

OP0181 FUNCTIONAL CUT-OFFS TO DISTINGUISH PULMONARY VASCULAR AND PARENCHYMAL INVOLVEMENT IN SYSTEMIC SCLEROSIS (SSC): A QUANTITATIVE ANALYSIS OF IMAGING FEATURES AT CHEST COMPUTED TOMOGRAPHY (CT) C. Bruni<sup>1</sup>, M. Occhipinti<sup>2,3</sup>, G. Camiciottoli<sup>3</sup>, M. Bartolucci<sup>4</sup>, G. Lepri<sup>1</sup>, A. Fabbri<sup>3</sup>, A. Tottoli<sup>1</sup>, A. Bassetto<sup>3</sup>, G. Ciardi<sup>3</sup>, D. Giuggioli<sup>5</sup>, G. Cuomo<sup>6</sup>, F. Masini<sup>6</sup>, F. Lavorini<sup>3</sup>, L. Calistri<sup>4</sup>, M. Matucci-Cerinic<sup>1</sup>. 1 University of Florence, Rheumatology, Florence, Italy; 2 University of Florence, Radiology, Firenze, Italy; 3 University of Florence, Pulmonology, Firenze, Italy; 4 Careggi University Hospital, Radiology, Firenze, Italy; 5 Policlinico of Modena University Hospital of Modena, Rheumatology, Modena, Italy; 6 University of Campania Studies "Luigi Vanvitelli", Napoli, Italy Background: Interstitial lung disease (ILD) and pulmonary arterial hypertension represent the most frequent causes of morbidity and mortality in SSC, with chest CT representing the gold standard in ILD assessment, while FVC and DLco allow functional assessment. Objectives: As qualitative analysis of given chest CT scans is hampered by low reproducibility, we aimed to perform a quantitative analysis (QA) of CT scans able to investigate the parenchymal and vascular features in SSC-ILD and thus testing the relationship with clinical-functional data. Methods: We prospectively enrolled 80 patients who underwent PFTs and spirometry-gated chest CT scan at TLC on the same day. Clinical, lung functional and diffusion data, as well as disability indexes were collected. CT images were analyzed by a computational platform for texture analysis of ILD patterns (CALIPER) through Imbio LTA. It quantified the extent of normal lung (%N), ground glass opacities (%GG), reticulation (%RET), honeycombing (%HC), hyperlucent (%HL), absolute (PVV, cm<sup>3</sup>) and normalized (PVV/LV, %) pulmonary vascular volumes. Cut-offs of normality for %FVC and %DLco of 80% and 70% were tested to differentiate parenchymal and vascular features. Results: 73 patients/CT scans were eligible for both software analyses. CALIPER showed GG% as the most frequent radiological pattern (mean 5.5±10.4%). %FVC and % TLC negatively correlated with all ILD patterns, while %DLco with RET% only; PVV and PVV/LV negatively correlated with %FVC and %TLC, while %DLco with PVV/LV only. Positive correlations were found between all ILD patterns and vascular volumes (Table 1). Conclusion: In SSC a cut-off at 80 for %DLco may help identifying vascular changes as automatically assessed on chest CT scan, without any underlying involvement, while %FVC at 80% or %DLco at 70% to identify significant parenchymal involvement. These results need to be confirmed in larger multi-centric cohorts. Disclosure of Interests: Cosimo Bruni Speakers bureau: Actelion, Eli Lilly, Mariaelena Occhipinti Consultant of: Imbio, Gianna Camiciottoli: None declared, Maurizio Bartolucci: None declared, Gemma Lepri: None declared, Alessio Fabbri: None declared, Alessandra Tottoli: None declared, Anna Bassetto: None declared, Giuglia Ciardi: None declared, Dilia Giuggioli: None declared, Giovanna CUOMO: None declared, Francesco Masini: None declared, Federico Lavorini: None declared, Linda Calistri: None declared, Marco Matucci-Cerinic Grant/research support from: Actelion, MSD, Bristol-Myers Squibb, Speakers bureau: Acetelion, Lilly, Boehringer Ingelheim DOI: 10.1136/annrheumdis-2020-eular.2188

		LV (cm <sup>3</sup> )	%N	%GG	%RET	%HC	%HL	PVV (cm <sup>3</sup> )	% PVV/LV
FVC%	r	.60	-.19	-.40	-.34	-.30	.35	-.26	-.44
	p	<.001	-	<.001	.004	.01	.003	.04	<.001
FEV <sub>1</sub> %	r	.58	-.02	-.38	-.25	-.24	.23	-.35	-.49
	p	<.001	-	.002	.04	.05	-	.004	<.001
FEV <sub>1</sub> /FVC	r	-.16	.33	.22	.16	.21	-.35	-.15	-.08
	p	-	.02	-	-	-	-	-	-
TLC%	r	.71	-.14	-.42	-.37	-.48	.40	-.43	-.64
	p	<.001	-	.001	.01	<.001	.002	<.001	<.02
DLco%	r	.38	-.05	-.21	-.31	-.22	.30	-.21	-.33
	p	.01	-	.01	-	-	-	-	.006
FVC/DLco	r	.03	-.08	-.06	-.003	-.09	.08	-.06	-.08
	p	-	-	-	-	-	-	-	-

Cut-offs equal to 80 for %FVC and 70 for %DLco distinguished both parenchymal and vascular features, while 80 for %DLco characterized vascular features only. These results were confirmed also when patients were stratified according to absent/single/combined %FVC and %DLCO impairments with 80% cut-offs (Table 2).

	FVC<80%	FVC ≥80%	p	DLco<80%	DLco ≥80%	p	DLco <70%	DLco ≥70%	p
%N	82.7 (9.6)	86.2 (14.7)	-	86.6 (12.7)	80.8 (15.8)	-	84.1 (13.9)	86.4 (13.5)	-
%GG	10.3 (8.9)	2.4 (3.9)	<.001	5.0 (6.7)	3.9 (6.9)	-	6.2 (7.5)	2.4 (4.8)	.002
%RET	2.9 (2.9)	0.8 (1.3)	<.001	1.6 (2.1)	0.7 (0.9)	-	1.9 (2.4)	0.6 (0.8)	.007
%HC	0.4 (0.6)	0.1 (0.1)	<.001	0.2 (0.3)	0.1 (0.1)	-	0.2 (0.4)	0.05 (0.2)	.010
%HL	3.6 (6.8)	8.9 (12.1)	-	5.4 (8.8)	14.1 (15.4)	.050	6.3 (10.1)	9.2 (12.7)	-
PVV	125.6 (39.1)	90.9 (26.9)	<.001	101.9 (34.8)	84.7 (19.4)	.016	106.9 (38.3)	87.5 (20.5)	.012
PVV/LV	3.8 (1.6)	2.0 (0.7)	<.001	2.51 (1.3)	1.7 (0.6)	.002	2.76 (1.4)	1.83 (0.6)	.001