EROSIONS ARE THE MOST OFTEN REPORTED STRUCTURAL LESION ON MRI OF THE SACROLIAC JOINTS IN AXSPA PATIENTS WITH IBP

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Background: HLA-B27 and sacroiliitis on MRI form the basis of the Assessment of SpondyloArthritis international Society (ASAS) axial spondyloarthritis (axSpA) classification criteria. In addition, while not an entry criterion of the classification criteria, inflammatory back pain (IBP) is fundamental in the axSpA diagnostic process and is endorsed as referral parameter in primary care. Besides inflammation on MRI, which is the hallmark of axSpA, there is still debate on the value of structural MRI lesions in axSpA patients.

Objectives: To report on MRI of the sacroiliac joints (MRI-SIJ) findings in newly diagnosed axSpA patients stratified for the presence of IBP and HLA-B27 positivity.

Methods: Newly diagnosed and anti-TNF naïve axSpA patients of an ongoing Belgian (Be-Giant) cohort were included in this study. MRI-SIJ assessment was performed independently by 3 calibrated readers according to an adapted method of the Spondyloarthritis Research Consortium of Canada score, evaluating erosions, fatty lesions, sclerosis and ankylosis (T1-weighted and STIR images viewed simultaneously). Also, the ASAS definition of a positive MRI-SIJ was evaluated. MRI sum scores were calculated as 2 out of 3 (median) reader scores.

Results: In 138 axSpA patients MRI-SIJ data was available; 68 (49.3%) patients were male, 104 (75.4%) HLA-B27 positive and 131 (94.9%) patients fulfilled the IBP criteria according to ASAS. In the IBP patients, a large amount of structural MRI lesions were seen. In these groups, erosions are most frequently reported, with an average extent of 5 erosions. IBP- patients were rarely seen in this cohort and erosions and fatty lesions were the only structural lesions observed in these patients, with a much lower extent compared to the IBP+ patients (see Table 1). There were no axSpA patients with negative MRI-SIJ, negative HLA-B27 and without IBP.

Conclusion: In this cohort of newly diagnosed anti-TNF naïve axSpA patients, structural lesions are frequently and with a high extent seen in IBP+ patients. Only in the IBP+ axSpA patients the previously reported threshold for axSpA patients of ≥3 erosions and ≥3 fatty lesions is maintained, as IBP- axSpA patients have far fewer lesions. IBP seems to be an indicator for the presence of structural MRI-SIJ lesions in newly diagnosed axSpA patients.

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BACKGROUND:
The overall presence of inflammation in the MRI-SIJ is associated with over 5-year radiographic damage in patients with axSpA[1]. But we do not know if a bone marrow edema (BME) lesion leads to a structural lesion at the same place (i.e. in the same quadrant).

OBJECTIVES: To investigate the association between BME and structural progression in the same quadrant of the SIJ, over time.

METHODS: Patients from the DESIR cohort (early axSpA according to the rheumatologist) with ≥2 consecutive MRI-SIJ (out of baseline, 2 and 5 years), were included. Each image was independently scored by 3 trained central readers blinded to chronological order. BME was considered present in a time point if detected in ≥2 consecutive examinations. BME was quantified as percentage of the volume of the SIJ quadrant for which it was present.

RESULTS: In total, 197 patients were included (age 34 (SD 9) years, 48% male and 61% HLA-B27 positive). While BME and fatty lesions were evenly distributed across quadrants, erosions and sclerosis occurred preferentially in the iliac side (i.e. Q1 and Q4) (Table 1). The prevalence of BME decreased over time (baseline range: 11%-16%; 5-year range: 7%-14%), while erosions (baseline range: 2%-23%; 5-year range: 3%-28%) and especially fatty lesions (baseline range: 4%-14%; 5-year range: 9%-21%) increased. Ankylosis and sclerosis were rarely in this early axSpA cohort. In the multivariable models, BME was longitudinally associated with sclerosis (OR:1.7 (95% CI: 1.0,3;2), erosions (2.0 (1.52;5)) and fatty lesions (1.7 (1.1,2;5)). The possible association with ankylosis could not be tested due to too low number of lesions (Table 2).

CONCLUSION: We here demonstrate that in early axSpA-patients inflammation in one SIJ quadrant leads to structural damage in the same quadrant. This finding reinforces the pathophysiological implications of inflammation in axSpA.

Table 1: Presence of the different imaging lesions* per quadrant – at 0, 2 and 5 years

<table>
<thead>
<tr>
<th>Quadrant</th>
<th>Erosions</th>
<th>Fatty Lesions</th>
<th>Sclerosis</th>
<th>Ankylosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>7.3 (6.0)</td>
<td>28.3 (19.7)</td>
<td>8.6 (4.2)</td>
<td>3.5 (2.8)</td>
</tr>
<tr>
<td>Q2</td>
<td>7.3 (6.0)</td>
<td>28.3 (19.7)</td>
<td>8.6 (4.2)</td>
<td>3.5 (2.8)</td>
</tr>
<tr>
<td>Q3</td>
<td>7.3 (6.0)</td>
<td>28.3 (19.7)</td>
<td>8.6 (4.2)</td>
<td>3.5 (2.8)</td>
</tr>
<tr>
<td>Q4</td>
<td>7.3 (6.0)</td>
<td>28.3 (19.7)</td>
<td>8.6 (4.2)</td>
<td>3.5 (2.8)</td>
</tr>
</tbody>
</table>

*numbers reported are: number of patients with 1 or more of the given structural lesion (% from group total); mean±standard deviation of patients with 1 or more of the given structural lesion.