

## IMAGING

## Elucidating the relationship between hand bone loss and osteoporosis

Measurement of hand bone mineral density (BMD) by use of digital X-ray radiogrammetry (DXR) could have a role in the assessment of localized bone loss as well as generalized osteoporosis, both of which are associated with rheumatoid arthritis (RA). According to the results of a study by Desai *et al.*, hand BMD assessed with DXR correlates with BMD of both the spine and hip as measured using conventional dual-energy X-ray absorptiometry (DXA).

The study was conducted in a subset of the BRASS (Brigham Rheumatoid Arthritis Sequential Study) cohort comprising 138 postmenopausal women aged 51–71 years with established RA. Patients included in the analysis had baseline hand radiographs and total hip and/or lumbar spine DXA performed within a 2-year span. DXR is a technique that uses digitized hand radiographs to measure the density of bone.

Cross-sectional analysis revealed that hand DXR-BMD was associated with DXA-BMD of both total hip and

lumbar spine, even after adjustment for relevant confounders. Stratification of the models according to disease duration (up to or over 5 years) and serological status (positive or negative) did not modify the effect, nor did correction for glucocorticoid use or smoking.

The relationship between hand DXR-BMD and spine DXA-BMD, but not hip DXA-BMD, was modified by patient age, in that the two BMD measurements were more closely associated in women aged less than 61 years. This finding is consistent with a more prominent role for increasing age in determining generalized bone loss at the spine.

Emerging evidence indicates that hand DXR-BMD correlates with radiographic progression of RA, and that it could be a useful prognostic marker of the disease. In addition, hand bone loss can occur early in the course of RA whereas generalized osteoporosis can take longer to develop. The authors speculate that hand DXR-BMD might be more useful in predicting generalized osteoporosis in



patients with disease of longer duration than in those with early RA, although this question remains to be addressed in a prospective, longitudinal study.

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**Original article** Desai, S. P. *et al.* Hand bone mineral density is associated with both total hip and lumbar spine bone mineral density in post-menopausal women with RA. *Rheumatology (Oxford)* doi:10.1093/rheumatology/kep385