13 B. SOBRADILLO*, M. ZACHMANN, M. FRANK*, H. FRISCH* and A. PRADER. Department of Paediatrics, University of Zurich, Switzerland.

Bayley-Pinneau (BP), Roche (R) and Tanner (T) height predictions in various conditions.

The 3 predictions at chronological ages (CA) 9 to 16 years were compared with adult height in 57 children. In normal boys (n = 15), R and T were most accurate from 9 to 12 years CA (mean prediction error -2.0 to 1.9 cm) and BP overestimated at 9 years (4.6 cm). In normal girls (n = 16), the 3 methods were about equal (-2.8 to 1.5 cm). In tall stature (4 m, 4 f), R and T were better than BP. In precocious puberty (4 m, 3 f), BP was accurate (1.8 cm), but R and T grossly overestimated at 10 years CA (20.9 and 27.5 cm). In Turner's syndrome (4 f), all overestimated at 9 years, R and T more (11.3 and 8.7 cm) than BP (2.2 cm). The same was found in primordial dwarfism (4 f) and Russell-Silver syndrome (3 m). It is concluded that R and T give better overall results, if bone age does not deviate more than about ± 2 years from CA. In conditions with larger differences, BP is more accurate.

14 L.DAVID, E. de PERETTI, A. EVRARD*, J. BERTRAND, R. FRANCOIS. Pavillon S bis, Hôpital Edouard Herriot and INSERM U 34, Lyon, France.

Delayed growth and adolescence (D.G.A.) with lack of adrenarche : catch-up of growth with dehydroepiandrosterone sulfate (DHAS) therapy.

We have good evidence that there are 2 main types of DGA : in type I growth and bone age (BA) velocities usually slow down between 6/8 years (y), sometimes earlier, in children who often have short stature ; in type II the decrease of growth and BA starts between 12/13 y in girls and 13/14 y in boys. A lack of adrenarche as indicated by low plasma levels of dehydroepiandrosterone (DHA) is present in typeI ; normal adrenarche is present in type II as in hypogonadotrophic hypogonadism. To test the hypothesis that the lack of adrenarche is responsible for the DGA in type I we studied the effect of DHAS therapy in a 12 y old girl with typical type I. Except for consistently low plasma levels of DHA : 10 to 22 ng/dl, all endocrine functions were normal. DHAS was given as a single oral morning dose of 5 mg/day for one y : growth velocity increased from 3.5 to 9 cm/y with a growth over BA velocities ratio = 1.3. From this preliminary study we suggest that a lack of adrenarche is responsible for the delayed maturation in DGA type I and that oral DHAS could be a useful substitutive therapy.

15 M. RANKE* and J.R. BIERICH. Dept. of Diagnostic Endocrinology, University, Children's Hospital, Tubingen, Germany.

Comparison of circulating human growth hormone measured by radioimmunoassay (RIA) and radioreceptorassay (RRA) in plasma of children.

The binding characteristics of cultured human lymphocytes-IM9 in a plasma-free sample have been already definied (1). A modification of the original RRA method with IM-9 cells allows measurements of hGH in plasma at concentrations above 3.5 ng/ml (sensitivity of the RIA approx. 0.5 ng/ml) using only 0.1 ml plasma. A parallel study of hGH by RRA and RIA was carried out in 41 GH-deficient but receiving 4 I.U. of GH and 41 constitutionally short stature children duuring sleep. The results gave good agreement between RRA and RIA values ($r=0.79$, $p<0.05$) and showed a parallelism between the regression lines after GH administration (RRA=0.38 ± 0.807 RIA) and during sleep (RRA=0.49+0.808 RIA). Single observations indicate that circulating hGH sometimes shows marked heterogeneity in respect to immunological and biological activity.

(1) Lesniak et al., J.biol.Chem.249,1661,1973.

16 E. de PERETTI, M.G. FOREST, L. DAVID, R. FRANCOIS and J. BERTRAND, INSERM, U. 34, Hôpital Debrousse and Hôpital Edouard-Herriot, Lyon, France.

Dehydroepiandrosterone (DHA), its sulfate (DHAS), 17-hydroxyprogesterone (OHP) and cortisol (F) levels in panhypopituitarism (group I) and isolated GH deficiency (group II) : Evidence for a pituitary hormone controlling adrenal androgens biosynthesis.

Ten subjects of group I (10-22 years) were studied in comparison of 11 subjects of group II (8-15 years). In group II normal ACTH production was documented on ACTH levels and normal responses to Metyrapone. As expected, adrenal androgens (DHA, DHAS) as well as OHP and F were extremely low in group I, reflecting the secondary adrenal insufficiency. In contrast group II had normal F and OHP basal levels for pubertal stage but on the criteria of adrenal androgens levels, 3 subgroups were found : DHA, DHAS were either normal for age (A : 2 girls 12-14 yrs) or low for age but consistent with delayed adrenarche (B : 3 boys 15-19 yrs) or drastically low whatever age or pubertal stage (C : 3 girls 8-16 yrs ; 3 boys 8-13 yrs). Thus in 1/2 of group II with apparently only GH deficiency but normal ACTH levels, impaired adrenal androgen production was documented. This suggests that a pituitary trophic hormone, lacking in subjects of subgroup II-C, controls the adrenal androgen production.

17 J.M. PARKIN* and B. MORA* (Intr. by C.G.D. Brook) Department of Child Health and Medicine, University of Newcastle upon Tyne, England.

Thyroid Function during human growth hormone treatment.

Impairment of thyroid function has been reported in growth hormone deficient children being treated with human growth hormone, and there is evidence that this is the result of inhibition of the TSH response to TRH. We have therefore carried out a number of tests of thyroid function in 10 children on human growth hormone treatment. Basal TSH levels and the TSH levels 20 minutes after an injection of TRH were normal in every case. In only one patient was the serum thyroxine level low and in this patient the growth response to human growth hormone was very good. It is concluded that the regime of treatment with human growth hormone recommended by the Medical Research Council does not significantly affect thyroid function.

18 Guest Lecture
A. Prader (Zurich)
New Aspects of Male Intersex Conditions