

widely used, TBS has the advantage of detecting missed osteoporotic bone cases by using a pixel method in DXA lumbar spine images, along with BMD. Currently, both type 2 diabetes mellitus (T2DM) and chronic kidney disease (CKD) can affect bone strength. However, no specific study has focused on the combined effect of T2DM and CKD on TBS in osteoporotic patients. This study aims to investigate the effect of CKD and T2DM on the efficacy of osteoporotic treatment by evaluating the change in TBS before and after treatment with anti-resorptive drugs in postmenopausal women. Primary objective: To assess the significance of CKD and T2DM in terms of TBS before and after treatment with anti-resorptive drugs in postmenopausal osteoporotic women. Secondary objective: To study the importance of detecting CKD and T2DM before and after treatment with anti-resorptive drugs in postmenopausal osteoporotic women using BMD as a tool for comparison.

Methods: 253 Thai postmenopausal osteoporotic women with a mean age of 71.77 ± 8.07 years who were treated with anti-resorptive drugs. L-spine TBS and L-spine BMD were measured in all patients. TBS values before and after treatment will be calculated and compared at 1 year and 2 years, respectively. The correlation between TBS and BMD in each model will also be assessed. Using statistical analysis, CKD, T2DM and drug administration will be evaluated for correlation with TBS and BMD results.

Results: Among 253 patients, 6 models were analyzed for the results of bone density changes from baseline to 2-y follow-up. In diabetes mellitus type 2, TBS showed significant differences between the diabetic and non-diabetic groups at the L3 level at both baseline and 2-y follow-up. For CKD, baseline BMD at the L2 and L4 levels, neck, and total hip showed significant differences, as did TBS and BMD at the L4 level at 2-y follow-up. The age factor was significantly different for BMD at the neck and total hip at all follow-up times. Combining both DM and CKD, TBS at the L3 level and BMD at the L4 level showed significant differences at both baseline and 2-y follow-up. Only BMD at the L2 level was significantly different at baseline. Summation of all three factors, at baseline, TBS at the L3 level and BMD at the L2 and L4 levels were significantly different, while average TBS, TBS at the L3 and L4 levels, and BMD at the L4 level showed significant differences at 2-y follow-up. Patients with more than two risk factors were significantly more likely to have worse BMD and TBS scores compared to patients with no risk factors. In addition, a comparison between injection group and oral medication group showed that the injection group had significantly improved in BMD at the average lumbar level, neck of femur, and L1 level at baseline and in BMD at the average, L1 to L4 level at 2-y follow-up.

Conclusion: Age, chronic kidney disease, and diabetes mellitus type 2 appear to be significant factors affecting bone quality in both the lumbar spine and hip, as assessed by BMD and TBS. In patients with multiple risk factors, more pronounced differences are observed at both baseline and 2-y follow-up. The injection group may demonstrate superior outcomes compared with oral medication, and BMD more clearly reveals the progression after the treatment compared to TBS.

P1086 **RADIOFREQUENCY ECHOGRAPHIC MULTI SPECTROMETRY (REMS) AS AN ULTRASOUND METHOD FOR BONE QUALITY ASSESSMENT IN PATIENTS WITH TYPE 2 DIABETES MELLITUS**

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Objective: Type 2 diabetes mellitus (T2DM) is a chronic, multifactorial disease characterized by persistent hyperglycaemia (high blood glucose levels) as a consequence of insulin resistance, resulting in the development of disabling health complications, such as bone fragility. Scientific literature shows both quality and quantity of bone have a strong relationship with T2DM, contributing to the increased risk of bone fragility fractures compared to nondiabetic subjects. Indeed, these patients, may fracture despite normal or even increased BMD. The bone alterations may be due to the effect of advanced glycosylation end products (AGEs) on collagen fibres and bone cells, this interaction causes a conformational alteration of the structure and of the bone strength. This study aims to use the REMS-based the Fragility Score (FS) parameter to evaluate the effect of T2DM on bone quality microarchitecture. The FS parameter is an indicator of skeletal fragility independent of BMD and ranging from 0–100 (100 indicates the maximum similarity with the fractured model, on the other hand, 0 indicates the maximum similarity with the healthy model).

Methods: A cohort of 30 Caucasian women with DMT2 were enrolled and compared with an equivalent group of healthy control women (HC) matched for age and BMI. All the patients underwent REMS scans on proximal femur and the difference of FS values between the two study groups was evaluated through t-test.

Results: The mean of age and BMI were respectively 67.9 ± 12.2 years and 24.9 ± 3.4 kg/m² for T2DM and 67.7 ± 12.1 y and 25.8 ± 3.7 kg/m² for HC. The FS values measured at the proximal femur was significantly higher in T2DM patients (46.2 ± 17.8) than those obtained by HC (41.8 ± 16.4). The mean difference between 2 group is equal to -4.37 ± 17.1 .

Conclusion: As expected, an important bone quality impairment associated with T2DM has been measured. The obtained data demonstrate that REMS is a valid diagnostic tool for the monitoring of bone health status, thanks to its ability to assess bone quality, enhancing the diagnosis in T2DM patients.

P1087 **USE OF TRABECULAR BONE SCORE TECHNIQUE (TBS) IN EXAMS BONE DENSITOMETRY (DXA) OF OSTEOPENIC DIABETIC PATIENTS FOR STRATIFICATION OF THE RISK OF FRAGILITY FRACTURES**

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Objective: In 2015, in Brazil, there were 373 thousand fractures due to bone fragility(1). The mortality rate associated with a fragility femoral fracture in the elderly is 19.2% at 1 year (2).

The increased risk of fragility fractures is not only related to BMD, but also the quality of bone trabecular microarchitecture (3). TBS detects specific changes in bone quality related to trabecular microarchitecture, improving the diagnosis of the high risk of fragility fractures.

Diabetic patients present a deterioration in bone microstructure that is more evident in the composition of the disease (4). This study aimed to evaluate TBS in diabetic patients and stratify selected patients using TBS values in combination with BMD, in lumbar spine DXA acquisitions performed at HMAB in the period 2016 and 2020.

Methods: The sample included diabetic patients with the following inclusion criteria: men aged 70 years or over, women aged 60 or over; laboratory diagnosis of diabetes according to the criteria of the Brazilian Society of Diabetes; and DXA with osteopenia.