

# PEDIATRIC NEUROLOGY BRIEFS

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### ATTENTION DEFICIT DISORDERS

#### ETIOLOGIES OF ADHD

The various proposed etiologies of attention deficit hyperactivity disorder (ADHD) are reviewed from the Department of Neurology, New York University Medical Center, New York. These include:

- 1) *genetics*,
- 2) *pregnancy related risk factors*: smoking, maternal anemia, breech delivery, chorioamnionitis, small head circumference, prematurity, low birth weight, birth asphyxia, cocaine, and alcohol (fetal alcohol syndrome),
- 3) *childhood illness sequelae*: meningitis, encephalitis, Reyes syndrome, otitis media, anemia, cardiac disease, thyroid disease, epilepsy, autoimmune disorders, and metabolic disorders,
- 4) *head injury*, especially involving frontal lobes,
- 5) *toxins and drugs*: lead, theophylline, anticonvulsants.

(Nass R. Etiologies of attention deficit hyperactivity disorder: Facts and myths. Int Pediatr 1995;10:236-241). (Reprints: Dr Ruth Nass, NYU Medical Center, 440 East 34th Street, Room 311, New York, NY 10016).

COMMENT. The recognition of risk factors for ADHD can lead to early intervention and improved prognosis. *Diet and nutrition* enthusiasts would add the effects of food additives, food allergies and sucrose to the above list of potential etiological factors in ADHD. For a review of recent articles concerning pros and cons of dietary factors in ADHD and learning disorders, see Progress in Pediatric Neurology I and II, 1991 and 1994, Chicago, PNB Publishers.

#### PEMOLINE IN ADHD

The effects of pemoline (Cylert) in 28 children with attention deficit disorder (ADD), 23 with and 5 without hyperactivity, were evaluated for dose-response, timing of response after ingestion, and duration of effect, in a double-blind, placebo-controlled, crossover study at the Child Development Clinic of the Department of Neurology, Hospital for Sick Children, Toronto, Canada. Using doses of 18.75, 37.5, 75, and 112.5 mg of pemoline, q.a.m., each

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dose administered at 9 am for 1 week, performance was measured by number of math problems completed correctly, teacher-recorded on-task behavior and noncompliance, and Abbreviated Conners Teacher Rating Scale. Tests were completed immediately and beginning 2, 4, and 6 hours after drug ingestion. Beneficial effects of pemoline on classroom behavior and academic performance were linear, beginning 2 hours after ingestion and lasting at least 7 hours. Side effects during observation were minimal, and response was comparable to that reported in studies of methylphenidate. (Pelham WE Jr et al. Pemoline effects on children with ADHD: A time-response by dose-response analysis on classroom measures. J Am Acad Child Adolesc Psychiatry November 1995;34:1504-1513). (Reprints: Dr Pelham. Western Psychiatric Institute and Clinic, 3811 O'Hara Street, Pittsburgh, PA 15213).

COMMENT. The commonly held belief that response to pemoline is gradual and sometimes delayed for 3 or 4 weeks was contradicted by the results of this study that demonstrate an acute beneficial effect, comparable to that of methylphenidate. The authors recommend that doses of pemoline higher than 18.75 or 37.5 mg may be needed for optimal benefit, and a prolonged response may be expected after a single morning dose. The side-effect of insomnia, reported in 32% of patients in one previous long-term trial, could not be evaluated in the present study because parent and sleep evaluations were not included. In my own patients with a complaint of sleep disturbance during treatment with pemoline, the side-effect was reported soon after initiation of therapy, suggesting a more acute onset of response than that noted in the manufacturer's reports. The present study confirms the need to consider increments of dosage more rapidly than recommended in the PDR.

#### ADVERSE FAMILY-ENVIRONMENT FACTORS AND ADHD

The influence of exposure to parental psychopathology and conflict on functioning and comorbidity in 140 children with ADHD and 120 normal controls was studied at the Pediatric Psychopharmacology Unit in Psychiatry, Massachusetts General Hospital and Harvard Medical School, Boston. Increased levels of environmental adversity were found among ADHD compared with control probands for all adversity variables and especially for parental conflict, diminished family cohesion, number of parents with psychiatric illness, and time exposed to maternal psychopathology ( $p < .01$ ). Superior IQ protected ADHD subjects from negative influences of parental psychopathology. The risk of developing comorbidity (conduct disorder, depression, anxiety) in ADHD subjects was not influenced by environmental adversity. (Biederman J et al. Impact of adversity on functioning and comorbidity in children with attention-deficit hyperactivity disorder. J Am Acad Child Adolesc Psychiatry Nov 1995;34:1495-1503). (Reprints: Dr Biederman, Pediatric Psychopharmacology Unit (ACC 725), Massachusetts General Hospital, 15 Parkman Street, Boston, MA 02114).

COMMENT. Adverse family environments, including chronic family conflict, decreased family cohesion, and exposure to maternal psychopathology, are risk factors in children with ADHD. Early recognition of these environmental factors should lead to intervention and improved outcome. The investigation of children with ADHD is multimodal and requires cooperation between various specialties