(modified Rodan total skin thickness score [mRSS], and percent predicted forced vital capacity [%FVC]), safety profiles, and outcomes after TCZ introduction regardless of TCZ continuation were extracted from the database.

Results: Of 404 patients enrolled in the database, 13 dcSSc patients were eligible for this study. Baseline characteristics included a mean age of 51 ± 9 years, 85% female, disease duration of 27 ± 24 months, and mRSS of 19.5 ± 10.6 . Seven patients (54%) had HRCT-confirmed ILD at baseline, and 9 (69%) were positive for anti-topoisomerase I antibody. Two (14%) and 11 (85%) were on mycophenolate mofetil and low-dose prednisolone (7.2 ± 6.0 mg/day), respectively. Seven patients (54%) each had active skin disease and elevated inflammatory markers defined in the phase III clinical trial [2], while only 4 (31%) fulfilled the inclusion criteria. TCZ was initially administered intravenously (8 mg/kg every 4 weeks) in 8 patients and subcutaneously in 5 (162 mg every 2 weeks in 4 and every week in one). At one year, mRSS was improved from 20.9 ± 11.4 to 10.7 ± 8.9 in 11 patients ($p = 0.007$), and %FVC was stable in 7 patients with ILD (76.8 ± 15.0 to 78.6 ± 16.1). During the observation period of 60.4 ± 26.7 months, 4 patients were treated with a stable dose of TCZ, while TCZ dose was reduced and/or discontinued in 9. Four of them discontinued TCZ due to adverse events ($n = 2$: acute lung injury and phlegmon) or prominent improvement of skin thickening ($n = 2$). Of 9 patients with dose reduction/discontinuation of TCZ, 4 patients who discontinued TCZ ($n = 3$) or received dose reduction of TCZ ($n = 1$) experienced a recurrence of progressive skin thickening together with inflammatory complications, including edematous induration of the skin, progression of ILD, polyarthritis, and/or pericarditis with increased inflammatory markers. The interval between dose-reduction/discontinuation of TCZ and clinical worsening ranged from 2 to 11 months. These manifestations were promptly improved by dose-escalation or resumption of TCZ in all patients except one who experienced progressive ILD and died of respiratory failure 27 months later.

Conclusion: In dcSSc patients who experienced improvement of skin thickness during treatment with TCZ, dose-reduction or discontinuation of TCZ may result in a recurrence of the disease. Randomized comparative studies are necessary to examine optimal timing for dose-reduction or discontinuation of TCZ in dcSSc patients after improvement of skin thickness.

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AB0437

OESOPHAGEAL DILATATION ON HIGH-RESOLUTION CT CHEST IN SYSTEMIC SCLEROSIS: SIGNIFICANT INDEX?

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Background: Systemic sclerosis (SSc) is chronic, autoimmune multisystem disorder presented by thickening and fibrosis of the skin and internal organs. Esophageal involvement is one of the most common manifestation. Esophageal enlargement on HRCT is a common finding in scleroderma patients and may also be associated with other scleroderma-related clinical findings (1).

Objectives: The aim of this study to evaluate the association between esophageal dilatation on chest HRCT at diagnosis with the other SSc features.

Methods: The study was planned for SSc patients registered between October 2007 and September 2020 in Dokuz Eylul University Rheumatology Department database. Demographics, clinical features and medical history were recorded. The baseline HRCT reports were screened in terms of esophageal dilatation. Then, the initial HRCT images were assessed for esophageal dilatation by an experienced chest radiologist according to recommendation of Pitrez et al.

Results: In our study, there were 233 SSc patients (f:206 M:27, mean age 59.9 ± 12.7 years) 71 (31.4%) of them diagnosed with diffuse disease. Median follow-up of study was 73 (1-272) months. Esophageal dilatation on HRCT was detected in 60 (25.8%) of SSc patients. 67 out of 155 patients (43.2%) had proof of esophageal involvement in esophageal transit scintigraphy. There is no statistical correlation was found between esophageal dilatation on HRCT with gender, smoking, arthritis, pulmonary hypertension and autoantibody subtypes.

Development of digital ulcer and telangiectasia is statistically higher in SSc patients with oesophageal dilatation on baseline chest HRCT ($p=0.001$ and $p=0.039$, respectively). There was a positive correlation between Modified Rodnan Skin Score (mRSS) and esophageal dilatation ($r=0.213$, $p=0.004$).

Conclusion: HRCT can be a reproducible and non-invasive method for evaluating esophageal dilatation. Presence of esophageal dilatation at baseline HRCT might be indicative for pulmonary involvement and SSc related gastrointestinal complications. Consecutive chest HCRT should be evaluated to obtain more reliable data about the relationship between esophageal dilatation and SSc related clinical features.

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Table 1. Clinical and demographic characteristics of the presence of esophageal dilatation on HRCT

	Esophageal dilatation on HRCT						
	Total (n=233)		Yes (n=60, 25.8%)		No (n=173, 74.2%)	p	
	Mean±SD.		Mean±SD.		Mean±SD.		
Age, years	59.9±12.7		59.7±12.2		60.1 ±12.6	>0.05	
	n	%	n	%	n	%	
Female	206	88.4%	53	88.3%	149	86.1%	>0.05
Smoking	79	33.9%	19	31.7%	60	34.7%	>0.05
Diffuse SSc	71	30.5%	23	38.3%	44	25.4%	>0.05
Overlap syndrome	33	14.2%	8	13.3%	25	14.5%	>0.05
Pulmonary fibrosis	118	50.6%	42	70.0%	76	43.9%	>0.05
Arthritis	80	34.3%	23	38.3%	56	32.4%	>0.05
Telangiectasia	156	67.0%	48	80.0%	105	60.7%	0.039
Digital ulcer	87	37.3%	34	56.7%	51	29.5%	0.001
Anti-Scl 70 (+)	89	38.2%	28	46.7%	59	34.1%	>0.05
Anti-centromer (+)	75	32.2%	15	25.0%	59	34.1%	>0.05

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AB0438

SERUM HOMOCYSTEINE AND BONE STATUS IN SYSTEMIC SCLEROSIS PATIENTS

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Background: Systemic sclerosis (SSc) is a complex autoimmune connective tissue disease characterized by self-amplifying microvascular damage sustained by autoimmune response and progressive skin and visceral fibrosis. Besides, SSc patients show higher incidence of bone micro/macroarchitectural damages and bone fractures. Emerging data demonstrate that high serum levels of homocysteine (Hcy) could modulate osteoclastogenesis and are recognized as risk factors for osteoporosis (2). Furthermore, serum levels of Hcy were found to be higher in SSc patients than in healthy controls (3).

Objectives: to evaluate the bone status according to Hcy serum levels in a cohort of SSc patients.

Methods: 20 female patients fulfilling ACR 2013 criteria for SSc underwent a dual-energy X-ray absorptiometry scan (DXA) (Lunar Prodigy) to evaluate bone status. We analysed bone quantity and quality respectively by bone mineral density (BMD) and trabecular bone score (TBS). According to the WHO criteria, osteoporosis was defined as a bone density of 2.5 standard deviations below that of a young adult (T-Score). Fasting blood samples were obtained from all patients in order to test serum Hcy level and bone turnover markers after obtaining the informed consent. All subjects underwent morphometric spine X-Ray to evaluate vertebral fractures. Statistical analysis was performed using non-parametric tests.

Results: The mean age of patients was 64.15 ± 10.8 years with a mean disease duration of 9.1 ± 2.3 years. The mean modified Rodnan Skin Score (mRSS) was 10.7 ± 8.5 . All patients showed a "scleroderma pattern" at nailfold Videocapillaroscopy (NVC): in particular, 7 patients showed the "Late" pattern, 9 patients the "Active" pattern and 4 patients the "Early" NVC pattern. Hyperhomocysteinemia (HHcy) was found in 25% of patients. Interestingly, SSc patients with the "Late" NVC pattern showed a significantly higher serum level of Hcy compared to the "Early/Active" group (11.15 ± 4.4 vs 17.17 ± 6.4 , $p=0.03$). No significant differences were observed in relation to the autoantibody profiles. Of note, 60% of patients with HHcy were found osteoporotic and 40% had bone fractures.

Considering the bone status, patients with Hcy showed a significantly lower TBS ($p=0.03$); the average values of BMD on the lumbar spine ($p=0.79$) and femoral neck ($p=0.13$) were found lower compared to, but without any statistical significance. Furthermore, no significant differences were observed in bone turnover markers according to Hcy levels.

Conclusion: The study demonstrates a relationship between higher levels of Hcy and lower TBS values within SSc patients, particularly in those with most severe microvascular damage at NVC ("Late" SSc pattern). Therefore it is concluded that higher serum levels of Hcy associate to both bone microarchitectural and microvascular damage in SSc.

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AB0439

CAPILLAROSCOPIC PATTERNS IN PATIENTS WITH SYSTEMIC SCLEROSIS-POLYMYOSITIS/ DERMATOMYOSITIS (SSc-PM/DM) OVERLAP SYNDROME

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Background: Impaired microcirculation is one of the leading factors in local and general pathogenesis of SSc. Widefield nail-fold video-capillaroscopy (NFVC) stands as the most informative and at the same time simple method used for evaluation of capillary circulation.

Objectives: To identify characteristic and specific for SSc- PM/DM capillaroscopic features.

Methods: Both hand II – V fingers of 68 pts with SSc-PM/DM were subjected to widefield NFC, evaluated using a binocular 20x magnification Olympus microscope and analyzed in view of specific skin lesions discriminating diffuse and limited SSc forms.

Results: SSc-specific dilatations of capillary loops were the most common for SSc-PM/DM and were found in all pts; 50% of them had signs of active scleroderma pattern, such as capillary loss or "avascular areas" (50%) and hemorrhages (51.5%), associated with generalized microvascular spasm in early disease and capillary sclerosis in advanced disease. The morphological capillary abnormalities such as varying degrees of capillary loops tortuosity/vascular inhomogeneity were present in 63% of examined nailfolds, branching bushy behavior of capillary loops and mega-capillaries predominated; architectural disorientation/disarrangement of capillary loops with formation of subcutaneous plexus was seen in more than 50% of them. Capillaroscopic changes consistent with active scleroderma pattern were present in 54 % and were associated with lab signs of inflammatory muscle syndrome and immunological disorders: giant capillaries ($p<0.02$), disorientation of capillary loops ($p<0.02$) and ramified/ bushy capillaries ($p<0.04$) were significantly more frequent in patients with severe muscle syndrome, increased CPK, ANF -positivity and hemorrhages ($p<0.03$).

Conclusion: Thus, widefield NFVC revealed a "mixed" nature of capillaroscopic changes, combining features specific for SSc (capillary dilation, avascular areas, hemorrhages) and for PM/DM (bushy and giant capillaries, disorientation of capillary loops of the nailfold with formation of subcutaneous plexuses.)

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AB0440

CLINICAL AND IMMUNOLOGICAL FEATURES OF THE SYSTEMIC SCLEROSIS-OVERLAP SYNDROMES

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Background: Systemic Sclerosis (SSc) overlap syndromes (SSc with polymyositis / dermatomyositis (PM/DM), rheumatoid arthritis (RA), etc.) still remain a group of very heterogeneous and not very well studied clinical variants of SSc that are characterized by certain clinical and immunological features.

Objectives: Identify clinical and immunological features of the SSc-overlap syndromes

Methods: 80 pts with SSc-PM/DM and 35 pts with SSc-RA undergoing standard clinical examination and laboratory immunological evaluation.

Results: ANA Hep2 was positive in 98% of SSc-PM/DM pts; a-Scl-70 was in 34%, a - PM-Scl and RF were in 20%. ACA (6%), a-RNP (9%), and a - Jo-1 (5%) were significantly less common. Correlation analysis showed significant prevalence of conduction abnormalities in pts with a-Scl-70- ($p<0.03$); PM-Scl was rarely associated with cardiac arrhythmia ($p<0.02$) and pericarditis ($p<0.03$), but there was an association between ACA and presence of digital ischemia ($p<0.04$). Three pts

with limited skin had Scl-70 and PM-Scl antibodies, two of them manifested clinical features of DM. A-Jo-1 was found in 3 pts with a longstanding disease (14, 10 and 7 years), and one of these pts was also positive for a-Scl-70. All pts had limited skin and two had interstitial lung disease with FVC values of 79% and 74.8%.

ANA Hep2 was positive in 96% of SSc-RA pts; a-Scl-70 – in 28%, and a-RNP - in 30%. RF-positivity was in 72% of pts, and Anti-CCP - in 27%. Simultaneous Anti-CCP and a-Scl-70 was found in one case, and Anti-CCP - anti-RNP – in another, both were associated with low RF titers. All pts had early joint involvement which became prevailing in subsequent years, and onset of the disease between 30 and 36 years. There was a correlation between laboratory signs of inflammatory activity and immunological disorders: ESR and a-Scl-70 ($p<0.03$). Anti-CCP and a-Scl-70 co-positivity was a significantly less frequent phenomenon ($p<0.04$). There was a remarkable 28% proportion of a-Scl-70 cases in SSc-RA with limited cutaneous which is usually characterized by ACA-positivity.

Conclusion: SSc-PM/DM and SSc-RA appear to be an active disease from the immunological point of view, confirming therefore an important role of immune alterations in disease progression. Laboratory findings display specific pathogenetic features of SSc-overlap syndromes; laboratory abnormalities can be used to measure the activity and specify characteristics of the pathological process.

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AB0441

NAILFOLD CAPILLAROSCOPY AND CANDIDATE BIOMARKER LEVELS IN SYSTEMIC SCLEROSIS-ASSOCIATED PULMONARY HYPERTENSION; PROFILING OF NON-INVASIVE MARKERS, A COHORT STUDY

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Background: Systemic sclerosis (SSc) is characterized by inflammation, vasculopathy and progressive fibrosis. Pulmonary Hypertension (PH) is one of the leading causes of death in SSc (1). Currently, most patients with SSc are screened for the presence of PH, and focus lies on early detection and early treatment. Recent literature describes potential for both nailfoldcapillaroscopy (NCM) and several biomarkers to serve as non-invasive tools to identify SSc patients at risk for developing PH (2). Ideally this could attribute to further improvement of risk stratification in SSc and PH screenings algorithms.

Objectives: To explore NCM characteristics and plasma levels of selected candidate biomarkers in a cross-sectional cohort of SSc patients with and without different forms of PH.

Methods: From 02-2018 until 02-2019 we included 40 consecutive SSc patients with associated PH (30 (75%) were female, 32 (80%) LcSSc, median age 72 years (IQR 69-77), median SSc duration 10.7 years (IQR 4.3-17.8), median PH duration 3.9 years (IQR 1.5-7.06)) and 40 without PH (28 (70%) were female, 26 (65%) had a LcSSc, median age 59 years (IQR 51-71), median SSc duration 6 years (IQR 3.1-8.6)). In each group NCM characteristics (both quantitative and qualitative) and plasma levels of IL4, IL6, IL8, IL13, PDGFAA, PDGFAB-BB, 6CKine, sTRAIL, MMP1, MMP7, sICAM1, sVCAM, CCL19/MIP3b, Endostatin, sVEGFR1, sVEGFR2, sVEGFR3, CXCL4, Endothelin1, FGF1, FGF2, VEGF-A, VEGF-C, and VEGF-D using Luminex kits, and vascular auto-antibodies AT1R and ETAR using ELISA (Celltrend GmbH, Luckenwalde, Germany) were determined. NCM characteristics were compared using t-tests, biomarker levels were compared by using Mann-Whitney U tests.

Results: We observed no differences in mean capillary density, number of abnormally shaped capillaries, number of fingers with density <3 capillaries/mm and in overall NCM pattern between patients with and without PH. Plasma levels showing significant differences between the two groups are presented in table 1.

Conclusion: We found significant differences in several of the selected biomarkers in SSc patients with and without PH, but not in NCM characteristics between the groups. However, we did observe a tendency toward more morphologic abnormalities and an overall late pattern in the SSc-PH group. Future longitudinal research should explore the added value of these NCM parameters and biomarkers in personalized risk stratification for the development of PH.

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