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# Bone mineral density discordances between lumbar spine and femur in patients with chronic kidney disease

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**Objectives:** The purpose of this study was to evaluate the prevalence and characteristics of discordances of bone mineral density (BMD) between spine and femur in chronic kidney disease (CKD) group compared with control.

**Methods:** This retrospective study included 48 patients with CKD whose BMD were examined with both quantitative computed tomography (QCT) and dual energy absorptiometry (DXA). DXA results of 151 healthy ageing participants (age 63.0 vs. 63.5, $P = 0.180$) with a health check-up were used as control. Major discordance occurs when the T-score at one site diagnosed as osteoporosis, but at the other site indicated as normal BMD. Minor discordance refers to a one degree of T score difference between two sites. Trabecular bone score (TBS) of both groups was calculated from DXA images.

**Results:** Using T-score of DXA of the femur, osteoporosis was more common in CKD group than in control group (20.8% vs. 6.6%, $P = 0.004$). According to T-score of DXA of the lumbar spine, the incidence of osteoporosis was not significantly different between two groups (22.9% vs. 23.8%; $P = 0.135$). However, the patients with CKD showed significantly lower TBS than control group [1.267 (1.242-1.348) vs. 1.384 (1.367-1.497), $P < 0.001$]. Using DXA, 60.4% of CKD patients showed spine-femur discordance whereas 49.0% of normal participants exhibited discordant diagnosis between spine and femur ($P = 0.031$). The prevalence of major discordance was higher in CKD group than control group (12.5% vs. 6.6%, $P < 0.001$). Comparing DXA and QCT in CKD group, the diagnosis was discordant in 62.5% (n=30) of the CKD patients and QCT diagnosed more osteoporosis than DXA (41.7% vs. 22.9%, $P = 0.006$) because of degenerative bony changes or aortic calcification.

**Conclusions:** The cortical bone showed more osteoporotic status and the discordance between spine-femur DXA was more common in CKD patients.