

month to 12.5 +/- 10.8 days per month ( $P < 0.001$ ). A 50% reduction in headache frequency was obtained in 46.3% patients. Headache disability measured by the PedMIDAS score improved from 47.4 to 22.8 ( $P < 0.001$ ), and headache disability grade improved from 2.6 (moderate) to 1.9 (mild) ( $P < 0.001$ ). (Hershey AD, Powers SW, Vockell A-LB, et al. Coenzyme Q10 deficiency and response to supplementation in pediatric and adolescent migraine. **Headache** February 2007;47:73-80). (Respond: Dr Andrew D Hershey, Division of Neurology, Cincinnati Children's Hospital Medical Center, 3333 Burnet Ave, Cincinnati, OH 45229).

COMMENT. CoQ10 deficiency may be common in pediatric and adolescent migraine, and supplementation may result in decreased headache frequency and disability. CoQ10 is included among several alternative ("natural") therapies with suggested potential effectiveness in migraine prevention. These include riboflavin, feverfew, and magnesium. A randomized controlled trial of CoQ10 (3 x 110 mg/day) compared to placebo in 42 migraine patients found CoQ10 superior for lessening attack-frequency, headache-days and days with nausea, after 3 months treatment (Sandor PS et al. **Neurology** 2005;64:713-715).

Modi S and Lowder DM, of ECU Brody School of Medicine, NC, reviewed published trials of medications for migraine prophylaxis (**Am Fam Physician** 2006;73:72-78) and found sufficient evidence to recommend propranolol, timolol, amitriptyline, divalproex, sodium valproate, and topiramate as first-line migraine prevention agents. Evidence to support the use of coenzyme Q10, riboflavin, and magnesium in migraine prophylaxis is limited, and data and opinions on feverfew are mixed. The above study should prompt further investigation and trials of CoQ10 in migraine pediatric patients, over longer periods. CoQ10 and high-dose vitamin therapies in children with mitochondrial disease are found possibly effective in the short term, but ineffective in the longer term (Panetta J et al. **J Inherit Metab Dis** 2004;27:487-498).

## **INFECTIOUS DISEASES**

### **INFLUENZA A, FEBRILE SEIZURES, AND POSTICTAL PROLONGED IMPAIRMENT OF CONSCIOUSNESS**

Febrile seizure (FS) patients in a one-year period, 2003-4, during an outbreak of influenza A in the Kitakawachi area of Japan, were prospectively analyzed by researchers at Hirakata City Hospital and Osaka Medical College. Influenza patients ( $n=47$ , 22%) and non-influenza patients ( $n=168$ ) with FS were compared with regard to clinical features of FS. Only one patient in this period had influenza B. Influenza virus infection was confirmed by rapid antigen test and/or serologically. One or more features of complex FS were exhibited in a total of 71 (33%) patients. Postictal impairment of consciousness was prolonged for more than 30 min (PPIC) in 28 (13%) patients. None had evidence of other intracranial pathology or symptomatic seizure etiology. Associations of influenza A with complex FS (prolonged, partial, multiple seizures) and PPIC were analyzed by multiple logistic regression. PPIC occurred more often in influenza than in non-influenza patients (10/47 [21%] vs 18/168 [11%],  $P=0.057$ ). The influenza A group was significantly older than non-influenza FS patients:  $40 \pm 22$  vs  $27 \pm 17$  months,  $P < 0.001$ . Influenza A was independently associated with PPIC ( $P=0.006$ ), but not with other atypical features of the complex FS. Partial FS was

more common in older patients, those with a past history of FS, and patients with a significantly lower body temperature at seizure occurrence ( $39.29 \pm 0.61^\circ\text{C}$  vs  $39.57 \pm 0.61^\circ\text{C}$ ,  $P=0.032$ ). PPIC was associated with a higher body temperature at seizure occurrence ( $39.80 \pm 0.65^\circ\text{C}$  vs  $39.46 \pm 0.60^\circ\text{C}$ ,  $P=0.011$ ), intravenous administration of diazepam ( $9/28$  [32.1%] vs  $4/187$  [2.1%],  $P<0.0001$ ), and prolonged seizure ( $10/28$  [35.7%] vs  $5/187$  [2.7%],  $P<0.0001$ ). (Hara K, Tanabe T, Aomatsu T, et al. Febrile seizures associated with influenza A. **Brain Dev** Jan 2007;29:30-38). (Respond: Dr Keita Hara, Division of Pediatrics, Hirakata City Hospital, Osaka, Japan; e-mail: [harakatacity@tree.odn.ne.jp](mailto:harakatacity@tree.odn.ne.jp)).

**COMMENT.** An almost identical study and similar findings to those in Japan are reported from Hong Kong (Kwong KL et al. **Pediatr Neurol** Dec 2006;35:395-399; see **Ped Neur Briefs** Dec 2006;20:94-5).

In the Japanese study, FS were complex in one third of the influenza-associated seizures, and postictal impairment of consciousness was prolonged (PPIC) for more than 30 min in 13%. Children with FS generally recover consciousness in less than 30 min. If recovery of consciousness takes  $> 1$  hour, an acute symptomatic etiology should be suspected, according to a recent UK report (Allen JE et al. **Arch Dis Child** Jan 2007;92:39-42; **Ped Neur Briefs** Jan 2007;21:4). In the simultaneous Japanese report, none of the influenza FS patients had evidence of encephalitis or structural brain lesion. However, many had complex FS, and PPIC was associated with prolonged seizure and with the need for administration of diazepam. Those with partial FS had a lower body temperature, indicative of a lower FS threshold (Millichap JG. **Pediatrics** 1959;23:76-85). Patients with a higher body temperature had PPIC and had received diazepam, given to raise the seizure threshold. A significant factor for development of FS in influenza is a coexisting gastroenteritis (Kwong KL et al. **Ped Neur Briefs** Dec 2006;20:94-5), a cause of afebrile seizures with focal onset, as described in the following article.

## MILD VIRAL GASTROENTERITIS AND AFEBRILE SEIZURES

Ictal electroencephalograms (EEGs) were recorded in six patients (2 male, 4 female; ages 14 mo to 38 mo) with afebrile convulsions and mild gastroenteritis (CwG), in a study at Nagoya, Japan. None had febrile convulsions. A family history of CwG was positive in 2 patients, and the twin of one patient had a history of febrile seizures. A cluster of seizures occurred within 1 -3 days of the onset of gastroenteritis. Rotavirus antigen test in the stool was positive in 2 patients. Seizures began as partial, and clinical manifestations included loss of responsiveness, arrest of movement, cyanosis, lateral eye deviation, and hemifacial convulsion. A generalized tonic-clonic convulsion occurred in 5 patients. Ictal EEGs showed focal low amplitude fast activity, beginning in the occipital area in 3 patients, and parietal, central, or frontal in the remaining 3. The focal discharge evolved into a secondary generalized seizure. Seizures were controlled with phenobarbital, lidocaine, or carbamazepine. At follow-up (mean 39 mo, range 17-62 mo) interictal EEGs and psychomotor development were normal. (Maruyama K, Okumura A, Sofue A, Ishihara N, Watanabe K. Ictal EEG in patients with convulsions with mild gastroenteritis. **Brain Dev** Jan 2007;29:43-46). (Respond: Dr Koichi Maruyama, Department of Pediatrics, Anjo Kosei Hospital, Aichi 446-8602, Japan).