Reinke's Crystals[1] at Damaged Germinal Epithelium

A number of authors consider the Reinke's crystals (RCs) as normal components of all healthily developed and normally functioning Leydig's cells (LCs)[2–5], while other authors belive the RCs to be always present in abnormally functioning[8–12], i.e. in degenerated LCs and testes[3]. As animal organisms lack such crystals, it is impossible to do any research under different experimental conditions[6,7,10,11].

Since in the literature we had not found any comparative study on the findings of RC in LC with various degrees of damage to the germinal epithelium, we decided to examine the bioptic material (biopsy after CHARNY[4] of 220 testes from 124 sterile men with chiefly normal hormonal findings. The damage to the germinal epithelium was divided into 5 groups in agreement with the degrees of the damage (Table).

The material was fixed in Gendre, enclosed in paraffin wax, cut into 3 and 5 μm sections, and stained with hemalaun-eosin, PAS after McManus, with azan after Heidenheim, and with ferrohemotoxilin.

The aspects and numbers of the RCs were not the same in all cases. In some only 1 or 2 RCs were found and were very long (Figure). In other cases they were considerably smaller and filled the LCs densely. Sometimes the RCs were found in the immediate surroundings of the LCs, as if these had been expelled.

Recently, i.e. during the last 7 years, very few papers dealing with this subject have been published. Most comprehensive of them is the one by HORNSTEIN et al.[8] based on the biopsy of 136 testes (12 normal ones, and 124 of men with hypogonadism) who analyzed the notion and number of RCs statistically. Their conclusion is that there is a positive correlation of high statistical significance between the numbers of RCs and of LCs typically stimulated, and that the RCs can be considered a possible component of normal, well stimulated and hormonally active LCs, and not a product of degenerated LCs, as some authors believe.

If our findings are examined with respect to the various degrees of damage to the germinal epithelium (most often caused by inflammation) the result is that RCs are absent in most cases. In our material they were found only in 35 of 220 testes. Since the hormonal analyses for the majority of our patients were normal, the conclusion can be drawn that in the groups of testes with damaged germinal epithelia, owing to unknown or inflammatory causes but not to hormonal disorders, the numbers of testes with RCs are approximately the same in all groups (except group 2, but this consists of the smallest number of analyzed cases).

From what has been said, the following conclusions can be drawn: a) in various kinds of damage to the testes the findings of RCs is practically the same, regardless of the degree of damage; the numbers of testes with RCs corresponds to the total numbers of the examined cases; b) RCs are present only in some cells of some testes; c) the damage to the germinal epithelium has no influence on the frequency of RCs findings, and the conclusions drawn by HORNSTEIN et al.[8] therefore seem to be correct, i.e. that the presence of RCs is not increased in pathological cases.

Numerial distribution of 220 testes in the groups of various degrees of damage, and of the testes containing Reinke's crystals in Leydig's cells.

Group	No. of examined testes	No. of testes with Reinke's crystals
1. Disorganization	72	10
2. Arrests	10	—
3. Depopulation	25	6
4. Focal fibrosis	96	15
5. Total fibrosis	17	4
Total	220	35

Leydig-cells with crystals at depopulation (Azan-Heidenheim ×800).

Zusammenfassung. Überprüfung der Reinkeschen Kristalle in den Leydingschen Zellen an einem bioptischen Material von 220 Hoden steriler Männer (22–45) entsprechend verschiedener Beschädigungsstufen des Samenepithels ergab keinen Einfluss des Keimepithels auf die Kristallbildung.

J. POSINOVEC and B. DURST-ŽIVKOVIĆ

Department of Histology and Embryology Medical Faculty Goljak 46, Yu-4100 Zagreb (Yugoslavia),
14 May 1973.

[1] REINKE, Arch. mikrosk. Anat. EntwMech. *47*, 34 (1896).
[2] E. BUKOFZER, Virchows Arch. path. Anat. Physiol. *248*, 427 (1924).
[3] H. STIEVE, *Möllendorff's Handbuch der mikroskopischen Anatomie des Menschen* (Springer, Berlin 1930).
[4] C. W. CHARNY, J. Am. med. Ass. *115*, 1429 (1940).
[5] R. C. SNIFFEN, Archs Path, *50*, 259 (1950).
[6] R. C. SNIFFEN, R. P. HOWARD and F. A. SIMMONS, Archs Path. *50*, 285 (1950).
[7] D. E. FAWCETT and U. H. BURGOS, *Ciba Foundation Colloquia on Ageing* (Churchill, London 1956), vol. 2, p. 86.
[8] O. HORNSTEIN, H. EIFEL and O. MITTMANN, Arch. klin. exp. Derm. *225*, 1 (1966).
[9] D. M. KRETSER, Experientia *24*, 587 (1968).
[10] D. W. FAWCETT, J. A. LONG and A. L. JONES, Recent Prog. Horm. Res. *25*, 315 (1969).
[11] PH. RUBIN, J. P. CESARINI, A. MATTEI, P. LAFFARGE and J. VAGNE, Année endocr., Paris *32*, 661 (1971).
[12] E. ALLARA and T. P. SCARPELLI, Atti della Societa ital. di Anatomia *29* Convegno nazionale ottobre 1971, Arch. ital. Anat. Endocr., Suppl. *76*, 11 (1971).