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JOURNAL ARTICLE

Decreased spermatogenesis as the result of an induced autoimmune reaction directed against the gonadotropin receptors in male rats

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The presence of luteinizing hormone (LH) and testosterone is considered critical for the maintenance of spermatogenesis in the rat. However, the role and importance of follicle-stimulating hormone (FSH) in the initiation and maintenance of spermatogenesis has been a subject of debate for some time. The objective of this study was to examine the role of FSH and LH *in vivo* in the developing and adult rat by inducing an autoimmune reaction against the receptors to these gonadotropins. Sperm numbers were reduced in animals immunized against either the FSH or LH receptor (FSHR/LHR). In animals immunized against both FSHR and LHR there was also a significant reduction in sperm number although spermatogenesis was never completely ablated. These results were seen in male rats immunized either prepubertally (18 days of age) or as adults (80 days of age). To examine the requirements for FSH in early postnatal-testicular development, pregnant females were also immunized against either FSHR, LHR, or both of the receptors, and the male offspring were examined at 30 days of age. Again, germ-cell number was decreased with the greatest effect in those pups whose mothers were immunized against both FSHR and LHR. Radioligand-receptor-binding assays revealed that the antibody produced in the rats against FSHR was able to compete with FSH for binding sites in receptor-membrane preparations. Therefore, the mechanism of disruption of spermatogenesis is probably due to suppression of hormone to receptor binding. The results of this study support a role for FSH in spermatogenesis not only during neonatal and early postnatal development but also in the adult animal.

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