

**5** PROGESTERONE (P), ESTRONE (E<sub>1</sub>) AND ESTRADIOL (E<sub>2</sub>) BEFORE PUBERTY IN THE RAT : ORIGIN AND EVOLUTION. L. Audi, A.M. Moreira and J.M. Saez, INSERM, U. 34. Hôpital Debrousse. 69322 Lyon Cedex 1 (France).

In male and female prepubertal rats, E<sub>1</sub> and E<sub>2</sub> measured by radioimmunoassay using an E<sub>2</sub>-17 antibody show a peak (E<sub>1</sub>=3.8±1.4 ng/ml and E<sub>2</sub>=0.4±0.2 ng/ml) in 13-15 days old animals. P levels which are low at that age (≤ 1 ng/ml) increase after 21 days. Adrenalectomy and/or castration experiments support the conclusion that E<sub>1</sub> and E<sub>2</sub> have mainly an adrenal origin. A relationship has been found between plasma and adrenal concentrations for E<sub>1</sub> and P but not for E<sub>2</sub>. Measurements by double isotope dilution method show that most of "E<sub>1</sub>" and "E<sub>2</sub>" are not true E<sub>1</sub> and E<sub>2</sub>. Similar results are given with E<sub>1</sub>-6 and E<sub>2</sub>-6 antibodies. The affinity of "E<sub>1</sub>" compared to E<sub>1</sub> is higher for α-fetoprotein than for the anti-E<sub>2</sub>-17 antibody, whereas the affinity of "E<sub>2</sub>" compared to E<sub>2</sub> is higher for the anti-E<sub>2</sub>-17 antibody and the uterine cytosol than for α-fetoprotein. The steroidogenesis inhibitors, cycloheximide and aminoglutethimide, significantly lower plasma and adrenal "E<sub>1</sub>" and "E<sub>2</sub>" levels; dexamethasone is also effective. ACTH-Immediat does not produce significant variations of "E<sub>1</sub>" and "E<sub>2</sub>" although P is augmented. A 2-3 days administration of ACTH-Retard produces a dramatic fall in plasma and adrenal "E<sub>1</sub>" and "E<sub>2</sub>" concentrations. A possible physiological role for these compounds is suggested by their ability to displace (<sup>3</sup>H)-E<sub>2</sub> from its uterus cytosol receptor.

**6** THE ENDOCRINE RESPONSE TO THE FIRST FEED OF BREAST MILK IN THE HUMAN NEWBORN. A. Aynsley-Green, D.H. Williamson, S.R. Bloom and R.C. Turner (intr. by M. Zachmann), Dept. of Paediatrics and Nuffield Dept. of Clin. Med., Univ. of Oxford and the Middlesex Hospital, London.

Post-natal feeding in animals stimulates the maturation of pancreatic insular hormone secretion. Little is known on the effect of the first feeds on entero-insular hormone secretion in man. We have measured the levels of several hormones in arterial blood after the first feed of 5 ml/kg breast milk in infants of diabetic mothers (IDM, n:7) and in infants of non-diabetic mothers (INDM, n:12) suffering from mild respiratory distress. IDM had significantly lower basal blood glucose levels, but a rise occurred in both groups 25 min. after BM. Mean peak insulin increment in INDM was only 8 μU/ml. IDM had significantly lower basal glucagon levels (mean 15.0±7.6 fm/ml v. 65.2±11.7 fm/ml, p < 0.05) with a rise after 55 min. (mean 28.5±5.4 fm/ml). INDM showed a rise in enteroglucagon levels after BM (basal 145±30 fm/ml, peak 305±60 fm/ml, p < 0.05). IDM had lower basal gastrin levels (4.8±1.7 pg/ml v. 10.9±1.3 pg/ml, p < 0.01), but a significant rise after BM occurred in both groups (mean at 55 min. 18.8±3.1 pg/ml and 26.1±1.9 pg/ml in IDM and INDM respectively). Entero-insular hormones are secreted after the first feed of breast milk in the human neonate.

**7** PLASMA ESTERONE (E<sub>1</sub>), ESTRADIOL (E<sub>2</sub>), LH AND FSH IN UNTREATED AND CYPROTHERONACETATE (CY) TREATED GIRLS WITH PRECOCIOUS PUBERTY. F. Bidlingmaier, O. Butenandt, D. Knorr, University of Munich, Children's Hospital, Munich, Germany.

E<sub>1</sub>, E<sub>2</sub>, LH and FSH were measured radioimmunologically in 81 plasma specimens of 28 sexually precocious girls 1 to 10 years of age. Prior to treatment in these girls the mean E<sub>1</sub> value (15 pg/ml) was within the infantile normal range, but the mean values of E<sub>2</sub> (26 pg/ml), LH (1.2 ng/ml) and FSH (1.6 ng/ml) were significantly elevated. However, out of 63 plasmas only 31 showed elevated E<sub>2</sub>, 24 LH and 34 FSH values above the normal range for age. Grouping the values according to breast development revealed considerably lower estrogens and gonadotropins in patients than in normally maturing girls of the same developmental stage. During treatment with CY (mean daily dose: 50 mg/m<sup>2</sup>) the mean estrogen and gonadotropin levels of 8 patients decreased significantly (E<sub>1</sub>: p < 0.001; E<sub>2</sub>: p < 0.01; LH: p < 0.025; FSH: p < 0.05). However, out of 18 plasmas from the girls treated 5 still had elevated E<sub>2</sub>, 6 LH and 12 FSH values in the pubertal range.

Supported by: DFG, SFB 51

**8** SERUM-TSH AND -T<sub>4</sub> BEFORE AND AFTER TRH STIMULATION IN NEWBORN. B. Brock Jacobsen, H. Andersen, H. Dige-Petersen and L. Hummer, Childrens Hospital Fuglebakken and Department of Nuclear Medicine, Rigshospitalet, Copenhagen, Denmark.

TSH and T<sub>4</sub> were estimated prior to, and 30 & 180 min. after i.v. injection of 40 μg TRH in 15 fullterm (FT), 10 preterm (PT) and 15 small-for-gestational age (SGA) euthyroid babies, 5-172 hours after delivery. For comparison, 13 normal children, 8-382 days of age, and two hypothyroid patients, 3 and 28 days old, were studied. Results: 1) Basal levels of TSH and T<sub>4</sub> were significantly lower in PT than in FT and SGA. 2) The decrease in TSH during the first 7 days of life was approximately exponential only in FT and SGA. 3) TSH (30 min.) was positively correlated to basal levels; the % increase in TSH was of same magnitude in all euthyroids. 4) TSH (180 min) remained elevated only in PT (2 < 0.01) and in SGA (2 < 0.05). 5) T<sub>4</sub> (180 min) was significantly higher than basal values in all euthyroids, especially in PT. TSH was extremely high in both hypothyroid patients with no increase after TRH. The different responses in euthyroid newborn may be related to varying degrees of hypothalamic-hypopituitary maturation.

**9** SERUM SOMATOMEDIN ACTIVITY IN OBESE CHILDREN. J.L. Chaussain, E. Binet, A. Schlumberger and J.C. Job, Hôpital Saint-Vincent de Paul, Paris, France.

Serum somatomedin activity (SSA) was measured by incorporation of <sup>35</sup>S in pork rib cartilage in 26 obese children, 9 boys and 17 girls, aged 7 to 15 years, whose weight excess ranged from 45 to 100%, and in 15 normal children of comparable ages. The SSA mean value was 0.96 in obese children, identical to that of controls (0.98), despite lower serum growth hormone levels after arginine in obese children. However, the range of individual values was wider in obese subjects. No inhibitory effect was found with low SSA obese serum on SSA of normal human serum. A significant (p < 0.001) negative correlation was found between SSA and weight excess in obese children (y = -0.01 x + 1.60, r = 0.7109). These data demonstrate that 1/ SSA is normal in most obese children despite low serum growth hormone levels 2/ SSA is negatively correlated to the weight excess.

**10** ARGININE VASOPRESSIN (AVP) RELEASE DURING SHORT DEHYDRATION TEST IN CHILDREN. P. Czernichow and A. Basmaciogullari, Hôpital des Enfants Malades, INSERM U.30, Paris, France. Supported by INSERM ATP 22.

A sensitive radioimmunoassay (RIA) for plasma AVP has been developed. The extraction from plasma following the procedure described by G.L. Robertson allows a recovery of 70% of AVP. A highly specific antibody has been obtained in rabbits immunized with Lysine VP coupled to thyroglobulin. The sensitivity of the assay is 1 pg/ml. The half life of the hormone measured after injection of AVP in diabetes insipidus (DI) is 4.5 min (n=2), in nephrogenic DI 6 min (n=1) and in renal insufficiency after bilateral nephrectomy 6 min (n=1). Base line values in normal children range between ≤ 1 pg/ml to 4 pg/ml. During dehydration AVP increases in plasma. Preliminary results in children from 6 to 14 years indicate that 285 mosm/L is the critical value above which AVP is secreted in proportion with plasma osmolality. In DI of several etiologies, 10 patients exhibited a small increase of plasma AVP during dehydration. Correlation with plasma osmolality indicates that this elevation occurs for values of osmolality which are higher than in normal children. Therefore many patients with DI may retain some capacity to secrete AVP but this secretion is inadequate in regards to plasma hyperosmolality.