Clinical neurophysiology

EP2216
Navigated repetitive transcranial magnetic stimulation in treatment of spasticity
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Introduction: Our aim is to assess the efficacy of different types of navigated repetitive transcranial magnetic stimulation (rTMS) in modulating lower limb spasticity.

Methods: 15 patients (10 males, 5 females, mean age 46±8.6 years) with secondary progressive multiple sclerosis and lower spastic paraparesis received 10 sessions rTMS over the motor hotspot of the tibialis anterior muscle in the primary motor cortex with 80% of motor threshold (ten patients underwent intermittent theta burst stimulation (iTBS) (frequency 30 Hz, burst frequency 5 Hz, number of pulses - 3, number of bursts - 10, total number of pulses - 30), 5 patients - high-frequency rTMS (10 Hz)). We assessed Modified Ashworth Scale (MAS), Modified Fatigue Impact Scale 2 (MFIS 2), Expanded disability status scale (EDSS), Kurtzke Functional Systems Score (FSS) and Spasticity Subjective Evaluation Scale (SSES), before and at the end of rTMS session, 2 and 12 weeks after.

Results: Both iTBS and high-frequency rTMS sessions significantly reduced MAS (3.0 [3.0; 3.0] before; 2.0 [1.0; 2.0] after; p=0.01); MFIS 2 and SSES scores. We haven’t defined any significant difference between our groups. These effects were persisting for 2 weeks after the end of the stimulation protocol in all patients and remained at the same level in a half of them in 3 months.

Conclusions: Our results indicate evident efficacy of both types of rTMS in treatment of severe spasticity. We currently move forward and include more patients with spasticity caused by variable range of disorders.

Disclosure: Nothing to disclose

EP2217
Use of excitatory deep repetitive transcranial magnetic stimulation with the H-coil to improve motor planning in Parkinson’s disease: evidence from sensorimotor rhythms event-related desynchronization
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Introduction: To investigate the clinical and neurophysiological effects of a combined prefrontal-primary motor cortex repetitive transcranial magnetic stimulation (rTMS) in Parkinson’s disease (PD) using the H-coil.

Methods: Twenty patients (3F; 63±9y.o.; PD duration: 6±3y) were included and underwent 12 deep rTMS sessions in 4 weeks. Excitatory 10 Hz rTMS was applied over M1 contralateral to the patient’s worse side (WS) and over the bilateral prefrontal cortices. Motor control was assessed before and after deep rTMS, OFF medication, using clinical (UPDRSIII, lateralized scores, timed arm tapping, and Nine-Hole Peg Test) and neurophysiological measurements (Event-Related Desynchronization (ERD) of the mu and beta sensorimotor rhythms during self-paced WS wrist extensions).

Results: No drop-outs or adverse events were recorded. Our results showed that UPDRSIII (global and subscores) and timed tests significantly improved after treatment (p<0.001). Mu and beta ERD latency onsets were also significantly increased after treatment (Mu: -1,237±177 ms before, and -2,024±215 ms after; beta: -1,247±151 ms before, and -2,229±179 ms after; p<0.01).

Conclusions: Deep rTMS is a safe treatment that improved motor symptoms and modulated the cerebral activity related to motor planning. The delayed mu and beta ERD shows that deep rTMS facilitated the activity of hypofunctioning cortico-striato-thalamo-cortical circuits, probably through dopamine release. This study highlights the importance of the H-coil for rTMS in PD, and the importance of repeating the sessions for more than two weeks. Further placebo-controlled, randomized studies are needed to assess the therapeutic efficacy deep rTMS and its consequences on cortical motor control.

Disclosure: Nothing to disclose
EP2218

Use of sLORETA to investigate cortico-thalamo-cortical impairments in normo-acoustic tinnitus sufferers

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Introduction: This electroencephalographic (EEG) study aimed to study and localize resting-state activity, auditory and cognitive evoke-related potentials (ERPs) in normoacoustic tinnitus sufferers.

Methods: 17 medication-free normoacoustic subjects with chronic, unilateral high-pitched tinnitus (6F, mean age 43.6±9.8 y., mean disease duration 22±35 months) underwent resting-state EEG (29 scalp electrodes, 5 min eyes opened, 5 min eyes closed) and auditory oddball paradigm (80% 1000Hz frequent stimuli, 20% rare stimuli at 2000Hz) for ERPs analyses (N1, P2 and P300). Cortical 3D distribution of current source density (CSD) of EEG data was computed with sLORETA. Results were compared with 17 healthy controls (9F, mean age ±SD: 45.7±15.1 years) and correlated with psychoacoustic measures.

Results: Eyes opened, patients had lower sources of alpha2 (10.5-12Hz), beta2 (18.5-21 Hz) and beta3 (21.5-30 Hz) rhythms in the left inferior parietal lobule. Eyes closed, patients had decreased alpha2 sources in the left inferior temporal and post-central gyri, and low gamma sources in the left middle temporal gyrus. Such decreased activity did not correlate with patients’ clinical features. N1 had shorter latencies in patients for both rare and frequent stimuli. P2 had shorter latencies only for the rare condition. P300 did not differ between groups. SLORETA showed decreased sources of ERPs in the left inferior temporal gyrus in patients.

Conclusions: We showed a cortico-thalamo-cortical involvement in normoacoustic tinnitus patients. Decreased CSD and shorter ERP latencies suggest a hyperexcitability of the thalamo-cortical circuits involving the left inferior temporal and parietal lobules.

Disclosure: Nothing to disclose

EP2219

Evaluation of brainstem involvement in multiple sclerosis

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Objectives: The aim of the present study was to determine the optimum method to detect brainstem lesions in patients with MS.

Methods: 72 patients with the diagnosis of relapsing-remitting MS according to the revised McDonald’s criteria were prospectively included in the study. Expanded Disability Status Scale (EDSS) score and brainstem functional system score (BSFS) (part of the EDSS evaluating brainstem symptomatology) were calculated. MRI was performed on 1.5T and T1, T2, PD and FLAIR sequences were analyzed for presence of brainstem lesions. Auditory evoked potentials (AEP) and ocular and cervical vestibular evoked myogenic potentials (oVEMP and cVEMP) were performed according to the standardized protocol.

Results: From 72 patients, 18 (25%) had clinical involvement of the brainstem. MRI showed brainstem involvement in 29 (40%) patients. Of the neurophysiological tests, AEP showed pathological results in 16 (22%) patients, oVEMP in 36 (50%) patients, cVEMP in 18 (25%) patients, and VEMP (combination of oVEMP and cVEMP) in 45 (63%) patients. VEMP detected brainstem lesions in higher percentage than clinical examination, MRI and AEP, which was statistically significant (<0.0001, 0.012 and <0.0001, respectively).

Conclusions: Results of the present study have shown that VEMPs are the best method to detect brainstem lesions in multiple sclerosis and that they detect them significantly better than clinical examination, AEP or MRI.

Disclosure: Nothing to disclose
EP2220

Corticospinal reserve predicts walking improvement to deep rTMS with H-coil in people with progressive multiple sclerosis

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Introduction: Walking impairment affects up to 85% of subjects with multiple sclerosis, impacting on quality of life. High-frequency Repetitive Transcranial magnetic stimulation (rTMS) enhances corticospinal plasticity, potentially favouring effects of neurorehabilitation. The H-coil allows deeper magnetic fields compared with traditional stimulators. In a preliminary study, we found that rTMS with H-coil enhances improvement in walking after neurorehabilitation. We aimed at replicating the study and at combining results with those of the previous study in order to explore correlations with baseline features.

Methods: We randomized 20 patients with progressive MS into real (n=10) and sham-placebo rTMS (n=10), who underwent 11 stimulation sessions. Walking speed (10 mt test) and endurance (2 and 6 minutes Test) were assessed at baseline and at the end of treatment, as well as modified Ashworth Scale (MAS), VAS for spasticity and pain, Fatigue Severity Scale, EDSS, MS walking scale-12, PASAT and NHPT.

Results: Compared with sham, real rTMS group had a significant improvement in 10MWT and Ashworth, confirming data from a previous pilot study. When pooling data with the latter study, we found that rTMS with H-coil enhances improvement in walking after neurorehabilitation. We aimed at replicating the study and at combining results with those of the previous study in order to explore correlations with baseline features.

Conclusions: Resting-motor-threshold (RMT) results from the combination of corticospinal excitability and of the amount of corticomotor fibers available for conduction. While rTMS mainly acts on the former mechanism, the latter is a limiting factor in the presence of corticospinal damage. In this condition, RMT could be considered as a therapeutic reserve index, being predictive of therapeutic response to corticospinal neuromodulation.

Disclosure: Nothing to disclose

EP2221

Prolonged peri-ictal clinical-EEG alterations in patients with PCDH19 mutation

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Purpose: Protocadherin coding gene (PCDH19) is a major gene in female patients with infantile onset epilepsy, associated with variable degree of mental retardation and autistic features with obsessive/hyperactive traits. PCDH-19-related epilepsy is characterized by febrile and afebrile cluster of seizures with prominent involvement of the fronto-temporal regions; status epilepticus can occasionally occur. We aim to provide further electroclinical insight about the clinical EEG features of the seizures cluster in benign forms of PCDH19-related epilepsy.

Methods: We selected patients with drug resistant PCDH19-related epilepsy, without severe mental retardation or severe psychiatric features. The patients underwent video-EEG-recordings, clinical±neuropsychological evaluation at their baseline, during and after the cluster of seizures.

Results: 10 patients have been selected. All of them had mild cognitive impairment, normal EEG at baseline and recurrent clusters of a few brief seizures (1-3 days) associated with variable degrees of cognitive/behavioural alterations persisting for days to weeks after seizures clusters.

Long-lasting peri-ictal video-EEG recordings were obtained in 6/10 patients; 6/6 had prolonged peri/post-ictal EEG slowing (days to weeks) and 3/6 subjects also had multifocal spikes/slow waves, in 1 case associated with multifocal jerks and in 1 case with several subtle morphic motor seizures.

Conclusions: Most PCDH19 patients share peculiar neuropsychological profile and ictal electro-clinical features suggesting both an ictal involvement and a more persistent impairment of the fronto-temporal limbic structures. In our patients, we documented furthermore the frequent recurrence of more prolonged clinical-EEG alterations, associated to the typical seizures clusters, possibly reflecting a fronto-limbic status-like condition.

Disclosure: Nothing to disclose
EP2222

The evaluation of the A-wave detected patients in an electrophysiology laboratory

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Introduction: A waves are present in at least one nerve in 5% of the clinically asymptomatic subjects; this is about 65% in subjects with polyneuropathy. In this study we evaluated the patients with detected A-waves according to their diseases and electrophysiological data.

Methods: The patients referred to our EMG laboratory in Istanbul Education and Research Hospital between January 2010 and September 2013 were evaluated retrospectively. EMG and nerve conduction studies of patients with A waves detected in F-wave studies were selected and classified according to their results.

Results: Data from 64 patients were obtained from their clinical records and electrophysiological tests. 41 patients were polyneuropathy (64.06 %), 7 patients were lumbar spinal pathology (10.94%) and 2 had normal electrophysiological data (3.12%). Forty nine of the patients diagnosed with polyneuropathy were at the early stage and pre-diagnosed as Guillain-Barre syndrome. Twelve patients were diagnosed as motor demyelinating, 21 were sensorymotor demyelinating, 8 were sensorymotor axonal and 8 were sensorymotor mixed type polyneuropathy. Two of the other polyneuropathy patients were multifocal motor polyneuropathy, one hereditary polyneuropathy, one chronic inflammatory demyelinating polyneuropathy, one diabetic polyneuropathy and the last one was n-hexane polyneuropathy. Spinal pathologies were L5 and S1 radiculopathies, lumbar trauma and spina bifida.

Conclusions: A waves can be seen in normal subjects and anterior root pathologies but mostly in polyneuropathies especially in the acquired polyneuropathies. They must be recognized well, differentiated from F-waves and their presentation must alarm clinicians as an early sign of an acquired polyneuropathy.

Disclosure: Nothing to disclose

EP2223

Tongue somatosensory evoked potentials: evaluation of the brainstem involvement in patients with early multiple sclerosis

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Objectives: The aim of this study was to determine the efficacy of tongue somatosensory evoked potentials (tSSEP) in evaluation of brainstem involvement in patients with early multiple sclerosis (MS).

Methods: tSSEP was performed on ten healthy volunteers and 29 patients with first clinical episode of a demyelinating event suggestive of MS. Obtained data were compared between the two groups, and tSSEP findings of MS patients were correlated with clinical and MRI data.

Results: MS patients had statistically significant prolongation of N1, P1 and N2 latencies on the left side compared with healthy controls (17.8±3.5 vs 15.2±1.3, p=0.004; 23.9±3.3 vs. 20.8±1.0, p=0; 29.9±4.2 vs. 26.7±2, p=0.01, respectively) and P1 and N2 on the right side (23.8±3.5 vs. 20.8±1.3, p=0.04; 30.3±3.8 vs. 27.3±1.9, p=0.01, respectively). Out of the 29 MS patients eight (28%) had clinically evident involvement of the brainstem and nineteen (66%) had brainstem lesions demonstrated on brain MRI. There was 20 MS patients with prolonged latencies of tSSEP on either side no clinical signs of brainstem dysfunction and this difference was statistically significant (p<0.0001). As well, tSSEP detected brainstem lesions in higher percentage than MR, reaching statistical significance (p<0.039).

Conclusions: tSSEP is an efficient method for evaluating the afferent trigeminal pathway in patients with early multiple sclerosis, more sensitive than clinical evaluation and radiological imaging in the detection of brainstem lesion.

Disclosure: Nothing to disclose
EP2224

Abnormal subclinical thermal sensory perception in 3 cases of ciguatera intoxication

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Introduction: The most striking expression of ciguatera intoxication is paradoxical perception of thermal sensation. We used a recently described psychophysical testing to examine the thermal perception abnormalities in three patients with such intoxication.

Methods: Three female patients (named B, C and D, in the figure, aged 35-38 years) presented gastrointestinal and neurological symptoms after ingestion of Caribbean fish. They reported paresthesias and abnormal temperature sensation for weeks, although had no such complaints at neurophysiological evaluation. We applied temperature stimuli consisting on slow increase or decrease of temperature (0.5%) from 32°C to heat or cold pain. Subjects asked to do continued (dynamic) expression of their sensation through an electronic visual analog-scale (VAS) device. Healthy volunteers, show overshoot sensation after heat or cold pain. We also studied nerve conduction in sural and median nerves (NCS), sympathetic sudomotor skin responses (SSR), contact-heat-evoked-potentials (CHEPs) and quantitative sensory testing (QST).

Results: Patients had normal neurological examination, NCS, SSR, CHEPs and QST (except for one patient who had abnormally enhanced sensory threshold for cold and heat to stimuli to the feet). However, no overshoot cold sensation was observed in any of them, after heat pain in the feet. Instead, they showed a paradoxical large and long-lasting heat sensation, particularly in sole.

Conclusions: The abnormal behaviour of our patients after heat pain stimuli may reflect the disturbances on thermal perception, frequently observed during ciguatera poisoning. Small nerve fibers dysfunction can be reliably evidenced employing dynamic psychophysical testing.

Disclosure: Nothing to disclose

EP2225

Open label pilot study of urethral injections of botulinum toxin to treat women in urinary retention due to Fowler’s syndrome

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Introduction: Urinary retention is uncommon in women, and one cause is a primary disorder of urethral sphincter relaxation (Fowler’s Syndrome). This aim of this study was to assess the efficacy and safety of urethral sphincter injections of botulinum toxin in women with Fowler’s Syndrome.

Methods: In this open label pilot study, ten women with mean age 40.2years (25-65) with a primary disorder of urethral sphincter relaxation (elevated UPP, sphincter volume and abnormal EMG) presenting with obstructed voiding (n=5) or in complete urinary retention (n=5) were recruited from a single tertiary referral centre. Symptoms were assessed using the IPSS questionnaire, urinary flow and post-void residual volume. After 2% lidocaine injection, 100U of onabotulinumtoxintypeA was injected into the striated urethral sphincter, divided on either side, under EMG guidance. Patients were reviewed at week 1, 4 and 10 post-treatment and symptoms were reassessed. The UPP was repeated at week 4.

Results: Three out of five women showed a 50% improvement in flow rate. Four out of five women in complete retention could void spontaneously, with a mean flow rate of 11.4 mls/sec at week 10. Six patients discontinued catheterisation at week 10. The mean static UPP improved from 113 (86-139) to 92.2 (66-151) cmH2O at baseline. No serious side effects were reported. Seven out of ten women opted for repeat injections.

Conclusions: Botulinum toxin injections into the striated urethral sphincter are associated with clinically meaningful improvement in voiding parameters representing a safe and reasonable outpatient treatment for those with retention/obstructed voiding awaiting sacral neuromodulation.

Disclosure: Funding: an unrestricted educational grant from Allergan. National Health Service Research Ethics Committee approval by NHNN and ION joint REC Clinical Trial: Yes Registration Number: EUDRACT 2008-004858-33 RCT: No

Subjects: HUMAN Ethics Committee: NATIONAL HOSPITAL FOR NEUROLOGY AND NEUROSURGERY and INSTITUTE OF NEUROLOGY JOINT RESEARCH ETHICS COMMITTEE Helsinki: Yes Informed Consent: Yes
EP2226

Forehead sympathetic skin responses in determining autonomic involvement in Parkinson’s disease

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Introduction: Sympathetic skin responses (SSR) and R-R interval variation (RRIV) are simple and reliable electrophysiological markers of autonomic nervous system (ANS) involvement in Parkinson’s disease (PD). There is growing evidence to suggest varying degrees of autonomic involvement in different body parts in PD. The purpose of this study was to evaluate SSR of forehead and demonstrate any differences with SSR of upper and lower extremities in determining ANS involvement in patients with PD.

Methods: Twenty early stage, 20 advanced stage idiopathic PD patients and 20 healthy controls participated in this study. SSR of forehead, hands and feet, RRIV, orthostatic hypotension, QT intervals and dysautonomic symptoms were evaluated.

Results: Absent forehead SSR was determined unilaterally in 4, bilaterally in 7 early stage patients, and unilaterally in 4, bilaterally in 8 advanced stage PD patients (p=0.000). However, absent extremity SSR was determined in at least 1 extremity of 3 advanced stage PD patients, and none of the early stage PD patients. No difference was noted in RRIV at rest between the three groups (p=0.218); whereas RRIV at deep hyperventilation was lower in both early and advanced PD patients compared to controls (p=0.014, p=0.002, respectively).

Conclusion: We suggest that forehead SSR might be more sensitive than extremity SSR in determining ANS dysfunction particularly in the early stage of PD. Further research and biopsy studies should be performed on forehead SSR to support the role of this simple and noninvasive electrophysiological examination as a diagnostic tool in autonomic involvement of early stage PD patients.

Disclosure: Nothing to disclose

EP2227

Newly developed Waldenström’s macroglobulinemia during immunomodulatory treatment for chronic inflammatory demyelinating polyneuropathy with antibodies against myelin-associated glycoprotein (MAG) and sulfatide

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Waldenström’s macroglobulinemia (WM) newly developed in a patient with chronic inflammatory demyelinating polyneuropathy (CIDP) with antibodies against myelin-associated glycoprotein (MAG) and sulfatide who was undergoing treatment with intravenous immunoglobulins (iv-IG). WM patients can develop polyneuropathies and few have anti-MAG and/or anti-sulfatide antibodies. Anti-MAG antibodies (4% of WM) are associated with sensorimotor axon loss and demyelination and anti-sulfatide (5% of WM) with sensory axonal loss. Rarely, both antibodies can be present, with a more severe phenotype. Anti-MAG anti-sulfatide CIDP can present independently, not associated with WM. There are no reports to date of patients with anti-MAG anti-sulfatide CIDP whom developed WM during immunomodulatory treatment with iv-IG. In addition, Rituxan has not been proven beneficial, as it has been previously reported for anti-MAG CIDP. 76-year-old right-handed man presented with persistent numbness in his left foot, three months following artificial disc placement in his lumbar spine. No weakness reported, only sensory symptoms. No radicular signs on exam nor impingement on spine images. Serum anti-MAG and anti-sulfatide antibodies were elevated. NCS/EMG studies revealed CIDP with prolonged distal motor latencies. Patient underwent chronic therapy with iv-IG, which stabilized his symptoms. After six years of treatment, he newly developed WM. Subsequent Rituxan infusions did not improve his clinical picture nor NCS/EMG findings. WM can newly develop in an autoimmune setting, such as anti-MAG and anti-sulfatide CIDP undergoing iv-IG treatment. This may reflect a possible induction of pathological B cell clone proliferation. Rituxan infusions did not improve the clinical symptoms nor NCS/EMG features of demyelination.

Disclosure: Nothing to disclose
EP2228

Long-term evolution of EEG in Unverricht-Lundborg disease
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Introduction: EEG features Unverricht Lundborg Disease (ULD) is characterized by an alteration of the background rhythm (BR), paroxysmal abnormalities and photoparoxysmal response.

Objective: To evaluate the EEG features of patients with ULD.

Methods: We included 17 ULD patients confirmed genetically and having more than 15 years duration of disease progression at the time of inclusion. This study was conducted between 2005 and 2013. EEGs were recorded at inclusion, 2 years and 5 years of follow-up. We divided our study population into 2 groups according to the activity of the disease (group 1: unstabilized patients with epileptic seizures and group 2: stabilized patients without seizure).

Results: 47 EEG were included. The mean duration of follow up was 26.5±6.9 years. The average BR was 8.2 c/s. BR was normal in 30 records (64%), slow in 17 (36%). Epileptic abnormalities were found in 22 EEGs (47%): generalized in 20, focused in 2, amplified by hyperventilation in 4 and photoparoxysmal response in 4. 18 EEG records in group 1 showed slow BR in 14 cases and generalized spike and wave discharges in 16. Concomitant myoclonus was recorded in 11 records photoparoxysmal response was found in 4 cases. 29 EEG records in group 2 showed normal BR in 27 records and generalized spike and waves discharges in 6.

Conclusions: This study shows that the progressive disappearance of EEG abnormalities in ULD is rather due to the treatment than a gradual spontaneous tendency to decrease over the years. EEG features in ULD depends on clinical stabilization.

Disclosure: Nothing to disclose

EP2229

Transcranial direct current stimulation for seizure control in patients with Lennox-Gastaut syndrome
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Introduction: Lennox-Gastaut Syndrome (LGS) is a relatively frequent and heterogeneous epileptic encephalopathy associated with several types of seizures with anti-epileptic drug resistance. Transcranial direct current stimulation (t-DCS) is a non-invasive and safe method tried in drug-resistant epilepsies. Our aim was to investigate the effect of t-DCS on the seizures of LGS patients.

Methods: 12 patients (mean age: 15.5; 6 males), diagnosed as LGS with their typical clinical and electroencephalographic (EEG) findings, were included after the signed consent of their legal guardians. All patients received anodal and cathodal stimulation (2 mA for 30 minutes on 3 consecutive days, with amplitude modulation at 12 Hz). Five patients also received sham stimulation (60 seconds stimulation gradually decreased in 15 seconds).

Results: Only 2 patients had more than 50% decreases in their seizure frequencies by cathodal stimulation. However, sham stimulation of these two patients did not show any change in seizure frequency. One of them had type-1 lissencephaly and the other had normal magnetic resonance imaging (MRI) findings. Both had prominent focal EEG findings in comparison to non-responders. Longest positive effect of t-DCS lasted one month. On the other hand, anodal stimulation was not effective. No adverse effect has been reported.

Conclusions: Although our series was small, it can be suggested that cathodal t-DCS may be effective in selected patients with significant focal EEG findings despite a devastating epileptic syndrome. Anodal t-DCS is not effective for improving seizure outcome among LGS patients. Further studies with large series of patients are needed.

Disclosure: Nothing to disclose
Evaluation of the effect of modafinil on cognitive functions in patients with idiopathic hypersomnia with P300

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Introduction: Modafinil is a well-tolerated psychostimulant drug with low addictive potential that is used to treat patients with narcolepsy and other excessive sleepiness. Whereas favorable effects of modafinil on cognitive functions have been shown in a large number of studies, there are very limited number of reports presenting the effects of modafinil electrophysiologically. The aim of this study was to investigate the effects of modafinil on auditory p300 latency and amplitude electrophysiologically.

Methods: Eighteen patients (age range: 16-48) with a diagnosis of Idiopathic Hypersomnia (IH) were included in the present study. As a standart treatment, 200 mg/day modafinil was administered to each patient. P300 auditory test was performed for each patient before and at the end of 1 week of modafinil treatment.

Results: After one week of modafinil treatment, mean P300 latencies (at all electrode sites) were significantly lower than the latencies before the treatment (P values for Fz, Cz and Pz recording sites were 0.039, 0.002 and 0.004, respectively). An increase in the P300 amplitudes was detected only at Fz recording site, but not at Cz or Pz recording sites. (P values for Fz, Cz and Pz recording sites were 0.014, 0.100 and 0.05, respectively).

Conclusions: One week of modafinil treatment improved the cognitive performance, alertness and executive functions in IH patients. Our findings obtained electrophysiologically provide further confirmation for previous reports in which modafinil has been shown to exert favorable effects on cognitive performance, alertness and executive functions.

Disclosure: Nothing to disclose

Gastrocnemius Hoffmann-reflex in the diagnosis of various neurological diseases: correlation with clinical features

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Introduction: The Hoffmann reflex (H-reflex) is commonly used in the diagnosis of radiculopathies, but it has been investigated in many conditions. Although H-reflex technique seems simple there are some limitations to its interpretation. The aim of this study was to analyze gastrocnemius H-reflex parameters in various neurological diseases and investigate their correlation with clinical manifestation and final diagnosis.

Methods: H-reflex was done bilaterally from gastrocnemius medialis muscles in prone position. Peak to peak amplitudes of M-wave and H-reflex, latency and Hmax/Mmax ratio were recorded. The data was supplemented by other electrophysiological parameters (for n.tibialis, n. peroneus and n.suralis), results of neurological examination and neurovisualization, and, if necessary, laboratory findings.

Results: 134 patients were studied (59 with S1 radiculopathies, 34 with disorder of central nervous system, 27 with polyneuropathies, 6 with peroneal neuropathies, 8 with sciatic neuropathy). The S1 radiculopathies could be well confirmed in 50 (84.7%) patients (low Hmax/Mmax ratio (6.7±0.6) with prolonged latency), but 24 patients had decreased ratio also contralaterally without clinical manifestation there. The central nervous disorder could be confirmed in 22 (64.7%) of 34 patients which had high Hmax/Mmax ratio (50.7±3.6) with normal latency. In 12 patients (33.3%) the electrophysiological results were controversial. H-reflex was helpful in 26 patients (96.3%) with polyneuropathies, where the affection of proximal fibers was observed in 21 patients. H-reflex was helpful in sciatic neuropathy and differential diagnosis of peroneal neuropathies.

Conclusions: Gastrocnemius H-reflex is a good diagnostic tool but caution must be exercised in the assessment of its results.

Disclosure: Nothing to disclose