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ATTENTION DEFICIT DISORDERS

ATTENTION DEFICIT DISORDER AND EPILEPSY

The relation between ADHD and epilepsy is evaluated in a review from New York Methodist Hospital, Brooklyn, New York. A marked increase in hyperactivity and inattention in children with epilepsy is noted in several studies, but the findings are difficult to interpret because of lack of conformity in the ages of patients, the severity and type of epilepsy, behavior rating scales used, and the effects of antiepileptic drugs. All types of epilepsy and even children with recent onset of seizures are involved. The underlying CNS dysfunction may cause both seizures and behavior problems. Deficits in attention may occur in the absence of behavioral symptoms and even with a normal intelligence quotient. Most studies agree that impairment of attention is more likely with generalized epilepsies than with focal epilepsies. Patients with absence epilepsy have difficulty sustaining attention despite adequate seizure control and normal IQ. Electrical status epilepticus during slow-wave sleep is associated with attention deficits and hyperactivity. Disturbed sleep patterns in epilepsy may contribute to attention and behavior disorders.

Children with ADHD have an increased incidence of epileptiform abnormalities in the EEG. This leads to difficulties in the interpretation of staring episodes or "daydreaming," a common associated complaint sometimes confused with a seizure disorder. More than 40 studies have confirmed the occurrence of brief cognitive deficits (*transient cognitive impairment [TCI]*) with subclinical epileptiform discharges. The current clinical practice of treating the patient and not the EEG is now called into question. TCI, occurring in approximately 50% of epileptic patients with subclinical epileptiform discharges, is most commonly detected during generalized 3-Hz spike-and-wave discharges. TCI during subclinical epileptiform discharges may adversely affect attention and cognitive function even without clinical seizures, and the effect can be reversed with antiepileptic drugs. Treatment does not always correlate with suppression of EEG epileptiform activity and its use remains controversial.

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Antiepileptic drugs have variable effects on attention and behavior. Phenobarbital, gabapentin, and topiramate cause deterioration, whereas carbamazepine and lamotrigine have been shown to improve attention and behavior. Phenytoin and oxcarbazepine have no documented effect on symptoms of ADHD. Concern that stimulant medications, methylphenidate (MPH) and dextroamphetamine (DAM), may lower the seizure threshold are not supported by controlled studies. In fact, most studies show that seizure frequency is not increased by MPH in children with controlled epilepsy (one study found an increased risk of a seizure with MPH in ADHD children with epileptiform EEGs but no previous seizure). DAM has been used as adjunct therapy in the control of nocturnal seizures. Atomoxetine and clonidine have no reports of seizure induction, but bupropion carries a dose-related risk of seizures. (Schubert R. Attention deficit disorder and epilepsy. **Pediatr Neurol** January 2005;32:1-10). (Respond: Dr Romaine Schubert, Chief, Division of Pediatric Neurology, New York Methodist Hospital. 503 6th St, Rm 518, East Pavilion, Brooklyn, NY 11215).

COMMENT. This review of ADHD and epilepsy is supported by 108 references and provides a scientific basis for the management of children with this common combination of symptoms. One in 5 children with epilepsy may have ADHD (Gross-Tsur V et al. **J Pediatr** 1997;130:670-674). Further studies are required, especially regarding the significance of subclinical epileptiform discharges in the EEG of children with ADHD and “staring” or “daydreaming” episodes, and the question “to treat or not to treat” with AEDs.

That MPH is effective and safe in children with ADHD and epilepsy, well controlled with antiepileptic drugs, is supported by another current review (Tan M, Appleton R. Attention deficit and hyperactivity disorder, methylphenidate, and epilepsy. **Arch Dis Child** Jan 2005;90:57-59). In contrast, children with ADHD and epileptiform EEGs may develop seizures with the introduction of MPH (Hemmer SA et al. **Pediatr Neurol** 2001;24:99-102). The incidence of seizures with MPH in those children with ADHD complicated by centro-temporal (rolandic) spikes was 16.7%, compared to only 0.6% in the group with normal EEGs. Other studies have shown either no effect or a reduction of seizures with MPH in children with ADHD and abnormal EEG or epilepsy.

PHYSICIAN FOLLOW-UP CARE OF CHILDREN WITH ADHD

Follow-up care received by children with attention deficit hyperactivity disorder (ADHD) by primary care clinicians (PCCs) was evaluated by questionnaires completed by parents at an index visit and at six months, in a study at Ohio State University, Columbus, OH and several research networks. Each clinician enrolled a consecutive sample of 55 children, 4 to 15 years of age, and 976 children identified with ADHD were selected for follow-up. Surveys were returned by 659 (68%) families, and the outcome measure was the number of office visits during the 6 months. Medications (94% stimulants) were prescribed at the index visit in 52% children with ADHD, and 78% were medicated at 6 months. A median of one visit was made to the PCC in 6 months, and the number of visits was the same for those taking psychotropic medication as those not on medication. Follow-up visits were more frequent to PCCs who had completed a fellowship in mental health training. Children seeing a mental health specialist (26%) were more often black, on Medicaid, or had higher levels of internalizing symptoms. Follow-up care by PCCs for ADHD falls below that recommended