

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 during 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).