

Table S1. Clinical characteristics of patients

Gender	Age (yrs) ^a	CTD key features ^b	Comorbidity ^b	Immunomodulatory Drugs ^c	Serology ^d	Disease Activity ^e	Smoking history
<i>Systemic lupus erythematosus</i> (SLE; n = 14)							
F	54	Arthralgia, rash; SVT	Cushing's Disease	HCQ	ANA+, dsDNA+	Minimal	Ex-smoker
F	35	Autoimmune liver disease, rash, pleurisy, lymphadenopathy	None	HCQ, MMF, Pred <10mg	ANA+, ACL+ (IgM)	Minimal	Current smoker
F	60	Sicca symptoms	Osteopaenia	HCQ	ANA+, Ro+	Minimal	Ex-smoker
F	70	Arthralgia, chronic renal impairment, anaemia	Hypothyroidism Hypercholesterolaemia Ischaemic heart disease Hypertension Asthma	HCQ, atorvastatin, aspirin	ANA+, dsDNA+	Minimal	Never
F	58	Synovitis and pleurisy	Osteoarthritis	MTX. HCQ	ANA+, dsDNA+	Minimal	Never
F	49	Bipolar disorder, RP	IgA deficiency; Migraine	MMF,	Neg	Moderate	Current smoker
F	47	Cerebellar ataxia, pleurisy, polyarthralgia, alopecia	Ischaemic heart disease, Hypertension, Sicca symptoms,	AZA, HCQ, Pred <10mg	Neg	Moderate	Ex-smoker
F	25	Nephritis, RP, malar rash, polyarthralgia	Migraines,	MMF, HCQ, Pred 10mg, aspirin	ANA +, dsDNA+, Ro+, La+, ACL+	Minimal	Current smoker
F	46	Polyarthralgia, tremor	Macular degeneration, Hypercholesterolaemia	AZA	Neg	Minimal	Ex-smoker
F	27	malar rash, photosensitivity, mouth ulcers, skin ulceration, livedo reticularis	Asthma	HCQ	ANA+, dsDNA+	Moderate	Ex-smoker
F	41	Migraines, RP	HT	HCQ	ANA+	Minimal	Never
F	50	Tenosynovitis, sicca symptoms, phototsensitivity, alopecia	Ehlers-Danlos Syndrome, proptosis, hypercholesterol aemia	HCQ; atorvastatin	RhF+, CCP+	Moderate	Smoker
F	52	Cerebral infarction, palpitations, polyarthralgia, mouth ulcers, rash, alopecia, cognitive impairment	Mucinous adenocarcinoma of appx resected	HCQ, aspirin, warfarin	Neg	Minimal	Never
M	27	Oropharyngeal ulceration, autoimmune liver		HCQ, MMF	Neg	Moderate	Never

		disease, synovitis, RP, pleurisy					
13/14 (93%) F	48 (36.5-53.5)			7/14 (50%) immunosuppressed	8/14 (57%) ANA+	5/14 (36%) moderate	9/14 (64%) smoking Hx
<u>Systemic sclerosis</u> (SSc; n = 5)							
F	56	lcSSc ; Calcinosis, sclerodactyly, RP; digital ulcers	HT	None	ANA+, CENP+	Moderate	Never
M	63	dcSSc ; Scleroderma, skin ulcers	HT; hypercholesterol aemia, AF	simvastatin	Neg	None	Ex-smoker
F	50	dcSSc ; ILD, myositis, malabsorption		MMF, Pred < 10mg	ANA+	Minimal	Never
F	81	lcSSc ; GORD, ILD (NSIP), PAH, RP, sicca symptoms	CKD, HT, OA	None	ANA+	Minimal	Never
F	70	lcSSc ; Sclerodactyly, ILD	Arteriopathy	Aspirin, Pravastatin	ANA+, CENP+	Moderate	Ex-smoker
4/5 (80%) F	63 (56-70)	2/5 (40%) dcSSc		1/5 (20%) immunosuppressed	4/5 (80%) seropositive	2/5 (40%) moderate	2/5 (40%) smoking Hx
<u>Primary Sjögren's syndrome</u> (pSS; n = 7)							
F	59	Parotid swelling, sicca symptoms, Retinal infarct	HT	None	RhF+, ANA+, Ro+, La+	Moderate	Ex-smoker
F	54	MSG Bx+, , sicca symptoms; objective KCS, synovitis	Hypertension, LVH, Thin GBM disease	MTX	Neg	Moderate	Ex-smoker
F	63	Sicca symptoms and signs, MSG Bx +ve	Hypertension, hypothyroidism	HCQ	ANA+, Ro+	Minimal	Ex-smoker
F	66	Submandibular and parotid gland swelling, sicca symptoms, objective KCS, synovitis, Raynaud's, ILD, GORD,	OP Bronchiectasis	LEF (2 weeks only)	ANA+ Ro+	Moderate	Never
F	58	Objective KCS, MSG Bx +ve, Polyarthralgia	Breast Ca 1988 Hyperthyroidism Hypertension Migraine Psoriasis	HCQ	ANA+, Ro+, RhF+	Minimal	Never
F	58	Parotid gland swelling, Sicca symptoms, Objective KCS, polyarthralgia	Hx of TB Vitamin B12 deficiency	HCQ	ANA+, Ro+, RhF+, ACL IgM+, beta2GP1 IgM+	Minimal	Never

F	60	Sicca symptoms, Objective KCS; ILD-UIP, RP	PBC	HCQ	ANA+, Ro+	Minimal	Never
7/7 (100%) F	59.7 (58- 61.5)			2/7 (29%) immunosuppressed	6/7 (86%) seropositive	3/7 (43%) moderate	3/7 (43%) smoking Hx
<i>Secondary Sjögren's syndrome</i> (n = 5)							
F	56	SSc/2ry SS , Sclerodactyly, calcinosis, GORD, RP, Alopecia, ILD-UIP	Hypothyroidism	HCQ, Pravastatin	ANA+, Ro+, La+, Scl-70+	Minimal	Ex-smoker
F	46	SLE/2ry SS , sicca symptoms, ILD- LIP, hyperviscosity		RTX, MMF, Aspirin, Pred < 10mg	ANA+, dsDNA+, U1- RNP+, RhF+	Minimal	Ex-smoker
F	60	SLE/2ry SS , Erosive Inflammatory acromioclavicular arthritis, mucocutaneous ulcers, sicca symptoms, sialadenitis	Hypertension, Ischaemic heart disease, Hypercholeste- ro laemia	HCQ, Aspirin	Neg	Minimal	Never
F	57	SLE/2ry SS , polyarthralgia, myalgia, photosensitivity, rashes, mouth ulcers	Migraines,	HCQ	ANA+, Ro+, La+, CENP+	Moderate	Never
F	42	SLE/SSc/2ry SS , Calcinosis; sclerodactyly; GORD, RP; livedo reticularis,	Atrial arrhythmia, migraines	MMF, HCQ	ANA+, CENP+	Moderate	Never
5/5 (100%) F	56 (46- 57)			2/5 (40%) immunosuppressed	4/5 (80%) seropositive	2/5 (40%) moderate	2/5 (40%) smoking Hx

^a Summary statistics: median and (for n > 4) IQR.

^b Abbreviations of clinical features: SVT: Supraventricular tachycardia; RP: Raynaud's Phenomenon; ILD: Interstitial lung disease; UIP: Usual Interstitial Pneumonia; NSIP: Non-specific Interstitial Pneumonia; LIP: Lymphocytic Interstitial Pneumonia; GORD: Gastro-oesophageal Reflux Disease; PAH: Pulmonary Arterial Hypertension; KCS: keratoconjunctivitis sicca; MSG Bx: minor salivary gland biopsy. Summary statistics for SSc report the percentage of patients with diffuse cutaneous (dc) SSc; the other SSc patients had limited cutaneous (lc) disease. For patients with overlap syndromes, the primary diagnosis is given in bold type.

^c Drug abbreviations: HCQ: Hydroxychloroquine; MMF: Mycophenolate Mofetil; MTX: Methotrexate; Pred: Prednisolone; AZA: Azathioprine; RTX: Rituximab. Summary statistics report the percentage of patients on antiproliferatives (AZA, MMF, MTX), biologics (RTX), or corticosteroids (Pred), separately or in combination.

^d Autoantibody abbreviations: ANA: Anti-nuclear antibody; dsDNA: Anti-double strand DNA antibody; ACL: Anti-cardiolipin antibody; RhF: Rheumatoid Factor; CCP: Anti-Cyclic Citrullinated Peptide antibody; CENP: Anti-Centromere Protein antibody; U1RNP: Anti-U1 small nuclear Ribonucleoprotein

antibody; Scl-70: Anti-topoisomerase I antibody; Neg: Negative for all autoantibodies tested. Summary statistics report the percentage of seropositive patients (ANA+ for SLE).

^e Disease activity was assessed by review of clinical notes and letters by a consultant rheumatologist who was, at the time of review, blinded to the flow cytometric results (F.C.H.). Summary statistics report the percentage of those with greater than minimal disease activity.