

Abstracts

17th ANNUAL MEETING

The European Society for Paediatric Endocrinology

Athens, September 9-13, 1978

1 C.DACOU-VOUTETAKIS, D.ANAGNOSTAKIS*, G.PAPADOPOULOS*, N.MATSANIOTIS*. First Department of Pediatrics of Athens University. Effect of prolonged illumination on concentration of FSH and prolactin in human neonates. In a previous study (Science 199:1229, 1978) we found that prolonged illumination alters LH secretion in human neonates. In the present study serum FSH and prolactin were measured from day 3 to 18 in 20 jaundiced newborns who underwent phototherapy for 48-72 hours (PH). Twenty newborns without phototherapy served as controls (C). In boys, serum FSH concentration showed similar changes in PH and C groups throughout the study period. In girls on phototherapy, an increase in FSH was observed earlier and mean peak value was significantly higher (56 mIU/ml) than in C (18.5 mIU/ml) with $p < 0.01$. Prolactin levels decreased with progress of age similarly in the two groups. Hence, light affects LH and FSH but not prolactin secretion, in the neonatal period. This effect is probably mediated through the pineal gland.

2 J.R. DUCHARME, S. C.-SAVOIE*, B. BOUREL*, W. GIBB*, Y. TACHE* and R. COLLU*
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Study of testicular activation in early infancy using the newborn lamb as experimental model.
Higher plasma testosterone (T), LH and FSH at 5 wks of age in the male lamb found by Lee et al and in this laboratory suggest its usefulness as an experimental model for the study of early postnatal testicular activation in the human. Pulsatile LH release and T secretion were more important at 2 and 8 wks than at 4 wks but hCG increased T secretion similarly. Hemicastration was done in 2, 4 and 8 wk old lambs and saline or hCG (500 IU/kg) administered 2 h prior to removal of the 2nd testis. 17,20 Lyase and 3 HSD were measured. In collaboration with doctors M.G. Forest and J.M. Saez of Lyon, isolated interstitial cells were prepared and hCG binding sites, T and cAMP secretion measured. An 8 to 10 fold increase in plasma T was observed 2 h post hCG. T production by isolated interstitial cells was increased by cAMP, cholera toxin and hCG but in hCG pre-treated animals, T response was not further enhanced. Higher in vitro responsiveness was observed at 4 wks. These results suggest a transitory increased reactivity of the pituitary gonadal axis in early life.

3 J.M.TANNER, R.H.WHITEHOUSE*, DOREEN JACKSON* and D.GUPTA, Depts. of Growth and Development & Chemical Pathology, Institute of Child Health, London, and Dept. of Diagnostic Endocrinology, Tübingen.
A Longitudinal Study of 24-hour Urinary Excretion Rates of LH, FSH, Sex Steroids, Creatinine and Hydroxyproline throughout Puberty.
Body measurements, puberty ratings and 24-hour excretion rates of various substances have been recorded every 4 months for 7 years in 56 healthy boys and 45 healthy girls aged 9 to 16. Excretion rates have been analysed in relation to chronological age, peak height velocity (PHV) "age," menarcheal "age" and secondary sex character "age". A striking finding is that LH excretion, after rising to a peak value at 1 year after PHV, then declines, in both sexes, to nearly prepubertal values. FSH excretion declines simultaneously but to a lesser degree, and in males only. Hydroxyproline level peaks 6 months after PHV in both sexes, then sharply falls. Creatinine has a continuously high rate of increase from 1 year before to 2 years after PHV, showing that the muscle growth spurt continues after the skeletal spurt. The maximal increment of testosterone in males occurs just after PHV. The interrelationships between hormonal and morphological events in each child have been examined by curve-fitting techniques.

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16 α -hydroxydehydroepiandrosterone (16 α -OHDHEA) and dehydroepiandrosterone (DHEA) in amniotic fluid.
To assess fetal adrenal function, free and total 16 α -OHDHEA levels in amniotic fluid were determined in 219 normal gestations. At 18th week of gestation, they were 0.28 \pm 0.11 (mean \pm 1 S.D.) and 31.1 \pm 16.6 ng/ml respectively compared to free DHEA (0.92 \pm 0.45 ng/ml) and total DHEA (10.1 \pm 5.6 ng/ml). At 36th week, they were 0.37 \pm 0.3 (free 16 α -OHDHEA) 96.7 \pm 86.0 (total 16 α -OHDHEA) compared to free DHEA (0.93 \pm 0.4) and total DHEA (17.4 \pm 12.5). In twenty normal deliveries, total 16 α -OHDHEA in amniotic fluid was 564.7 \pm 558 ng/ml. In an anencephalic newborn, born at 39th week, total 16 α -OHDHEA and DHEA were low. In two small for gestational age infants, total 16 α -OHDHEA was low at 16th and 40th weeks. In conclusion, throughout gestation, free, total 16 α -OHDHEA and total DHEA increased progressively and free DHEA remained constant in amniotic fluid. This might be due to some protective mechanism for the fetus. Assessment of 16 α -OHDHEA in amniotic fluid could be of help in assessing fetal viability.