EFFECT OF CONCURRENT ADMINISTRATION OF ALENDRONATE SODIUM AND RETINOL ON DEVELOPMENT OF CHANGES IN HISTOMORPHOMETRIC PARAMETERS OF BONES INDUCED BY OVARIECTOMY IN RATS

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Retinol is a commonly used vitamin, especially by elderly people. Alendronate sodium, an aminobisphosphonate, is a potent antiresorptive drug used in the treatment of osteoporosis in postmenopausal women. Frequently, alendronate sodium and retinol are used concurrently. There are no reports on the interaction between alendronate sodium and retinol.

The aim of the present study was to investigate the effect of concurrent administration of alendronate sodium and retinol on bone remodeling in ovariectomized rats. The histomorphometric parameters of long bones were studied.

The experiments were carried out on 3-month-old Wistar rats, divided into 7 groups: I (C) – sham operated control rats, II (OVX) – ovariectomized control rats, III (OVX + ALN) – ovariectomized rats + alendronate sodium (3 mg/kg po), IV (OVX + R-1) – ovariectomized rats + retinol (700 IU/kg po), V (OVX + R-2) – ovariectomized rats + retinol (3500 IU/kg po), VI (OVX + ALN + R-1) – ovariectomized rats + alendronate sodium (3 mg/kg po) + retinol (700 IU/kg po), VII (OVX + ALN + R-2) – ovariectomized rats + alendronate sodium (3 mg/kg po) + retinol (3500 IU/kg po). The drugs were administered to the rats daily by oral gavage (alendronate sodium in the morning, retinol in the afternoon) for 28 days. Body mass gain, bone mass, mineral content in the tibia, femur and L-4 vertebra, histomorphometric parameters of the right tibia (width of osteoid, periosteal and endosteal transverse growth, area of the transverse cross section of the bone marrow cavity and the cortical bone) and the right femur (width of epiphyseal and metaphyseal trabeculae, width of epiphyseal cartilage) were studied.

Bilateral ovariectomy induced osteopenic skeletal changes in mature female rats. Alendronate sodium administered at a dose of 3 mg/kg po daily inhibited the development of changes induced by ovariectomy in the skeletal system of rats. Retinol, especially administered at the dose of 3500 IU/kg daily, intensified the changes in the osseous system caused by estrogen deficiency in rats. Retinol administered concurrently with alendronate sodium attenuated the antiresorptive effect of alendronate sodium on the skeletal system in ovariectomized rats.

Key words: alendronate sodium, retinol, ovariectomy, bones, rats, osteoporosis

# correspondence