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JOURNAL ARTICLE

Morphometric study of the gubernaculum in male estrogen receptor mutant mice

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To determine role of estrogen receptors in testicular descent, a morphometric study of the testis and structures derived from the gubernaculum was made in sexually mature male mice having an estrogen receptor disrupted gene mutation (ERKO). Macroscopic dissections and sagittal serial sections were made of the pelvis of four wild-type mice, four mice heterozygous for the ERKO mutation, and four homozygous ERKO males. By external morphological examination the testes appeared to be descended in all three genotypes. All mice had development of a cremaster sac, which is derived from the gubernaculum, but this was twice as large in wild-type mice than in both the heterozygote or homozygote ERKO groups. The cause for the smaller cremaster sac appeared to be excessive development of the cremaster muscle in ERKO mice. The thickened muscle was associated with postmortem retraction of the testes into the inguinal canal or abdomen. Spermatogenesis and testicular volume were deficient in homozygous ERKO mice at this age. This study demonstrates that estrogen has a previously unknown role in masculine sexual development of the gubernaculum and the structures derived from it, such as the cremaster muscle.

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