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### Effects of Glucocorticoid on Bone Metabolism Markers and Bone Mineral Density in Rats.

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#### Abstract:

Statement of Problem: Glucocorticoid-induced osteoporosis is characterized by a decrease in osteoblast numbers and a marked impairment of new bone formation. Purpose: The aim of present study was to evaluate the effect of methylprednisolone acetate on bone metabolism and bone mineral density in rats. Materials and Methods: Eighteen male Sprague Dawley rats (8 weeks old, weighting 180 gm) were randomly divided into three groups: Group A (n=6), was a baseline control consisting of normal animals. Group B (n=6), was treated only by normal saline injection (0.9%) and group C (n=6), injected Methylprednisolone acetate (0.2 mg/kg/s.c. 3 times/week for 4 weeks). Changes in biochemical agents of serum calcium were evaluated by measuring acid phosphatase and osteocalcin, before and after treatment. Bone mineral density (BMD) of the lumbar vertebrae was also measured by dual energy x-ray absorptiometry (DEXA). Results: The results showed that, serum calcium levels were not affected by methylprednisolone acetate ( $p>0.05$ ), but acid phosphatase levels of serum increased significantly ( $p\leq 0.05$ ). In addition, the serum osteocalcin levels and bone mineral density of lumbar vertebrae decreased significantly ( $p\leq 0.05$ ) in the methylprednisolone acetate-treated group as compared to the other groups. Conclusions: The findings indicate that administration of methylprednisolone acetate decreases bone formation and increases bone resorption in the lumbar vertebrae.

#### Keywords:

Glucocorticoid . Bone metabolism markers . BMD

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