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### EFFECTS OF VISUAL DEPRIVATION ON VISUAL EVOKED POTENTIALS IN MIGRAINEURS AND HEALTHY SUBJECTS

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**Background:** Interictally visual evoked potentials (VEP) are characterised in migraine by a deficient habituation. Among the possible underlying mechanisms, deficient activation of inhibitory interneurons has been postulated. Cortex excitability is known to increase after visual deprivation (VD) which is attributed to an excitability decrease of cortical inhibitory interneurons (Boroorjerdi et al. 2000).

**Objective:** To study the effect of VD on VEP and its habituation in migraineurs without aura (MO) and healthy volunteers (HV).

**Methods:** Six sequential blocks of 100 averaged VEP at 3.1 Hz were recorded before and after 1 hour of visual deprivation in 6 healthy subjects and in 8 migraineurs. We measured N1-P1 amplitudes in each block and its percentage change between the 1st and the 6th block

**Results:** Before VD VEP clearly habituated in HV ( $-13.87 \pm 8.99\%$ ) but there was, as expected, a potentiation in MO ( $14.35 \pm 15.22\%$ ) ( $p=0.002$ ). In MO this potentiation was replaced by habituation after VD ( $-3.85 \pm 10.05\%$ ) ( $p=0.01$ ) and N1-P1 amplitude in the 1st block decreased significantly ( $p=0.006$ ). Changes induced by VD were more variable and not significant in HV ( $1.63 \pm 17.63\%$ ).

**Conclusions:** These results suggest that reduced activity of cortical inhibitory interneurons is not responsible for the interictal lack of VEP habituation in migraine or that LD has in migraineurs a paradoxical effect increasing instead of decreasing excitability of these interneurons.

Boroorjerdi B, Bushara KO, Corwell B et al. Enhanced excitability of the human visual cortex induced by short-term light deprivation. *Cereb Cortex* 2000;10: 529-534.

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### THE H-REFLEX AS A DIAGNOSTIC TOOL FOR MILLER FISHER SYNDROME IN PEDIATRIC PATIENTS

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**Background:** Miller Fisher syndrome (MFS) is characterized by the triad of gait ataxia, external ophthalmoplegia and areflexia. It is considered as an immune disorder involving anti-GQ1b and anti-GT1a antibodies. Immunohistochemical data suggest a direct pathophysiological role for anti-GQ1b antibodies in MFS at motor nerve terminals. The proximal extent of this antibody-mediated degeneration remains uncertain. The variability in abnormal electrophysiological findings reported is important, ranging from isolated H-reflex abolition to widespread nerve conduction impairments.

**Methods:** We investigated three paediatric MFS cases, aged between 2 and 11 years. Motor and sensory nerve conduction studies, H-reflex and F-waves were performed.

**Results:** All three patients had an absence of H reflex. It was the sole abnormality in two patients whereas the third case had more extended nerve conduction impairments concerning motor and sensory fibres. The transient character of this isolated abolition has been confirmed in one of our patients.

**Conclusions:** The selective and temporary impairment of H reflex

observed in our patients, points to a proximal demyelinating process near the dorsal root ganglia. Based on these findings and recent immunohistochemical advances, we discuss the neurophysiology of areflexia and ataxia in MFS. This may involve selective demyelination of Ia spinocerebellar afferent fibres originating in muscle spindles. H reflex can be proposed systematically as a useful tool in the diagnostic approach of MFS, particularly in a paediatric population in which extensive neurophysiological testing would seem irrelevant.

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### CARDIOVASCULAR AUTONOMIC FUNCTION TESTS IN MIGRAINE PATIENTS

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Autonomic nervous system is involved in migraine during (nausea, vomiting, etc.) and outside of the attacks. Most studies, carried out on pupillary autonomic function, have revealed oculosympathetic impairment in migraine patients studied when headache-free. Cardiovascular autonomic function tests have also been studied in migraine patients with different methods and contradictory results. The aim of this study was to assess cardiovascular sympathetic and parasympathetic functions with standardised cardiovascular autonomic function tests in patients suffering from migraine. We studied 30 headache-free patients suffering from migraine (diagnosed according to the criteria of IHS 2004) and 30 age- and sex-matched controls. In these subjects, the following cardiovascular autonomic function tests were performed to assess sympathetic and parasympathetic functions: orthostatism, head-up tilt, cold pressor test, deep breathing, Valsalva manoeuvre and hyperventilation. Blood pressure was globally lower in patients than in controls ( $p<0.01$ ). In addition, a mild postural hypotension (blood pressure drop  $>20$  mmHg – resulting in a systolic blood pressure  $<90$  mmHg) was found in a subgroup of migraine patients (10/30–33.3%). The responses to deep breathing, Valsalva manoeuvre and hyperventilation were significantly higher in patients ( $p<0.001$ ) than in controls; an observation that indicates parasympathetic hyperfunction in migraine patients. The possible relevance of low blood pressure, postural hypotension and parasympathetic hyperfunction in migraine patients has to be elucidated in further studies.

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### BSI VERSUS THE EYE: EEG MONITORING IN CAROTID ENDARTERECTOMY

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**Objective:** Carotid endarterectomy is a common procedure as an important secondary prevention of stroke. For selective shunting, continuous EEG monitoring is a standard technique, with visual assessment to track possible ischemia. Recently, the extended BSI was proposed as a pair of quantitative features to support the visual interpretation. Here, we further evaluate its potential clinical use using a large data set.

**Method:** The extended BSI (consisting of a spatial and temporal symmetry measure, sBSI and tBSI, respectively) was calculated

retrospectively from a group of 111 patients who underwent a carotid endarterectomy in our hospital. EEG recordings were visually assessed to determine shunt placement and compared to the calculated BSI-values.

**Results:** All unilateral changes in the EEG found by visual assessment were reflected by  $\Delta$ -sBSI  $\geq 0.060$  and all diffuse changes by  $\Delta$ -tBSI  $\geq 0.065$ . In EEGs with both unilateral and diffuse changes,  $\Delta$ -sBSI  $\geq 0.060$  and  $\Delta$ -tBSI  $\geq 0.065$ .

**Conclusions:** This study extends and confirms our previous pilot results that the sBSI and tBSI correlate strongly with the visual assessment of the EEG, as performed by experienced neurophysiologists.

**Significance:** The extended BSI supports the visual intraoperative EEG monitoring during carotid endarterectomies and assists in a more reliable decision for selective shunting.

## P2251

### PANIC DISORDERS IN ADULT CELIAC DISEASE

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**Background and aims:** Celiac disease is an autoimmune gastrointestinal disorder characterized by mucosal atrophy of the jejunum on exposure to gluten, a protein found in grains. An increased prevalence of celiac disease has been reported in psychic symptoms and depression. We planned to evaluate the association between celiac disease and panic disorders and what part autoimmune impairment of the thyroid may play in it.

**Methods:** We revealed 28 celiac patients with panic disorders, 21 females and 6 males, aged 16-61. The diagnosis of celiac disease was made on the basis of clinical history, serological criteria and endoscopic duodenal biopsy. Panic disorder was formulated using the International Composite Diagnostic Interview, according to DSM-IV criteria. The thyroid was evaluated with palpation, echography and measurement of serum-free thyroid hormones (FT4, FT3), thyroid-stimulating hormone (TSH) and antithyroid autoantibodies (anti-TPO). Celiac patients were evaluated for the level of knowledge about celiac disease and the compliance with gluten-free diet.

**Results:** Anti-TPO was significantly high in 17 celiac patients. In 22 patients, the panic disorders improved quickly with a gluten-free diet.

**Conclusions:** We think celiac disease should be taken into consideration in the presence of panic disorders, particularly if they are not responsive to psychopharmacological therapy, because withdrawal of gluten from the diet usually results in disappearance of symptoms. Screening for celiac disease in all cases of panic disorders with subclinical thyroid disease is therefore recommended.

## P2252

### RELATIONSHIP BETWEEN ENDOTHELIAL DYSFUNCTION AND VEGETATIVE BALANCE IN PATIENTS WITH HYPERTENSION

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**Background:** We investigated relationship between the endothelium-dependent vasodilatation and the autonomic regulation in hypertensive patients.

**Study design and methods:** Two groups of individuals have been included in the study: 20 patients with uncomplicated, untreated EH (mean  $48 \pm 3.6$  years) and 15 normotensive subjects (mean  $46 \pm 2.1$  years). Patients with cardiac, metabolic, or any other systemic disease were excluded. Cardiac autonomic function was assessed by Valsalva's manoeuvre, respiratory sinus arrhythmia (for cardiac vagal tone) and the pressor and chronotropic changes following forearm isometric handgrip exercise and the assumption of upright posture (tests of sympathetic function). All subjects underwent measurement of endothelium-dependent vasodilatation (FBF) of the brachial artery by forearm venous occlusion pletysmography after increasing times of ischemia using duplex ultrasonography («Hewlett Packard Image Point», USA). FBF was calculated as the mean of 4 to 8 inflow recordings during 3 minutes. All data are presented as means  $\pm$  SEM. Data were analyzed with ANOVA of the time response curves or t-test.

**Results:** FBF was markedly blunted in hypertensive patients versus healthy controls (30s:  $2.1 \pm 0.2$  vs.  $3.7 \pm 0.1$ ; 60s:  $2.3 \pm 0.1$  vs.  $4.1 \pm 0.3$ ; 120s:  $3.1 \pm 0.1$  vs.  $7.6 \pm 0.04$   $p < 0.001$ , respectively). 89% hypertensive patients had failures of the vegetative nervous system (52% sympathetic, 31% parasympathetic, 6% parasympathetic/sympathetic dysfunction). The multivariate analysis shows high correlation between impaired FBF and failure of peripheral sympathetic vasomotor tone ( $r = 0.41$ ;  $p < 0.05$ ).

**Conclusion:** Correlation between the change in the sympathetic part of the vegetative nervous system and endothelial dysfunction may indicate poor prognosis in patients with hypertension.

## P2253

### CONTINUOUS EEG MONITORING IN THE INTENSIVE CARE UNIT: BETA SCIENTIFIC AND MANAGEMENT SCIENTIFIC ASPECTS

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EEG monitoring provides a non-invasive and inexpensive method to assess important aspects of the neurologic status of a patient. Because this technique offers an opportunity for long-term brain monitoring, even when patients are comatose or sedated, it can be of great use in the ICU. However, there are various practical and logistical problems that have to be overcome before continuous EEG monitoring (cEEG) can be implemented in the ICU. For instance, analysis of the raw EEG signal has to be performed by a physician, who is not always present in the ICU. This problem can be overcome by the accessibility of a network, so the physician can view the EEG from his office or from home. Quantitative EEG (qEEG) analysis methods and automated signalling can simplify interpretation for the ICU staff and thereby reduce labour intensity. In this study, we analyze the aspects that are involved in implementation and use of cEEG in the ICU. The beta scientific aspects that are analyzed are the relevant patient groups that can be monitored and the suitability of the different qEEG features, including automated signalling. The management scientific aspects that are determined are the costs and labour intensity. Based on our own experience and existing literature, it is likely that a combination of qEEG features is needed to optimally monitor different types of injury. Analysis of the aspects involved in implementation and use of cEEG in the ICU will reveal points of interest and will contribute to a successful implementation in the ICU.