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MOLECULAR AND CELLULAR BIOMARKERS THAT DISCRIMINATE JUVENILE IDIOPATHIC ARTHRITIS FROM SEPTIC ARTHRITIS

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Career situation of first and presenting author Student for a master or a PhD.

Introduction Juvenile idiopathic arthritis (JIA) and septic arthritis (SA) are the most frequent cause of arthritis among children under the age of 16 years. JIA is an inflammatory disorder with articular inflammation that persists for more than 6 weeks, while SA is caused by bacterial infection in children joints. Although these diseases have different pathophysiological basis and involve different treatments and prognoses, they share clinical similarities.

Objectives To date, there are no markers sufficiently reliable to discriminate between these two forms of arthritis at the onset of the disease. Our goal is to identify diagnostic biomarkers capable of discriminating between JIA and SA. To that end, we focused on microRNAs (miRNAs) and myeloid cell subsets, both playing a major role in the immune system.

Methods We analyzed serum and synovial fluid (SF) samples from JIA or SA patients using a miRNAs Whole Transcriptome Assay associated with a next-generation sequencing detection technology to measure the expression level of 2083 miRNAs in a pilot study (oligoarticular JIA (oJIA): n=5; SA: n=3) and validated using RT-qPCR in a replicative study (oJIA: n=9; SA: n=9). In parallel, we performed a phenotypic characterization of peripheral blood (PB) and SF myeloid subpopulations using a flow cytometer (oJIA: n=9; SA: n=8).

Results Principal component analysis and hierarchical clustering characterizations did not show significant differences between serum miRNAs of oJIA and SA patients. However, we observed a distinct miRNA profile signature in SF between the two diseases with 16 upregulated miRNAs and 5 downregulated that perfectly discriminates oJIA and SA (p<0.01). In addition, phenotypic characterization revealed the existence of 5 myeloid cell subsets with distinct accumulation profile between the SF of oJIA and SA (p<0.05).

Conclusions In this study, we propose for the first time a SF-based miRNA signature as well as 5 myeloid cell subsets that discriminate between oJIA and SA and might be used as potential diagnosis markers in juvenile arthritis. Moreover, these markers give an insight into the mechanisms that are differentially altered between inflammatory and infectious arthritis.

Disclosure of Interest None declared.

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IMPACT OF DISEASE ACTIVITY, DURATION AND MUSCLE INVOLVEMENT ON CHANGES OF BODY COMPOSITION IN MYOSITIS PATIENTS

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Career situation of first and presenting author Student for a master or a PhD.

Introduction Skeletal muscle, pulmonary and articular involvement in idiopathic inflammatory myopathies (IIM) limit the mobility/self-sufficiency of patients, and can have a negative impact on body composition.

Objectives To assess body composition and physical activity of IIM patients and healthy controls (HC).

Methods 54 patients with IIM (45 females; mean age 57.7; disease duration 5.8 years; PM, 22/DM, 25/IMNM, 7) and 54 age-/sex-matched HC (45 females, mean age 57.7) without rheumatic/tumor diseases were included. PM/DM patients fulfilled Bohan/Peter criteria for PM/DM. We assessed anthropometric parameters and body composition (by densitometry: iDXA Lunar, and by bioelectric impedance: BIA2000-M), and physical activity (by Human Activity Profile questionnaire, HAP). Routine biochemistry analysis was performed after 8 hours of fasting. Disease activity was evaluated by MITAX and MYOACT activity score, muscle involvement by manual muscle test (MMT-8) and functional index 2 (FI2).

Results Compared to HC, patients with IIM had significantly increased body fat% (BF%) but significantly decreased lean body mass (LBM), bone mineral density (BMD) and increased extracellular mass/body cell mass (ECM/BCM) ratio, which reflects worse muscle predispositions for physical activity and deteriorated nutritional status. Disease duration negatively correlated with BMD and LBM (assessed by BIA). Disease activity assessed by MITAX and MYOACT positively correlated with LBM (assessed by both BIA and DXA), as well as with basal metabolic rate (BMR), and fat free mass (FFM). CRP was positively associated with BF% (iDXA and BIA). Higher BF% (iDXA) was associated with worse physical endurance (FI2) and worse ability to perform physical activity (HAP). MMT-8 score negatively correlated with ECM/BCM ratio.

Conclusions We found significant negative changes in body composition of our IIM patients compared to healthy age-/sex-matched individuals, associated with their disease activity and duration, inflammatory status, skeletal muscle involvement, and physical activity. These data could reflect their impaired nutritional status and predispositions for physical exercise, aerobic fitness and performance.

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ASSOCIATION OF CHANGES OF BODY COMPOSITION IN SCLERODERMA PATIENTS WITH DISEASE ACTIVITY, PHYSICAL ACTIVITY AND SERUM LEVELS OF INFLAMMATORY CYTOKINES

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Career situation of first and presenting author Student for a master or a PhD.

Introduction Fibrosis of the skin and visceral organs, especially digestive tract, and musculoskeletal involvement in systemic sclerosis (SSc) can have a negative impact on body composition and physical activity.

Objectives The aim was to assess body composition and physical activity of SSc patients and healthy controls (HC) and the association with selected inflammatory cytokines in SSc.

Methods 59 patients with SSc (50 females; mean age 52.5; disease duration 6.7 years; lcSSc:34/dcSSc:25) and 59 age-/sex-matched HC (50 females, mean age 52.5) without rheumatic or tumour diseases were included. SSc patients fulfilled ACR/EULAR 2013 criteria. We assessed body composition (densitometry: iDXA Lunar, bioelectric impedance: BIA-2000-M), physical activity (Human Activity Profile, HAP questionnaire), disease activity (ESSG activity index) and serum levels of 27 cytokines (commercial multiplex ELISA kit, Bio-Rad Laboratories). Data are presented as mean $\pm$ SD.

Results Compared to HC, patients with SSc had significantly lower body mass index (BMI), body fat% (BF%) and visceral fat weight (VF), and also significantly decreased lean body mass (LBM), and bone mineral density (BMD). Compared to HC, patients with SSc had increased extracellular mass/body cell mass (ECM/BCM) ratio, reflecting deteriorated nutritional status and worse muscle predispositions for physical activity. Increased ECM/BCM in SSc positively correlated with disease activity (ESSG), skin score (mRSS) and inflammation (CRP, ESR), and was associated with worse quality of life (HAQ, SHAQ), fatigue (FSS), and decreased physical activity (HAP). ESSG negatively correlated with BF%. HAP positively correlated with BMD. Increased serum levels of several inflammatory cytokines were associated with alterations of body composition.

Conclusions Compared to healthy age-/sex-matched individuals we found significant negative changes in body composition of our SSc patients, which are associated with the disease activity and physical activity, and could reflect their nutritional status, and gastrointestinal and musculoskeletal involvement. Serum levels of certain inflammatory cytokines were associated with alterations of body composition in SSc patients.

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PREVALENCE AND CHARACTERISTICS OF CARDIOVASCULAR RISK FACTORS AND CORONARY DISEASE AMONG PATIENTS WITH PSORIATIC ARTHRITIS

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Career situation of first and presenting author Resident.

Introduction Patients with psoriatic arthritis have increased cardiovascular disease risk and comorbidity compared with the general population.

Objectives To describe prevalence and characteristics of coronary disease and cardiovascular risk factor in a cohort of patients with psoriatic arthritis over 40 years old, in each group of treatment (DMARDS vs biologic therapy).

Methods Patients older than 40 years old with psoriatic arthritis were identified based on medical records of Rheumatology department database. Primary outcomes included: age, sex, disease duration and age at the coronary event, HLAB27 positivity, hypertension, type II diabetes and hyperlipidemia.

Results Of the 137 patients, 57% were men and mean age was 57.05 ± 10.6 years old. 82% had only peripheral arthritis, while 18% also showed axial involvement. Regarding the latter subgroup, 16% of patients had a positive HLA-B27 test, 56% were HLA-B27 negative and 28% showed lack of the test. 87% of patients were in DMARDS therapy, while 31% received biologic therapy: etanercept 42%, secukinumab 16%, adalimumab 12%, ustekinumab 12%, infliximab 9.5%, golimumab 4.7% and certolizumab 2%. About 7% of patients didn't receive DMARDS neither biologic therapy, because of intolerance. Prevalence for DMARD group and biologic group for hypertension was 43% and 26%, respectively; for diabetes 19.5% and 7%; hyperlipemia 47.5% and 38%; coronary disease 10.9% and 2.4%. In DMARD subgroup, we found 6 myocardial infarction (all of them revascularized) and 3 angina, versus 1 myocardial infarction in biologic subgroup.

Conclusions There is solid epidemiologic evidence linking PsA to cardiovascular risk factors and an increased risk of developing cardiovascular disease. In addition, over the past two decades it has become clear that chronic inflammation is an independent risk factor for cardiovascular events. In our study the ratio of ischemic heart disease for patients with PsA in DMARD therapy is four times higher than biologic treatment group. This may be due to the greater percentage of cardiovascular risk factors in the first group, although, the cardioprotective effect of biologic therapies, must be considered, as there are some studies that show association between antiTNF and significant reduction in carotid IMT. Proper management of cardiovascular risk requires aggressive control of disease activity.