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BONE MICROARCHITECTURAL PARAMETERS I POSTMENOPAUSAL WOMEN WITH PREVALENT FRACTURE: A HR-PQCT CHARACTERIZATION

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Objective: HR-pQCT)is an increasingly available imaging nique providing quantitative three-dimensional paramet both bone structure and density. Currently, no internationa sensus exists on its clinical implication, and compared original version of this technique, data on second generati pQCT are scarce. However, a few studies support the evi that in regard to fracture prediction, HR-pQCT could be supe areal BMD. This study investigates structural differences i microarchitecture in postmenopausal women with or w prevalent fracture.

Methods: We used data of the PoCOsteo Study (1), a pr tive cohort study of postmenopausal women and men>50 performed at two study sites (Graz, Austria and Tehran, I develop and validate a Point-of-Care tool for bone diseases microarchitecture was assessed in 50 consecutive fema tients at the Austrian study center, using HR-pQCT (Scanco cal AG, XTremeCT, II. Generation; Brüttisellen, Switzerland) distal tibia. Patients were stratified into two arms (n=25 pe depending on whether fracture history was negative (Grou positive (Group 2). Blood samples were drawn in parallel sess serum routine parameters, bone turnover markers (and bone metabolism related hormones. HR-pQCT variable prise two- and three-dimensional parameters illustrated in 1, representing both cortical and trabecular density and ture. Clinical fractures were ascertained from questionnair medical records, whereas vertebral fractures were diag either by conventional radiograph or DXA-based vertebra ture assessment (VFA). To assess differences between t groups, we performed a two-sample t-test in normally distr variables and a Mann-Whitney U test in non-normally distr variables. P-values<0.05 were considered statistically signi The statistical software package used was IBM® SPSS® tics Version 28 (IBM Corporation, Armonk, NY, USA).

Results: Mean age between the group 1 and 2 was comp (p=0.53). HR-pQCT measurements at both sites were av in all 50 participants. The following parameters were signi ly lower in Group 2 compared to Group 1: Tt.vBMD (234 292.8, p<0.0001), Ct.Ar (103.2 vs. 124.7, p<0.001), Ct.Th vs. 1.50, p<0.001), Tb.N (1.03 vs. 1.21, p<0.001), Tb.vBMD vs. 158.0, p<0.01), Tb.Inn.vBMD (78.2 vs. 104.7, p<0.01), (0.199 vs. 0.231, p<0.01), Tb.Sp (0.977 vs. 0.825, p=0.02), MD (807.2 vs. 852.5, p=0.03). No significant difference was in Tb.Meta.vBMD, Tb.Th, Tb.1/N.SD, Ct.Po, Ct.Po.Dm, Tt.Ar, Significant differences in BTMs were found only for N-te Procollagen 1 (65.0 vs. 30.6 ng/ml, p<0.01) and osteocalci vs. 30.6 ng/ml, p=0.05) (group X vs. group X, respectively) differences in bone specific alkaline phosphatase (20.1 vs µg/l, p=0.06), CrossLaps, TRAP and other bone relevant eters such as PTH, thyroid hormone, testosterone and es levels did not reach significance.

Conclusion: We found significant differences among the ity of HR-pQCT parameters in women>50 y depending o fracture history. Tt.vBMD, Ct.Ar, and Ct.Th. appeared to ha strongest association with prior clinical fracture. These are supportive of the evidence, that HR-pQCT may provid vant information on bone quality and bone strength by cap the complex cortical and trabecular microarchitecture. To e the full potential of HR-pQCT technology, particularly in te fracture prediction, high-quality prospective clinical studi warranted. Moreover, the authors favour international sta ization of HR-pQCT imaging techniques, procedure of me ment and terminology, to make studies and their results comparable.

Reference: 1. Khashayar P, et al. BMJ Open 2020;10:e0353