Characterization of bone parameters in older overweight and obese men

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Obesity alters bone mineral density (BMD) and geometrical properties of bone, and has been shown in women. Our goal was to characterize bone parameters in men with body mass index (BMI) >25 kg/m². Thirty-eight men (BMI of 31.9±4.4 kg/m²) who were older (58±6 years) were examined for body composition and bone parameters including areal BMD and true volumetric BMD and geometric properties were measured at the tibia. To determine variability over time, a subset of men (n=19) had repeat measurements after 6 months using dual energy x-ray absorptiometry and peripheral quantitative computed tomography. Serum sex steroids were measured including total and free testosterone and estradiol. As expected, body weight correlated positively with total body BMD (r = 0.37; p<0.02). Over the 6 months, men did not significantly change weight (0.6±2.4). Total body and femoral neck BMD increased during this time by 1.5±2.7% and 1.1±2.2%, respectively (p<0.05), but there was no change in cortical and trabecular BMD of the tibia and there was a decrease in cortical bone area, content and polar moment of inertia at the tibia (p < 0.02) with a trend to decrease the stress: strain index. There was a 17-25% increase in serum testosterone and estradiol (p < 0.05). Others have found that normal weight men (50-69 y), show a slight annual increase in FN-BMD (0.5%/y) that is less than the 1-2% increase found here. These data show that obesity increases sex steroids and BMD, but there is evidence of a decline in bone cortical bone content and altered geometric properties. Support: NIH-AG12161.

Biography

Sue Shapses has completed her Ph.D at the age of 28 years from Columbia University and postdoctoral studies from Dept of Medicine at Albert Einstein School of Medicine and from the Orthopaedic Dept. at Columbia's College of Physicians and Surgeons, NY, NY. She is the director of NJ Obesity Group and Chair of the Interagency Council on Osteoporosis. She has published more than 70 papers in high quality journals and over 30 reviews or chapters.

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