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WHAT IS THE LEVEL OF AGREEMENT BETWEEN LOCAL AND CENTRAL READERS IN THE DETECTION OF ACTIVE AND STRUCTURAL LESIONS ON MRI TYPICAL OF AXIAL SPONDYLOARTHRITIS? DATA FROM THE ASAS CLASSIFICATION COHORT STUDY

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Background: There has been no central reader evaluation of MRI scans from the ASAS Classification Cohort (ASAS-CC)¹ to compare detection of lesions in the sacroiliac joints (SIJ) between central and ASAS-CC local site readers. Active MRI lesions typical of axSpA were reported in 61.6% and 2.2% of patients from this cohort diagnosed with axSpA and non-axSpA back pain, respectively¹. Structural lesions were recorded but not reported in the literature.

Objectives: We aimed to compare detection of active and structural lesions on MRI images of the SIJ from the ASAS-CC between ASAS-CC local site readers and central readers from the ASAS-MRI group.

Methods: MRI images were available from 258 of the 495 cases who had MRI performed in the ASAS-CC and also had a local rheumatologist diagnosis. Seven central readers recorded MRI lesions in an eCRF that included wording of lesions defining active and structural lesions typical of axSpA that was exactly the same as in the original ASAS-CC eCRF permitting comparisons between central and local site readers. In addition, lesions that met the criteria for an ASAS positive MRI were recorded by central readers. Active and structural lesion frequencies were assessed descriptively according to majority agreement (≥4/7) of central reader data and also any 2 central readers. Reliability of detection of MRI lesions was compared between central and local readers using the kappa coefficient.

Results: Significant differences in lesion frequencies were observed according to diagnostic category (Table 1). The frequency of active lesions reported by local readers (61%) was greater than for central readers that agreed on the presence of an active lesion (49.7%). Structural lesions were reported less frequently by local readers (44.0%) compared to central readers that agreed on the presence of a structural lesion (54.9%). Reliability of local readers for detection of active lesions was good but only fair for structural lesions (Table 2).

Reader	MRI Lesion Type	Local Rheumatologist Diagnosis		P value
		AxSpA (n=187)	Not AxSpA (n=71)	
Local	Active	114 (61.0%)	3 (4.2%)	<0.0001
Central (≥4 in agreement)	Active	83 (44.4%)	3 (4.2%)	<0.0001
Central (≥4 in agreement)	ASAS positive	76 (40.6%)	2 (2.8%)	<0.0001
Central (≥2 in agreement)	Active	93 (49.7%)	6 (8.5%)	<0.0001
Central (≥2 in agreement)	ASAS positive	89 (47.6%)	5 (7.0%)	<0.0001
Local	Structural	72 (44.0%) ^a	3 (5.2%) ^a	<0.0001
Central (≥4 in agreement)	Structural	51 (31.5%) ^a	6 (10.3%) ^a	<0.0001
Central (≥2 in agreement)	Structural	89 (54.9%) ^a	10 (17.2%) ^a	<0.0001

Local Readers		Central Readers			
		Active lesion (2 reader agreement)		Active Lesion (≥4 reader agreement)	
		Yes	No	Yes	No
Active lesion	Yes	85	32	78	39
	No	14	127	8	133
Kappa (95% CI)		0.64 (0.54-0.73)		0.62 (0.53-0.72)	
Structural lesion		Structural lesion (2 reader agreement)		Structural Lesion (≥4 reader agreement)	
		Yes	No	Yes	No
		Yes	No	Yes	No
Structural lesion	Yes	58	17	43	32
	No	41	104	27	118
Kappa (95% CI)		0.46 (0.34 to 0.57)		0.39 (0.27 to 0.52)	

Conclusion: Local readers may have overestimated the presence of active lesions and underestimated the presence of structural lesions in the ASAS-CC. Their reliability for detection of structural lesions was limited which could reflect lack of awareness of structural lesions related to axSpA.

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