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MUSCLE DISORDERS

BRAIN DYSTROPHIN IN DUCHENNE DYSTROPHY

To define the potential pathogenic role of dystrophin deficiency in the cognitive impairment characteristic of Duchenne muscular dystrophy (DMD), the protein in brain cortical synapses of an 8-year-old patient examined at autopsy and an age-matched control subject dying of myelogenous leukemia was analysed in the Department of Neuroscience and Cell Biology, Rutgers-The State University of New Jersey, Piscataway, NJ. Western blot analysis of protein in total homogenate, synaptic membrane, and the highly purified postsynaptic density (PSD) disc beneath the postsynaptic membrane, showed 427-kd dystrophin normally expressed in the PSD of the control tissue but was undetectable in the PSD from the DMD cerebral cortex. (Kim T-W, Wu K, Black IB. Deficiency of brain synaptic dystrophin in human Duchenne muscular dystrophy. *Ann Neurol* September 1995;38:446-449). (Respond: Dr Kim, Laboratory of Genetics and Aging, Department of Neurology, Massachusetts General Hospital East, 13th Street, Charlestown, MA 02129).

COMMENT. Human brain dystrophin is normally present in the cortical synapse but is absent in the brain of a child dying with Duchenne muscular dystrophy. Dystrophin deficiency in DMD may be a factor in both muscle and brain synaptic dysfunction. The patient examined in this report had no obvious cognitive impairment but a subclinical deficit was not excluded. The possible relationship between the dystrophin deficiency in the synapse and cognitive function was undetermined. That brain cortical dysfunction needs further study in patients with DMD is indicated by this report and by occasional observation of Babinski and other abnormal central nervous system signs.

ADHALIN DEFICIENCY AND MUSCULAR DYSTROPHY

Muscle biopsy specimens from 30 muscular dystrophy patients were examined for a deficiency of adhalin, the 50-kd dystrophin-associated protein,

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at the University of Pittsburgh School of Medicine, PA. Of 3 patients with neonatal-onset congenital MD, 11 with childhood-onset MD, and 16 with early adult-onset MD (limb-girdle MD), only one, a 16-year-old African-American girl with childhood-onset MD, had adhalin gene mutations. All patients had autosomal recessive inheritance patterns, and all had serum CK levels higher than 1000 IU/liter. (Ljunggren A et al. Primary adhalin deficiency as a cause of muscular dystrophy in patients with normal dystrophin. Ann Neurol September 1995;38:367-372). (Respond: Dr Eric P Hoffman, BST W1211, University of Pittsburgh School of Medicine, Pittsburgh, PA 15261).

COMMENT. Primary adhalin deficiency in patients with muscular dystrophy with normal dystrophin is a relatively rare occurrence. It is not restricted to French families in which it was first reported. The phenotype is consistent with childhood-onset muscular dystrophy.

Approximately 60% of MD patients show absence or deficiency of dystrophin. Of the remaining 40% with normal dystrophin, most have the genetically heterogeneous severe childhood form of autosomal recessive MD, or limb-girdle dystrophy, and 1 in 30 may have a primary adhalin deficiency.

METABOLIC DISORDERS

CARNITINE PT II DEFICIENCY AND CEREBRAL DYSGENESIS

A newborn female infant with neonatal lethal multiorgan carnitine palmitoyltransferase II (CPT II) deficiency is reported from the Departments of Medicine and Pathology, Children's Hospital, Boston, MA; and the Department of Pharmacology and Medicine, Case Western Reserve University, VA Medical Center, Cleveland, OH. The infant was referred at 4 days of age because of hyperammonemia and seizures. Pregnancy was complicated by oligohydramnios. Ultrasound on day 1 showed enlarged kidneys with cortical cysts. Cranial ultrasound revealed a periventricular cyst. On day 3, seizures with prolonged apnea were followed by unresponsiveness. Pupils were fixed and dilated. Dysmorphic features included microcephaly, long fingers and toes, extra digital creases, and joint contractures. The liver enlarged, and the infant died at 10 days with cardiac and renal failure. Long-chain acylcarnitines were elevated in blood and multiple tissues, and lipid accumulations and deficiency of CPT II activity were found in heart, liver, muscle, and kidney tissue. (North KN et al. Lethal neonatal deficiency of carnitine palmitoyltransferase II associated with dysgenesis of the brain and kidneys. J Pediatr September 1995;127:414-420). (Reprints: Kathryn N North MD, Department of Neurology, Children's Hospital, Bridge Road, Camperdown, New South Wales 2050, Australia).

COMMENT. The authors cite two previous reports of families with neonatal CPT II deficiency associated with multiple malformations. Autopsy findings include diffuse lipid accumulation, cardiomegaly, dysplastic kidneys, and brain migration defects. They conclude that this metabolic disorder should be included in the differential diagnosis of neonates dying with dysmorphism and multiple organ malformations, along with Zellweger syndrome, other disorders of peroxisomal B-oxidation, and glutaric acidemia type II.