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Osteoporosis

AB0606

IMPACT OF ABDOMINAL AORTIC CALCIFICATION AND SERUM CREATININE-TO-CYSTATIN C RATIO TO BONE FRAGILITY FRACTURE

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Background: Relationship between bone fragility fracture (BFF) and abdominal aortic calcification (AAC) has been discussed in recent decade.

Objectives: Now we investigated the relationship between the two and a new factor of BFF: serum creatinine-to cystatin C ratio (Cr/CysC).

Methods: A total of nine-hundred and thirty one osteoporotic patients were recruited. Diagnosis of osteoporosis was indexed by the criteria of Japanese Primary Osteoporosis Diagnostic Criteria. Patient's lumbar spine X-ray pictures were taken and dual-energy X-ray absorptiometry (DXA) of lumbar spine and hip joint were tested at the same time, and all of them were followed us for more than one year up to nine years with at least an administration of vitamin D. Anti-osteoporotic drugs were administered for 660 patients.

Vertebral compression fracture (VF) and AAC were evaluated with lateral view of X-ray picture. VF was classified in accordance with Semi-quantified method (SQ), and AAC was classified as follows: Grade0; No calcification, Grade1; Partial calcification not continued over one vertebral height, Grade2; Calcification continuous over one vertebral height. BFF history of the patients except of VF was harvested from the medical record and with interview. Patients' background at first measurement were measured and Cr/CysC was calculated as well. Prevalence of BFF at the baseline for each grade with SQ was compared according to the grade of AAC. Background factors including bone mineral densities (BMD) of the lumbar spine and hip joint measured using DXA were compared for each AAC grade.

Occurrence of BFF was picked up during following up (BFF_F/U) of the patients. Prevalence of BFF_F/U for each ACC grade was statistically compared, and relationship between BFF_F/U and factors at the baseline was statistically evaluated.

Results: A total of 219 of Grade0, 428 of Grade1, and 278 of Grade2 were recruited. Prevalence of BFF at baseline for each VF group was 182, 16, 9, and 12 for Grade0, 138, 98, 122, and 70 for Grade1, and 53, 45, 82, and 144 for Grade2, with Grade-0, Grade-1, Grade-2, and Grade-3 by SQ, respectively ($p < 0.01$). Factors that demonstrated significant correlation with occurrence of BFF were sex, age, BMD of the lumbar spine and the hip joint, and Cr/CysC with univariate mode binary logistic regression analysis. However, Cr/CysC did not demonstrate significant correlation using multivariate model.

Occurrence of BFF_F/U for each AAC group was 26, 90, and 82 for Grade0, Grade1, and Grade2, respectively ($p < 0.01$). The only factor that demonstrated significantly correlated with occurrence of BFF_F/U was Cr/CysC in the Grade1 and the Grade2 of the AAC classification.

Conclusion: ACC grade significantly correlates with occurrence of BFF. Cr/CysC also significantly correlates with occurrence of BFF after follow up under presence of AAC.

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AB0607

DO HIP STRUCTURAL ANALYSIS MEASUREMENTS PREDICT FRACTURE RISK IN PATIENTS WITH POLYMYALGIA RHEUMATICA?

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Background: Polymyalgia Rheumatica (PMR) is an inflammatory condition which commonly affects the elderly. Risk of fracture is higher in this group of patients compared to the general population and can lead to increased morbidity and mortality (1). Hip structural analysis (HSA) is a technique that uses dual-energy X-ray absorptiometry (DEXA) images to assess hip bone structure (2).

Objectives: To identify whether HSA measurements help predict fracture in patients with PMR.

Methods: Data were collected from June 2004 to October 2010 from PMR patients who had a DEXA scan at a District General Hospital. This included hip axis length (HAL), cross-sectional area (CSA), cross-sectional moment of inertia (CSMI), distance from centre of femoral head to centre of femoral neck (D1) and to inter-trochanteric line (D2), mean femoral neck diameter (D3), shaft angle (A) neck/shaft angle (Θ) and proximal femur strength index (SI) and distance from centre of mass of femoral neck to superior neck margin (Y). Fracture was predicted by a series of binomial logistic regression models, adjusted for age and sex. Odds ratios with 95% confidence intervals and area under the receiver operating characteristic curve (AUC) were calculated.

Results: 714 patients with PMR were identified, 182 were male and the mean age was 70.5. HAL, CSMI, D1, D2, D3, A, Θ , SI and Y were not significant predictors of fracture in regression models; odds ratios are included in Table 1. CSA predicted fracture risk; odds ratio was 0.988 with a 95% confidence interval of 0.980-0.997. The AUC for the CSA regression model was 0.6739.

Table 1. Odds ratios of fracture for different HSA parameters

HSA Parameter	Odds Ratio (95% confidence interval)
HAL	1.008 (0.982 - 1.035)
CSMI	1.000 (0.999 - 1.000)
CSA	0.988 (0.980 - 0.997)
D1	1.029 (0.972 - 1.089)
D2	1.010 (0.981 - 1.040)
D3	1.033 (0.962 - 1.109)
Y	1.087 (0.966 - 1.223)
A	0.983 (0.940 - 1.029)
Θ	1.007 (0.975 - 1.039)
SI	0.683 (0.406 - 1.150)

Conclusion: These data suggest that CSA helps predict the risk of fracture in patients with PMR. HAL, CSMI, D1, D2, D3, A, Θ , SI and Y do not predict fracture risk. Limitations of the study are that it was retrospective and only studied patients who underwent DEXA scans. The study may have been underpowered to detect the impact of some HSA measurements on fracture risk.

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AB0608

BONE MINERAL DENSITY, VITAMIN D STATUS AND BONE METABOLISM IN A COHORT OF ADULT PATIENTS WITH INFLAMMATORY BOWEL DISEASE

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Background: Patients with inflammatory bowel disease (IBD) have an increased risk of low bone mineral density (BMD) and bone fractures due to several mechanisms. However, the best management of osteoporosis in this population is yet to determine.

Objectives: To evaluate bone mineral density and other clinical, analytical and demographic features related with the risk of bone fractures in an IBD cohort.

Methods: Retrospective monocentric study including all the patients with IBD consecutively referred from Gastroenterology to the Rheumatology Department in a tertiary university hospital between January of 2013 and October 2020. Demographic, clinical and analytical data and BMD by dual-energy X-ray absorptiometry (DXA) (total hip, femoral neck and lumbar spine) were collected at the time of the first visit in the Rheumatology outpatient center. Correlations between variables were evaluated by Spearman rank test and Mann-Whitney U test was used in the comparison analysis between groups (significance level at $p < 0.05$), using SPSS 25.0 software.

Results: A total of 222 patients were included: 128 (57.7%) females, mean age of 43.4 (± 13.6) years, mean IBD duration of 11.6 (± 9.7) years. Regarding IBD: 163 (73.4%) had Crohn's disease (CD) and 59 (26.6%) had ulcerative colitis