ATTENTION DEFICIT AND BEHAVIOR DISORDERS

NEONATAL CEREBRAL ISCHEMIA: A RISK FACTOR FOR ADHD

The effect of low neonatal cerebral blood flow (CBF) on dopaminergic neurotransmission was studied in 6 genetically susceptible high-risk, preterm neonates followed with attention deficit hyperactivity disorder (ADHD) at Aarhus University Hospital, Denmark, and tested at 12-14 years of age. The authors hypothesized that cerebral ischemia at birth might contribute to deficient dopaminergic neurotransmission, which is considered to be the basis for ADHD. Dopamine receptor binding in the striatum was examined with positron emission tomography (PET), and inattention and impulsiveness were measured by continuous reaction times (RT) and RT variability determined by a computerized test of variables (TOVA). In 6 adolescents (12-14 years of age; 5 boys) with CBF measurements at preterm birth and a subsequent diagnosis of ADHD, high striatal dopamine receptor availability ('empty receptors') was correlated with increased RT and RT variability, findings that supported a dopaminergic role in ADHD symptomatology. The link demonstrated between high dopamine receptor availability with low neonatal CBF supports the hypothesis of cerebral ischemia as a risk factor for ADHD. (Lou HC, Rosa P, Pryds O et al. ADHD: increased dopamine receptor availability linked to attention deficit and low neonatal cerebral blood flow. **Dev Med Child Neurol** 2004;46:179-183). (Respond: Dr Hans C Lou, Centre of Functionally Integrative Neuroscience and PET Centre, Aarhus University Hospital, DK-8000 Aarhus, Denmark).

COMMENT. These results support the long held theory that some cases of ADHD may be a consequence of prematurity and low cerebral blood flow (CBF) with perinatal hypoxic-ischemic encephalopathy. The low neonatal CBF predisposes to dopamine depletion in the prefrontal-striatal-limbic system that, in genetically susceptible individuals, leads to ADHD. The beneficial effect of methylphenidate is further convincing evidence that dopaminergic systems are implicated in the pathogenesis of ADHD.

CONCERTA cf RITALIN EFFECTS ON DRIVING PERFORMANCE

The effects of different methylphenidate (MPH) delivery profiles on driving performance of 6 male ADHD adolescents, aged 16 to 19 years, were evaluated by a randomized, crossover, single-blind study comparing controlled-release (OROS) MPH (Concerta) given q.d. to immediate-release MPH (Ritalin) in equal doses t.i.d. in a study at the University of Virginia, Charlottesville, VA. A computer-quantified Impaired Driving Score (IDS) was used to measure driving performance tested on a driving simulator at 2 PM, 5 PM, 8 PM, and 11 PM after treatments had been maintained for 7 days. In participants receiving MPH t.i.d. the IDS worsened in the evening (8 PM) compared to those on OROS MPH q.d. (p=.01). Performance was significantly better overall when on once daily Concerta compared to MPH given t.i.d. (p=.004). (Cox DJ, Merkel RL, Penberthy JK et al. Impact of methylphenidate delivery profiles on driving performance of adolescents with attention-deficit/hyperactivity disorder: a pilot study. **J Am Acad Child Adolesc Psychiatry** March