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JOURNAL ARTICLE

Rapid development of Leydig cell tumors in a Wistar rat substrain

K. J. Teerds, D. G. de Rooij, F. H. de Jong and F. F. Rommerts

Department of Cell Biology and Histology, Veterinary School, State University of Utrecht, The Netherlands.

In 78% of the Wistar rats (substrain U) studied, spontaneous Leydig cell tumors developed between the ages of 12 and 30 months. The first signs of tumor development, in the form of nodules of Leydig cells, were already apparent in 1-month-old U-rats. These nodules of Leydig cells were found in all animals studied. In no other strain of rats has this type of abnormality been observed at such an early age. The first Leydig cell tumors were noticed between the ages of 12 and 14 months. The tumor tissue appeared to have developed from a rapid, focal outgrowth of a nodule. The tumor Leydig cells were found to be sensitive to the cytotoxic action of the specific Leydig cell toxicant ethane dimethane sulphonate (EDS), although not all tumor cells were killed. Inhibin-like immunoreactivity could be detected in both normal and tumor Leydig cells, and plasma levels varied considerably within the different groups of rats. Moreover, no significant changes in plasma levels of inhibin-like immunoreactivity were found during the aging period when Leydig cell tumors were formed or after EDS administration when nearly all Leydig cells were killed. Therefore, the possible contribution of Leydig cells and tumor cells to the total content of inhibin-like immunoreactivity in the testis and plasma may be of less importance than expected. Some significant fluctuations in plasma testosterone concentrations were found during aging; however, there appeared to be no correlation between plasma testosterone levels and the appearance of large Leydig cell tumors. This indicates that testosterone production by tumor cells is limited. (ABSTRACT TRUNCATED AT 250 WORDS)

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