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**Predicting Outcome in Acute Stroke: A Comparison
Between QEEG and the Canadian Neurological Scale**

E. Cuspeda, C. Machado, E. Aubert, L. Galán, F. Llopis and Y. Avila

ABSTRACT

Objective: To determine and compare the predictive value of quantitative EEG (QEEG) and the Canadian Neurological Scale (CaNS), in patients with an acute cerebral stroke. Methodology: Twenty-eight patients were studied with the diagnosis of acute ischemic middle cerebral artery stroke, within the first 72 hours of clinical evolution. Thirty-seven EEGs and clinical evaluations were collected: 13 during the first 24 hours after stroke onset, 9 between 24-48 hours and 15 between 48-72 hours. The QEEG studied variables were: the Z values (maximum, minimum and the Z medians from the 5 nearest points to each one) of absolute energies (AE) from the 4 classic frequencies bands. The clinical scale showed a smaller percent of correct prognosis than QEEG variables. Conclusions: QEEG was demonstrated to be a powerful tool to predict the degree of residual functional disabilities after an acute ischemic stroke and showed a higher prognostic value than CaNS when they are performed within the first 72 hours of brain infarct.

Electrophysiology of the Frontal Lobe

E. Niedermeyer

ABSTRACT

The electrophysiology of the frontal lobe appears to be unimpressive when the view is limited to the routine EEG recording of a healthy waking adult. There is usually low voltage fast activity, which becomes more pronounced when recorded with depth leads.

Three special EEG patterns of marginal to slightly abnormal character are discussed: a) rhythmical midfrontal 6-7/sec activity of juveniles, b) rhythmical midfrontal sharp 4-6/sec activity of infancy and early childhood with arousal from sleep, and c) frontal intermittent rhythmical delta activity (FIRDA) in waking adults with frontopolar maximum, possibly related to thought processes under abnormal conditions.

With extension of the frequency range, ultraslow (DC-like) as well as fast beta (gamma, 40-80/sec) and ultrafast activity (80-1000/sec) are found particularly over the frontal lobes. Ultraslow baseline shifts are arousal-related and mixed with overlying ultrafast waves. Attention control and the "working memory" involve chiefly the dorsolateral prefrontal cortex, investigated with P300 responses and likely to show ultrafast spectra. Perception-related 40-80/sec gamma activity has been thought to be associated with the entrance into consciousness.

Initiation and design of motor activity spreads from prefrontal to the frontomotor cortex, associated with powerful event-related potentials: contingent negative variation (CNV) and "Bereitschafts potential" ("readiness potential," RP).

Neuroscientific research of the highest frontal lobe functions has become a very active domain of neuroimaging. With the use of the extended frequency range, EEG and also evoked potential studies could add further information with acquisition in real time. Ultrafast frequency ranges presented in computerized frequency analysis and mapping might show impressive correlates of highest frontal lobe functions.

The Frontal Arousal Rhythm (FAR) Is an Ictal Pattern: A Case Report

John R. Hughes

ABSTRACT

This paper deals with a patient with the Frontal Arousal Rhythm (FAR), a rare rhythmic pattern usually seen in young children awakening from sleep, with a history of seizures. In this patient, subtle clinical changes were observed on the video during the pattern, consisting of a sequence of brief eye lid flutter, chewing, increased inspiration and upper lip quivering. This exact sequence was seen on three successive occasions lasting for 6, 9, and 10 sec. The conclusion is the FAR is not just a sign of seizure disorder, but is actually an ictal pattern.

Benign Neonatal Sleep Myoclonus: Case Report

and Follow-up of Four Members of an Affected Family

**M. Luigia Vaccario, Maria A. Valenti, Anna Carullo,
Rossella Di Bartolomeo and Salvatore Mazza**

ABSTRACT

Benign neonatal sleep myoclonus (BNSM), characterized by myoclonic jerks of the extremities only in non-REM sleep, occurs in the first months of life with spontaneous disappearance within 3-4 months. We examined five siblings with typical BNSM, at the 3-10 years follow-up neurological examination. Psychomotor development, cognitive functions and EEG were completely normal. These cases confirm that BNSM is a self limited and nonepileptic disorder.

Sleep Disorders in Sanfilippo Syndrome: A Polygraphic Study

**P. Mariotti, G. Della Marca, L. Iuvone, S. Vernacotola,
R. Ricci, G. F. Mennuni and S. Mazza**

ABSTRACT

Objective: A high prevalence of sleep disorders is reported in patients affected by Mucopolysaccharidosis III (Sanfilippo syndrome). These disorders have never been investigated by prolonged, objective, and instrumental evaluations. The present work is based on sleep duration and structure in Sanfilippo patients.

Study design: The features of sleep/wake cycle in 6 Sanfilippo patients and 6 healthy controls were evaluated by means of sleep diaries and 48 hour ambulatory EEG and polygraphic recordings. Statistical analysis was performed by means of the U-test (Mann-Whitney).

Results: Four out of six Sanfilippo patients, the oldest patients in our sample, showed an extremely irregular sleep pattern, with several sleep episodes of inconstant duration, irregularly distributed along 24 hours. The two younger patients showed sleep maintenance insomnia with several nocturnal awakenings.

Conclusions: These results suggest that sleep disruption in Sanfilippo syndrome consists of an irregular sleep/wake pattern, which at its onset might appear as a disorder of initiating or maintaining sleep. This could explain why some patients do not respond to conventional hypnotics. The present observation might suggest attempting therapies aimed at resynchronization, such as behavioral treatment, light therapy or melatonin.

Spikes Immediately After Electroconvulsive Therapy in Psychotic Patients

**Fumio Kubota, Nobuyoshi Shibata, Takushiro Akata,
Senichiro Kikuchi, Akira Kifune, Naoya Yuuki and Kazuo Takeuchi**

ABSTRACT

The goal of this study was to assess the spikes systematically and to clarify an epileptic abnormality induced by electroconvulsive therapy (ECT). Our subjects were 20 psychotic patients with no spikes on prior EEGs. ECT was performed by applying electrical current to both sides of the patient's temple every 2 or 3 days for a period of between 1-4 weeks. The first EEG examination was performed either on the day that the ECT course was completed or on the following day. Subsequent EEG examinations were performed at intervals of 2 or 3 days. Thirteen of the 20 patients showed spikes. There were no significant differences in age, gender, diagnosis, or type of ECT.

Patients with spikes had significantly more ECT sessions than those without spikes. The spikes were present in the frontal, temporal and central areas, predominantly frontal, anterior temporal and mid-temporal region, and almost disappeared in 1-3 weeks. The occurrence of spikes immediately after ECT was demonstrated. Although this abnormality was transient, it could indicate that in humans ECT causes the early stage of kindling phenomenon as a result of repeated application, and that the temporal lobe seems to play a major role in order to induce the phenomenon.

Lithium Intoxication Mimicking Clinical and Electrographic Features of Status Epilepticus: A Case Report and Review of the Literature

M. Gansaeuer and T. M. Alsaadi

ABSTRACT

A 58-year-old patient who was somnolent, distractible and confused is presented. She was previously treated with lithium, and a plasma level was mildly elevated at 1.7 mmol/l (normal 0.5-1.5 mmol/l). The EEG was suggestive of electrographic status epilepticus. Following treatment with i.v. lorazepam, neither mental status nor EEG abnormalities improved. She had a full recovery of mental function and markedly improved EEG findings following discontinuation of lithium. The EEG is an effective tool for diagnosing lithium neurotoxicity in patients with normal or mildly elevated lithium plasma levels. However, caution is needed before making an assumption of status epilepticus.

Epileptic Nystagmus and Its Possible Relationship with PGO Spikes

John R. Hughes and John J. Fino

ABSTRACT

A simultaneous video-EEG on a waking 6-year-old male revealed rapid horizontal and then vertical eye movements and 10 sec later showed ictal rhythms maximal on the occipital areas, quickly spreading to all other areas. A second ictal event during wakefulness was very similar to the first. During sleep interictal discharges were seen from the right frontal-temporal area and one more ictal event was noted. This latter seizure in the NREM sleep record did not show any eye movements, but showed ictal activity on the right frontal-temporal area, which later became generalized. We propose that the interictal discharges on the right frontal-temporal area likely arose from the amygdala, which activated the pontine nuclei responsible for PGO (ponto-geniculo-occipital) spikes and the rapid eye movements seen in our patient. The PGO spikes activated the occipital areas, which then showed clear ictal rhythms to complete the sequence of events. This case demonstrates a sequence of rapid eye movements without ictal patterns, followed by seizure rhythms, but may still be an example of "epileptic nystagmus," assuming that the eye movements arose from an ictal activation of the deep subcortical portion of the PGO system.