Obesity prevalence and average radiographic irreversible MRI features and fluctuation of knee pain severity

Purpose: We have reported previously that the change in certain MRI features, i.e., synovitis, effusion and bone marrow lesions (BMLs) relates directly to occurrence of frequent knee pain. In this analysis of subjects from the Multicenter Osteoarthritis Study (MOST), we extend the work by assessing whether variation over time in these MRI features is also associated with fluctuation of knee pain severity.

Methods: Subjects were from MOST, an observational study of 3026 persons with knee OA or at high risk of disease. At clinic visits subjects were asked about their knee pain severity using the WOMAC questionnaire and had knee MRIs performed at baseline, 15- or 30-month clinic visits. MRIs were scored using the WORMS scale by two radiologists blinded to knee pain status (range of inter-observer ICC: 0.68–0.96). Synovitis was scored 0–3 in two sites (infrapatella and intercondylar), effusion was scored 0–4 for each knee, and BMLs were scored 0–3 in each of 5 sub-regions in the medial and lateral and 4 sub-regions in the patellar and femoral compartments. We summarized synovitis and BMLs within each knee by totaling the scores across sites or sub-regions. Each of the 5 items in the WOMAC pain scale is scored from 0 (no pain) to 4 (extreme pain). We used the maximum item score to define the categories of knee pain severity at each clinic visit: no-pain (all 5 items scored 0 prior to a clinic visit), mild-pain (maximum score of any item <2), or moderate to severe pain (maximum score of any item ≥3). Included in this analysis were knees which have had changed their pain severity categories over the study period. We performed a self-matched case-control study, using each person as its own control, to evaluate the relation of synovitis, effusion, and BML to the change in severity of pain using a conditional adjacent logistic regression model.

Results: Change in status of knee pain severity occurred in 408 knees during the follow-up period. 9.0%, 9.1%, and 28.2% of the knees had total synovitis, effusion and BML scores improved; whereas 16.9%, 24.8%, and 22.6% of the knees had synovitis, effusion and BML scores worsen, respectively, during the follow-up period. The adjacent odds ratios (OR) were 1.0, 1.3, 1.1 and 1.8, respectively, when synovitis score increased from 0 to 1, 2, and 3–6 at the same knee (p for trend <0.001). The corresponding ORs were 1.0, 1.5, 2.2, and 4.5 respectively for an effusion score increasing from 0, to 1, to 2, or to 3 (p for trend <0.001), and 1.0, 1.2, 1.3, 2.1, and 3.3 for a BML score increasing from 0 to 1–2, to 3–4, to 5–6, or to >7 (p for trend <0.001), respectively.

Conclusions: Changes of synovitis, effusion, and BMLs were strongly associated with fluctuation of knee pain severity. Since these MRI features are reversible, these features can become major targets for treatment for knee pain.

Impact of comorbidities, obesity and functional limitation on the health care utilization of elderly persons with osteoarthritis in the US

Purpose: Osteoarthritis (OA) is a highly prevalent, disabling and resource intensive disorder, often accompanied by comorbidities. While accurate