IL-1b, IL-5, IL-6, IL-8, IL-17, TNF, Eotaxin) and markers of nutrition (specifically total protein, albumin, insulin and C-peptide) and lipid metabolism (specifically triglycerides, high-density lipoprotein, apolipoprotein A, atherogenic index of plasma) were significantly associated with alterations of body composition in patients with SSc ($p < 0.05$ for all correlations).

Conclusion: 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. Detected alterations of body composition in SSc patients were significantly associated with serum levels of several inflammatory cytokines/chemokines and markers of nutrition and lipid metabolism, which might further support the role of systemic inflammation and nutritional status on the negative changes in body composition of SSc patients

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FRI0256

ADVANCED MICROCIRCULATORY DAMAGE IS ASSOCIATED WITH INCREASED PULSE WAVE REFLECTIONS IN PATIENTS WITH SSC

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Background: In systemic sclerosis (SSc), inflammation and microvascular damage are fundamental in the progressive fibrotic process. Although the presence of accelerated atherosclerosis in SSc is not as well-described as in other systemic disorders namely rheumatoid arthritis, it appears that individuals suffering from the disease are at higher risk for cardiovascular events. Nailfold Video Capillaroscopy (NVC) is a non-invasive and reproducible imaging technique of the capillary vascular bed, used in the evaluation of microvascular involvement in SSc. Previous data on the association between micro- and macrovascular damage are scarce.

Objectives: The aim of this study was to examine the association between micro- and macrovascular involvement in patients with SSc.

Methods: This is a cross-sectional study including consecutive SSc patients attending to a Scleroderma Outpatient Clinic between March and September 2018. All the study participants underwent NVC and the findings were classified in one of the following qualitative patterns: early, active, and late NVC pattern. Capillary's density was evaluated in the distal row of each finger, based on the number of capillaries per 1 mm and the mean capillaroscopic skin ulcer risk index (CSURI) was automatically calculated with software image analysis. Carotid intima-media thickness (cIMT) was measured in the common carotid artery bilaterally, according to the relevant guidelines. Aortic blood pressure (BP), heart rate adjusted augmentation index [Alx(75)] and carotid-femoral pulse wave velocity (PWV) were evaluated with applanation tonometry (Sphygmocor).

Results: Sixty-four (95.3% women) SSc individuals with mean age 57.54 ± 12.99 years were included in this analysis. Alx(75) was significantly associated with CSURI ($r = 0.261$; $p = 0.038$) and inversely associated with the number of capillaries ($r = -0.271$; $p = 0.030$) suggesting a link between the degree of microvascular disease and arterial stiffening. Regarding SSc-specific NVC patterns, Alx(75) were marginally lower in patients with early compared to active or late patterns (25.95 ± 11.27 vs 32.50 ± 11.17 vs $31.62 \pm 10.32\%$; $p = 0.081$ and $p = 0.083$) confirming a trend between progressive microvasculopathy and arterial stiffness. Mean cIMT was negatively correlated with enlarged capillary loops. Brachial or aortic systolic BP (SBP) and pulse pressure (PP) levels were not correlated with any of the studied NVC parameters.

Conclusion: Microvascular vasculopathy is associated with higher wave reflections, indicating an association between atherosclerotic disease and microvascular injury in SSc patients. Such observations may provide possible explanations for the excessive cardiovascular and mortality risk in this population.

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FRI0257

CAPILLAROSCOPIC VERY EARLY MORPHOLOGICAL AND QUANTITATIVE SPECIFIC ABNORMALITIES ANTICIPATE THE DEVELOPMENT OF THE "SCLERODERMA PATTERN" IN PATIENTS WITH RAYNAUD'S PHENOMENON

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Background: Nailfold videocapillaroscopy (NVC) abnormalities in subjects with isolated Raynaud's phenomenon (RP) may be present before transition to secondary RP (SRP) and development of a NVC "scleroderma pattern" and are known to predict for evolution to a connective tissue disease (CTD) within few years [1]. In a previous study, we have demonstrated that the very early increase of capillary diameter over $30 \mu\text{m}$ is an independent predictor for development of Systemic Sclerosis (SSc) associated SRP [2].

Objectives: Present pilot retrospective study aimed to investigate in a cohort of patients affected by CTD-related RP the presence of very early capillaroscopic morphological and quantitative abnormalities in the acquired pictures of NVC performed before the development of the NVC scleroderma-pattern. In particular, the study was addressed to identify a "very early" scleroderma pattern, in order to intercept patients with RP at high risk of evolution in a CTD, specifically SSc.

Methods: We selected the NVCs of 273 SSc patients presenting one of the validated NVC "scleroderma patterns". We enrolled 26 SSc patients having a NVC analysis performed before the development of the "very early" NVC pattern. As controls, we evaluated 26 patients affected by other CTDs with stable non-scleroderma pattern over time. The 16 images per patient obtained by NVC examination were analyzed for total number of capillaries, number and the limbs diameters of capillaries with a diameter $>30 \mu\text{m}$, and microhemorrhages. Statistical analysis was performed using non-parametric tests.

Results: All 26 SSc patients showed dilated capillaries with a diameter $>30 \mu\text{m}$ in their previous NVC. Patients later developing scleroderma pattern had statically higher number and percentage of capillaries with a diameter $>30 \mu\text{m}$ ($p = 0.0004$ and $p = 0.0005$), as well as a larger apical dilatation $>40 \mu\text{m}$ ($p = 0.002$). A progressive and significant increase in all capillary diameters were only detected in patients later diagnosed for SSc (apical $p = 0.006$, venous $p = 0.02$, arterial $p = 0.03$). A significant homogeneous and progressive dilation was observed from the apical region and then involving both venous and arterial branches, only in SSc patients ($p = 0.002$).

Conclusion: Present pilot study demonstrates, for the first time that, before to develop a validated NVC scleroderma-pattern, all potential SSc patients present significant very early morphological and quantitative NVC changes. In particular, the progressive and homogeneous capillary loop dilation over $40 \mu\text{m}$ in over 40%

of total number capillaries significantly could contribute to identify RP patients who will develop a SSs pattern after 4-5 years.

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FRI0258

CUMULATIVE INCIDENCE, SURVIVAL AND PREDICTORS OF PULMONARY HYPERTENSION IN SYSTEMIC SCLEROSIS SUBSETS: PAH IS NOT INCREASED IN LIMITED VS DIFFUSE PATIENTS BY ADJUSTED COMPETING RISK ANALYSIS

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Background: Pulmonary hypertension (PH) is a life-threatening complication of systemic sclerosis (SSc), thought to be more commonly found in limited cutaneous (lcSSc) compared to diffuse (dcSSc) subset. Since lcSSc has a better prognosis, it is unclear whether a higher occurrence of PH in lcSSc reflects survival bias.

Objectives: To compare the cumulative PH incidence in disease subsets, after accounting for death as a competing event, in a large multi-center SSc cohort.

Methods: Cumulative incidence of PH was studied in 1431 Canadian Scleroderma Research Group (CSRG) database patients (57% lcSSc; follow-up 3.5±2.9 years, range 1-14) by Fine-Gray analysis, unadjusted and adjusted for sex, age and SSc-related autoantibodies (SAS 9.4). Survival curves, predictors of PH development and survival were analyzed by Kaplan-Meier and Cox proportional hazards analyses (SPSS 25.0). Subgroup analysis was performed for PAH.

Results: 157 SSc patients had PH (including 117 PAH), either confirmed by RHC or postmortem. Compared to those without PH, lcSSc-PH patients had longer disease and older age at SSc diagnosis, while dcSSc-PH patients - more severe peripheral vascular and gastrointestinal involvement. The cumulative incidences of PH/PAH were similar in dcSSc and lcSSc after accounting for death in the adjusted competitive risk model (Table 1; Fig.1). 47% of PH- and 42% of PAH-patients died over a FU period. Male gender ($p<0.0001$) and anti-Scl-70 ($p<0.001$) were associated with earlier PH development, while older age

($p=0.006$) - with PAH (Table 2). ACA-negativity and older age predicted worse PH prognosis.

A.

B.

Figure 1. Cumulative incidence curves for PH (A) and PAH (B).

Conclusion: Cumulative incidence of PH, after accounting for death as competing event, was comparable in SSc subsets. Vigilance should be considered in males, Scl-70 positive and late age-onset SSc.

Table 1. Sub-distribution Hazard ratio of incident PH and PAH.

		PH		PAH	
		Hazard ratio (95% CIs)	P values	Hazard ratio (95% CIs)	P values
Crude Model	DcSSc vs lcSSc	2.03 (1.13, 3.66)	0.0186	1.60 (0.82, 3.16)	0.1710
Adjusted model	DcSSc vs lcSSc	1.82 (0.93, 3.57)	0.0818	1.57 (0.69, 3.59)	0.2812
	Female vs male	0.98 (0.42, 2.32)	0.9660	2.10 (0.51, 8.65)	0.3040
	Age	1.00 (0.99, 1.02)	0.7041	1.01 (0.98, 1.03)	0.5498
	Antibodies				
	ACA vs negative	0.95 (0.46, 1.96)	0.8991	1.08 (0.50, 2.35)	0.8391
	ATA vs negative	1.93 (0.84, 4.42)	0.1198	0.59 (0.13, 2.73)	0.4970
	Anti-RNAP vs negative	1.24 (0.45, 3.43)	0.6841	1.77 (0.58, 5.44)	0.3181

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