

Use of REMS technology in patients with spine artifacts.: A new diagnostic opportunity

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Bone Densitometry performed by DEXA technology is the Gold Standard in the evaluation of BMD. It is well known that some conditions (arthrosis, vertebral collapses, vertebroplasty) can result in an overestimation of the spinal BMD measured by DEXA.

The purpose of this work is to evaluate the REMS (Radiofrequency Echographic Multi-Spectrometry) technology in patients with alterations of the spine. 86 female patients (mean age 70.44 ± 9.1), with vertebral alterations that could affected the spine BMD were considered.

Patients, after obtaining informed consent, underwent DEXA and REMS examination on the reference sites (proximal femur and Lumbar vertebrae). The bone mineral density assessed by REMS technology showed lower values in the spine compared to the densitometric test performed with DEXA technology for both the BMD (0.772 ± 0.065 vs 1.067 ± 0.210) and the T-score (-2.5 ± 0.6 vs 0.2 ± 1.8). The BMD and T-score values measured with REMS and DEXA at the femoral site were highly correlated and this correlation reached statistical significance ($p < 0.01$). Furthermore, a high correlation was shown between the BMD and the T-score measured with the DEXA technology at the femoral sites (FN and TH) and those measured at the lumbar site with the REMS method ($p < 0.01$).

The high correlation between the values of femoral BMD, T-score FN and T-score TH in the two methods confirms that the REMS technology is a highly reliable examination in the evaluation of BMD and fracture risk. Plus the data obtained on lumbar scans shows that REMS technology is able to evaluate BMD more accurately than DEXA in patients with conditions that can make the DEXA exam less reliable. These data open new possible scenarios from both research and clinical point of view and for fracture prevention.