THU0390

GENETIC STUDY OF MEDICAL IMAGE PROGRESSION IN A CHINESE AS POPULATION FOR SIX MONTHS' FOLLOW-UP

LIU JING¹, Qi Zhu², Weilin Pu¹, Dongyi He², Hejian Zou³, Xiaodong Zhou⁴, John D Reveille⁴, Jiucun Wang¹. ¹Fudan University, State Key Laboratory of Genetic Engineering, Collaborative Innovation Center for Genetics and Development, School of Life Sciences, Shanghai, China; ²Guanghua Integrative Medicine Hospital, Shanghai, China; ³Fudan University, Huashan Hospital, Shanghai, China; ⁴The University of Texas Health Science Center at Houston, Houston, United States of America

Background: Genetic factors accounts for about 90% pathogenesis of ankylosing spondylitis (AS), and may predict the disease progression. MRI is an important tool for evaluating disease progression and assessing treatment response in patients with AS.

Objectives: This study aims to define correlation between AS-associated genetic variations and MRI scores of AS patients in Chinese population.

Methods: A total of 62 AS patients treated with TNF blockers from Guanghua medical center (Shanghai, China) were recruited in this study. All of AS patients were evaluated for disease progression with MRI (SPARCC) [1-3]. Measures of inflammation (bone marrow edema (BME) of sacroiliac joints (SIJ) and spine) and structural damage (fat metaplasia, erosion, backfill and ankylosis of SIJ) were recorded at baseline and six months' follow-up. The changes of MRI scores were defined as the score of six months' follow-up minus that of baseline. All of patients were examined with whole exon sequencing for genetic polymorphisms. Logistic regression analysis was performed and genetic variants with $p < 1E-4$ were considered as significant.

Results: The results showed that seven genetic variants significantly enriched in extracellular matrix pathways were associated with the changes of BME score of SIJ and spine. Four genetic variants regulating bone homeostasis, such as *ABCA4*, were significantly associated with the changes of fat metaplasia. Twelve variants were associated with the changes of erosion, one of which regulated expression of *FBF1* according to GTEx database (β/p -value = $-5.0/1.1E-5$). Mouse with *Fbf1* knockout showed abnormality in insulin metabolism and skeleton (MGI database). Genetic variants of the adipose related gene (*CTBP2*) and bone related genes (*RGMA*, *BMP8A*) were associated with the changes of backfill. In addition, genetic variants of *FAT4* was associated with the changes of ankylosis (β/p -value = $6.8/1.4E-8$). Mutation of *FAT4* caused two bone related diseases and mouse with *Fat4* knockout showed severe abnormality of skeleton (MGI database).

Conclusion: Overall, the results suggested that the polymorphisms of genes involved in extracellular matrix were associated with BME, and genetic variants involved in adipose and bone metabolism were associated with structural damage in AS patients.

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Disclosure of Interests: JING LIU: None declared, Qi Zhu: None declared, Weilin Pu: None declared, Dongyi He: None declared, Hejian Zou: None declared, Xiaodong Zhou: None declared, John D Reveille Grant/research support from: Janssen Research & Development, LLC, Jiucun Wang: None declared

DOI: 10.1136/annrheumdis-2019-eular.2916

THU0391

COMPARISON OF CHARACTERISTICS AND BURDEN OF DISEASE IN PATIENTS WITH RADIOGRAPHIC AND NON-RADIOGRAPHIC AXIAL SPONDYLOARTHRITIS: A SYSTEMATIC LITERATURE REVIEW AND META-ANALYSIS

Clementina López-Medina^{1,2}, Sofia Ramiro^{3,4}, Désirée van der Heijde³, Maxime Dougados¹, Anna Moltó¹. ¹Cochin Hospital, Rheumatology, Paris, France; ²Universidad de Córdoba, Córdoba, Spain; ³LUMC, Leiden, Netherlands; ⁴Zuyderland MC, Heerlen, Netherlands

Background: In 2009, the ASAS criteria allowed to classify patients with radiographic (r-axSpA) and non-radiographic (nr-axSpA) axial Spondyloarthritis (axSpA), and enhanced the concept of axSpA as a whole disease with different phenotypic presentations. However, some have claimed that the burden of r-axSpA and nr-axSpA is so different that they should be considered as different forms of the same disease.

Objectives: To compare the characteristics, burden of disease and treatment effect in patients with r-axSpA and nr-axSpA.

Methods: A systematic literature review until October 2018 was performed using PubMed, EMBASE and Cochrane databases. The PICO approach was used to formulate the research questions: P (r-axSpA patients), I (no intervention/drugs (only for the treatment effect evaluation), C (nr-axSpA patients), O (clinical presentation, disease activity, structural damage, function, quality of life, mobility, treatment modalities and treatment effect). Only observational studies and Randomized Controlled Trials (RCT) published after 2009 (year of publication of the ASAS criteria) were included. For the evaluation of the treatment effect, only RCT were considered. Risk of bias was evaluated on each manuscript with the Cochrane Risk of Bias tool for RCT and Hayden tool for observational studies. Pooled analysis was performed (Standardized Means Differences (SMD) and Relative Risk (RR) for continuous and binary variables, respectively) with a random effects model after evaluation of the heterogeneity of the studies.

Results: A total of 60 studies out of 787 references were included. Clinical presentation, disease activity, burden of disease (function, quality of life and mobility), treatment and treatment effect were evaluated in 54 (90.0%), 40 (67.7%), 37 (61.7%), 18 (30.0%) and in 9 (15.0%) manuscripts, respectively. Only 3 cross-sectional studies were classified as high risk of bias. Pooled results concerning continuous and binary variables are represented in tables 1 and 2. Only two RCTs (Etanercept vs. Sulfasalazine and Certolizumab vs. Placebo) directly compared the treatment effect between both groups, and none of them showed differences regarding ASAS partial remission, ASDAS major improvement and ASAS 40.

Conclusion: Published data suggest that r-axSpA and nr-axSpA patients share a similar clinical presentation except for peripheral manifestations (which are more prevalent among nr-axSpA), males and smokers (which are more frequent among r-axSpA). Disease activity and burden of disease are identical in both groups, except mobility, which is poorer among r-axSpA. The treatment effect was similar in both groups.

Abstract THU0391 –Table 1.

Table 1. Pooled results for clinical presentation, disease activity, burden of disease and treatment for continuous variables in r-axSpA vs. nr-axSpA patients.

	r-axSpA Pooled mean (95%CI)	nr-axSpA Pooled mean (95%CI)	SMD (95%CI)*
Clinical presentation			
Age at symptom onset	26.3 (24.8 to 27.9)	27.8 (26.2 to 29.4)	-0.11 (-0.2 to 0.01)
Time to diagnosis	6.1 (5.5 to 6.6)	4.2 (2.2 to 6.2)	0.31 (0.1 to 0.5)
MRI inflammation			
SPARCC total SIJ	7.7 (5.4 to 10.1)	7.2 (5.9 to 8.6)	0.31 (-0.3 to 0.9)
Berlin activity score spine	5.5 (1.6 to 9.4)	2.9 (-0.2 to 5.9)	1.87 (-0.5 to 0.6)
Structural damage			
mSASSS	8.1 (5.3 to 10.9)	2.7 (1.7 to 3.6)	0.52 (0.4 to 0.6)
Disease activity			
BASDAI	4.6 (4.3 to 4.9)	4.6 (4.3 to 5.0)	-0.03 (-0.1 to 0.0)
CRP	9.3 (7.9-10.6)	6.2 (5.2 to 7.3)	0.29 (0.2 to 0.4)
ASDAS-CRP	2.7 (2.4-3.0)	2.6 (2.3 to 2.8)	0.11 (0.0 to 0.2)
Function			
BASFI	3.4 (3.1 to 3.7)	3.0 (2.7 to 3.3)	0.19 (0.1 to 0.3)
HAQ-S	0.6 (0.5 to 0.8)	0.6 (0.5 to 0.7)	0.06 (-0.1 to 0.2)
Quality of life			
SF36-MCS	48.5 (46.5 to 50.6)	48.2 (44.1 to 52.3)	0.02 (-0.1 to 0.1)
SF36-PCS	40.6 (37.0 to 44.3)	41.9 (37.2 to 46.7)	-0.04 (-0.2 to 0.1)
Mobility			
BASMI	2.8 (2.3 to 3.3)	1.6 (1.3 to 1.9)	0.69 (0.5 to 0.9)

*SMD < 0.2 = irrelevant difference / 0.2<SMD<0.5 = doubtful / SMD >0.5 = meaningful difference

Abstract THU0391 –Table 2.

Table 2. Pooled results for clinical presentation and treatment for binary variables in r-axSpA vs. nr-axSpA patients.

	r-axSpA Pooled percentage (95%CI)	nr-axSpA Pooled percentage (95%CI)	RR (95%CI)
Clinical presentation			
Sex (male)	69.8 (66.2 – 72.8)	53.6 (49.0 – 58.1)	1.30 (1.2 – 1.4)
Smoker	37.7 (26.9 – 50.0)	31.1 (21.6 – 42.6)	1.18 (1.1 – 1.3)
HLA-B27 positive	76.7 (71.6 – 81.1)	71.9 (66.7 – 76.6)	1.04 (0.9 – 1.1)
Good NSAIDs response	68.5 (56.0 – 78.8)	61.7 (53.3 – 69.4)	1.09 (0.9 – 1.1)
Peripheral arthritis	32.8 (27.6 – 38.5)	35.2 (28.9 – 41.9)	0.87 (0.8 – 0.9)
Dactylitis	5.6 (3.9 – 7.9)	7.6 (5.5 – 10.5)	0.64 (0.5 – 0.8)
Any enthesitis	23.0 (14.0 – 35.4)	30.1 (22.0 – 39.7)	0.84 (0.7 – 0.9)
Uveitis	18.0 (13.4 – 23.8)	14.3 (12.0 – 16.9)	1.31 (1.1 – 1.6)
Psoriasis	8.5 (5.6 – 12.8)	9.3 (7.4 – 11.7)	0.98 (0.8 – 1.1)
IBD	6.5 (5.2 – 8.2)	5.6 (4.0 – 7.9)	1.04 (0.9 – 1.3)
MRI inflammation			
Patients with positive MRI-SU	45.8 (18.7 – 75.7)	71.5 (66.9 – 75.8)	0.57 (0.3 – 1.1)
ASAS definition			
Structural damage			
Patients with erosion MRI-SU	70.8 (41.8 – 89.1)	41.0 (19.0 – 67.3)	1.8 (1.1 – 3.0)
Patients with fatty lesions	79.4 (56.1 – 92.1)	51.5 (28.4 – 74.0)	1.4 (1.2 – 1.7)
Treatment			
NSAIDs	73.5 (63.1 – 81.8)	69.1 (55.5 – 80.0)	1.04 (0.9 – 1.1)
csDMARDs	29.3 (20.5 – 39.9)	28.5 (21.9 – 36.1)	1.04 (0.8 – 1.3)
bdDMARDs	28.7 (19.7 – 39.7)	26.2 (26.1 – 39.6)	1.08 (0.9 – 1.3)

Disclosure of Interests: Clementina López-Medina: None declared, Sofia Ramiro Grant/research support from: MSD, Consultant for: AbbVie, Lilly, MSD, Novartis, Pfizer, Sanofi, Speakers bureau: AbbVie, Lilly, MSD, Novartis, Pfizer, Sanofi, Désirée van der Heijde Consultant for: AbbVie, Amgen, Astellas, AstraZeneca, Bristol-Myers Squibb, Boehringer Ingelheim, Celgene, Daiichi, Eli-Lilly, Galapagos, Gilead, GlaxoSmithKline, Janssen, Merck, Novartis, Pfizer, Regeneron, Roche, Sanofi, Takeda, Union Chimique Belge, maxime dougados Grant/research support from: Eli Lilly and Company, Pfizer, AbbVie, and UCB Pharma, Consultant for: Eli Lilly and Company, Pfizer, AbbVie, and UCB Pharma, Anna Moltó: None declared
DOI: 10.1136/annrheumdis-2019-eular.3542

THU0392

DESCRIPTION AND PREVALENCE OF SPONDYLOARTHRITIS IN UNSELECTED PATIENTS WITH PSORIASIS, ACUTE ANTERIOR UVEITIS, AND INFLAMMATORY BOWEL DISEASE PRESENTING WITH UNDIAGNOSED BACK PAIN

Walter P Maksymowych^{1,2}, Raj Carmona³, James Yeung⁴, Jon Chan⁵, Liam Martin⁶, Sibel Aydin⁷, Dianne Mosher⁸, Ariel Masetto⁹, Stephanie Keeling¹, Olga Ziouza⁶, Sherry Rohekar⁹, Joel Paschke², Amanda Carapellucci², Robert G Lambert¹. ¹University of Alberta, Edmonton, Canada; ²CaRe Arthritis, Edmonton, Canada; ³McMaster University, Hamilton, Canada; ⁴James Yeung Rheumatology, Vancouver, Canada; ⁵Artus Health Center, Vancouver, Canada; ⁶University of Calgary, Calgary, Canada; ⁷University of Ottawa, Ottawa, Canada; ⁸University of Sherbrooke, Sherbrooke, Canada; ⁹Lawson Health Research Institute, London, Canada

Background: There is limited prospective data as to the frequency of axial spondyloarthritis (axSpA) in unselected patients referred to rheumatologists with undiagnosed back pain. It is also unclear which clinical features discriminate between axSpA and non-specific causes of back pain that might inform the development of a screening strategy.

Objectives: To determine the prevalence of axSpA in unselected patients referred with undiagnosed back pain presenting with AAU, psoriasis, or colitis and determine which clinical characteristics define patients with axSpA.

Methods: The multicenter Screening for Axial Spondyloarthritis in Psoriasis, Iritis, and Colitis (SASPIC) Study is aimed at facilitating early detection of axial SpA. First and last patients were recruited on February 2013 and March 2018, respectively. Consecutive patients ≤45 years of age with ≥3 months undiagnosed back pain with any one of psoriasis, AAU, or colitis had routine clinical evaluation by a rheumatologist for axial SpA and MRI evaluation ordered per rheumatologist decision. Differences in clinical characteristics between those who were diagnosed as axSpA or non-specific back pain were analyzed using chi-squared and t-tests.

Results: A total of 246 patients were recruited, 47.6% were diagnosed with axSpA, and these included 68.5% of B27 positive patients (Table 1). Diagnosis of axSpA was established in 45.7%, 61.6%, and 40.2% of patients, while ASAS classification criteria were met by 26.1%, 71.2%, and 27.6% of patients with psoriasis, AAU, and IBD, respectively. Features of inflammatory back pain, male gender, and B27 positivity, but not physical measures discriminated axSpA from other causes of back pain (Table 2).

Abstract THU0392 –Table 1.

	Psoriasis	AAU	IBD
Total number (%)	46 (18.7%)	73 (29.7%)	127 (51.6%)
Age, mean (SD) years	36.7 (6.0)	34.0 (5.8)	34.0 (7.3)
Males, N (%)	24 (52.2%)	41 (56.2%)	64 (50.4%)
Symptom Duration, mean (SD) years	7.7 (7.7)	8.7 (6.7)	6.3 (5.9)
B27+, N (%)	10 (21.7%)	51 (69.9%)	28 (22.0%)
Family history of SpA, N (%)	15 (32.6%)	15 (20.5%)	20 (15.7%)
Enthesitis, N (%)	15 (32.6%)	13 (17.8%)	39 (30.7%)
Peripheral arthritis, N (%)	13 (28.3%)	2 (2.7%)	5 (3.9%)
Dactylitis, N (%)	4 (8.7%)	2 (2.7%)	3 (2.4%)
Radiographic sacroiliitis, %	6.5%	23.3%	10.2%
Axial SpA rheumatologist diagnosis, %	45.7%	61.6%	40.2%
Axial SpA diagnosis and B27+, %	15.2%	52.1%	12.6%
Meets ASAS criteria, %	26.1%	71.2%	27.6%

Abstract THU0392 –Table 2.

Demographics	axSpA YES (n=117, 47.6%)	Not axSpA (n=129, 52.4%)	P value
Male, N (%)	72 (61.5%)	57 (44.2%)	0.006
Mean (SD) age, years	33.7 (6.7)	35.2 (6.7)	ns
Inflammatory Back Pain Yes, N (%)	102 (87.2%)	72 (55.8%)	<0.00001
Duration stiffness > 60 mins, N (%)	57 (48.7%)	30 (23.3%)	0.001
Nocturnal awakening 2nd half of night, N (%)	72 (61.5%)	51 (39.5%)	0.001
Alternating buttock pain, N (%)	53 (45.3%)	21 (16.3%)	<0.00001
Improvement with exercise but not rest, N (%)	77 (65.8%)	48 (37.2%)	<0.00001
Respond to NSAID within 48 hrs, N (%)	58 (49.6%)	59 (45.7%)	ns
Family history of SpA, N (%)	22 (18.8%)	28 (21.7%)	ns
B27 positive	61 (52.1%)	28 (21.7%)	<0.00001
Elevated CRP (> 6.0mg/L)	43 (36.8%)	32 (24.8%)	0.042
Radiographic sacroiliitis, N (%), local readers	54 (46.2%)	7 (5.4%)	<0.00001

Conclusion: Patients with extra-articular manifestations and undiagnosed back pain have a high prevalence of axSpA and referral to a rheumatologist should constitute standard of care, especially if B27 positive.

Disclosure of Interests: Walter P Maksymowych Grant/research support from: AbbVie, Pfizer, Janssen, Novartis, Consultant for: AbbVie, Eli Lilly, Boehringer, Galapagos, Janssen, Novartis, Pfizer and UCB Pharma; Chief Medical Officer for Canadian Research and Education Arthritis, Raj Carmona Grant/research support from: Amgen, Abbvie, Janssen, Consultant for: Amgen, Abbvie, BMS, Eli Lilly, Merck, Novartis, Janssen, Takeda, UCB, James Yeung: None declared, Jon Chan Grant/research support from: Janssen, UCB, Novartis, Pfizer, Celgene, Consultant for: Amgen, Celgene, Eli Lilly, Janssen, Amgen, Abbvie, Novartis, Pfizer, UCB, Sandoz, Merck, Liam Martin: None declared, Sibel Aydin Consultant for: Abbvie, Celgene, UCB, Novartis, Janssen, Sanofi, Dianne Mosher: None declared, Ariel Masetto Grant/research support from: Amgen, Sanofi, Consultant for: Sanofi, Pfizer, Bristol-Myers Squibb, Novartis, Boehringer Ingelheim, Speakers bureau: Novartis, Stephanie Keeling Consultant for: AbbVie, Pfizer, Eli Lilly, Janssen, Amgen, Astrzeneca, UCB., Olga Ziouza: None declared, Sherry Rohekar Consultant for: Abbvie, Amgen, BMS, Celgene, Eli-Lilly, Janssen, Merck, Novartis, Pfizer, Roche, Sanofi, UCB, Joel Paschke: None declared, Amanda Carapellucci: None declared, Robert G Lambert Consultant for: Bioclinica, Par-exel, Abbvie

[3] DOI: 10.1136/annrheumdis-2019-eular.6299