Also, drug response rates and incidence of adverse effects differed between study populations, despite use of identical protocols and patient selection.

The management of refractory seizures and their effects on the quality of life of the patient are reviewed (Devinsky O. Patients with refractory seizures. N Engl J Med May 20 1999;340:1565-1570). The optimal use of antiepileptic drugs, first-line and second-line choices, and their effects on other drug serum levels are tabulated. Vagus-nerve stimulation, recently approved as an adjunctive therapy for refractory seizures in patients older than 12 years, is discussed.

SEIZURE DISORDERS

VAGUS NERVE STIMULATION FOR REFRACTORY EPILEPSY

The efficacy of vagus nerve stimulation (VNS) was evaluated in 24 patients, aged 4 to 40 years (median 18 years), at the New York Presbyterian Hospital-Cornell Medical Center, NY; Mercy Children's Hospital, Kansas City; and University of California at San Diego. Seizure rates during a 1-month baseline were compared to those with 3 months of VNS. Improvements occurred in 22 (88%); 16 had >30% reduction, and 11 had >50% reduction in seizure rate. The median seizure rate reduction was 46%. Idiopathic epilepsy patients improved more than those with symptomatic epilepsy (-60% cf -40%). Generalized tonic seizures responded better than generalized tonic-clonic seizures (-70% cf -33%). Patients with higher baseline seizure rates responded better. Age at onset of epilepsy (median 2, range 0-14 years) was also a predictor of response; seizures developing in later childhood were more responsive.

Adverse events included cough (6 patients), abdominal pain (2), and anorexia, hiccups, dysphagia, emesis, and fatigue (1 each). All were considered mild except one moderate cough and one with anorexia. The median heart rate was slowed compared to baseline. (Labar D, Murphy J, Tecoma E, E04 VNS Study Group. Vagus nerve stimulation for medication-resistant generalized epilepsy. Neurology April 1999;52:1510-1512). (Reprints: Dr Douglas Labar, Comprehensive Epilepsy Center, New York Hospital-Cornell Medical Center, K-619, 525 E 68th Street, New York, NY 10021).

COMMENT. Vagus nerve stimulation may be indicated in older children and adolescents with drug-refractory epilepsies, especially generalized tonic seizures. This pacemaker device, connected by two stimulating electrodes to the left vagus nerve, appears to be safe and generally well tolerated. Transient hoarseness is the most common adverse effect, but cough and anorexia may also occur. Further studies are needed to define the types of seizures responsive to VNS in children.

OUTCOME OF EPILEPSY SURGERY IN EARLY CHILDHOOD

The medical records of 23 children, ages 0-3 years, who were treated surgically for epilepsy between 1991 and 1996 were analysed at the Hospital for Sick Children, Toronto, Canada. The mean age at onset of seizures was 4.7 months, and the mean age at time of surgery was 15.3 months. Partial seizures were diagnosed at onset in 20, infantile spasms in 2, and generalized tonic-clonic seizures in one. Focal cortical resection was performed in 21 and hemispherectomy in 11. Pathological findings included focal cortical dysplasia (8 patients), Sturge-Weber syndrome (5), hemimegalencephaly (3), low-grade glioma (3), and tuberous sclerosis (1). Seizure outcome was class I in 12, class II in 3, class III in 6, and class IV in 2 (Engel's criteria). Outcomes for Sturge-Weber and low-grade glioma patients were better than those with neuronal migration disorders (NMD). Patients with NMD who did poorly had normal MRI/CT findings

at seizure onset, a diffuse irritative zone on EEG, and extensive focal cortical resections affecting multiple lobes. Patients having hemispherectomies did better than those with focal cortical resections. (Sugimoto T, Otsubo H, Hwang PA, Hoffman HJ, Jay V, Snead OC III. Outcome of epilepsy surgery in the first three years of life. Epilepsia May 1999;40:560-565). (Reprints: Dr T Sugimoto, Department of Pediatrics, Kansai Medical University Otokoyama Hospital, Izumi 19, Otokoyama, Yawata, Kyoto, 614 Japan).

COMMENT. Young children with refractory epilepsy may benefit from surgery, especially in those showing concordance of ictal video-EEG and neuroimaging data. The outcome in children undergoing hemispherectomy is superior to results of focal cortical resection.

EARLY-ONSET BENIGN OCCIPITAL SEIZURE SYNDROME

The recognition of a syndrome of early-onset benign childhood occipital seizures (EBOS) is proposed in a report from St Thomas' Hospital. London, England. The characteristic findings are infrequent partial, usually nocturnal, seizures with deviation of the eyes and vomiting, frequently evolving to hemi- or generalized convulsions, with onset between 1 and 12 years, usually at age 5 years. Behavioral changes with irritability are frequent, and retching, coughing, and incontinence may occur. The prognosis is excellent, one third having only one seizure, and remission occurs within one year from onset. EEG shows occipital spikes, especially in sleep. Centrotemporal spike foci may occur later and a few develop rolandic seizures. (Panayiotopoulos CP. Early-onset benign childhood occipital seizure susceptibility syndrome: a syndrome to recognize. Epilepsia May 1999;40:621-630). (Reprints: Dr CP Panayiotopoulos, St Thomas' Hospital, London SE1 7EH, England).

COMMENT. Dr Panayiotopoulos proposes an addition to the classification of childhood epilepsy syndromes, with recognition of an early-onset benign occipital seizure syndrome (EBOS), sharing identical EEG manifestations with late-onset idiopathic occipital epilepsy (LOE), but having more common clinical features with rolandic seizures (BECTS). EBOS are infrequent, mainly nocturnal, and remit usually within one year, whereas LOE are diurnal and usually persist for years. A unified concept for benign childhood partial epilepsies might be preferred, since clinical and EEG characteristics are often shared, and one syndrome may evolve into another. We must await the determination of genetic markers.

RISK OF SEIZURE-RELATED AUTOMOBILE ACCIDENTS

A retrospective case-control study to identify clinical risk factors for seizure-related motor vehicle crashes in 50 patients with epilepsy and 50 matched control patients was performed at Johns Hopkins University, Baltimore, MD. The majority (54%) of patients who crashed were driving illegally, having a history of poor seizure control; 25% had more than one crash related to a seizure and 20% had missed a dose of medication just prior to the crash. Patients with well controlled epilepsy, and no seizure recurrence for more than 12 months had a 93% reduction in risk of a crash, compared to patients with more frequent seizure recurrence. The presence of reliable auras with seizures, and few prior nonseizure-related accidents decreased the odds of seizure-related accidents. (Krauss GL, Krumholz A, Carter RC, Li G, Kaplan P. Risk factors for seizure-related motor vehicle crashes in patients with epilepsy. Neurology April 1999;52:1324-1329). (Reprints: Dr Gregory L Krauss, Meyer 2-147, 600 N Wolfe St, Baltimore, MD 21287).