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Bone Mass Measurements Are Associated with Cardiovascular Mortality: A 5-year Analysis. M. M. Pinheiro*, C. H. M. Castro, R. E. Heymann*, K. R. B. Oliveira*, C. Ohashi*, V. L. Szejnfeld. Rheumatology, Unifesp, Escola Paulista de Medicina, Sao Paulo, Brazil.

Previous studies suggest that osteoporotic fracture is associated with increased risk of mortality, however the relationship between bone mineral density (BMD), quantitative ultrasound (QUS) and mortality is still controversial. Our aim was to evaluate the ability of BMD and QUS measurements to predict new osteoporotic fracture and mortality. Two-hundred seventy five women were invited to participate in this study. Risk factors for osteoporosis and fracture were evaluated by a questionnaire that included details concerning lifestyle habits, diet, hormonal factors and drug use. Patients with suspected secondary osteoporosis were excluded. Spine and femur BMD (DPX-L, Lunar) and calcaneus QUS (Achilles +, Lunar) were performed in all patients at baseline. Lateral thoracic and lumbar X-ray was taken at baseline and 5-year later to confirm the presence of vertebral fractures. Five-year after baseline visit, all reported deaths were confirmed by review of hospital records and classified according to ICD-10 code. Two-hundred eight (75.6%) women completed the study and 25 (9.1%) lost follow-up. Mean age and weight were 75.2 ± 6.5 years and 60.3 ± 10.2 kg, respectively. Forty-two (15.3%) women died (incidence rate = $36.2/1,000$ person-years) and 41 patients (19.7%) had new osteoporotic fracture (incidence rate = $41.7/1,000$ person-years). After adjustments for age, weight, previous fracture, smoking, physical activity, drugs and comorbidities, femoral neck BMD, trochanter BMD and stiffness index (SI) were associated with new osteoporotic fracture [standardized HR = 2.0 (95% CI 1.26-3.18), 1.62 (95% CI 1.08-2.42) and 2.2 (95% CI 1.30-3.82), respectively]. Trochanter BMD, SI and femoral neck BMD were the most significant predictors of death in this population [standardized HR = 1.59 (95% CI 1.07-2.36), 1.57 (95% CI 1.10-2.46) and 1.43 (95% CI 1.06-2.22), respectively]. Cardiovascular mortality was also associated with low femoral neck BMD [RH = 1.28 (95% CI 1.07-2.62)], trochanter BMD [RH = 1.30 (95% CI 1.08-2.18)] and SI [RH = 1.54 (95% CI 1.08-2.79)]. Mortality due to cancer, infectious or pulmonary diseases had no statistically significant association with BMD or QUS measurements. Spine BMD was not related to the risk of new fracture or death. In conclusion, low SI and femur BMD were able to predict the risk of new osteoporotic fracture and were associated with total and cardiovascular mortality, independently of age, health status and other diseases in Brazilian elderly women. These results reinforce epidemiological and biological recent evidence supporting common pathophysiological aspects between osteoporosis and atherosclerosis.

Disclosures: M.M. Pinheiro, None.

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Low Bone Mineral Density of Distal Forearm Predicts the Mortality in Elderly Men - the MINOS Study. P. M. Szulc¹, F. Munoz², F. Marchand², P. D. Delmas¹. ¹Epidemiology of Osteoporosis, INSERM 403 Research Unit, Lyon, France, ²SSMB, Montceau les Mines, France.

Only limited data on the association between areal bone mineral density (aBMD) and mortality are available in men. We evaluated if cross-sectional area (CSA), aBMD, volumetric BMD (vBMD) and morphologic parameters (external diameter, cortical thickness) predict the risk of death in 792 men aged 50 to 85 belonging to the MINOS cohort. During the follow-up of 7.5 yrs, 134 men died. After adjustment for age, co-morbidity, medication, hormonal levels and professional physical activity, decreased aBMD of distal forearm and ultradistal radius was associated with higher mortality (O.R. = 1.25-1.30 per 1 SD decrease, $p < 0.02-0.002$). In analyses performed separately for radius and ulna, decreased CSA, aBMD, vBMD and cortical thickness of each bone were associated with increased mortality (O.R. = 1.20 - 1.34 per 1 SD decrease, $p < 0.04-0.02$) whereas the external diameter was not ($p > 0.6$). In similar multiple adjusted models, hip and lumbar spine BMD were not associated with the increased mortality ($p > 0.15$). In summary, our data indicate that in elderly men decreased CSA, aBMD, vBMD and cortical thickness of distal radius and ulna, but not of lumbar spine and hip, are associated with a higher mortality. Bone mineral of distal forearm, which is neither a weight-bearing site nor influenced by osteoarthritis, may reflect the deterioration of general health status better than other sites of measurement.

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Relationship of Diabetes and Falls in Older Men. T. L. Dam¹, R. Fullman², P. M. Cawthon³, J. Cauley³, E. Orwoll⁴, E. Barrett-Connor⁵. ¹Medicine, UCSD, San Diego, CA, USA, ²Prevention Studies Group, UCSF, San Francisco, CA, USA, ³U. of Pittsburgh, Pittsburgh, PA, USA, ⁴Medicine, OHSU, Portland, OR, USA, ⁵Family and Preventive Medicine, UCSD, San Diego, CA, USA.

Patients with diabetes have increased bone mineral density. Nevertheless, several studies have shown that diabetics also have increased rates of fracture possibly due to an increased risk of falls that may contribute to their increased fracture rates. We evaluated 5,995 community dwelling men ages 65 years and older enrolled in the prospective cohort study of Osteoporotic Fractures in Men. Self reported diabetes status and multiple covariates were collected at a baseline visit via questionnaire in 2000-2002. Physical, cognitive, visual and neuromuscular functions were measured at the baseline visit. Incidence of falls was ascertained every 4 months by a mailed questionnaire for 2 years

(response rate >95%). We compared the prevalence of risk factors for falls and incidence of falls by diabetes status.

The 653 (10.9%) men who reported diabetes had significantly higher BMD scores (at the total spine, total hip, femoral neck, trochanter and intertrochanter) compared to nondiabetics. During each year of follow up, a higher percentage of men with diabetes fell compared to men without diabetes. By the end of year 2, 40% of men without diabetes and 47.4% of men with diabetes had reported at least 1 fall ($p = .0003$), with an age-adjusted 36% increased fall risk (OR 1.36 (1.15-1.61), $p < .0001$). More than 10 previously described risk factors for falls were significantly ($p < .0001$) more prevalent in men with diabetes. After adjusting by logistic regression models for selected covariates (age, weight, history of cataracts or stroke, dizziness, use of benzodiazepine, loop diuretic and tricyclic antidepressant, depth perception and grip strength), the risk of falling associated with diabetes decreased and was no longer statistically significant (OR 1.15 (0.97-1.38), $p = .11$). Diabetes was associated with better BMD and an increased risk of falls in these older men. Diabetes co-morbidities and associated medications may explain the higher fall risk, as evidenced by the attenuation of the diabetes fall association in multiply adjusted analyses. These results suggest a multifactorial etiology for the increased risk of fracture despite higher BMD levels observed in diabetics.

Disclosures: T.L. Dam, None.

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64. **Comparison of the OST Versus a Typical Risk-Factor Questionnaire for Evaluating Osteoporosis in Men.** C. L. Sybrowsky*, J. G. Skedros. Utah Bone and Joint Center, Salt Lake City, UT, USA.

Although dual-energy x-ray absorptiometry (DXA) is an effective means of determining low bone mineral density (BMD), identifying the appropriate population to screen remains a topic of controversy. This is especially problematic in males, since the majority of osteoporosis risk-assessment models have focused on females. Previous studies have shown that the osteoporosis self-assessment screening tool (OST) is highly sensitive for identifying males at risk for osteoporosis (Adler et al., 2003 Mayo Clin Proc). This value is determined as: $[(\text{weight in kg} \times \text{age in years}) \times 0.2, \text{truncated to an integer}]$. The purpose of this study was to determine if the OST more strongly correlated with BMD than responses to a 'typical' risk-factor questionnaire that assessed 30 known or suspected risk factors for osteoporosis or osteoporosis-related fracture in men. This questionnaire has been used in our orthopaedic surgery specialty clinic to determine candidates for DXA and to provide documentation of risk to insurance companies for payment authorization. A population of 158 American Caucasian men with a mean age of 67.5 ± 13.1 years and weight of 85.3 ± 16.0 kg completed the risk-assessment questionnaire and underwent central DXA (total hip, femoral neck, and lumbar spine). T-scores for the population were then correlated with questionnaire responses and OST risk indices. 16.5% of the men had T-scores lower than -2.5 at one or more of the scanned sites. OST indices ranged from -6 to 16 (mean 4 ± 5). Total number of reported risk factors ranged from 0 to 13 (mean 4 ± 2). When defining osteoporosis as a T-score of ≤ -2.5 , an OST index of ≤ 3 yielded sensitivity of 92%, specificity of 55%, positive predictive value of 29%, and negative predictive value of 97%. Questionnaire assessment of 3 or more risk factors yielded sensitivity of 65%, specificity of 42%, positive predictive value of 18%, and negative predictive value of 86%. These data confirm the high sensitivity of the OST for detecting osteoporosis in men and demonstrate that it more accurately predicts low BMD than gross quantification of standardized risk factors. However, since the risk-assessment questionnaire assigns equal importance to each of the 30 risk factors, differential weighting of risk factors may improve sensitivity/specificity.

Osteoporosis prevalence determined by OST index and standardized risk-assessment questionnaire

Category	T-score ≤ -2.5	T-score ≤ -2.0
OST ≥ 4	2.7% (2/75)	8.0% (6/75)
OST -1 to 3	26.6% (16/60)	38.3% (23/60)
OST ≤ -2	34.8% (8/23)	56.5% (13/23)
3 or more risk factors	18.1% (17/94)	28.7% (27/94)
5 or more risk factors	22.7% (10/44)	40.9% (18/44)

Disclosures: C.L. Sybrowsky, None.

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Predictors of Femoral Neck Geometry in Caribbean Men: The Tobago Bone Health Study. L. M. Semanick¹, T. Beck¹, J. A. Cauley², V. Wheeler³, A. Patrick³, C. Bunker², J. M. Zmuda². ¹Radiology, Johns Hopkins University, Baltimore, MD, USA, ²University of Pittsburgh, Pittsburgh, PA, USA, ³Tobago Hospital, Trinidad, Trinidad and Tobago.

Osteoporotic fracture is less prevalent in African Americans than Caucasians suggesting a difference in bone structural strength. Studies of bone differences in African Americans are confounded by their heterogeneity due to their admixture of African, European and other origins. We analyzed the associations between anthropometry, lifestyle factors