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JOURNAL ARTICLE

Quantitative maintenance of spermatogenesis in cyclosporine-treated rats by exogenous administration of testosterone propionate

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The authors had previously shown that the subcutaneous administration of cyclosporine (CsA) resulted in an impairment of spermatogenesis. Testosterone levels declined and gonadotropin levels increased, suggesting that CsA primarily affects the synthesis and secretion of testosterone. In this study, the authors attempted to determine whether the exogenous administration of testosterone would maintain spermatogenesis in animals treated with a very high dose of CsA. Sexually mature, male Sprague-Dawley rats were treated subcutaneously with CsA (40 mg/kg per day) alone, or in combination with testosterone propionate (TP; 2 and 5 mg/d per rat), for 14 days. As expected, CsA reduced the body and reproductive organ weights and the levels of serum testosterone, while elevating the levels of follicles-stimulating hormone (FSH) and luteinizing hormone (LH). Quantitative analysis of spermatogenesis revealed a decline in all the different types of germ cells in tubules at stage VII of the cycle of the seminiferous epithelium. Administration of TP in 2 and 5 mg/d per rat doses restored the body and reproductive organ weights and the circulating levels of FSH. The serum levels of LH were below the assay's minimum level of detectability. Analysis of spermatogenesis revealed a dose-dependent increase in the germ cell counts after the administration of 2 and 5 mg of TP. The circulating levels of CsA were also significantly reduced after TP administration. These results revealed that CsA-induced alteration in spermatogenesis can be prevented by the exogenous administration of testosterone.

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