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ATTENTION DEFICIT AND BEHAVIOR DISORDERS

SEROTONIN LEVELS IN ATTENTION DEFICIT DISORDER

The relationship between blood serotonin, norepinephrine, dopa and lipid levels and the degree of hyperactivity, impulsiveness, inattention, and aggressiveness in 35 boys with ADHD, combined type, was studied at the Ness Ziona Mental Health Center, Nes Ziona, Tel Aviv University, and other centers in Israel. The high-severity ADHD subgroup, as measured by the Conners Teacher Rating Scale, showed a tendency toward a correlation with low platelet-poor plasma serotonin concentrations ($P=0.08$). Catecholamine and lipid levels were unrelated to severity of ADHD. (Spivak B, Vered Y, Yoran-Hegesh R et al. Circulatory levels of catecholamines, serotonin and lipids in attention deficit hyperactivity disorder. Acta Psychiatr Scand April 1999;99:300-304). (Respond: B Spivak, Ness Ziona Mental Health Center, PO Box 1, Ness Ziona 74100, Israel).

COMMENT. A tendency toward lower plasma serotonin levels may correlate with severity of ADHD, and a disruption in serotonin function may underly the mechanism of one subtype of ADHD. A previously suggested link between low serum cholesterol levels and impulsive and aggressive behavior in ADHD children is not supported by the present study. The authors are to be commended on their attempt to document the neurobiological basis and relationship of serotonin function to the severity of symptomatology in ADHD. Further biochemical investigations of this type, including methylphenidate-induced changes, may lead to a better understanding of the pathogenesis of ADHD.

Brain serotonin in autistic children was studied at the Children's Hospital of Michigan, Detroit. (Chugani DC, Muzik O, Behen M et al. Developmental changes in brain serotonin synthesis capacity in autistic and nonautistic children. Ann Neurol March 1999;45:287-295). Serotonin synthesis capacity (SSC) measured in vivo by PET showed a gradual increase in 30 autistic children from 2 to 15 years, reaching to 1.5 times adult normal values. In comparison, SSC in 8 nonautistic siblings and 16 epileptic children without autism was 200% higher than in adults up to 5 years and then declined toward adult values. It seems that

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the developmental increase in SSC usually present in childhood is disrupted in autistic children. Previous studies in animals, cited by the authors, have shown that changes in brain serotonin during development may affect synaptic connections in the sensory cortex and alter neuronal differentiation.

MPH RESPONSE PREDICTORS IN ATTENTION DEFICIT DISORDERS

Response to methylphenidate (MPH) in 36 boys (7-12 years) with attention deficit hyperactivity disorder (ADHD) was examined in a double-blind, placebo-controlled, crossover study at the National Centre for Child and Adolescent Psychiatry, Oslo, Norway. Significant improvements in the level of hyperactivity at home or at school and in conduct problems at school were obtained in response to MPH (0.5 mg/kg/day) in 83% (behavior was at normal levels in 60%). Neuropsychological tests showed MPH-induced improvements in sustained attention (Children's Checking Task [CCT] and Continuous Performance Test [CPT] of vigilance), working memory (Paced Auditory Serial-Addition Task [PASAT]) and motor coordination (Maze test).

Pre-treatment high levels of hyperactivity and inattention, relatively young age, and absence of emotional disorders were correlated significantly with normalization of hyperactive behavior in 71% of cases. Test performance and neurodevelopment scores had no predictive value. (Zeiner P, Bryhn G, Bjerke C, Truyen K, Strand G. Response to methylphenidate in boys with attention-deficit hyperactivity disorder. Acta Paediatr March 1999;88:298-303). (Respond: P Zeiner, National Centre for Child and Adolescent Psychiatry, PO Box 26, Vinderen, 0319 Oslo, Norway).

COMMENT. The degree of hyperactivity in children with ADHD is correlated with response to MPH treatment. This finding in the Oslo study corroborates previous reports, both in clinical and animal studies, showing that subjects with the highest levels of motor activity are most likely to respond positively to MPH, whereas those with lower activity levels are sometimes made worse (Millichap et al. Am J Dis Child 1968;116:235-244; Ann N Y Acad Sci 1973;205:321-334). In these studies, neuropsychological test performances were also improved, and the occurrence of subtle signs of neurological abnormality was a likely predictor of response to MPH. Taylor et al (Psychol Med 1987;17:121-143) have also reported that high levels of motor activity, impaired attention and motor coordination, younger age and absence of emotional problems may predict a response to MPH.

Denney CB and Rapport MD, University of Hawaii, evaluated the validity of models designed to predict MPH-responsiveness in children with ADHD (L Am Acad Child Adolesc Psychiatry April 1999;38:393-401). They concluded that the magnitude of response to MPH measured by classroom attention and behavioral inhibition are correlated and predictive of academic performance and teacher-rated behavior.

Comorbid anxiety and ADHD response to MPH. Diamond IR, Tannock R, and Schachar RJ, University of Toronto, examined the effect of comorbid anxiety on response to MPH in ADHD (L Am Acad Child Adolesc Psychiatry April 1999;38:402-409). Contrary to previous reports, behavioral response and side effects with MPH were unaffected by comorbid anxiety after 4 months of treatment, titrated to a dose of 0.7 mg/kg. Difficulties in measurement of childhood anxiety may account in part for differences in results.

BEHAVIORAL PROBLEMS IN LEARNING DISABLED CHILDREN

The relationships between learning difficulties (LD) and behavior problems (BP) in 11 to 12-year-old children was determined at the Royal