

## **SEIZURE DISORDERS**

### **CORTICAL EXCITABILITY MEASURES IN PATIENTS AND UNAFFECTED SIBLINGS**

Researchers at St Vincent's Hospital, Victoria, Australia, measured cortical excitability using transcranial magnetic stimulation in 157 patients with epilepsy (95 generalized and 62 focal) and their asymptomatic siblings and results were compared to those of 12 controls and 20 of their siblings. No differences were observed in cortical excitability between healthy controls and their siblings. Compared to controls, cortical excitability was higher in siblings of patients with generalized or focal seizures. Motor threshold was lower in patients with juvenile myoclonic epilepsy compared with their siblings. The disturbance in cortical excitability appears to involve intracortical inhibitory circuits even in siblings of patients with a structural abnormality and acquired epilepsy. (Badawy RAB, Vogrin SJ, Lai A, Cook MJ. Capturing the epileptic trait: cortical excitability measures in patients and their unaffected siblings. *Brain* 2013 Apr;136(Pt 4):1177-91). (Response: Dr Radwa Badawy. E-mail: badawyr@unimelb.edu.au).

COMMENT. The authors conclude that certain genetic factors that predispose to epilepsy and a complex genetic/environmental interaction determine the clinical phenotype.

#### **Gene mutations in progressive myoclonus epilepsies.**

A mutation in the potassium channel associated gene CNTN2 was the cause of a cortical myoclonic tremor and epilepsy in a consanguineous Egyptian family (Stogmann E, et al. *Brain* 2013 Apr;136(Pt 4):1155-60)

A mutation in the GOSR2 gene was identified in 12 patients with "North Sea" progressive myoclonus epilepsy. Early onset ataxia at 2 years of age was followed by myoclonic seizures at average age 6.5 years, followed by multiple seizure types. All patients developed scoliosis by adolescence, an important diagnostic clue, some had pes cavus or syndactyly, and all had elevated serum creatine kinase (mean 734 IU) and normal muscle biopsies. EEG showed generalized S/W with posterior predominance and photosensitivity. With progressive decline, patients became wheelchair bound by mean age 13 years. The cases all came from countries bounding the North Sea. The relentless course distinguished "North Sea" progressive myoclonus epilepsy (PME) from other PMEs (Lomax LB, et al. *Brain* 2013 Apr;136(Pt 4):1146-54). Other PMEs include Unverricht-Lundborg disease (gene CSTB mutation), Lafora's disease (EPM2A), Northern with mental retardation (CLN8), and teenage-onset PME (CLNB) (Andrade DM, et al. *Pediatr Neurol* 2012 Sep;47(3):205-8).

### **TREATMENT OF SYMPTOMATIC INFANTILE SPASMS**

Investigators at Tokyo Women's Medical University studied the clinical, radiological, and EEG characteristics of 69 patients with infantile spasms (IS) followed for 3-74 months (mean 18 months) after initial cessation of epileptic spasms (ES).

Subjects were classified as focal (fIS)(n=23) and diffuse (dIS)(n=46). ES responded to the initial ACTH trial in 100% fIS vs 80% of dIS (p=0.02). Subsequent seizure relapse occurred in 74% fIS cf 38% of the dIS group (p=0.0006). A second ACTH course of therapy in fIS group resulted in a short- or long-term remission. Approximately one-third of fIS patients maintained remission despite focal epileptic EEG abnormalities. Focal resection and corpus callostomy achieved only a short-term remission. Grouping patients as fIS and dIS provides practical information regarding long-term outcome and treatment strategies. (Fujii A, Oguni H, Hirano Y, Shioda M, Osawa M. A long-term, clinical study on symptomatic infantile spasms with focal features. **Brain Dev** 2013 May;35(5):379-85). (Response: Dr Hirokazu Oguni. E-mail: hoguni@ped.twmu.ac.jp).

COMMENT. The authors conclude that a second course of ACTH should be considered to treat a relapse of fIS before resorting to surgical therapy. An extremely low-dose ACTH step-up protocol is used to treat West syndrome (WS) in this institution (Oguni H, et al. **Brain Dev** 2006 Jan;28(1):8-13). In an earlier report of 31 infants with WS (cryptogenic WS in 9, symptomatic WS in 22) using ACTH-Z in a dose of 0.005 mg (0.2 IU/kg/day) once daily for at least 2 weeks, up to a maximum of 3 weeks, tapered to zero over the subsequent 1 or 2 weeks, successful control of both spasms and hypsarrhythmia was obtained in 17 patients (55%). In the absence of a response, the dosage was increased to 0.025 mg (1.0 IU/kg/day) for 2 weeks (second treatment course in 8 patients), providing complete suppression of WS in an additional 2 patients. At 1 year or more follow-up, 13 patients (48%) remained seizure-free. Side effects were mild and occurred in 13 patients. This ACTH extremely low-dose step-up method achieved 61% short-term and 48% long-term remission, without significant side effects. The efficacy of low-dose versus high-dose ACTH regimens continues to be debated (Ito M, et al. **Pediatr Neurol** 1990 Jul-Aug;6(4):240-4; Snead OC, et al. **Neurology** 1989 Aug;39(8):1027-31; Snead OC. **Pediatr Neurol** 1990 May-Jun;6(3):147-50).

## EVIDENCE-BASED GUIDELINE FOR TREATMENT OF NEUROCYSTICERCOSIS

The Guideline Development Subcommittee of the AAN conducted a literature search and review of 10 Class I or Class II trials of treatment for parenchymal neurocysticercosis. Albendazole therapy, with or without corticosteroids, is probably effective in decreasing both long-term seizure frequency and the number of cysts demonstrable radiologically in adults and children with neurocysticercosis, and is well-tolerated. Insufficient information is available to assess efficacy of praziquantel. Albendazole plus either dexamethasone or prednisolone should be considered, both to decrease the number of active lesions on brain imaging studies (Level B) and to reduce long-term seizure frequency (Level B). The evidence is insufficient to support or refute the use of steroid treatment alone in patients with intraparenchymal neurocysticercosis (Level U). (Baird RA, Wiebe S, Zunt JR, Halperin JJ, Gronseth G, Roos KL. Evidence-based guideline: Treatment of parenchymal neurocysticercosis. **Neurology** 2013 Apr 9;80(15):1424-1429). (Respond: AAN. E-mail: guidelines@aan.com).