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JOURNAL ARTICLE

Dose and time relationships in the endocrine response of the irradiated adult rat testis

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The dose- and time-dependent responses for the interstitial and tubular compartments in irradiated adult rat testes are described. Leydig cell dysfunction, as indicated by increased serum LH (to a maximum of 385% of control after 5 Gy) and decreased serum T (to a minimum of 30% of control after 10 Gy), was observed at 8 weeks postirradiation. Subsequent recovery of Leydig cell function was then observed, so that after 9 months serum T was normal but LH was still marginally elevated. The dysfunction, with a threshold of about 4 to 5 Gy, was associated with a loss of Leydig cells from the testis. Spermatogenic damage was observed; after doses of 3 Gy and above a marked dose-response was recorded as assessed by counts of tubule cross sections exhibiting spermatogenesis. Reduced serum levels of androgen binding protein indicated Sertoli cell dysfunction at 8 weeks after 3 Gy and above, with values of less than one half of those seen in the controls. Serum FSH also was elevated to between 150% and 200% of control, and after 9 months closely reflected androgen binding protein changes. Unlike the Leydig cell, no recovery with time was observed for this aspect of Sertoli cell function.

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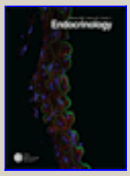

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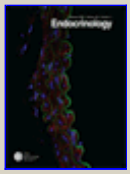

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Endocrinology, January 1, 2006; 147(1): 472 - 482.
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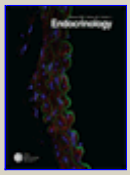

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Effects of Medroxyprogesterone and Estradiol on the Recovery of Spermatogenesis in Irradiated Rats
Endocrinology, October 1, 2004; 145(10): 4461 - 4469.
[Abstract] [Full Text] [PDF]