Peripheral BMD T-Scores in the Diagnosis of Osteoporosis

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Abstract

The purposes of this study were to provide the reference value of peripheral bone mineral density from young healthy adults (20-40 years) in both sexes and to examine the prevalence of osteoporosis and fracture risk in normal young adults by T-scores following the World Health Organization (WHO) definition. Nondominant sites of 4 peripheral skeletal of 1,128 young healthy women and 225 men were examined with the following techniques: (1) dual energy X-ray absorptiometry (DXA) at supradistal and distal 1/10 of forearm (2) digital X-ray radiogrammetry (DXR) of metacarpal and distal forearm and (3) quantitative ultrasound of the os calcis (stiffness index). The results showed that young adult mean (YAM) of all peripheral sites were similar in both sexes (p>0.05 for all). Peak bone mass of all peripheral sites between Thai males and females were not different. YAM ± SD of women were used as Thai reference values and could be appropriately applied to men for individual calculation of T-scores. YAM at corresponding area of dominant and non-dominant sites of the above measurements (n=421,183 and 467 for forearm DXA, ultrasound heel and DXR, respectively) were not significantly different. It indicated that the BMD values of estimating bone mass would be correct whether the dominant or non-dominant site was measured. Applying the WHO definition of normal, osteopenia and osteoporosis to the T-scores level among 4 measurements in normal young adults for screening of peripheral osteoporosis, the prevalence of osteopenia and osteoporosis were 12.56-17.74% and 0.62-1.04%, respectively. There was a moderate fracture risk of 1.24-2.39% and marked risk of <0.5%.

Keyword : Reference value, Peripheral BMD, Osteoporosis