images analysis led to classification of pulmonary segments as "negative" (normal morphology) and "positive" (GGO). Furthermore, the "Warrick score" was used as a staging tool for SSc-ILD. Mean Standardised Uptake Value (mSUV) of segmental parenchyma was normalised (nmSUV) by comparison with the values of selected control subjects.

Results: No SSc patient was affected by cancer. Three patients had a Warrick Score >0, while 4 patients did not have any lung involvement (Warrick Score=0). The 3 patients with a Warrick Score >0 had also skin involvement with a median mRSS 6 (2–7) and pathological lung FDG uptake. In "positive" segments of SSc patients, nmSUV was significantly higher than in the lung segments of the control population (mean estimation 1.53; C.I. 1.42–1.65, $p<0.0001$). In "negative" segments of SSc patients, with a Warrick score >0, the nmSUV was significantly higher than in segments of the control population (mean estimation 1.29; C.I. 1.22–1.37, $p<0.0001$). Lung segments with GGO showed an nmSUV higher (21%) than "negative" segments (C.I. 0.13–0.28, $p<0.0001$) of patients with Warrick score >0. "Negative" lung segments of patients with Warrick Score >0 showed a 32% higher 18F-FDG uptake than "negative" lung segments of patients with Warrick Score=0. (C.I. 0.17–0.48, $p<0.0001$). (figure 1)

Abstract THU0425 – Figure 1. a) Differences in 18F-FDG uptake between "positive" segments of Warrick score >0 SSc patients, "negative" segments of Warrick score >0 SSc patients and "negative" segments of Warrick score=0 SSc patients vs attended normalised control value (=1); b) Differences in 18F-FDG uptake between "positive" lung segments of SSc patients with Warrick score >0 vs "negative" segments of the same patients; c) Differences in 18F-FDG uptake "negative" lung segments of patients with Warrick Score >0 vs "negative" lung segments of patients with Warrick Score=0

Conclusions: Morphologically "positive" GGO segments show an increased 18F-FDG uptake suggesting the existence of a metabolically active (inflammatory) GGO. However, in patients with GGO, negative lung segments showed a higher nmSUV than negative lung segments in patients without GGO. This may suggest that PET/CT may disclose an underlying inflammatory process, which cannot yet be evidenced by HRCT. Further studies on a larger population are warranted to confirm these data and possibly provide a prognostic significance of PET/CT positivity in SSc patients.

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THU0426 ETHNIC VARIATION IN SYSTEMIC SCLEROSIS MORBIDITY AND MORTALITY

H. Al-Sheikh, Z. Ahmad, S.R. Johnson. Toronto Scleroderma Program, Division of Rheumatology, Department of Medicine, Sinai Health Systems, University Health Network, University of Toronto, Toronto, Canada

Background: Systemic sclerosis (SSc) is an uncommon connective tissue disease characterised by pathological skin thickening and can involve multiple internal organs. Ethnic variations in SSc have been reported in clinical manifestations, severity of the disease as well as survival.

Objectives: Our aim was to compare the survival and disease manifestations across ethnicity among SSc patients.

Methods: The Toronto Scleroderma Program is the largest single-centre, multi-ethnic, longitudinal SSc cohort in Canada. Patients are followed every 6 to 12 months using a standardised protocol. Patients who fulfilled the American College of Rheumatology-European League Against Rheumatism classification criteria for SSc and are 16 years of age or older were included in our retrospective cohort study. The study period was 1970–2017. Ethnicity was self-reported and was categorised as: Caucasian, African-American, Hispanic, Arab, East-Asian, First Nations or Persian. The primary outcome was the time from diagnosis to death from all causes. Secondary outcomes were differences in disease duration, SSc subtype, clinical manifestations, and serology. Survival probabilities and median survival times were determined using Kaplan-Meier survival curves. Cox proportional hazard models were used to estimate adjusted survival.

Results: 1005 subjects were evaluated, the majority of whom were Caucasian ($n=745$ (74%), African-American $n=58$ (6%), South Asian ($n=69$ (7%)), and East Asian ($n=80$ (8%)). Compared to Caucasians, East Asians less frequently had calcinosis (29% versus 9%, $p=0.002$), and esophageal dysmotility (88% versus 69%, $p=0.002$); African-Americans more frequently had interstitial lung disease (31% versus 53%, $p=0.007$); and First Nation subjects more frequently had diffuse cutaneous disease (35% versus 56%, $p=0.02$) and diabetes (5% versus 33%, $p=0.03$). There were no differences across ethnicities in the prevalence of pulmonary hypertension, renal crisis, or digital ulcers.

We found no difference in the short-term survival across ethnicities. However, in the long-term, there was trend for Hispanic subject to have better survival (81.3% (95%CI 63, 100), while First Nations (58.3% (95%CI 25, 100) and South Asian subjects (52.6% (95%CI 32, 87) had worst survival at 15 years and 20 years, respectively. East Asians appear to have the longest median survival time 43.3 years.

Conclusions: Ethnic variations in disease SSc disease manifestations are observed. However, in the setting of a universal health care system, this does not result in significant differences in survival.

Disclosure of Interest: None declared

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THU0427 COMPARABLE CARDIOVASCULAR DISEASE AND NEOPLASM RATES BUT HIGHER FREQUENCY OF DEPRESSION IN SYSTEMIC SCLEROSIS VERSUS RHEUMATOID ARTHRITIS: A MULTICENTRE COMPARATIVE STUDY OF COMORBIDITIES

S. Panopoulos¹, M.G. Tektonidou¹, A. Drosos², S.-N. Lioussis³, T. Dimitroulas⁴, L. Sakkas⁵, D. Boumpas¹, P. Voulgaris², D. Daoussis³, K. Thomas¹, G. Georgiopoulos¹, G. Vosvotekas⁴, D. Vassilopoulos¹, P.P. Sfikakis¹. ¹Joint Rheumatology Program, School of Medicine, National and Kapodistrian University of Athens, Athens; ²Rheumatology Clinic, Department of Internal Medicine, Medical School, University of Ioannina, Ioannina; ³Division of Rheumatology, Department of Internal Medicine, Faculty of Medicine, University of Patras, Patras; ⁴4th Department of Internal Medicine, School of Medicine, Hippokraton Hospital, Aristotle University of Thessaloniki, Thessaloniki; ⁵Department of Rheumatology and Clinical Immunology, Faculty of Medicine, School of Health Sciences, University of Thessaly, Larissa, Greece

Background: An increased burden of comorbid conditions negatively impacts patients' outcomes, leads to increased mortality and seems to characterise all chronic systemic connective tissue diseases. Systemic Sclerosis (SSc) is associated with the highest mortality rate comparing to other diseases, whereas data regarding epidemiology and clinical expression of SSc comorbidities is limited. In contrast, comorbidities of rheumatoid arthritis (RA), and especially the increased rate of cardiovascular disease, are better established.

Objectives: To compare the prevalence of common comorbidities in SSc versus RA in a large multicentre case-control study from 5 academic centres in Greece.

Methods: Between 2016 and 2017 consecutive SSc patients ($n=408$, mean age: 58.6 years, 88% women) were matched 1:1 for age and gender with 408 RA patients. Evaluated comorbidities were dyslipidemia, diabetes mellitus, arterial hypertension, coronary artery disease, stroke, chronic obstructive pulmonary disease, osteoporosis, neoplasms and depression. Differences were examined by χ^2 test.

Results: The prevalence of dyslipidemia (18.4% vs 30.1%, $p=0.001$) and diabetes mellitus (5.6% vs 11.8%, $p=0.007$) was lower in SSc than RA patients and there was no difference regarding arterial hypertension (31.8% vs 30.6%, respectively, $p=0.742$) between the two groups. Disease duration, smoking and alcohol consumption were comparable between SSc and RA groups. While there was a trend for lower prevalence of ischaemic strokes in SSc than RA (0.4% vs 2.2%, $p=0.085$), comparable rates of coronary artery disease were noted (2.7% vs 3.7%, $p=0.445$). No differences were found between SSc and RA patients regarding chronic obstructive pulmonary disease (5.2% vs 3.7%, respectively, $p=0.326$), osteoporosis (24% vs 22%, $p=0.668$) and neoplasms (1.1% vs 1.7%, $p=0.534$). Depression requiring treatment was more prevalent in SSc compared to RA patients (22% vs 12%, $p=0.001$).

Conclusions: Despite almost half prevalence of dyslipidemia and diabetes mellitus in SSc versus RA patients, the cardiovascular comorbidity burden appears to be similar between the two diseases. SSc has no higher prevalence of neoplasms than RA but a greater negative impact on quality of life, as clearly more SSc patients develop depression compared to RA patients. Acquisition of prospective data is currently underway.

Disclosure of Interest: None declared

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THU0428

SKIN SCORE CHANGES IN EARLY DIFFUSE CUTANEOUS SYSTEMIC SCLEROSIS (dcSSc) PATIENTS ARE ASSOCIATED WITH OVERALL DISEASE SEVERITY

T. Nevskaya¹, M. Baron², B. Zheng², C.A. Baxter², D.R. Ramey⁴, J.E. Pope¹, on behalf of Canadian Scleroderma Research Group. ¹Department of Medicine, Division of Rheumatology, University of Western Ontario, Schulich School of Medicine And Dentistry, London; ²Division of Rheumatology, Jewish General Hospital, McGill University, Montreal, Canada; ³MSD Ltd, Huddersdon, UK; ⁴Merck and Co., Inc., Kenilworth, NJ, USA

Objectives: To determine if skin changes over 2 years are associated with changes in organ involvement in early diffuse cutaneous systemic sclerosis (dcSSc).

Methods: dcSSc with ≤ 5 years disease duration followed for 2 years from the Canadian Scleroderma Research Group (CSRG) registry were studied for organ involvement using the Medsger Disease Severity Score (DSS) with ≥ 1 point changes (decrease or increase) considered improvement or progression, correspondingly. Other disease measures were assessed including pulmonary function, patient and physician globals, functional disability and quality of life. Modified Rodnan Skin Score (mRSS) improvement was defined as a decrease of ≥ 5 points and/or $\geq 25\%$ reduction. Adjusted regression analysis, ANOVA, chi-square, t-test and Pearson's tests were used.

Results: Of the 128 patients, mRSS improved for 50% from 22.6 to 18.1 ($p=0.0001$). More skin-improvers improved in severity of lung (39% vs 17%, $p=0.006$), joint/tendon (50% vs 21%, $p=0.017$), and any visceral organ involvement (renal, cardiac, pulmonary or gastrointestinal) (60% vs 27%, $p=0.031$) compared to mRSS non-improvers. Skin-improvers less often developed new skin ulcers (0% vs 11%, $p=0.015$) and GI disease (5% vs 18%, $p=0.023$), as well as progression of joint/tendon involvement (7% vs 29%, $p=0.02$). Improving mRSS correlated with changes in total Medsger's severity score (without skin domain), severity of lung, GI, and peripheral vascular disease (table 1). FVC% stabilised in skin-improvers vs. worsened by 6.5% in non-improvers, $p=0.026$. Physician global assessments (severity, activity, damage) HAQ-DI, and SF-36 PCS improved more with improved mRSS ($p<0.003$, $p=0.001$, $p=0.005$ respectively). Improvement in Forced Vital Capacity% predicted correlated with skin improvement ($r=0.33$, $p=0.004$).

Abstract THU0428 – Table 1. Relationship between change in disease measures and change in skin score

Outcome measure	Skin-improver (n=64)	Skin non-improver (n=64)	P-value Improvers vs. Non-improvers
Total Medsger's severity score without skin domain (negative is improvement)	-2.57 $\pm$ 3.11	0.42 $\pm$ 2.98	0.002
Patient global score	-0.70 $\pm$ 2.69	0.15 $\pm$ 2.61	0.088
Physician global score:	-1.97 $\pm$ 2.50	-0.61 $\pm$ 2.63	0.003
Activity	-1.33 $\pm$ 2.54	-0.03 $\pm$ 2.04	0.002
Severity	-0.72 $\pm$ 1.87	0.77 $\pm$ 1.98	0.000
Damage	-0.19 $\pm$ 0.64	0.18 $\pm$ 0.47	0.001
HAQ-DI	-0.19 $\pm$ 0.64	0.18 $\pm$ 0.47	0.001

SHAQ Numeric Rating Scales:	-0.29 $\pm$ 2.59	0.00 $\pm$ 2.55	0.552
Pain	0.29 $\pm$ 2.93	0.66 $\pm$ 2.30	0.445
RP	0.32 $\pm$ 1.96	0.16 $\pm$ 2.32	0.681
Finger ulcers	-0.21 $\pm$ 3.02	0.54 $\pm$ 2.97	0.178
Gastrointestinal	0.02 $\pm$ 2.32	0.05 $\pm$ 3.34	0.950
Breathing	-0.70 $\pm$ 2.70	-0.22 $\pm$ 2.62	0.340
Overall SF-36 PCS	3.08 $\pm$ 9.03	-1.55 $\pm$ 8.33	0.005

Conclusions: Over two years, improving skin scores in dcSSc were associated with an improvement in lung disease, joint/tendon, physician global assessments, HAQ-DI, SF-36 PCS, and overall visceral organ improvement. Improvement in mRSS as a primary outcome in drug trials is likely to be concordant with improvement in organ involvement and several other disease measurement domains in early dcSSc.

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THU0429

NAILFOLD VIDEO CAPILLAROSCOPY AND DETERIORATION OF SKIN INVOLVEMENT AND LUNG FUNCTION TESTS IN SYSTEMIC SCLEROSIS: A 3-YEAR PROSPECTIVE STUDY

V.-K. Bournia¹, K. Kottas¹, A. Iliopoulos², P.P. Sfikakis¹, P. Vlachoyiannopoulos¹. ¹Joint Rheumatology Program, School of Medicine, National and Kapodistrian University of Athens; ²Department of Rheumatology, Veterans Administration Hospital (NIMTS), Athens, Greece

Background: Nailfold video-capillaroscopy(NVC) is a non-invasive method to assess peripheral microangiopathy. Abnormal capillaroscopic patterns are almost universally found in patients with Systemic Sclerosis (SSc) and assist the diagnosis of SSc. However, little is known about the prognostic value of NVC in skin and lung involvement progression in these patients.

Objectives: To test the hypothesis that baseline capillaroscopic indices, as well as possible changes in capillaroscopic indices over time, correlate with deterioration in skin thickening and lung function tests in a prospective SSc cohort.

Methods: Fifty-five consecutive SSc patients from a tertiary care university centre (49 women, 29 limited cutaneous SSc, mean age: 50.84 $\pm$ 14.88 years, mean disease duration 6.74 $\pm$ 6.25 years) were evaluated by NVC at baseline and after a median of 3.1 years. Qualitative assessment of NVC findings permitted categorization of patients to a predominantly normal, early, active or late capillaroscopic pattern. Capillary loss, capillary dilatation, giant or ramified capillaries and micro-hemorrhages were further assessed using a semi-quantitative rating scale (score 0–3), derived as the mean of three fields in each of the 2nd, 3rd, 4th and 5th finger of both hands. Scoring was performed by two different assessors. Skin thickening was measured using the modified Rodnan Skin Score (mRSS). FVC and DLCO were performed within 6 months from the NVC. Deterioration in FVC and DLCO was considered clinically significant when $>10\%$. Between baseline and follow-up evaluation 36% of patients had been receiving both major antiproliferative and vasodilator therapy, while 15% and 29% had been receiving only antiproliferative or vasodilator therapy, respectively.

Results: Intraclass correlation coefficient (ICC) for interrater reliability analyses was very good for all semi-quantitative capillaroscopy scores [ICC: 0.97 (0.74–0.99) for capillary loss score, 0.94 (0.85–0.98) for dilatation score, 0.98 (0.97–0.99) for giant score, 0.94 (0.84–0.97) for microhemorrhages score], except for the ramification score [ICC: 0.52 (-0.2–0.81)] which was excluded from all analyses. Linear regression, adjusted for age and gender, showed no association between either baseline capillaroscopy scores or of their changes and changes in mRSS over time. FVC and DLCO deteriorated in 13 and 11 patients, respectively. Binary logistic regression analysis adjusted for age and gender showed no association either baseline capillaroscopy scores or of their changes with deterioration in FVC or DLCO, with the exception of the change in microhemorrhages score, which correlated inversely with deterioration in FVC [$p=0.013$, Odds Ratio=0.051 (CI: 0.005–0.534)]. Regarding qualitative analysis of capillaroscopic findings, the baseline capillaroscopy pattern remained unchanged in 35, deteriorated in 15 and improved in 5 patients. No difference was found between these 3 groups regarding change in mRSS (ANOVA, $p=0.634$), deterioration in FVC (χ^2 test, $p=0.502$) or deterioration in DLCO (χ^2 test, $p=1.00$).

Conclusions: Although a possible confounding effect of treatment cannot be excluded, NVC seems to have poor prognostic value for the progression of skin thickening and interstitial lung disease in rigorously treated SSc patients.

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