Ten-year follow-up of SpA-related oligoarthritis involving the knee: the presence of psoriasis but not HLA-B27 or baseline MRI bone oedema predicts outcome

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Abstract

Objective. Bone marrow oedema (BMO) and HLA-B27 are poor prognostic factors in axial SpA, and psoriasis is a poor prognostic factor in small-joint polyarthritis. The aim of this study was to investigate the influence of HLA-B27, MRI BMO and psoriasis on long-term outcomes in early SpA-related knee joint oligoarthritis.

Methods. Patients with SpA-related oligoarthritis with knee involvement were recruited. Baseline assessment included ESSG criteria, RF, HLA-B27 and MRI. The degree of MRI BMO was determined on fat-suppression sequences and scored using the whole-organ magnetic resonance imaging score (WORMS) (range 0–45). Patients were treated at the discretion of their rheumatologist and followed up for 10 years. Outcome assessments included joint counts, functional and symptomatic questionnaire, CRP and radiographic assessment for OA.

Results. Forty-four patients were recruited [mean age 32 years (range 15–59 years), 70% male] with a mean disease duration at baseline of 9.75 months (1–48 months). Twenty-six (59%) patients (mean age 43 years, 65% male) returned for follow-up after a mean of 10 years (range 8.4–12.6 years). Ten (38%) patients had persistent clinical synovitis and 31% of knees had secondary radiographic OA. Global outcome was poor/very poor in 69% of cases. The only factor predicting outcome at 10 years was psoriasis, but neither HLA-B27 nor BMO. PsA patients had significantly worse global outcome compared with ReA (P = 0.036), and significantly worse symptomatic (P = 0.001) and functional (P = 0.001) outcome compared with other subtypes.

Conclusion. SpA-related knee joint oligoarthritis has significant long-term clinical and radiological morbidity despite standard treatments. HLA-B27 and MRI BMO were not predictors of poor outcome as they are in axial SpA; however, the presence of psoriasis predicted significantly worse outcome.

Key words: oligoarthritis, knee, spondyloarthritis, outcome, predictors.

Introduction

The outcome of knee joint involvement in SpA-related oligoarthritis is highly variable, ranging from self-limiting to chronic arthritis [1, 2]. Until recently, the long-term outcome in patients with inflammatory back pain (IBP) was also poorly defined. However, in recent years, MRI has helped transform the understanding for the anatomical basis of SpA. Diffuse MRI determined that bone marrow oedema (BMO) is representative of osteitis in both the axial and appendicular skeleton [3–5]. The severity of
BMO is linked to the presence of the HLA-B27 gene in the axial skeleton [6, 7] and peripheral skeleton at sites of major enthesis [8]. Persistence of BMO in the SI joints is also linked to HLA-B27 status [6]. Moreover, the severity of MRI SI joint BMO and HLA-B27 have also been shown to predict progression to radiographically defined modified New York criteria (mNYc) AS in the long-term follow-up of early IBP [9].

Oligoarthritis, defined as an inflammatory arthritis affecting five or less joints [10], with knee involvement is another frequent presentation in SpA, and tends to affect young people and can cause significant morbidity [11, 12]. However, unlike RA, the prognosis of early SpA-related knee disease is more variable. The data available is limited with variable outcomes [13, 14], and is largely restricted to short-term studies [10–13, 15–18] with no long-term outcome studies available.

MRI is able to detect BMO in peripheral joints in SpA, and MRI BMO is a well-recognized feature in PsA [19–21]. The severity of BMO is linked to HLA-B27, axial disease persistence and poor outcome [6, 8, 9, 22, 23]; the presence of psoriasis is a poor prognostic feature in peripheral small-joint PsA [24, 25] and the presence of HLA-B27 is thought to be a poor prognostic factor in ReA [1, 2, 26]. The objective of this study was therefore to test the hypothesis that MRI BMO, HLA-B27 and the presence of cutaneous psoriasis are poor prognostic factors in SpA-related knee joint oligoarthritis.

Methods

This was a prospective correlational study of predictors of outcome over a 10-year follow-up period. Ethical approval was given by the Bradford National Health Service Research Ethics Committee. All patients gave their informed consent. Consecutive patients with seronegative oligoarthritis with knee involvement of suspected SpA origin were recruited from early arthritis clinics in West Yorkshire, UK. Inclusion criteria were oligoarthritis (five or fewer joints), including involvement of the knee, <4 years of symptoms, active clinical synovitis of the knee and negative RF. Patients were given standard treatments at the discretion of their treating rheumatologist.

Baseline assessment

The ESSG criteria for SpA [27] were assessed and MRI of the affected knee, RF and HLA-B27 were all performed. All patients had MRI T1-weighted spin-echo sagittal pulse sequences (T1SE) and T2-weighted turbo spin-echo coronal and sagittal pulse sequences with fat-suppression (T2 TSE/FS) using a Philips 1.5T Gyroscan ASC NT with a quadrature knee coil (Philips, Best, The Netherlands). The ESSG criteria for SpA [27] were assessed and MRI of the affected knee, re-assessment for ESSG criteria [27] and the Rheumatoid and Arthritis Outcome Score (RAOS) [28]. The RAOS is a validated, reliable and responsive outcome instrument in the form of an easy to complete patient-administered questionnaire designed to be used in inflammatory arthritis of the lower limb [28]. It assesses five components of outcome including pain, other symptoms (swelling, stiffness), function, as determined by activities of daily living (ADL) and sporting activities and quality of life (QoL). The questionnaire is scored between 0 and 100 (100 = excellent, 0 = bad).

CRP, anti-CCP (not available at the time of baseline assessment) and radiographs of the knee were also performed at follow-up. Patients were assessed for secondary OA with semi-flexed posterior-anterior and lateral radiographs of the affected knee [29–31]. The presence/absence and degree of radiographic OA was assessed using the Kellgren and Lawrence (K–L) scoring system [32].

Composite outcome score

The above measures offer isolated numerical values on a continuous or discrete scale of many different individual clinical, functional, serological and radiographic outcomes. To date, no valid reliable internationally recognized composite global outcome has been established in oligoarthritis. We therefore devised a global score based on the above measures to try and assess the overall outcome for this cohort of oligoarthritis patients as would be done in a clinical setting (Table 1).

MRI and radiographic scoring

All MRI scans and radiographs of the knee were scored by two experienced rheumatologists (D.McG./H.M.-O.), by consensus, blinded to clinical details and outcome. Scoring of the knee radiographs for OA was by the K–L scoring method [32] (range Grades 0 = none to 4 = severe). To acknowledge the severity of OA in patients who had progressed to total knee replacement (TKR) and so as not to exclude them from statistical analysis, patients with TKR were given a score of 5. There are no validated and internationally recognized scoring systems for scoring MRI BMO of the knee in SpA. A qualitative scoring method has previously been published recording presence or absence of BMO at peri-entheseal locations by using a lesion counting scoring method [23]. However, to obtain quantitative scoring of knee joint BMO the whole-organ magnetic resonance imaging score (WORMS) of the knee in OA was used [33]. BMO was defined as poorly marginated areas of increased signal intensity in the normally fatty epiphyseal marrow on fat-suppressed T2-weighted fast-spin echo images. The BMO was graded from 0 to 3 on the extent of regional involvement in each of the well-described 14 articular surface regions (Fig. 1) and one subspineous region, Grade 0 = none, Grade 1 = <25% of the region effected, 2 = 25–50% and Grade 3 = >50%. Total scores for the whole-knee BMO including patellofemoral joint, ranging from 0 to 45 [33].

In this study, however, the WORMS BMO scoring method was used to score the more diffuse BMO typically seen in SpA (Fig. 2A and B), and classical, localized OA BMO (kissing BMO) in peri-articular areas adjacent to
sites with obvious articular cartilage loss at sites devoid of entheseal insertions was not scored.

Reliability of scoring

Intra-observer reliability was assessed, on 14–20 sets of images at two separate time points, for both the BMO scoring by the WORMS method [33], as described above, and scoring radiographic knee OA by the K–L method [32]. The reliability for agreement between different grades of BMO in all 15 compartments scored was quadratic-weighted kappa ($\kappa_w = 0.97$). The range was from 0.90 (medial femoral anterior compartment) to 1.00 (medial patella compartment). The total BMO score intra-class correlation coefficient (ICC) was 0.99 (0.98–1.00). There was 100% agreement over the presence of effusion on MRI. For the K–L scoring, agreement between different radiographic grades was $\kappa_w = 0.99$.

Sample size and statistical analysis

Power analysis was based on a minimum of 5–10 participants per predictor variable for logistic regression analysis to be performed [34]. Three predictors of outcome—knee MRI BMO, presence of PsA and HLA-B27 status—were assessed, therefore a minimum of 30 patients were recruited to the study. Logistic regression analysis was performed on the predictor variables, using the above-described clinical, radiographic and functional assessments as outcome measures. Mann–Whitney U-test, $\chi^2$ test and $p$ correlation statistics were also performed. All statistical analyses were carried out in SPSS version 15.0.1.1.

Results

Baseline demographics

Forty-four patients were recruited [mean age 32 years (range 15–59 years), 70% male] with a mean disease duration at baseline of 9.75 months (1–48 months). The diagnoses at baseline according to ESSG criteria [27] were 17 (39%) PsA, 12 (27%) ReA, 9 (20%) undifferentiated oligoarthritis, 4 (9%) AS and 2 (5%) IBD-related SpA (Table 2). All patients were RF negative and 42% [18/43 (one result lost in lab)] were HLA-B27 positive.

Baseline MRI imaging

The mean total BMO score for the whole-knee MRI was 2.86 (range 0–29). Twenty-five (57%) patients had no

Table 1  Composite oligoarthritis outcome score

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Excellent (all of)</th>
<th>Good (all of)</th>
<th>Moderate (all of)</th>
<th>Poor (any of)</th>
<th>Very poor (any of)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SJC</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$\geq 1$</td>
<td>$\geq 2$</td>
</tr>
<tr>
<td>TJC</td>
<td>0</td>
<td>0</td>
<td>$\leq 1$</td>
<td>$\geq 2$</td>
<td>$\geq 3$</td>
</tr>
<tr>
<td>CRP, mg/l</td>
<td>$&lt;5$</td>
<td>$&lt;5$</td>
<td>$&lt;10$</td>
<td>$&gt;10$</td>
<td>$&gt;20$</td>
</tr>
<tr>
<td>FROM</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>NA</td>
</tr>
<tr>
<td>RAOS</td>
<td>Pain, %</td>
<td>$\geq 80$</td>
<td>$\geq 60$</td>
<td>$&lt;60$</td>
<td>$&lt;40$</td>
</tr>
<tr>
<td>Other Sx, %</td>
<td>$\geq 80$</td>
<td>$\geq 60$</td>
<td>$&lt;60$</td>
<td>$&lt;40$</td>
<td>$&lt;40$</td>
</tr>
<tr>
<td>ADL, %</td>
<td>$\geq 80$</td>
<td>$\geq 60$</td>
<td>$&lt;60$</td>
<td>$&lt;40$</td>
<td>$&lt;40$</td>
</tr>
<tr>
<td>Sports, %</td>
<td>$\geq 80$</td>
<td>$\geq 60$</td>
<td>$&lt;60$</td>
<td>$&lt;40$</td>
<td>$&lt;40$</td>
</tr>
<tr>
<td>QoL, %</td>
<td>$\geq 80$</td>
<td>$\geq 60$</td>
<td>$&lt;60$</td>
<td>$&lt;40$</td>
<td>$&lt;40$</td>
</tr>
<tr>
<td>K–L score</td>
<td>0</td>
<td>0</td>
<td>$\leq 1$</td>
<td>$\geq 2$</td>
<td>$\geq 3$</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>Nil</td>
<td>Nil</td>
<td>Y</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>DMARDs</td>
<td>Nil</td>
<td>Y</td>
<td>Y</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Anti-TNF</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>Y</td>
<td>–</td>
</tr>
</tbody>
</table>

CRP $<5$ mg/l = normal laboratory range. All of: all of the features listed below; any of: any of the features listed below; SJC: swollen joint count; TJS: tender joint count; FROM: full range of movement; Sx: symptoms; Y: yes; N: no; NA: not applicable.

Fig. 1 WORMS. The lateral, femoral and tibial condyles are divided into anterior, central and posterior segments as are the medial condyles. The patella is divided into medial and lateral segments and there is also a subspinous segment below the tibial spines, making 15 segments that can be scored from 0 to 3 (maximum total score 45). Figure reproduced from Ref. [33]. LF: lateral femur; LT: lateral tibia; LP: lateral patella; a: anterior; c: central; p: posterior.
BMO on MRI. Whereas nine (20%) had a maximum of Grade 1 (mild BMO) and seven (16%) had a maximum of Grade 2 (moderate BMO), only three (7%) had severe (Grade 3) BMO. The most frequently affected region was the medial patella (Fig. 3) and the anterior portion of the medial femoral condyle \[8/44 (18.2\%)] (Fig. 3). The lateral patella was also affected frequently \[7/44 (15.9\%)] . The least affected area was the central aspect of the medial tibial condyle \[3/44 (6.8\%)] and the tibial subspinous region \[4/44 (9\%)] . The patella again was the most severely affected area (accumulative total BMO score across all 44 patients, with medial patella = 12 and lateral patella = 11) (Fig. 3) and the most mildly affected area was the central position of the medial tibial condyle \[total BMO = 4\]. Classical localized mild OA BMO in peri-articular areas was present in only two cases.

**Table 2** Baseline demographics

<table>
<thead>
<tr>
<th>Clinical features</th>
<th>Baseline (n = 44)</th>
<th>Follow-up patients (n = 26)</th>
<th>Patients not returning for follow-up (n = 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at baseline, mean (range), years</td>
<td>32 (15–59)</td>
<td>33 (15–60)</td>
<td>32 (19–64)</td>
</tr>
<tr>
<td>Male, %</td>
<td>70</td>
<td>65</td>
<td>77</td>
</tr>
<tr>
<td>Disease duration at baseline, mean (range), months</td>
<td>9.75 (1–48)</td>
<td>8.9 (1–42)</td>
<td>9.8 (1–48)</td>
</tr>
<tr>
<td>Diagnosis (ESSG), %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS</td>
<td>4 (9)</td>
<td>3 (12)</td>
<td>1 (6)</td>
</tr>
<tr>
<td>PsA</td>
<td>17 (39)</td>
<td>10 (38)</td>
<td>7 (39)</td>
</tr>
<tr>
<td>ReA</td>
<td>12 (27)</td>
<td>7 (27)</td>
<td>5 (28)</td>
</tr>
<tr>
<td>IBD-SpA</td>
<td>2 (5)</td>
<td>2 (8)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>uSpA</td>
<td>9 (20)</td>
<td>4 (15)</td>
<td>5 (27)</td>
</tr>
<tr>
<td>HLA-B27 positive, %</td>
<td>42</td>
<td>36</td>
<td>50</td>
</tr>
<tr>
<td>Total BMO score on MRI, mean (range)</td>
<td>2.86 (0–29)</td>
<td>1.5 (0–12)</td>
<td>4.8 (0–29)</td>
</tr>
</tbody>
</table>

IBD-SpA: IBD-related SpA.

BMO on MRI. Whereas nine (20%) had a maximum of Grade 1 (mild BMO) and seven (16%) had a maximum of Grade 2 (moderate BMO), only three (7%) had severe (Grade 3) BMO. The most frequently affected region was the medial patella (Fig. 3) and the anterior portion of the medial femoral condyle \[8/44 (18.2\%)\]. The lateral patella was also affected frequently \[7/44 (15.9\%)] . The least affected area was the central aspect of the medial tibial condyle \[3/44 (6.8\%)] and the tibial subspinous region \[4/44 (9\%)] . The patella again was the most severely affected area (accumulative total BMO score across all 44 patients, with medial patella = 12 and lateral patella = 11) (Fig. 3) and the most mildly affected area was the central position of the medial tibial condyle \[total BMO = 4\]. Classical localized mild OA BMO in peri-articular areas was present in only two cases.

**Outcomes**

**Clinical**

Twenty-six (59%) patients (mean age 43 years, 65% male) returned for follow-up after a mean of 10 years (range 8.4–12.6 years). The diagnoses at follow-up were 10 (38%) PsA, 7 (27%) ReA, 4 (15%) undifferentiated oligoarthritis, 3 (12%) AS and 2 (8%) IBD-related SpA. All patients were RF negative and 36% (9/25) were HLA-B27 positive. Anti-CCP measured at follow-up was negative in all patients with the exception of one, who was RF

![Image](https://example.com/image.png)

**Fig. 2** Oligoarthritis with bilateral knee involvement in a HLA-B27-positive patient with ReA MRI scans the same day: bilateral clinical effusion confirmed on MRI: (A) coronal image and (B) sagittal image of the left knee, severe BMO; (C) right knee, no BMO.
negative with psoriasis and diagnosed as having psoriatic oligoarthritis. The mean swollen joint count was 1.7 (range 1–24) and the mean tender joint count was 4 (range 0–72). Ten (38%) patients had persistent clinical synovitis at a mean of 10 years follow-up. One PsA patient had developed polyarticular small-joint disease but was RF and anti-CCP negative and was still deemed to be PsA.

Eighty-one per cent (21/26) of patients had a full range of movement in the affected knee. One (3.8%) PsA patient had had a total knee replacement. The mean CRP at follow-up was 11.4 mg/l (range <5.0 to 125). Three of the four highest CRP values were from PsA patients, but overall there was no significant difference in median CRP values between PsA and other diagnoses (P = 0.461).

**Treatment**

Twenty-two (85%) patients had been treated with NSAIDs since the onset of their symptoms, with 35% (9/26) taking NSAIDs at the time of follow-up. Fifty-four per cent (14/26) of the patients had been treated with IA steroids, 61.5% (16/26) had been on DMARDs at some point, with 31% (8/26) being on DMARDs at the time of follow-up and 3.8% (1/26) being on a combination of anti-TNF and DMARDs.

**Function**

The mean scores for the different subsections of the RAOS were symptoms, 73.7% (range 25–100); pain, 76.4% (range 19.4–100); ADL, 79.8% (range 23.5–100); sports activities, 62.0% (range 0–100); and QoL, 65% (range 6.3–100). This indicates that the group as a whole complained of moderate symptoms, pain and reduction in ADL resulting in a more marked reduction in QoL and sporting activities.

**Radiographic**

In the group as a whole, radiographic outcome was in general good, with a mean K–L score of 1.1 (range 0–5), indicating only doubtful radiographic OA, defined as ‘doubtful narrowing of joint space and possible osteophytic lipping’ [34]. Overall 31% (8/26) had definite radiographic OA (K–L grade ≥2) at 10 years follow-up. PsA patients as a group had the worst K–L scores with a median of 2 equating to definite osteophyte formation and possible narrowing of the joint space [32] compared with other diagnoses; however, this was not significantly different (P = 0.144).

**Composite score**

With the use of the described composite score only 3/26 (11.5%) patients had an excellent or a good outcome and 18/26 (69%) had a poor or very poor outcome.

**Predictors of knee MRI BMO**

**HLA-B27**

HLA-B27 was not associated with the presence of MRI BMO [B27 negative, 10/25 (40%) BMO present vs B27 positive, 9/18 (50%) BMO present; continuity-corrected χ² = 0.116, P = 0.734], a higher total BMO score (HLA-B27 negative n = 25, median [interquartile range (IQR)] = 0 (0–3); HLA-B27 positive n = 18, median (IQR) = 0.5 (0–3.75), Mann–Whitney U-test Z = –0.37, P = 0.714) or severity of BMO (i.e. a score of moderate or severe BMO in any one of the 15 compartments of the knee assessed, as opposed to mild or no BMO) (continuity-corrected χ² = 0.92, P = 0.336).

**Psoriasis**

Psoriasis was not predictive of either a higher total BMO score [n = 17, median (IQR) = 0 (0–4.5)] compared with other diagnoses [n = 27, median = 0 (0–3); Mann–Whitney U-test Z = –0.21, P = 0.831] or of the severity of BMO (continuity-corrected χ² = 0.07, P = 0.788).

**PsA and HLA-B27**

PsA in combination with HLA-B27 was not associated with higher BMO scores [absent n = 40, median (IQR) = 0 (0–3); present n = 3, median (IQR) = 1.0 (0.5–3.5); Mann–Whitney U-test Z = 52.0, P = 0.736] or with the severity of the BMO score (continuity-corrected χ² = 0.00, P = 1.000).

**Predictors of outcome**

**BMO**

Total BMO score did not predict either K–L score (correlation with BMO ρ = –0.02 (P = 0.914) or any component of the RAOS score [symptoms: 0.13 (0.541), pain: 0.17 (0.416), ADL: 0.19 (0.371), sports: 0.17 (0.405) and QoL: 0.26 (0.206)].
**TABLE 3** Long-term functional outcome in oligoarthritis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Non-PsA (n = 15)</th>
<th>PsA (n = 10)</th>
<th>MW-U</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAOS symptoms</td>
<td>85.71 (82.14–92.86)</td>
<td>42.86 (31.25–82.14)</td>
<td>24.5</td>
<td>0.004</td>
</tr>
<tr>
<td>RAOS pain</td>
<td>97.22 (80.56–100.00)</td>
<td>56.94 (29.17–76.39)</td>
<td>19.5</td>
<td>0.001</td>
</tr>
<tr>
<td>RAOS ADL</td>
<td>100.00 (92.65–100.00)</td>
<td>58.82 (35.66–77.94)</td>
<td>18.5</td>
<td>0.001</td>
</tr>
<tr>
<td>RAOS sports</td>
<td>90.00 (85.00–100.00)</td>
<td>5.00 (0.00–62.50)</td>
<td>18.0</td>
<td>0.001</td>
</tr>
<tr>
<td>RAOS QoL</td>
<td>87.50 (75.00–100.00)</td>
<td>40.63 (15.63–59.38)</td>
<td>25.5</td>
<td>0.004</td>
</tr>
</tbody>
</table>

Values are represented as mean (range). MW-U: Mann–Whitney U-test.

Presence of BMO
Presence of any grade of BMO was not significantly associated with K–L score (P = 0.798), RAOS symptoms (P = 0.588), pain (P = 0.549), ADL (P = 0.511), sports activity (P = 0.588) or QoL (P = 0.288).

HLA-B27
There was no significant association between HLA-B27 and worse K–L grade [HLA-B27 negative n = 15, median (IQR) = 1 (0–2); positive n = 9, median (IQR) = 0 (0–1); Mann–Whitney U-test = 55.0, P = 0.482], or between HLA-B27 and worse RAOS score.

Diagnosis predicting outcome
The ReA group had the best outcome, with 5/7 (71%) of ReA having an excellent, good or moderate outcome, and 5/8 (62.5%) of all patients with a good or moderate response being ReA.

Conversely, PsA and AS patients had the worst knee-specific outcome with 9/10 (90%) of PsA and 3/3 (100%) of AS patients having a poor or very poor outcome. The global outcome in PsA was significantly worse (continuity-corrected \( \chi^2 P = 0.036 \)) than ReA, with only 2/7 (28.5%) of ReA having a poor/very poor outcome. PsA patients also had significantly worse symptoms (pain: \( P = 0.001 \), other symptoms: \( P = 0.004 \)), function (ADL: \( P = 0.001 \), sport and recreation: \( P = 0.001 \)) and QoL (\( P = 0.004 \)) than other diagnoses (Table 3).

Discussion
This is the first long-term study investigating outcome and predictors of outcome in oligoarthritis related to SpA using baseline MRI in combination with genetic and clinical parameters. We tested the concept that MRI BMO in the knee could be used to prognosticate in a manner similar to MRI in axial disease in SpA [6–9, 35]. We found no association between HLA-B27 or psoriasis and presence or severity of BMO in the knee of oligoarthritis patients, and also no association between BMO and long-term clinical and radiographic outcome. A clinical parameter, namely the presence of psoriasis, was the best long-term predictor of early SpA-related knee disease. It remains to be defined why MRI BMO and/or HLA-B27 have no obvious parallels between knee and axial disease.

We have shown that over a 10-year period, in the cohort as a whole, radiographic secondary OA is present in 31% of the affected knees, 38% have persistent clinical synovitis and that global 10-year outcome was poor or very poor in 69% of cases despite the use of standard treatments with either IA steroid and/or DMARDs. In particular, long-term QoL and ability to perform sporting activities were affected, the significance of which should not be underestimated in this young cohort. In terms of subclasses of SpA there was a clear divide, with PsA patients having a significantly worse outcome and the majority of ReA patients having a good outcome. PsA patients had a worse radiographic OA score, a higher CRP and 90% had a poor or very poor global outcome, which was significantly worse than ReA. All self-reported elements of outcome were significantly worse in PsA patients compared with the other diagnoses.

Before this study, studies investigating predictors of outcome in oligoarthritis were limited to early intervention and short-term outcome [10, 18]. The two published studies have shown that early intervention with IA steroid into active joints (open-label study) [10] or early IA steroid and SSZ [in a randomized controlled trial (RCT)] [18] results in better short-term responses than no/conventional treatment; however, >50% of patients still had active synovitis at 52 weeks [10] in the open-label study and there was still significant disease with function and work disability at 12 months in the RCT [18]. There were no baseline predictors of persistent disease identified in either study.

Our study has some limitations. Eighteen patients failed to return for follow-up, which is a recognized problem of long-term outcome studies, resulting in relatively small numbers with complete data sets in the cohort. All AS patients had a poor or very poor long-term outcome, but as there were only three AS patients at follow-up, we felt it unwise to conclude too much from this result. The choice of assessment of secondary OA of the knee at follow-up was radiographs, which are still the gold standard. It is recognized that MRI and arthroscopy are more sensitive to early OA changes [36, 37]; however, for the purpose of the study these were not practical options. The K–L method [32] of radiographic assessment for OA is also an old scoring system. Criticisms of it are that it is relatively insensitive to change; however, radiographic change was not assessed in this study, just radiographic OA severity at follow-up. For the purpose of screening...
subjects for a radiographic diagnosis and severity of OA, the K-L scoring system is still regarded as an adequate tool [38]. Furthermore, we recognize that the composite clinical global outcome tool used is simple and has not previously been tested or validated; however, it gives a practical assessment option comprising clinical, serological, radiographic and functional outcomes similar to what would be used in everyday clinical practice and is, in our opinion, a better global outcome than any of the individual outcome measures used in isolation. Finally, the study did not quantify synovitis in the knee on MRI, what would be used in everyday clinical practice and is, therefore, radiographic and functional outcomes similar to practical assessment option comprising clinical, serological and radiographic outcomes.

Disclosure statement: P.E. has provided expert advice and undertaken clinical trials for Pfizer, Merck, Abbott, Centocor, BMS, Roche and UCB. All other authors have declared no conflicts of interest.

References


Rheumatology key messages

- Poor outcome of oligoarthritis involving the knee at 10 years is common.
- Radiographic OA occurs in one-third of oligoarthritis patients at 10 years.
- The presence of psoriasis is a bad prognostic factor in oligoarthritis involving the knee.

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