71

M.MAES, R.WOLTER, P.MALVAUX, M.VANDERSCHUEREN, and THE BELGIAN STUDY GROUP FOR PAEDIATRIC ENDOCRINOLOGY. Universities of Louvain, Bruxelles, Gent, Antwerpen, Liège and Leuven, Belgium.

Effects of human Growth Hormone (hGH) and Gonadotropins (Gn) on the testicular response to human chorionic gonadotropin (hCG) in prepubertal GH-deficient children.

To evaluate the role of hGH, plasma testosterone (T) and dihydrotestosterone (DHT) were measured before and 72h after an IM injection of hCG (1500 I.U./m^2) in seven prepubertal GH-deficient children before and after three months of hGH therapy. There were no significant differences ($P > 0.05$) between basal and 72h plasma T levels (mean ± SE) before and after hGH (basal : 0.60 ± 0.15 nM vs 0.39 ± 0.08 nM; 72h : 4.02 ± 1.10 nM vs 4.17 ± 1.13 nM). Like for T, no significant differences were found for DHT. To evaluate the role of Gn, the testicular response to hCG of 11 GH- and Gn-deficient children was compared to that of 16 prepubertal boys with GH deficiency and intact Gn secretion. As shown in the Table, 72h-T were significantly greater in the children with Gn ($P < 0.001$). No other differences for T or DHT were significant. In conclusion, the testicular response to hCG is not modified by GH. In contrast, the greater response in the presence of Gn suggests a permissive role of Gn on the testicular responsiveness to hCG.

	Basal T	72h-T	Basal DHT	72h-DHT
Gn deficient	0.31 ± 0.05	2.83 ± 0.80	0.16 ± 0.03	0.51 ± 0.15
Gn present	0.46 ± 0.06	6.60 ± 0.53	0.19 ± 0.02	0.60 ± 0.14

72

P.G.F. Swift, A.M. Klidjian, J.M.S. Johnstone Departments of Paediatrics & Surgery, Leicestershire Hospitals.

A DOUBLE BLIND, CONTROLLED STUDY OF LUTEINISING-HORMONE RELEASING HORMONE (LHRH) IN THE MANAGEMENT OF UNDESCENDED TESTIS

The role of LHRH nasal spray was assessed in 40 boys with 54 undescended testes (UDT). Subjects were divided randomly into three groups: eighteen placebo, twelve low dose (600 micrograms daily) and ten full dose (1200 micrograms), who had 25, 16 and 13 UDT's respectively. They were assessed independently by two observers before and after treatment, which lasted four weeks. No clinical improvement was seen in any of the placebo group who all required surgery. Improvement was seen in 5/16 testes of the low dose group and 7/13 in the high dose group and these did not require operation. Improvement was only in those testes which initially could be manipulated to below the external inguinal ring. LHRH spray may have some benefit in these cases and help define which need orchidopexy.

73

M.VANDERSCHUEREN-LODEWEYCKX, L.DOOMS*, G.MARCHAL*, K. ADISOEPOSO* and R.VEREECKEN*. Department of Paediatrics, Radiology and Urology, University of Leuven, Belgium.

LHRH treatment in retentio testis : clinical and ultrasonographic results.

The efficacy of LHRH in cryptorchidism is still debated. The aim of this study was to quantify testicular descent after LHRH therapy. Synthetic LHRH (Hoe 471) was given intranasally in a spray dose of 200 µg in each nostril three times a day for 4 weeks to 38 boys, aged 1.2 to 12.8 years (median 8.0 years) with unilateral (n=15) and bilateral (n=23) retentio testis. In supine and sitting positions, spontaneous testicular position and the most caudally obtained during traction were rated clinically before, during and after treatment. In 28 patients, testicular position and volume were measured by ultrasonography using a 10 mHz probe. A two stage testicular descent was obtained in 6 out of 15 patients (40%) with unilateral and in 18 out of 23 (78%) with bilateral retentio testis. Testicular descent clinically evident could not be confirmed by ultrasonography. This discrepancy may be explained by the variability in testicular position, the lack of information on its mobility by ultrasonography and by the difficulties to measure testicular length and the distance to the pubic symphysis. A striking increase in testicular ultrasonographic area was recorded in 7 patients in spite of any measurable changes in basal plasma hormone levels. It is concluded that ultrasonography is a valuable additional tool in the diagnosis of retentio testis but not in the evaluation of testicular descent and retractility.

74

H. DEGENHART, A. BAK, S. DROP, H. VISSER. Dept. of Paediatrics, Erasmus University Rotterdam, Univ. Hosp. Rotterdam/Sophia Children's Hosp., The Netherlands.

Height prediction by a linear regression procedure.

The currently used final height prediction methods are based on an estimate of the growth potential, which can be read from the Bayley-Pinneau tables once bone age (BA) and chronological age (CA) are known. Using a spline-fit of recent Dutch height for age percentiles and of the corresponding standard deviations, at any age a prediction of final height can be made. Such predictions are associated with a certain error. Knowledge of the error distribution allows the calculation of (age-dependent) statistical weights for both CA- and BA-based height predictions. Our procedure involves the application of a weighted linear regression procedure on all height predictions available of an individual (CA and BA-based). The best estimate is calculated at the age corresponding to the last datapoint. In principle this method can be applied to all reasonably homogeneous groups, without use of the Bayley-Pinneau tables. In a population of healthy tall-for-age girls (N=60; mean age at time of prediction 12 yrs), for whom final height was known, predictions were obtained with a mean error of 0.2 cm; 1 SD=2.12 cm.

75

A. S. KWABWE*, R. A. KING* and J. M. TANNER, Imperial College of Science and Technology, and Institute of Child Health, University of London, U.K.

Progress towards a computerized expert system for the assessment of skeletal maturity.

A computerized expert system to determine the skeletal maturity from a hand-wrist radiograph is being developed, and we report progress so far. The advantages of the system are speed and total objectivity.

The two basic tasks associated with this problem involve image processing and artificial intelligence. As regards image processing, we have developed a computationally cheap method to identify each bone and to store its coordinates. It is based on simple shape descriptions and structural locations and is immune to changes in orientation and to growth related changes. It is encoded as a sub-expert system.

The second task involves the analysis of the characteristics of each bone to determine its maturity stage. We have developed rules based on the stage descriptions of Tanner et al, 1983 (Assessment of Skeletal Maturity and Prediction of Adult Height, 2nd ed., Academic Press). Each description is reformulated into a set of questions, and production rules are used to encode these as knowledge sources. The system architecture is similar to the blackboard structure used in HEARSAY-2. The knowledge sources correspond to every node of a classification tree and are invoked either from the blackboard or from another sub-expert system.

76

A.BALSAMO*, S.COCCERI*. R.ARGENTO*, S.PARTESOTTI*, E.FREJAVILLE*, L.MAZZANTI*, P.PIRAZZOLI*, E.CACCIARI. Dept. Pediatr. Dept. Angiology, Univ. Bologna, Italy

Haemorheologic and lipidemic parameters in obesity and diabetes.

Haemorheologic and lipidemic tests were performed in 3 groups of children: 20 with obesity (14m,6f., age 11.4±2.6y) defined as a weight excess of at least 20% (OC); 16 with type 1 diabetes in compensated phase (7m.,9f.,age 11.9±2.0y) (DC); and 20 normal children (15m.,5f.,age 11.9±2,1y.) (NC). For haemorheologic tests by analysis of variation the 3 groups were significantly different for blood viscosity (BV, $p<0,01$ for both 230 and 23/sec-1), plasma viscosity (PV, $p<0,01$) and fibrinogen (Fg, $p<0,01$), but not for haematocrit (HT) and erythrocyte filtration time (1ml.20% erythrocyte suspension in autologous plasma, EFT). The differences were entirely due to OC and not to DC:BV 230 sec. was cP 4.63± 0.46 in OC versus 4.19+0.30 in NC ($p<0.005$); PV was cP 1.66± 0.08 in OC vs. 1.55 ± 0.08 in NC ($p<0.001$); and FG was mg% 341± 53 in OC vs. 254±82 in NC ($p<0.001$) for lipidemic tests, OC had significantly increased triglycerides ($p<0.05$), FFA ($p<0.05$) but not cholesterol, and significantly lowered Lipoprotein ($p<0.01$). DC differed from normals only for increase in FFA ($p<0.01$). These data show that early haemorheologic changes, esp. in hyper Fg and increased PV and DV are observed in childhood obesity rather than in juvenile diabetes. These changes do not involve EFT, in either condition. The chronic metabolic disorder due to obesity affects the lipidemic profile much more than type 1 diabetes.