Longitudinal assessment of MRI in hip osteoarthritis using SHOMRI and correlation with clinical progression.

Abstract:
To assess the evolution of MR imaging findings in normal volunteers and subjects with hip osteoarthritis (OA) over 1.5 years described by the semi-quantitative Scoring Hip OA with MRI (SHOMRI) scoring system and their correlation with the evolution of clinical parameters. Hip MRI studies of 18 subjects with [Kellgren-Lawrence (KL) score = 2/3; mean age = 54.4 ± 11.2 years; 27.8% women] and 36 controls without radiographic OA [KL = 0/1; mean age = 43.7 ± 12.8 years; 50.0% women] were assessed at baseline and after 1.5 years by using SHOMRI, and their clinical status was evaluated by using Harris Hip Score and Hip Disability and Osteoarthritis Outcome Score (HOOS). Imaging and clinical parameters at baseline and their change over time were compared between groups using Mann-Whitney U and Fisher?’s exact tests. Spearman?’s rank correlations and generalized linear models adjusted for age, sex, BMI, and KL were used to assess associations between imaging and clinical findings. At baseline, OA subjects had significantly higher SHOMRI total scores than controls [median (IQR): 12.5 (6-19.5) vs. 7 (4-13.5); p = 0.024]. Over 1.5 years, only the progression rate of subchondral cysts was significantly higher in OA subjects than in controls (16.7% vs. 0.0%; p = 0.033), while no significant differences were found for any of the other SHOMRI subscales.
Baseline bone-marrow edema pattern (BMEP) was significantly associated with worsening pain (HOOS subscale; p = 0.018) and hip-related quality of life (HOOS subscale; p = 0.044). Progression of subchondral cysts was significantly associated with worsening symptoms other than pain (HOOS subscale, p = 0.030). Baseline KL did not significantly correlate with worsening of any clinical symptoms (each, p > 0.05). In this relatively young study population without or with mild to moderate radiographic hip OA, only minimal differences were found between groups regarding the progression of hip abnormalities as assessed by SHOMRI over 1.5 years. However, BMEP predicted clinical worsening and subchondral cyst progression was associated with worsening symptoms. Although longer follow-up periods are required, this suggests that SHOMRI is a useful tool to monitor hip abnormalities and their progression longitudinally.