

## **Valproic Acid Treatment of Learning Disorder: A Comment**

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*To the Editor.* In the January 1996 issue, Gordon et al(1) described a 7-year-old boy with low school achievement without recent clinical history of seizures in whom the antiepileptic drug valproic acid was associated with normalization of a previously epileptiform electroencephalogram (EEG) with simultaneous improvement in cognition and scholastics. This important and carefully designed single subject report raises important issues regarding the evaluation and treatment of children with low school achievement.

First, is it appropriate to include an EEG in the routine assessment of learning disorders? In a medically cost-conscious society, proving the net economic advantage of such a practice would be difficult. What my associates and I have elected in a referral setting is to consider an EEG appropriate under the following circumstances:

1. Like the case of Gordon et al(1) a prior history of head trauma or other event, including fever, in which an unequivocal seizure occurred.
2. History of head trauma associated with loss of consciousness.
3. Unequivocal history of significant perinatal stress with or without perinatal seizure.
4. Impaired school achievement refractory to behavioral management, educational intervention and adequate trials of psychostimulant therapy in which the quantitative neurologic examination suggests organicity(2).
5. A confirmed diagnosis of seizure disorder in a first degree relative.

Using these criteria, we have in the last 5 years, from nearly 300 EEGs of school-aged patients, observed three subjects, aged 7, 9, and 10 years, similar to the patient of Gordon et al(1), in whom unequivocal epileptiform discharges were observed and improved (none normalized) with antiepileptic drug therapy (one valproic acid, the other two carbamazepine). Additionally, in our patients, elements of cognitive measures likewise improved (using a neuropsychological battery including the Rey Auditory Verbal Learning Test(3), Three Letter Cancellation Task(3), Digit Span from the Wechsler Intelligence Scale for Children-III [WISC-III] (4), Rey-Osterrieth Complex Figure(3,5), and Wisconsin Card Sorting Test(6). All three subjects improved scholastically. Social behaviors were less consistently favorably influenced (measured by the Achenbach Child Behavior Checklist, Conners Hyperactivity Index, and DSM-IV Rating Forms) such that in two, additional psychostimulant therapy was required. One of these three students declined scholastically when the antiepileptic drug therapy was withheld by the parents. None of our patients was subjected to the laudatory double-blind crossover design of Gordon and associates(1). One of the three had been placed in a special education class for the educable mentally retarded and was, subsequent to antiepileptic drug therapy, transferred to a regular

classroom The other two remained in special education support services for learning disabilities.

The authors' description of increased Conners hyperactivity scores when the disorder was treated may not only be attributable to the direct adverse effect of valproic acid but may also relate to the underlying neurologic disorder the behavioral manifestations of which may change with therapy which addresses only some aspects of the neurobehavioral disorder.

The relationship of seizure disorder to learning disorder is too large a topic for a single case report or its discussion in a letter, but the cortical anomalies described in dyslexia are similar to those observed in some forms of epilepsy (7). Furthermore, Schachter et al(8) have reported retrospective analysis of seizure disorders presenting in late childhood manifesting antecedently as a learning disorder.

Finally, the frequent occurrence of focal or multifocal occasional low to medium voltage sharp waves in the learning disabilities population, estimated in our experience at 10% of records, does not warrant, in my judgement, primary therapy with an antiepileptic drug. Gordon and coworkers(1) are to be congratulated on a fine clinical contribution to the literature on the neurology of learning.

#### References

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