

The relationship between bone mineral density and immobilization duration in hemiplegic limbs

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Objective: Prolonged immobilization in stroke is known to result in hypercalciuria, hypercalcemia, accelerated bone resorption, and osteoporosis. Furthermore, bone mineral loss accelerated with increasing duration of hemiplegia. Although stroke is a common disease that causes sudden immobilization, relatively few investigations of bone metabolism in stroke have been reported. The aim of this study was to investigate the changes in bone mineral density of the forearms and legs related to duration of hemiplegia-induced immobilization after stroke. **Methods:** Forty-one hemiplegic patients with stroke were evaluated. The patients' age, gender and duration of hemiplegia-induced immobilization were recorded. The measurements of bone mineral density (BMD) in all patients were evaluated with DEXA using the Norland apparatus. The BMD values (g/cm^2) were determined by measurements made in the lumbar vertebrae, both forearm and legs (femoral neck and trochanter). **Results:** We found that bone mineral density was decreased in the affected extremities relative to the intact contralateral side on measurements by dual energy x-ray absorptiometry in bones such as forearm, femoral neck and trochanter. There was a significant difference between bone mineral density of paretic and nonparetic forearms and legs. Bone mineral density of the upper limbs was lower than that of the lower limbs. There was a negative correlation between duration of hemiplegia and BMD values. **Conclusions:** Bone mineral loss may be related to the duration of hemiplegia-induced immobilization. Bone mineral loss is accelerated when the duration of hemiplegia is prolonged.

Key words: bone mineral density, the duration of hemiplegia, stroke