SEIZURE DISORDERS

ANTIEPILEPTIC DRUGS AND THYROID FUNCTION

Thyroid function in 78 girls and female adolescents (aged 8-18 years) during pubertal development was evaluated while taking carbamazepine (CBZ), oxcarbazepine (OXC), or valproate (VPA) monotherapy for epilepsy and after withdrawal of antiepileptic drugs, in a study at Oulu University Hospital, and Hospital for Sick Children and Adolescents, University of Helsinki, Finland. Examinations were repeated after a mean follow-up of 5.8 years. In the initial evaluation, the mean serum thyroid hormone concentrations were lower in the 19 girls taking CBZ (T4, 70.2; free T4, 11.5) or in 18 taking OXC (T4, 74.9; free T4, 11.3) than in the 54 control girls (T4, 96.6; free T4, 14.4), while TSH was normal in girls taking CBZ or OXC. Serum T4 and/or free T4 levels were below the lower reference range in 63% taking CBZ and 67% taking OXC. VPA-treated girls with epilepsy had normal T4 and free T4 levels but slightly increased TSH levels (3.3 compared to 2.5 in controls [$p<0.01$]). Serum hormone concentrations returned to normal after withdrawal of medication. (Vainionpaa LK, Mikkonen K, Rattya J, et al. Thyroid function in girls with epilepsy with carbamazepine, oxcarbazepine, or valproate monotherapy and after withdrawal of medication. **Epilepsia** March 2004;45:197-203). (Reprints: Dr LK Vainionpaa, Department of Pediatrics, FIN-90014, University of Oulu, Finland).

COMMENT. All the antiepileptic drugs studied had an effect on thyroid levels in girls during puberty, but the reductions in T4 and free T4 levels with CBZ and OXC, and the increase in TSH with VPA were reversed when the AEDs were withdrawn. Growth and pubertal development remained normal, and the hormonal changes had no effect on the clinical euthyroid state. Hepatic P450 enzyme induction and increased metabolism of thyroid hormones are proposed as one reason for the decreased thyroid levels during CBZ or OXC treatment. Variables in the methods of hormone analysis (commercial from diluted serum versus ultrafiltration method with undiluted serum) are also suggested as a possible explanation for some of the findings (Surks MI, DeFesi CR. **JAMA** 1996;275:1495-8).

Lack of effect of AEDs on QT interval in 178 children with epilepsy, ages 1 month to 18.9 years (Kwon S et al. **Pediatr Neurol** 2004;30:99-101). The mean corrected QT interval of 152 children on AEDs was 0.40+/-0.03 s, and for 26 AED-free control patients it was 0.40+/-0.03 s. There was no significant difference in QT intervals between drug groups (CBZ, OXC, VPA, TOP), monotherapy or polytherapy. AEDs are not a likely explanation for sudden unexpected death linked to prolonged QT in children with epilepsy.

COGNITIVE OUTCOME OF ACTH-TREATED INFANTILE SPASMS

The long-term cognitive and seizure outcomes of 37 patients with cryptogenic infantile spasms (onset, age 3 to 9 months) treated with high-dose synthetic adrenocorticotropic hormone (ACTH) (1 mg IM every 48 hrs for 2 weeks, 8-10-week slow taper, followed by oral prednisone, 10 mg/d for 1 month, and slow taper for 5 months or until age 1 year) were evaluated at Schneider Children's Medical Center of Israel, Petah Tiqva,