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PREDICTION OF ADULT HEIGHT IN UNTREATED TALL CHILDREN;
VALIDITY OF DIFFERENT METHODS

170 predictions in 90 tall girls (age 7-17 yrs) and 68 predictions in 31 tall boys (age 8-18 yrs) were calculated by the following methods: Bayley-Pinneau (BP), Tanner Mark I (T I), Tanner Mark II (T II), Roche-Wainer-Thissen (RWT), Index of Potential Height (IPH), and compared to attained final height. In tall girls T I give good predictions in the bone age (BA) range from 9-16 yrs. T II overestimate final height from BA 12-16 yrs, the tables with more than 3 variables do not improve the results. BP overpredicts from BA 12-15 yrs. RWT and IPH are not suitable for tall girls at all bone ages. In tall boys T I and T II give good results up to the BA of 13 yrs. From 13-16 yrs both methods overestimate final height, specially in the very tall boys (height > 3 SD). In BA over 16 yrs T I and T II is not applicable giving paradoxical results. BP grossly overestimates up to the BA of 12 yrs, overestimates slightly up to 16 yrs and is the best method after the BA of 16 yrs. RWT and IPH underestimate final height up to the BA of 14 yrs, thereafter give acceptable results. Evaluation of any growth inhibiting therapy must take in account these methodological drawbacks.

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STRIKING CHANGES IN THYROID HORMONE AND ADRENAL
STEROID LEVELS AND THEIR BINDING GLOBULINS DUE
TO HIGH DOSES OF TESTOSTERONE/ESTRADIOL IN
TREATMENT OF TALL STATURE

Little is known of the influence of sexual steroids in high dosage on other hormones and their binding proteins. 28 children with excessive tall stature were studied: 14 boys, chronological age (CA) 13.9±0.4 yrs. (SE), treatment: 500 mg testosterone enanthate i.m. every two weeks. 14 girls, CA 13.8±0.4, treatment: 0.5 mg ethinyl estradiol from day 1-25 and 15 mg norethisterone from day 20-25. Results boys: Mean T4 binding globulin (TBG) was lower, T4 and T4/TBG ratio (index of free T4) were markedly reduced (51.4±6.4 ug/l and 2.65±0.25) and directly determined free T4 likewise, T4/TBG ratio negatively correlated with testosterone serum levels (r=-0.585, p<0.05). Results of T3 were variable, values for TSH basal and TRH-induced TSH-rise were normal. Cortisol (C) levels were normal, C binding globulin (CBG) was lower, C/CBG ratio rose. Mean sex hormone binding globulin (SHBG) was reduced, testosterone (T)/SHBG ratio was highly elevated. Results girls: Mean TBG was markedly increased (36.6±2.3 mg/l), but mean T4 rose only slightly (94.9±7.2 ug/l), therefore mean T4/TBG ratio was definitely diminished (2.55±0.17), directly determined free T4 likewise. Results of T3 were variable. A high increase in SHBG, CBG and C and a normal C/CBG ratio was found. Thus, profound effects of high doses of sexual steroids on several hormone levels and their binding globulins were observed and low free T4 was noted in treated boys as well as in girls.

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THE EFFECT OF SOMATOSTATIN ANALOGUE (SMC201/995)
IN A BOY WITH GIGANTISM

A 15 year old boy presented with a history of excessive growth and frontal headaches. He was 200cm tall (Ht SDS +4.1) and had evidence of hypogonadism. Skeletal age was 15 yrs. EMI scan revealed a pituitary tumour with suprasellar extension. Growth hormone (GH) levels during sleep were consistently >135 mu/l. There was no suppression of GH with glucose load and glucose tolerance was impaired with hyperinsulinaemia. Gonadotrophin levels were unrecordable, serum prolactin normal. Transphenoidal surgery led to partial removal of a pituitary adenoma. Immuno-staining was positive for growth hormone in the majority of cells and for prolactin in a small number. Post-operatively, GH levels were >70mu/l.

SMC201/995 was started as a subcutaneous injection eight hourly, and a course of pituitary irradiation begun. The analogue was well tolerated apart from initial but transient diarrhoea. Mean serial GH profiles on SMC which was increased from 50-500 ug 8 hourly, ranged between 29-90 mu/l. The results of a midday profile on 1,000 ug 8 hourly (0800, 1400, 2200) are shown:

Time (hr)	1100	1120	1140	1200	1220	1240	1300
GH (mu/l)	28	29	32	34	41	43	47
Insulin (mu/l)	59	51	47	47	76	87	148
Glucose mmol/l	6.1	6.1	6.1	6.4	6.8	7.5	8.2

Somatostatin analogue reduced GH levels with no serious side-effects, and no worsening of glucose tolerance but to date it has not achieved full suppression of growth hormone release.

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LH-RH ANALOGUE TREATMENT OF CENTRAL PRECOCIOUS
PUBERTY: MONITORING BY BIOLOGICAL ASSAY FOR LH.

Five children (2 M, 3 F) aged 3.5-9.5 yrs, with central precocious puberty and 1 boy (12 yrs old) with corpus callosum agenesis and sexual aggressive behaviour, have been treated with LH-RH Analogue (Buserelin): a) First 15 days: 30±10% mcg/Kg/die subcutaneously; b) Later: 1200 mcg/die intranasal, via nebulizer in 3 doses. Each child was assessed for a complete hormonal picture, particularly: a) LH-RH test and sexual steroids (RIA method); b) Biological and radioimmunological assay for LH (-30', -15', 0) and the mean of the biological/immunoreactive LH ratio (B/I; prepubertal values < 0.6) (Fraioi et al. J. Endocrinol. Invest. 8:513, 1985). Our results, both clinical and biochemical, returned to normal prepubertal condition at 1 month until the 3rd mo. After this time, they showed an escape of B/I ratio, raising at 2.8 (6 mo); 2.16 (4 mo); 3.1 (4 mo); 2.7 (12 mo) in spite of persisting normalization of clinical findings and sexual steroid levels. These results can be attributed to an inadequate or discontinuous absorption during the intranasal administration or to a hypothetical change of LH native molecule, occurring during long-term treatment. The elevation of B/I seems to represent an early useful monitor for a new assessment of dosage or route of administration.

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PELVIC ULTRASONOGRAPHY IN PREMATURE THELARCHE (PT), PREMATURE
ADRENARCHE (PA), PRECOCIOUS PUBERTY (PP), EARLY PUBERTY (EP) AND
OTHER ENDOCRINE ABNORMALITIES

Real-time ultrasonography of the pelvic organs was performed on 40 girls with PT, 31 with PA, 23 with PP, 39 with EP, 18 with isolated vaginal bleeding (VB), 20 with congenital adrenal hyperplasia (CAH), 20 with hirsutism (H), 18 with obesity (O) and 133 age-matched normal girls (C). Uterine and ovarian volumes (UV and OV) were calculated and ovarian morphology was classified as S01= homogenous, S02= less than 3 small cystic areas, S03= microcystic, S04= at least one cystic area > 9 mm and C= large cystic area up to 20 mm.

Examination revealed: pictures resembling aged-matched controls in PA and O; higher S02 frequency in PT and CAH under 8 years (with higher 17-OH-P values); higher S03 frequency in H (with higher testosterone values); macrocysts (C) in VB, H and CAH over 10 years.

OV was higher than controls in PP and EP with S03 and S04, in H and O with S03. UV was higher than control in PP and EP with S03 and S04; lower in CAH over 10 years.

Real-time ultrasonography of the pelvic organs can be very useful not only in diagnosing disorders in sexual development but also for greater understanding at the pathogenesis of these disorders.

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MEASUREMENT OF LH AND FSH BY ULTRASENSITIVE
TIME-RESOLVED IMMUNOFUOROMETRIC ASSAYS
PREDICT THE ONSET OF PUBERTY

Low levels of LH and FSH in serum cannot be reliably assayed by RIA. We report the development of two ultrasensitive time-resolved immunofluorometric assays (IFMA) for these gonadotropins. Two monoclonal antibodies are used in each assay. One antibody is immobilized onto the wall of plastic microtiter strips wells and the other one is labeled with a europium chelate. The immobilized antibody is specific for the β subunit of either LH or FSH and the labeled antibody for the α subunit of both gonadotropins. Twenty-five μ l of sample is diluted with 200 μ l assay buffer and incubated overnight in the wells. The assay sensitivity for LH was 0.019 IU/l and for FSH 0.014 IU/l. A linear measuring range was obtained up to 200 IU/l for both assays. In girls aged 7-9 years the mean LH level was 0.05 IU/l and the FSH level 0.8 IU/l. Until 10 yrs of age a rapid increase of LH to 0.6 IU/l was observed and a further slower increase to 5.1 IU/l in adults. The FSH pattern was similar to that of LH but the increase was more shallow and the mean level in adults was 4.7 IU/l. The increase in LH level was 100-fold, whereas that of FSH was only 7-fold. The increase in serum estradiol levels followed the same pattern as LH, but the mean increase in estradiol was only about 10-fold.