

عنوان مقاله:

Effect of regular resistance exercise, vitamin D, and calcium supplements on the bone mineral content and density in postmenopausal model of rats: An experimental study

محل انتشار:

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خلاصه مقاله:

Background: Postmenopausal osteoporosis progressively occurs due to alteration in the estrogen level during the menopause period, and subsequently elevates the risk of fractures. Objective: To evaluate the effect of regular resistance exercise, vitamin D, and calcium supplements on bone mineral content and density, postmenopausal rats used. Materials and Methods: In this experimental study, 72 female Sprague-Dawley rats (8-10 wk: 250 ± 15 gr) were ovariectomized and randomly divided into nine groups ($n = 8$ /each): control, placebo, exercise (EX), exercise with vitamin D supplement (EX + D), exercise with calcium (EX + Ca), exercise with calcium and vitamin D (EX + Ca + D), vitamin D administration (D), calcium administration (Ca), and calcium and vitamin D (Ca + D) groups. Finally, the tail, hip, and lumbar bone mineral content, bone mineral density, bone thickness, and bone cells were evaluated in each group. Results: The tail, hip, and lumbar bone mineral density was increased significantly in the EX + Vit D group compared to the control group ($p = 0.004$, $p = 0.007$, $p = 0.003$, respectively). However, there were no significant changes in the bone mineral content of the hips and lumbar among the groups. Besides, bone thickness in the Ex + Vit D group was more than the other groups ($p = 0.02$). The number of osteoclast cells were decreased in the Ca + Vit D, Ex + Ca, Ex + Vit D, and Ex + Vit D + Ca groups compared to the control group. Osteocyte numbers were increased only in the Ex + Vit D group. Conclusion: Resistance exercise in combination with vitamin D and calcium have a positive effect on the bone mineral density and bone mineral content and might be able to prevent or delay the osteoporosis among elderly women. However, additional researches are needed to assess the molecular pathways of this process.

کلمات کلیدی:

Menopause, Vitamin D, Exercise, Calcium, Bone mineral density, یائسگی, ویتامین D, ورزش,

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