays for every AGHD, is being questioned in the literature. Indeed, being more selective in the realization of X-rays could reduce the duration of pain for the patient, the radiation exposure as well as the costs and the time spend in the ER. In this context, we assessed the efficiency of three decisional rules for the

realization of X-rays for AGHD, the FSDR, the QSDR and the FQR.

Methods

In a retrospective study, we reviewed every case of AGHD encountered in adult patients at the UCL saint Luc ER between 1 January 2014 and 31 December 2016. For every case, we determined the presence or absence of a significant fracture complicating the AGHD. We applied the three

decisional rules to our population in order to assess if we would have missed significant fractures doing so in clinical practice.

Results

A total of 212 cases of AGHD have been identified, 42 were complicated by a significant fracture on prereduction X-rays and 44 on post-reduction X-rays. If the FSDR had been applied, no significant fracture would have been missed prior to reduction but one post-reduction with a sensitivity of 97.7% (95% CI 93.3–100) and a negative predictive value (NPV) of 98.9% (95% CI 96.8–100). With the QSDR, we would have missed 3 significant fractures prior to reduction and 5 after reduction with a sensitivity of 88.6% (95% CI 79.2–97.9) and an NPV of 97.1% (95% CI 94.6–99.6). The FQR, we would have missed 3 significant fractures prior to reduction with a sensitivity of 92.9% (95% CI 85.1%–100%) and an NPV of 96.3% (95% CI 92.2–100).

Discussion

Despite the limitations due to its retrospective design, this study is the first to analyze these

three algorithms on the same population. The sensitivities and VPNs highlighted are very close to those found in other studies on this topic.

Conclusion

Based on this study, the QSDR, they cannot be recommended. The FSDR can be recommended for prereduction in clinical practice. The post-reduction FSDR and the FQR cannot be recommended until prospective validation on a greater population.

References

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A review of the effectiveness of the physician's response unit

E. Jones and K. Jacques

Introduction

The Physician's Response Unit (PRU) is a novel service that operates from the Royal Gwent Hospital's Emergency Department (ED), in Newport, South Wales. It involves an Emergency Medicine Consultant and a Paramedic responding to 999 calls in a Rapid Response Vehicle. Their aim is to treat and, hopefully, discharge patients at the scene, reducing ED admissions. The PRU can also refer patients on to other departments, e.g. the Medical Assessment Unit, allowing patients to bypass the ED.

Methods

To achieve the project aims, the author spent 6 weeks out in the PRU and in the ED to observe and speak to patients. To assess whether ED admissions were reduced, the dispositions of patients seen by the PRU were recorded on a daily log sheet. The service users' satisfaction with the PRU was evaluated using simple questionnaires. This included both patients and Paramedics, who can request the PRU for support with a patient. Simple questionnaires were given to patients in triage to understand why patients present to the ED inappropriately*.

*NB: an 'inappropriate' ED presentation refers to a patient that did not need treatment or a patient that could have received treatment from another service, for example a GP or Pharmacist.

Results

The PRU saw 245 patients during the project's time-frame. (n = 156) of these patients were discharged at scene, while 16% (n = 38) were sent to the ED.

One hundred percent (n = 32) of patients asked described the care they received from the PRU as equal to or better than the care they have received previously. Ninety-four percent (n = 30) of patients rated their overall satisfaction with the PRU as 10/10.

The main reason patients gave for presenting to the ED when it was deemed potentially inappropriate was that they had been advised to attend by a healthcare professional (HCP) or by NHS Direct.

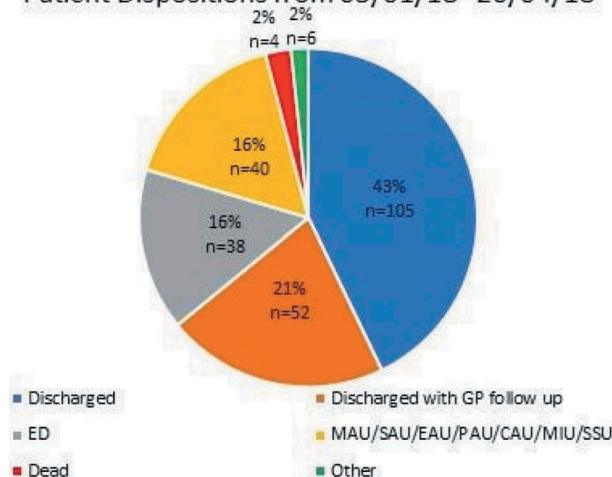
Conclusion

The PRU is very well received by both patients and Paramedics and has been shown to reduce the number of patients attending the ED. This system excellently implements the principles of prudent healthcare.

Date:		Doctor:		Paramedic:		PRU Daily Log Sheet Aneurin Bevan University Hospital	
1. Incident No.	Name	Red	PCR No.	Comments/Interventions	Disposition	Transport	Additional Comments
Call + Dispatch Time	Date of Birth	Amber 1			DISC v4 GP	NE	
Location	GP Surgery	Amber 2			DISC v4 GP	Own	
Age & Sex		Green 1			ED MAU EAU SAU	Tail	
2. Incident No.	Name	Red	PCR No.	Comments/Interventions	Disposition	Transport	Additional Comments
Call + Dispatch Time	Date of Birth	Amber 1			DISC v4 GP	NE	
Location	GP Surgery	Amber 2			DISC v4 GP	Own	
Age & Sex		Green 1			ED MAU EAU SAU	Tail	
3. Incident No.	Name	Red	PCR No.	Comments/Interventions	Disposition	Transport	Additional Comments
Call + Dispatch Time	Date of Birth	Amber 1			DISC v4 GP	NE	
Location	GP Surgery	Amber 2			DISC v4 GP	Own	
Age & Sex		Green 1			ED MAU EAU SAU	Tail	

Telephone Advice Log					
Incident No. & PCR No.	Crew Call Sign	Time of Call	Age & Sex	Advice Given	Patient Outcome/Disposition
1.					
2.					
3.					
4.					

Patient Dispositions from 03/01/18 - 20/04/18



Comparative analysis of the influence of the communication board and eye tracking on the effectiveness of the mechanically ventilated patient's communication in Marie Curie Civil Hospital's intensive care unit

E. Szymkowicz

Introduction

Communication is a major challenge for patients under mechanical ventilation (MV). MV leads to a transitory speech loss mainly associated with an endotracheal tube or tracheostomy. Several studies suggest that there is 'a significant relationship between speech loss and severe emotional reactions' (Baumgarten & Poulsen 2014, Maringelli et al. 2013). Communication with the intensive care unit (ICU) patients is essential to 'improve the quality and safety of health care' (Campbell & Happ 2010).

Material and methods

This prospective study consists of a quantitative descriptive part that analyses communication

difficulties and of a mixed experimental part that compares the influence of eye tracking (ET) and communication board (CB) on the communication effectiveness of the mechanically ventilated patient. A total of 101 caregivers and 44 patients from the ICU of the Marie Curie Civil Hospital participated in the study.

Results

The results indicate that MV is a source of communication difficulties for ICU caregivers and patients.

The ET has a significantly higher effect than the CB on the quantity of messages transmitted ($p < 0.0001$) and on the patient satisfaction ($p < 0.0001$). The quantity of messages transmitted and the patient

satisfaction are not associated with age ($p > 0.05$), gender ($p > 0.05$) and severity of the pathology ($p > 0.05$). The content of the ET communication includes nine themes and the content of the CB communication includes eight themes. The use difficulties of the ET include five categories and the use difficulties of the CB include four categories. However, the difficulties in using the ET concern 73% of the communications and do not hinder the transmission of messages, unlike the difficulties in using the CB, which concern 97% of the communications.

Conclusion

In conclusion, the results suggest that the high-tech device, the ET, and the low-tech device, the CB, have a positive influence on the effectiveness of the mechanically ventilated patient's communication.

The influence exerted by the high-tech device is higher than that exerted by the low-tech device. Furthermore, the results also indicate that CB and ET can be used whatever the age, gender and severity of the pathology.

The woman with a neck painful 'tumor' abscess without current fever

F. Somville, G. Vander Mieren and B. Wellens

Introduction

A tubercular neck abscess is rare in immunocompetent adults. In the case of a tubercular abscess, it is typically due to cervical spine tuberculosis and is seen habitually in children.

Clinical presentation

A 49-year-old woman, originally from Portugal, presented with a painful, swelling of the neck, troubles with swallowing, never preceded by any fever. CT-imaging and PET scan showed a multilobulated abscess. A chest X-ray did not show any abnormalities. Already in Portugal, a few months before, by an ultrasound control, there was the first diagnosis of an atrophy nerve mass. A wait-and-see attitude was adopted. At emergency station in Belgium, she came with the complaints of painful increased swelling, swallowing complaints and redness in the swollen zone of the lower part of the neck. Although without any period of fever. Initially, it was suspected that it was a space-consuming process type of tumor tissue with necrosis. Incision, drainage and biopsy were performed. Both PCR and culture

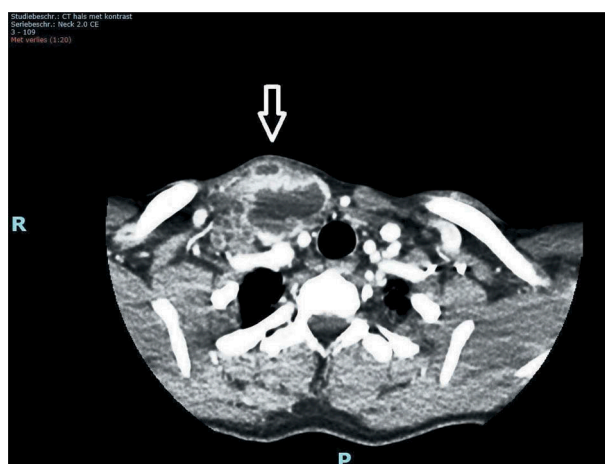
revealed an infection with *Mycobacterium tuberculosis*. But at the end, the diagnosis was made of an extensive abscess with several lobulated of tuberculosis development at the height of the neck in the zone of sternocleidomastoid extending to the left long upper lobe.

Discussion

It is a rare presentation of this type of abscess at the height of the neck without a fever and starting from the lung. It should always be considered if no details are seen in the classical blood count and even at RX of the thorax. Certainly when it concerns a space-consuming tumor that is painful and progressively rowed in the low neck base. In the literature, we see abscesses in that zone at the level of the thyroid or from the bone structures in the environment.

Conclusion

There can be a possibility of a rare presentation of tuberculosis from the upper lobe from the lung to the neck. We always have to think of an abscess with tuberculosis on the emergency department.



Non-lethal poisoning by ingestion of castor beans with remarkably elevated ricinine concentrations in the patient samples: a case report from Belgium

F. De Rydt, S. Lefever, I. Geerts, M. Criel, L. Dobbels and M. Gillis

Introduction

The seeds of the castor bean plant (*Ricinus communis*) contain ricin toxin, a ribosome-inactivating protein. It is one of the most potent toxic biologic agents and intoxication can occur from inhalation, injection or ingestion. Routine toxicology tests do not screen for this toxin. Ricinine, an alkaloid extracted from the same bean, is used as a surrogate marker for ricin exposure since ricin itself is not measurable in the routine clinical setting [1]. We report a case of an intentional ricin poisoning with castor beans, purchased on the internet.

Clinical Presentation

The case concerns a 30-year-old woman with a past medical history of arterial hypertension and anxiety disorders. Her prescribed drugs were alprazolam and bisoprolol. Two days prior to the presentation, the woman attempted suicide by ingesting 50 castor beans and benzodiazepines. She reported nibbling some, but not all beans. She started vomiting rapidly after intake and noticed seeds in her vomitus. Clinical manifestations on admission were agitation, anxiety, vomiting, diarrhea and abdominal cramps.

She was afebrile, normotensive with a heart rate of 114, respiratory rate of 15 and oxygen saturation of 99%. EEG, ECG and arterial blood gas analysis were normal. Abdominal ultrasound was significant for

mild liver steatosis. Esophagogastroduodenoscopy did not reveal abnormalities. Laboratory results showed only a slight increase in liver and kidney function tests (Table 1). At our hospital, the toxicological analysis on urine was positive for benzodiazepines. Patient samples were sent to other laboratories for quantification of ricinine with a validated LC-MS/MS technique. The ricinine levels in the blood and urine were unprecedented high (Table 2) and despite the supposed lethal ricin levels, no evolution to multiple organ dysfunction was observed. Following 3 days of clinical stability, she was discharged to the psychiatric ward.

Discussion

Notwithstanding the ricinine in serum and urine were tenfold higher than the only other known Belgian case report, only mild clinical signs and symptoms of poisoning occurred [2]. In contrast to that case, the beans were not crushed and injected but ingested and furthermore the samples were taken 48 h after intake.

Conclusion

Ricin toxin is not detectable by routine drug tests. Ricin exposure can be proven by determining its surrogate marker ricinine. When ingested, however, ricinine levels seem to poorly correlate with ricin poisoning severity.

Table I. Hospital lab results

Parameter	Reference range	Admission	Day 1	Day 2	Day 3
Hemoglobin (g/dl)	12,0-16,0	14,5	13,5	13,8	13,5
Platelets (*10 ⁹ /L)	150-400	473	456	467	402
WBC count (*10 ⁹ /L)	3,5-11,0	15,6	14,5	14,2	12,1
CRP (mg/dl)	<5,0	26	24	18	
Glucose (mg/dL)	<115	105	110		
Urea (mg/dL)	17-48	37	25	23	16
Creatinine (mg/dL)	0,50-0,90	1,1	0,77	0,71	0,65
eGFR (mL/min/1,73m ²)		67,3	>90,0	>90,0	>90,0
CK (U/L)	<167	91	59	83	54
Troponin T (ng/L)	<14	8,7			
LDH (U/L)	135-214	185		230	177
Total bilirubin (mg/dL)	<0,70			0,8	0,73
AST (U/L)	<32	65	111	109	70
ALT (U/L)	<31	91	149	236	205
GGT (U/L)	<40	70	71	69	54
ALP (U/L)	35-104	84	78	83	72
Na (mmol/L)	136-145	137	136	137	132
K (mmol/L)	3,4-4,5	3,5	3,6	3,6	3,3
Cl (mmol/L)	98-107	99		99	
Bicarbonate (mmol/L)	22-29	20		19	

Table II. Measured ricinine concentrations in the patient samples

Approx. time after intake (h)	Sample type	Ricinine concentration $\mu\text{g/L}$
48	Serum	238
48	Urine	2170

Ruptured thrombosed splenic artery aneurysm and splenic infarction in an 82-year-old patient

C. S. Fernandes Vilarinho and A. Mabrouck

Introduction

Splenic artery aneurysms (SAA) are a rare occurrence and more than 90% of them remain asymptomatic. The incidence of visceral aneurysms (VA) among the global population is discussed to be around 0.1–0.2%, SAA make up 60% of VAs. SAA's frequency is more common in women (female to male ratio 4:1) and especially after the age of 60; however, ruptures, which are rare, have a higher rate among men and pregnant women.

Case presentation

An 82-year-old male was taken to the Emergency Room complaining of a sharp pain in his left flank accompanied with a malaise, his vitals were stable. The physical examination revealed diminished abdominal peristalsis, a diffuse abdominal sensitivity and a starting abdominal defence. The CT showed a retroperitoneal hematic collection facing the splenic artery, a partial splenic infarction and a probable thrombosed ruptured SAA. An aortic aneurysm also partially thrombosed was seen. A splenectomy was required as treatment. The patient survived the surgery and was discharged two weeks later from the hospital.

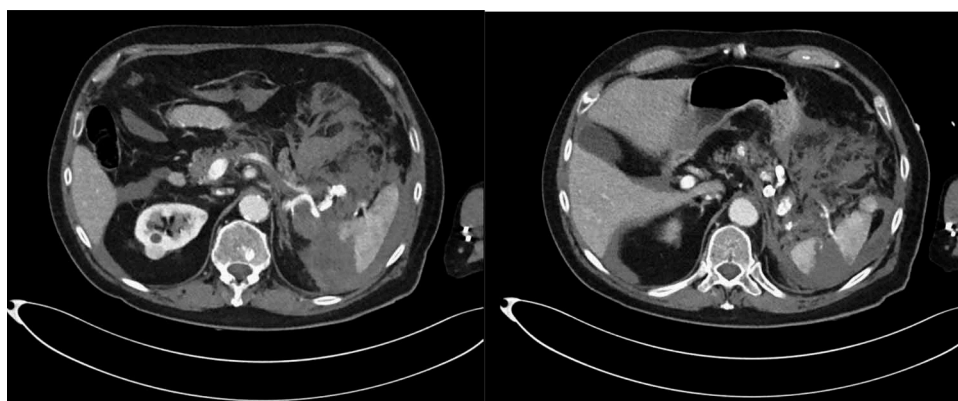
Discussion

Although the aetiology of splanchnic aneurism which includes SAA is not clear, two types were

observed: dysplastic aneurisms present in women and atherosclerotic aneurisms that affect mostly men. A few autopsy series have found them to have an incidence of up to 10.4% in cadavers. The rupture rate is around 5% and more common in pregnant women. The mortality after rupture for a VAA is approximately of 25%. Ruptured SAA remain haemodynamically stable for 6 and up to 96 h, this is known as the 'double-rupture phenomenon'. The causes at the origin of a splenic infarction are mostly malignancies especially pancreatic and haematological disorders, increased thromboembolic states, infectious diseases as endocarditis and hemoglobinopathies such as sickle cell disease. SAA especially are associated with splenic infarction. The presentation of this condition vastly depends on the aetiology underlying it. Treatment options for SAA consist of embolization, endovascular treatment with a stent, laparoscopic surgery, open repair surgery or splenectomy.

Conclusion

Albeit, ruptured splenic artery aneurysms are rarely encountered in the Emergency Room they should be thought of in front of an abrupt abdominal pain in a pregnant woman as well as older men, especially if they suddenly get hemodynamically unstable.



Necrotizing Soft Tissue Infection (NSTI): an all-time difficult diagnosis

S. Beeckman, M. H. Omer, J. Stroobants, K. Anseeuw and D. Viskens

Introduction

NSTI is a clinical and often difficult diagnosis, with tools as Gram-staining and LRINEC-calculators (laboratory risk indicator for necrotizing fasciitis) being limited in availability, sensitivity or specificity to guide fast and lifesaving treatment decisions.

Clinical presentation

A 72-year-old woman, with Parkinson, arterial hypertension and diet-controlled diabetes, visited the emergency department (ED) with a 3-week history of physical deterioration, anorexia, immobility and a 'decubitus wound' on the right flank. She presented hemodynamically stable, lethargic, without fever and glycemia of 177 mg/dl. Her right flank showed a foul-smelling wound with manually removable necrotic soft tissue (Figure 1) and erosion of the two distal ribs. Blood results showed a normal leucocyte count (80% neutrophils), CRP of 55.7 mg/L, GFR of 61 ml/min/1.73 m² and a lactic acidosis (3.8 mmol/l). The clinical findings suggest a category 4 decubitus with underlying infection, an NSTI or the latter as consequence of the former. CTscan demonstrated right kidney nephrolithiasis and pyelonephritis with an adjacent retroperitoneal abscess broadly breaking through the soft tissues, described as necrotizing fasciitis (Figure 2). An

urgent right nephrectomy and wound debridement were performed combined with intravenous anti-biotherapy (Figure 3). The patient recovered well. All cultures identified *P. mirabilis* and *Bacteroides* on day 4.

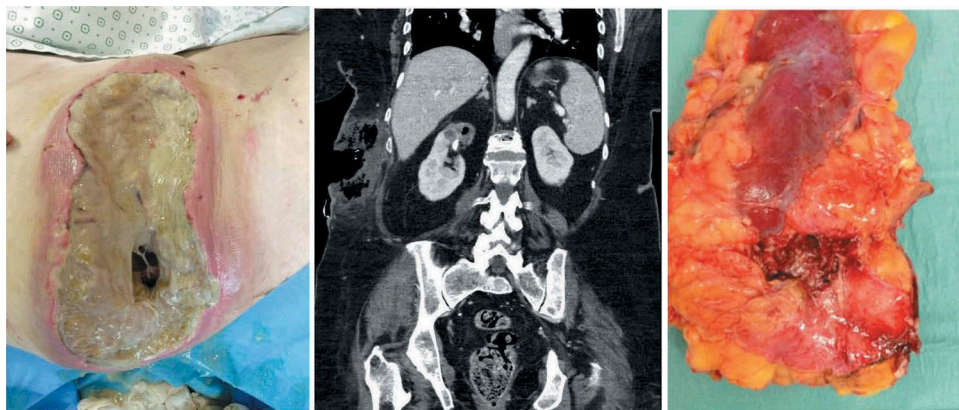
Discussion

If there is high suspicion for NSTI based on history and clinical examination, urgent debridement is mandatory above calculating the index (consisting of CRP, leucocyte count, hemoglobin, sodium, creatinine and glucose).

Theoretically, a simple Xray film could detect gas bubbles, but not the extent of necrosis. The gold standard to differentiate between necrotizing and non-necrotizing infection is an MRI scan but is hard to obtain immediately. The diagnosis of necrotizing fasciitis superimposed on a nephrocutaneous fistula due to nephrolithiasis was made by CT scan in our case.

Conclusion

Though NSTI remains a challenging diagnosis, which can be made in the ED, treatment consists of early diagnosis, prompt broad antimicrobial therapy and fast debridement. Medical imaging by emergency CT scan is the best choice to assess the extent of the wound.



Out-of-hospital cardiac arrest due to ventricular rhythmic storm in a patient receiving ibrutinib for chronic lymphoid leukemia

A. Jayaswal, M. El Mourad and V. De Wilde

Introduction

Ibrutinib is a tyrosine kinase inhibitor approved for refractory or relapsed chronic lymphocytic leukemia

(CLL), lymphocytic lymphoma and mantle cell lymphoma. Ibrutinib use is associated with atrial fibrillation with an incidence of 5–6% after 18 months of

therapy. There have been some reports of ventricular tachycardia.

Clinical presentation

We present the case of a 71-year-old man with a history of CLL and an out-of-hospital cardiac arrest under ibrutinib. Upon the arrival of the ambulatory medical team, the first rhythm on the monitor showed ventricular fibrillation. Advanced life support was performed and a spontaneous cardiac rhythm was obtained after 27 min of resuscitation. He was administered 2 mg of adrenaline, intubated and mechanically ventilated for transfer to the emergency department. Upon arrival, transthoracic cardiac ultrasound was performed showing lateral depressed ST segments, but coronagraphy turned out to be negative.

He was transferred to the ICU where he had further rhythm-related complications including multiple episodes of ventricular tachycardia with one clearly identified as torsade de pointe with prolonged QTc initially measured at 523 ms. He was administered amiodarone 300 mg, magnesium sulfate, potassium followed by lidocaine, which prevented further rhythm disturbance. The next day, he developed intermittent atrial

fibrillation which persisted until day 11. He remained in a coma with poor EEG. Withdrawal treatment was carried upon the concertation of the family.

His past medical history includes stage III renal insufficiency and chronic hyperuricemic gout disease. Initially diagnosed with stage C CLL, he was treated with chemotherapy involving rituximab, fludarabine and cyclophosphamide (RFC) followed by bendamustine (R-Benda), and had attained complete phenotypic as well as metabolic remission but eventually relapsed. He was under Ibrutinib treatment since 6 months.

Discussion

Patients under ibrutinib is a risky challenge with the profile of therapeutic efficacy and potentially fatal side effects. Ventricular tachycardia has been known, but the rhythmic storm involving atrial as well as ventricular fibrillation and torsade de pointe makes this an original case report.

Conclusion

Ibrutinib is an arrhythmogenic molecule and emergency physicians should be aware of its toxicity.

A rare case of airway compromise due to achalasia with megaesophagus

S. Moorthamers and T. Preseau

Introduction

Achalasia is an esophageal motility disorder, characterized by abnormal esophageal peristalsis and impaired relaxation of the lower esophageal sphincter. It typically manifests as dysphagia for both liquids and solids, heartburn, or weight loss. We report a rare case of a patient with airway compromise as the initial presentation of achalasia.

Clinical presentation

A 65-year-old woman presented to the Emergency Department (ED) with severe postprandial shortness of breath, cough and increasing dyspnea. At ED presentation, her respiratory rate was 25 breaths per minute with biphasic stridor and monophonic expiratory wheezing on auscultation. The remainder of her physical examination was unremarkable. She had a past medical history significant for arterial hypertension, gastroesophageal reflux disease and breast cancer. She denied any history of dysphagia or odynophagia. A quickly performed chest radiograph showed important mediastinal widening, a right-sided paratracheal soft tissue density and lucent

area in the lower chest. Chest computed tomography to evaluate the mediastinal pathology revealed marked dilatation of the esophagus measuring up to 8.1×7.8 cm in diameter, resulting in significant airway compression due to the mass effect of the massively dilated food-filled esophagus. For urgent esophageal decompression, a nasogastric tube was inserted and retained food was aspirated leading to complete resolution of the respiratory distress symptoms. Subsequent upper endoscopy identified no strictures or masses and confirmed the diagnosis of achalasia causing megaesophagus.

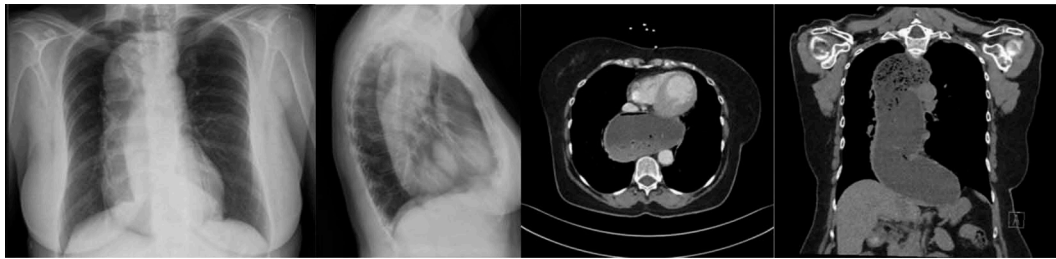
Discussion

Megaesophagus leading to acute airway obstruction is a rare complication of achalasia with only 50 cases reported in literature since the first case documented in 1950 by Bello et al. When unrecognized and left untreated, respiratory failure may occur and prompt endotracheal intubation to secure the airway is mandatory and lifesaving. However, in cases without respiratory failure, esophageal decompression is mostly achieved by urgent esophageal catheterization or upper endoscopy with food suctioning.

Conclusion

Airway obstruction is a rare but possibly fatal complication of achalasia. Quickly performed CXR

and early recognition are crucial since prompt esophageal decompression by nasogastric tube suctioning of food can reverse airway obstruction and avoid respiratory failure leading to intubation.



Giant extracranial carotid artery aneurysm as a rare cause of cervical mass

B. Lemaire, P. Hubin, M. Gensburger, A. Ghuysen and V. D'Orio

Case presentation

A 66-year-old woman with a history of rheumatic arthritis treated with methotrexate, was admitted to the emergency room given the occurrence of a left cervical mass. She had been under amoxicillin/clavulanate for 3 days for suspected tonsillitis.

Upon admission, she mentions suffering from sore throat for a week, odynophagia and more recently, dysphagia, mild hoarse voice and left cervical mass. No other systemic symptoms, including fever, were reported.

The examination revealed a left erythematous tonsillitis and a severe right deviation of the soft palate. Under the mandibular angle, a pulsatile mass was obvious and a murmur was heard. The systematic examination, including neurologic, was normal.

Ultrasonographic, then CT scan assessment revealed a giant post-bulbar aneurysm of the left carotid artery, measuring 34 mm and partially thrombosed, with a regional mass effect but without any signs of rupture of the vessel wall.

Endovascular treatment by embolisation was planned.

Discussion

Extracranial carotid artery aneurysms account for less than 1% of all arterial aneurysms. Their main cause is atherosclerosis. Others include connective tissue, inflammatory, genetic diseases, radiation treatment

history, trauma and infectious diseases (blood-borne, loco-regional, iatrogenic).

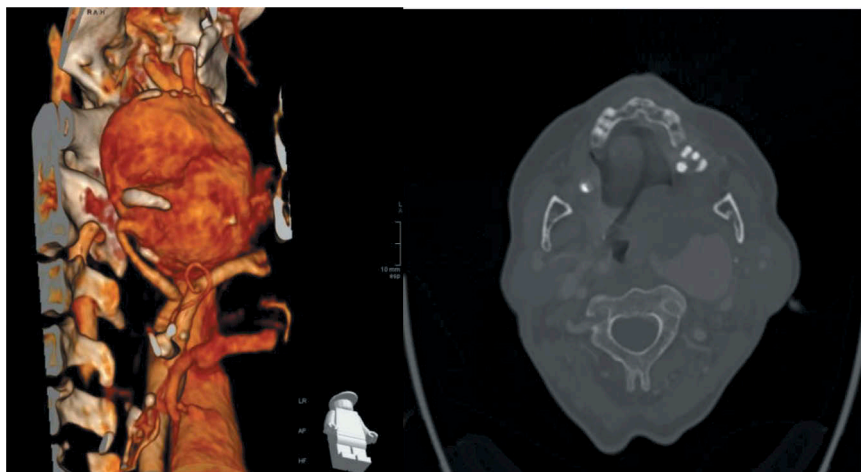
Most of the time, these aneurysms are revealed by ischemic attacks (often transient) through thrombosis or secondary embolisation.

Unilateral pulsatile cervical mass can be found out. Bigger aneurysms may cause dysphagia, shortness of breath, hoarse voice, Horner's syndrome or a tongue deviation (compression of the pharynx, larynx, of cranial nerves IX, XI, XII, sympathetic). Haemorrhage might occur in the event of a rupture. Their diagnosis, as all cervical masses, involve ultrasonography, but angiographic CT scan or MRI allows a better characterisation of the aneurysm.

Treatment is either conservative, surgical or endovascular, depending on the size, localisation, origin and patient history. This condition being rare, there is however no standardisation as to how to treat it. It is generally admitted that symptomatic aneurysms or those at high risk of complications (bigger and thrombosed ones) should require invasive treatment.

Conclusion

Extracranial carotid artery aneurysms are a rare entity with a wide range of presentations. The lack of available data currently makes it impossible to set up a standardised management for them.



A bariatric intervention went the wrong direction

G. Bavestrello Piccini, S. Vandaele, L. Cosyns, M. Davous, D. Cheung and J. C. Cavenaile

Introduction

Bariatric interventions are known to have several possible complications, but some of them may be trickier to identify.

Clinical presentation

A 34-year-old female presented to our Emergency Department with acute abdominal pain, appeared 1 week earlier, associated with vomiting and bloating, but without anorexia or gastrointestinal disturbances. That day the patient described a severe increase in the fluctuating epigastric pain (evaluated at 10/10), and its migration toward the right flank.

The patient had a history of recurring urinary infections, left ovarian cysts, appendicectomy, cesarean section, and placement of gastric balloon 18 months earlier.

Tenderness was elicited at the level of the epigastric region and left iliac fossa. No sign of guarding or rebound tenderness was observed. No palpable mass was found. Peristalsis was normal.

Discussion

The blood tests showed neutrophilic leukocytosis, normal CRP, no ionic disturbances, slightly increased LDH, normal renal function, liver function and lipase.

The gynecological exam revealed non-malodorous white vaginal discharge and pain at the pelvic examination. The echographic examination performed by the gynecologist showed some free liquid in the

pouch of Douglas. No anomalies at the level of the uterus or the ovaries were found.

A CT scan was at first refused by the Radiologist.

A plain abdominal radiography showed air-fluid levels and could not demonstrate the presence of the gastric balloon in the stomach. The radiologist therefore accepted to perform a CT scan, which revealed an occlusion of the small intestine due to the presence of calcified material with a metallic end and with air-fluid levels inside of it. This image was the gastric balloon which had displaced from the stomach. Signs of intestinal ischemia were starting to show, but no sign of perforation was seen.

Conclusion

The differential diagnosis, in this case, included

- Mechanical obstruction due to adhesions: unlikely due to the poor surgical medical history. Moreover, the passage of stools was not affected.
- Gastric perforation was not ruled in, since it could explain the abdominal pain but not the history of vomiting.

Patients that undergo the placement of a gastric balloon should have a strict follow-up, and the balloon is normally removed after 6 months. It is therefore extremely unlikely to have an intestinal occlusion due to the migration of a gastric balloon.

A non-traumatic hemoperitoneum: ruptured aneurysm of a pancreaticoduodenal artery due to compression of the celiac trunk

A. S. Schwab, J. El Mouedden and M. El Amine

Introduction

An aneurysm on the splanchnic arteries can occur in the case where the celiac trunk is compressed by the presence of an arched ligament.

Case presentation

A 54-year-old patient presents to the emergency room for confusion and dizziness. She reports abdominal discomfort without any other complaints. A FAST ultrasound was performed at the bedside and shows fluid in the peritoneal cavity. An abdominal CT scan with contrast agent injection reveals a ruptured aneurysm of the pancreaticoduodenal artery due to compression of the celiac trunk. The patient was treated in interventional radiology for embolization.

Discussion

Aneurysms of the splanchnic arteries and particularly aneurysms ruptured of a pancreaticoduodenal arch

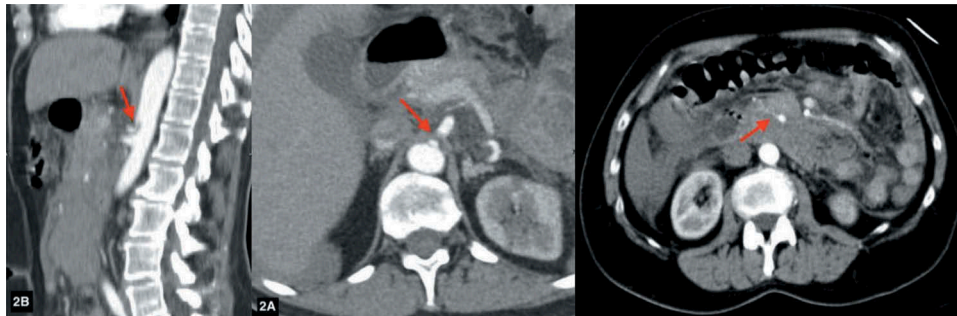
and the gastroduodenal artery require urgent management.

The pathogenesis of these aneurysms is probably defined by the increase in blood flow (chronic hyper-developed aneurysm) in thin-walled arteries on celiac stenosis [1]. The incidence of aneurysms of the pancreaticoduodenal arches is 2% [1].

The age group concerned can vary from 45 to 75 years [1–4]. This pathology affects men as much as women [4].

Conclusion

Here we present the case of a 54-year-old patient who presents with confusion and dizziness. She reports abdominal discomfort without any other complaints. In compensated shock, we highlighted a hemoperitoneum on a ruptured aneurysm of the infero-anterior pancreaticoduodenal artery by compression upstream of the celiac trunk by the arched ligament.



Nitrous oxide (N₂O) induced psychosis and myeloneuropathy

L. Poppeliers, Y. Van Ael and M. Timmermans

Introduction

N₂O, known as laughing gas, is widely used as a recreational drug aside from its medical uses. It seems that recreational use of N₂O is an increasing trend in some countries. Heavy or prolonged use can result in neuropsychiatric symptoms. Most well known are the neurological symptoms but psychiatric symptoms are less documented.

Case presentation

A 47-year-old male with a medical history of depression and no active treatment, presents himself with complaints of general weakness, paresthesia, loss of appetite, weight loss, electrical shock sensation in the neck and a compulsion to hold the back of his head. During the interview, he admits to have hallucinations, paranoia and episodes of disorientation. He admits to

have been using around 100 N₂O canisters a day for the last 2 months. Clinical examination shows a positive sign of Lhermitte and a diminished sensation in the left upper limb. Further neurological examination was normal. Vital signs were within normal limits. Laboratory testing showed a vitamin B12 below normal 159 ng/L. Urine toxicology screen was negative. He was diagnosed with N₂O-induced B12 deficiency with myeloneuropathy and psychosis and admitted to the neurological ward for 3 days. We started intravenous thiamine, intramuscular B12 1000 µg and oral folic acid. MRI total spine was normal. He was discharged with oral folic acid, a vitamin B complex and intramuscular B12 1000 µg once a week with which symptoms gradually resolved.

Discussion

There has been an increase in case reports of N₂O-induced B12 deficiency myelopathy, and psychiatric symptoms however are far less reported. N₂O use

causes a functional B12 deficiency. Laboratory B12 results may be decreased or within normal limits. The exact pathophysiology resulting in psychiatric symptoms remains unknown. Management of N₂O-induced psychosis consists of abstinence from N₂O and B12 supplementation. Symptomatic treatment with antipsychotics can be given until symptoms resolve. Patient education is an important factor in the treatment and awareness campaigns among high-risk populations could prove useful in preventing neuropsychiatric sequelae of N₂O use.

Conclusion

N₂O is a commonly abused inhalant. However, high dosages or prolonged exposure may cause serious neuropsychiatric effects. Patients presenting with unexplained psychiatric symptoms should be reviewed for substance use including N₂O. Discontinuation of N₂O and B12 supplementation allow for a good overall prognosis.

A rare case of infective endocarditis of a native aortic valve with *Lactobacilli*: what can we learn from the clinical scenario?

P. Welter, R. Haesendonck, B. Van Bylen, B. Vanmechelen, S. Van Boxstael, P. J. Van Asbroeck, E. Oris, D. Mesotten, M. Vanderlaenen, J. Van Zundert and P. Vanelderen

Introduction

Infective endocarditis (IE), although a rare presentation at the emergency department (ED), is generally fatal if left untreated. We present a case of a native valve infection with lactobacilli in an immunocompetent patient. In the 2 months prior to the diagnosis, the patient visited several doctors with a plethora of symptoms.

Clinical presentation

A 59-year-old woman with moderate aortic insufficiency underwent a tooth extraction. Four months later she presented to an ED with general malaise, difficulty walking, pain in her left buttock and 37.3°C body temperature. Analysis showed slight anemia, neutrophilia an elevated CRP, hematuria and pyuria. She received ciprofloxacin and NSAIDs. The next day, she revisited the ED because of worsening malaise, but internal medicine and cardiology workup revealed no other pathology. A few weeks later she presented with left lower limb pain and paresthesia, abdominal discomfort and subfebrilitas. She was again prescribed antibiotics because of inflammatory blood results with no clear focus. Over the next month, she received lumbar infiltrations and Amitriptylin with no result. She presented to the ED again and an arterial ultrasound of the left leg showed no vascular abnormalities.

The fourth presentation at the ED she had an acute ischemic left leg. CT angiography demonstrated an occlusion of the distal popliteal artery, for which the patient was transferred to our center. Further workup revealed native aortic valve endocarditis with septic emboli due to lactobacilli. She underwent embolectomy, aortic valve replacement and a long course of IV antibiotics with a good outcome.

Discussion

Lactobacilli are an infrequent human pathogen but are known to cause bacteremia, IE and pleuropneumonia. These low virulence organisms grow and multiply slowly, therefore they only cause subacute endocarditis. This reflects in a difficult clinical picture with aspecific signs and symptoms with inflammatory blood results.

Conclusion

Subacute IE is a difficult diagnosis since all signs and symptoms are non-specific. Recurrent general malaise, subfebrilitas and alternating pain without a clear cause, specifically with findings of anemia, inflammation, hematuria and pyuria should prompt us to avoid prescribing antibiotics prior to cultures and consider making an early cardiac ultrasound.

It is not always a respiratory tract infection in children

C. Vertriest and C. Lyphout

Introduction

An 11-year-old girl is seen in the ED with respiratory distress. On top of the list of differential diagnosis will be asthma, pneumonia or foreign body aspiration. That usually covers it, but not always.

Clinical presentation

The girl presented with a 2-week history of intermittent cough, dyspnoea, anorexia and lethargy. On arrival, she had a BP of 118/98 mmHg with an HR of 142 bpm, an RR of 34/min with an SpO2 of 97% on room air. She was afebrile. On clinical exam, she was in severe respiratory distress in the absence of cyanosis, was poorly perfused with a raised CVP and had hepatomegaly. Ultrasound according to the RUSH protocol showed a dilated hypocontractile heart with pericardial effusion, a dilated IVC without respiratory collapse, bilateral pleural effusions, with extensive B-line pattern, intra-abdominal free fluid and hepatomegaly, pointing to cardiac decompensation and shock. Chest XR showed cardiomegaly and upper lobe diversion. She was diagnosed with an incipient cardiogenic shock due to a non-compaction dilated cardiomyopathy (NCM).

She was started on diuretics, adrenaline infusion and high flow oxygen. After a good initial response, she relapsed. She was put on the high urgency transplant list and underwent a heart transplantation 1 month later.

Discussion

A recent study showed that 49% of the children with previously unknown heart disease hospitalized with systolic heart failure were missed at first presentation and underwent significant nonrelevant treatment and testing.

NCM is a rare disorder, caused by failure of normal embryogenesis of the myocardium. Instead of becoming strong and dense, the myocardium remains a loose network of trabeculae and deep intertrabecular recesses. Clinical manifestation varies from no symptoms to congestive heart failure, arrhythmias and systemic thrombo-emboli. In a population-based retrospective study in children, NCM accounted for 9.5% among cardiomyopathies. Echocardiography is the diagnostic procedure of choice but the diagnosis is often missed or delayed.

Conclusion

Although rare, cardiac failure should always be considered in the differential diagnosis of dyspnoea in children. A systematic clinical exam with liver palpation may help differentiating. The use of a structured ultrasound evaluation can lead to a prompt diagnosis.

Non-compaction cardiomyopathy is a rare entity, not well known by emergency physicians, that may lead to a variety of clinical manifestations.

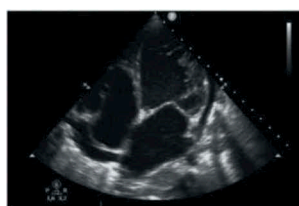


Image 1. Apical cardiac view dilated heart and pericardial effusion



Image 3. Pleural effusion



Image 2. Dilated IVC

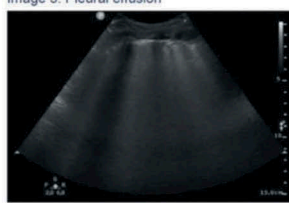


Image 4. Lung view with B-line pattern



Image 5. Chest XR with cardiomegaly and upper lobe diversion

Too many cooks spoil the soup

T. Ledure and D. Rans

Introduction

Altered mental status (AMS) of the elderly is a common cause of emergency department consultation. The heterogeneity of the presentations and the improbable causes can make the diagnosis difficult.

Clinical presentation

Emergency Medical Services were called for a couple, usually valid and independent, found confused at their home. The 90-year-old woman is apathetic and in mydriasis. The 86-year-old man is restless and in miosis. The rest of the clinical examination is normal and the vital signs reassuring. The history does not indicate any intake of toxic and a drug origin is ruled out after review of the couple's medications. CO measurements are negative. The symptoms appeared about 1 h after lunch, a bowl of pea soup. The visual and olfactory analysis of the rest of the soup, garbage cans and ingredients in the fridge does not show anything suspicious. It was finally a jar of 'improved' butter made by their son, found empty in the dishwasher, which suggests the diagnosis.

Discussion and conclusion

Intoxication with *l*-9-tetrahydrocannabinol (THC) in the elderly is rare. According to Aslaner [1], toxic causes represent 2% of AMS (18/822 patients >65 years old). The symptoms of THC poisoning are very heterogeneous [2], especially in the pediatric [3] and geriatric

populations. There have been no fatal cases reported, although there is reason to fear an increased risk of falling. At the neurological level, there are many psychological factors: anxiety, agitation, drowsiness, psychosis, hallucinations, mydriasis (40% of cases). At the cardio-respiratory level, psychological factors include tendency to tachycardia and hyperventilation. At the digestive level, nausea/vomiting is found repeatedly. Currently, the use of THC-containing foods for therapeutic use is increasing. They have no characteristic odor or appearance and are sources of intoxication, sometimes collective [4]. Their THC content is high and often poorly supported by non-consumers. Even if the frequency of poisoning in the confused elderly does not require systematic toxicological screening, it should be considered in any confused patient whose anamnesis or initial assessment does not show any clear etiology. In addition, the analysis of the patient's living environment can provide valuable information and should not be overlooked!

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Interscapular pain followed by sudden hemiplegia: a case report

N. Verbeke, V. Van Belleghem, M. Desmet and D. Helsloot

Introduction

Spontaneous epidural hematoma of the spinal column is rare with an incidence of 1 in 1,000,000/year. Risk factors include minor trauma, vascular malformation, hypertension, disc herniation and coagulation abnormalities [1]. We present a case of spontaneous epidural hematoma of the cervical spinal column associated with apixaban use.

Case presentation

A 91-year-old male presented to the emergency department with sudden onset of interscapular pain irradiating to both upper limbs.

Medical history included repaired thoracoabdominal aneurysm, heart failure, atrial fibrillation and

thrombo-embolic events for which he was on apixaban.

Clinical evaluation revealed normal vital signs and neurological findings.

An ECG showed no signs of acute ischemia. Lab results included increased troponins and D-Dimers. Standard coagulation tests were within normal limits.

An urgent angio-CT of thorax and abdomen did not show any abnormalities.

Twenty minutes later, the patient developed a paresis of the right leg and arm. An additional CT of the head and cervical spine revealed an epidural haematoma on the right posterolateral side at levels C4 to C7 with cord compression. Treatment consisted of administering prothrombin complex concentrate and an urgent laminectomy, after which the patient fully recovered.

Discussion

Differential diagnosis of sudden interscapular pain includes acute myocardial infarction, pulmonary embolism, aortic dissection, rupturing aneurysm, compression fractures, herniated disc, nerve compression and referred pain from gall bladder disease or tumors. In this case, symptoms were due to a hematoma with cord compression on a higher cervical level. Few cases of DOAC-related spontaneous epidural hematoma of the spinal column have been reported in literature, the majority during treatment with rivaroxaban and few with dabigatran [2–4]. To assess apixaban activity, only specific anti-FXa assays are recommended. However,

these tests may not be readily or timely available in case of life-threatening events [5]. Early surgical decompression and reversal of DOAC is critical to the obtain the best possible outcome. Current guidelines recommend treatment with PCC 50 U/kg, awaiting the introduction of the specific antidote andexanet alfa [5,6].

Conclusion

Spontaneous epidural hematoma of the spinal column is a rare and challenging finding that requires early diagnosis and treatment. Risk factors include anticoagulation such as apixaban.



Clenbuterol intoxication: a case report and review of literature

M. Willems, F. Somville and G. Van der Mieren

Introduction

Clenbuterol is a long-acting β_2 -agonist. It also has anabolic and lipolytic effects and that is why it is commonly used by bodybuilders. Intoxications with clenbuterol are becoming more frequent.

Clinical presentation

A 51-year-old man, a bodybuilder, presented at the emergency department 30 min after ingesting 0.6 mg

of clenbuterol. He ingested this in a suicide attempt and presented with a mild chest pain.

Initial parameters: 85/36 mmHg, HR 99 bpm, sat 98%, RR 28/min, T 37.1°C.

We saw a marked tremor and hyperventilation during clinical examination.

The arterial blood gas values were as follows: pH 7.39, pCO₂ 29 mmHg, pO₂ 113 mmHg, lactate 6.5 mmol/L (59.2 mg/dl), bicarbonate 17.2 mmol/L, potassium 2.71 mmol/L and glucose 259 mg/dl.

The first ECG showed a sinus tachycardia with atrial ectopic beats without further abnormalities. Lab testing confirmed the electrolyte abnormalities and showed hypophosphatemia and a troponin level within normal range.

Immediately after arrival, he was treated with activated charcoal. Nevertheless, he deteriorated shortly after arrival with the development of an atrial fibrillation with hemodynamic instability. BP was 70/31 mmHg. The ECG showed repolarisation abnormalities compatible with a main stem obstruction. Urgent cardioversion was successful. A follow-up ECG showed a sinus tachycardia with the same repolarisation abnormalities. He was treated with β -blockers and noradrenalin at a maximum dose of 0.2mcg/kg/minute. Potassium was substituted. He went to the ICU. The chest pain resolved and troponin levels remained low. The ECG normalized the day after.

Discussion

Clenbuterol has a prolonged elimination half-life of 25 to 30 h. It acts as a selective β_2 -agonist but with toxic dosing also as a β_1 -agonist. The dose-dependent β_2 -agonist-related adverse effects include headache, dizziness, nervousness, mild tachycardia, palpitations, hypokalemia, hyperglycemia, nausea, muscle tremors,

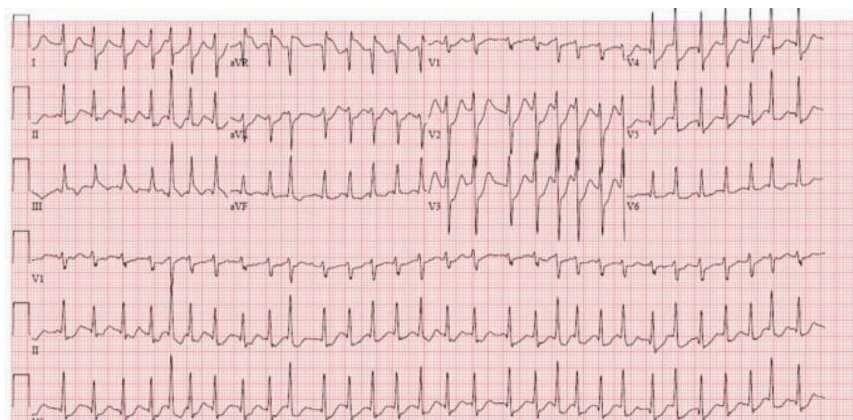
tenseness and peripheral vasodilation. Excessive ingestions can lead to hallucinations, severe headaches, convulsions, nausea, and vomiting. Death is also reported. The use of receptor targeted therapy with a short-acting β_2 -antagonist is recommended.

Conclusion

A clenbuterol overdose is an intoxication with fast and possibly severe hemodynamic instability. Arrhythmias and electrolyte disorders are also to be expected. Fast treatment with beta blockers and intensive monitoring for several days should be considered.

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Measles-induced acute disseminated encephalomyelitis in a non-vaccinated patient

D. Ali, Y. Gorur, L. Bosquée and B. Cardoso

Introduction

Measles is one of the most contagious diseases that can cause acute disseminated encephalomyelitis (ADEM) in 1/1000 cases in non-vaccinated population. The diagnosis must be confirmed by serology or a polymerase chain reaction (PCR). Even if clinical improvement with intravenous corticosteroids or

immunoglobulins has been reported, morbidity and mortality are still high.

Case presentation

A 40-year-old woman was admitted to the emergency department for fever, confusion and walking disturbances during the last 24 h. We notice a massive

cutaneous rash 1 week ago and a recent measles infection in the close family. At the clinical examination, axial ataxia and global hypotonia were noted. Blood tests showed hyperleukocytosis and elevated C-reactive protein. The brain CT was negative. The diagnosis should have been completed by a cerebral MRI, although the patient had a metallic implant which is a contraindication to perform such an exam. The cerebral spinal fluid (CSF) was clear with a high value of white cells predominantly neutrophil and normal. PCR in the CSF and nasopharyngeal sample was positive for measles. The diagnosis of ADEM following a measles infection was made. A high dose of corticosteroids was administrated in association with ribavirin and vitamin A. No neurological complications are noticed in the outcome after releasing.

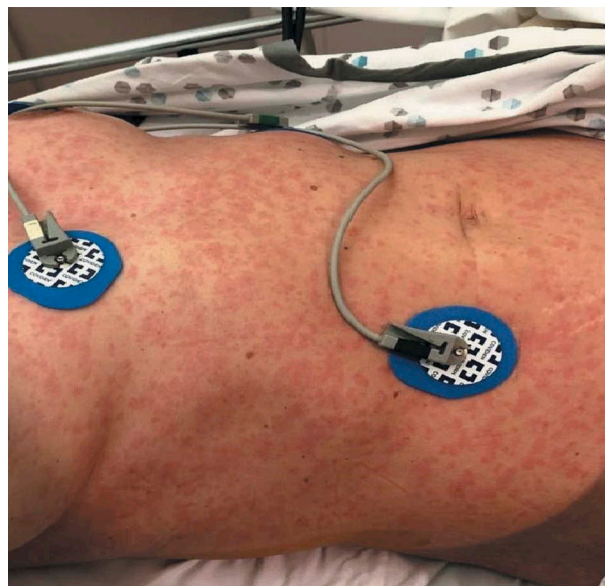
Discussion

Measles is an infectious disease that could be responsible for serious respiratory and neurological complica-

tions. Mimicry with the virus causes ADEM, an inflammatory demyelinating disease of the central nervous system. Its clinical presentation is sudden fever, convulsions and cerebellar, pyramidal or medullary signs. The PCR on CSF is the key to diagnostic exam. Blood tests and the CSF basic analysis are not specific of the disease. The MRI is the gold standard for the study of brain damages. The treatment of ADEM is empirical and consists of high-dose corticotherapy. The second-line therapy consists of intravenous immunoglobulin and the third-line therapy is plasmapheresis. In addition, high dose of vitamin A reduces mortality and ocular lesions. Antiviral treatment is rarely used and its effectiveness is uncertain. The evolution is unpredictable.

Conclusion

Measles-induced ADEM is an uncommon but severe complication. Nowadays, corticosteroid therapy must be considered even in the absence of established treatment recommendation.



Neuromyelitis optica spectrum disorders – unexpected, overlooked

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Introduction

Neuromyelitis Optica Spectrum Disorder (NMOSD), is a rare, lifelong and debilitating autoimmune disease of the central nervous system (CNS), characterized by inflammation of the optic nerve and spinal cord. It is often overlooked. In our case report, the patient consulted three different physicians in 1 month in her

search for help for her complaints before she was diagnosed with NMOSD.

Clinical presentation

A 24-year-old female came to the Emergency Department (ED) with urinary retention. The day before she also consulted the neurologist with ascending

paresthesia starting after a fall by tripping 1 month ago. We see paresthesia from level Th4 downwards combined with proprioceptive loss in both hands. Her clinical examination showed anisocoria with a left mydriatic pupil, less strength in both hands and hyperreflexia in the upper and lower limbs. A lumbar puncture showed lymphocyte pleocytosis. Meningitis/Encephalitis Panel and cultures were negative. NMR spinal cord with contrast showed no arguments for arteriovenous malformation/fistula, no contrast capitation and an average diffusion restriction. Visual evoked potentials showed prolonged latency right and somatosensory evoked potentials were normal. Ophthalmologic examination showed bilateral signs of inflammation.

Since the NMR spinal cord was most suspect for a transverse myelitis, combined with a bilateral neuritis optica, the most likely diagnosis of NMOSD was made.

Treatment was started with high-dose corticosteroid during her stay. When she went home after 5 days, an immunosuppressive antimetabolite maintenance therapy was added.

Discussion

NMOSD primarily attacks the optic nerves and spinal cord leading to blindness and paralysis. Typically, we see acute attacks of bilateral or rapidly sequential optic neuritis or transverse myelitis, often over days. Recovery can take weeks to months. No clinical features are disease-specific but some combinations are highly suspicious. In 2015, revised consensus criteria were published, which defines the diagnosis in the presence of core clinical characteristics, AQP4 Ag status on MRI imaging. NMOSD causes stepwise clinical deterioration because of accumulating visual, motor, sensory and bladder deficits from recurrent attacks. Long-term disability and mortality rates are high.

Conclusion

NMOSD is a rare, aspecific disease with no clinical disease-specific features. The disease can and will thus often be missed.

Ophthalmoparesis with fixed dilated pupils and bulbar involvement: a rare clinical picture which warrants urgent treatment decisions. A case of Miller–Fisher syndrome mimicking botulism

N. Léonard, L. Blomme, C. Boone and R. Nieuwendijk

Introduction

We present a case with the rare pattern of ophthalmoparesis with fixed dilated pupils and bulbar involvement in the absence of central nervous systems or sensory dysfunction. Both botulism and Guillain–Barre syndrome (GBS), Miller–Fisher variant (MFS) can present in this way. With clinical suspicion of botulism, prompt initiation of treatment is essential, as well as in severe presentations of GBS.

Clinical presentation

A 16-year-old male presents to the emergency department 1 week after a youth camp. He had some diarrhoea and a week later developed blurry vision during an episode of rhinosinusitis. Examination revealed fixed dilated pupils. CT of the brain and CSF analysis were negative. A presumptive diagnosis of pseudoephedrine effect was made. On follow-up 1 week later, deterioration with diplopia, dysphonia, autonomic dysfunction (constipation and dry mouth), bilateral facial weakness and limited uvula elevation was noted. MRI was negative, CSF showed 1 leukocyte/

mm³ and protein of 30 mg/dL. Toxicology screening was positive only for paracetamol. Because of clinical suspicion for foodborne botulism, we initiated treatment with heptavalent botulinum antitoxin. Hereafter, he showed a rapid amelioration of his speech and diplopia, but bilateral mydriasis remained for 4 weeks. In vivo test for botulinum toxin in the serum and faeces and detection of *Clostridium botulinum* in faeces were negative. *Campylobacter jejuni* serology came back positive with a titre of 20 (<10) and anti-ganglioside antibodies Anti-GT1a IgG/IgM and Anti-GQ1b IgG/IgM in the serum were positive. A definite diagnosis of Miller–Fisher syndrome was made. Apart from fatigue, he made a full recovery of his neurological symptoms.

Discussion

GBS is an autoimmune neuropathy caused by auto-antibodies against gangliosides. Botulism is caused by neurotoxins that bind to the same gangliosides, thus explaining the overlapping symptomatology. Technical investigations can give ambiguous results. Early administration of antitoxin in botulism or



immunoglobulins (IVIg) in severe GBS cases can prevent progression of paralysis and respiratory failure. Clusters of foodborne botulism do occur. Furthermore, as the most lethal known substance, botulinum toxin is of interest as a bioterrorism agent.

Conclusion

The emergency physician must recognize this clinical picture. Botulism and MFS must be in the differential and prompt treatment must be initiated on clinical ground.

Sarcoidosis-like disease associated with oxaliplatin-based chemotherapy for sigmoid cancer

B. Wellens, C. Callens, H. De Cauwer and F. Somville

Introduction

Sarcoidosis is a disease that may affect different organ systems. Sarcoidosis-like disease might be the result of the (neuro)toxic effect of chemotherapy, but was also shown to appear after exposure to WTC dust due to the 9/11-attacks. We describe a case of pulmonary sarcoidosis as well as neurosarcoidosis probably oxaliplatin-induced.

Clinical presentation

A 40-year-old male was admitted to the emergency station because of rapidly ascending flaccid paraparesis with Th12 sensory level with urinary retention since 10 days, accompanied by headache, fever, nausea, vomiting and photophobia since 4 days. Seven months earlier he was diagnosed with sigmoid cancer (pT3N0M0) that was curatively treated by laparoscopic resection followed by adjuvant FOLFOX chemotherapy.

MR imaging and CSF analysis supported the diagnosis of meningoencephalitis and transverse myelitis with underlying meningitis carcinomatosa, so treatment with FOLFIRI chemotherapy and panitumumab was started. Unfortunately, his condition worsened to tetraparesis with C3 sensory level, bilateral blindness and severe neuropathic pain in both legs. Almost simultaneously with neurological deterioration,

imaging of the lungs showed increasing lung pathology: differential diagnosis of diffuse infective or inflammatory or metastatic disease. Because of underlying auto-immune was suspected high-dose corticosteroids were administered, followed by a 5-day course of IVIg. With the latter treatment, rapid clinical improvement was seen with complete resolution of blindness, marked recovery of upper limb strength and Th8 sensory level.

EBUS revealed noncaseating granulomata, suggestive for sarcoidosis.

Discussion

Sarcoidosis mimics ADEM and Devic's disease, metastatic disease and paraneoplastic disease as well as infections especially in transverse myelitis cases; however, in our case, CSF pleiocytosis and hypoglycorrachia, pulmonary involvement with multiple adenopathies showing granulomatous inflammation, all suggested sarcoidosis.

Conclusion

The involvement of both lungs, nervous system and paraspinal muscles (most probably sarcoid myopathy) supports the diagnosis of sarcoidosis, only sporadically linked to chemotherapy thus far.

A rare complication of dengue: transverse myelitis

N. Pans, R. Debaene, C. Callens, H. De Cauwer, G. Van der Mieren and F. Somville

Introduction

A dengue viral infection is a rare aetiology of transverse myelitis. It can occur in the peri-infectious or the post-infectious phase due to an auto-immune reaction.

Clinical presentation

A 25-year-old previously healthy male, born in Togo, Africa, presented with complaints of thoracic back pain and illness. The patient also described weakness in the lower left limb. The clinical neurological examination revealed a mild weakness in that limb. There was no sensory deficit. The initial blood count showed no signs of infection. Further history taking revealed that 3 months before the patient visited his family in Togo. MR imaging showed a hypersignal intensity at the level of T11-T12, highly suspicious for transverse myelitis. Both MR Imaging of the brain and CSF analysis were

normal. SSEP of the lower limbs showed a bilateral mild delay of the central latency. A broad range of serologic tests revealed an elevated number of IgG antibodies of

Dengue virus, IgM was negative. The patient was diagnosed with a transverse myelitis due to viral dengue infection. IV methylprednisolone 1 g for 3 consecutive days was administered. A month after this therapy a new SSEP of the lower limbs was performed and showed already a major improvement of the central latency. The clinical complaints also diminished. Control MR imaging of the spine after 6 months showed amelioration: hypersignal intensity at the level of T11-T12 was clearly decreased. He had no complaints.

Discussion

Transverse myelitis is a spinal cord disorder that can present as a (post)infectious complication (DD schistosomiasis, tuberculosis, malaria, HIV, etc.) or as a result of a neuro-inflammatory disorder like MS. In this case



report, the transverse myelitis is the result of a post-infectious complication of a Dengue infection probably due to an auto-immune reaction. Four days after infection the IgM antibodies already can be elevated and can stay positive until 3 months after infection. This is the reason why in our patient IgM was already absent. IgG antibodies stay positive until several years after infection.

Conclusion

Transverse myelitis is a condition with many aetiologies. This case emphasizes the importance of a thorough history taking including travel history.

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Spontaneous pneumomediastinum

E. van Tankeren, H. Desmedt, G. Van der Mieren and F. Somville

Introduction

Spontaneous pneumomediastinum (SPM) is an uncommon diagnosis defined as the presence of free air in the mediastinum without an apparent cause. It is a self-limiting disorder that most often occurs in young males without any apparent precipitating factor or underlying disease. Its pathophysiology involves the rupture of alveoli with resultant air penetration into the mediastinum. Underlying disease processes, such as asthma, physical trauma, including yelling, contact sports, and Valsalva during labor, have also been reported to cause SPM. Here, we present a case of a 22-year-old female who presented to us with the chief complaint of chest pain and the subsequent diagnosis of SPM.

Clinical presentation

A 22-year-old woman presented to our ER with chest pain since a couple of hours. No trauma was noted nor any other pressure-raising activities. She complained of chest pain, a sore throat and pain in the upper back.

She had no relevant medical history but was an active smoker.

On physical examination, there was a crackling sound, most likely Hamman's sign. The ECG showed a normal sinus rhythm without ST anomalies. The laboratory testing showed elevated D-dimers of 800 µg/l.

A chest X-ray showed air around the heart and in the neck (Figure 1).

A ultrasound of the heart showed no abnormalities.

The patient refused to be admitted and was treated with NSAIDs. A control CT thorax was made a few days later which showed a small residual pneumomediastinum without rupture of the trachea or esophageal structures.

Discussion

SPM, also known as Hamman's syndrome, is a rare condition that is typically seen in young men and may occur in situations that increase alveolar pressure, such as coughing, vomiting and other Valsalva manoeuvres. Patients usually present with chest pain, dysphagia, hoarseness and dyspnea. Subcutaneous emphysema may be present. A crackling sound synchronous with the heartbeat (Hamman's sign) is pathognomonic for pneumomediastinum.

Conclusion

SPM is a challenging diagnosis and should be considered in the differential diagnosis of chest pain in healthy young adults. The prognosis is good in the absence of associated conditions.

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Keraunoparalysis in lightning strike

V. Sterckx, K. Monsieurs and H. Raemen

Introduction

Lightning strike causes specific, potentially life-threatening injuries. Due to the low incidence of lightning strike, many emergency physicians have no experience with its unique properties. We present a patient with keraunoparalysis and describe the challenges for its clinical management.

Clinical presentation

An 18-year-old male was referred to our emergency department for venoarterial-extracorporeal membrane oxygenation (VA-ECMO) after being struck by lightning. Out of a group of 14 patients he was the only one found unresponsive after the impact. Bystander cardiopulmonary resuscitation was immediately started and advanced life support (ALS), including intubation, was provided by a physician-staffed team. The initial rhythm was asystole. After two cycles of ALS (15 min after collapse) return of spontaneous circulation was achieved. No medication was administered and the patient remained stable during transport.

On hospital arrival, the following clinical features were found: equal, only slightly reactive pupils and signs of keraunoparalysis: a mottled appearance of the limbs and intermittent absence of peripheral pulses. A central pulse remained present and there was no need for VA-ECMO placement. The patient developed cardiogenic shock, prompting the use of

inotropes. Due to severe acute respiratory distress syndrome, he received inhaled nitrous oxide and prone ventilation. He ultimately survived with neurological sequelae.

Discussion

Keraunoparalysis is a phenomenon specific to lightning strike, occurring in approximately 80% of the cases and usually resolving within a few hours. Keraunoparalysis is thought to be secondary to temporary vascular spasm and causes weakness and an ischaemic appearance of the limbs, with intermittent loss of peripheral pulses. These findings must be differentiated from true hypotension or ischaemia. Autonomic dysfunction typically causes absence of pupillary reflexes. Direct lightning strike may result in depolarisation of the entire myocardium, leading to cardiac arrest. Due to the inherent automaticity of the heart, return of sinus rhythm may occur. However, because the concomitant respiratory paralysis caused by lightning lasts longer, ventilatory support is usually needed to prevent secondary cardiac death due to hypoxia.

Conclusion

Keraunoparalysis occurs in 80% of the patients after lightning strike. Knowledge and awareness of its unique presentation is important to ensure proper diagnosis and treatment.

Cardiac arrest in lightning strike

V. Sterckx

Introduction

Lightning strike is a rare but life-threatening type of electrical injury. Due to its limited occurrence in Belgium, many emergency physicians have no experience with its unique clinical features. This article discusses the initial triage of these patients in the prehospital setting as well as further stabilization in the emergency department.

Case presentation

An 18-year-old patient was admitted to the emergency department after being struck by lightning. Although there were 13 other victims, first responders immediately started resuscitation of the

unresponsive and pulseless patient. First, rhythm check showed asystole. After being resuscitated for 15 min, during which time he was intubated, return of sinus rhythm was achieved. No medication was administered. After transportation he was stable and the most important clinical findings were equal pupils, only slightly reactive to light, a score of 3/15 on the Glasgow Coma Scale and second-degree burns of the thorax. The absence of pupillary reflexes is typically caused by autonomic dysfunction due to a phenomenon called keraunoparalysis, rendering it unusable in further decision-making. Arterial spasm is also a typical sign, indicated by the mottled appearance of the patient's limbs and the intermittent absence of peripheral pulse we witnessed after

placement of an arterial line in the radial. Central (femoral) pulse did remain palpable. Echocardiogram and computed tomography showed no significant posttraumatic injuries. The patient ultimately survived the trauma, with severe neurological impairment.

Discussion

In a direct lightning strike, the rise in voltage can result in depolarization of the entire myocardium, leading to asystole or ventricular arrhythmias. Because of the inherent automaticity of the heart, a spontaneous return of sinus rhythm will occur. But because the

concomitant respiratory paralysis lasts longer, a secure airway is needed to prevent secondary cardiac death. This is why reverse triage is so important: the patient who appears to be dead will benefit the most from immediate medical intervention.

Conclusion

Lightning strikes are rare, but a basic knowledge of its unique properties is important. Especially in the prehospital setting, reverse triage should be the rule. The primary assessment of the victim should not lead to unnecessary interventions, nor should it lead to a wrong interpretation of the clinical signs.

Amphetamine-induced stroke, a case-report and review of current literature

K. De Clerck and P. Meert

Introduction

Hemorrhagic stroke is a potentially life-threatening complication of stimulant abuse. The clinical presentation may vary and symptoms might overlap with those of amphetamine intoxication. This diagnosis could be unexpected in a healthy and young patient. It is important for emergency physicians to be aware of this potential complication.

Clinical presentation

A 34-year-old woman was admitted to the emergency department (ED) on a suspicion of a first epileptic seizure shortly after snorting amphetamine. She was found by emergency medical services at home in a post-ictal phase, somewhat agitated. Upon arrival at the ED, the patient had regained a normal level of consciousness and initially complained of headache. She had a blood pressure of 156/108 mmHg. Other vital signs were within normal ranges. Initial clinical and neurological examination were unremarkable. Laboratory examination showed normal values for haematology and biochemistry. During the first 2 hours after arrival, GCS dropped to 13 (E3V4M6), the patient became nauseous and started to vomit. Noncontrast head CT revealed subarachnoid hemorrhage (SAH) around the brain stem extending into the third, fourth and lateral ventricles as well as ventricular dilation. Cerebral

angiography demonstrated a ruptured aneurysm of the distal basilar artery and a smaller aneurysm of the right posterior communicating artery.

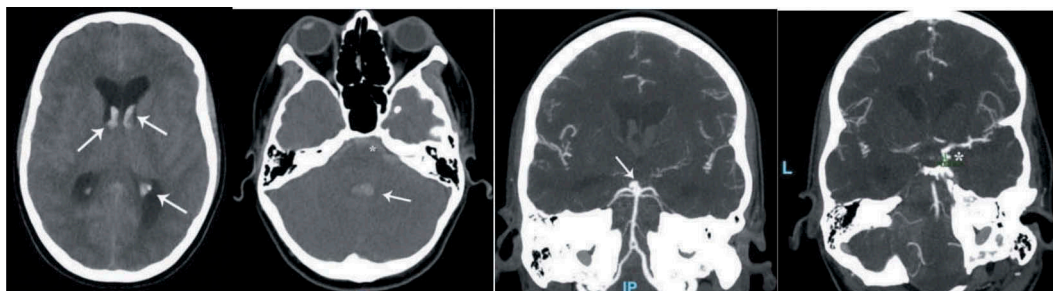
Discussion

A case report and review of current literature was described in order to update the knowledge of this dangerous complication of amphetamine abuse.

Current literature confirms use of amphetamines as a risk factor for hemorrhagic stroke, either SAH or intracerebral hemorrhage (ICH). Cerebral vascular inflammation may contribute to the pathogenesis but not always present. Vascular malformations may or may not be present. Whether they arise secondary to amphetamine abuse or just become evident through hemorrhage in combination with amphetamine use is not clear. Literature does show that when aneurysmal SAH is associated with amphetamine abuse, it happens at a younger age and with significantly worse presentations and outcomes.

Conclusion

Patients presenting with a positive history of amphetamine use and a headache, agitation or other neurological symptoms should alert the physician to this potential complication and prolonged observation or cerebral imaging should certainly be considered.



Re-expansion pulmonary edema after draining a pneumothorax

P. Broere, H. Baeten, S. Pilate, P. Monballyu, F. Vandereyken and Y. Ben Bouazza

Introduction

Re-expansion pulmonary edema (REPE) is an uncommon complication of tube thoracostomy for pneumothorax and pleural effusion. The following case describes REPE in a patient after chest drainage for primary spontaneous pneumothorax.

Clinical presentation

A 30-year-old male was brought into the emergency department with dyspnoea and right-sided thoracic pain since 3 days. The patient was hemodynamically stable and had a saturation of 94% at room air. Chest auscultation revealed absent air entry on the right side. A chest X-ray showed a large right sided pneumothorax with complete lung collapse and mediastinal shift (Figure 1), for which an intercostal drain was inserted. Soon after this procedure, saturation and blood pressure dropped. The patient was given fluids and high flow oxygen. An additional chest x-ray was taken which showed correct drain positioning and diffuse densifications over the right lung compatible with lung edema (Figure 2). The patient was admitted to intensive care where he received non-invasive continuous positive airway pressure (CPAP) therapy and a minimal dose of norepinephrine. An adjacent CT-thorax confirmed findings for REPE (Figure 3). The patient stabilized and was transferred to the ward

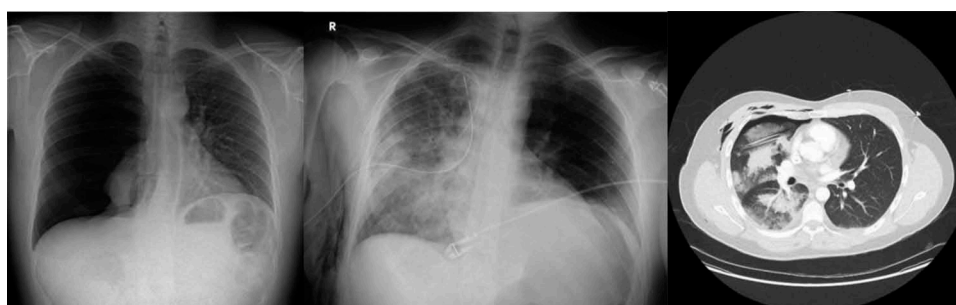
after 3 days, and 6 days post admission he was discharged home in good condition.

Discussion

REPE is a serious complication following chest drain insertion, mortalities can be as high as 20% in severe cases [1–3]. It is defined by radiographic findings of pulmonary edema in at least one lobe at the side of lung re-expansion regardless of symptomatology [4]. Size and duration of pneumothorax are possibly associated with higher rates of REPE [6], while the presence of pleural effusion is a proven risk factor [7]. The pathophysiology still remains unclear; however, it is thought to be due to a combination of increased permeability of the pulmonary vessels [3] and an imbalance of hydrostatic forces [5]. Treatment is mostly supportive, with ventilatory support via non-invasive CPAP, which redirects fluid back into the capillaries via an increase of intra-alveolar pressure. Diuretics, whilst effective for cardiogenic pulmonary edema, are not effective in REPE [5]

Conclusion

The possibility of REPE after treatment of pneumothorax should be kept in mind. It is a potential life-threatening condition in which prompt supportive treatment is desired.



Carpal tunnel vision

P. Van Bostraeten, S. Pilate, F. Vandereyken and H. Baeten

Introduction

Carpal Tunnel Syndrome (CTS) is a common disorder, mostly considered idiopathic with multifactorial pathophysiology. Common symptoms are pain or paresthesia in the median nerve area. Sometimes sensory symptoms radiate proximally into the forearm and in some cases above the elbow to the shoulder.

Clinical presentation

A 44-year-old male had been suffering from atraumatic right shoulder pain since 1.5 months and had consulted his general practitioner who had started symptomatic therapy with painkillers. Because of persisting shoulder pain and new symptoms consisting of dysesthesias and loss of strength in the right arm, the patient was referred for an EMG of both arms. This showed a CTS stage 2 and excluded any other sensory nor motor problem in other investigated nerves. The patient was therefore referred to the orthopedic clinic to discuss a potential operative release of the CTS. The orthopedic surgeon noted a marked swelling of the right upper limb and referred the patient to the emergency department for further diagnostic workup. Except for 28 pack-years of smoking and a tuberculous chest infection in 2009, there was no other relevant medical history. The patient was not on any chronic medication and there was no substance abuse.

Clinical examination showed global non-pitting edema of the right upper limb with venous stasis.

There was no objective sensorimotor loss in the right upper limb. A mass in the right supraclavicular fossa was felt without other adenopathy. The patient was afebrile and no Horner's sign was noted. A CT Thorax showed a large Pancoast tumor with a maximal diameter of 10.6 cm in the upper right lobe with invasion of the neck base and local neurovascular structures.

Discussion

Most of the time, Pancoast tumors present with primary symptoms such as shoulder pain, Horner syndrome or neurological symptoms caused by compression of the C8, T1 or T2 nerve roots. Other presentations can be hemoptysis, coughing or weight loss. Only in 5–10% of the cases a superior vena cava syndrome (SVCS) is seen. SVCS most often presents itself with face or neck swelling, and dyspnea. Arm edema is considered to be less frequent.

Conclusion

Atraumatic shoulder pain and the presence of ipsilateral upper limb edema and neurological deficit should warrant the exclusion of a Pancoast tumour. When an investigation leads to a diagnosis that does not explain all the symptoms, one should always consider it being a possible distraction.



A case of tuberculous meningoencephalitis diagnosed too late

A. Detroz

Introduction

We relate the case of a 53-year-old woman presenting at the emergency room with clinical signs of meningitis who was under investigation for back pain and just had a magnetic resonance imaging (MRI) showing Pott disease lesions. A late diagnosis led the patient to death that could have been avoided with early diagnosis and treatment.

Clinical presentation

This 53-year-old woman presented with neck pain and fever for the last few days. Her GP had put her on antibiotics (ciprofloxacin). She was then admitted to internal medicine room for exploration of her alteration of general state. It is important to point that she had no major inflammatory syndrome yet (C-reactive protein: 10 mg/l).

Since her neurological status was worsening (alteration of consciousness and headaches), a lumbar puncture was performed 8 days after admission, showing 285 WBC/cm³ with mainly lymphocytes (64%) and the antibiotherapy was switched to cefotaxime and amoxicillin.

The day after she presented bradycardia (50/min), high blood pressure (170/80 mmHg) and vomiting.

A brain-computed tomodensitometry was performed showing a mild dilatation of the ventricles comparing to the last one. This clinical picture of intracranial hyperpressure led to have the patient intubated and have an external ventricular drainage made.

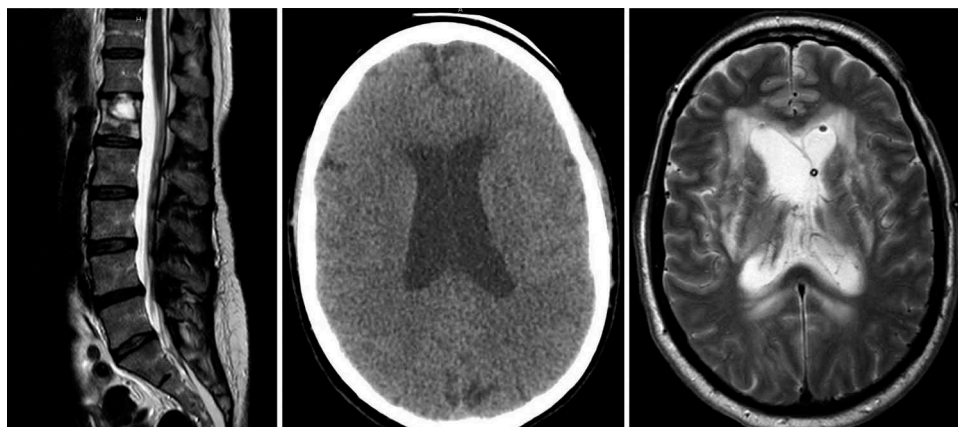
Clinical evolution was always worsening and she never showed any sign of awakening. A MRI of the brain was performed showing extensive lesions of the brain and the cerebral trunk associated with diffuse ischemic lesions. *Mycobacterium tuberculosis* was then found in the CSF (this analysis was added later since it is not in the regular PCR multiplex panel). The patient died soon later of cerebral death.

Discussion

Current recommendations consist of quadritherapy (isoniazid, rifampin, pyrazinamide, and ethambutol).

Conclusion

Even though tuberculous meningitis is a disease whose diagnosis is difficult, elements available at the admission could have helped to evoke the diagnosis of tuberculous meningitis and have the death avoided with prompt treatment.



Non-fatal intravenous auto-injection with chlormequat

M. van Lieshout, S. Van Landeghem, A. Verstraete, P. De Paepe, W. Buylaert and C. Lyphout

Clinical presentation

A 38-year-old female was brought to the emergency department after intravenous auto-injection of chlormequat in an attempted suicide. Immediately

following injection, she experienced hypersalivation, dyspnea and a temporary paralyzing effect with complete recovery. Neurological examination in our emergency department was unremarkable and vital signs were normal, estimated 5 h post-injection. Skin

inspection revealed a punctiform wound at the right antecubital fossa. Blood sample and syringe content analysis confirmed the presence of chlormequat. The blood concentrations on admission and 4 h later were 2.1 and 0.2 µg/mL, respectively.

Discussion

Chlormequat is a highly toxic and often lethal agent in humans, even in low doses, yielding a clinical picture resembling the toxic syndrome associated with anticholinesterase poisoning. Twelve fatal chlormequat intoxications have been described, of which one following auto-injection. Only one patient with a non-fatal course has

been reported, who was successfully resuscitated after a witnessed cardiopulmonary arrest following oral ingestion. Treatment of chlormequat poisoning is supportive, and based on animal models, including low-dose atropine to stop muscarinergic effects; high doses of atropine should be avoided as it might be associated with higher mortality.

Conclusion

We described the first non-fatal case of chlormequat poisoning by auto-injection, with analytically confirmed presence of chlormequat in blood and syringe content.