the normal anatomy by asymmetrical appearance of radiographic features in isolated joints of individual participants. Conclusions: In an early OA cohort accurately measured radiographic features reveal generalised radiographic joint characteristics independent of OA, and asymmetry in radiographic joint characteristics in case of manifestation of OA.

399 Withdrawn

400 DO BASELINE SYNOVITIS AND EFFUSION PREDICT TIBIOFEMORAL CARTILAGE LOSS OVER 30 MONTHS IN SUBJECTS WITHOUT RADIOGRAPHIC OSTEOARTHRITIS? RESULTS FROM THE MULTICENTER OSTEOARTHRITIS (MOST) STUDY

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Purpose: Synovitis and effusion are frequently present in osteoarthritis (OA) and correlate with pain and other clinical outcomes. High grade synovitis is associated with structural deterioration in some studies longitudinally. This is consistent with theories suggesting that synovitis present in OA is triggered by cartilage detritus, which stimulates activation of synoviocytes and thus may be a secondary phenomenon. However, the data supporting this theory are limited. Synovial inflammation does appear to occur in early OA, but as to whether it occurs prior to damage to other tissues remains unclear.

Aim of the study was to assess the prevalence of synovitis and effusion in knees without OA and no concomitant cartilage damage and 2. to analyze if presence of baseline synovitis and effusion in knees without radiographic OA predicts future tibio-femoral (TF) cartilage loss.

Methods: The Multicenter Osteoarthritis (MOST) Study is a longitudinal observational study of subjects with OA or at risk of developing OA. The MRI protocol included axial and sagittal proton-density weighted fat-suppressed fast spin echo sequences and a coronal STIR sequence. MRI was performed at a 1.0 T extremity system (ONI Medical Systems, OrthOne™). MRIs were assessed semiquantitatively according to the WORMS scoring system. Only knees without radiographic OA (Kellgren Lawrence grades 0 and 1) and no baseline TF cartilage damage as defined by MRI (WORMS cartilage score of 0 in all 10 TF compartments) were included. A synovitis-surrogate of signal changes in the infrapatellar and intercondylar areas of Hoffa's fat pad, and effusion were both scored from 0-3. Presence of definite synovitis and effusion was defined as grade ≥2. Knees with scores of either 0 or 1 were the reference. Logistic regression was used to estimate the risk of cartilage loss at follow-up. Cartilage loss was defined as an increase of at least a 0.5 grade (subtle within-grade progression, that did not fulfill the criteria of a full-grade change) in any subregion. Adjustment was performed for possible confounders of future tibiofemoral cartilage damage, i.e. baseline effusion in the synovitis model, baseline synovitis in effusion model, patellofemoral cartilage damage, meniscus damage, meniscal extrusion, body mass index (BMI), age, gender, malalignment, bone marrow lesions.

Results: 514 knees (1 knee per patient) were included (55.6% women, mean age 60.1±7.2, mean BMI 29.1±4.5). 47 (9.1%) knees showed synovitis, and 53 (10.3%) presented with joint effusion at baseline, 137 (26.7%) knees exhibited cartilage loss during follow-up. After adjustment, baseline synovitis was not associated with an increased risk of cartilage loss at follow-up (adjusted odds ratio 1.0 [95% confidence intervals 0.5-2.1, p=0.89]). Knees with baseline effusion had an increased risk for cartilage loss (adjusted odds ratio 2.7 [95% confidence intervals 1.4-5.1, p=0.002]).

Conclusions: Baseline synovitis in knees without radiographic OA, as assessed on non-enhanced MRI, does not predict cartilage loss, but joint effusion. However, assessment of baseline synovitis on contrast-enhanced MRI might yield different results. Baseline effusion, which reflects synovial activation, predicts structural progression in subjects without radiographic OA.

401 PREVALENT MRI-DETECTED BONE MARROW EDEMA-LIKE LESIONS STRONGLY PREDICT INCIDENT SUBCHONDRAL CYST-LIKE LESIONS IN THE SAME SUBREGION IN PATIENTS WITH OR AT RISK FOR KNEE OSTEOARTHRITIS: THE MOST STUDY

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Purpose: Subchondral cyst-like lesions (SCs) represent a common finding in knee osteoarthritis (OA), but their etiology is controversial. The aim of this study was to assess the association of prevalent bone marrow edema-like lesions (BMLs) and full-thickness cartilage loss with incident SCs in the same subregion after 30 months, in order to evaluate the bony contusion vs. synovial fluid intrusion theories of SC formation.

Methods: The Multicenter Osteoarthritis (MOST) Study is a NIH-funded longitudinal observational study of individuals who have or are at risk for knee OA. All subjects with available baseline (BL) and 30-months follow-up (FU) MRIs were included. MRI was performed at a 1.0 T extremity system, including axial and sagittal proton density-weighted fat suppressed and coronal STIR sequences. BL and FU MRIs were read using the semiquantitative WORMS system by two experienced musculoskeletal radiologists. The tibiofemoral and patellofemoral joints were subdivided in 14 compartments in case of manifestation of OA. Subchondral cyst-like lesions (SCs) represent a common finding in knee osteoarthritis (OA), but their etiology is controversial. The aim of this study was to assess the association of prevalent bone marrow edema-like lesions (BMLs) and full-thickness cartilage loss with incident SCs in the same subregion after 30 months, in order to evaluate the bony contusion vs. synovial fluid intrusion theories of SC formation.

Abstract 400 – Table 1. Longitudinal association between baseline synovitis and effusion and cartilage status at 30-months follow-up

<table>
<thead>
<tr>
<th>Synovitis and effusion at baseline (514 knees)</th>
<th>Cartilage status at follow-up</th>
<th>Crude OR (95% CI)</th>
<th>Adjusted OR* (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No cartilage loss (n=377)</td>
<td>Cartilage loss (n=317)</td>
<td></td>
</tr>
<tr>
<td>Synovitis absence (grades 0 and 1) (N=467)</td>
<td>348 (74.5%)</td>
<td>119 (25.5%)</td>
<td>1.0 (reference)</td>
</tr>
<tr>
<td>Synovitis presence (maximum grade ≥2) (N=47)</td>
<td>29 (61.7%)</td>
<td>18 (38.3%)</td>
<td>1.4 (0.7–2.7)</td>
</tr>
<tr>
<td>Effusion absence (grades 0 and 1) (N=461)</td>
<td>352 (76.4%)</td>
<td>109 (23.6%)</td>
<td>1.0 (reference)</td>
</tr>
<tr>
<td>Effusion presence (grade ≥2) (N=53)</td>
<td>25 (47.2%)</td>
<td>28 (52.8%)</td>
<td>3.4 (1.9–6.2)</td>
</tr>
</tbody>
</table>

*Results adjusted for baseline effusion, synovitis, patellofemoral cartilage damage, meniscus damage, meniscal extrusion, body mass index, age, gender, malalignment, bone marrow lesions.