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Background: Studies have reported that female patients with spondyloarthritis (SpA) have different disease courses and treatment responses compared to male patients. Whether patients' sex, the biological attributes associated with being male or female, is associated with a different outcome after receiving one-year of tight control, treat-to-target (T2T) strategy remain uncertain.
Objectives: This study aimed to evaluate the differences in the clinical response between male and female patients from the Asia Pacific League of Associations for Rheumatology (APLAR) SpA Registry.
Methods: Patients who fulfilled the CASPAR 2006 classification criteria for psoriatic arthritis (PsA) and 2009 ASAS classification for axial spondylitis (AxSpA) were recruited. They received 1 year of protocolized treatment aiming at 1) minimal disease activity (MDA) *or Disease Activity in Psoriatic Arthritis* (DAPSA) low disease activity (LDA) for PsA patients, and 2) *Ankylosing Spondylitis Disease Activity Score* (*ASDAS*) LDA for AxSpA patients. Patients were assessed every 3 monthly and treatment was escalated if target was not reached.
Results: 63 male (age: 45±15 years, 27 PsA, 36 AxSpA) and 36 female (age: 46±12 years, 22 PsA, 14 AxSpA) subjects from 6 Asia-Pacific regions were included. At baseline, male had more tender joints but less severe enthesitis than female. Male AxSpA patients had a lower Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) but male PsA patients had a higher DAPSA. Other baseline characteristics were shown in Table 1. During the study period, the use of conventional synthetic disease-modifying anti-rheumatic drugs (csDMARDs) decreased slightly, while the use of biologics (bDMARDs) significantly increased across both sexes (Figure 1). After 1-year treatment, there were significant improvements in disease activity in the entire cohort (DAPSA: 15.3±11.6 at baseline vs 10.1±11.2 at 1-year, p=0.002; ASDAS: 2.4±1.0 at baseline vs 1.9±0.9 at 1-year, p=0.003). Despite having lower CRP levels (2.3 ± 2.5mg/L in female vs 8.7±17.7mg/L in male, p=0.008) and higher bDMARDs use in female patients (54% in female vs 45% in male) at 1-year, their clinical responses were less optimal compared to male patients. Female patients had a higher patients' global assessment score (3.9±2.4 in female vs 2.9±2.2 in male, p=0.035). Disease activity in female PsA patients and the number of tender joint count in both PsA and AxSpA increased while that in male patients improved (% change in DAPSA: -47% in male vs +19% in female, p=0.003); % change in tender joint count: -70% in male vs +19% in female, p=0.014). Both patients' and physicians' global assessment scores increased in female SpA patients whilst that in male SpA patients decreased. There was also a trend showing less improvement in other parameters in female patients (Figure 1).

Table 1. Demographics, clinical features and disease activity in patients with Spondyloarthritis in APLAR region at baseline, stratified by gender

	Male (n=63)	Female (n=36)	*p*
Age, years	45 ± 15	46 ± 12	
Presence of sacroiliitis in Xray[1]	35 97%	8 57%	*
NRS Patients' pain assessment, 0-10	3.9 ± 2.2	4.3 ± 2.2	
NRS Patients' global assessment, 0-10	3.9 ± 2.3	4.3 ± 2.0	
NRS Physicians' global assessment, 0-10	3.5 ± 2.3	3.4 ± 2.0	
TJ count, 0-68	2.8 ± 5.3	1.0 ± 1.3	*
SJ count, 0-66	1.5 ± 3.4	0.7 ± 1.3	
Dactylitis digits	0.3 ± 1.4	0.1 ± 0.4	
PASI[2]	3.56 ± 5.84	1.68 ± 2.58	
SPRACC, 0-15	0 ± 1	1 ± 1	*
ESR, mm/h	20 ± 18	27 ± 22	
CRP, mg/L	18.0 ± 55.6	7.5 ± 10.2	
MDA achieved[2]	8 29.6%	9 49.9%	
DAPSA[2]	17.57 ± 13.57	10.40 ± 5.76	*
ASDAS CRP[1]	2.29 ± 1.00	2.90 ± 0.93	
BASDAI[1]	3.0 ± 1.8	5.1 ± 2.4	*
BASFI[1]	2.2 ± 1.9	4.5 ± 2.5	*
BASMI[1]	3 ± 2	2 ± 1	*
HAQ-DI	0.395 ± 0.493	0.622 ± 0.574	*

[1]For Axial SpA only, [2]for PsA only.

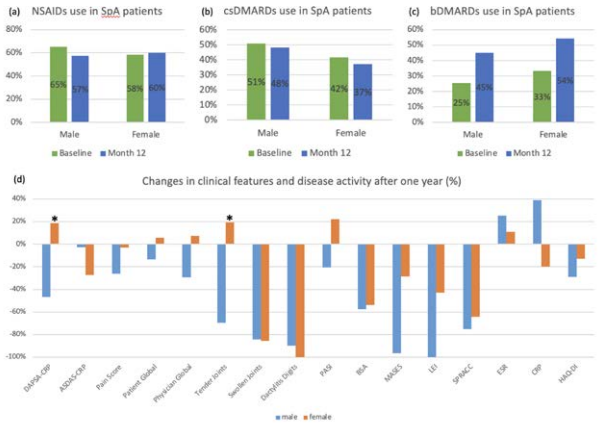

Figure 1 - NSAIDs (a) / csDMARDs (b) / bDMARDs (c) use at baseline and 1-year and changes in clinical features and disease activity after 1-year treatment (d) in male and female SpA patients.

Conclusion: There may be differential treat-to-target responses between male and female SpA patients. The causes of such differential characteristics should be further explored to potentially implement a sex-specific treat-to-target strategy for spondyloarthritis.
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POS0303

IMPACT OF PREGNANCY ON SACROILIAC IMAGING IN WOMEN WITH AXIAL SPONDYLOARTHRITIS: RESULTS OF THE ANALYSIS OF THE DESIR COHORT

Keywords: Spondyloarthritis, Descriptive Studies, Imaging

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Background: Axial spondyloarthritis (axSpA) is typically characterized by imaging (radiographs or MRI) abnormalities of the sacroiliac joints (SIJ). Also, inflammatory lesions of the SIJ have been observed in healthy women post-partum [1,2]. However, the impact of pregnancy on imaging abnormalities in women with axSpA is unknown.
Objectives: The objective of this study was to evaluate impact of pregnancy on SIJ imaging in patients with early axSpA.
Methods: Data of all women with early axSpA from the DESIR prospective cohort were included, with a follow-up of 5 years. Description of demographic disease characteristics, obstetric history, and SIJ imaging abnormalities (i.e. sacroiliitis on radiographs and on MRI, based on local and central reading) was performed in all women. SIJ abnormalities were compared depending on the history of past pregnancy (t-test and chi-square as appropriate). Furthermore, in nulligravidae females at baseline who presented an incident pregnancy during follow-up, SIJ abnormalities were compared before/after pregnancy, using paired-test.
Results: 381 patients were included in the analysis. 142 (37%) were nulligravidae at baseline, and were younger (28 vs 39 years old) and had higher educational level (74 vs 52% university level). Sacroiliitis on MRI and X-ray were more frequent in nulligravidae women (16.9% vs 9.9%, p = 0.05 and 33.8% vs 19.4%, p < 0.01, respectively). Among them, 38 (10% of all patients) presented an incident pregnancy during follow-up and had an available imaging before and after pregnancy: overall no significant changes were observed with regard to both radiographic and MRI imaging abnormalities of the SIJ, except for an increase on the New York score of the left SIJ, and surprisingly, a trend towards a reduction on the proportion of MRI sacroiliitis and SPARCC score after pregnancy (**table 1**).

Table 1. Imaging characteristics in women with axSpA who had first pregnancy during follow up, with description before/after delivery and paired-test with Mc Nemar of Student test (for binary and continuous variables, respectively).

Imaging criteria *(mean (sd) or number (%))*	**Before pregnancy (N = 38)**	**After delivery (N = 38)**	**Paired test (Mc Nemar or Student)**
Radiographic criteria			
X-ray sacroiliitis	8 (21.1%)	9 (23.7 %)	p = 0.37
New York score on right sacroiliac joint	0.66 (1.06)	0.67 (0.86)	p = 1
New York score on left sacroiliac joint	0.67 (1.07)	0.95 (0.95)	**p = 0.037**
Any erosion in the sacroiliac joints	9 (23.7%)	9 (23.7%)	p = 0.48
Any joint widening in the sacroiliac joints	0	3 (7.9%)	NA
Any sclerosis in the sacroiliac joints	6 (15.8%)	9 (23.7%)	p = 0.13
Any partial or total ankylosis in the sacroiliac joints	1 (2.6%)	2 (5.3%)	p = 0.48
MRI criteria			
Sacroiliitis on MRI	18 (47.3%)	2 (5.2%)	p = 0.074
SPARCC score	3.94 (7.63)	0.39 (0.74)	p = 0.15
≥ 3 fatty lesions on MRI	4 (10.5%)	1 (2.6%)	p = 1
≥ 3 erosions on MRI	1 (2.6%)	0	NA
≥ 5 fatty lesions and/or erosions on MRI	1 (2.6%)	1 (2.6%)	p = 1
Number of any lesions on sacroiliac joint (0 to 144)	1.81 (3.36)	1.8 (2.92)	p = 0.1
Number of enthesitis (0 to 12)	0 (0)	0 (0)	NA
Number of erosions (0 to 40)	0.84 (2.36)	0.42 (0.7)	p = 1
Number of fatty lesions (0 to 40)	0.97 (2.01)	1 (2.02)	p = 0.15
Number of sclerosis (0 to 40)	0 (0)	0.26 (0.86)	p = 0.29
Number of partial or total ankylosis (0 to 24)	0 (0)	0 (0)	NA

Conclusion: In an early SpA cohort, the occurrence of a first pregnancy did not seem to increase the number of imaging abnormalities of the SIJ.

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POS0304 IN-SILICO MODELLING OF THE SACROILIAC JOINTS DEMONSTRATES INFLUENCE OF JOINT FORM VARIATION ON MECHANICAL STRESS

Keywords: Spondyloarthritis, Imaging, Gender/diversity issues

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Background: Recent studies have uncovered an association between atypical joint form morphology and mechanical disease of the sacroiliac joints [1] and sclerosis in healthy controls [2]. A possible explanation for the effect is a change in load distribution in atypical joint forms and thus increased mechanical stress in affected patients.

Objectives: To investigate the effect of joint morphology on joint stress, using finite element models (FEM).

Methods: FE models were computed using dedicated software (Amira Software, Zuse Institute Berlin and Thermo Fisher Scientific, 2021), from CT scans of five patients without disease of the sacroiliac joints from a retrospective patient cohort[2]. Selected were patients with known anatomical variants (accessory joint, crescent-shaped ilium and intra-articular joint form variant; all female individuals) as well as a typical male and a typical female joint, based on radiological assessment. The models included both information on bone elasticity, derived from bone density on CT and stiffness of ligaments and muscles from the literature (visualization in Figure 1). Lastly, loading conditions during bipedal walking were simulated in all models, drawing from in-vivo data. Mean von Mises stress as well as percentage of joint surface above critical stress value (defined as 7 MPa) during y-axis loading (e.g. standing upright) and bipedal walking were compared between different joint morphologies.

Results: Table 1 provides a summary of the results. In axial loading (=y-axis stress) highest median stress and 99th percentile stress was observed in the crescent-shaped ilium with 12.5 Mpa and 28.8 Mpa respectively, while the iliosacral complex exhibited the lowest median stress (7.0 MPa) and the second highest 99th percentile value (25.1 MPa), indicating a less even distribution of stress. For bipedal walking the highest stress was also observed in the crescent shaped ilium with 64.2% of joint surface showing more than 7 Mpa during ipsilateral toe off vs. only 22.7% in the iliosacral complex. In all load scenarios, stresses were higher in the typical female joint than in the typical male joint.

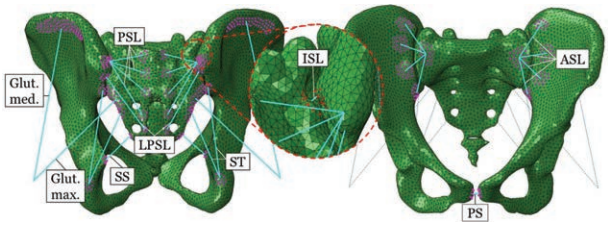

Figure 1. Example of FE-model with ligaments and muscles. Left=posterior view; right=frontal view. Glut. Med.=gluteus medius muscle; Glut. Max.=gluteus maximus mscle; SS=sacrospinous ligament; PSL=posterior sacroiliac ligament; LPSL=long posterior sacroiliac ligament. ST=sacrotuberous ligament; ISL=interosseous sacroiliac ligament; ASL=anterior sacroiliac ligament; PS=pubic symphysis;.

Table 1 . Summary of results. 99th percentile=value, below which 99% of measured values within the joint lie. Static y-axis=axial or downward stress, e.g. during standing upright; IHS=ipsilateral heel strike; CTO=contralateral toe off; CHS=contralateral heel strike; ITO=ipsilateral heel strike.

Joint form	**Von Mises stress [Mpa]**		**%joint surface above 7Mpa**					
	Median	**99th percentile**	**Static y-axis**	**Gait cycle phase**				
				IHS	**CTO**	**Swing**	**CHS**	**ITO**
Typical female	8.1	18.9	61	49	56	34	39	51
Typical male	8.5	18.2	66	38	26	20	39	16
Crescent-shaped	12.5	28.8	92	43	54	27	43	64
Iliosacral complex	7.0	25.1	50	26	21	13	20	23
Accessory joint	9.9	20.0	72	43	38	28	31	46

Conclusion: Finite element modelling revealed differences in load extent and distribution across different sacroiliac joint morphologies, strengthening the evidence, that morphology may play a role in mechanical joint stress. Further studies with larger numbers of computed models per joint form are needed to validate these first exploratory results.

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POS0305 CONTINUING TNFI AFTER PREGNANCY DIAGNOSIS IN WOMEN WITH CHRONIC RHEUMATIC INFLAMMATORY DISEASES IS NOT ASSOCIATED WITH WORSE OBSTETRICAL OR INFECTIOUS OUTCOMES: THE RESULTS OF AN EMULATED TARGET TRIAL

Keywords: Spondyloarthritis, Pregnancy and reproduction, Disease-modifying Drugs (DMARDs)

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Background: Continuation of biologics during pregnancy in patients with chronic inflammatory diseases during pregnancy is still a difficult medical decision. Many women with chronic rheumatic inflammatory diseases (CRID) decide to stop tumor necrosis factor inhibitors (TNFi) treatment once pregnancy is confirmed to avoid potential adverse fetal events but taking the risk of inflammatory flare.