

SUPPLEMENTARY MATERIAL

Incidence Rate and Prevalence of Systemic Sclerosis and Systemic-Sclerosis-Associated Interstitial Lung Disease in Japan: Analysis Using Japanese Claims Databases

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Supplementary Methods

Secondary outcomes

For the prevalence of comorbidities at baseline and during follow-up, patients were classified as having a diagnosis if they had at least one inpatient or outpatient claim for the selected ICD-10 codes. The prevalence of comorbidities in the follow-up period was calculated at 6 and 12 months. In addition to the medical conditions listed in Supplementary Table S1, the 30 most prevalent medical conditions for each cohort were identified. For these, patients were classified as having a medical condition if they had at least one code for an inpatient or outpatient claim.

For the frequency of prescriptions of medications and medical therapies during the baseline and follow-up (6 and 12 months), the proportion of patients with at least one prescription claim of any of the medications in the drug classes listed in Supplementary Table S2 was recorded. In addition, the top 25 most prescribed medications and the top 5 medical therapies were included. The medications include those used to treat SSc, SSc-ILD or comorbidities in those patient populations (i.e. cyclophosphamide, mycophenolate mofetil, azathioprine, rituximab, methotrexate, tocilizumab, tacrolimus, ciclosporin, anti-TNF drugs, mizoribine, hydroxychloroquine, and pulmonary hypertension medication, including PGI₂, ERA, PDE5I, sGC stimulants and selective prostacyclin stimulants).

The incidence rate of selected disease outcomes was evaluated in the follow-up period. Patients with corresponding selected disease outcomes at baseline were excluded. The selected disease outcomes were chosen due to their importance for understanding the burden of disease for SSc and SSc-ILD, as well as being able to be accurately captured in a claims database. Patients were defined as having a diagnosis of the specific potential adverse event if they had at least one inpatient or outpatient claim with the relevant ICD-10 code for any of the conditions in that disease category listed in Supplementary Table S3.

Supplementary Table S1. Selected comorbidities for SSc and SSc-ILD

Selected disease outcomes of SSc/SSc-ILD	ICD-10 MHLW 2013 codes/other codes
ILD	J84.x
Pulmonary hypertension	I27.x
Epicarditis	I30.x, I31.x, I32.x
Heart failure	I50.x
Myocardial fibrosis	I42.x, I43.x
Arrhythmia	I44.x, I45.x, I47.x, I48.x, I49.x
Scleroderma renal crisis	M34.8
Kidney failure	N17.x, N18.x, N19.x
Pseudo-ileus	K56.x
Finger ulcer, finger/toe gangrene/necrosis	L98.x
Respiratory failure	J96.x

ICD, International Classification of Diseases; ILD, interstitial lung disease; MHLW, Ministry of Health,

Labour and Welfare of Japan; SSc, systemic sclerosis; SSc-ILD, systemic sclerosis-associated

interstitial lung disease.

Supplementary Table S2. Prescriptions of medications/HOT for SSc/SSc-ILD and pulmonary

hypertension

Covariate	Comment
Medication/HOT for treatment of SSc/SSc-ILD	
Cyclophosphamide hydrate	
Mycophenolate mofetil	
Azathioprine	
Rituximab	
Methotrexate	
Tocilizumab	
Tacrolimus hydrate	
Ciclosporin	
Anti-TNF	
Infliximab	
Etanercept	
Adalimumab	
Golimumab	
Certolizumab pegol	
Abatacept	
Mizoribine	
Hydroxychloroquine sulfate	
HOT	Procedure codes: 114041610, 114042770, 114043670, 114045470, 114004910, 114005010, 114006110, 114006210, 114006310, 739210000, 739220000, 739230000, 739250000, 739260000, 739270000
Other medications of interest (pulmonary hypertension medication)	
PGI2	
Epoprostenol sodium	
Treprostinil	
Beraprost sodium	
Iloprost	
ERA	
Bosentan	
Ambrisentan	
Macitentan	
PDE5I	
Sildenafil citrate	
Tadalafil	
sGC stimulant	
Riociguat	

Selective prostacyclin stimulant

Selexipag

ERA, endothelin receptor antagonist; HOT, home oxygen therapy; PDE5I, phosphodiesterase type 5

inhibitor; PGI₂, prostaglandin I₂; sGC, soluble guanylate cyclase; SSc, systemic sclerosis; SSc-

ILD, systemic sclerosis-associated interstitial lung disease; TNF, tumour necrosis factor.

Supplementary Table S3. List of selected disease outcomes for SSc and SSc-ILD

Selected disease outcomes of SSc/SSc-ILD	ICD-10 MHLW 2013 codes/other codes
Death	JMDC: disenrollment from the insurance system with a cause categorized as “death” MDV: I46.1, I46.9, R96, R98, R99 or discharge summary
ILD	J84.x
Pulmonary hypertension	I27.x
Epicarditis	I30.x, I31.x, I32.x
Heart failure	I50.x
Myocardial fibrosis	I42.x, I43.x
Arrhythmia	I44.x, I45.x, I47.x, I48.x, I49.x
Scleroderma renal crisis	M34.8
Kidney failure	N17.x, N18.x, N19.x
Pseudo-ileus	K56.x
Finger ulcer, finger/toe gangrene/necrosis	L98.x
Home oxygen therapy	Billing fee codes: 11400411, 11400371, 114045470, 114041510, 114041610
Respiratory failure	J96.x

ICD, International Classification of Diseases; ILD, interstitial lung disease; JMDC, Japanese Medical Data Centre; MDV, Medical Data Vision; MHLW, Ministry of Health, Labour and Welfare of Japan; SSc, systemic sclerosis; SSc-ILD, systemic sclerosis-associated interstitial lung disease.