slept less (>30 min in 9 patients) and 13 children slept longer (>30 min in 1). Mean Actual Sleep Time per Day was significantly reduced after VPA termination (-10.7 min) in children older than age 6 years. Gender and dose of VPA were not contributing factors. Questionnaire data showed no significant difference in bed and wake time, duration of sleep, and time to fall asleep before and after ending VPA treatment. (Schmitt B, Martin F, Critelli H, Molinari L, Jenni OG. Effects of valproic acid on sleep in children with epilepsy. **Epilepsia** Aug 2009;50:1860-1867). (Respond: Bernard Schmidt MD, Department of Pediatric Neurology, University Children's Hospital, Steinwiesstrasse 75, CH-8032 Zurich, Switzerland. E-mail: bernard.schmidt@kispi.uzh.ch).

COMMENT. Termination of VPA after long-term treatment for epilepsy is associated with a small but significant reduction of sleep duration, but only in children older than 6 years of age. The reason given for initiating this study was frequent parental reports that sleep duration increases during VPA treatment and decreases when medication is suspended. The results partly confirm the parental observations.

CONCURRENT ANTICONVULSANT/KETOGENIC DIET EFFICACY

Researchers at the Johns Hopkins Hospital, Baltimore, studied retrospectively the comparative efficacy of six most frequently used anticonvulsants when employed in combination with the ketogenic diet (KD) for treatment of 115 children with epilepsy. Mean age at initiation of the KD was 4.7 years. Patients had tried unsuccessfully a median of 4 anticonvulsants, and at KD initiation were receiving a median of 2 anticonvulsants (range 1-5). At KD onset, the most common anticonvulsants included valproic acid (n=38), topiramate (31), levetiracetam (27), lamotrigine (25), zonisamide (21), and phenobarbital (14). Only 4 children received vigabatrin. Most common seizure types treated with drug/KD combination included Lennox-Gastaut syndrome or mixed/multiple seizures (n=56), infantile spasms (18), and complex partial seizures (19). After 3 months on the diet and no change in the anticonvulsant dose, 72% had a >50% seizure reduction. Patients receiving zonisamide and KD were more likely to have a >50% reduction in seizures than the other children combined who were receiving the other 5 anticonvulsants (P=0.04). Nineteen of the 21 children (90%) receiving zonisamide had a >50% seizure reduction. Children receiving phenobarbital and KD were less likely to have a >50% seizure reduction (P=0.003). The difference in the interaction between KD and zonisamide or phenobarbital was not explained by seizure type or age. Patients responding with a >90% seizure reduction or seizure freedom showed no significant correlation with a specific anticonvulsant/KD combination. (Morrison PF, Pyzik PL, Hamdy R, Hartman AL, Kossof EH. The influence of concurrent anticonvulsants on the efficacy of the ketogenic diet. **Epilepsia** Aug 2009;50:1999-2001). (Respond: Eric H Kossof MD, Pediatric Epilepsy Center, The Johns Hopkins Hospital, Baltimore, MD 21287. E-mail: ekossof@jhmi.edu).

COMMENT. Zonisamide is not approved for use in children, and its mechanism of action is not definitely known. It is thought to increase seizure threshold by effects on sodium and calcium channels. As a carbonic anhydrase inhibitor, zonisamide is less active than acetazolamide, but this mechanism may have a contributory anticonvulsant effect.

Controlled clinical balance studies of the effects of anticonvulsant drugs and the ketogenic diet (KD) on acid-base, electrolyte, and amino acid metabolism in children with absence seizures (Millichap JG et al. **Epilepsia** 1964;5:239-255; **Am J Dis Children** 1964;107:593-604) found that the KD and acetazolamide, studied as monotherapies, had similar metabolic effects. They both caused a metabolic acidosis, with decreased pH, pCO2, and standard bicarbonate, and a negative balance of electrolytes. In contrast, trimethadione, mephobarbital, and methsuximide as monotherapies (anti-'petit mal' medications available in the 1960s), caused a metabolic alkalosis, with an elevation of pH and standard bicarbonate, and compensatory rise in pCO2; the urinary excretion of sodium and potassium and fecal excretion of calcium, magnesium and phosphorus were reduced, and the balance of electrolytes was positive. The effects of the ketogenic diet and acetazolamide on acid-base and electrolyte balance were the reverse of those obtained during treatment with conventional antiepileptic medications and corticotropin. Apart from an increase in serum leucine during treatment with the KD, levels of serum amino acids showed no significant changes. In this study, while all therapies were beneficial, the KD was most effective in the control of absence seizures and reduction of epileptiform discharges in the EEG. Concurrent use of a carbonic anhydrase inhibitor (acetazolamide or zonisamide) and KD would result in accentuated effects on acid-base and electrolyte metabolism and potential improvement in seizure control, but not without an anticipated increase in adverse side effects.

QUANTITATIVE EEG, COGNITIVE DEFICITS, AND BECTS

Researchers at Pontificia Universidade Catolica, Campinas, Brazil studied the relationship between educational problems and clinical/EEG aspects of benign childhood epilepsy with centrotemporal spikes (BECTS) in 38 children, ages 8 to 11 years (average age 9.29 +/- 1.27). Educational problems assessed by the School Performance Test, Parent and Teacher Questionnaires on learning difficulties, and the WISC-III test were observed in 7 (18.4%) children with BECTS. In this subgroup of educationally handicapped children, relative alpha amplitudes at the central and parietal electrodes were lower as compared with the BECT subgroup with normal educational performance and a control group matched for age and gender. Alterations in background brain electrical activity appeared to be related to a tendency toward educational disorders in children with BECTS. Quantitative EEG is a possible means of assessment of cognitive deficits in children with BECTS. (Tedrus GMAS, Fonseca LC, Melo EMV, Ximenes VL. Educational problems related to quatitative EEG changes in benign childhood epilepsy with centrotemporal spikes. **Epilepsy & Behav** Aug 2009;15:486-490). (Respond: Dr Lineu C Fonseca, Dept of Neurology, Pontificia Universidade Catolica de Campinas, Brazil. E-mail: lineu.fonseca@uol.com.br).

COMMENT. Deonna T, Roulet E and associates, of Lausanne, Switzerland, in one of the earlier prospective neuropsychological and EEG studies of 22 children with BECTS (19) and occipital spikes (3), found 21 had average IQ, 8 had school difficulties, 4 delayed language development, and 8 had transient impairments in verbal, visuospatial, or memory function. Cognitive deficits improved or normalized on follow-up, with concomitant EEG improvement or normalizaton. Transient cognitive difficulties in some children with BECTS were directly related to the paroxysmal EEG activity (Deonna T et al. **Dev Med Child Neurol** 2000;42:595-603). Wolff M et al (**Epilepsia** 2005;46:1661-1667), in a combined