in 13 and symptomatic in 31 infants. Vigabatrin was the initial treatment in 36, and all infants were followed until 12 months of age. On the first video-EEG before treatment, 27 infants showed hypsarrhythmia, and 17 had multifocal spikes with normal EEG background. A 4-hour recording including waking, sleep, and awakening was usually sufficient to detect spasms. Subtle, asymmetric or asynchronous spasms, and asymmetric ictal or interictal EEG abnormalities were associated with symptomatic etiology and poor cognitive and seizure outcome. Treatment modifies both spasms and EEG; spasms may become subtle and only discernible on EEG, and hypsarrhythmia may be replaced by multifocal spikes. Hypasarrhythmia rarely persists following vigabatrin treatment. Complete eradication of spasms, including subtle variants, is essential for a favorable cognitive outcome. (Gaily E, Liukkonen E, Paetau R et al. Infantile spasms: diagnosis and assessment of treatment response by video-EEG. Dev Med Child Neurol Oct 2001;43:658-667). (Respond: Dr Eija Gaily, PO Box 280, Hospital for Children and Adolescents, FIN-00029 HYKS, Finland).

COMMENT. Video-EEG may be essential for the initial diagnosis of infantile spasms, especially in infants with symptomatic etiology and subtle spasms. It is also necessary in assessing response to treatment and the exclusion of persisting subtle spasms not clinically evident.

RISK FACTORS FOR EARLY NEONATAL SEIZURES

Prenatal and perinatal risk factors for neonatal seizures occurring in 100 newborns in the first week were determined in a case-control study at Grottaferrata, the University of Rome, and other centers, Italy. The majority (71%) had more than one type of seizure, the most common being generalized tonic (29% of infants). Less frequently, multifocal clonic (13%), focal clonic (9%), and myoclonic seizures (5%); all were associated with subtle seizures. Interictal EEG was normal in 20%, and showed asymmetries of background activity in 47%, burst suppression in 5%, and episodic voltage attenuation in 28%. Etiologies presumed to be responsible for seizures included hypoxic-ischemic encephalopathy in 30%, intracranial hemorrhage (10%), hypocalcemia (9%), meningitis (8%), hypoglycemia (2%), and unknown (10%). A history of epilepsy in first degree relatives was found in 4 cases and for none of the controls. Parents of cases had a lower socioeconomic status than those of controls. Neonatal seizures were associated with maternal disease in the 2 years preceding the pregnancy, excessive weight gain, placental pathology, preeclampsia, low geastational age, low birth weight, and neonatal jaundice. Cardiopulmonary resuscitation was needed in 37% of cases and none of the controls. (Arpino C, Domizio S, Carrieri MP et al. Prenatal and perinatal determinants of neonatal seizures occurring in the first week of life. J Child Neurol October 2001;16:651-656). (Respond: Dr Carla Arpino, E Litta Rehabilitation Center for Developmental Disabilities, Via Anagnina Nuova, 13, 00046 Grottaferrata, Rome, Italy).

COMMENT. Neonatal seizures in the first week are strongly associated with low gestational age and low birthweight, risk factors that might be preventable. Other familial. maternal, and neonatal factors are associated, including placental pathology, preeclampsia, and a family history of epilepsy and febrile seizures.

KETOGENIC DIET IN REFRACTORY FOCAL SEIZURES

The efficacy of the ketogenic diet in the treatment of intractable focal seizures was studied retrospectively in 34 patients (mean age, 7.5 yrs; range, 4 months to 29 yrs) and compared to 100 patients with generalized seizures at the

Cleveland Clinic, OH. One fourth of focal seizure patients had more than a 50% reduction in seizure frequency after 3 months and 12 months, and 6 patients had more than 90% control. Generalized seizures responded more favorably, with 46% having a 50% reduction at 3 months and 42% at 12 months. Differences were not significant. Outcome tended to be better in patients under 12 years of age. (Maydell BV, Wyllie E, Akhtar N et al. Efficacy of the ketogenic diet in focal versus generalized seizures. Pediatr Neurol September 2001;25:208-212). (Respond: Dr Elaine Wyllie, Head, Section of Pediatric Epilepsy, The Cleveland Clinic Foundation, Department of Neurology, Desk S 51, 9500 Euclid Ave, Cleveland, OH 44195).

COMMENT. The ketogenic diet is a treatment option in young children with medically intractable focal seizures when surgery is not advised. Like antiepileptic drugs, however, the ketogenic diet may be accompanied by adverse events and treatment must be carefully monitored.

Adverse effects of the ketogenic diet. Wheless JW discusses the possible adverse events during initiation and maintenance of the ketogenic diet (J Child Neurol Sept 2001;16:633-35). These include the following: a) diet initiation adverse events: dehydration, hypoglycemia, and vomiting; and b) during diet maintenance: poor growth, kidney stones, hyperlipidemia, cardiomyopathy, prolonged QT interval, excessive bruising, optic neuropathy, elevated very-long-chain fatty acids, vitamin D deficiency, osteomalacia, trace mineral deficiencies, constipation, exacerbation of gastroesophageal reflux disease. Diseases that may be aggravated by the ketogenic diet include: porphyria, pyruvate carboxylase deficiency, carnitine deficiency, fatty acid oxidation defects, and mitochondrial disorders. Parents expecting that a diet treatment is "natural" and relatively innocuous should be counseled regarding risks. Deaths related to the ketogenic diet have been reported in 3 children (cardiac arrest, pneumonia, and acute hemorrhagic pancreatitis), and serious adverse events in 5 children included hypoproteinemia, hemolytic anemia, thrombocytopenia with bleeding, Fanconi's renal tubular acidosis, and elevated liver enzymes. (Ped Neur Briefs July 2001;15:50-52).

The Hopkins method of introduction, using a period of starvation and maintenance of a 4/1;fat/nonfat ratio, appears to be more conducive to adverse events than the Mayo Clinic method that omits a starvation period and employs lower ratios. (Millichap JG. Progress in Pediatric Neurology I, PNB Publishers, 1991;pp84-88).

ANTIEPILEPTIC DRUGS IN AUTISTIC SPECTRUM DISORDERS

Published data on the use of antiepileptic drugs (AED) in the treatment of autism (ASD) and associated affective disorders and epilepsy have been reviewed at the Department of Neurology, Miami Children's Hospital, FL. A total of 10 case reports or open-label studies included 2 adults and 29 children, ages 22 months to 14 years. Mental retardation was present in 21 of the 31 patients, epilepsy (generalized and complex partial) in 18, and EEG abnormalities in the absence of clinical seizures in 6. Affective symptoms (manic or depressive episodes) occurred in 7. In one report of 13 patients, MRI and SPECT were abnormal in 50% and 100%, respectively, without specific details noted. Antiepileptic drugs (valproic acid (VPA) in 4, lamotrigine (LMG) in 13, and carbamazepine (CBZ) in 1) were used to control seizures in all 18 patients with epilepsy and ASD, and in 5 of 6 patients with EEG abnormalities without seizures. They were used as mood stabilizers in 7 children with affective symptoms without seizures. VPA was effective in control of seizures and EEG abnormalities in all 8 children treated, CBZ was effective in 3