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摘要:

摘要目的: 应用微焦点计算机断层扫描(Micro-CT)研究大鼠去势后股骨松质骨微结构的改变及其改变规律。方法: 24只10周龄健康雌性SD大鼠随机分为两组: 去势组与对照组, 每组12只, 去势组大鼠行去势即双侧卵巢切除术, 对照组不作任何处理。去势后3月, 经Micro-CT扫描股骨后, 行三维重建, 并进行股骨松质骨微结构相关参数定量检测。结果: 与对照组相比, 去势组大鼠骨体积分数(BV/TV)、骨小梁厚度(Tb.Th)及骨小梁数量(Tb.N)分别减小72.6%、39.0%和56.4%($P<0.05$); 骨表面积和骨体积比(BS/BV)、骨小梁分离度(Tb.Sp)及骨小梁模式因子(Tb.Pf)分别增加63.7%、354.2%和72.6%($P<0.05$); 而骨小梁平均骨密度(Tb.Mean)分别为(443.92±39.07)HU和(428.67±50.82)HU, 无明显变化($P>0.05$)。结论: 去势大鼠股骨松质骨质量明显降低, 骨小梁数量减少, 骨小梁分离度增加, 骨小梁平均骨密度无明显改变, 提示大鼠去势后骨质疏松发病过程中, 股骨松质骨微结构的改变是以骨小梁的破坏为基本单位进行的。

关键词: [大鼠](#) [去势](#) [股骨](#) [骨小梁](#) [微焦点计算机断层扫描](#)

Micro-CT study on the femoral bone trabeculae in the process of osteoporosis in ovariectomized rat [Download Fulltext](#)

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Fund Project:

Abstract:

Abstract Objective: To investigate the changes of bone microstructure in femoral cancellous bone and the possible change law by micro-computed tomography (Micro-CT) in ovariectomized rats. **Method:** Twenty-four healthy 10 week-old female Sprague Dawley (SD) rats were randomly divided into two groups: ovariectomized group (ovx group) and control group (control group), each group with 12 rats. The ovx group rats were ovariectomized with bilateral ovarian resection, and the control group rats were not made any processing. Three months after ovariectomy, the bone microstructure related parameters of femur cancellous bone were quantitatively detected after micro-CT scan and 3-D reconstruction. **Result:** Compared with control group, the bone volume fraction (bone volume/total volume, BV/TV), trabecular thickness (Tb.Th) and trabeculae number (Tb.N) decreased in ovx group rats, and decreased respectively by 72.6%, 39.0% and 56.4% ($P<0.05$); The ratio of bone surface area and bone volume (BS/BV), trabecular spacing (Tb.Sp) and trabeculae pattern factor (Tb.Pf) increased in ovx group, and increased respectively by 63.7%, 354.2% and 72.6% ($P<0.05$); And there was no difference in the mean of trabeculae bone (Tb.mean) between the two groups, and were (443.92±39.07) HU, (428.67±50.82) HU ($P>0.05$). **Conclusion:** There was significant reduction of bone quality in femoral cancellous bone in ovariectomized rats; the decreased trabeculae number (Tb.N) and no change of mean of trabeculae bone (Tb.mean) in ovariectomized rats indicated that the destruction of bone trabeculae was the basic unit for the changes of femoral cancellous bone microstructures in the process of osteoporosis of rats after ovariectomy.

Keywords: [rat](#) [ovarietomy](#) [femur](#) [bone trabecular](#) [micro-computed tomography](#)

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