SAT0310

IDENTIFICATION OF FACTORS ASSOCIATED WITH MAGNETIC RESONANCE IMAGES CHANGES SUGGESTIVE OF AXIAL SPONDYLOARTHRITIS IN THE AXIAL SKELETON OF INDIVIDUALS <45 YEARS – EVALUATION OF DATA FROM A LARGE COMMUNITY STUDY

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Background: Active (bone marrow edema, BME) and structural (fatty lesions, FL) lesions in the spinal and the sacroiliac joints (SIJ), as assessed by magnetic resonance imaging (MRI), have been described in patients with axial spondyloarthritis (axSpA) but may also occur in non-axSpA patients and healthy individuals (1,2).

Objectives: Identify factors associated with the occurrence of BME and FL in spinal- and SIJ-MRIs in the population-based Study of Health in Pomerania (SHIP).

Methods: All available spinal- (sagittal T1/T2 sequences) and SIJ- (semi-coronal STIR sequences) MRIs were evaluated by two trained readers blinded to clinical data. BME (SIJ and spine) and FL (spine) suggestive of axSpA were recorded. Disagreements were resolved by consensus. BME was quantified using Berlin MRI scores. Clinical information was available for age (increase per decade), sex, smoking (ever vs. never), prevalence of spinal pain (NRS≥4/10 in last 3 months), CRP, HLA-B27 status and body mass index (BMI) categories (WHO definition of under- (cat. 1), normal (cat. 2) or overweight (cat. 3)). Associations between clinical factors and MRI lesions were analyzed (a) by modeling of number and size of lesions using negative binomial count regression and (b) for presence/absence of lesions using univariate logistic regression.

Results: MRIs of 793 volunteers, 392 male (49.4%), 45 CRP-positive (5.7%), 67 HLA-B27+ (8.4%), 497 smokers (62.7%) were evaluated. BME lesions were found in 136 SIJ-MRIs (17.2%) and in 218 (27.5%) spinal MRIs, while FL were found in 645 spinal MRIs (81.3%).

A higher number and larger sized SIJ BME lesions were associated (exp (β), 95% CI) with HLA-B27 (2.8, 1.5-4.9), spinal pain (1.7, 1.2-2.6), and higher BMI (cat. 1 vs 3, 1.7, 1.0-3.0). In the spine, higher number and larger sized BME were associated with age (1.5, 1.2-2.0), while FL were associated with higher BMI, (cat. 1 to cat. 3 (1.9, 1.5-2.2), age (1.6, 1.5-1.8) and male sex (1.4, 1.2-1.6).

Presence (odds ratio, 95% CI) of spinal BME (1.3, 1.0-1.7) and/or FL (1.7, 1.3-2.3) was associated with age, while FL alone were associated with a higher BMI (cat. 1 to cat.3, 3.3, 1.8-6.1).

In total, 22 subjects (16.2%) had large (>33% of surface involvement) and 114 small (≤33% of surface involvement) SIJ-BME lesions. Large SIJ-BME lesions were found in 4.5% HLA-B27-positive vs. 2.6% HLA-B27-negative subjects (p=0.40).

Out of 187 quadrants with BME lesions in SIJ, the majority (n=66, 35.3%) was located in the upper sacral quadrant. Most SIJ lesions (n=156, 83.4%) were small. Out of 362 spinal segments with BME, the majority n=152, 42%) was located in the lower (T7/8-T11/12) thoracic spine. Most spinal lesions (n=329, 90.9%) were small.

Conclusion: In this large population-based study, higher numbers of large SIJ-BME lesions were significantly associated with HLA-B27, back pain and BMI. In some contrast, spinal BME and FL were associated with older age, male sex and BMI but not HLA-B27. The association for HLA B27 was only shown on the quadrant but not on the patient level. These findings are in accordance with previously published hypotheses that question the specificity of sacroiliitis and spondylitis in axSpA (3).

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SAT0311

DIAGNOSTIC UTILITY OF INDIVIDUAL INFLAMMATORY BACK PAIN PARAMETERS IN PATIENTS WITH AXIAL SPONDYLOARTHRITIS

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Background: A recent study in German chronic back pain (CBP) patients (pts) with a suspicion of axial spondyloarthritis (axSpA) report on the performance of, among others, the ASAS inflammatory back pain (IBP) criteria and the individual IBP parameters. Pts were diagnosed by a rheumatologist blinded for all clinical features but IBP and by a rheumatologist with all diagnostic tests available as in daily practice (reference standard). Data show high sensitivity but low specificity of the ASAS IBP

1a	Be-Giant cohort	SPACE cohort	SPACE cohort
	axSpA N=205	axSpA N=307	No axSpA N=354
IBP (ASAS definition), n (%)	172 (83.9)	228 (74.3)	177 (50.0)
Age at onset <40 years	197 (96.1)	277 (90.2)	312 (88.1)
Insidious onset	185 (90.2)	261 (85.0)	298 (84.2)
Improvement with exercise	181 (88.3)	252 (82.1)	228 (64.4)
No improvement with rest	172 (83.9)	264 (86.0)	269 (76.0)
Pain at night	162 (79.0)	172 (56.0)	131 (37.0)
No. of IBP parameters present, n (%)			
0	0	1 (0.3)	0
1	1 (0.5)	5 (1.6)	7 (2.0)
2	7 (3.4)	22 (7.2)	56 (15.8)
3	25 (12.2)	51 (16.6)	114 (32.2)
4	53 (25.9)	116 (37.8)	108 (30.5)
5	119 (58.1)	112 (36.5)	69 (19.5)

1b	Sensitivity (confidence interval)		Specificity (confidence interval)		LR+	
	Be-Giant cohort	SPACE cohort			Be-Giant cohort	SPACE cohort
IBP (ASAS definition)	83.9% (78.0-88.5)	74.3% (68.9-79.0)	50.0% (44.7-55.3)		1.7	1.5
Age at onset <40 years	96.1% (92.2-98.2)	90.2% (86.2-93.2)	11.9% (8.8-15.8)		1.1	1.0
Insidious onset	90.2% (85.1-93.8)	85.0% (80.4-88.7)	15.8% (12.3-20.1)		1.1	1.0
Improvement with exercise	88.3% (82.9-92.2)	82.1% (77.2-86.1)	35.6% (30.6-40.9)		1.4	1.3
No improvement with rest	83.9% (78.0-88.5)	86.0% (81.5-89.6)	24.0% (19.7-28.9)		1.1	1.1
Pain at night	79.0% (72.7-84.3)	56.0% (50.3-61.6)	63.0% (57.7-68.0)		2.1	1.5

Figure. Performance of individual parameters of the ASAS IBP criteria

criteria and individual IBP parameters(1). Performance of IBP in other countries is less studied.

Objectives: What is the diagnostic utility of IBP and the individual IBPpar according to the ASAS IBP criteria in several rheumatology settings in West- and Northern-Europe?

Methods: Data of the multicentre, observational Be-Giant and SpondyloArthritis Cause Early (SPACE) cohorts were used. The Be-Giant cohort included ≥ 18 years old, newly diagnosed axSpA pts who were diagnosed by a rheumatologist and fulfilled the ASAS axSpA criteria. SPACE cohort included pts, ≥ 16 years, with (almost) daily CBP for ≥ 3 months and ≤ 2 years, with a symptom onset < 45 years. In SPACE, axSpA pts were diagnosed by a rheumatologist (plus a level of confidence of ≥ 7 on a 0–10 scale). All other pts in SPACE were labelled as 'no axSpA'. Pts underwent a diagnostic workup according to the protocol of the corresponding cohort, including data on the individual parameters of the ASAS IBP criteria. Sensitivity, specificity and positive likelihood ratios (LR+) were calculated using the axSpA pts from each cohort separately and the "no axSpA" pts as control group.

Results: IBPpar data was available in 661 pts (SPACE) and 228 pts (Be-Giant); 36.0% and 49.6% were male, mean age 30.8 ± 8.2 and 34.7 ± 9.7 years, respectively. The figure shows a majority of axSpA pts with > 2 IBPpar, but this is also seen in the no axSpA pts. IBPpar show high sensitivity but very low specificity with 'pain at night' as exception with a slightly better specificity. LR+ were, in both cohorts, much lower (figure) than the LR+ of 3.1 for IBP previously reported as diagnostic estimate in routine practice.

Conclusion: IBP and the individual IBPpar are commonly seen in patients with and without an axSpA diagnosis. Our data confirm results from Germany, showing that the diagnostic utility of IBP in a rheumatology setting is lower than previously assumed with a (very) low specificity and LR+. It seems the distinctive impact of IBP is expressed when physicians refer their patient to the rheumatologist.

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SAT0312 GENDER CONTRASTS IN PATIENT REPORTED OUTCOMES DON'T ALTER THE DISEASE ACTIVITY SCORE IN AXIAL SPONDYLOARTHRITIS PATIENTS

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Background: Disease activity in axial spondyloarthritis (axSpA) is often quantified by the Axial Spondyloarthritis Disease Activity Score (ASDAS), a composite index which combines 4 patient reported outcome (PRO) parameters and C-reactive protein (CRP) as an acute phase reactant. ASDAS commonly acts as a target in treat-to-target approaches in axSpA patients.

Objectives: To identify the impact of gender on ASDAS in newly diagnosed axSpA patients and to determine whether possible differences are PRO- or CRP-driven.

Methods: Patients originate from the Be-Giant cohort, a Belgian observational registry of newly diagnosed axSpA patients (expert opinion). Included patients fulfill the Assessment of SpondyloArthritis international Society (ASAS) classification criteria for axSpA and are anti-TNF naïve prior to inclusion. An extensive patient description was performed at baseline, including PRO and laboratory investigations with CRP (mg/L). ASDAS was calculated for each patient and subdivided in a PRO-component (ASDAS-PRO) and a CRP-component (ASDAS-CRP) (1).

Results: By January 2019, 291 axSpA patients were included (138 male, 153 female). At baseline, ASDAS could be calculated in 262 patients. ASDAS-PRO was significantly higher in women compared to men (1,66 vs. 1,48, $p = 0,04$), while ASDAS-CRP did not differ significantly (0,90 for both genders, $p = 0,96$). No significant difference was found between the total ASDAS of women and men (2,54 vs. 2,38, $p = 0,09$) (Figure 1). When categorizing the score into 4 disease activity states (2), 60,8% (76/125) of men show high or very high disease activity (ASDAS > 2.1) at baseline compared to 67,2% (92/137) of women ($p = 0,35$).

Concerning the 5 ASDAS components, the discrimination between male and female axSpA patients was most pronounced for *patient global* scores (Figure 2). Men reported a baseline patient global score of 4,3 (95% CI 3,8 – 4,8), compared to a score of 5,1 (95% CI 4,7 – 5,6) in women ($p = 0,01$).

Conclusion: Female axSpA patients report a significantly higher *patient global* score compared to men. This contributes to a significantly higher ASDAS-PRO in women. However, neither the ASDAS itself nor the ASDAS disease activity categories are significantly affected by gender contrasts in PRO.

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Figure 1. Total ASDAS score (ASDAS-TOT), subdivided in a PRO-component (ASDAS-PRO) and a CRP-component (ASDAS-CRP) in male and female axSpA patients.

Figure 2. Patient global score in male and female axSpA patients.

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