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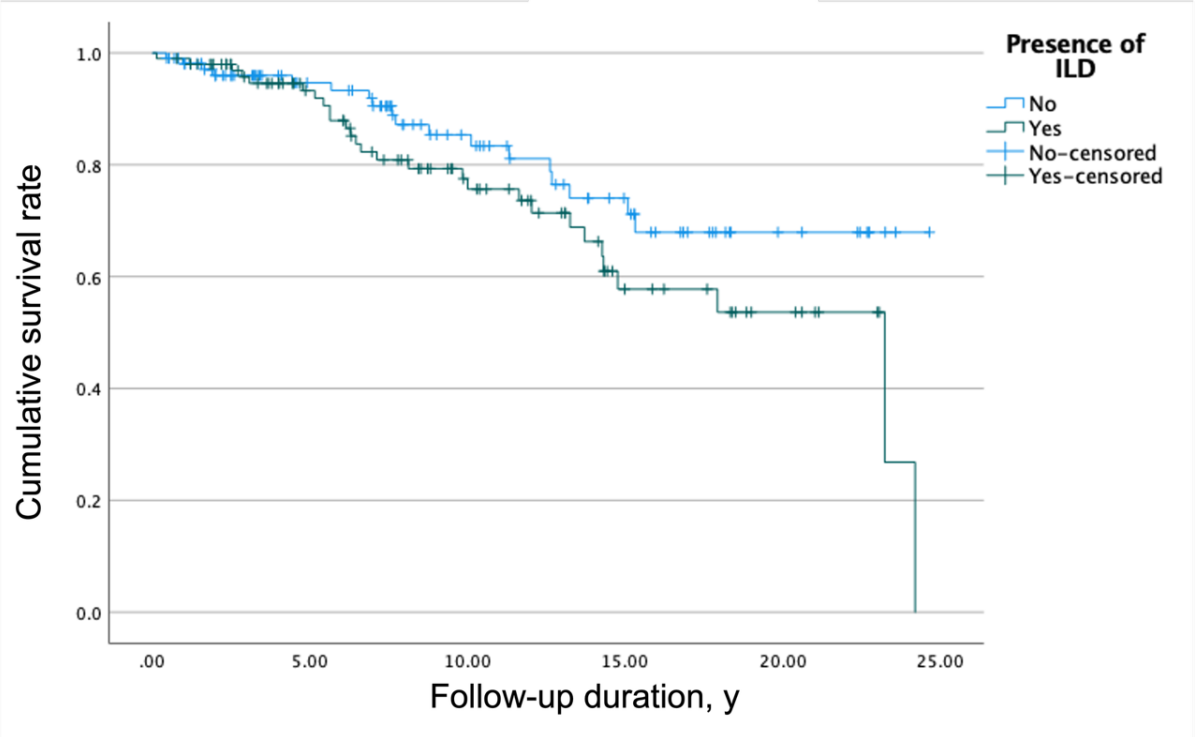
Supplementary material

Supplement to: DTH Chan, LHP Tam, TTO Lam, et al. Prevalence, risk factors, and outcomes of systemic sclerosis–associated interstitial lung disease in a Chinese population. Hong Kong Med J 2025;Epub 12 Feb 2025. https://doi.org/10.12809/hkmj2411807.

Supplementary Figure. Kaplan–Meier curve for cumulative survival in patients with and without interstitial lung disease (ILD)



Log-rank test, P=0.056

Supplementary Table 1. Clinical characteristics of systemic sclerosis patients with and without interstitial lung disease*

	With ILD (n=111)	Without ILD (n=112)	Total (n=223)	P value
Clinical features				
Raynaud's phenomenon				
On presentation	94 (84.7%)	97 (86.6%)	191 (85.7%)	0.682
On follow-up	11 (9.9%)	7 (6.3%)	18 (8.1%)	0.316
Ever had	105 (94.6%)	104 (92.9%)	209 (93.7%)	0.593
Puffy fingers				
On presentation	19 (17.1%)	22 (19.6%)	41 (18.4%)	0.626
On follow-up	8 (7.2%)	14 (12.5%)	22 (9.9%)	0.185
Ever had	27 (24.3%)	36 (32.1%)	63 (28.3%)	0.195
Sclerodactyly				
On presentation	84 (75.7%)	79 (70.5%)	163 (73.1%)	0.387
On follow-up	20 (18.0%)	25 (22.3%)	45 (20.2%)	0.423
Ever had	104 (93.7%)	104 (92.9%)	208 (93.3%)	0.803
Digital ulcers				
On presentation	15 (13.5%)	14 (12.5%)	29 (13.0%)	0.822
On follow-up	22 (19.8%)	16 (14.3%)	38 (17.0%)	0.272
Ever had	37 (33.3%)	30 (26.8%)	67 (30.0%)	0.286
Oesophageal dysmotility				
On presentation	27 (24.3%)	23 (20.5%)	50 (22.4%)	0.498
On follow-up	42 (37.8%)	35 (31.3%)	77 (34.5%)	0.301
Ever had	69 (62.2%)	58 (51.8%)	127 (57.0%)	0.118
Arthralgia				
On presentation	33 (29.7%)	36 (32.1%)	69 (30.9%)	0.697
On follow-up	19 (17.1%)	16 (14.3%)	35 (15.7%)	0.561
Ever had	52 (46.8%)	52 (46.4%)	104 (46.6%)	0.95
Dyspnoea				
On presentation	36 (32.4%)	5 (4.5%)	41 (18.4%)	<0.001

On follow-up	52 (46.8%)	11 (9.8%)	63 (28.3%)	<0.001
Ever had	88 (79.3%)	16 (14.3%)	104 (46.6%)	<0.001
Cough				
On presentation	15 (13.5%)	1 (0.9%)	16 (7.2%)	<0.001
On follow-up	27 (24.3%)	4 (3.6%)	31 (13.9%)	<0.001
Ever had	42 (37.8%)	5 (4.5%)	47 (21.1%)	<0.001
Bibasal crackles				
On presentation	26 (23.4%)	3 (2.7%)	29 (13.0%)	<0.001
On follow-up	50 (45.0%)	4 (3.6%)	54 (24.2%)	<0.001
Ever had	76 (68.5%)	7 (6.3%)	83 (37.2%)	<0.001
Pulmonary hypertension				
On presentation	1 (0.9%)	1 (0.9%)	2 (0.9%)	1
On follow-up	21 (18.9%)	2 (1.8%)	23 (10.3%)	<0.001
Ever had	22 (19.8%)	3 (2.7%)	25 (11.2%)	<0.001
Laboratory results				
CRP at baseline, mg/L	1.2 (1-3.93)	1.7 (1-3.2)	1.5 (1-3.25)	0.656
ESR at baseline, mm/hr	21.5 (14-40.5)	18 (11-30)	20 (12-32.5)	0.074

Abbreviations: CRP = C-reactive protein; ESR = erythrocyte sedimentation rate; ILD = interstitial lung disease

[*] Data are shown as No. (%) or median (interquartile range), unless otherwise specified

Supplementary Table 2. Univariable and multivariable Cox regression for predictors of interstitial lung disease

	Univariable analysis		Multivariable analysis*	
	Hazard ratio (95% CI)	**P value**	**Hazard ratio (95% CI)**	**P value**
dcSSc	2.039 (1.381- 3.067)	<0.001		
lcSSc	0.491 (0.326-0.724)	<0.001		
ATA	2.048 (1.383-3.077)	<0.001		
ACA	0.199 (0.087-0.452)	<0.001		
Ever had dyspnoea	3.645 (2.242-5.988)	<0.001	1.943 (0.978-3.861)	0.058
Ever had cough	2.177 (1.464-3.300)	<0.001		
Ever had bibasal crackles	3.726 (2.457-5.714)	<0.001	2.813 (1.540-5.181)	0.001
Ever had PH†	2.413 (1.477-3.861)	<0.001		
Baseline ESR	1.013 (1.003-1.023)	0.012		

Abbreviations: 95% CI = 95% confidence interval; ACA = anti-centromere antibody; ATA = anti-topoisomerase antibody; dcSSc = diffuse cutaneous systemic sclerosis; ESR = erythrocyte sedimentation rate; lcSSc = limited cutaneous systemic sclerosis; PH = pulmonary hypertension

* Included variables with P<0.05 in univariable analyses (dcSSc, ATA, ever had dyspnoea, ever had cough, ever had bibasal crackles, and baseline ESR)

† Excluded as it was likely a consequence of underlying interstitial lung disease

Supplementary Table 3. Baseline characteristics of systemic sclerosis patients with progressive and non-progressive interstitial lung disease in this study*

	Progressive ILD (n=59)	Non-progressive ILD (n=33)	Total (n=92)	P value
Female sex	51 (86.4%)	29 (87.9%)	80 (87.0%)	0.844
Age, y [mean (range)]	63.6 (26-97)	64.8 (35-94)	64.1 (26-97)	0.654
Smoking history				
Never	51 (86.4%)	29 (87.9%)	80 (87.0%)	0.844
Ex-smoker	6 (10.2%)	0	6 (6.5%)	0.084
Current smoker	0	2 (6.1%)	2 (2.2%)	0.126
Ever smoker	6 (10.2%)	2 (6.1%)	8 (8.7%)	0.707
Disease duration, y	11.6 (8.1-15.5)	9.8 (5-19.7)	10.5 (6.5-16.3)	0.928
Age at SSc diagnosis, y	53 (20-81)	56 (20-79)	54 (20-81)	0.401
Age at ILD diagnosis, y	54 (20-85)	60 (31-81)	57 (20-85)	0.051
dcSSc	22 (37.3%)	13 (39.4%)	35 (38.0%)	0.842
lcSSc	36 (61.0%)	20 (60.6%)	56 (60.9%)	0.969
Autoantibodies				
ATA	37 (62.7%)	18 (54.5%)	55 (59.8%)	0.444
ACA	2 (3.4%)	2 (6.1%)	4 (4.3%)	0.616
RNP	10 (16.9%)	3 (9.1%)	13 (14.1%)	0.365

Abbreviations: ACA = anti-centromere antibody; ATA = anti-topoisomerase antibody; dcSSc = diffuse cutaneous systemic sclerosis; ILD = interstitial lung disease; lcSSc = limited cutaneous systemic sclerosis; RNP = ribonucleoprotein antibody; SSc = systemic sclerosis

* Data are shown as No. (%) or median (interquartile range), unless otherwise specified

Supplementary Table 4. Clinical characteristics of systemic sclerosis patients with progressive and non-progressive interstitial lung disease*

	Progressive ILD (n=59)	Non-progressive ILD (n=33)	Total (n=92)	P value
Raynaud's phenomenon				
On presentation	52 (88.1%)	26 (78.8%)	78 (84.8%)	0.231
On follow-up	3 (5.1%)	5 (15.2%)	8 (8.7%)	0.130
Ever had	55 (93.2%)	31 (93.9%)	86 (93.5%)	0.893
Puffy fingers				
On presentation	11 (18.6%)	6 (18.2%)	17 (18.5%)	0.956
On follow-up	5 (8.5%)	1 (3.0%)	6 (6.5%)	0.414
Ever had	16 (27.1%)	7 (21.2%)	23 (25.0%)	0.530
Sclerodactyly				
On presentation	43 (72.9%)	26 (78.8%)	69 (75.0%)	0.530
On follow-up	11 (18.6%)	5 (15.2%)	16 (17.4%)	0.672
Ever had	54 (91.5%)	31 (93.9%)	85 (92.4%)	0.675
Digital ulcers				
On presentation	11 (18.6%)	4 (12.1%)	15 (16.3%)	0.417
On follow-up	14 (23.7%)	1 (3.0%)	15 (16.3%)	0.010
Ever had	25 (42.4%)	5 (15.2%)	30 (32.6%)	0.008
Oesophageal dysmotility				
On presentation	14 (23.7%)	11 (33.3%)	25 (27.2%)	0.321
On follow-up	25 (42.4%)	10 (30.3%)	35 (38.0%)	0.273
Ever had	39 (66.1%)	21 (63.6%)	60 (65.2%)	0.812
Arthralgia				
On presentation	15 (25.4%)	11 (33.3%)	26 (28.3%)	0.419
On follow-up	13 (22.0%)	4 (12.1%)	17 (18.5%)	0.240
Ever had	28 (47.5%)	15 (45.5%)	43 (46.7%)	0.853
Dyspnoea				
On presentation	18 (30.5%)	15 (45.5%)	33 (35.9%)	0.152
On follow-up	31 (52.5%)	11 (33.3%)	42 (45.7%)	0.076
Ever had	49 (83.1%)	26 (78.8%)	75 (81.5%)	0.613
Cough				
On presentation	8 (13.6%)	5 (15.2%)	13 (14.1%)	1
On follow-up	17 (28.8%)	5 (15.2%)	22 (23.9%)	0.141
Ever had	25 (42.4%)	10 (30.3%)	35 (38.0%)	0.253
Bibasal crackles				
On presentation	15 (25.4%)	9 (27.3%)	24 (26.1%)	0.846
On follow-up	29 (49.2%)	11 (33.3%)	40 (43.5%)	0.142
Ever had	44 (74.6%)	20 (60.6%)	64 (69.6%)	0.162
Pulmonary hypertension				
On presentation	0	1 (3.0%)	1 (1.1%)	0.359
On follow-up	14 (23.7%)	4 (12.1%)	18 (19.6%)	0.178
Ever had	14 (23.7%)	5 (15.2%)	19 (20.7%)	0.330

Abbreviation: ILD = interstitial lung disease

* Data are shown as No. (%), unless otherwise specified

Supplementary Table 5. Causes of death among systemic sclerosis patients in this study*[*]

	With ILD (n=33)	Without ILD (n=21)	Total (n=54)
Infection			31 (57.4%)
Pneumonia	21 (63.6%)	9 (42.9%)	30 (55.6%)
Unknown source	N/A	1 (4.8%)	1 (1.9%)
Malignancy			12 (22.2%)
Lung	4 (12.1%)	4 (19.0%)	8 (14.8%)
Colon	N/A	1 (4.8%)	1 (1.9%)
Corpus	1 (3.0%)	N/A	1 (1.9%)
Lymphoma	N/A	2 (9.5%)	2 (3.7%)
SSc-related			5 (9.3%)
ILD	4 (12.1%)	N/A	4 (7.4%)
PH	N/A	1 (4.8%)	1 (1.9%)
Others			6 (11.1%)
Cardiovascular	1 (3.0%)	1 (4.8%)	2 (3.7%)
End-stage renal failure	N/A	1 (4.8%)	1 (1.9%)
Unknown	2 (6.1%)	1 (4.8%)	3 (5.6%)

Abbreviations: ILD = interstitial lung disease; N/A = not applicable; PH = pulmonary hypertension; SSc = systemic sclerosis

[*] Data are shown as No. (%)