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SEIZURES AND RELATED DISORDERS

AMPHETAMINE-ASSOCIATED SEIZURES

Neurologists at the Royal Perth Hospital, Western Australia, studied 44 adolescents and young adults who presented with first seizures occurring within 24 h of illicit use of amphetamine or related analogs (amphetamine-associated seizures, AAS) and identified over 8 years. The clinical features and prognosis of patients with AAS were compared to control patients with seizures acutely provoked (n=126) by other factors, and patients with unprovoked (n=401) seizures. AAS were not confined to individuals taking high doses and were not related to the mode of ingestion (orally in 21). EEGs of 39 (89%) patients with AAS within 2-171 days of the seizure found 4 (10%) with epileptiform abnormalities (all generalized). Cranial imaging in 42 patients (95%) showed 4 (10%) with epileptogenic lesions (focal cortical dysplasia, heterotopia, focal atrophy, and posttraumatic gliosis). Recovery from the seizure was rapid and no patient had neurologic sequelae. A history of sleep deprivation over the 24 h prior to the seizure was obtained in 77% of AAS patients, compared to 26% of those provoked by other factors and 26% of unprovoked seizure patients ($p<0.001$). Eighteen AAS patients (40%) had one or more risk factors for epilepsy, a similar proportion to other provoked seizure patients (39%). Nine patients (20%) had a first-degree relative with epilepsy. Seven percent of AAS patients developed epilepsy, compared to 13% of those provoked by other factors, and 50% of the unprovoked seizure group. Seizure recurrence was less likely to occur in patients with AAS than with other provoked seizures ($p=0.005$). AAS are related to an intrinsic proconvulsant effect combined with increased patient susceptibility and environmental factors. (Brown JWL, Dunne JW, Fatovic DM, Lee J, Lawn ND. Amphetamine-associated seizures: clinical features and prognosis. **Epilepsia** Feb 2011;52(2):401-404). (Respond: Nicholas D Lawn MD, Department of Neurology,

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COMMENT. The use of dextro-amphetamine or methylphenidate in the treatment of ADHD in adolescents and adults carries a risk of psychostimulant abuse. Factors associated with the highest risk of substance use disorders (SUDs) in patients with ADHD include comorbid antisocial personality disorder, bipolar disorder, eating disorder, and dropping out of school (Kollins SH. **Curr Med Res Opin** 2008;24:1345-57). Treatment of ADHD with stimulants during childhood may reduce the risk of developing SUDs at a later age (Biederman J et al. **Pediatrics** 1999;104:e20). Psychostimulant formulations used in ADHD that have a lesser potential for abuse include long-acting stimulants (eg Concerta, Focalin XR, Adderall XR, Vyvanse), and the skin patch (Daytrana). In patients suspected of an increased risk of SUDs, short-acting formulations of methylphenidate or amphetamine that may be crushed and snorted or injected should be avoided.

Seizure as a complication of therapeutic doses of dextro-amphetamine or mixed amphetamine salts (Adderall) used in ADHD is rarely reported. In a letter to the editor, a 9-year-old mentally retarded girl with ADHD-combined type had a generalized seizure requiring resuscitation after a second dose of Adderall 2.5 mg t.i.d. She was subsequently treated with methylphenidate without seizure recurrence. (Thomas S et al. **J Am Acad Child Adolesc Psychiatry** 2002;41:365). These authors cite an anecdotal report of convulsions with Ritalin (Chamberlain RW. **Pediatrics** 1974;54:658-659). **Physicians' Desk Reference** (55th ed. 2001) cautions against the use of CNS stimulants in children with epilepsy or an abnormal EEG. The incidence of seizures was significantly increased in children with ADHD and centrotemporal spikes in the EEG (Hemmer SA et al. **Pediatr Neurol** 2001;24:99-102). Some subsequent studies have shown that the addition of methylphenidate is safe in children with ADHD and epilepsy when seizures are controlled with antiepileptic medication (Tan M et al. **Arch Dis Child** 2005;90:57-59). While the addition of short-acting methylphenidate in children with ADHD and epilepsy controlled with AEDs appears to be safe, a recent controlled study of OROS long-acting methylphenidate suggests potential safety concerns requiring further study. The risk of seizure recurrence increased with increasing doses of OROS-MPH (Gonzalez-Heydrich J, Biederman J et al. **Epilepsy Behav** 2010;18:229-237). Caution is advised in the use of extended release formulations and larger doses of psychostimulants in the treatment of children with ADHD and a susceptibility to seizures.

ADHD IN CHILDREN WITH BENIGN EPILEPSY AND SIBLINGS

The prevalence and characteristics of ADHD in children with benign epilepsy and in their nonepileptic siblings were compared in a prospective study at Carmel Medical Center, Haifa, Israel. Of 40 patients with benign epilepsy, 21 (52.5%) had generalized seizures, 16 (40%) had partial seizures, 8 (20%) had absence epilepsy, and 5 (12.5%) benign epilepsy with centrotemporal spikes. Of 28 (70%) diagnosed with ADHD, 19 had the inattentive type, 1 with hyperactive type, and 8 with the combined type. Of 12 nonepileptic siblings in the control group, only 2 (16.7%) had ADHD ($P<0.03$). Children with seizures more resistant and requiring more than 1 AED showed a trend toward an