Reinke's crystals in testes of infertile men with cryptorchidism

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Reinke's crystals are normal constituents of Leydig cells in humans but their nature and function are poorly understood. The crystals resemble hexagonal prisms of variable size [1]. They are composed of parallel 10 nm filaments and do not have a unit membrane [2]. Sometimes the crystals cause a deformity of the nucleus and infolding of the nuclear membrane of Leydig cells. In some cases Reinke's crystals are observed like tiny rods within the nucleus [3-5]. The aim of our study was to investigate the properties of Reinke's crystals in healthy and cryptorchid men.

20 biopsies from patients with cryptorchidism and 6 biopsies from men with normal spermatogenesis (20 to 30 y.) were used. Tissue was fixed in Gendre, embedded in paraffin and serially sectioned at 7 μm thick sections. After staining with modified Masson's method, specimens were observed and analyzed using stereological methods. To get closer look on the shape and the placement of crystals we used Leica confocal microscope. In addition, serial semithin sections (d = 0.85 μm) were obtained by an ultramicrotome (Reichert, Austria) and stained with 1% toluidine blue. Semi- and ultrathin sections (d = 70-500 nm) were mounted on copper grids, contrasted with lead citrate and uranyl acetate and examined by a transmission electron microscope (Philips).

Stereological analysis revealed a significant increase in number of Reinke's crystals inside the cryptorchid testes in comparison with controls. Pictures from confocal and electron microscope demonstrate a hexagonal form of the crystal. Placement of the crystals is not restricted on Leydig cells only since the crystals could be found within the rest of the interstitial compartment. Electron microscopy analysis performed on thick sections provided a better insight into the organisation of the crystal lattice.

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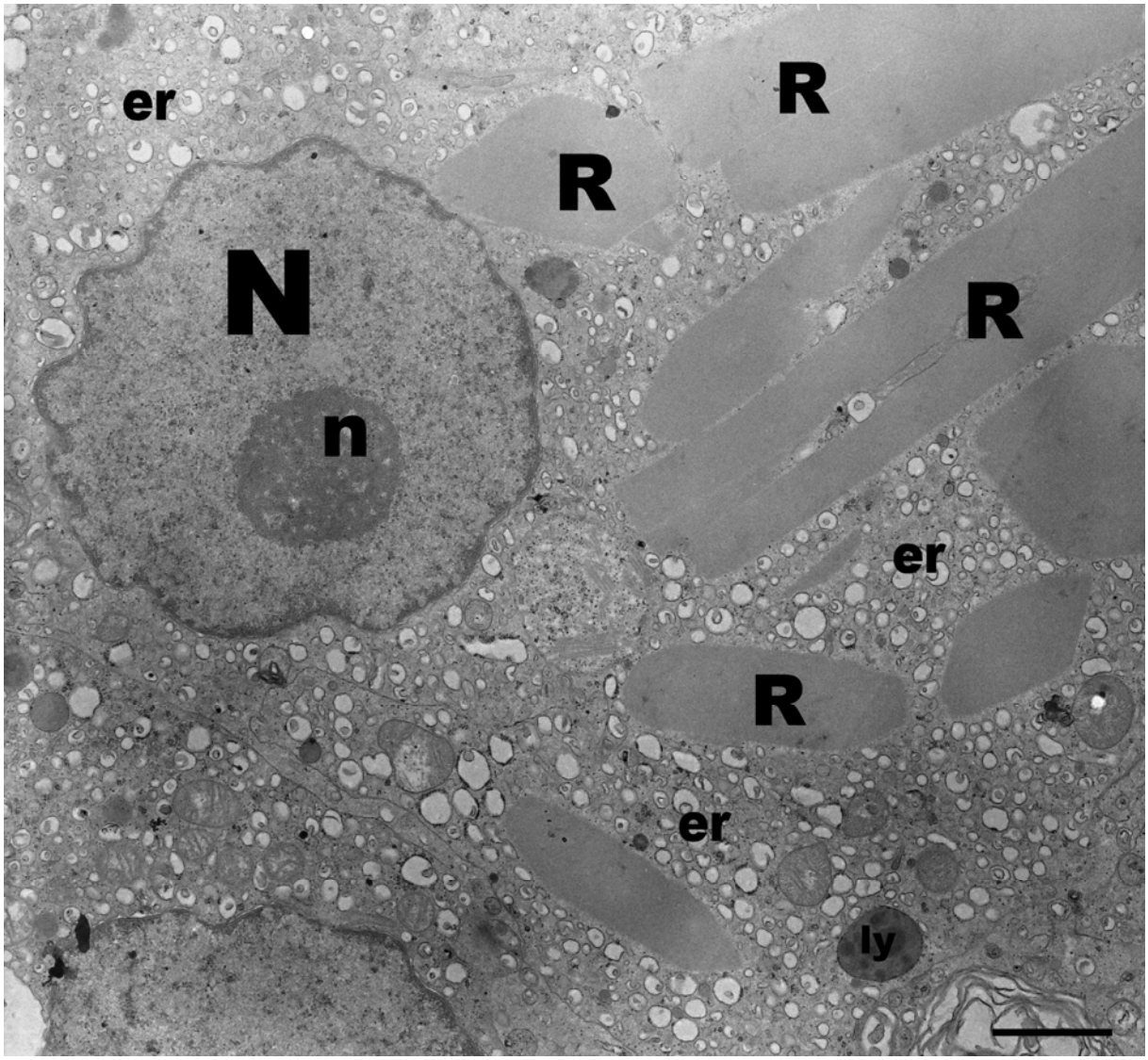

Fig. 1. Leydig cell from cryptorchid testis. The nucleus (N) of the cell shows slight indentations and a prominent nucleolus. Abundant cytoplasm is rich in cistrenae of smooth and, occasionally, rough endoplasmic reticulum (er). Reinke's crystals (R) are numerous and have variable size (ly-lysosome).
TEM, original magnification x7.000, bar = 1 μm

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