(±3.2) years in cases of SSc-related death, as compared to 18.3 (±11.0) years in deaths not related to SSc.
Conclusions: SSc prevalence (13,8/10^5) in Crete is consistent with previous (2002) Greek studies (15,4/10^5)[4] albeit lower compared to other European countries and USA[5]. Despite its rarity, the disease has significant burden. The SSc-related mortality occurs early in the disease course. Early recognition and treatment may decrease disease burden and improve the outcomes.
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SAT0331 AMINAPHTONE INCREASES SKIN BLOOD PERFUSION AND IMPROVES CLINICAL SYMPTOMS IN PATIENTS WITH BOTH PRIMARY AND SECONDARY RAYNAUD'S PHENOMENON: AN OPEN SIX MONTH PILOT STUDY

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Background: Aminaphtone (1,4-Dihydroxy-3-methyl-2-naphthyl-4-aminobenzoate) is a vasoactive drug that was recently demonstrated to improve the symptoms of Raynaud's phenomenon (RP) and to down-regulate endothelin-1 production by endothelial cells (1–3).
Objectives: To evaluate skin blood perfusion and clinical symptom changes during aminaphtone treatment in patients with both primary and secondary RP, during a six-month follow-up.
Methods: Forty-six patients with active RP were enrolled during routine clinical assessment in November 2015 (11 primary RP, mean age 49±19SD years, mean RP duration 6±3 years; 35 secondary RP to systemic sclerosis, mean age 61±17 years, mean RP duration 11±9 years), after informed consent. Aminaphtone was administered 75 mg twice daily (off label) in addition to current treatments (the patients were on a stable drug regimen for at least two months before, which remained unmodified during the follow-up). Blood perfusion was measured by Laser Speckle Contrast Analysis (LASCA) and values recorded as perfusion units (PU) (4), at the level of fingertips, periungual areas, dorsum and palm of hands, and face, at baseline (T0), after one (T1), four (T4), twelve (T12) and twenty-four (T24) weeks of treatment. Raynaud's condition score (RCS) and both frequency and duration of Raynaud's attacks were assessed at the same time. Forty-six patients with RP (9 primary RP and 37 secondary RP to systemic sclerosis) not treated with aminaphtone were also enrolled as a control group and evaluated at T0 and T24.
Results: A progressive statistically significant increase of blood perfusion was observed from T0 to T12 in all skin areas analyzed (median PU at T0, T1, T4, T12, T24 respectively: fingertips 55, 88, 101, 107, 98 periungual areas 44, 88, 91, 92, 92; dorsum of hands 38, 61, 71, 75, 75; palm of hands 56, 85, 89, 94, 82; whole face 127, 138, 144, 159, 129; $p<0.001$ for all areas). From T12 to T24 was not observed any further increase of blood perfusion. A progressive statistically significant decrease of RCS (median at T0, T1, T4, T12, T24: 7, 6, 4, 4, 4; $p<0.0001$), frequency of Raynaud attacks/day (median: 2, 2, 1, 1, 1; $p<0.0001$) and Raynaud duration (median: 20, 20, 10, 4, 4 minutes; $p<0.0001$) was also recorded from T0 to T12. The results were similar in both primary and secondary RP patients (p=0.40). Aminaphtone administration had to be stopped in 2 patients due to headache, and one patient was lost during follow-up. Any statistically significant variation of blood perfusion was not observed in the control group (median PU at T0 and T24 respectively: fingertips 70, 71; periungual areas 68, 70; dorsum of hands 57, 57; palm of hands 59, 59; whole face 132, 130; p=n.s. for all areas).
Conclusions: This study demonstrates that aminaphtone treatment seems able to increase skin blood perfusion and to improve RP symptoms, even in patients affected by systemic sclerosis. These preliminary results should be further confirmed by a randomized clinical trial, also to assess the role that aminaphtone plays in the treatment/prevention of disease clinical complications.
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SAT0332 HEPATOBILIARY INVOLVEMENT IN SYSTEMIC SCLEROSIS AND THE CUTANEOUS SUBSETS. CHARACTERISTICS AND SURVIVAL OF PATIENTS FROM THE SPANISH RESCLE REGISTRY

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Background: Hepatobiliary involvement (HBI) has been associated to systemic sclerosis (SSc). However, it is not considered as characteristic clinical manifestation of that autoimmune disease
Objectives: To assess the prevalence and causes of HBI in SSc and to investigate the clinical characteristics and prognosis of SSc patients with HBI (SSc-HBI) and without HBI (SSc-non HBI).
Methods: Up to January 2015, 1572 SSc patients were collected in the Registro de ESCLErodermia (RESCLE) and causes of hepatobiliary disturbances were recorded. We investigated the HBI related characteristics and survival from the entire cohort and according to the following cutaneous subsets: dcSSc, lcSSc, and SSc sine scleroderma (ssSSc).
Results: Out of 1572, 118 (7.5%) patients had HBI, and primary biliary cholangitis (PBC) was largely the main cause (n=67, 4.3%), followed by autoimmune hepatitis (n=19, 1.2%), and anti-mitochondrial negative PBC (n=6, 0.4%). Other causes of HBI were: secondary liver diseases (n=11, 0.7%), SSc-related HBI (n=7, 0.4%), nodular regenerative hyperplasia (n=3, 0.2%), liver cirrhosis (n=3, 0.2%), and unknown origin (n=2, 0.1%). In multivariate analysis, HBI was independently associated to lesser risk of dcSSc (5.1% vs 24.4%, OR: 0.18, p=0.005%), and higher frequency of calcinosis (26% vs 18%, OR: 1.80; p=0.028), left ventricular diastolic dysfunction (46% vs 27%, OR: 1.73; p=0.027), sicca syndrome (51% vs 29%, OR: 2.03; p=0.003), and anti-centromere antibodies (ACA, 73% vs 44%, OR: 1.86; p=0.023). According to the cutaneous subsets, HBI was associated: (1) in lcSSc subset, to longer time from SSc onset to diagnosis (10.8±12.5 vs 7.2±9.3, OR: 1.03; p=0.012), sicca syndrome (54% vs 33%, OR: 1.96; $p<0.001$), and ACA (80% vs 56%, OR: 2.64; $p<0.001$); and (2) in ssSSc subset, to sicca syndrome (44% vs 19%, OR: 3.43; p=0.018). No associations were found in dcSSc subset. HBI was the cause of death in 2.3% patients. Kaplan–Meier cumulative survival for the SSc cohort and the cutaneous subsets, according to the presence or absence of HBI showed no differences.
Conclusions: The prevalence of HBI in SSc was 7.5%. Primary autoimmune liver diseases accounted for 77% of all conditions. PBC was the main cause of HBI reaching 4.6% of the overall SSc cohort. Patients with HBI were rarely classified as dcSSc subset and the elapsed time from the first SSc symptom to SSc diagnosis was longer. Calcinosis cutis, diastolic dysfunction, sicca syndrome, and the presence of ACA were all independently associated to HBI. In lcSSc subset, HBI was associated to sicca syndrome and ACA but in ssSSc only sicca syndrome was more prevalent. HBI was the cause of death in 2.3%
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SAT0333 PREVALENCE OF SARCOPENIA IN PATIENTS WITH SYSTEMIC SCLEROSIS ACCORDING TO THE REVISED CRITERIA OF THE EUROPEAN WORKING GROUP ON SARCOPENIA IN OLDER PEOPLE

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Background: Systemic Sclerosis (SSc) is a chronic inflammatory connective tissue disease that is often associated with gastrointestinal involvement and myopathy. Sarcopenia is defined as age-associated loss of muscle mass, strength and function with profound impact on functionality as well as on mortality (1). "Secondary sarcopenia" has now been described in the context of severe and chronic disease such as malignant disease or inflammatory disorders (2) and been linked to poor clinical outcome.
Objectives: Analysis of the prevalence of sarcopenia in patients with SSc with respect to clinical characteristics, quality of life and severity of physical impairment.
Methods: 129 patients were included. Sarcopenia was defined according to the

criteria of the European Working Group on Sarcopenia in Older People (3) using appendicular lean mass assessed by bioelectric impedance analysis and grip strength - stratifying both by body mass index. We also used the 2016 formula by Scafoglieri et.al to calculate appendicular lean mass (4). This approach is different from previous studies because we combined the new formula with established cut-off values, which incorporate a functional parameter. Muscle function was assessed by hand grip, knee extension strength and peak expiratory flow. Impairment and quality of life were evaluated using the Scleroderma Health Assessment Questionnaire (SHAQ) and Short-Form 36 Health Survey (SF-36®). Clinical data were assessed according to standardised procedures.

Results: The prevalence of sarcopenia in our study group was 27.1%.There were no significant differences between patients with and without sarcopenia regarding age (p=0.838) and disease duration (p=0.832). There were significant differences regarding grip strength (p<0.001), knee extension strength (p=0.003), peak flow (p=0.042), SF-36® Physical Function (p=0.009) and the number of immunosuppressive (p=0.048) and other drugs taken (p=0.037). See Table 1.

Table 1 Comparing analysis between two patient groups (Sarcopenia/ No Sarcopenia)

Variable	Sarcopenia, n = 35	No Sarcopenia, n = 94	p
Women	32 (91.4)	85 (90.4)	0.862
Age (years)	59.5 ± 14.8	59.0 ± 13.5	0.838
Disease duration (years)	8.6 ± 6.0	8.9 ± 6.9	0.832
Body Mass Index (kg/m²)	20.6 ± 2.7	25.5 ± 5.2	< 0.001
Hand grip strength (kgF)	10.3 ± 6.1	18.7 ± 8.0	< 0.001
Knee extension strength (kgF)	13.6 ± 7.2	22.3 ± 16.3	0.003
Peak flow (l/min)	305.8 ± 102.0	348.3 ± 101.9	0.042
SF-36® Physical Health SUM	40.5 ± 18.1	48.5 ± 19.6	0.043
SF-36® Physical Function	41.7 ± 27.1	54.3 ± 27.4	0.026
SHAQ score	0.66 ± 0.12	0.64 ± 0.07	0.010
IPAQ (level of activity – high)	5 (14.3)	28 (29.8)	0.073
Number of medication	6.2 ± 3.8	4.8 ± 3.2	0.037
Number of immunosuppressive medication	1.4 ± 1.1	1.0 ± 1.0	0.048

Data are given in mean ± SD or n (%)
SSc – Systemic Sclerosis; SF-36® - Short Form 36; SHAQ – Scleroderma Health Assessment Questionnaire; IPAQ – International Physical Activity Questionnaire; CRP – C-reactive protein

Conclusions: There is a high prevalence of sarcopenia in patients with SSc even among younger patients. Sarcopenic patients have a significant increase in physical impairment and a decreased quality of life regarding their physical health. Taking a higher number of immunosuppressive or other drugs was identified as a risk factor for sarcopenia. This could be due to severe organ involvement being a confounder or an indication for the immunological component in the pathophysiology of secondary sarcopenia. This suggests that sarcopenia might be linked to severe disease or multimorbiditiy in SSc patients.

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SAT0334 CORRELATING MULIPLEX PLASMA CYTOKINE ANALYSIS WITH RIGHT HEART CATHETERISATION FINDINGS IN SCLERODERMA ASSOCIATED PULMONARY ARTERIAL HYPERTENSION

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Background: Right heart catheterisation (RHC) is an important test for the diagnosis and subclassification of pulmonary hypertension (PH), one of the serious manifestations of systemic sclerosis (SSc). It provides haemodynamic information for diagnosis and management. Routine RHC in SSc cases with suspected PH permits blood sampling to explore plasma levels of key cytokines that may be markers of mediators of pulmonary arterial hypertension (PAH) pathogenesis.

Objectives: This is an exploratory study to assess for associations between plasma cytokine levels and haemodynamic assessment from RHC in SSc patients.

Methods: SSc patients undergoing routine RHC were recruited. Indications for referral included suspected PH, or those on treatment for established PH for assessment of response to therapy. Blood samples were collected during RHC in consented patients. Demographic and clinical data were obtained. Haemodynamic data from RHC including mean right atrial pressure (mRAP), mean pulmonary arterial pressure (mPAP), pulmonary capillary wedge pressure (PCWP), pulmonary vascular resistance (PVR), cardiac output (CO) and cardiac index (CI) were recorded. Plasma samples were analysed using a bead-based multiplex platform for IL1b, IL4, IL6, IL10, IL17A, IL17F, IL21, IL22, IL23, IL25, IL31, IL33, IFNg, sCD40L and TNFa (Bio-Rad Pro Assays). Plasma from a small group of healthy controls were also analysed for comparison. For analytes found to be below the lower limit of detection of the assays, they were assumed to be equal to the lower limit of the detection as per the assay's protocol.

Results: 32 SSc patients were recruited. Their mean age was 59.4-year-old, and 31 of them (97%) were female. Most (n=29, 91%) had limited cutaneous SSc. The commonest antibody was anti-centromere antibody (n=16, 55%), followed by anti-U3RNP antibody (n=4, 14%). None of these patients had significant pulmonary fibrosis (≥20% involvement on HRCT thorax scan). PAH, defined as mPAP ≥25mmHg & PCWP ≤15mmHg, was diagnosed at RHC in 26 patients (81%).

Among the proteins tested, only the level of sCD40L was significantly different among the three groups, namely SSc with PH, SSc without PH and healthy controls (p=0.008). sCD40L was also the only biomarker which was significant higher among patients with SSc (with and without PH) than healthy controls (p=0.0284).

Interestingly, there was a weak negative correlation between sCD40L and mPAP (correlation coefficient=-0.35, p=0.0486). There was a moderately strong positive correlation between mRAP and IL4 (correlation coefficient=0.57, p=0.0006) and IL10 (correlation coefficient=0.51, p=0.0028). We found no evidence for association between any of the biomarkers and cardiac output, cardiac index, PCWP or PVR.

Conclusions: Our data suggest that some individual plasma proteins may correlate with specific RHC haemodynamic parameters. Future studies will extend these findings and explore whether combining multiple analytes may give stronger non-invasive prediction of relevant haemodynamic variables and could be used in detection or monitoring of PAH in SSc.

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SAT0335 SERUM KYNURENINE/TRYPTOPHAN (KYN/TRP) RATIO AND NEOPTERIN (NEO) LEVELS ARE RAISED IN SYSTEMIC SCLEROSIS (SSC) AND ASSOCIATE WITH SPECIFIC CLINICAL AND AETIO-PATHOGENETIC FEATURES

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Background: The enzymes IDO degrades Trp into Kyn and is induced by IFN-gamma/IL-1. Neo is produced by monocytes/macrophages after IFN-gamma stimulation through the enzyme GTPCH and is a biomarker for monitoring immune activation in several diseases [1]. The activity of GTPCH is induced in parallel to IDO and the Kyn/Trp ratio has been suggested to be a direct measure of IDO activity [2].

Objectives: To assess serum level of Kyn, Trp, Neo and Kyn/Trp ratio in SSc and potential associations with specific disease features.

Methods: 60 SSc pts and 10 healthy controls (HC) were recruited and serum levels of Kyn, Trp and Neo were measured. Kyn/Trp ratio was calculated. The results were then correlated with specific disease features: disease duration, limited or diffuse disease, autoantibody profile (anti-RNA pol III (ARA), anti-topoisomerase (ATA) and anti-centromere (ACA)), inflammatory markers, Hb level, concurrent modified Rodnan skin score (mRSS), peak mRSS, pulmonary fibrosis (PF), pulmonary arterial hypertension (PAH), history of scleroderma renal crisis (SRC), GI involvement, vasculopathy, environmental exposure, oncology history, smoking status, immunosuppressive treatment, NT-proBNP and urate levels. Non-parametric statistical tests were used.

Results: Kyn/Trp ratio was higher in SSc compared to HC (mean 49.97±32.77 [41.50 – 58.43] vs 22.5±6.3 [13.5 – 32.5] μmol/mmol, p<0.05) and, more specifically, dcSSc showed higher ratio compared to lcSSc that had higher ratio than HC (mean 56.58±39.62 [43.18 – 69.99] vs 40.05±13.93 [34.16 – 45.93] vs 22.5±6.3 [17.99 – 27.01] μmol/mmol respectively, p<0.05). Moreover,