

Table S1. Definition of chest computed tomography (CT) findings

CT findings	Definition	Score
Interstitial pneumonia	<ul style="list-style-type: none"> • Subpleural honeycombing • Reticular opacities • Traction bronchiectasis • Bilateral patchy ground-glass opacities 	Positive if any of these findings are present
Bronchiectasis	Bronchial diameter clearly larger than the accompanying pulmonary artery	Evaluated according to the number of pulmonary lobes and segments affected, with the lingula and middle lobe considered as independent lobes (0-6) [1]
Granular shadow	Cluster of small shadows of 5 mm or less	Same as above
Mucus plugs	Areas of opacification within the airway lumen, contiguous with patent airway lumen across sequential transverse CT slices	Number of bronchopulmonary segments with ≥ 1 mucus plug (s) and summed (0-18) [2]

CT, computed tomography.

[1] Martínez-García MÁ, et al. Eur Respir J. 2014 May; 43(5): 1357-67.

[2] Okajima Y, et al. Chest.2020; 158(1): 121-130.

Table S2. Patient characteristics of synovial tissue and synovial fluid analysis

Study population n=5	
	RA
Patients, n	5
Age, median (range) years	69 (62-73)
Female, n (%)	3 (60.0)
Duration of RA (years)	15.6±5.41
Smoking history(never/ex/current), n	2/2/1
Pack-years	14.0±18.12
DAS28-CRP	2.68±0.361
Disease activity (remission/low/moderate/high), n	1/2/2/0
RF (positive/negative), n	3/2
Treatment characteristics	
Use of oral glucocorticoids, n (%)	2 (40.0)
Use of methotrexate, n (%)	3 (60.0)
Use of bDMARDs, n (%)	2 (40.0)
RA, Rheumatoid arthritis; DAS28, 28-joint disease activity score; RF, rheumatoid factor; bDMARDs, biological disease-modifying antirheumatic drugs. Disease activity was classified based on DAS28-CRP (remission, <2.3; low disease activity, ≥2.3 and <2.7; moderate disease activity, ≥2.7 and ≤4.1; and high disease activity, >4.1). Data presented as n (%) or mean±SD unless otherwise noted.	

Table S3. Patient characteristics of lung tissue analysis

Study population n=17		
	Non-RA	RA
Patients, n	11	6
Age, median (range) years	65 (48-83)	75.5 (65-79)
Female, n (%)	3 (27.3)	3 (50.0)
Smoking history(never/ex/current), n	4/7/0	0/6/0
Pack-years	32.45±28.51	38.5±17.72
Treatment characteristics		
Oral steroid, n (%)	0	3 (50)
Methotrexate, n (%)	0	4 (66.7)
Biologic agent, n (%)	0	1 (16.7)
Chest CT		
Pattern (normal/ILD/airway lesion/mixed), n	4/0/7/0	4/0/1/1
Lung function test		
VC % predicted (%)	113.44±13.36	92.48±10.01*
FEV ₁ % predicted (%)	97.10±13.20	94.33±10.15
FEV ₁ /FVC % (%)	69.89±10.36	78.85±8.68
Complications		
Asthma, n (%)	0	0
COPD, n (%)	4 (36.3)	1 (16.7)
Pathology of lung cancer		
AD, n (%)	8 (72.7)	3 (50.0)
SQ, n (%)	2 (18.1)	3 (50.0)
LCNEC, n (%)	1 (9.1)	0

RA, Rheumatoid arthritis; VC, vital capacity; FEV₁, forced expiratory volume in one second; COPD, chronic obstructive pulmonary disease; AD, adenocarcinoma; SQ, squamous carcinoma; LCNEC, large cell neuroendocrine carcinoma.

Data presented as n (%) or mean±SD unless otherwise noted.

*P<0.05 vs. the Non-RA, determined by Mann Whitney U test.

Table S4. Patient characteristics for B cells and plasma cells analysis

Study population n=15		
	Sputum	Lung
Patients, n	7	8
Age, median (range) years	52 (37-58)	73.5 (48-79)
Female, n (%)	4 (57.1)	4 (50.0)
RA	7	5 (62.5)
Smoking history(never/ex/current), n	4/3/0	2/6/0
Pack-years	27.00±37.77	26.75±21.58
Treatment characteristics		
Oral steroid, n (%)	3 (42.9)	3 (37.5)
Methotorexate, n (%)	5 (71.4)	3 (37.5)
Biologic agent, n (%)	2 (28.6)	1 (0.125)
Chest CT		
Pattern (normal/ILD/airway lesion/mixed), n	0/2/4/1	6/0/1/1
Lung function test		
VC % predicted (%)	101.36±17.58	100.38±14.81
FEV ₁ % predicted (%)	97.80±25.97	96.33±10.10
FEV ₁ /FVC % (%)	72.56±10.46	76.81±8.88
Complications		
Asthma, n (%)	1 (14.3)	0
COPD, n (%)	0	2 (25.0)
Pathology of lung cancer		
AD, n (%)	-	3 (37.5)
SQ, n (%)	-	5 (62.5)
LCNEC, n (%)	-	0

RA, Rheumatoid arthritis; VC, vital capacity; FEV₁, forced expiratory volume in one second; COPD, chronic obstructive pulmonary disease; AD, adenocarcinoma; SQ, squamous carcinoma; LCNEC, large cell neuroendocrine carcinoma.