Evaluation of forearm bone mineral density: Comparison of dominant and non-dominant forearms

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Abstract
For evaluation of forearm bone mineral density (BMD), (1) BMD of corresponding sites of dominant and non-dominant forearms were compared and (2) characteristics of each of the 4 regions of interest (ROIs) including supradistal, distal 1/10, distal 1/6 and distal 1/3 along the long bone of both forearms were analyzed. One hundred and forty one women (79 normal and 62 osteoporotic) were recruited by randomized selection from the department of Nuclear Medicine of Phramongkutklao Hospital. Both dominant and non-dominant forearms of each subject were scanned by Panasonic (DXA-70) dual energy X-ray absorptiometry (DEXA) on the same day. Lumbar spine BMD was also measured by Hologic DEXA (QDR-4500) and WHO criteria for diagnosis of osteoporosis was applied for identifying osteoporosis and normal groups. The results showed that none of the corresponding sites of BMD of both forearms were significantly different (p>0.05 for all). The BMD from distal to proximal of each long bone (radius and ulna) of both forearms was gradually increased in osteoporosis and normal groups. Further distal sites of the forearms and lower BMD were found. Comparison between mean BMD at corresponding sites in normal and osteoporotic groups, had significantly different BMD at all ROIs (p<0.05). While BMD at corresponding sites of both ulna in the 2 groups was not significantly different (p>0.05). A great percentage change of mean BMD in the osteoporotic group was seen at supradistal and distal 1/10 of both forearms when using BMD in the normal group as control. We suggest that both distal radii especially at supradistal and distal 1/10 sites should be scanned in routine practice. The distal location of the forearms had a relatively smaller amount of surrounding soft tissue than the proximal.

Keywords: Bone Density; Forearms

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