creased. These results may be due to difficulty in release of mGOT from muscle.

During the recovery phase from polymyositis, exercise caused increased activity of CPK and sGOT in sera, but not of mGOT, presumably because the mild trauma of exercise is insufficient to release mGOT from the mitochondrial matrix. The rapid decrease of serum mGOT after corticosteroid therapy may provide a sensitive index to the cessation of muscle cell necrosis even though increased activity of serum CPK and sGOT persists.

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Pyridoxine-Dependency Seizure: Report of a Rare Presentation

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A child developed minor motor seizures at the age of 14 months accompanied by an abnormal electroencephalogram showing single spikes and polyspikes over the vertex and frontocentral regions. Seizures continued until the age of 22 months despite administration of several standard anticonvulsants. At age 22 months, pyridoxine, 75 mg daily, was initiated and anticonvulsants were discontinued. Both the seizures and the electroencephalographic abnormality have disappeared over the ensuing 20 months with pyridoxine therapy.

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A rare cause of neonatal seizures is pyridoxine (vitamin B_6)-dependency convulsions. Late presentation of a pyridoxine-responsive seizure disorder, presumably due to pyridoxine dependency, is presented.

The boy was the product of a term gestation. At birth he weighed 3.5 kg and was meconium stained. The pregnancy had been uncomplicated and the delivery unremarkable. In reply to a leading question about fetal activity, the mother admitted to having felt excessive hiccups by the fetus during the last two months. Apgar scores were not available. Neurodevelopmental milestones were mildly delayed. During the entire first year of life, the child had had intermittent regurgitation of food associated with "birdlike" swallowing movements and frequent attacks of croup. The family history included a chronic mixed seizure disorder in a maternal uncle starting at age 6 years.

The child first presented with seizures at the age of 14 months. Initially these were in the form of brief staring and stiffening attacks with turning of the head associated with eye deviation to the left side, occurring approximately 4 or 5 times per day. Physical examination revealed no unusual findings. Head circumference measured 48 cm, plotting on the 50th percentile, and height and weight were between the 25th and 50th percentiles. Skin examination showed no neurocutaneous abnormalities. Standard neurological examination including funduscopy was nor-

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mal. Developmental examination using the Denver Developmental Screening Test revealed an age level of 10 to 11 months.

An initial electroencephalogram (EEG) contained well-formed single spikes and polyspikes over the vertex and frontocentral regions. Cerebrospinal fluid examination and routine electrolyte screening were normal. CT scan showed prominent cerebral sulci and interhemispheric fissure but no anomalies or calcification. Blood and urine amino acid screen and quantitative assay were normal.

The clinical course was characterized by poor seizure control despite a systematic approach using phenobarbital, phenytoin (Dilantin), acetazolamide (Diamox), valproic acid (Depakene), and clonazepam (Clonopin). Drugs were used in varying combinations and in age-appropriate doses from 14 to 22 months of age. Seizures continued almost regularly and changed pattern to atonic and minor motor varieties.

When the patient was 22 months old the EEG was still abnormal, showing single and polyspikes from frontocentral regions. Seizure frequency was about 5 to 14 per day with phenytoin and clonazepam therapy. At this point, clonazepam was discontinued and pyridoxine (vitamin B_6) was started empirically at a dose of 75 mg daily. A dramatic reduction in seizure frequency occurred within 72 hours, and the seizures had stopped by the fifth day following pyridoxine administration. A repeat EEG four weeks after the start of pyridoxine treatment was normal. Once the clinical response to pyridoxine was well established, phenytoin was withdrawn and thereafter the child was treated solely with pyridoxine at a dose of 50 mg daily. A repeat EEG was again normal a month later. He has remained seizure free for 20 months receiving solely pyridoxine, 25 mg daily. His neurodevelopmental skills have advanced considerably.

Discussion

Hunt el al [7] first described a case of intractable convulsions in an infant that were controlled by vitamin B_6. Based on further observations by Scriver [9] and Bejsovec et al [1], pyridoxine (B_6)-dependency convulsions have been recognized as an entity primarily presenting as a rare form of neonatal convulsive disorder. It is also recognized as one of five pyridoxine-dependency syndromes, the others being B_6-responsive anemia, xanthurenic aciduria, cystathioninuria, and homocystinuria [3]. The fact that the seizures observed in the vitamin B_6 dependency syndrome respond solely to that vitamin suggests that there is a specific biochemical lesion within the central nervous system, presumably involving the γ-aminobutyric acid shunt enzymes [3].

This patient appears to have an atypical form of pyridoxine-dependency seizure disorder. The child developed seizures much later than the neonatal period. The diagnosis of pyridoxine-dependency seizures was entertained when standard anticonvulsant therapy failed to control his convulsions. An important factor that caused us to suspect the disorder was the possibility of intrauterine seizures (retrospective interpretation of excessive hiccup) [1, 6] and mild asphyxiation at birth (meconium staining). The prompt clinical response, reversal of EEG abnormalities, and a continued seizure-free state for over a year with pyridoxine therapy alone strongly favor the diagnosis. An adequate nutritional history and lack of clinical features (skin and hair changes and anemia) make it unlikely that the child has a systemic pyridoxine-deficiency state [8]. Biochemical investigations in the diagnosis of B_6 cofactor (pyridoxal 5′-phosphate) activity, such as the tryptophan loading test [4] and erythrocyte aspartate aminotransferase cofactor activation [5], may not show abnormalities [6]. Thus, the diagnosis is often made on clinical grounds by a prompt response to B_6 [9]. Failure to provide pyridoxine supplements may lead to recurrence of seizures within 48 hours in patients with pyridoxine-dependency seizures [3]; at the request of the parents, we did not undertake such confirmation. Only two previous cases have been reported of late-onset pyridoxine-dependency seizures; both were in the siblings of a patient with neonatal pyridoxine-dependency seizures [10].

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