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MORPHOMETRIC EFFECTS OF TESTOSTERONE SUPPLEMENTATION ON CERTAIN EXTREMITY BONES IN YOUNG SWIM-TRAINED RATS

Abstract:

Introduction and Aim: There has been a dramatic increase in the use of doping agents today. Used by athletes to increase strength, endurance and speed, AAS lead to various negative effects on the human body despite enhancing performance and strength. The purpose of this study was to investigate the morphometric effects of testosterone supplementation on certain extremity bones in young swim-trained rats.

Methods: The study was conducted with a total of 24 30-day-old male Wistar rats obtained from Selcuk University Experimental Medicine Research and Application Center. The rats were divided into four equal groups of six: control (C), exercise (E), testosterone (T) and testosterone+exercise (TE) groups. The appropriate weekly dose was adjusted for the rats in the testosterone-treated group according to their body weights. The front and rear extremity bones of the materials were dissected and the uncovered humerus and femur bones were dried. The length, corpus thickness, cortex cortical thickness and medulla diameter points of each bone were determined and the morphometric measurements were taken. The results were presented as Mean±SD. Data were analyzed through comparison between the groups by using ANOVA and Duncan test. The significance level was set at $P<0.05$.

Results: The femur and humerus lengths of the TE, T, E, and C groups were compared and the respective lengths were femur; 32.24 ± 1.04 for the C group, 32.23 ± 0.28 for the E group, 31.12 for the TE group and 30.72 ± 30.93 for the T group, humerus; $25,74\pm 0,77$ for the C group, $25,66\pm 0,25$ for the E group, $24,68\pm 0,53$ for the TE group and $24,58\pm 0,41$ for the T group. The femur and humerus bones of the rats in the groups given testosterone supplementation (TE and T) were significantly shorter than those of the rats in the other two groups ($p<0.05$). However, there were not any statistical differences among the TE, T, E, and C groups in terms of cortex, corpus and medullary diameter measurements of the femur and humerus bones (of $p>0.05$).

Conclusion: The results of the study showed that testosterone supplementation stopped the growth of femur and humerus by causing premature epiphyseal closure in them. Also, even exercise did not reduce the adverse effects of testosterone supplementation. Although some athletes think that prohibited agents used as AAS affect performance positively, these agents should not be used because of their adverse effects on athletes' health and because they are against sports ethics.

Keywords:

Testosterone, Exercise, Femur, Humerus