ATTENTION DEFICIT DISORDERS

PMRS STUDIES OF RIGHT FRONTAL LOBE METABOLISM IN ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

Proton magnetic resonance spectroscopy (H-MRS) and quantitative morphometric analysis were used to investigate neurometabolite concentrations in the right prefrontal white matter in relation to attention skill and frontal anatomy of 23 children (17 male) with ADHD and 24 matched controls at the University of New Mexico, Albuquerque. Two children with ADHD and none of the controls showed right frontal lobe abnormalities in the MRI, and both showed no changes in neurometabolites and voxel tissue composition. Females with ADHD had lower N-acetylaspartate concentrations than males with ADHD. Males and females with ADHD did not differ in severity of attentional problems. Right dorsolateral frontal volumes were smaller in children with ADHD, and these correlated with neurometabolite concentrations. Continuous Performance Test performance was related to both dorsolateral volume and the creatine-phosphocreatine peak from H-MRS. Sex-specific neurobiological differences in ADHD are confirmed, and these involve neurochemistry, neuroanatomy, and attentional performance. (Yeo RA, Hill DE, Campbell RA et al. Proton magnetic resonance spectroscopy investigation of the right frontal lobe in children with attention-deficit/hyperactivity disorder. J Am Acad Child Adolesc Psychiatry March 2003;42:303-310). (Respond: Dr Ronald A Yeo, Department of Psychology, University of New Mexico, Albuquerque, NM 87131).

COMMENT. Children with ADHD have impaired performance on a continuous performance test, and a smaller right dorsolateral frontal volume. As a group, ADHD children do not show abnormalities in neurometabolite concentrations in the right prefrontal region, but a significant sex interaction for N-acetylaspartate (NAA) is demonstrated, with especially low concentrations in girls. Patterns of correlations between neurometabolites, right prefrontal anatomy, and attentional performance differ across groups, the most significant correlations occurring in children with ADHD. The NAA reductions in females may be related to decreased glucose metabolism previously reported in females with ADHD. (Ernst M et al. 1994; see Progress in Pediatric Neurology III, PNB Publishers, 1997;p213).

SLEEP AND BEHAVIOR IN ADHD

Potential relationships between objectively measured sleep disturbances and neurobehavioral function in a community cohort of 5- to 7-year old children with parentally reported symptoms of ADHD were investigated at the University of Louisville, KY. Snoring was unusually prevalent among mildly affected ADHD children, and sleep-disordered breathing (SDB) was significantly prevalent among children with mild hyperactive behavior. SDB was not significantly correlated with ADHD, but rapid eye movement sleep was disturbed and contributed to the behavior. (O'Brien LM, Holbrook CR, Mervis CB et al. Pediatrics March 2003;111:554-563).