THU0390

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

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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

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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