the fact that ACTH in fetal life is not the main trophic factor stimulating fetal adrenal growth, even though ACTH-dependent steroidogenesis takes place. Various investigators have already postulated that other hormonal peptides may play a role in the control of fetal adrenocortical development, but in vivo as well as in vitro studies have given contradictory results [4].

References

141. Analysis of 24-hour steroid excretion in patients with congenital adrenal hyperplasia by capillary gas chromatography, thin-layer chromatography and mass spectrometry

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Urinary steroid excretion was evaluated in 23 patients with congenital adrenal hyperplasia (CAH) by means of capillary gas chromatography. Reproducibility of the method, normal range and physiologcal relationship of the 41 evaluated steroids had been determined previously by examining excretion rates in 10 healthy subjects. While the excretion of tetrahydrocortisol (THE) was below normal in most patients it was elevated in 6 patients with CAH. However, a markedly increased ratio of excreted pregnanetriol/THE was seen in each case (5.9–466.0; healthy males: 1.01 ± 0.43; healthy females: 0.74 ± 0.27; x ± SD) indicating impaired 21-hydroxylase activity. In four patients the apparent preponderance in the excretion of pregnanetriol over that of pregnanetriol seemed to indicate a 3β-dehydrogenase defect. However, additional gas chromatographic and subsequent mass spectrometric analysis of the urine samples following pre-purification by thin-layer chromatography failed to confirm the presence of pregnanetriol, though it confirmed the original data on pregnanetriol excretion. The excretion of 11-O-etiocholanolone and 11-OH-etiocholanolone, both metabolites of cortisol, was below the limit of detection in 20/23 and 17/23 patients, respectively, whereas an elevated excretion of 11-O-androsterone and 11-OH-androsterone, both metabolites of 21-deoxycortisol and 11β-OH-androstenedione, was seen in 12/23 and 16/23 patients, respectively. The excretion of androsterone and etiocholanolone was elevated in 5/10 and 3/10 postpubertal patients, respectively, but was normal in each of the 13 prepubertal patients with congenital adrenal hyperplasia. The evaluation of steroid excretion by capillary gas chromatography is a useful tool for calculating the relative share of single metabolites, thus leading to a more exact characterization of individual adrenal enzyme defects. As demonstrated by the difficulties to obtain reliable information on the excretion of pregnanetriol, the method is obviously limited by the presence of unknown steroid metabolites. These difficulties can be overcome by the use of a second determination method, e.g. by prepurification with thin-layer chromatography and/or by additional mass spectrometry.