

PEDIATRIC NEUROLOGY BRIEFS

A MONTHLY JOURNAL REVIEW

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Vol. 17, No. 9

September 2003

MOVEMENT DISORDERS

DIFFERENTIAL DIAGNOSIS OF DYSTONIA

An approach to the early diagnosis of pediatric neurotransmitter diseases (PNTD), and especially dystonia, is outlined in a report from the University Children's Hospital, Dusseldorf, Germany; and Institute of Child Health, University College, London, UK. Symptoms suggestive of biogenic monoamine PNTD include, dystonia, myoclonic epilepsy, mental retardation, oculogyric crises, neonatal hypoglycemia, and aggressive behavior. Childhood-onset dystonia or parkinsonism-dystonia is the hallmark of dopamine deficiency and PNTD. Screening tests for dystonia caused by neurometabolic disorders in children <2 years include CBC, plasma amino acids, homocysteine, lactate and pyruvate, uric acid, creatinine; urine organic acids and sulfite; blood biotinidase, acyl-carnitine, and dipterin; white cell hexosaminidase; and serum transferrin isoelectric focusing. If these tests are nondiagnostic, a lumbar puncture and the following CSF investigations are advised: cells, protein, glucose, lactate, amino acids, pterins, and 5-methyltetrahydrofolate. Potentially treatable inborn errors of metabolism causing dystonia in young children include biotinidase deficiency, methylmalonic aciduria, glutaric aciduria type 1, succinylsemialdehyde dehydrogenase deficiency, and purine nucleoside phosphorylase deficiency. Other dystonias in young children, usually having a poor prognosis and recessively inherited, include Pelizaeus-Merzbacher disease, Lesch-Nyhan syndrome, sulfite oxidase and molybdenum cofactor deficiency, infantile neuronal ceroid lipofuscinosis, infantile Gm2 gangliosidosis, Niemann-Pick type A, and mitochondrial encephalomyopathies. Dystonias presenting in children >2 years of age are either acquired, especially post-streptococcal infectious encephalitides, or primary genetic with family history (idiopathic or paroxysmal, L-dopa-responsive with diurnal variation (Segawa's disease), and myoclonic dystonia). Older children with primary dystonia should receive a trial of L-dopa for at least 3 months. (Assmann B, Surtees R, Hoffmann GF.

PEDIATRIC NEUROLOGY BRIEFS (ISSN 1043-3155) © 2003 covers selected articles from the world literature and is published monthly. Send subscription requests (\$65 US; \$68 Canada; \$75 airmail outside N America) to **Pediatric Neurology Briefs - J. Gordon Millichap, M.D., F.R.C.P.-Editor**, P.O. Box 11391, Chicago, Illinois, 60611, USA.

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Approach to the diagnosis of neurotransmitter diseases exemplified by the differential diagnosis of childhood-onset dystonia. *Ann Neurol* 2003;54(suppl 6):S18-S24). (Respond: Dr Assmann, University Children's Hospital, Moorenstrasse 5, 40225 Dusseldorf, Germany).

COMMENT. The term dystonia is used for a symptom or abnormal movement disorder. Dystonia is characterized by intermittent or continuous muscle spasms that are generalized (dystonia musculorum deformans) or segmental (localized to the neck (spasmodic torticollis), upper limb, or lower limb), and primary genetic or acquired (post-perinatal asphyxia, trauma, toxins, or vascular). In primary hereditary dystonias, the mode of transmission is variable. One form with high incidence in Ashkenazi Jews is probably autosomal dominant. The first symptom in hereditary dystonia is an involuntary posturing of one portion of the body, most commonly a plantar, flexion-inversion movement of the foot, commonly misdiagnosed as a hysterical gait. In treatment, trihexyphenidyl (Artane) is used in Ashkenazi Jewish patients, and Levodopa, alone or with a decarboxylase inhibitor (Sinemet), in patients with late onset dystonia. Cryothalamectomy is a surgical approach rarely entertained in children with medically-intractable hemidystonia.

CSF analysis and magnetic resonance spectroscopy in the diagnosis of neurotransmitter diseases are reviewed by Hyland K (*Ann Neurol* 2003;54(suppl 6):S13-S17), and Novotny EJ Jr et al (*Ann Neurol* 2003;54(suppl 6):S25-S31). The CSF compounds measured are homovanillic acid (end product for dopamine metabolism), 5-hydroxyindoleacetic acid (for serotonin), and 3-methoxy-4-hydroxyphenylglycol (for norepinephrine). MRS methods are under investigation for the measurement of neurotransmitters in the brain. Abnormalities of motor cortex excitability preceding voluntary movement in patients with dystonia have been studied by Gilio F et al (*Brain* 2003;126:1745-1754). Dystonic movements are commonly triggered or made worse by voluntary action.

PAROXYSMAL DYSKINESIAS

Clinical characteristics of 26 children diagnosed with paroxysmal dyskinesias between 1980 and 2000 were evaluated retrospectively at the National Neurological Institute "C Besta" of Milan, Italy. Patients were categorized according to precipitating factors: 14 had paroxysmal kinesigenic dyskinesia (PKD), 6 had paroxysmal non-kinesigenic dyskinesia (PNKD), and 6 had paroxysmal exercise-induced dyskinesia (PED). None had paroxysmal hypnogenic dyskinesia (PHD), a form of nocturnal frontal lobe epilepsy. Patients with PKD had a mean age at onset of 7.1 years (range 1.5-14 years); 13 were idiopathic, with a positive family history in 9 and autosomal-dominant inheritance; and one was associated with Chiari type 1 malformation. Of the 6 with PNKD, 1 had multiple sclerosis, 2 had cerebral palsy, 1 had a left basal ganglia stroke, 1 an acute inflammatory encephalopathy, and only 1 was idiopathic. Six with PED were all idiopathic, and attacks of dystonia or choreoathetosis were triggered by prolonged exercise, usually running or walking. Antiepileptic drugs, especially carbamazepine, were most effective in treatment of the PKD type, with benefit obtained in 70%. The occasional co-occurrence of epilepsy and PKD may be explained by a common ion channel