

presenting with the four characteristic symptoms (finger agnosia, agraphia, right-left disorientation and dyscalculia), in the absence of any other neuropsychological disorders, had a focal ischemic lesion in the inferior left angular gyrus, extending to the callosal fibers. An impairment in mental manipulation of images and visuospatial function is the basis for the Gerstmann cognitive deficit syndrome.

PREFRONTAL DYSFUNCTION IN ADHD: FUNCTIONAL MRI STUDY

Functional magnetic resonance imaging (MRI), during performance of two tasks requiring high-level executive control, was studied in seven adolescent boys with ADHD, and compared to nine controls, at the Institute of Psychiatry, Kings' College, London, UK. A "stop" task required inhibition of a planned motor response, and a "delay" motor timing task required the synchronization of a motor response to an intermittently appearing visual stimulus. Adolescents with ADHD showed less brain activity, predominantly in the right hemisphere mesial frontal cortex during both tasks, and in the right inferior prefrontal cortex and left caudate nucleus during the stop task. ADHD is associated with subnormal activation of the prefrontal areas responsible for higher-order, inhibitory motor control. (Rubia K, Overmeyer S, Taylor E et al. Hypofrontality in attention deficit hyperactivity disorder during higher-order motor control: a study with functional MRI. Am J Psychiatry June 1999;156:891-896). (Reprints: Dr Rubia, MRC Child and Adolescent Psychiatry Unit, Institute of Psychiatry, De Crespigny Park, London SE5 8AF, UK).

COMMENT. Motor attention and response selection, impaired in patients with ADHD, is associated with hypofunction of the right mesial frontal lobe and striatal areas. The findings in these functional MRI studies corroborate previous documentation by quantitative MRI of structural changes in the frontal lobe and caudate in ADHD children. (see Progress in Pediatric Neurology III, PNB Publ, 1997;p212; and Vol. II, 1994;pp172-184).

The role of the right frontal lobe in humor appreciation is evaluated at the University of Toronto and Rotman Research Institute, Baycrest Centre for Geriatric Care, Canada. (Shammi P, Stuss DT. Brain June 1999;122:657-666). In patients with damage to the right frontal lobe, the physical or emotional responses of laughter and smiling were diminished, and impaired performance on humor appreciation tests was correlated with cognitive deficits. Working memory, or the ability to retain information, was related to appreciation of verbal (jokes) and non-verbal (cartoon) tests.

A right frontal lobe dysfunction may explain the *anhedonia* characteristic of some children with ADHD.

PREVALENCE OF ADHD AND METHYLPHENIDATE USAGE

An analysis of data obtained from the National Ambulatory Medical Care Survey (NAMCS), 1990-1995, for children aged 5 through 18 years, was performed at Washington State University, to discern trends in the prevalence of US office-based visits for ADHD and for prescriptions of stimulant medications, including methylphenidate (MPH), for ADHD treatment. From approximately 1 million diagnosed cases in 1990, the prevalence of ADHD had increased 2.3-fold in 1995. In this period, the number of office visits for girls diagnosed with ADHD rose 3.9-fold; the mean age of patients with ADHD increased by more than 1 year, from 9.7 to 10.8; the percentage of all office visits resulting in a diagnosis of ADHD rose from 1.1% to 2.8%; and the population-adjusted rate of ADHD patients prescribed

stimulants increased 2.9-fold (2.6-fold for MPH). (Robison LM, Sclar DA, Skaer TL, Galin RS. National trends in the prevalence of attention-deficit/hyperactivity disorder and the prescribing of methylphenidate among school-age children: 1990-1995. Clin Pediatr April 1999;38:209-217). (Reprints: Linda M Robison MSPH, Pharmacoeconomics & Pharmacoepidemiology Research Unit, College of Pharmacy, Washington State University, PO Box 646510, Pullman, WA 99164).

COMMENT. A 2.3-fold increase in the prevalence of the ADHD diagnosis in children and 2.6-fold increase in MPH prescriptions in the period 1990-1995 are partially explained by the increase in diagnosis of the syndrome in girls and the increasing age of patients treated in the US. One third of ADHD cases diagnosed during childhood still meet the diagnostic criteria in adulthood, according to Swanson JM et al. (Lancet 1998;351:429-433). In some centers, medication is continued through adolescence into early adulthood, contributing to the reports of an increased prevalence rate. (Safer DJ, Krager JM. Pediatrics 1994;94:462-464).

A 1995 survey of pediatric neurologists regarding usage of stimulant medication for ADHD showed that, in this specialty, treatment was continued for a mean of 3.5 years, with a range of 1 to 5 years. Of patients treated, 70% were 6-12 years of age, and only 20% were 13-18 years. (Millichap JG. Ped Neur Briefs Sept 1996;10:65).

RITALIN AND ADDERAL COMPARISON IN ADHD

A double-blind, crossover, 6 week study at the Departments of Psychology and Psychiatry, State University of New York at Buffalo, compared the efficacy and time-course of Ritalin® (10 mg and 17.5 mg bid), Adderal® (7.5 mg and 12.5 mg), and placebo in 25 ADHD children, mean age 9.6 years. A beneficial response in behavior and academic productivity was obtained with both drugs in 75% of participants. The effects of the two drugs were similar, except that Adderal may be more potent and effects may persist for an hour or two longer than Ritalin. The midday doses of both drugs appear to be more effective than the morning doses, suggesting an additive effect, and an indication for using a relatively lower dose at lunch-time. Side effects were not significantly different for Ritalin and Adderal, although the reported incidence of tics, dysphoria, sleep disturbance, and loss of appetite was greater for Adderal. (Pelham WE, Aronoff HR, Midlam JK et al. A comparison of Ritalin and Adderal: efficacy and time-course in children with attention-deficit/hyperactivity disorder. Pediatrics April 1999;103: www.pediatrics.org/cgi/content/full/103/4/43). (Reprints: William E Pelham PhD, Department of Psychology, Park Hall, SUNY at Buffalo, Buffalo, NY 14260).

COMMENT. Adderal may offer a useful addition to the psychostimulant armamentarium for treatment of ADHD. It may be substituted for methylphenidate (MPH) when a longer acting drug is required, if MPH rebound symptoms are troublesome, and when children object to receiving midday doses at school. Its superiority to Dexedrine has not been established, and both amphetamines have the disadvantage of mandatory triplicate prescriptions.

Methylphenidate versus dextroamphetamine in ADHD. Efron D, commenting on the Adderal study by Swanson et al (1998), refers to his experience and comparative trials of MPH and dextroamphetamine in 125 children with ADHD, at the Royal Children's Hospital, Melbourne, Australia. (Am Acad Child Adolesc Psychiatry May 1999;38:500). With dosages standardized at 0.15 mg/kg/bid for dextroamphetamine and 0.3 mg/kg/bid for MPH, beneficial effects were similar, though consistently favoring MPH. The incidence and severity of