ASSOCIATION BETWEEN BODY FAT AND BONE MINERAL DENSITY IN POSTMENOPAUSAL WOMEN THROUGH RADIOFREQUENCY ECHOCARDIOGRAPHIC MULTI SPECTROMETRY

Elena Kirilova1, Nikola Kirilov2, Stoyanka Vladeva1. 1Trakia university, Stara Zagora, Bulgaria; 2Medical University of Sofia, Stara Zagora, Bulgaria

Background: Osteoporosis is characterized by reduced bone mineral density (BMD) and increased fracture risk. Age, concomitant diseases, body mass index (BMI), body composition, etc. are important risk factors that could reflect on bone density and on the increased risk of fractures. Although obesity has been associated with increased bone mineral density (BMD) in the most studies, the relationship between body fat and BMD remains contradictory.

Objectives: The aim of this study is to determine if there is any association between body fat distribution and bone mineral density in postmenopausal women through novel ultrasound technique applicable on both-lumbar spine and femoral neck.

Methods: A total of 98 women with mean age 62 ± 11 years underwent radiofrequency echocardiographic multi-spectroscopy (REMS). Bioelectrical impedance analysis (BIA) software was used to assess body fat percentage. Patients were divided into two groups-with body fat ≥ 32% and body fat < 32%. Age, BMI, lumbar spine BMI, total hip BMD and fracture risk score (FRAX) were compared between the patients with normal body fat and those with high body fat.

Results: The mean age of the women with normal body fat was 61.1 ± 14.6 years and the mean age of the women with high body fat was 63.3±9.5 years. BMI of the women with body fat < 32% was significantly lower (22.5 kg/cm²) compared to the BMI of the women with body fat ≥ 32% (30.2 kg/cm²) (p = 0.000). Bone mineral density of L1-L4 and total lumbar spine BMD did not differ between the women with normal body fat and high body fat. Femoral neck BMD, trochanteric BMD and total hip BMD of the patients with normal body fat (0.624 g/cm², 0.737 g/cm² and 0.736 g/cm² respectively) were significantly lower than those patients with high body fat (0.682 g/cm², 0.864 g/cm² and 0.838 g/cm² respectively) (p = 0.000 for femoral neck BMD and trochanteric BMD, and p = 0.001 for total hip BMD). FRAX score for 10-year probability of major osteoporotic fracture did not differ significantly between the two groups (20.8% for women with normal body fat and 16.6% for women with high body fat). FRAX score for 10-year probability of hip fracture was also not significant between the two groups, but there was a trend to statistical significance (p = 0.059) (9% for women with normal fat and 4.9% for women with high fat).

Conclusion: Postmenopausal women with body fat ≥ 32% showed higher femoral neck BMD compared to those with body fat < 32%, but there was no significant difference in the lumbar spine BMD values between the groups. Women with high body fat did not show significantly lower FRAX score than the women with normal body fat.

REFERENCES

Disclosure of Interests: None declared