65

P.S.WARD*, and D.C.L.SAVAGE. Bristol Children's Hospital, Bristol, U.K.

Growth hormone (GH) responses to sleep, insulin hypoglycaemia and arginine infusion.

A few children with no apparent cause for their short stature, continue to grow poorly despite normal GH responses (>15mU/L) to pharmacological stimuli. It has been suggested that their GH secretion during sleep may more accurately reflect their true GH reserve. We have compared sleep related GH secretion (GH-Sleep) with GH responses to insulin hypoglycaemia (GH-I) and arginine infusion (GH-Arg.) in 19 children referred to our Growth Clinic. Blood was withdrawn continuously through an indwelling thromboresistant catheter (Cormed SL-65 Continuous Blood Withdrawal Pump) and divided into 15 minute aliquots, throughout approximately 5 hours of EEG monitored sleep. The following morning an insulin hypoglycaemia/arginine infusion test was performed. GH was measured by radioimmunoassay. 2 patients had normal GH-Arg. responses but GH-Sleep peaks less than 15mU/L. Correlation coefficients, r, for peak serum GH levels were :- for GH-I & GH-Sleep 0.55 ($p<0.02$), GH-Arg. & GH-Sleep 0.52 ($p<0.02$) and GH-I & GH-Arg. 0.56 ($p<0.02$). We conclude that sleep studies of GH reserve are indicated only when the results of stimulation tests are inconsistent with clinical findings.

66

A.CARRASCOSA*,M.ALBISU*, L.AUDI*, M.GUSINYE*, N.POTAU* and E.VICENS; Hospital Infantil Vall d'Hebron, Autonomous Univ., Barcelona, Spain.

Somatomedin activity (SA) in prepubertal children with short stature and normal growth hormone (GH) secretion

Six prepubertal children with short stature (<3rd percentile) and growth velocity <4cm/y have been observed for 2 years or more. Gastrointestinal, hepatic, renal and thyroid functions and X-ray skeletal examination, were normal. GH secretion was evaluated in all cases by two tests: exercise-propranolol and insulin induced hypoglycemia. In 4 cases the sleep-induced GH release was also studied. Peaks of GH were higher than 10ng/ml. SA was measured by the Van den Brande method. Normal values (U/ml) were 0.8-1.2. SA was low (0.1-0.6) in 5 cases and 1.35 in one. SA evaluation six months later confirmed these results. In the first 5 cases SA increased (0,8-1.1) after GH administration (2mg/d/7d). Of these, 2 have been treated with GH 6mg/w, one for 9 and the other for 24 months. During therapy, growth velocity (cm/y) increased to 6,5 and 7,2 respectively.
In conclusion, SA is of value in the selection of patients with short stature and normal GH secretion who may respond to GH therapy. A certain degree of end-organ somatomedin insensitivity is suggested in the child with normal SA.

67

P.TASSONI*, A.CASSIO*, G.NATALI*, S.ZUCCHINI*, A.REGGIANI*, J.ARRIGONI*, A.CICOGNANI,and E.CACCIARI.
2nd Pediatric Clinic, University of Bologna, Italy.

Somatomedin-C in fullterm, preterm and small for date infants.

Capillary blood samples on filter paper were assayed by means of a RIA method (kit Nichols Institute USA) from 1096 newborns divided into fullterm,preterm and small for date infants.Somatomedin-C (SmC) mean value which did not differ in the 3 groups,was 0.15±0.09UI/ml. 110 newborns (10%) showed SmC disc values ≤0.075 UI/ml minimum value measurable by our method.There was no significant difference in the percentage of these values among the 3 groups of newborns.The total population showed a positive correlation($P<0.001$)between SmC and day of life.Only in the first group SmC correlated positively($P<0.05$)with birthweight also.From day 5 of life onward fullterm infants had SmC levels significantly higher than those of preterm infants examined in the same day of life,while the difference existed between fullterm and small for date infants only for the 5th day of life.Among fullterm infants,subjects on day 5 of life and from day 7 onward showed SmC values significantly higher($P<0.001$) than those of newborns examined in earlier day of life.Finally,in all newborns having weight proportional to their gestational age,only subjects with birthweight > 2500g showed SmC levels significantly higher in 5th than in 4th day of life.In conclusion,SmC rates were in fact seen to be reduced in the neonatal phase of life.In fullterm and small for date infants SmC increase was found to be decidedly earlier and quicker if compared to preterm infants.In any case,reaching a critical weight seems to be necessary to complete this process.

68

J. STRACZEK*, F. SAREM*, B. LEHEUP*, P. NABET*, O. OLIVE*, M. PIERSON
Department of Pediatrics, Hôpital d'Enfants, Vandoeuvre and Department of Biochemistry, Hôpital Central, Nancy, France.

Clinical Leprechaunism associated with normal response of patient fibroblasts to IgF I, IgF II and Insulin.

Leprechaunism is a rare syndrome related to cell resistance to growth factors. The purpose of this study was to define the response of 4 year old girl to growth hormone (hgH) and to several growth factors. Diagnosis of leprechaunism was made on the basis of severe growth retardation at 4 years of age (L = 72,5 cm <5 SD ; W = 6.300 kg <5 SD), facial dysmorphism, absence of subcutaneous fat and history of hypoglycemia. hgH response to pharmacological stimuli was found lower than 5 ng/ml at 3 times. Basal levels of IgF I and IgF II were extremely low. When measured during hgH supplementation for 10 days (2 U/kg/day), IgF I and II peaked at the 5 day but still remained under the control values. After discontinuation of hgH, they decreased to basal levels in less than 10 days. The response of fibroblasts from the patient to several growth factors, judged by 3 H Thymidine incorporation and cell number, has been compared to the response of control fibroblasts. The responses did not differ for : normal human serum, fetal calf serum (1 to 30 %), IgF I, IgF II, Insulin (20 to 100 ng/ml), whole patient serum (5 %). When the effect of a control Plasma Derived Serum was compared to PDS of the patient, the fibroblasts exhibited a lower thymidine incorporation in the presence of 5 % patient PDS, with an apparent division blockage. In conclusion, to the difference of previous reports, fibroblasts of this patient seem to be responsive to IgF I, IgF II and Insulin. However, the patient plasma seems to lack some other stimulating factors which may act as division progression factors. We hypothetize that a defect of plasmatic factors which are not only IgF I, IgF II or Insulin may lead to the clinical features of leprechaunism.

69

M.DUMIC*, V.PLAVSIC*, I.FATTORINI* and J.ILLE* (Intr. by D.Vukovic)Pediatric University Clinic, Rebro, Zagreb, Yugoslavia

Absent spermatogenesis despite early bilateral orchidopexy in 17-ketoreductase deficiency.

We describe a new case of steroid 17-ketoreductase deficiency in a 46 XY male who was raised as a male already from 8 months of age and whose cryptorchidism was corrected prior the age of 4years. Despite early orchidopexy there was absence of spermatogenesis on testicular biopsy at 26 years of age. Hormonal findings at that time document the 17-ketoreductase deficiency, however the serum testosterone was not remarkably low (3.1 ng/ml) indicating that testosterone deficiency per se could not be responsible for tubular damage. Further, the patient underwent a normal male puberty except for gynecomastia. Thus this case suggests that absence of spermatogonia in previously reported cases (Imperato McGinley, Akesade and Goebelsman) was not attributable solely to cryptorchidism, which persisted until a postpubertal age. This is further supported by Millan's report, in whose patient one testis was descended, and another undescended, but both showed a few spermatogonia. At present we have not explanation for the absence of spermatogenesis, but suggest that the steroidogenesis defect may cause arrest of spermatogenesis in the developing testis.

70

F. HADZISELIMOVIC, J. GIRARD, E. HECKER*, B. HERZOG*. University Children's Hospital Basel, Switzerland.

The value of testicular biopsy in cryptorchidism.

The prognostic value of testicular biopsies in cryptorchidism has been assessed in 24 children who have now reached adulthood. A significant positive correlation between the number of germ cells (S/T) in the biopsy and sperm count as well as number of normal sperm forms (NF) was found ($p<5\%$, Spearman Rank Correlation Coefficient). Thus, the testicular biopsy performed during orchiopexy is of prognostic value. The S/T, sperm count x 10^6 ml and NF were negatively correlated to basal plasma LH and FSH in adulthood ($p<5\%$). A positive correlation was found between plasma testosterone and NF in ejaculates ($p<5\%$). The hormonal findings suggest that in cryptorchid adults a serious tubular damage is related to an impaired Leydig cell function. The prognostic value with respect to fertility and the possibility of discovering carcinoma in situ cells justify a testicular biopsy in cryptorchid boys.