culminating in organ failure and death. Fibrosis, believed to result from a hyperactive tissue repair programme, is characterized by the abnormal presence of the myofibroblast, a specialized type of fibroblast that overexpresses the highly contractile protein α-smooth muscle actin, which displays excessive adhesive properties. The precise contribution of adhesive signalling, which involves integrin-mediated activation of focal adhesion kinase (FAK)/src, to the fibrotic phenotype of cutaneous SSc fibroblasts is unclear.

Methods. Fibroblasts ($n = 6$) and skin biopsies were obtained from control and SSc tissue, and derived from mouse embryonic and mouse integrin β1 wild-type and knockout. Proteins and RNAs including phospho-FAK, FAK, CCN2, vinculin, α-SMA and Type I collagen antibodies were examined by IF staining, RT–PCR and western blot analysis. Cells were incubated for 24 h in the presence or absence of anti-integrin β1 antibody, *N*-acetyl cysteine (NAC) or PP2 (10 μM). In addition, the ability matrix remodelling in collagen contraction models and migration assays were also examined.

Results. Histological analysis of SSc dermal tissues reveals differential expression of p-FAK protein compared with control dermis. FAK phosphorylation was found to be reduced in integrin β1 knockout mouse dermal fibroblasts. Neutralizing anti-integrin β1 antibody or the anti-oxidant NAC reduces FAK phosphorylation in SSc fibroblasts. These results show integrin β1 and reactive oxygen species (ROS) are required for the elevated FAK phosphorylation in SSc fibroblasts. The FAK/src inhibitor PP2 significantly decreases expression of pro-fibrotic mRNAs and proteins in normal and SSc dermal fibroblasts, such as CCN2, α-SMA and Type I collagen ($P < 0.05$). When normal and SSc fibroblasts were subjected to the floating collagen gel model of ECM contraction and the scratch wound assay of cell migration, in the presence or absence of PP2 and anti-integrin β1 antibody, both of them reduced the enhanced ability of SSc fibroblasts to contract a collagen gel matrix and migration.

Conclusion. These results suggest that the excessive adhesion of SSc fibroblasts to ECM is intimately involved with the fibrotic phenotype of this cell type; blocking adhesive signalling may be beneficial in controlling fibrosis.

S.10.4 OVEREXPRESSION OF IL-6 IN EARLY dcSSc MAY DRIVE FIBROTIC RESPONSE VIA JAK2/STAT3 SIGNALLING PATHWAYS

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Introduction. Previously we showed that a subset of dcSSc with elevated serum IL-6 levels were associated with high modified Rodnan skin score (mRSS). In this study, we examined its potential pro-fibrotic effects and downstream signalling pathways in patients with early dcSSc.

Methods. Using skin biopsies obtained from patients with early dcSSc [$n = 10$, mean disease duration, mean (S.E.M.) 35 (9.5) months] and healthy controls ($n = 5$), colocalization of IL-6 with αSMA and phospho-STAT3 were determined immunohistochemically. The effect of IL-6 trans-signalling on extracellular matrix (ECM) production was assessed on fibroblasts grown by explant culture from skin of SSc patients and healthy controls. Downstream signalling pathways regulated by IL-6 and soluble IL-6 receptor was examined using pharmacological inhibitors. These were stimulated overnight with IL-6 (0–50 ng/ml) and sIL-6R (20 ng/ml).

Results. There was increased dermal IL-6 expression in patients with early dcSSc compared with healthy controls. IL-6 accumulation was strongly associated with vascular structures and perivascular inflammatory infiltrate in 8/10 patients. Compared with controls, immunostaining for downstream IL-6 signalling molecules showed an increased expression of pSTAT3 in all cases with early dSSc, particularly in the perivascular inflammatory foci and vascular structures. Similar colocalization of IL-6 and αSMA was observed in all skin sections with early dcSSc.

To explore the effect of IL-6 trans-signalling on ECM synthesis, incubation of dermal fibroblasts from healthy controls with either IL-6 alone (25–50 ng/ml) or sIL-6R (20 -ng/ml) alone had no effect on collagen, αSMA and CTGF production. However, there was up-regulation of collagen synthesis in normal fibroblasts [34.3 (2.45) *vs* 9.88 (1.54) Densitometry Image Unit (DIU) controls, $P < 0.05$] in response to IL-6 and sIL-6R. Similar induction of αSMA and CTGF by 12-fold and 15-fold ($P < 0.01$), respectively, were observed in normal fibroblasts incubated with a combination of IL-6 and sIL-6R. The IL-6 trans-signalling activation of collagen synthesis in normal fibroblasts was abrogated by AG490 (3.6-fold) and S3I-201 (3.5-fold, $P < 0.02$), that targets JAK2 and STAT3 signalling pathways, respectively.

Time-course analysis indicates that IL-6 trans-signalling induces maximal activation of pJAK2 and pSTAT3 at 45 min and this was diminished by 2 h in normal fibroblasts. Constitutive activation of both JAK2 and STAT3 pathways was observed in SSc fibroblasts.

Conclusion. Our results confirm overexpression of IL-6 in dcSSc and demonstrate a potent pro-fibrotic effect of IL-6 trans-signalling via the JAK2/STAT3 pathways. The data supports the rationale targeting the IL-6 trans-signalling as a potential fibrotic therapy in SSc.

SESSION 11

THE HAND

S.11.1 INFLUENCE OF DIGITAL ULCER HEALING ON DISABILITY AND DAILY ACTIVITY LIMITATIONS IN SSc

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Objective. We previously showed that DU significantly increased global and hand disability with a significant impact on activities of daily living (ADLs) and work disability. This study aims to evaluate the impact of digital ulcer (DU) healing on disability and daily activity limitations in SSc.

Methods. From January 2008 and June 2009, we prospectively evaluated 189 SSc patients for DU history, disability, employment and occupational status during meetings of the French SSc Patient Association ($n = 86$, 45.5%) or during hospitalization ($n = 103$, 54.5%)1. Among the 60 patients with at least one active DU at baseline (M0), 40 patients were followed longitudinally over 6 (3) months. These patients were evaluated for DU history, global and hand disability, health-related quality of life (HRQoL), daily activity limitation and employment status.

Results. The median (IQR) age was 57.5 (43.5–68) years and the median (IQR) disease duration was 8.3 (3–16.5) years. Twenty-two (55%) patients had diffuse SSc and 34 (85%) were females. At baseline, a mean of 2.9 (2.8) DU per patient was reported. Thirty-three (82.5%) patients had ischaemic DU, 7 (17.5%) patients had >1 DU associated with calcinosis and 13 (32.5%) patients had mechanical DU. Thirteen (32.5%) patients had >4 DU at baseline. Among the 40 patients, 16 (40%) patients showed complete ulcer healing. In these patients with DU, the presence of calcinosis was associated with a lower probability of healing ($P = 0.03$). Comparison between healed and no-healed DU patients showed an improvement of hand disability provided by an improvement of the Cochin Hand Function score ($P = 0.05$)) and a trend towards HAQ domain dressing and grooming ($P = 0.06$) between M0 and M6 (3) visit in healed patients but not in no-healed patients. Concerning HRQoL, there were no difference for Mental and Physical component Scores of SF-36 but significant improvement of Bodily Pain score ($P = 0.04$) and Physical Role score ($P = 0.05$) between M0 and M6 (3) visit in patients with healed DU. The absence of healing was associated with significantly decreased work productivity ($P = 0.05$), whereas the performance in ADL was not significantly decreased ($P = 0.15$). Patients who were on sick-leave and who received some help for household tasks at the time of active DU were more likely to heal.

Conclusion. For the first time, we provide prospective data with evidence that DU healing is associated with an improvement in hand function. Sick leave was associated with better healing of DU.

S.11.2 EVALUATION OF THE IMPACT OF RECURRENT ISCHAEMIC DIGITAL ULCERS ON HAND DISABILITY IN PATIENTS WITH SSc (ECLIPSE)—REPORT OF THE COHORT AT THE TIME OF INCLUSION

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Introduction. Ischaemic digital ulcers (DUs) are a common complication of SSc.
Methods. This prospective, longitudinal, observational study of 24 months evaluates the impact of recurrent DU on hand disability. Patients fulfilled ACR or LeRoy–Medsger criteria for SSc, experienced at least one DU during the previous year with or without active DU at inclusion, and were eligible for bosentan therapy. Data were collected on SSc, characteristics of past and present DU, modified Rodnan skin score, factors influencing hand function and mobility, disability scores [Cochin hand function scale (CHFS), HAQ disability index (HAQ-DI)] and quality of life (SF-36).
Results. A total of 217 patients were included between October 2009 and March 2011 in 50 centres. The interim analysis includes 184 patients (128 women). Mean age was 43 (15) years at diagnosis of SSc and 53 (15) years at inclusion. SSc was diffuse in 44% of patients and RP started 14 (12) years before inclusion. Of the patients, 11% had pulmonary arterial hypertension. Mean Rodnan score was 14.3 (8.8). Time elapsed since the first DU was 6 (7) years. In 47% of patients, DU was an early complication (first non-RP sign) and 59% had recurrent DU. Sequelae of DU included loss of substance (62%), autoamputation (8%) and surgical amputation (10%). Complications were infection (8%), gangrene (5%) and osteitis (2%). Of the patients, 54% had at least one active DU at inclusion. In these patients, the mean number of DU was 2.3 (1.9); 54% had more than one DU, 37% had both hands involved and on average 2.2 (1.7) fingers were affected. Of the cases, 21% had at least one extended DU (>1 cm). Concomitant mechanical ulcers were localized at the dorsal face of fingers (19%), bony reliefs (13%) or calcinosis (1%). DUs were painful [visual analogue scale 6.18 (2.56) *vs* 2.49 (2.56) without DU] and disabling, involving the dominant hand in 72% of patients. DU worsened hand disability (median CHFS, 42 with active DU *vs* 26 without DU, $P < 0.0001$), HAQ-DI and affected SF-36. Other factors contributing independently to hand disability were reduced PIP or DIP joint mobility of at least one finger (56 and 66% patients, respectively) and retraction of flexor tendons (45%).
Conclusion. DUs represent an early complication of SSc. They are painful, affecting often multiple fingers and both hands. In patients with SSc, DUs are significantly associated with hand disability. Prospective follow-up at 2 years will allow to further elucidate the specific role that DU episodes play in the disability of these patients.

S.11.3 STEPS TO LINKING SSc TO THE WORLD HEALTH ORGANIZATION'S INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH: A EUSTAR INITIATIVE

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Background. SSc affects multiple organ systems resulting in many types and degrees of disability. Skin fibrosis, ischaemic pain, ulceration, arthritis, contracture, myopathy as well as cardiopulmonary, renal and gastrointestinal effects carry significant burden on emotional, social and physical functioning.
International Classification of Disability, Health and Functioning (ICF) is a universal framework introduced by the World Health Organization (WHO) to describe and quantify the impact caused by health conditions on functioning and disability. ICF uses a standardized alphanumerical language to describe health states in terms of the bio-psycho-social model. It is accepted by international health care and policy-making systems to assess the impact of disease on personal, scientific, economic and service levels.
Methodology. A comprehensive PubMed search with keywords: outcome, rehabilitation, function, quality of life, mental, sexual, pain and disease activity identified five validated measures representing the broadest range of SSc manifestations (O.D., L.A.S.). Meaningful concepts were identified in the instruments and linked to the ICF by

TABLE 1. Questionnaire and ICF codes identified by annotators

Questionnaire	No. of concepts	ICF code	Description
HAMIS	9	b7101	Mobility of joint functions, mobility of several joints
		b7202	Mobility of bone functions, mobility of carpal bones
		d4400	Fine hand use, picking up
		d4401	Fine hand use, grasping
mRSS	17	s8100	Structure of areas of skin, skin of head and neck region
		s8101	Structure of areas of skin, skin of the shoulder region
		s8102	Structure of areas of skin, skin of upper extremity
		s8104	Structure of areas of skin, skin of lower extremity
		s8105	Structure of areas of skin, skin of trunk and back
RCS	7	b265	Touch function
		b2702	Sensory functions related to temperature and other stimuli, Sensitivity to pressure
		b280	Sensation of pain
		b810	Protective functions of the skin
		b820	Repair functions of the skin
		b840	Sensation related to the skin
		d430	Lifting and carrying objects
		d440	Fine hand use
		d445	Hand and arm use
		s7302	Structure of hand
		NC	Duration of attacks[a]
		NC	Frequency of attacks[a]
		NC	Raynaud's[a]
		ND	Symptoms[a]
SHAQ VAS	7	b280	Sensation of pain
		b430	Lifting and carrying objects
		b445	Hand and arm use
		b455	Exercise tolerance functions
		b4552	Exercise tolerance functions; fatigability
		b5105	Ingestion functions; swallowing
		b515	Digestive functions
		b525	Defecation functions
		b810	Protective functions of the skin
		b820	Repair functions of the skin
		d440	Fine hand use
		HC	Digital ulcers[a]
		HC	Raynaud's[a]
		HC	Scleroderma[a]
		ND	Activities[a]
SSc GIT	25	b134	Sleep functions
		b2801	Sensation of pain, pain in body part
		b510	Ingestion functions
		b5105	Ingestion functions, swallowing
		b5106	Ingestion functions, regurgitation and vomiting
		b515	Digestive functions
		b525	Defecation functions
		b5250	Defecation functions, elimination of faeces
		b5251	Defecation functions, faecal consistency
		b5252	Defecation functions, frequency of defecation
		b5253	Defecation functions, faecal continence
		b5254	Defecation functions, flatulence
		b535	Sensations associated with the digestive system
		b5350	Sensations associated with the digestive system, sensation of nausea
		b5351	Sensations associated with the digestive system, feeling bloated
		d9250	Recreation and leisure, socializing
		PF	Fear[a]

[a]Need for newly created ICF code.

TABLE 2. Point and interval estimates of proportion of agreement with and without correction for chance

Questionnaire	No. of concepts	No. of ICF codes	Proportion of agreement			Proportion of agreement corrected for chance		
			Estimate	Lower Limit	Upper Limit	Estimate	Lower Limit	Upper Limit
HAMIS	9	4	0.8611	0.7500	0.9444	0.7097	0.5291	0.8835
mRSS	17	5	0.9647	0.9176	1.0000	0.8964	0.7631	1.0000
RCS	7	10	0.9082	0.8367	0.9388	0.6736	0.3879	0.7726
SHAQ	7	11	0.9048	0.8477	0.9524	0.6650	0.4848	0.8279
SSc GIT	25	16	0.9506	0.9318	0.9718	0.6599	0.5306	0.7912
Overall	65		0.9359	0.9172	0.9506	0.7230	0.6453	0.7797

TABLE 3. Linkages from the five pilot instruments according to ICF chapters

Domain	Chapter	Title	Number of categories generated	Categories shared amongst instruments	Contributing instruments
Body functions	Chapter 1	Mental	3	0	GIT
	Chapter 2	Sensory and pain	4	3	GIT, RCS, SHAQ
	Chapter 4	Cardiovascular and respiratory	3	0	SHAQ
	Chapter 5	Digestive, metabolic and endocrine	12	3	GIT, SHAQ
	Chapter 7	Neuromuscular and movement	1	0	HAMIS
	Chapter 8	Skin	2	2	RCS, SHAQ
Body structures	Chapter 7	Movement	1	1	RCS
	Chapter 8	Skin	4	0	mRSS
Activities and participation	Chapter 4	Mobility	21	2	GIT, mRSS, RCS, SHAQ
	Chapter 5	Self-care	8	0	SHAQ
	Chapter 6	Domestic life	3	0	SHAQ
	Chapter 7	Interpersonal interactions and relationships	1	0	GIT
	Chapter 9	Community, social and civic life	2	0	GIT

two health professionals familiar with ICF linking rules (R.E., L.A.S.). Agreement was analysed (K.K.).

Results. Nine codes were created to address absence of ICF codes to describe aspects contained within the instruments. ICF codes were linked to five validated SSc instruments: 9 ICF codes to Hand Mobility in Scleroderma Test (HAMIS), 17 to modified Rodnan skin score (mRSS), 7 to Raynaud's condition score (RCS), 7 to Scleroderma Health Assessment Questionnaire (SHAQ) and 25 to SSc Gastrointestinal Tract Instrument (GIT) (Table 1).

Agreement ranged from 0.8611 (95% CI 0.7500, 0.9444) for HAMIS to 0.9647 (0.9175, 1.000) for mRSS, and from 0.7097 (0.5291, 0.8835) to 0.8964 (0.7631, 1.0000) corrected for chance (Tables 2 and 3). Overall agreement was 0.9359 (0.9172, 0.9506) and 0.7230 (0.6453, 0.7797) adjusted for chance. By either measure, agreement between linkers, a physiotherapist and rheumatologist, was high.

Discussion. This first step, in a methodological series to establish an ICF language for SSc, was successful in both high agreement of linking and in exploring potential challenges of linking a complex multi-organ system disease. Further face, content and construct validation strategies are now underway. Of the diseases already linked to ICF, SSc is the most complex thus requiring precise strategies to gain knowledge from SSc experts including patients, rehabilitation and nurses. A composite of SSc codes will soon be available for ICF-engaged health systems. Thus, the global, regional and personal impact of SSc across cultures, age and socioeconomic status may be assessed fairly for policy making, provision of services and funding.

S.11.4 MODIFIABLE PREDICTORS OF FATIGUE IN SSc: A PROSPECTIVE LONGITUDINAL STUDY OF THE GENISOS COHORT

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Objectives. Fatigue has been rated by persons with SSc as their most bothersome symptom. Longitudinal studies examining the baseline predictors of fatigue in SSc have not been reported. Our objectives were to examine the course of fatigue severity over time and to identify baseline clinical, demographic and psychosocial predictors of sequentially obtained fatigue scores in early SSc. We also examined baseline predictors of change in fatigue severity over time.

Methods. We analysed 1090 longitudinal Fatigue Severity Scale (FSS) scores belonging to 256 patients who were enrolled in the Genetics *vs* Environment in Scleroderma Outcomes Study (GENISOS). A comprehensive list of demographic, objective clinical (including serology, disease type, Medsger severity scale), patient-reported clinical and psychosocial variables were examined as potential predictors of sequentially obtained fatigue levels. Predictive significance of baseline variables for sequentially obtained FSS scores was examined with generalized linear mixed models. Predictors of change in FSS over time were examined by adding an interaction term between the baseline variable and time-in-study to the model.

Results. The patients' mean age was 48.6 years, 47% were Caucasians and 59% had diffuse cutaneous involvement. The mean disease duration at enrolment was 2.5 years. The FSS was obtained at enrolment and follow-up visits (mean follow-up time 3.8 years). Average baseline FSS score was 4.7 (+0.96). The FSS was relatively stable and did not show a consistent trend for change over time ($P = 0.221$).

In multivariable model of objective clinical variables, higher Medsger Gastrointestinal ($P = 0.006$) and Joint ($P = 0.024$) Severity Indices, and anti-U1-RNP antibodies ($P = 0.024$) were independent predictors of higher FSS. In the final model, ineffective coping skills captured by higher Illness Behaviour Questionnaire scores ($P < 0.001$), higher self-reported pain ($P = 0.006$) and higher Medsger Gastrointestinal Severity Index ($P = 0.009$) at enrolment were independent predictors of higher longitudinal FSS scores.

Baseline DLco per cent predicted was the only independent variable that significantly predicted a change in FSS scores over time ($P = 0.013$), with lower DL_{CO} levels predicting an increase in FSS over time.

Conclusions. In the first longitudinal fatigue study of persons with SSc, we identified several modifiable clinical and psychological factors that predict longitudinal fatigue severity in early SSc. Further interventional studies are needed to examine whether more effective management of gastrointestinal, joint and pulmonary manifestations, in addition to improvement of pain control and coping skills can decrease perceived fatigue in persons with SSc.

S.11.5 A SELF-ADMINISTERED STRETCHING PROGRAMME FOR HAND FUNCTION IN SSc: PRELIMINARY RESULTS ON A 1-MONTH FOLLOW-UP OF 13 PATIENTS

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Hands are greatly involved in most patients with SSc. Besides hand disability highly influences the activities of daily life, while passive and active stretching exercises may reduce handicap and help to preserve function. Thus, we decided to evaluate, using interview-based and self-administred questionnaires, the functional ability, the health status and the emotional and physical personal perception of finger joint

motion in SSc patients before and after 1-month of a self-administred stretching programme.
Patients and methods. We enrolled 13 consecutive ScS patients, all females, mean age 62.8 years (mean disease duration 14.2 years) presenting a clinically evident hand involvement, characterized by pain and reduced range of motion. All the patients had a detailed clinical and laboratory assessment and their organ involvement was also investigated. All patients were evaluated by mental and physical SF-36, HAQ and with Duruoz Hand Index, at baseline and 1 month after having received instructions on a self-administred stretching programme. The collected data were compared with evaluate any possible differences before and after performing this schedule.
Results. Four (30.8%) patients had a diffuse form of SSc, whereas 9 (69.2%) had a limited form. All of them (100%) were ANA positive: five (38.5%) had ACAs and five (38.5%) had anti-topo I antibodies. Six (46%) patients had a modified Rodnan skin score over 14; digital ulcers were found in 5 (38.5%) cases. At the end of the 1-month stretching programme, there was a global improvement in the mean values of mental (33.68 *vs* 41.03) ($P < 0.008$) and physical (28.92 *vs* 31.75) SF-36 scores, a reduction in the mean values of HAQ assessment (1.71 *vs* 1.38) ($P < 0.01$). Duruoz Hand Index also improved for those activities requiring strength (14.84 *vs* 11.3), skill and accuracy (12.61 *vs* 10.3) and for those exercises needing the use of the first three fingers (9.23 *vs* 8.23).
Conclusion. Although a longer follow-up on a higher number of patients is needed, our preliminary results show how useful a stretching programme of the hands can be to improve quality of life and function in SSc patients.

SESSION 12

MISCELLANEOUS

S.12.1 IS H1N1 INFLUENZA VACCINE SAFE AND EFFECTIVE IN PATIENTS WITH SSc?

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Introduction. Immunosuppressed patients are potentially at risk to suffer from life-threatening pulmonary infections caused by H1N1. Although pulmonary disease is an important cause of morbidity in patients with SSc, low rates of influenza vaccination are still observed in this population due to lack of information and fear of adverse events. The recent WHO recommendation that the 2010–2011 trivalent seasonal flu vaccine must contain A/California/7/2009/H1N1-like virus reinforces the need to access the safety and efficacy of H1N1 vaccination in SSc patients.
Patients and methods. One hundred twenty-seven patients and 234 controls were vaccinated with adjuvant-free influenza A/California/7/2009 (pH1N1) vaccine. All participants were evaluated pre- and 21 days post-vaccination and serology for anti-H1N1 was performed by haemagglutination inhibition (HI) assay (HIA). Efficacy was assessed by seroprotection and seroconversion rates and the factor increase in geometric mean antibody titre (GMT). Participants received a 21-day symptom diary card and were instructed to report local and systemic adverse events. Severe side effects were considered if hospitalization was required.
Results. SSc patients had mean age of 52 (5.3) years, mean disease duration of 11.96 (7.9) years and a female predominance (93%). Of SSc patients, 69.3% had limited cutaneous disease, whereas 30.7% had diffuse cutaneous disease. Half of the patients were on immunosuppressant therapy (mostly AZA, MTX and CYC). Thirteen (10%) patients were taking CSs, but only two patients received a daily dose > 10 mg of prednisone. SSc patients and controls presented similar pre-vaccination GMT (11.2 *vs* 9.3; $P = 0.094$) and seroprotection rates (18.1 *vs.* 11.5%; $P = 0.110$). After vaccination seroprotection rates (81.1 *vs* 82.9%; $P = 0.668$) and GMT (134.4 *vs.* 122.9; $P = 0.654$) rose in both groups. Seroconversion rates (72.4 *vs* 76.9%; $P = 0.372$) and factor increase in GMT (12.0 *vs* 13.2; $P = 0.553$) were comparable in both groups. Disease-modifying antirheumatic drugs were not associated with reduced vaccination responses ($P > 0.05$). Immunization was well tolerated with mild local (7.1 *vs* 14.1%; $P = 0.058$) and minor systemic reactions (23.6 *vs* 25.6%; $P = 0.704$) in patients and controls, respectively. No severe side effect was reported.
Conclusion. Vaccination against H1N1 was safe and induced a satisfactory response in patients with SSc, including in those under immunosuppressive therapy. Due to the inherent risks of lower respiratory infections in this group of patients, physicians should consider annually influenza vaccination recommendation (ClinicalTrials.gov, #NCT01151644).

S.12.2 THE AUTOANTIBODY PROFILE OF CHINESE PATIENTS WITH SSc DIFFERS SIGNIFICANTLY FROM OTHER ETHNIC GROUPS

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Background/Purpose. The presence of autoantibodies to nuclear and nucleolar proteins is a characteristic feature of SSc. Autoantibody frequencies may differ in ethnic populations and indicate distinct clinical outcomes. Our goal was to study SSc-specific autoantibodies in Chinese patients with SSc, and compare their frequencies with that in US and Japanese SSc patients.
Methods. Chinese SSc patients ($n = 328$) were recruited from a multicentre study including hospitals and outpatient clinics in Shanghai and Shijiazhuang in China. All patients met the ACR classification criteria for SSc. Anti-topo antibody (ATA), ACA and anti-RNA polymerase III (RNAP III) were detected utilizing commercially available kits. The autoantibody information in Chinese patients was compared with the serology in the US–Caucasian patients ($n = 834$), recruited from the GENISOS and Scleroderma Family Registry, as well as Japanese SSc patients ($n = 203$) based on published data. Chi-square test was utilized for the above-mentioned comparisons.
Results. ATA were found in 54.9%, ACA in 10.7% and RNAP III autoantibodies in only 2.1% of Chinese patients with SSc. This represents the first report on the frequency of RNAP III in Chinese patients with SSc. Compared with US patients (ATA in 18.7%, ACA in 32.4% and anti-RNAP III in 17.4%), and to Japanese patients (ATA in 31.5%, ACA in 36.9%, anti-RNAP III in 5.9%), Chinese SSc patients have a significantly low frequency of RNAP III and ACA, but higher frequency of ATA (Table 1). The prevalence of diffuse cutaneous involvement was significantly higher in Chinese patients (62.8%) than Caucasian (34.8%) and Japanese patients (44.8%) with SSc (Table 1).
Conclusion. The frequencies of SSc-specific autoantibodies differ significantly in Chinese patients from Caucasians and Japanese patients with SSc. The higher frequencies of ATA and the lower occurrence of ACA may indicate a higher risk for developing interstitial lung disease in Chinese SSc patients, whereas the markedly low frequency of RNAP III in Chinese SSc patients explains the observed low prevalence of scleroderma renal crisis in China. Our findings, along with the previously published data on the association of SSc-specific antibodies with distinct HLA alleles, suggest that differences in genetic determinants in various geographic areas may contribute to the