

47. Role of mesenchyme in the early cytodifferentiation of human prostate, P. KELLO-KUMPU-LEHTINEN and R. SANTTI, Department of Anatomy, University of Turku, Kiinamyllynkatu 10, 20520 Turku 52, Finland

The electron microscope study of human embryos and fetuses aged 6-15 weeks revealed that the mesenchyme, which is adjacent to the epithelium of the urogenital sinus at the level of the mesonephric duct openings, is the local initiator of the morphological differentiation of the human prostate. The epithelial outgrowths were found to appear after the mesenchymal changes, e.g. the increased cell density and the differentiation of the mesenchymal cells became evident in the ninth week. The mesenchymal differentiation in the homologous portion of the female urethra was shown to lag behind that of the male. The cytodifferentiation of the prostatic mesenchyme correlated with the ultrastructural differentiation of testicular Leydig cells, suggesting that the mesenchymal changes are determined by fetal androgens. By the end of the eleventh week a lumen was seen in the terminal portion of some solid cellular cords completing the acinar structure for the first time. Most of the prostatic epithelial cells were undifferentiated and resembled the basal cells in normal adult prostate. However, some apical cells of the stratified epithelium became polarized and secretion granules appeared in the Golgi area and apical parts of the cells in the thirteenth week. These granules contained acid phosphatase activity demonstrable by electron microscope histochemical techniques. As a sign of the possible inductive role of the mesenchyme in glandular morphogenesis direct epithelio-mesenchymal cell contacts were seen in association with the polarization of the epithelial cells and the appearance of secretory activity. It is possible that epithelio-mesenchymal interactions, and more specifically stromal influences on the proliferation and differentiation of the epithelial cells, continue throughout life and play an important role in the growth of both the normal and the pathological prostate.

48. Prostatic carcinoma: correlation of hormonal pattern in plasma and urine to local extent of tumour, presence of metastases, grade of differentiation and primary response to hormonal treatment, S. RANNIKKO¹, A.-L. KAIRENTO², S.-L. KARONEN² and H. ADLERCREUTZ², ¹III Department of Surgery and ²Department of Clinical Chemistry, University of Helsinki, 00290 Helsinki, Finland

In order to investigate the correlation of hormonal pattern in prostatic cancer with local extent of the tumour (T classification in the TNM classification system), presence of metastases (M classification), grade of differentiation (G classification) and primary response to hormone treatment plasma FSH, LH, prolactin (PRL), testosterone (T), estrone (E1), estradiol (E2), progesterone and cortisol and urinary 17-ketosteroids (17-KS), an-

drosterone (A), etiocholanolone (Et), DHEA, 17-ketogenic steroids (17-KGS), pregnanediol, pregnanetriol, estrone, estradiol and estril were measured in 32 patients with histologically or cytologically verified cancer. 22 patients were treated with orchidectomy, six with orchidectomy and Estradurin® (polyestradiol phosphate = PEP) (Leo, Hälsingborg, Sweden) and 4 with PEP.

The plasma hormonal pattern was the same if the tumour was confined to the gland or extended beyond the capsule, but urinary 17-KS ($P < 0.005$), 11-deoxy-17-ketosteroids ($P < 0.05-0.025$) and 17-KGS ($P < 0.025$) were significantly lower and urinary A/Et ratio ($P < 0.025$) higher in the patients with tumours extending beyond the capsule. Patients with metastases had significantly higher plasma E2 ($P < 0.05$) and lower plasma T/E2 ($P < 0.025$) and T/E1+E2 ($P < 0.05$) ratios than those without metastases. Patients with less differentiated tumours had significantly higher plasma E1+E2 values ($P < 0.025$) and lower plasma T/E1+E2 ratio ($P < 0.025$) than those with well differentiated tumours. Patients with a good primary response to hormonal treatment had significantly higher plasma T ($P < 0.05$), T/E2 ($P < 0.025$) and T/E1+E2 ($P < 0.025$) and T/PRL ($P < 0.025$) ratios than those who primarily responded poorly. Patients with a poor response to treatment (8 subjects) all had ratios of T (nmol/l)/E2 (pg/ml) below 1.0 and T (nmol/l) / PRL (mIU/l) below 0.1 but in the group with a good response (18 subjects) both high and low ratios were found.

It is concluded that a low plasma androgen/estrogen ratio is typical for patients with less differentiated metastasizing prostatic carcinoma and a high T/E2 and T/PRL ratio means a good response to hormonal treatment. However, those with low ratios had a variable response. Of the hormones assayed only plasma T, E2, E1 and PRL seemed to have some association with the prostatic cancer. Assay of urinary hormones is probably of little value in this disease.

OVARIAN FUNCTION AND DISEASE

49. Gap communicating junctions in theca interna cells of developing mouse follicles, G. FAMILIARI and P.M. MOTTA, Department of Anatomy, Faculty of Medicine, University of Rome, Italy

The theca interna has been studied by transmission and scanning electron microscopy as well as by freeze-etching in a variety of developing and atretic follicles with particular reference to the occurrence and development of intercellular junctions.

A) In primordial and primary follicles, the theca interna consists of a few layers of concentrically arranged fibroblasts and small bundles of collagen fibres. Intercellular junctions such as zonulae adherentes (ZA) and gap junctions (GJ) are rarely observed. When present they are very small.

B) In growing follicles the theca interna