

to the controls but they prevailed in the frontal section where also more severe white matter changes were detected.

Conclusions.— T2*-weighted gradient-echo 7.0T MRI demonstrates the prevalence of MBs in AD brains compared to FTLN brains. In both pathologies, however, the location of the MBs is clearly linked to the severity of the neurodegenerative changes. The presence of CAA is associated with an increased number and a more widespread distribution of MBs. = 20.

<http://dx.doi.org/10.1016/j.neucli.2012.11.017>

CO17

Evaluating the brain connectivity of the resting state networks in medial temporal lobe epilepsy using partial directed coherence

X. Meng*, W. Sun, W. Mao, Y. Wang

Xuan Wu hospital, neurology department, Beijing, China

Keywords: Medial temporal lobe epilepsy; Neural network; PDC

*Corresponding author.

E-mail address: xianghongmeng@gmail.com (X. Meng)

Objective.— Recent evidence suggests that temporal lobe epilepsy affects a neuronal network rather than a single circumscribed structure within the temporal lobe. Our study was to study the difference of the brain network in rest state between medial temporal lobe epilepsy (mTLE) patients and normal persons.

Method.— By causality analysis of multichannel electroencephalograph (EEG) with partial directed coherence (PDC), we investigated the different neural networks involved in the whole cortex as well as the connectivity between temporal areas and the other brain areas in the patients with medial temporal lobe epilepsy and the normal control. Only patients with unilateral TLE defined by regional temporal EEG seizure onsets or unitemporal interictal spikes (i.e., more than 90% of spikes occurring over affected temporal lobe) and auras before seizure were able to be included. All patients underwent an extensive presurgical evaluation including prolonged video EEG monitoring with scalp electrodes and bilateral placed sphenoidal electrodes, high-resolution MRI, and comprehensive neuropsychological testing. More than six specialists in epilepsy reached consensus on the side of seizure onset. The MRI results of all patients were either normal or hippocampus sclerosis. Patients with additional abnormalities detected by visual inspection (e.g., lesions and atrophy of temporal lobe, abnormalities of the other brain areas) were not included. Fourteen medial temporal lobe epilepsy patients after surgery evaluation in Xuan Wu were enrolled in our study, and divided into left temporal lobe epilepsy group (L-ep: 6 patients, 4 male, mean age: 29.33–6.62) and right temporal epilepsy group (R-ep: eight patients, six male, mean age: 32.00–7.09). Nine normal persons with the similar age and sex compared to epilepsy groups (male 7, mean age: 31.22–4.47) had informed consent to take part in our study. The 64 electrodes scalp encephalography (EEG) was recorded before epileptic surgery. All epilepsy patients accepted temporal lobectomy in two weeks after EEG recording. The postoperative evaluation was done. All patients were followed up in the third month, sixth month and twelfth year after operation. Results: our results indicated that overall PDC index of epilepsy patients was increased compared to the normal control. The connectivity of the network of the left mTLE patients was more tightly than the right mTLE patients. It was observed that the PDC index of the temporal lobe and hemisphere of the epileptogenic focus to the contralateral ones was significantly higher than that of the contra-lateral temporal lobe and hemisphere to the epileptogenic ones, which was consistent with the post-surgery results. That is, the causal influence radiates away from the hemisphere and temporal lobe that may most likely represent the focus of seizure onset in mTLE patients.

Conclusion.— The functional connectivity changes may be due to either reorganization or network impairment, or else they may be the sign of a compensatory mechanism. The localizing and lateralizing ability of PDC analysis in epilepsy may provide crucial information in the selection of cortical areas for resection, effectively treating or ameliorating the occurrence of seizures in a patient.

<http://dx.doi.org/10.1016/j.neucli.2012.11.018>

CO18

24 h in-home EEG after a first seizure in adults

J. Askamp, M.J.A.M. van Putten

University of Twente, Department of Clinical Neurophysiology (CNPH), Enschede, The Netherlands

E-mail addresses: j.askamp@utwente.nl (J. Askamp),

M.J.A.M.vanPutten@utwente.nl (M.J.A.M. van Putten)

Purpose.— The EEG is useful as a predictor of risk of seizure recurrence. However, the sensitivity of a routine EEG in epilepsy is limited, ranging between 25–56% [3]. Repeating routine EEGs may increase the sensitivity to 77% after six recordings [1]. A sleep-deprived EEG improves the yield by 24% in patients with presumed epilepsy after a normal routine EEG [2]. In this study, we evaluate the diagnostic value and feasibility of 24 h in-home EEG in first-seizure patients, as this may improve diagnostic certainty while reducing costs and time-to-diagnosis.

Methods.— First-seizure patients, aged 18 years or older, are randomized to either a group having a standard EEG eventually followed by a sleep-deprived EEG, or a group having a standard EEG followed by a 24 h in-home EEG. In-home EEGs are recorded using a dedicated portable amplifier (TMS-international). The diagnostic value, time-to-diagnosis and number of hospital visits will be assessed.

Results.— At present, 24 first-seizure patients have been included, of which 13 were assigned to the in-home group. None of the standard EEGs contained epileptiform discharges. Ten patients were diagnosed with a first seizure without underlying abnormalities. Five were diagnosed with epilepsy. In two of them, the sleep-deprived EEG showed sharp waves. Two patients had a symptomatic first seizure, whereas in six patients, the first event was probably not epileptic. The average time-to-diagnosis was 70 and 78 days for the sleep-deprived and in-home group respectively and included on average 4.4 and 4.9 hospital visits per patient.

Conclusion.— In-home EEG in first-seizure patients seems feasible. However, the percentage of first-seizure patients with epileptiform discharges is low. Follow-up should demonstrate whether this is caused by the low sensitivity of the EEGs or by the low percentage of first-seizure patients eventually diagnosed with epilepsy. We expect to be able to draw further conclusions when more patients are included.

Further reading

[1] Doppelbauer, et al. *Acta Neurol Scand* 1993.

[2] Liporace, et al. *Epilepsy Res* 1998.

[3] Smith. *J Neurol Neurosurg Psychiatry* 2005.

<http://dx.doi.org/10.1016/j.neucli.2012.11.019>

CO19

The role of EEG-correlated fMRI in presurgical evaluation of epilepsy surgery

P. van Houdt^{a,b}, P. Ossenblok^c, A. Colon^d, F. Leijten^e, P. Boon^a, J.C. de Munck^b

^a Department of Research and Development, Kempenhaeghe, Sterkselfeweg 65, 5591 VE Heeze, The Netherlands

^b Department of Physics and Medical Technology, VU University Medical Center, The Netherlands

^c Department of Clinical Physics, Kempenhaeghe, Netherlands