Abstracts

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1 THE EFFECT OF THE STIMULANT DRUGS DEXTROAMPHETAMINE AND METHYLPHENDIATE ON GROWTH HORMONE SECRETION IN HYPERACTIVE CHILDREN. D.Aarskog, F.Ø.Fevang, H. Kløve T. Thorsen and K.F. Støa, Dept. of Pediatrics, Dept. Neuropsychology and the Hormone Laboratory, University of Bergen, Norway.

Recent reports that prolonged use of the stimulant drugs dextroamphetamine and methylphendiate (Ritalin) in high doses can suppress growth in hyperactive children and that rebound growth occurred after cessation of therapy, prompted us to test whether these two drugs could provoke growth hormone (GH) secretion. The effect of L-dopa (125-5oo mg) and 15 mg of amphetamine on GH secretion was studied in 1o hyperactive children. Each of the children had both tests performed on alternate days, and serum GH was determined at o,3o,6o,9o,12o and 18o min. Individuals with a peak serum GH level of less than 6 ug/ml were considered "non-responders". There were two non-responders to each drug, and one child did not respond to either test. Peak GH response occured at 6o min in both tests with a mean peak GH level of 11.7 ug/ml after L-dopa and 9.8 ug/ml after amphetamine. There were no significant differencesbetween the mean values at any time of sampling. Preliminary data indicate that methylphendiate also can provoke GH secretion to similar extent as amphetamine. We are now in progress to retest the effect of these drugs on GH secretion in children who have been on methylphendiate treatment for 6 months or more.

2 GROWTH OF DIABETIC CHILDREN DURING TREATMENT WITH ONE AND TWO DAILY INJECTIONS OF INSULIN. H.K.Åkerblom and T. Koivukangas, The Department of Pediatrics, University of OULU, Oulu, Finland.

The present study was done by analysing height channel recordings of diabetic children from two consecutive years, the midpoint being the time of the change in insulin therapy. The series includes all diabetics who presently attend the diabetes clinic and who had not passed midpuberty at the end of the analysis period. The patients were divided into two subgroups, a) lack of pubertal signs at the end of the analysis period (n=21) and b) early phase of puberty or midpuberty reached before the end of the analysis period (n=29). In group a) ten children had a decreased growth rate during the first year of analysis, and eight of them accelerated in height after the switch in insulin therapy The height increase/year was 4.7±0.4 before and 5.9±0.4 cm (mean ± SE) after the change. In group b) 12 diabetics presented growth deceleration during the year before the switch in therapy, and 11 of them accelerated after the change. Growth acceleration was related to improved control of diabetes. The findings indicate the value of twice daily insulin therapy in diabetic children.

3 URINARY GROWTH HORMONE IN THE NEONATAL PERIOD IN INFANTS OF DIABETIC MOTHERS. H. Andersen, K.W.Kastrup & B.Friis-Hansen, Childrens Hospital, Fuglebakken and Rigshospitalet, Copenhagen, Denmark.

Infants of diabetic mothers (IDM) are suggested to have elevated plasma levels of growth hormone (GH) in the early neonatal period. This can be caused by increased secretion, decreased elimination or excretion. As secretion and elimination studies are difficult to perform in this age-group, we have studied the excretion of urinary HGH to elucidate this unexplained phenomenon.Urinary GH was studied with the method of Hanssen in 1o newborns (IDM). Simultaneously 1o infants of normal mothers (INM) were examined within the first 3 days of life. The samples obtained were randomized before analysis. Results: Day 1: No significant difference between IDM and INM could be demonstrated. Day 2: Significantly higher excretion of GH was found in IDM. Day 3: Extremely high excretion of GH: 1573ng/1oo ml/m^2 (INM: 92ng/1oo ml/m^2) was seen. Even though higher diuresis was found in IDM on day 3, the total excretion of GH in a given volume of urine was increased in IDM. The findings are compatible with an increased secretion of GH in the early neonatal period but also with an increased renal clearance from the second day of life.

4 SEXUAL HORMONE BINDING GLOBULIN (SHBG) DURING MALE PUBERTAL DEVELOPMENT IN NORMAL AND PATHOLOGICAL CONDITIONS. A.Attanasio, B.Blank, K. Rager, and D.Gupta, Dept. of Diagnostic Endocrinology, Univ. Children's Hospital, Tübingen, Germany.

Since Testosterone is specifically bound to SHBG, this globulin may determine the availability of physiologically active testosterone at different stages of pubertal development. Furthermore its concentration could be of importance under pathological conditions, particularly in such cases, in which an androgen disturbance exists. To investigate this subject, a method for the quantitative determination of SHBG in human plasma was developed. 2oo µl of plasma, steroid free after absorption to charcoal were incubated in excess with ^{3}H-DHT at 37°C for 3o min. A 1:1o diluted portion was then precipitated with saturated ammonium sulfate, and filtered through a millipore membrane to separate the globulin fraction from albumin, free and albumin bound DHT. Taking into account that SHBG has one specific binding site, the molar concentration of SHBG in the globulin fraction was calculated considering the specific activity of DHT and the molecular weight of SHBG (=1oo.ooo). The results were expressed in mg/l. SHBG was measured in a group of normal boys and the results were evaluated in relation to the genitalia developmental stages. The average value of 4.8 mg/l in G I boys decreased to 1.8 mg/l in GIV-GV boys. Boys with disturbances of male development were also studied. In cryptorchidism higher SHBG concentrations were found when the values were considered according to chronological age or to bone age.