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Brief Communication

Ultrastructucal Features of the Neoplastic Sertoli Cell in a Dog

Although the Sertoli cell tumour is a common testicular neoplasm in the dog, accounting for 32% of testis tumours in one study (*Nielsen & Lein* 1974), we have only found one report (*von Bomhard et al.* 1978) on the ultrastructure of this tumour in the dog. The present paper, describing electron microscopic features of one such tumour in an undescended testis of an 11-year-old dog, provides some new information on the ultrastructure of the neoplasm.

Before surgery, the plasma oestradiol -17β level was high (as high as in pro-oestrous bitches, and 5-10 times higher than in dogs with other types of testicular tumours, *Thilander,* unpublished obervations). Upon castration, tumour material was fixed in 10% neutral-buffered formalin for light microscopy and in 3% glutaraldehyde in 0.067 mol/l cacodylate buffer for electron microscopy and thereafter processed by conventional techniques.

On light microscopy (Fig. 1), the tumour showed a predominance of intratubular growth with multilayered, often palisading tumour cells. Nuclear atypia was marked, the mitotic activity was moderate, and the connective tissue stroma of the tumor was scanty.

On electron microscopy, most cells were seen to be either columnar, with basal nuclei (Fig. 2), or rounded without polarity. The latter cells were mainly located in the center of the tubules. The pleomorphic nuclei displayed some marginal heterochromatin and generally prominent nucleoli with distinct nucleolonemata. Ribosomes/polyribosomes, granular and agranular endoplasmic reticulum, mitochondria, and coated vesicles were abundant in most cells, and centrioles were frequently observed (Fig. 3). Lipid inclusions, small dense bodies, and autophagosomes often occurred. The Golgi apparatus was consistently inconspicuous, and microtubules and microfilaments appeared less prominent than in normal Sertoli cells. In addition to desmosome-like devices, as described by *von Bomhard et al.* (1978), cell contacts between the columnar type of cells also included gap junctions (nexuses), which were sometimes very extensive, especially between less well-differentiated tumour cells (Fig. 4). Occluding inter-Sertoli cell junctions were not seen. Germ cells were not observed amongst the neoplastic cells.

Centrioles are an extremely rare finding in Sertoli cells of normal testes in adult mammals (*Plöen,* unpublished observations), whereas they occasionally appear in Sertoli cells of the undescended testis in boys (*Läckgren & Plöen* 1984). Thus, there is evidence of a difference between the undescended and the descended testis in this respect. Possibly, this may be related to the observation (*Reif & Brodey* 1969) that Sertoli cell tumours are prone to arise in retained testes. On these lines, it is possible that a lack of involution of centrioles in the retained testis might be related to tumourogenesis, though it seems equally plausible that de novo formation of

centrioles (*Dirksen* 1971, *Kato & Sugiyama* 1971) may have taken place.

In murine myometrial cells, de novo formation of gap junctions can be induced by oestrogen treatment (*Dahl et al.* 1980). In ovarian granulosa cells, the size and number of gap junctions increase under the influence of oestrogen (*Merk et al.* 1972). It is well known that the canine Sertoli cell tumour may produce oestrogens (*Pierrepoint et al.* 1967). As the high plasma concentration of oestradiol -17β in the present dog strongly suggests that this particular tumour was oestrogen-producing, the extensive gap junctions here described may very well have been induced by oestrogen influence. In other words, hormonal activity may modify the ultrastructural features of the Sertoli cell tumour.

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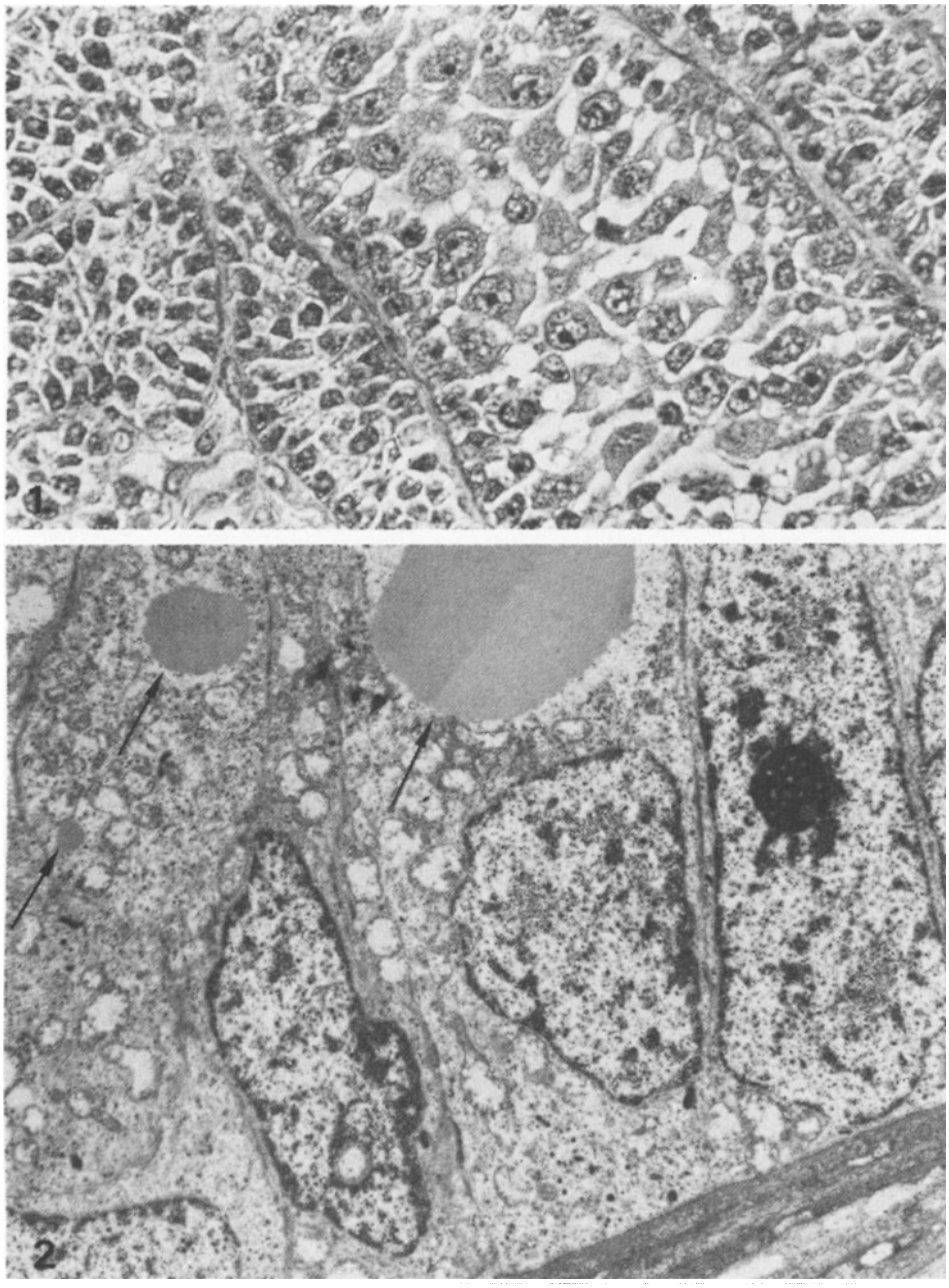

Figure 1. Part of the tumour. Intratubular growth of neoplastic Sertoli cells with marked atypia. H & E × 500.

Figure 2. Electron micrograph of columnar neoplastic Sertoli cells with basal nuclei. Lipid droplets (arrows). × 5500.

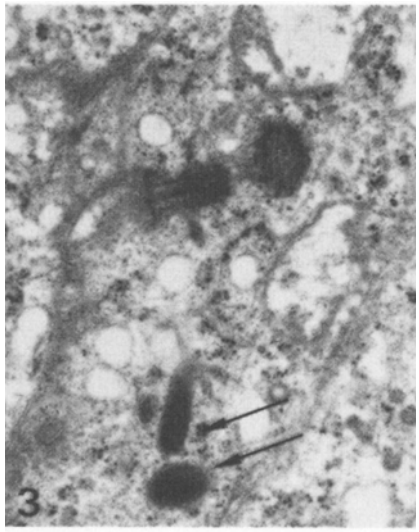

Figure 3. High power electron micrograph to show centrioles and dense bodies (arrows). × 23500.

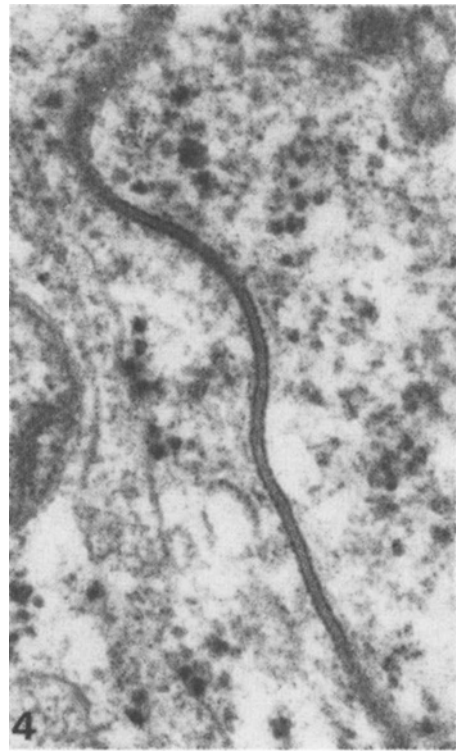

Figure 4. Part of an extremely extensive gap junction between two less well-differentiated cells. × 76500.