Disclosure of Interests: Gerd Rüdiger Burmester Speakers bureau: AbbVie, Eli Lilly, Galapagos, Janssen, MSD, Pfizer, Roche, and UCB, Consultant of: AbbVie, Eli Lilly, Galapagos, Janssen, MSD, Pfizer, Roche, and UCB, Jayne Stigler Shareholder of: Employee of AbbVie and may hold stock or options, Employee of: AbbVie, Andrea Rubbert-Roth Speakers bureau: AbbVie, Amgen, BMS, Chugai, Eli Lilly, Gilead, Janssen, Novartis, Roche, and Sanofi, Consultant of: AbbVie, Amgen, BMS, Chugai, Eli Lilly, Gilead, Janssen, Novartis, Roche, and Sanofi, Yoshiya Tanaka Speakers bureau: AbbVie, Asahi-kasei, Astellas, Bristol-Myers Squibb, Chugai, Daiichi-Sankyo, Eisai, Eli Lilly, Gilead, GSK, Janssen, Mitsubishi-Tanabe, Novartis, Pfizer, Sanofi, and YL Biologics, Grant/research support from: AbbVie, Asahi-Kasei, Chugai, Daiichi-Sankyo, Eisai, Mitsubishi-Tanabe, and Takeda, Valderilio F Azevedo Speakers bureau: AbbVie, Amgen, Bristol-Meyers Squibb, Celltrion, Eli Lilly, Fresenius Kabi, GSK, Janssen, Novartis, Organon, Pfizer, and UCB, Consultant of: AbbVie, Amgen, Bristol-Meyers Squibb, Celltrion, Eli Lilly, Fresenius Kabi, GSK, Janssen, Novartis, Organon, Pfizer, and UCB, Grant/research support from: AbbVie, Amgen, Bristol-Meyers Squibb, Celltrion, Eli Lilly, Fresenius Kabi, GSK, Janssen, Novartis, Organon, Pfizer, and UCB, Derek Coombs Shareholder of: Employee of AbbVie and may hold stock or options, Employee of: AbbVie, Reva McCaskill Shareholder of: Employee of AbbVie and may hold stock or options, Employee of: AbbVie, Ralph Lippe Shareholder of: Employee of AbbVie and may hold stock or options, Employee of: AbbVie, Peter Wung Shareholder of: Employee of AbbVie and may hold stock or options, Employee of: AbbVie, Lianne S. Gensler Consultant of: AbbVie, Fresenius Kabi, Gilead, Janssen, Eli Lilly, MoonLake, Novartis, Pfizer and UCB Pharma, Grant/research support from: Novartis and UCB Pharma.
DOI: 10.1136/annrheumdis-2023-eular.2699

POS0658 ANKYLOSING SPONDYLITIS IS ASSOCIATED WITH INCREASED PREVALENCE OF VALVULAR HEART DISEASES: A POPULATION BASED STUDY

Keywords: Spondyloarthritis, Heart, Epidemiology

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Background: Ankylosing spondylitis (AS) is a chronic inflammatory arthritis primarily affecting the sacroiliac joint and axial skeleton with associated extraarticular involvement including cardiovascular system disease including aortic value disease with variable reported prevalence.
Objectives: The aim of this study is to determine the prevalence of heart valve disorders in AS patients.
Methods: A retrospective, population-based, cross-sectional study retrieved from the Clalit Health Services (CHS) registry. Cases were defined as having AS, whereas controls were age- and sex- frequency matched in a ratio of 5:1. The prevalence of valvular heart diseases was compared between the two groups, a multivariate logistic regression model was applied to estimate the association after controlling for potential confounders.
Results: We included 4,082 AS patients and 20,397 age- and sex- frequency matched controls. AS patients had a significantly higher prevalence of cardiovascular risk factors (p<0.001) and a higher prevalence of valvular heart disease. In the multivariate logistic regression model, adjusting for multiple confounding factors, AS was independently associated with aortic stenosis (OR 2.25, 95% CI 1.57-3.23, p<0.001), aortic insufficiency (OR 2.44, 95%CI 1.5-3.94, p<0.001), mitral insufficiency (OR 1.75, 95%CI 1.17-2.61, p<0.001) but not mitral stenosis (OR 1.31, 95% CI 0.6-2.7, p=0.47).
Conclusion: Our study reports the increased risk of valvular heart diseases in patients with AS possibly due to the inflammatory milieu associated with the disease process and the result of biomechanical stress affecting the enthesis-like valvular structures.

Table 1. Characteristics of the study population of the present study

	Control (N=20397)	Ankylosing spondylitis (N=4082)	p-value
Age	56.5 (41.0-66.0)	54.9 (42.0-67.0)	0.065
Sex			
Male	13032 (63.9%)	2608 (63.9%)	0.999
Female	7365 (36.1%)	1474 (36.1%	
Smoking	3647 (17.9%)	1873 (45.9%)	
Comorbidities			
Obesity	2124 (10.4%)	1196 (29.3%)	<0.001
Hypertension	3021 (14.8%)	1499 (36.7%)	<0.001
Diabetes	1800 (8.8%)	885 (21.7%)	<0.001
Hyperlipidemia	4513 (22.1%)	2237 (54.8%)	<0.001
Ischemic heart disease	1290 (6.3%)	574 (14.1%)	<0.001
Pulmonary Hypertension	130 (0.6%)	47 (1.2%)	<0.001
Treatment			<0.001
NSAIDs	7881 (98.5%)	2257 (56.4%)	
DMARDS	101 (1.3%)	538 (13.4%)	
Anti-TNF	19 (0.2%)	1210 (30.2%)	
Valvular heart disease			
Aortic Stenosis	71 (0.3%)	61 (1.5%)	<0.001
Aortic Insufficiency	71 (0.3%)	46 (1.1%)	<0.001
Mitral Stenosis	28 (0.1%)	11 (0.3%)	0.053
Mitral Insufficiency	80 (0.4%)	46 (1.1%)	<0.001

Abbreviations – NSAIDs- non-steroidal anti-inflammatory drugs; anti-TNF – anti-tumour necrosis factor; DMARDs – disease modifying antirheumatic drugs

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[1] Dubash S, McGonagle D, Marzo-Ortega H. New advances in the understanding and treatment of axial spondyloarthritis: from chance to choice. Ther Adv Chronic Dis. 2018;9:77-87

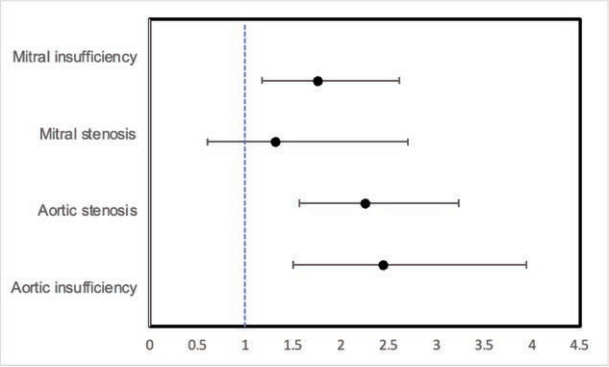

Figure 1. Logistic regression model showing the association of Ankylosing spondylitis with various heart valvular disease

Acknowledgements: NIL.
Disclosure of Interests: None Declared.
DOI: 10.1136/annrheumdis-2023-eular.6229

POS0659 COMPARISON OF METROLOGICAL PROPERTIES OF THE S-SCAISS VERSUS THE SPARCC SCORING SYSTEM FOR THE DETECTION/QUANTIFICATION OF INFLAMMATION AT MRI-SIJ IN SPONDYLARTHRITIS: DATA FROM THE DESIR COHORT

Keywords: Diagnostic tests, Spondyloarthritis

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Background: Different tools to quantify inflammatory changes in sacroiliac (SI) MRI have been developed. The Spondyloarthritis Research Consortium of Canada (SPARCC) appears to be the most sensitive to change, as it has demonstrated a good discriminating capacity. In a previous work of our group, we described the development of a fast, easy and reliable method to quantify the bone marrow edema (BME) in MRI-SIJ, through a semi-automatic process with a computer tool called SCAISS. SCAISS uses both semi-axial and semi-coronal slices from the MRI-SIJ. Since many centres only perform semi-coronal slices, we developed a simplified tool (s-SCAISS) that only requires the assessment of semi-coronal slices.
Objectives: To compare inter-rater reliability, discriminative validity and sensitivity to change using the s-SCAISS system, and compared to the SPARCC system, in patients presenting with inflammatory low back pain suggestive of axial spondyloarthritis from the DEvenir des Spondylarthopathies Indifférenciées Récentes (DESIR) cohort.
Methods: MRI-SIJ image of 206 patients collected at baseline of the DESIR cohort and after a first one year follow-up were analyzed (46.6% male, mean age 33.6 ± 8.8 years). Inter-reader reliability (3 readers for s-SCAISS and 2 central core readers for SPARCC) was assessed using intraclass correlation coefficients (ICC). Discriminative validity testing was performed by calculating the Area Under the Curve (AUC), sensitivity, specificity and likelihood ratios for different cut-off points for the classification of presence/absence of BME in SI, using positive/negative MRI as the gold standard according to DESIR core readers. Sensitivity to change was evaluated in subjects with improvement in illness activity testing

differences between paired measures. Three different criteria were considered to define activity improvement: a change in ASDAS score at 12 months of 1.1 (Clinical Important Improvement -CII-) and 2 points (Major Improvement -MI-) and a reduction ≥ 50% of the initial BASDAI score (BASDAI50).

Results: Inter-rater reliability: Both s-SCAISS and SPARCC showed good inter-reader reliability: In baseline MRI: ICC 0.95 and 0.82, respectively; At 1 year MRI: ICC 0.80 and 0.79, respectively.

Discriminative validity: Of the 206 patients included in our study, 70 (34%) fulfilled the ASAS criteria for presence of Inflammation on MRI, The AUC for EMO detection was excellent for both systems (0.88 and 0.98 for SCAISS and SPARCC, respectively). The optimal cut-off point for s-SCAISS was 60 u (Sens 83%, Esp 80%) and for SPARCC 1.25 u (Sens 93% and Esp 94%). Using the s-SCAISS cut-off point of 60 u, and the one 1.25 for SPARCC, 165 patients (81.3%) and 189 patients (93.1%), respectively were classified in accordance with the ASAS definition of the presence or absence of inflammation at MRI evaluated by the human central readers. Sensitivity to change: Of the 206 patients included, at 1 year after baseline assessment, 48 (23.3%), 17(8.3%) and 54 (26.2%) patients had a CII, MI and BASDAI50, respectively. In these patients with improved disease activity, the mean (SD) s-SCAISS score at baseline was 404.1 (SD 1055.1), 185.7 (262.7) and 375.3 (SD1008.8), respectively. While at 12 months it decreased to 72.6 (SD134.8), 46.1 (SD72.1) and 76 (SD151.7). The means of paired differences were 331.4 (SD 1019.6), 139.7 (SD 240.8) and 298.3 (SD 976.9), respectively, all of them with $p<0.05$. As expected, the AUC for the detection of CII, MI and BASDAI50 for both systems were poor (s-SCAISS 0.61, 0.63 and 0.58 and for SPARCC 0.7, 0.66, 0.60, respectively).

Conclusion: The MRI-SIJ EMO quantification system with s-SCAISS is as reliable and sensitive to change as SPARCC. The apparent advantage of SPARCC over s-SCAISS is artefactualised by the fact that the definition of the presence or absence of ASAS criteria for sacroiliitis is determined by the same readers who assess SPARCC.

Acknowledgements: We thank all DESIR-cohort patients and all individuals involved with creating and maintaining the cohort. The DESIR cohort was sponsored by the Département de la Recherche Clinique et du Développement, Assistance Publique Hôpitaux de Paris. We are also grateful to the heads of the participating regional centres.

Disclosure of Interests: None Declared.

DOI: 10.1136/annrheumdis-2023-eular.20

POS0660 FACET JOINT INFLAMMATION IS RARE, BUT WHEN PRESENT IT IS ASSOCIATED WITH FACET JOINT ANKYLOSIS IN RADIOGRAPHIC AXIAL SPONDYLOARTHRITIS PATIENTS FROM THE SIAS COHORT

Keywords: Imaging, Spondyloarthritis

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Background: There is still little known on posterior element (PE) inflammation and ankylosis in the facet joints (FJ) of patients with axial spondyloarthritis (axSpA).

Objectives: To assess whether PE inflammation, in particular in the FJ, is associated with new FJ ankylosis on MRI one year later, in patients with radiographic axSpA (r-axSpA).

Methods: Patients with a diagnosis of r-axSpA recruited from Germany (Herne) and the Netherlands (Leiden) were included in the Sensitive Imaging in Ankylosing Spondylitis (SIAS) observational cohort when ≥1 inflammatory lesion on MRI of the spine and 1-18 syndesmophytes were present. Spinal MRIs were performed at baseline, 1 and 2 years. PE inflammatory lesions and FJ ankylosis were both assessed on MRI, per vertebral unit (VU) level by 3 readers independently. FJ inflammation in the cervical spine was not assessed. The probability of developing FJ ankylosis after one year was described conditional on the presence or absence of PE/FJ inflammation at baseline. Multilevel time-lagged auto-regressive GEE was used for the association between PE (or FJ) inflammation and the development of FJ ankylosis one year later, taking the reader and VU levels into account.

Results: In 58 patients MRI scores of at least 2 readers were available. Patients' average age was 49±10) years and 85% was male. Inflammation in PE or FJ at baseline was seen in 34 (59%) and 14 (24%) patients respectively. PE inflammation was distributed throughout the whole spine but most prevalent in the lower part of the thoracic spine (9%-16%). FJ inflammation was infrequently present and was more often reported in the upper thoracic spine (2%-5%) (Figure 1). FJ ankylosis was reported in 15 patients (26%) at baseline and 17 patients (29%) with follow up visits. FJ ankylosis was mainly present in the upper half of the spine (Figure 1). In 19 patients (33%) the development of new FJ ankylosis over 1 or 2 years was seen by at least 1 reader. Of the VU levels with PE or FJ inflammation only very few showed new FJ ankylosis after one year: 2 and 1 VU levels, respectively (Table 1). There was no association between PE inflammation and the development of new FJ ankylosis in the same level after one year (OR=1.15, 95%CI 0.55-2.42). However, FJ inflammation was associated with new facet joint ankylosis one year later (OR=3.79, 95%CI 1.47-9.75).

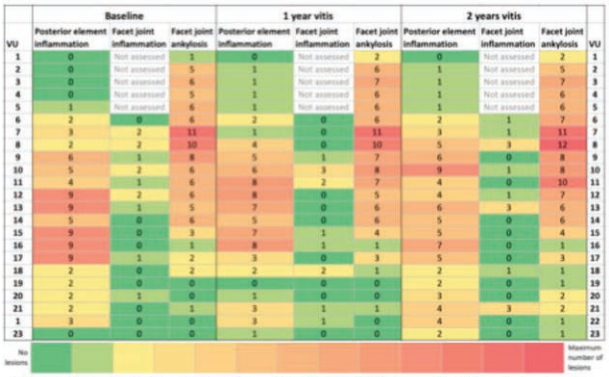

Figure. The extent of posterior element lesions on MRI across the 23 vertebral units (VU) in radiographic axial spondyloarthritis patients with 2 years follow-up.

Table 1. Probability of developing facet joint ankylosis with and without posterior element inflammation present one year before, in r-axSpA patients from the SIAS cohort

Inflammation in any part of the posterior elements			
PE inflammation	New facet joint ankylosis after one year	N*	P (FJ ankylosis | PE inflammation)
0	0	7195	P (FJ ankylosis | 0) = 43/7238 =
0	1	43	0.0059
1	0	511	P (FJ ankylosis | 1) =2/513 =
1	1	2	0.0039
Inflammation only in the facet joint			
Facet joint inflammation	New facet joint ankylosis after one year	N#	P (FJ ankylosis | FJ inflammation)
0	0	5934	P (FJ ankylosis | 0) = 38/5972 =
0	1	38	0.0064
1	0	93	P (FJ ankylosis | 1) =1/94 =
1	1	1	0.0106

PE; posterior elements, *; number of VU levels with inflammation in at least 1 part of the posterior elements (pedicle, facet joint, processes spinosi, soft tissue), #; number of facet joints, FJ; facet joint, P; probability

Conclusion: PE inflammation and FJ ankylosis on MRI were infrequently observed in patients with r-axSpA. No association was found between inflammation in the PE and the development of FJ ankylosis. However, when inflammation in the FJ is present the likelihood of developing FJ ankylosis after 1 year is over 3 times higher compared to FJ without inflammation. This finding adds to the pathophysiological relationship between inflammation and ankylosis at the same anatomical location of the axial skeleton in patients with axSpA.

REFERENCES: NIL.

Acknowledgements: NIL.

Disclosure of Interests: Manouk de Hooge Consultant of: UCB, Rosalinde Stal: None declared, Alexandre Sepriano Consultant of: Abbvie, UCB and Lilly, Xenofon Baraliakos Consultant of: AbbVie, BMS, Celltrion, Eli Lilly, Galapagos, MSD, Novartis, Pfizer, UCB, Grant/research support from: AbbVie, MSD, Novartis, UCB, Monique Reijnierse: None declared, Juergen Braun: None declared, Désirée van der Heijde Consultant of: AbbVie, Bayer, BMS, Cyxone, Eisai, Galapagos, Gilead, Glaxo-Smith-Kline, Janssen, Lilly, Novartis, Pfizer, UCB Pharma, Floris A. van Gaalen Consultant of: Novartis, MSD, Abb Vie, Bristol Myers Squibb, Grant/research support from: Stichting vrienden van Sole Mio, Stichting ASAS, acobus Stichting, Novartis, UCB, Sofia Ramiro Consultant of: AbbVie, Eli Lilly, MSD, Novartis, Pfizer, UCB, Sanofi, Grant/research support from: AbbVie, Galapagos, MSD, Novartis, Pfizer, UCB.

DOI: 10.1136/annrheumdis-2023-eular.414