O196 Efficacy and tolerability of levetiracetam during one-year follow-up as add-on therapy in patients with treatment-resistant generalised epilepsy

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Objective: We investigated the efficacy and tolerability of Levetiracetam (LEV) as add-on therapy in Cypriot patients with treatment-resistant generalized epilepsy.

Methods: We retrospectively identified twelve patients ranging in age from 14 to 41 years old. Eight patients had symptomatic generalized epilepsy (SGB) and four patients had primary generalized epilepsy (PGE). The patients were studied for a 12-month period. Patients received LEV as add-on therapy to 2–6 (mean 2.4) anticonvulsants. We compared mean seizure frequency for a 3-month period prior to and 12 months after introduction of LEV. Maximum doses ranged from 1000 to 3000 mg daily. All subjects had physical and neurological examinations, routine baseline hematomal, biochemical, and urinary investigations at entry.

Results: Two patients (16.7%) became seizure free. Four patients (33.3%) had seizure reduction of by 75% or greater. Two patients (16.7%) had seizure reduction by 50% or greater. Three patients (25%) became worse and two of them discontinued the study. More than 50% reduction in the number of their seizures was seen in 62.5% of the patients suffering from SGE and in 75% of the patients suffering from PGE. Efficacy was clinically apparent from the first trimester of treatment. Both seizure free patients required 1000 mg of LEV as daily adjunctive therapy. There was a decreased chance of the patients becoming seizure-free as the number of previously used AED’s increased. Reasons for discontinuation of LEV were either lack of efficacy (1 patient), adverse events (1 patient) or both (1 patient). The withdrawal rate was 25%. Side effects reported were: Sedation (2 patients), headaches (1 patient), dizziness (1 patient), weakness (1 patient), weight increase (1 patient) and behavioral disorder (1 patient). No patient showed significant changes from baseline hematological, biochemical and urinary parameters.

Conclusion: Our results show that LEV has efficacy in both symptomatic as well as in primary generalized epilepsy as seen by a significant reduction of seizures. 66.7% of our patients with refractory epilepsy experienced a reduction of 50% or more on their seizure frequency with the addition of LEV in their antiepileptic drug regimen during the twelve months of their evaluation. Levetiracetam was also well tolerated by the majority of our patients.

O197 A hypothesis how non-REM sleep might promote seizures in partial epilepsies: a transcranial magnetic stimulation study

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Objective: To investigate alterations of inhibitory and excitatory cortical circuits during NREM sleep in drug-naive patients with partial epilepsies and sleep-bound seizures only.

Methods: Paired-pulse TMS-paradigm was performed to test intracortical inhibition (ICI) and facilitation (ICF) in the hemisphere of the epileptic seizures: a transcranial magnetic stimulation study.

Results: Two patients (16.7%) became seizure free. Four patients (33.3%) had seizure reduction of by 75% or greater. Two patients (16.7%) had seizure reduction by 50% or greater. Three patients (25%) became worse and two of them discontinued the study. More than 50% reduction in the number of their seizures was seen in 62.5% of the patients suffering from SGE and in 75% of the patients suffering from PGE. Efficacy was clinically apparent from the first trimester of treatment. Both seizure free patients required 1000 mg of LEV as daily adjunctive therapy. There was a decreased chance of the patients becoming seizure-free as the number of previously used AED’s increased. Reasons for discontinuation of LEV were either lack of efficacy (1 patient), adverse events (1 patient) or both (1 patient). The withdrawal rate was 25%. Side effects reported were: Sedation (2 patients), headaches (1 patient), dizziness (1 patient), weakness (1 patient), weight increase (1 patient) and behavioral disorder (1 patient). No patient showed significant changes from baseline hematological, biochemical and urinary parameters.

Conclusion: Our results show that LEV has efficacy in both symptomatic as well as in primary generalized epilepsy as seen by a significant reduction of seizures. 66.7% of our patients with refractory epilepsy experienced a reduction of 50% or more on their seizure frequency with the addition of LEV in their antiepileptic drug regimen during the twelve months of their evaluation. Levetiracetam was also well tolerated by the majority of our patients.

O198 Active brain processes during human quiescent sleep: an EEG / fMRI study of non-REM slow oscillations

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Introduction and Objectives: Functional neuroimaging studies in humans have characterized non-REM sleep (NREM) as a stage of brain deactivation (1). However, NREM is dominated by slow oscillations, with alternating hyperpolarization and depolarization phases at the cellular level in animals. The depolarization (“up”) phases correspond to periods of intense neuronal firing. This implies that, at the macroscopic level in humans, NREM may not be a pure quiescent state but might show increased brain activations in the up state of slow oscillations. Using simultaneous electroencephalography (EEG) / functional magnetic resonance imaging (fMRI), we aimed at characterizing the regional cerebral activities during NREM and specific to slow oscillations.

Methods: 26 non-sleep deprived, healthy, young subjects were scanned during the first half of the night in a 3Tesla fMRI scanner (echo-planar imaging sequence, 32 slices, repetition time = 2.46s, echo time = 40 ms, voxel size = 3.4x3.4x3 mm³), with a continuous 64-channels EEG recording.

After scanner and pulse artifact removal, NREM (stages 2–4) epochs and corresponding fMRI time series were selected. Slow waves were automatically detected on EEG epochs as in (2). The maximum negativity, chosen as the up state onset, was taken as event of interest for each detected slow oscillation. The analysis (conducted with the software Statistical Parametric Mapping 5 [SPM5]) looked for the brain areas in which responses were significantly correlated with the occurrence of slow oscillations (up states) across subjects.

Results: 14 subjects slept and were used for analyses. Positive brain responses correlated to slow oscillations were found in the thalamus, medial prefrontal cortex, auditory cortex, hippocampus, brainstem and cerebellum. We found no significant negative brain responses.

Conclusion: In keeping with our hypothesis, we show that the brain remains active during NREM, in phase with the slow oscillations, in a set of brain areas potentially involved in slow oscillations mechanisms. Activations were also located in brain areas involved in the processing of declarative memories during wakefulness, further supporting the hypothesis that slow waves participate in the consolidation of memory traces during NREM.

References