

OSTEOARTHRITIS

It started with a cyst...or did it?

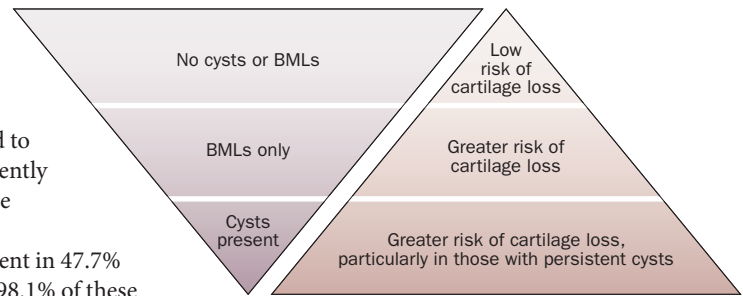
Subchondral bone cysts are common in patients with knee osteoarthritis (OA), but the link between cysts, bone marrow lesions (BMLs) and structural changes in the knee during the course of this disease is not well understood. Some clues have been provided by an article published in *Arthritis Research & Therapy*. Flavia Cicuttini, the lead researcher on this paper, explains “Our study aimed to examine the natural history of subchondral bone cysts, as well as the relationship between these cysts and tibial cartilage volume, and the risk of joint replacement in patients with OA.”

The study included 132 patients with symptomatic knee OA, who were screened at baseline and again 2 years later by MRI. Of those screened, 109 patients had MRIs that were suitable for inclusion in the analyses. Tibial cartilage volume was measured, and subchondral bone cysts (defined as a well-demarcated hypersignal) and BMLs (defined as ill-defined hypersignals) were counted and graded (0 for no lesion, 1 for a mild-to-moderate lesion and 2 for a severe or large lesion). Four years after the baseline MRI,

patients were contacted to see if they had subsequently needed to undergo knee arthroplasty.

Bone cysts were present in 47.7% of patients at baseline; 98.1% of these individuals also had BMLs. Patients with bone cysts at baseline tended to have larger BMLs than those without cysts. Interestingly, cysts were shown to progress in 23.9% of patients and regress in 11.4%, and 13.0% of patients developed new cysts in the 2-year time-frame of the study. Medial and lateral tibial cartilage volume loss was higher, in those with cysts than those with BMLs alone or neither cysts nor BMLs at baseline.

The authors also assessed the impact of the severity of bone abnormality in the medial compartment (grade 1 for normal, grade 2 for BMLs only, and grade 3 for BMLs and cysts present) on the likelihood of the patient needing surgery; the risk of joint replacement increased with every single grade increase in the severity of bone abnormality (OR 1.99; 95% CI 1.01–3.90; $P=0.05$).



Original figure provided by F. Cicuttini and colleagues

“The findings that patients with cysts do worse than those with BMLs only, or with neither cysts nor BMLs, is novel,” says Cicuttini. “Furthermore, we showed that cysts have the potential to regress and that regression is associated with reduced cartilage loss, thus cysts may provide therapeutic targets in the treatment of knee OA. We plan to extend this work by examining the risk factors for progression and regression of bone cysts.”

Jenny Buckland

Original article Tanamas, S. K. *et al.* The association between subchondral bone cysts and tibial cartilage volume and risk of joint replacement in people with knee osteoarthritis: a longitudinal study. *Arthritis Res. Ther.* 12, R58 (2010)