At birth, in cases of premature delivery, EPH gestosis, feto-placental insufficiency, retarded fetal growth and so on, lower values of excretion of these steroids are present. In the first few days of neonatal life we have observed an increasing trend of almost all these compounds. Generally, when low oestriol levels are present during fetal life, low levels of all 16-substituted steroids appear in newborn urine too. This fact confirms the opinion that, as hormonal activity, the newborn in the first few days of life would be a kind of fetus model.

72. Cortisol metabolism in the neo-natal period, C. H. L. SHACKLETON, J. W. HONOUR and N. F. TAYLOR, Division of Clinical Chemistry, Clinical Research Centre, Harrow, Middlesex, England

1β-Hydroxycortolone was recently shown to be an important urinary metabolite of cortisol in an infant with renal-tubule insensitivity towards aldosterone (Shackleton C. H. L. and Snodgrass G. H. A. I.: *Ann. clin. Biochem.* 11 (1974) 91) and this compound may well be identical to an unidentified metabolite isolated from infant urine by Danilescu-Goldenberg and Giroud (*J. clin. Endocr. Metab.* 38 (1974) 64) following administration of labeled cortisol. The present investigation was undertaken to ascertain the quantitative excretion of urinary 1β-hydroxycortolone relative to other cortisol metabolites in the normal and pre-term newborn. Total steroid extracts of urine were obtained following enzymic hydrolysis, Amberlite XAD-2 extraction and purification on Sephadex LH-20 columns (Shackleton C. H. L., Gustafsson J.-Å. and Mitchell F. L.: *Acta endocr., Copenh.* 74 (1974) 157). Methyloxime-trimethylsilyl ethers of the steroids were prepared and analysed by combined gas chromatography-mass spectrometry (GC–MS). Complete spectra in the mass range 100–800 nm were acquired at 10 s intervals throughout the GC–MS analysis. The mass spectra were stored in mass converted format on magnetic tape. The data were processed (DPLOT module Varian SpectroSystem 100 MS) and intensities of up to eight selected ions from the series of mass spectra were plotted in graphic form on an oscilloscope and photographed. The intensities of selected ions specific for cortisol and its metabolites (e.g. cortisone, 6β-hydroxycortisol, 6β-hydroxycortisone, 20-dihydrocortisol, 20-dihydrocortisone, tetrahydrocortisol, tetrahydrocortisone, cortolones, cortols, and 1β-hydroxycortolone) were determined and related to intensities of ions given by standard mixture of cortisol metabolites. The major metabolites of cortisol present in infancy urine were found to be tetrahydrocortisone, 6β-hydroxycortisol, cortolone and 1β-hydroxycortolone. The excretion of tetrahydrocortisol and *allo*-tetrahydrocortisol was found to be extremely low. A significant amount of cortisol was excreted unmetabolised.

73. Integrated serum gonatrophins and gonadal steroids during first weeks of life in premature male infants, A. ATTANASIO, E. STEIL, M. EICHNER, K. RAGER, H. MENTZEL and D. GUPTA, Departments of Diagnostic Endocrinology and Neonatology, University Children's Hospital, 74 Tübingen, Germany

Pituitary-gonadal relations in newborns and in infants have been investigated by several authors in the last years. Evidence for testicular activity in early infancy has been accumulated. While many authors evaluated hormonal data in infants in relation to later pubertal events, the significance of hormonal activity in the newborn period for the normal genital development has not been discussed so far. In this study, blood specimens from prematurely born male infants (27th to 39th week of gestational age) were obtained longitudinally. The specimens were assayed for plasma testosterone, serum LH and FSH by RIA. Most of the subjects were found to have undescended testes at the beginning of the observation period, and had them down in the scrotal position by the end of this period. During the longitudinal follow up, peak values of plasma testosterone, sometime reaching 2000 ng/100 ml, were observed, although the timing of the peak was individually variable. No such pattern was found for serum gonadotrophins, although, on the average, they were significantly elevated when compared to later developmental stages. The results of this longitudinal study show that the hypothalamo-pituitary-gonadal axis is highly active during this developmental period. The high gonadotropin values clearly demonstrate that the enhanced testicular activity found in these premature infants do not depend upon placental factors. Since descent of testis is known to occur between the 32nd and the 40th week of normal gestation, the pattern of plasma testosterone so far revealed in this longitudinal study suggests a relationship between high levels of circulating testosterone and descent of testis in the scrotal position.

74. Plasma dehydroepiandrosterone (DHEA) and pregnenolone (Δ_5P) in newborns after HCG stimulation, A. LUCISANO, G. TORTOROLO, E. ARNO and S. DELL'ACQUA, Instituto di Clinica Pediatrica e Istituto di Clinica Ostetrica e Ginecologica Università Cattolica del Sacro Cuore, Rome, Italy

The foeto-placental unit utilizes as estriol precursor mainly the DHEA, synthesized by foetal adrenals. The purpose of the present investigation was to elucidate the role of HCG in the regulatory mechanism of foetal DHEA synthesis.

In a group of 8 newborns, during the first days of the life, when the *paleocortex* is still present, total DHEA and total Δ_5P have been measured daily in plasma by means of a gas-chromatographic assay. The plasma levels of DHEA and Δ_5P decrease until the third day from birth, from 0·9 to 0·3 μg/ml for DHEA and from 0·8 to 0·4 μg/ml for Δ_5P. In a group of 6 newborn at third day after birth we injected 5000 IU of HCG and in the following 24 h we obtained a significant increase of plasma levels of DHEA and Δ_5P. These results suggest that as well as foetal ACTH, HCG can also be involved in the control of DHEA synthesis by foetal adrenals.

75. Perinatal adrenal anomaly associated with total absence of 3β-hydroxy-5-ene-steroids in the infants urine, K. CARLSTRÖM*, G. BJÖRK†, P. ENEROTH‡ and J.-A. GUSTAFSSON§, Hormone Laboratory* and Department of Obstetrics and Gynaecology†, Sabbatsbergs Sjukhus; Hormone Laboratory, Karolinska Sjukhuset‡ and Department of Chemistry §,Karolinska Institutet, Stockholm, Sweden

3β-Hydroxy-5-ene-steroids are the major steroids in the human foetus and in early infancy, and are excreted in large amounts in the infants urine. They are mainly synthesized by the foetal zone of the adrenal cortex and act as precursors for the foetoplacental oestrogens, notably oestriol. Foetal adrenal anomalies might therefore be accompanied by low maternal urinary oestriol excretion. As far as we know from the literature such