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VALIDATION OF ASSESSMENTS IN SPONDYLOARTHRITIS INTERNATIONAL SOCIETY (ASAS) MRI LESION DEFINITIONS IN AXIAL SPONDYLOARTHRITIS: DATA FROM THE ECHOGRAPHY IN SPONDYLOARTHRITIS COHORT (ECHOSPA)

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Background: The diversity of MRI lesions in the sacroiliac joints of patients with axial spondyloarthritis (axSpA) has only recently been appreciated and consistent terminology, descriptions, and definitions have not yet been internationally accepted. The ASAS MRI group has generated updated consensus lesion definitions and these now require validation to support widespread adoption for clinical practice and research.

Objectives: To assess the distribution by diagnosis, reliability of detection, and construct validity of active and structural lesions as defined by the ASAS-MRI group on MRI scans from the ECHOSPA cohort.

Methods: Consecutive outpatients with age <50 years and symptoms >3 months suggestive of SpA (inflammatory back pain, peripheral arthritis or inflammatory arthralgia, enthesitis or dactylitis, uveitis with B27 positivity, a family history of SpA) were enrolled in the prospective French ECHOSPA cohort. MRI scans from 412 of the 470 recruited cases were available for evaluation by 2 readers and an adjudicator. ASAS MRI defⁿ were recorded in an ASAS consensus-derived eCRF that comprises global assessment (active and/or structural lesion typical of axSpA present/absent) and detailed scoring of individual lesions (SPARCC SIJ inflammation, SPARCC SIJ structural). Definite lesions were defined according to confidence ≥ 3 (0–4 scale). Reliability of detection of lesions assessed as present/absent by global assessment was analysed using kappa and detailed scoring of SIJ quadrants by intra-class correlation coefficient (ICC). For construct validity we calculated optimal cut-offs for bone marrow oedema (BME) and erosion that defined active and structural lesion typical of axSpA, respectively.

Results: At baseline, mean age of the 412 cases with MRI scans was 39.3 years, mean duration of symptoms was 2.5 years, 41.3% were HLA-B27 positive, and 63.2% were female. Active and structural lesions typical of axSpA were present in 9.7% and 10.8%, respectively, and ASAS positive MRI in 9.3%. Subchondral BME (13.6%) and erosion (9.4%) were the most frequent active and structural lesions, respectively. Active but not structural lesions were present in 3.0% while the converse was evident in 4.0%. AxSpA was diagnosed at baseline in 88.1% and all categories of active and structural lesions were higher in those with axSpA. Substantial κ values (95% CI) were evident for detection of these lesions with comparable reliability for active and structural lesions: active lesion (0.76 (0.65–0.88)), ASAS positive MRI (0.78 (0.66–0.89)), structural lesion (0.76 (0.65–0.87)). Detailed scoring per SIJ quadrant that reflect expert opinion as to what constitutes an active or structural lesion typical of axSpA are provided in the table 1.

Abstract FRI0218 – Table 1

Number of SIJ Quadrants	Active Lesion Typical of AxSpA	
	Sensitivity	Specificity
BME Score ≥ 2	100%	90.27%
BME Score ≥ 3	100%	95.14%
BME Score ≥ 4	97.5%	96.76%
	Structural Lesion Typical of AxSpA	
	Sensitivity	Specificity
Erosion Score ≥ 2	84.09	99.15
Fat metaplasia ≥ 2	27.27	98.02
Backfill ≥ 2	11.36	100
Ankylosis ≥ 2	4.55	99.72

Conclusions: SPARCC BME score of ≥ 3 and Erosion Score ≥ 2 may optimally reflect active and structural lesions typical of axSpA, respectively. MRI lesions defined by the ASAS-MRI group can be reliably detected.

Disclosure of Interest: None declared

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FRI0219

ANALYSIS OF THE DIFFERENT VALUE OF MAGNETIC RESONANCE IMAGING CHANGES IN THE SACROILIAC JOINTS FOR A DIAGNOSIS OF AXIAL SPONDYLOARTHRITIS AS JUDGED BY RHEUMATOLOGISTS AND RADIOLOGISTS

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Background: A classification of axial spondyloarthritis (axSpA) by the imaging arm of the ASAS criteria relies partly on the detection of a bone marrow oedema (BME) in the magnetic resonance imaging (MRI) of the sacroiliac joints (SIJ) suspicious of SpA.¹

Objectives: To evaluate different types of MRI changes possibly relevant for a diagnosis of axSpA as judged by radiologists taking the rheumatologist's diagnosis as gold-standard.

Methods: Consecutive patients <45 years were included if they presented in a specialised rheumatologic centre with chronic low back pain (duration >3 months). Patients underwent a complete diagnostic workup including MRI of the SIJ. All clinical and laboratory information including images but no radiological reports was available for experienced rheumatologists to make a diagnosis of axSpA or non-axSpA. In parallel, two experienced musculoskeletal radiologists, blinded to patients' demographics and symptoms (except for back pain) evaluated all MR images without knowledge of the rheumatologist's diagnosis, by quantification of BME, fat metaplasia, erosions, sclerosis and ankylosis based on the Berlin SIJ score. The radiologists also stated whether the patient is likely to have axSpA or not, solely based on MRI findings.

Results: A total of 100 patients were recruited. The rheumatologist diagnosed axSpA in 54 patients (mean age 31.5 $\pm$ 8.0 years, 77.8% HLA-B27+, mean symptom duration 36.4 $\pm$ 42.0 months), while 46 patients were diagnosed as non-specific back pain (age 33.6 $\pm$ 7.1 years, 17.4% HLA-B27+, mean symptom duration 25.5 $\pm$ 31.6 months). According to the radiologists, 38 patients were identified as axSpA, 34 of which were also diagnosed as axSpA by the rheumatologist (overall agreement with the clinical diagnosis: 63%), and 4 patients were thought to have axSpA by the radiologist but not by the rheumatologist (disagreement with the clinical diagnosis: 8.7%). Similarly, the quantification of MRIs showed higher scores in patients diagnosed as axSpA by the rheumatologist (Tab.1). Only few patients had sclerosis or ankylosis.

From the radiologist's perspective, the calculated odds ratio (OR) for identification of axSpA by MRI only was 3.1 (95% CI:1.4–7.1) for the presence of BME, 3.5 (95% CI:1.4–9.0) for fat metaplasia, 2.8 (95% CI:1.1–7.0) for erosions, 2.0 (95% CI:0.7–5.5). For the combination of BME and any structural change, the OR was 3.7 (95% CI:1.6–8.5).

Tab. 1: Mean/median scores $\pm$ standard deviation for inflammatory and chronic lesions based on the Berlin SIJ score

Lesion type		axSpA	non-SpA	p-value
Mean $\pm$ SD	Total score	12.3 $\pm$ 11.8	4.4 $\pm$ 4.8	p<0.001
	BME	3.3 $\pm$ 3.8	1.1 $\pm$ 1.5	p=0.001
	Fat metaplasia	3.4 $\pm$ 5.4	1.0 $\pm$ 3.0	p=0.004
	Erosions	3.2 $\pm$ 5.8	0.7 $\pm$ 2.1	p=0.011
Median	Sclerosis or Ankylosis	0	0	

Conclusions: This study reveals a discrepancy between the rheumatologist's and the radiologist's identification of axSpA, confirming that a diagnosis of axSpA in daily practice should not rely on imaging findings only. Nevertheless, the overall specificity of the radiologists was acceptable, although the sensitivity was relatively low. These data suggest also that not only BME but also fat metaplasia and erosions are of value to diagnose axSpA, beyond classification. The combination of MRI changes seems to enhance the discriminative diagnostic performance.

REFERENCE:

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