

which 34 aborted and 26 had a favourable evolution. Serial determinations of urinary total oestrogens (fluorimetry according to Brown), pregnandiol (gas chromatography), HCG (inhibition of hemagglutination) and plasma progesterone (protein binding competition), oestradiol, HCG and HPL (radioimmunoassay) were performed. 1124 samples were assayed and related to normal values previously established in the laboratory. Correlation of results with clinical outcome was established for each of these hormones. For each hormone assayed, the percentage of infraliminary values corresponding to abortions was quoted and, similarly the percentage of values within the normal range corresponding to abortions was also established. Concerning the incidence of abortion when abnormal levels were noticed, we were able to conclude that 90% of these levels belonged to pre-abortion group as far as plasma HCG was concerned. The results are 87% for urinary HCG and plasma oestradiol 86% for plasma progesterone, 84% for urinary pregnandiol, 74% for plasma HPL (after the 12th week) and 68% for urinary oestrogens. When levels are within the normal range the probability that they belong to the abortion group is 22% for plasma progesterone, 28% for plasma HPL after 12th week, 30% for plasma HCG and 39% for plasma oestradiol and 41% for urinary and oestrogens. The conclusion of this study is that when abnormal levels of urinary or plasma HCG, plasma progesterone or oestradiol, and urinary pregnandiol are observed the probability of abortion is high. But when plasma progesterone levels are within the normal range probability of abortions is very low; correlation between normal values of other hormones and evolution of pregnancy is far less clear. This work emphasizes the value of plasma progesterone assay in monitoring threatened abortion as a factor of prediction of clinical outcome.

62. Changes in plasma dehydroepiandrosterone before and during pregnancy and in labour. A. E. SCHINDLER*, T. WALK* and E. NIESCHLAG†. *Universitätsfrauenklinik, Tübingen and †II. Med.-Univ. Klinik, Düsseldorf, Germany

Dehydroepiandrosterone sulfate (DS) is secreted by the maternal and fetal adrenal and represents the direct precursor of placental estradiol production and the indirect precursor of placental estriol biosynthesis. Since the measurement of this steroid has been used in recent years for placental function tests, the purpose of this investigation was to measure the changes of free dehydroepiandrosterone (D) and DS before and during pregnancy and in labour. D was measured by radioimmunoassay (Nieschlag *et al.*: *Steroids* 19 (1972) 669) and DS was measured by gas-liquid chromatography (Walk *et al.*: *Archs. Gynäk.* 214 (1973) 318). D determinations were made in 26 non-pregnant women, in 96 women during pregnancy and in 37 women at the beginning and at the end of labour. DS measurements were carried out in 42 non pregnant volunteers, 157 women at various stages of pregnancy and in 30 women at the start and at the end of labour.

D was significantly higher in pregnant than in non-pregnant women (0.73 vs 0.57 $\mu\text{g}/100\text{ ml}$, $P < 0.002$), but there was no correlation between the stage of pregnancy and the D concentration. In labour the D concentration increased from 0.97 to 1.42 $\mu\text{g}/100\text{ ml}$ ($P < 0.001$). 69 $\mu\text{g}/100\text{ ml}$ DS was found in plasma from non-pregnant women and a decrease to 37 $\mu\text{g}/100\text{ ml}$ during pregnancy was measured ($P < 0.05$). However, during labour, a significant increase was determined (from 40 to 75 $\mu\text{g}/100\text{ ml}$, $P < 0.001$). These findings indicate a rapid and increased utilization of maternal DS by the placenta which does not affect the free D levels. In labour,

however, the increase of D and DS in the maternal circulation seems to be related to increased ACTH secretion. Influences of an altered utero-placental blood flow, changes in placental enzyme activity and transfer of D and DS from the fetal circulation could be additional factors.

63. Modification of urinary steroid levels after administration of DHEA-sulphate to pregnant women presenting different kinds of intrauterine growth retardation. G. AGOSTONI, E. KOVARICH, A. GARAGIOLA, D. COLOMBO and F. POLVANI, Università di Milano, II Clinica Ostetrica Ginecologica, Italy

Twenty cases of retarded fetal growth, diagnosed during pregnancy by ultrasonic technique and confirmed by birth weight (which was more than 2 standard deviations below the mean for gestational age), had one administration of 30 mg DHEA-sulphate intravenously in order to verify if the variation in urinary steroids excretion of small-for-date foetuses would be similar, independently from their different etiological origin. Urine was collected every 2 h, from 8 a.m. to 8 p.m., DHEA-sulphate was administered at noon. Urinary steroid levels determination was made by gas-chromatographic method on high resolution glass capillary column (modified from Roa, 1971). Using this technique a single analysis was sufficient to measure all steroids normally involved in placental metabolic pathways of DHEA-sulphate. Results showed that, though selected foetuses made up a homogeneous group from a quantitative point of view, the steroid response to DHEA-sulfate was not uniform. If the trial was interpreted as placental function test (Lauritzen, 1967), two groups with different metabolic behaviour could be pointed out, the first with normal, the second with unsettled replying ability. Metabolic behaviour resulting from the test could be related to etiological and pathogenetic characteristics of each case. Lauritzen Ch.: *Acta endocr. Copenh. Suppl.* 119 (1967) 188. Roa A. and Sommerville I. F.: *J. Obstet. Gynaec. Br. Commwlth.* 78 (1971) 1096.

64. Hormonal dynamics during different model conditions of foetoplacental distress in midpregnancy. J. STASTNY, H. de WATTEVILLE, V. WEISS, P. VASSILAKOS and R. WYSS, Clinique universitaire de Gynécologie et d'Obstétrique, Genève, Switzerland

The aim of the study was to demonstrate the predictive value of plasma hormone assays used as foetoplacental function tests, in terms of the earliest possible detection of a significant concentration decrease following an experimental foetoplacental compromise. Normal volunteers undergoing legal pregnancy interruption between the 14th and 24th week were investigated. Hormonal dynamics of HPL, unconjugated progesterone (P) oestradiol-17 β (E₂) and oestriol (E₃) was studied in the following model situations: In *saline induced abortions* (n = 10) foetal death occurred between the 35th and 105th min following the exchange of amniotic fluid by the hypertonic NaCl solution (10%). The time from instillation to a significant decrease of maternal plasma level was 1 h for HPL and 4 h for P. In *mid-pregnancy interruptions by hysterotomy* with subsequent sterilization (n = 10 + 3) an elastic tourniquet, routinely fastened around the isthmus to avoid bleeding, was used to reduce the uterine blood flow during 25 min (hypoxia), thereafter released for 25 min (restitution), after which uterotomy with subsequent evacuation of the conceptus was performed (disappearance). The degree of