ATTENTION DEFICIT DISORDERS

ETIOLOGY OF ADHD: PERINATAL HYPOXIC ENCEPHALOPATHY

Recent evidence pointing to a disturbance of function of the striatum in attention deficit hyperactivity disorder (ADHD) is reviwed from the Department of Pediatric Neurology, The John F Kennedy Institute Glostrup, Denmark. Concomitant involvement of the cingulo-striato-thalamo-cortical loop which subserves awareness results in impulsivity, inattention and hyperactivity. Perinatal hypoxic-ischemic encephalopathy, common in prematurity, a known antecedent of ADHD, results in release of excitatory amino acids, especially glutamate, which cause neuronal swelling and cell death. The anatomy of the striatum, with its convergent glutaminergic afferent synaptic transmission from the cortex, contributes to its vulnerability in ischemia-induced glutamate release. The increased survival of premature infants has led to a higher incidence of ADHD in this patient group. (Lou HC. Etiology and pathogenesis of attention-deficit hyperactivity disorder (ADHD): significance of prematurity and perinatal hypoxic-haemodynamic encephalopathy. Acta Paediatr Nov 1996;85:1266-1271). (Respond: Dr HC Lou, Department of Pediatric Neurology, The John F Kennedy Institute, Gl Landevej 7 DK-2600 Glostrup, Denmark).

COMMENT. ADHD is a heterogeneous disorder with a number of presumed etiologic factors. This author emphasizes the role of prematurity and hypoxic-ischemic events in damage to the striatum and its connections in the pathophysiology of ADHD. Several studies are cited showing up to one third of premature infants with birthweight <1500 gm have ADHD when examined at 5 to 7 years.

MRI STUDY OF BRAIN DEVELOPMENT AND IQ

Volumetric analysis of brain images obtained from MRI was used to study cerebral development in 85 normal children and adolescents, 5 to 17 years of age, at the Kennedy Krieger Institute, Johns Hopkins University, Baltimore; and Thomas Jefferson School of Medicine, Philadelphia, USA. Boys' brains were 10% larger than girls, and increased cortical grey matter contributed primarily to the larger brain volume. Age related changes included loss of cortical and subcortical grey volume and gain in white matter volume. Cerebral asymmetries were similar in both sexes: cortical and subcortical grey matter was prominent on the right side and CSF on the left. Total cerebral volume, particularly prefrontal grey matter, correlated with IQ. Subcortical grey matter volume showed a lesser but significant correlation with IQ variance. (Reiss AL, Abrams MT, Singer HS, Ross JL, Denckla MB. Brain development, gender and IQ in children. A volumetric imaging study. Brain Oct 1996;119:1763-1774). (Respond: Dr Allan L Reiss, Kennedy Krieger Institute, 707 North Broadway, Baltimore, MD 21205).

COMMENT. The finding that larger than normal brain volume is not always associated with superior cognitive function should allay fears that the investigators had any sexist bias in reporting boys' brains to be 10% larger than girls. Examples cited include children with neurofibromatosis-1 and the fragile X syndrome, both characterized by macrocephaly and below average IQ.