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PROTECTIVE EFFECT OF VITAMIN D3 IN METHYLPREDNISOLONE ACETATE (MPA) INDUCED LOSS OF BONE METABOLISM MARKERS AND BONE MINERAL DENSITY IN THE LUMBAR SPINE OF RAT

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Abstract:

Although some vitamins have been shown to prevent glucocorticoids induced osteoporosis in short time, the magnitude of this effect remains to be clarified. The aim of this study was to evaluate protective effect of vitamin D3 on methylprednisolone acetate (MPA) induced osteoporosis in rats. Twenty-four male Sprague Dawley rats were randomly divided into four groups: Group A (n = 6), was a base line control or normal animals. Group B (n = 6), was treated only normal saline, group C (n = 6), was treated MPA (0.2 mg/kg) subcutaneously for 4 weeks (3 times per a week) and finally group D (n = 6) were administered MPA resemble to group C and treated by Vitamin D3 (0.1 µg/kg dissolved in ethanol daily). Level of calcium, osteocalcin and acid phosphatase in serum were measured before and after treatment. Also, bone mineral density (BMD) of lumber vertebrae was measured by dual energy X-ray absorptiometry. The results showed that the serum calcium level unaffected by MPA in all groups before and after treatment, but the serum osteocalcin level and bone mineral density of lumbar vertebrae were significantly ($P < 0.05$) decreased in group C compared with groups A and B. In group D serum osteocalcin level increased again significantly ($P < 0.05$) but increasing of BMD and bone mineral content were not significant. The findings indicate that by using of vitamin D3 in MPA treated rats could increase bone formation and decrease bone resorption.

Keywords:

Methylprednisolone acetate ، vitamin D3 ، bone markers metabolism

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