SAT0310

ANTI-CENTROMERE ANTIBODY ISOTYPE LEVELS AS BIOMARKER FOR DISEASE PROGRESSION IN SUBJECTS AT RISK TO DEVELOP SYSTEMIC SCLEROSIS

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Background: Presence of anti-centromere antibodies (ACA) generally associates with a better prognosis than many other systemic sclerosis (SSc) associated autoantibodies. However, presentation of the disease can be very heterogeneous and prediction of the disease course is challenging. Some older studies suggest a possible association between clinical characteristics and isotypes of ACA in patients with SSc. It is unknown whether ACA can serve as biomarker for future SSc development.

Objectives: To evaluate the clinical course of very early SSc and to assess whether ACA isotype levels can identify subjects that will progress to definite SSc.

Methods: ACA IgG+ patients with very early SSc (defined as presence of ACA IgG AND Raynaud and/or puffy fingers and/or abnormal nailfold capillaroscopy but not fulfilling ACR 2013 criteria) from five prospective SSc cohorts (Leiden, Zurich, Oslo, Bordeaux, Ghent) were included. Presence and levels of ACA IgG, IgM and IgA were determined at first clinical assessment and clinical course was evaluated annually. Disease progression to definite SSc, which was defined as fulfillment of the ACR 2013 criteria for SSc, and included any development of: digital ulcers (DU), interstitial lung disease (ILD) assessed by high resolution chest tomography, pulmonary arterial hypertension assessed by right heart catheterization, gastro-intestinal involvement, renal crisis or myocardial involvement was determined. ACA response characteristics were compared between very early SSc patients that progressed to definite SSc and those who did not. Logistic regression was performed to determine whether ACA response characteristics can predict progression to definite SSc, with adjustment for age and follow-up duration.

Results: In total 92 subjects were included with median follow-up (FU) of 3 years (table 1); 39% progressed to definite SSc, mostly based on the development of skin involvement (77%). Twenty-three percent of patients developed lung involvement, 11% DU, 17% gastro-intestinal involvement and 4% myocardial involvement. Progression on more than one organ system was present in 31% of the very early SSc patients. In the multivariable logistic regression, with adjustment for age and follow-up duration, ACA IgG levels at baseline were significantly associated with progression to definite SSc (OR 3.0 (1.1-8.8)). Likewise, a trend was observed for higher ACA IgM levels (OR 1.8 (0.9-3.5)) in the very early SSc patients progressing to definite SSc (figure 1).

Table 1. Baseline characteristics and ACA isotype levels in patients with very early SSc, and between progressors and non-progressors. * p value < 0.05.

	Progressors (n=35)	Non-progressors (n=57)
Female, n(%)	32 (91)	50 (91)
Age, mean (SD)	56 (14)	53 (13)
Disease duration since non Raynaud phenomenon, median(IQR) in years	3 (0.8-10)	2 (0.6-7)
Follow-up duration in years, median (IQR)	4 (2-6)	2 (1-3)*
Abnormal Nailfold videocapillaroscopy, n(%)	17 (65)	27 (60)
IgA level [aU/mL], median (IQR)	63 (34-120)	75 (35-144)
IgM level [aU/mL], median (IQR)	131 (32-585)	79 (18-391)
IgG level [U/mL], median (IQR)	342 (162-720)	195 (93-488)*

Conclusion: In this study we illustrate that 39% of the ACA positive very early SSc subjects progress to definite SSc within median 4 years. We identified higher ACA IgG level as a predictive biomarker for progression to definite SSc indicating that it might be a useful biomarker for risk stratification in clinical practice.

Disclosure of Interests: Nina van Leeuwen: None declared, Jaap Bakker: None declared, Annette Grummels: None declared, Corrie Wortel: None declared, Suzana Jordan: None declared, Sophie Liem: None declared, Oliver Distler Grant/research support from: Grants/Research support from Actelion, Bayer, Boehringer Ingelheim, Competitive Drug Development International Ltd. and Mitsubishi Tanabe; he also holds the issued Patent on mir-29 for the treatment of systemic sclerosis (US8247389, EP2331143)., Consultant of: Consultancy fees from Actelion, Acceleron Pharma, AnaMar,

Bayer, Baecon Discovery, Blade Therapeutics, Boehringer, CSL Behring, Catenion, ChemomAb, Curzion Pharmaceuticals, Ergonex, Galapagos NV, GSK, Glenmark Pharmaceuticals, Inventiva, Italfarmaco, iQvia, medac, Medscape, Mitsubishi Tanabe Pharma, MSD, Roche, Sanofi and UCB, Speakers bureau: Speaker fees from Actelion, Bayer, Boehringer Ingelheim, Medscape, Pfizer and Roche, Anna-Maria Hoffmann-Vold Grant/research support from: Boehringer Ingelheim, Consultant of: Boehringer Ingelheim, Actelion, Bayer, GlaxoSmithKline, Speakers bureau: Boehringer Ingelheim, Actelion, Roche, Karin Melsens: None declared, Vanessa Smith Grant/research support from: The affiliated company received grants from Research Foundation - Flanders (FWO), Belgian Fund for Scientific Research in Rheumatic diseases (FWRO), Boehringer Ingelheim Pharma GmbH & Co and Janssen-Cilag NV, Consultant of: Boehringer-Ingelheim Pharma GmbH & Co, Speakers bureau: Actelion Pharmaceuticals Ltd, Boehringer-Ingelheim Pharma GmbH & Co and UCB Biopharma Sprl, Marie-Elise Truchet: None declared, Hans Ulrich Scherer Grant/research support from: Bristol Myers Squibb, Sanofi, Pfizer, Speakers bureau: Pfizer, Lilly, Roche, Abbvie, Rene Toes: None declared, Thomas Huizinga Grant/research support from: Ablynx, Bristol-Myers Squibb, Roche, Sanofi, Consultant of: Ablynx, Bristol-Myers Squibb, Roche, Sanofi, Jeska de Vries-Bouwstra: None declared

Figure 1. ACA isotype levels in the progressors and the non-progressors. ACA IgG levels were significantly different between the two groups (*p=0.02). On the X-axis the two groups (progressors vs. non-progressors are shown) on the Y-axis the levels of ACA isotypes are shown in U/ml for ACA IgG, aU/ml for ACA IgM and ACA IgA.

DOI: 10.1136/annrheumdis-2020-eular.1511

SAT0311

BIOELECTRICAL IMPEDANCE VECTOR ANALYSIS FOR NUTRITIONAL STATUS ASSESSMENT IN SYSTEMIC SCLEROSIS AND ASSOCIATION WITH DISEASE CHARACTERISTICS

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Background: Bioelectrical impedance vector analysis (BIVA) is a common non-invasive method for estimating body composition which ultimately allows to obtain information on subject's nutritional status. So far no data about the use of BIVA in patients with systemic sclerosis (SSc) have been published.

Objectives: We used BIVA in a cohort of SSc patients in order to assess their nutritional status and any correlation with the various clinical characteristics of the disease, also evaluating the differences with the general population.

Methods: We collected data from consecutive patients diagnosed with SSc according to EULAR/ACR criteria and from healthy controls (HC) matched for age and sex. Patients underwent BIVA for the assessment of fat mass (FM), free fat mass (FFM), total body water (TBW), extracellular water (ECW), body cellular mass (BCM), basal metabolic rate (BMR) and ECM/BCM ratio, an early index of protein catabolism. Data included anthropometric and clinical features, Body Mass Index (BMI) and specific organ involvement with particular attention to gastrointestinal symptoms. Laboratory parameters, including haemoglobin and albumin levels, were also collected. Additionally, patients completed the UCLA GIT 2.0 questionnaire.

Results: Data from 50 SSc patients (92% female; mean age 61.1±12.5 years; mean disease duration 13.4±10.2 years) and from 50 HC were compared. BIVA revealed that SSc patients presented a significant reduction in BMR, BCM and ECW values compared to HC ($p<0.001$ for all). The former also exhibited a higher ECM/BCM ratio ($p<0.001$). No significant differences regarding FM, FFM, TBW and BMI were found between the two groups. Among the cohort of SSc patients, a direct correlation was found between age and ECW ($p=0.001$; $\rho=0.473$) and between disease duration and FM ($p=0.023$; $\rho=0.325$), whereas age inversely correlated with BMR ($p=0.012$; $\rho=-0.357$). Patients with anaemia and/or hypoalbuminemia had significantly reduced BMR, BCM and TBW values; those with hypoalbuminemia also had elevated ECW levels ($p=0.001$). No other significant associations with BIVA values were found among the laboratory findings and among the gastrointestinal complaints. Results showed relevant interrelations between BIVA parameters and the SSc-related involvement of different organs, e.g. digital ulcers, interstitial lung disease and pulmonary arterial hypertension (See Table 1). In addition, a higher skin involvement inversely correlated with FM ($p=0.038$; $\rho=-0.387$). The only correlation that emerged from the UCLA GIT 2.0 questionnaire was the inverse relationship between TBW and GIT-reflux ($p=0.017$; $\rho=-0.385$). Four patients died during the study: they had significantly lower BMR and BCM, with an increased ECW.

Table 1.

	Ongoing digital ulcers	History of digital ulcers	Interstitial lung disease	Pulmonary arterial hypertension	Heart involvement
FM	$p=0.006$	ns	$p=0.042$	ns	ns
FFM	$p=0.019$	$p=0.046$	ns	ns	ns
TBW	$p<0.001$	ns	$p=0.007$	ns	ns
ECW	ns	ns	$p=0.015$	$p=0.004$	$p=0.02$
BCM	$p=0.01$	$p=0.047$	$p=0.016$	$p=0.013$	$p=0.03$
BMR	$p=0.002$	$p=0.036$	$p=0.004$	$p=0.015$	ns
ECM/BCM	ns	ns	$p=0.034$	ns	ns

Conclusion: BIVA has shown that SSc patients have a worse nutritional status than HC. The parameters obtained with BIVA in SSc patients correlate with serological malnutrition markers (haemoglobin and albumin), with various organ-specific SSc manifestations (cardiopulmonary involvement and digital ulcers) and with mortality. BIVA could therefore play a role in the prognostic stratification of SSc patients.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.2436

SAT0312 SUBCLINICAL ATHEROSCLEROSIS IN SYSTEMIC SCLEROSIS AND RHEUMATOID ARTHRITIS: A COMPARATIVE MATCHED-COHORT STUDY

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Background: Systemic autoimmune inflammatory disorders confer a higher risk of cardiovascular (CV) disease leading to increased morbidity and mortality compared to the general population. CV risk in Systemic Sclerosis (SSc) has not been studied so extensively as in other diseases, such as Rheumatoid Arthritis (RA), and the real impact of CV disease on SSc prognosis remains unknown. Surrogate markers of atherosclerosis namely carotid intima media thickness (cIMT) and pulse wave velocity (PWV) are impaired in some but not all studies in SSc patients.

Objectives: The aim of the study was to investigate the prevalence of subclinical atherosclerosis assessed by cIMT and PWV between two well-characterized SSc and RA cohorts.

Methods: Consecutive SSc patients attending the Scleroderma Clinic were compared with RA patients recruited in the Dudley Rheumatoid Arthritis Co-morbidity Cohort (DRACCO), a prospective study examining CV burden in RA. Cardiovascular risk was assessed using the QRisk3 and cIMT, Augmentation Index (AIx75) and central systolic and diastolic blood pressure were measured in all participants. Propensity score matching, was utilized to select patients from the two cohorts with similar demographic characteristics, CV risk factors (smoking, hypertension, obesity, dyslipidemia, diabetes) and inflammatory load. Unpaired t-test and Chi-square test of independence were applied.

Results: Fifty five age- and sex-matched SSc and RA patients with similar distribution of CV risk factors were included. No difference was demonstrated between SSc and RA regarding cIMT and AIx75% (0.65 vs 0.61mm $p=0.17$ and 33.4 vs 31.7 $p=0.397$ respectively). However average QRisk3 score was significantly higher in the RA compared to the SSc group ($P<0.05$).

Conclusion: The results of this comparative study show that subclinical atherosclerosis is comparable between individuals with SSc and RA, a systemic disease with well-defined high atherosclerotic burden. RA patients have higher CV risk (QRisk3 algorithm) suggesting that disease-specific factors such chronic high-grade inflammation may influence the CV risk in this population.

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Table 1. Demographic and cardiovascular risk factors of the matched patients

	RA N=55	SSc N=55	P
Age	63.6 (14.8)	61.3 (10.9)	0.140
Female	49 (89.1%)	53 (96.4%)	0.438
Smoking	10 (18.2%)	13 (23.6%)	0.5
Diabetes	0 (0.00%)	1 (1.82%)	0.364
Hyperlipidemia:	7 (12.7%)	6 (10.9%)	1.000
Hypertension:	23 (41.8%)	19 (34.5%)	0.441
ESRD	20.4 (18.4)	22.0 (19.1)	0.666
CRP	8.38 (11.6)	6.65 (30.2)	0.692

Table 2. Comparison of IMT, AIx75, Framingham and QRISK3 between matched patients

	RA N=55	SSc N=55	P
IMT right average	0.65 (0.17)	0.61 (0.12)	0.175
IMT left average	0.67 (0.15)	0.64 (0.13)	0.214
IMT average	0.66 (0.14)	0.63 (0.10)	0.137
AIx 75% (%)	33.4 (9.23)	31.7 (10.8)	0.397
Framingham risk			< 0.001
< 10%	9 (31.0%)	37 (74.0%)	
10 – 20%	12 (41.4%)	9 (18.0%)	
20 – 30%	3 (10.3%)	4 (8.00%)	
>30%	5 (17.2%)	0 (0.00%)	
QRISK3	18.2 (15.3)	11.1 (10.6)	0.006

Disclosure of Interests: Pantelis Baniotopoulos: None declared, Eleni Pagkopoulou: None declared, Stergios Soulaïdopoulos: None declared, Aamer Sandoo: None declared, Niki Katsiki: None declared, Asterios Karagiannis: None declared, Karen Douglas: None declared, Alexandros Garyfallos Grant/research support from: MSD, Aenorasis SA, Speakers bureau: MSD, Novartis, gsk, Georgios Kitas: None declared, Theodoros Dimitroulas: None declared

DOI: 10.1136/annrheumdis-2020-eular.2601

SAT0313 CORRELATION BETWEEN PROGRESSION OF SKIN FIBROSIS AND PROGRESSION OF INTERSTITIAL LUNG DISEASE (ILD) IN PATIENTS WITH SSC-ILD: DATA FROM THE SENSCLIS TRIAL

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