Microscopic investigations on Reinke's crystals in patients with cryptorchidism

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Introduction & aim: The human testis has two compartments that have distinctive roles: the seminiferous tubules for the production of spermatozoa and interstitial part with Leydig cells for androgen production. Besides the production of testosterone, Leydig cells synthesize Reinke's crystals. These crystals are normal constituents of Leydig cells, although not present in each cell. They are made from 10 nm thick protein filaments. Filaments are organized in various crystal shapes from 1 to 10 µm long and 2 to 3 µm in diameter.
The aim of the current study was to show variations of Reinke's crystals in patients with cryptorchidism regarding their microscopic appearance using light, confocal and electron microscopy.

Materials & methods: We used 11 biopsies from patients with cryptorchidism and 5 biopsies from men with normal spermatogenesis (20 to 30 y.). For the light microscopy, tissue was fixed in Gendre, embedded in paraffin, serially sectioned at 7 µm thick sections and stained with modified Masson's method. For the confocal microscopy, sections were stained with hemalaun and eosin. For transmission electron microscopy (TEM), biopsies were embedded in Durcopan and sectioned by an ultramicrotome PT-X Power Tome CRX (RMC) at 70 nm. The grids with sections were contrasted and examined by TEM Zeiss 902A.

Results & conclusion: Within some Leydig cells a single crystal could be found in the cytoplasm. However, very often there were two or even more crystals that could cause a deformity of the nucleus and infolding of the nuclear membrane. In some cases Reinke's crystals were observed (in addition to their cytoplasmic location) within the nucleus. In addition to Leydig cells, crystals were found inside the loose connective tissue, individually or in group.
The fact that the crystals were located in the nucleus suggests that the nucleus could be the primary site of the production of the crystal. Since those found in the nucleus were rather small (when compared to the cytoplasmic ones) indicates that the crystals are aggregating during the time. Regarding the form of crystals, one could notice different irregular shapes but also regular hexagonal prisms. One can assume that this hexagonal form is some kind of a final product of the filament aggregation. Further studies are needed to clarify the biochemical composition and the process of the crystal synthesis.

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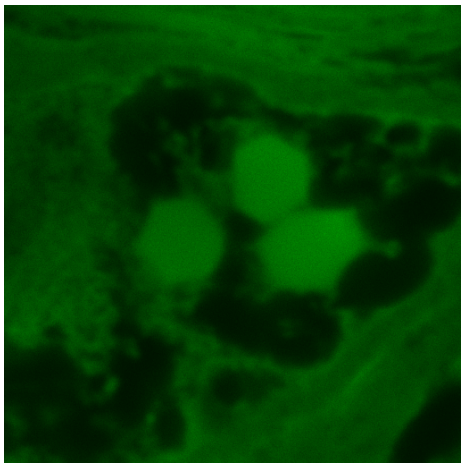
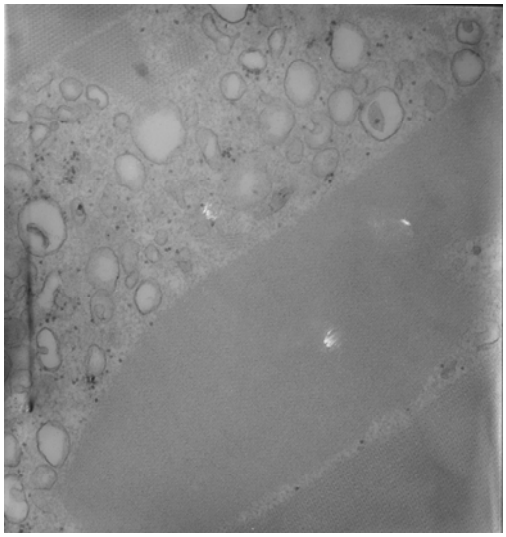
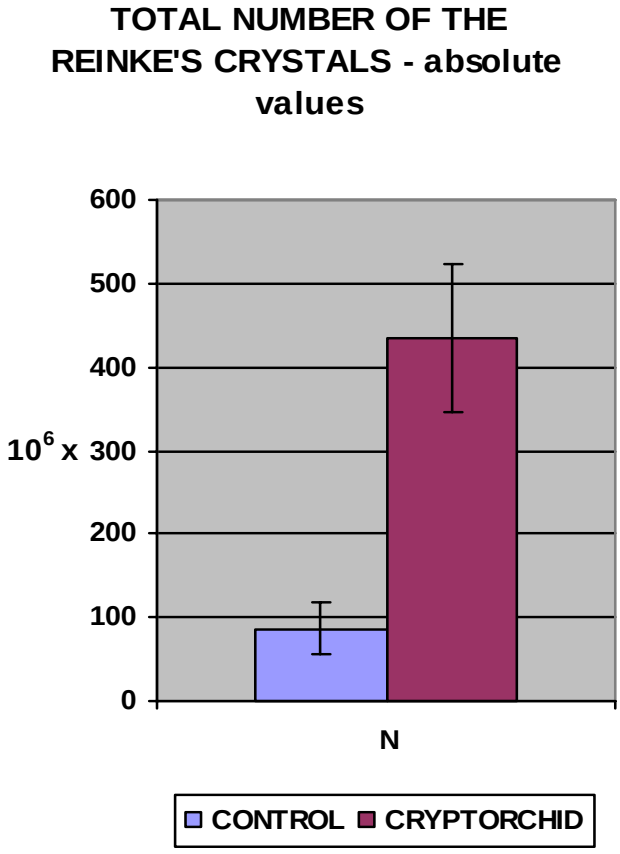


Picture 1. Reinke's crystals showing hexagonal forms.



Picture 2. Reinke's crystals taken by TEM where uniform structure

of the crystals could be noticed.



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