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The effect of testosterone treatment on urodynamic findings and histopathomorphology of pelvic floor muscles in female rats with experimentally induced stress urinary incontinence

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Objective: In recent studies, it has been observed that androgen receptors are densely located in pelvic floor muscles. We aimed to investigate the effect of testosterone on urodynamic findings and histopathomorphology of pelvic floor muscles in rats with experimentally induced stress urinary incontinence.

Materials and Methods: Twenty-eight adult female rats were randomized into four groups. Group I: rats in which SUI was induced and single-dose testosterone was administered 30 days later, group II: rats in which SUI was induced and single-dose testosterone was administered within the same session, group III: rats in which SUI was induced and saline was injected intramuscularly 30 days later, and group IV: the sham group. In order to demonstrate objectively the curative and preventive role of testosterone in experimental model of SUI, urodynamic examination and histopathomorphological evaluation of levator ani muscle were performed.

Results: Myofiber areas in groups I and II were detected to be significantly larger than those of the control group ($P < 0.001$). Another parameter was leak point pressure value by urodynamics. Regarding this parameter, LPP values in groups 1, 2 and 4 were observed to be significantly higher than those of group 3 ($P < 0.001$). The results of the comparison among groups 1, 2 and 4 revealed no significance ($P > 0.05$), which indicates that testosterone provides continence in a similar way to the group in which sciatic nerve section was not performed.

Conclusions: In the present study, it has been demonstrated that testosterone has both preventive and curative effects on rat models of experimental SUI.

Editorial Comment

The authors present a very elegant study in which the role of intramuscular exogenous testosterone is proven to enhance free serum testosterone levels and to partially restore striated muscle fiber atrophy secondary to sciatic nerve injury in female rats. Also, from a clinical perspective, urodynamics study shows improvement in leak point pressure (LPP) values for treated rats, although the reading technique resembles more a detrusor leak point pressure than a true Valsalva LPP.

This study reinforces the idea that the anabolic effect of testosterone may be a useful tool to treat female urinary incontinence in a non-surgical manner. Additional aspects other than muscle hypertrophy such as neurological and connective tissue changes may be implicated. It should be noted, however, that clinical studies are necessary to determine the ideal form of testosterone formulation and delivery method, associated side effects such as humor disturbances and virilization, ideal dosage and duration of therapy.

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