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INDICE

BONE QUALITY IS ASSOCIATED WITH BODY COMPOSITION IN PATIENTS WITH TYPE 2 DIABETES.

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Type 2 diabetes mellitus (T2DM) is associated with an increased risk of fractures, despite normal or even increased bone mineral density (BMD). Trabecular Bone Score (TBS) and Quantitative UltraSound of bone (QUS) provide surrogate parameters of bone quality. Aim of this study was to investigate the association of bone quality indexes with body composition measurements and muscle strength in a setting of Caucasian subjects with T2DM.

The 10-year probability of major osteoporotic fractures and hip fractures were computed by Fracture Risk Assessment Tool (FRAX). Body composition and bone mineral density at lumbar spine and femoral were performed by a dual-energy X-ray absorptiometry (DXA). TBS was computed through DXA images by iNsight software. The DBM Sonic Bone Profiler (Igea, Carpi, Italy) was used to assess phalangeal QUS. Morphometric Vertebral fractures (Vfs) and handgrip strength were detected by X-ray and by a Jamar dynamometer, respectively. T2DM metabolic control has been determined from the mean of HbA1c values.

Forty-five patients (female 65%) [median age 67 (60 to 70)] with T2DM were considered. The 10-year probability of fractures was 8.1% and 2.3% as for major osteoporotic or hip fracture respectively. Morphometric Vfs were detected in 18% of patients. Adipose mass accounts for 40% of body composition. Bone transmission time (BTT) at phalangeal QUS discriminated T2DM subjects with and without prevalent fractures [0.93 (0.7 to 1.15) vs. 1.27 (0.99 to 1.45) µsec respectively, p=0.03]. BMD at lumbar spine was significantly positively associated with lean indices (lean/height² and appendicular lean/height²). TBS and handgrip strength values were negatively related with adipose indices. At multiple regression analysis, handgrip strength predicted both lumbar (β= 0.009, SE 0.0034, p=0.01) and femoral neck BMD values (β= 0.006, SE 0.002, p=0.01). Age (β= -0.008, SE 0.002, p=0.007) and handgrip strength (β= 0.01, SE 0.002, p=0.0001) were also independently associated with TBS score, after correcting for mean HbA1c values and time since T2DM diagnosis.

Surrogates of bone quality as TBS and phalangeal QUS measurements, as well as handgrip strength, are associated with body composition in adult subjects with T2DM, providing information about bone strength.