

SIGNIFICANCE OF FOCAL EEG ABNORMALITIES IN PERVASIVE DEVELOPMENTAL DISORDER AND ADHD

Researchers at University of Fukui, Japan analyzed the relation between EEG abnormalities and PDD or ADHD, and assessed the clinical utility of EEG in the differential diagnosis of these disorders. The study involved 64 PDD children and 22 ADHD children with no history of epilepsy or progressive neurological or psychiatric disease. Paroxysmal discharges at the frontopolar-frontal brain regions and background EEG abnormalities were detected preferentially in the PDD group expressing persistence or hypersensitivity, whereas central-temporal discharges were detected preferentially in the ADHD group expressing impulsivity. No significant differences in the laterality of paroxysmal discharges were found between PDD and ADHD. Patients classified as inattentive subtype ADD showed no EEG abnormality. A combination of EEG abnormalities, including background abnormalities and paroxysmal discharges at Fp-F and C-T regions, might be useful diagnostic hallmarks to distinguish PDD with ADHD from ADHD alone. Dysfunction of specific brain areas associated with EEG abnormalities might explain characteristics of PDD and ADHD symptoms. (Kawatani M, Hiratani M, Kometani H, et al. Focal EEG abnormalities might reflect neuropathological characteristics of pervasive developmental disorder and attention-deficit/hyperactivity disorder. **Brain Dev** 2012 Oct;34(9):723-30). (Respond: Dr Masao Kawatani, Department of Pediatrics, Faculty of Medical Sciences, University of Fukui, Eiheiji, Yoshida, Fukui 910-1193, Japan. E-mail: kawatani@u-fukui.ac.jp).

COMMENT. The utility of the EEG in ADHD is previously documented, especially in relation to choice of medication (stimulant vs. non-stimulant) in patients with lack of awareness and transient cognitive impairment. (Millichap JJ, Stack CV, Millichap JG. **J Child Neur** 2011 Jan;26(1):6-11; idem. **Clinical EEG and Neuroscience** 2011 Jul;42(3):180-4). Of 624 EEG recordings in non-epileptic children evaluated for ADHD, 26% were abnormal. Of 163 abnormal recordings, 55% were focal epileptiform discharges, localized predominantly in the central region, less frequently in frontal and temporal regions, and infrequently in parietal and occipital areas; 41.7% had generalized epileptiform discharges. Hemispheres were equally affected, but in frontal areas, the left side had more frequent spikes. Only 3 patients had background slowing and 3 had focal slowing. None had a primary diagnosis of PDD.

ANTIEPILEPTIC DRUGS AND SEIZURES

EFFECT OF NEONATAL EXPOSURE TO AED ON SYNAPTIC MATURATION

Pharmacologists at Georgetown University, Washington, DC examined functional synaptic maturation in striatal medium spiny neurons from neonatal rats exposed to antiepileptic drugs (AED) with proapoptotic action (phenobarbital, phenytoin, lamotrigine) and without proapoptotic action (levetiracetam). Phenobarbital-exposed rats were also assessed for reversal learning at weaning. Compared to control animals that