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JOURNAL ARTICLE

Early effects of vasectomy on testicular structure and on germ cell and macrophage apoptosis in the hamster

Y. Lue, A. P. Hikim, C. Wang, J. J. Bonavera, S. Baravarian, A. Leung and R. S. Swerdloff

Division of Endocrinology, Harbor-UCLA Medical Center, Torrance 90509, USA.

This study provides quantitative information on the early (up to 3 months) effects of vasectomy on apoptosis in the hamster testis. Groups of five adult male golden hamsters were either bilaterally vasectomized or sham-operated and sacrificed at intervals of 3, 6, and 12 weeks after surgery. In all three postvasectomy groups, testis weight and testicular and plasma testosterone (T) levels were not different from controls. Spermatogenic alterations, ranging from tubules with mild intraepithelial vacuoles to almost completely atrophied tubules, were detected in samples of 1 of 5 testes both at 3 and 12 weeks after vasectomy. Histometric analysis of testicular tissues at 3, 6, and 12 weeks in the postvasectomy groups showed no discernible effect of vasectomy on the absolute volumes of seminiferous tubules, tubular lumen, and total Leydig cells when compared to respective controls. In situ analysis of germ-cell apoptosis, characterized by 3'-end-labeling immunocytochemistry, revealed a significant increase (2.5-fold) in germ-cell apoptosis at stages XIII-I, involving primarily the dividing spermatocytes after 3 weeks of vasectomy. Apoptotic index was not changed from sham-operated animals at 6 and 12 weeks postvasectomy. Interestingly, a very high incidence of macrophage apoptosis was detected in the samples of three out of five testes in the 12 weeks postvasectomy group (39.3%) compared to that of controls (0.8%). These results demonstrate that vasectomy has little or no detrimental effect on the morphologic characteristics of the spermatogenesis or intratesticular concentrations of testosterone in the majority of the animals studied up to 12 weeks postsurgery, although vasectomy transiently (3 weeks postsurgery) activated germ-cell apoptosis, involving dividing spermatocytes at stages XIII-I.

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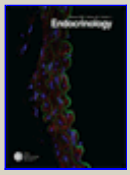

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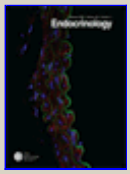

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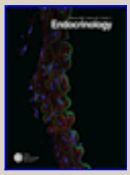

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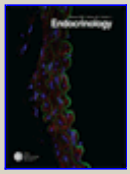

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