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
Prevention of Methylprednisolone Acetate-Induced Osteoporosis with Calcium Administration in Rat Model

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Abstract:

Glucocorticoid steroids are widely used as anti-inflammatory and immunosuppressive medications and are well known to induce osteoporosis. In Present study 24 rats were randomly divided into four groups (n=6): Group A (control), Group B (sham)that was treated only by normal saline for 1 month.Group C that was treated by methylprednisolone acetate alone (0.2 mg/kg) for 1 month. Group D that was treated by methylprednisolone acetate (0.2 mg/kg) and oral calcium supplementation (15 mg/kg) for 1 month. Changes in concentration of bone metabolic markers such as osteocalcine, acid phosphatase and calcium were evaluated before and after treatment. Bone mineral density (BMD) of lumbar vertebrae was also measured by dual energy X ray absorptiometry (DEXA). The results showed that concentration mean of serum acid phosphatase was increased significantly ($P < 0.05$) in C and D groups in compared to A and B groups. The concentration mean of serum osteocalcine in group C was decreased significantly ($P < 0.05$) in comparison to A and B groups but increased significantly in the group D in comparison to group C. The concentration mean of serum calcium was decreased significantly ($P < 0.05$) in C and D groups in compared to A and B groups. The bone mineral density (g/cm²) was decreased significantly ($P < 0.05$) in group C in compared to A and B groups. This increased significantly in group D in compared to group C. These results are compatible with the view that low doses of methylprednisolone acetate decreases bone formation and increase bone resorption in the lumbar vertebrae of rats. Calcium administration decreased effects of methylprednisolone.

Keywords:

Methylprednisolone acetate , osteoporosis , bone metabolism markers (BMM) and rat

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