VASCULAR DISORDERS

SICKLE CELL DISEASE AND ASSOCIATED SEIZURES

The prevalence of cerebral vasculopathy in 76 patients with sickle cell disease (SCD), with and without seizures, and of magnetic resonance (MR) perfusion abnormality in those with recent seizures, was determined in a study at Great Ormond Street Hospital for Children, London, UK. Neurologic complications of SCD in 47 patients (23 male; median age 12 years; range 1.7-27 years) included recurrent seizures in 6, stroke in 9, transient ischemic attack (8), headaches (9), behavior and/or learning difficulties (9), or abnormal transcranial Doppler, more frequent in the seizure (4/6) and nonseizure (26/41; 63%) groups than in the asymptomatic (10/29; 34%) group. All seizure patients had relative decreased cerebral perfusion, and perfusion abnormalities were ipsilateral to electroencephalographic abnormalities. The development of seizures in patients with SCD is related to vasculopathy and focal hypoperfusion. (Prengler M, Pavlakis SG, Boyd S et al. Sickle cell disease: ischemia and seizures. **Ann Neurol** August 2005;58:290-302). (Respond: Dr Prengler, Neurosciences Unit, The Wolfson Centre, Mecklenburgh Square, London WC1N 2AP, UK).

COMMENT. Seizures are reported in 12 to 14% of patients with sickle cell disease (SCD), and the prevalence in children with SCD is 10 times the general population (Liu JE et al, 1994; cited by authors). Vasculopathy and ischemia are factors in the occurrence of seizures in SCD. MR perfusion studies showing relative hypoperfusion in gray and white matter may be indicative of the cause of seizures when other neuroimaging methods are negative.

COAGULATION ABNORMALITIES ASSOCIATED WITH STROKE OR PORENCEPHALY

The prevalence of genetic and functional coagulation abnormalities in 59 children (age 0-18 years) with arterial ischemic stroke or porencephaly was compared with previously published population frequencies in a study at the National Institute for Neurological Disorders and Stroke, Bethesda, MD. Two thirds had at least 1 prothrombotic risk factor, and 5 had 3 or more. A family history of early thrombosis was found in one third of the children with coagulopathies and stroke. Abnormal factors included plasminogen activator inhibitor-1, methylenetetrahydrofolate reductase (involved in homocysteine metabolism), elevated lipoprotein (a), activated PC resistance, and factor V. Prothrombotic abnormalities are common in cerebrovascular disorders in children. (Lynch JK, Han CJ, Nee LE, Nelson KB. Prothrombotic factors in children with stroke or porencephaly. **Pediatrics** August 2005;116:447-453). (Reprints: Dr John Kylan Lynch, National Institute of Neurological Disorders and Stroke, Building 10, Rm 5S220, 10 Center Dr, MSC 1447, Bethesda, MD 20892).

COMMENT. Previous studies of coagulation abnormalities in children with stroke have shown variable results. The above findings support prothrombotic screening. Common risk factors for stroke have included cerebral arterial abnormalities, previous varicella zoster

infection, preceding trauma, recent infection, and anemia (Ganesan V et al. **Ann Neurol** 2003;53:167-173; **Ped Neur Briefs** Feb 2003;17:15).

ATTENTION DEFICIT DISORDERS

EFFECT OF STIMULANT MEDICATION ON GROWTH

Twenty-nine studies of growth in height of children (22) and late adolescents (7) with attention deficit hyperactivity disorder (ADHD) treated with stimulant medication were reviewed at the University of Sydney, Australia. Of 21 studies in children classified by study design, 9 showed statistically significant attenuation of growth in height while taking stimulants, and 12 showed normal growth patterns. An average height deficit of approximately 1 cm/year during the first 1-3 years of treatment was estimated, with no or less attenuation in patients on doses not exceeding 20 mg/day methylphenidate (MPH). Dexamphetamine may cause more growth attenuation than MPH. Patients with adverse gastrointestinal side effects had more persistent growth attenuation. The effect on growth in height followed a pattern of initial weight loss and resumption of weight gain, but at a lower centile. The author hypothesized that weight gain drives growth in height, but height takes longer to adjust to a new equilibrium on stimulant medication. Most children achieve a satisfactory adult height, with a rebound in growth during the 3rd year of treatment (a finding not supported by the MTA/NIMH study, 2004) or after treatment is discontinued. In 2 studies, the weight centile stabilized while the height centile continued to decline for the third and fourth year. A rare but troubling subgroup with more persistent growth attenuation emphasizes the importance of close monitoring of height and weight, Of six cross sectional studies of late adolescent or adult patients with ADHD, none showed any significant difference between those treated with stimulants durting childhood and controls. (Poulton A. Growth on stimulant medication; clarifying the confusion: a review. **Arch Dis Child** August 2005;90:801-806). (Respond: Dr A Poulton, Western Clinical School, Nepean Campus, University of Sydney, Australia).

COMMENT. Despite the indisputable evidence that stimulants may have an attenuating effect on growth of ADHD children, a plethora of studies have failed to detect an adverse effect. In fact, six of 36 children under 8 years of age showed an increased growth rate, and MPH appeared to have a possible growth stimulant effect in one study using modest doses (Millichap, 1977). Discrepancies in findings between studies can be caused by various factors, the most important relating to dose of stimulant, and use of drug holidays at weekends and vacation periods. Studies employing smaller doses of 20 mg/day or less and on school days only are generally free from adverse effects on growth. Other variables include the duration of therapy, design of study, and duration of follow-up. The more recent introduction of extended release preparations of MPH, not addressed in this review, will probably accentuate the risk of growth adverse effects and the need for careful monitoring. Further reviews should also include the effect of stimulant medication on weight, a precursor of changes in height and more amenable to dietary modifications. Further research should investigate the effects of the newer medications used in treatment of ADHD, duplicating the excellent MTA Cooperative NIMH study (**Pediatrics** 2004;113:762-769; **Ped Neur Briefs** April 2004;18:25-26).