examined by perimetry at Shaare Zedek Medical Center, Jerusalem (Gross-Tsur V et al. 2000, reviewed in Ped Neur Briefs July 2000;14:49). VEPs and ERGs can be useful indicators of visual function in young or retarded patients when perimetry is inappropriate. Unless the effect on visual fields can be prevented, this significant risk seems to outweigh the benefits of using vigabatrin for the treatment of infantile spasms.

MOVEMENT DISORDERS AND ADHD

EYE MOVEMENTS IN TOURETTE SYNDROME & COMORBID ADHD

The effect of comorbid ADHD on oculomotor abnormalities in boys with Tourette syndrome (TS) was determined using three saccade tasks to examine the planning and execution of eye movements in a study at the Kennedy Krieger Institute and Department of Neurology, Johns Hopkins School of Medicine, Baltimore, MD. Subjects in 3 groups, ages ranging from 7.8-14.6 years (means 10-11 yrs) included 14 with TS-only, 11 with TS+ADHD, and 10 controls. Eye movements were recorded by electro-oculography, and maximum saccadic velocities, amplitudes, and latencies were computer analysed.

Latency of prosaccades (measuring ability to initiate saccades to an unpredictable peripheral visual stimulus) was prolonged in both patient groups (TS-only and TS+ADHD) compared to controls, which indicates that TS is associated with delay in initiation of oculomotor responses. Response inhibition errors on antisaccade (ability to inhibit a prosaccade) tasks (directional errors) and memory-guided saccade task (anticipatory errors) were increased in boys with TS+ADHD compared to the TS-only group, suggesting that comorbid ADHD is associated with deficits in response inhibition and excessive variability in motor response to a visual stimulus. Accuracy of memory guided saccades was not significantly different in the three group. (Mostofsky SH, Lasker AG, Singer HS, Denckla MB, Zee DS. Oculomotor abnormalities in boys with Tourette syndrome with or without ADHD. J Am Acad Child Adolesc Psychiatry December 2001;40:1464-1472). (Respond: Dr Stewart H Mostofsky, Developmental Cognitive Neurology, Kennedy Krieger Institute, 707 North Broadway, Baltimore, MD 21205).

COMMENT. This is the first report of the impact of comorbid ADHD on the execution of eye movements. Whereas TS results in slowed oculomotor responses to a visual stimulus, ADHD is associated with an increased variability of response. This finding is consistent with excessive variability in reaction time demonstrated by continuous performance tasks in children with ADHD. The authors emphasize the importance of treating comorbid conditions, especially ADHD, in children with tic disorders. ADHD is reported to occur in more than 50% of patients with TS. See Ped Neur Briefs Nov 2001 for article on increased risk of cognitive deficits and behavioral disturbance in children with tic disorders complicated by ADHD.

In a previous report of the control of volitional and reflexive saccades in 10 subjects with Tourette's syndrome and 10 controls (LeVasseur AL et al. Brain 2001;124:2045-2058) from Queen's University, Kingston, Ontario, Canada, saccadic reaction times were longer, saccadic amplitudes were smaller, but the occurrence of direction errors was normal in the immediate antisaccade task. The ability to inhibit reflexive saccades towards novel stimuli was not impaired in TS. Timing errors were significantly greater in TS compared to controls, indicating that the ability to inhibit planned motor programs is significantly impaired. Altered cortical-basal ganglia circuitry leading to reduced cortical inhibition may explain the inability of TS subjects to delay execution of motor responses. Four of

the 10 patients in the Canadian study had co-morbidities, 2 with ADHD, but results were analysed separately and comorbidy was not considered responsible for the findings. A medication effect, possibly involved in 6 patients, was also excluded. It is noteworthy that direction errors, normal in this TS study, were only abnormal in the TS+ADHD group of the Hopkins study and not in the TS-only group.

Deficient inhibition as a marker for familial ADHD subgroup has been proposed at the Hospital for Sick Children, Toronto (Crosbie J, Schachar R. Am J Psychiatry November 2001;158:1884-1890). Family history of ADHD and risk factors were compared in 54 ADHD children having poor or good inhibition (based on stop-signal paradigm performance) and 26 healthy controls. ADHD was significantly more prevalent in families of ADHD children exhibiting poor inhibition (48%) than in those with good inhibition (18.5%) or in controls (7.7%). Neurobiological and psychosocial risk factors were not different in the 3 groups. Cognitive measures of inhibition may act as phenotype markers for genetic analyses of ADHD. Latent-class subtypes of ADHD (Neuman RJ et al. 1999) are independently transmitted in families and should be more appropriate targets than DSM-IV subtypes for molecular genetic studies of ADHD, according to Todd RD et al (Am J Psychiatry Nov 2001;158:1891-1898).

NEOPLASTIC DISORDERS

PEDIATRIC SPINAL TUMORS

The clinical outcome and surgical treatment of 34 pediatric spinal tumors seen over an 18-year period (1981-1999) were analysed in a retrospective study at the Neurosurgical University Hospital of Frankfurt am Main, Germany. Tumor types and histology included the following: *Intramedullary* 5 (ependymoma, astrocytoma, hemangioblastoma): *Intradural, extramedullary* 6 (neurinoma, neurofibroma, medulloblastoma metastasis); *Extramedullary, extradural* 3 (neurinoma, ganglioneuroma); *Extradural* 6 (histiocytoma, neurinoma, angiofibroma, aneurysmal bone cyst); *Extradural, paravertebral* 14 (chordoma, primitive neuroectodermal, neuroblastoma, neurofibroma, Ewing"s sarcoma, aneurysmal bone cyst). Neurinomas and neurofibromas predominated in older children and neuroblastomas or primitive neuroectodermal tumors in younger age groups. Ependymomas and astrocytomas were the most frequent intramedullary tumors. Extradural tumors were more heterogeneous. Pain was the most frequent symptom, occurring in 67% of cases. Weakness of the extremities was the most common sign, elicited in 25 cases. Sensory impairment occurred in 22 and bladder dysfunction in 7. Malignant tumors had a shorter duration of symptoms and higher incidence of neurologic deficits than benign tumors. Following surgical decompression of the spinal cord, the neurologic status improved, with good functional recovery in 23 patients while 5 had deteriorated at follow-up. Relapse occurred in 12 cases (histiocytomas, chordomas, medulloblastoma, and von Hippel-Lindau cervical hemangioblastoma). Chemotherapy was used postoperatively in 7 cases, radiation therapy in 6, and combined therapy in 4. One case of aneurysmal bone cyst diagnosed by biopsy was cured by radiation therapy alone. At follow-up, average 2 years, 22 children could walk without aids, 7 with aids, and 2 (histiocytomas) were non-ambulatory and plegic. (Schick U, Marquardt G. Pediatric spinal tumors. Pediatr Neurosurg Sept 2001;35:120-127). (Respond: Dt Uta Schick, Clinic of Neurological Surgery, University of Leipzig, Johannisallee 34, D-04103 Leipzig, Germany).

COMMENT. The majority of spinal tumors require surgical decompression, and resection when possible. Aneurysmal bone cysts may respond to radiation.