Sodium Valproate Controls Choreoathetoid Movements of Kernicterus

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The term kernicterus has been used both pathologically and clinically(1). Pathologically it indicates a canary-yellow staining of circumscribed area of the basal ganglia, brainstem and cerebellum; clinically, it comprises a syndrome consisting of athetosis, impaired vertical gaze and auditory loss or imperception. The majority of infants with this disorder die within the first week or two of life, and those who survive are often mentally retarded, deaf and totally unable to sit, stand or walk(2). However, exceptional patients, obviously less damaged, are mentally normal or at most only slightly backward. Severe athetosis and choreiform movements impair child's ability to attain normal motor milestones. The conventional treatment of these abnormal movements includes the use of drugs like phenobarbitone, chlorpromazine, diazepam and haloperidol. Recent reports indicating the effectiveness of sodium valproate in the treatment of Sydenham's chorea(3,4) prompted us to try this drug in a 2½ years old child with severe choreoathetoid movements in kernicterus that failed to respond to conventional drugs.

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Received for publication: August 1, 1991;
Accepted: August 28, 1991

Case Report

A 2½-year-old female child was under our medical care from 4th day of birth. She was born at home and brought to the hospital on the 4th day with severe jaundice and convulsions. Her two sibs, who were also born at home, had died in the first week of life due to severe jaundice and convulsions; and another sib who is now 5-year-old and perfectly normal was delivered in our hospital and was given exchange transfusion for hyperbilirubinemia due to Rh incompatibility. The index case was given exchange transfusion immediately after admission and she seemed to improve in the next few weeks; but failed to attain her developmental milestones at appropriate time. She attained head control and social smile at 2 years of age and no further milestones were attained when she was seen at 2½ years of age. She developed severe choreoathetoid movements at the age of 1½ years. She also had yellow staining of teeth, failure of upward gaze, hypotonia and hearing loss. Initial trial of phenobarbitone, chlorpromazine and diazepam in the standard doses failed to control the abnormal movements. A recent report of effectiveness of sodium valproate in the

control of choreiform movements in Sydenham's chorea(3) prompted us to try the drug in our case. The child was put on sodium valproate in the dose of 20 mg/kg/day in two divided doses and other sedatives were withdrawn. Two weeks after the initiation of therapy there was a remarkable control of abnormal movements and the child could roll over from prone to supine position. After 4 weeks of therapy when she was last seen, there was further control of choreoathetoid movements and child was able to sit, hold objects in hand and imitate. She could also bear weight on her legs. Sodium valproate not only controlled the abnormal movements in the present case, but also helped the child to exhibit her milestones.

Discussion

Sodium valproate is an effective anticonvulsant, which has been recently used in the treatment of Sydenham's chorea(3,4). The present study indicates that this drug could be used for the control of severe choreoathetoid movements resulting from kernicterus as well. We suggest that a larger controlled study should be carried out to validate our finding. The precise mechanism by which valproate controls involuntary movements is not known. However, sodium valproate is known to raise the level of gamma-aminobutyric acid (GABA), particularly in the striatum nigra(5). This increase may exert its effect through modification of the GABAergic synaptic transmission and hence control the abnormal movements. This effect on the basal ganglia may be totally different from the anticonvulsant effect of valproate(3).

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Perinatal Hypophosphatasia

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Rathbun(1) coined the term 'hypophosphatasia' for a heritable metabolic

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Received for publication: November 30, 1990;
Accepted: October 31, 1991