

and behavior. (Holmes GL et al. Effects of seizures on learning, memory, and behavior in the genetically epilepsy-prone rat. Ann Neurol Jan 1990; 27:24-32).

COMMENT. Some children with poorly controlled epilepsy have a progressive decline of IQ on serial intelligence tests (Bourgeois BF et al. Ann Neurol 1983; 14:438-444 and Rodin EA et al. Dev Med Child Neurol 1986; 28:25-33). The cause of this epileptic dementia in children is not always clearly understood. The underlying disease process may be degenerative in nature and sometimes the adverse side effects of anticonvulsant medications have been implicated. In the present paper the potential cognitive depressant effects of repeated generalized seizures are emphasized and age of onset of the seizure disorder may be a critical factor in determining whether deficits in learning and behavior occur.

#### COGNITIVE EFFECTS OF ANTICONVULSANTS

The neuropsychological effects of carbamazepine, phenobarbital, and phenytoin in 15 patients with partial complex epilepsy were investigated at the Department of Neurology, Medical College of Georgia, Augusta, GA. Patients were treated with each drug for three months, using a randomized double-blind, triple crossover design. Neuropsychological tests included digit span, selective reminding test, digit symbol, finger tapping, grooved pegboard, choice reaction time, P3 evoked potential, and profile of mood states. Anticonvulsant blood levels were converted to a percentage of the standard therapeutic ranges. Separate analyses of covariance using percentage blood levels and seizure frequency were performed for each of the cognitive variables. Digit symbol performance with phenobarbital was significantly worse than with the other two anticonvulsants but otherwise the neuropsychological performance was comparable during treatment with each of the drugs. (Meador KJ et al. Comparative cognitive effects of anticonvulsants. Neurology March 1990; 40:391-394).

COMMENT. All major anticonvulsant drugs may produce cognitive deficits. The effects are dose dependent and may occur even when anticonvulsant blood levels are well within the established therapeutic ranges. Cognitive deficits are particularly prominent with polypharmacy (Trimble MR. Epilepsia 1987; 28 (suppl 3):S37-S45). The present study conducted in adults has shown that any differential cognitive effects of anticonvulsants must be subtle. Neuropsychological deficits commonly associated with anticonvulsant drugs include impairments in attention and concentration, memory, information processing and motor speed. A double-blind crossover study of phenobarbital and valproic acid treatment in 21 epileptic children has shown that neuropsychological functioning was significantly worse during phenobarbital treatment (Vining et al. Pediatrics 1987; 80:165).