

A lateral point of view on bone mineral densitometry: A more accurate diagnosis of osteoporosis

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INTRODUCTION:

Vertebral compression fractures are the most common fragility fracture, yet osteoporosis of the spine is significantly under diagnosed and under treated. The traditional frontal lumbar spine protocol for dual energy x-ray absorptiometry (DEXA) bone density evaluation potentially over estimates bone density. This is due to the presence of superimposed posterior structures affected by sclerotic degenerative changes.

The purpose of this study is to determine if the lateral lumbar spine DEXA measurement is more sensitive and accurate than the traditional frontal view in diagnosing osteoporosis.

METHODS:

A retrospective analysis of DEXA scans completed between January 2020 and December 2021 at a single institution was performed. All patients who met the criteria for osteoporosis screening were included.

An established technique of measuring the lumbar vertebral body from the lateral point of view is routinely used. The bone mineral density (BMD) and T-scores were compared between the frontal and lateral lumbar spine as well as the lateral lumbar spine and femoral neck. Statistical analysis was performed using SPSS Statistics software version 25.0.

RESULTS: A total of 2733 patients (mean age, 67.3 years + 9.2; 2654 (97.1%) female) were included.

The T-scores obtained from BMD measurements of the lateral lumbar spine (-1.5+1.7) were significantly lower (paired t-test, $p < 0.0005$) than the frontal views (-0.4+1.7). This resulted in more frequent diagnosis of osteoporosis, with 30.7% (838/2733) of patients being diagnosed with osteoporosis based on lateral view, compared to 7.4% (202/2733) on frontal view.

DISCUSSION AND CONCLUSION: Lateral lumbar spine mineral densitometry resulted in significantly lower BMD measurements compared to frontal lumbar spine views. **To our knowledge, this is the first study to utilize the lateral measurement of the lumbar spine as a factor in establishing the true Bone Health of our patients.** We believe that this technique provides a more accurate and clinically useful way to diagnose and treat osteoporosis and prevent fragility fractures.