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

Xenofon Baraliakos¹, Adrian Richter^{2,3}, Daniel Feldmann¹, Anne Ott¹, Robin Bülow⁴, Carsten Schmidt², Juergen Braun¹. ¹Rheumazentrum Ruhrgebiet, Ruhr-University Bochum, Herne, Germany; ²Institute for Community Medicine, Greifswald, Germany; ³German Rheumatism Research Center, Berlin, Germany; ⁴Department of Diagnostic Radiology and Neuroradiology, University Medicine, Greifswald, Germany

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 $\geq$ 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 ($\leq$ 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).

REFERENCES

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SAT0311

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

Manouk de Hooze^{1,2}, Floris A. van Gaalen³, Marleen van de Sande⁴, Karen Fagerli⁵, Lennart Jacobsson⁶, Dirk Elewaut^{1,2}, Désirée van der Heijde³, Filip van den Bosch^{1,2}. ¹VIB Inflammation Research Center, Ghent, Belgium; ²UZ Gent, Ghent, Belgium; ³LUMC, Leiden, Netherlands; ⁴AMC, A'dam, Netherlands; ⁵Diakonhjemmet Hospital, Oslo, Norway; ⁶University of Göteborg, Göteborg, Sweden

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
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