

A NEW DEVICE FOR THE HAND BMD MEASUREMENT (ALARA METRISCAN): A CLINICAL EVALUATION

R. Valenti, G. Martini, E. Ceccarelli, N. Dal Canto, R. Nuti

Department of Internal Medicine, Endocrine-Metabolic Sciences and Biochemistry, University of Siena, Siena, Italy

DEXA is now considered the “goal standard” for bone mineral density assessment.

Nowadays, this technique is available for evaluation of several skeletal sites (lumbar spine, hip, radius and heel). A new X-ray absorptiometry device for finger BMD measurement has recently presented, called Alara Metriscan. Alara Metriscan use an X-ray digital technique that allow the BMD evaluation of the middle phalanx of the second, third and fourth finger of the left hand. This device is quickly, easy to use, and relatively cheaper to respect the other techniques. Furthermore, the radiation exposure for single scan is very low (0.012 mSV for a single scan).

The aim of the present study was to evaluate the diagnostic accuracy and the reproducibility of the new BMD device Alara Metriscan. We evaluate 218 patients (190 females, mean age 50 ± 9 , and 28 males, mean age 65 ± 8), by lumbar spine, proximal hip, total hand, and finger QUS and we compared our results with Alara Metriscan data.

Reproducibility was evaluated as C.V.% after 3 consecutive measurements with repositioning of the left hand.

Diagnostic accuracy was evaluated on the basis of BMD T-Score: we considered as osteoporotic the subject with L1-L4 T-Score ≤ -2.5 or and/or hip T-Score ≤ -2.5 , than we calculated the percentage of patients properly diagnosed with Alara Metriscan. Among 60 osteoporotic patients, 22 patients had a T-Score ≤ -2.5 (33%) at Alara, while only 23 of 158 patients classified as non-osteoporotic based on L1-L4 or hip T-Score were incorrectly classified as osteoporotic by Alara. In our patients, sensibility and specificity were 36 and 85%, respectively.

As far as the “short-term” reproducibility is concerned, our results gave a coefficient of variation (C.V.) for Alara measurements of 0.8%.

Moreover, in our patients we obtained some interesting data about the relationship with other devices: the finger BMD highly correlated with BMD measured the other sites by DEXA, particularly with the hand, while the correlation appeared slightly weaker with U.S. parameters, but stronger compared with the relationship between U.S. parameters and lumbar and hip data.

In conclusion, Alara Metriscan appeared easy to use, relatively cheaper to respect the other device currently employed for BMD evaluation, maintaining a good accuracy and safety profile, and can be easily used on large scale for screening programs.