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Background: Current treatments for systemic sclerosis-associated interstitial lung disease (SSc-ILD) are characterised by different attributes such as mode of administration, adverse events (AE) and efficacy. Physicians and patients often have different perspectives on treatments, thus shared decision-making between patients and physicians is essential. An understanding of patients' decision processes when weighing treatment attributes and the trade-offs they are willing to make is important for shared decision-making.

Objectives: The study aimed to 1) identify relevant treatment attributes, 2) elicit patient preferences for these attributes and 3) quantify preference as relative attribute importance (RAI); a higher RAI indicates that more of the variability in patients' responses may be explained by changes in the attribute; and maximum acceptable risk (MAR) of diarrhoea, nausea and/or vomiting (MAR is a trade-off measure that evaluates attributes in risk-equivalences as a unit of measurement).

Methods: A discrete choice experiment (DCE) was created, based on a literature review, a patient advisory board, qualitative patient interviews, and a workshop involving SSc-ILD expert physicians. Seven SSc-ILD treatment attributes were identified: 1) mode of administration; 2) shortness of breath; 3) skin tightness; 4) cough; 5) tiredness; 6) risk of gastrointestinal tract (GIT) AEs; and 7) risk of serious and non-serious infections. The levels of AE risk were informed by frequencies observed in clinical trials and patient input during the interviews. The DCE was integrated into an online survey, which asked patients to make repeated choices between two alternatives described by varying levels of included attributes. Patients with SSc-ILD were recruited by physician referral from Switzerland, Norway, France, Germany and the USA. DCE data were analysed using a logit model, and RAI and MAR measures were calculated.

Results: A total of 231 patients with physician-confirmed SSc-ILD (mean age 52.6±13.2 years; 54% diagnosed for >5 years) completed the survey. Patients with SSc-ILD mostly preferred twice-daily oral treatments ($p<0.001$) and infusion every 6–12 months ($p<0.001$) over monthly infusions. Patients' choices were mostly affected by the risk of GIT AEs (RAI=25%; 95% CI 22–28%) and risk of infections (RAI=20%; 95% CI 16–24%). Improvements in shortness of breath and type and severity of cough were jointly more important than improvement in skin tightness ($p<0.001$).

Patients accepted an additional 21% risk (95% CI 13–29%) of GIT AEs if they could reduce the frequency of infusions from monthly to 6–12 monthly, or accepted an extra 15% (95% CI 7–23%) increase in risk if changing to an oral treatment twice daily. Among symptoms, an additional 28% (95% CI 20–36%) risk of GIT AEs was considered acceptable if the severity of patients' persistent cough was reduced to a level that was easier to tolerate, even if it remained persistent. Similarly, a 37% (95% CI 28–46%) increase in the risk of GIT AEs was acceptable if it resulted in breathlessness during routine activities rather than breathlessness at rest. Finally, patients were willing to accept an additional 36% risk (95% CI 27–45%) of GIT AEs if it reduced their risk of non-serious infections from 30% to 15% and of serious infections from 10% to 5%.

Conclusion: This is the first study to quantitatively elicit patients' preferences for attributes of SSc-ILD treatments. Preferences were driven by safety, efficacy and technical considerations. Patients showed willingness to make trade-offs, providing a firm basis for shared decision-making in routine clinical practice.

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POS0856

CLINICAL UTILITY OF BREATH-HOLDING TEST FOR MEASURING CARDIOPULMONARY FUNCTION IN PATIENTS WITH SYSTEMIC SCLEROSIS

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Background: Interstitial lung disease (ILD) and pulmonary arterial hypertension (PAH) are major causes of death in systemic sclerosis (SSc). Six-minute-walk test (6MWT) is a standard outcome measure for exercise capacity in cardiopulmonary diseases. However, the results of 6MWT may not reflect real cardiopulmonary function of SSc patients in whom musculoskeletal system is frequently inflected.

Objectives: This study aimed to evaluate the clinical utility of breath-holding test (BHT) in evaluating cardiopulmonary function in SSc patients, as compared with 6MWT.

Methods: Seventy-two patients with SSc were prospectively enrolled and underwent BHT and 6MWT with measurement of Borg score and Scleroderma Health Assessment Questionnaire (SHAQ). Data on diffusing capacity for carbon monoxide (DLCO, %), forced vital capacity (FVC, % and liters), and ejection fraction and pulmonary arterial systolic pressure (PASP) measured by transthoracic echocardiography (TTE), were also collected. For BHT, participants were required to make a maximum expiration followed by a maximum inspiration and to hold the breath as long as possible at maximum inspiratory level. This procedure was repeated three times, with 5-minute intervals. 6MWT was performed according to the American Thoracic Society guidelines. Pearson's correlation test was applied to demonstrate the relationship between BHT results and each clinical parameter.

Results: Among 72 (66 female) patients, mean (SD) age was 57.1 (11.1) years, modified Rodnan skin score 10.6 (10.5), SHAQ 0.64 (0.61) and 6MWT distance 473.5 (95.5) m. Mean BHT time was 35.05 (14.90) sec at the first time, 38.92 (16.14) sec at the second time, and 41.11 (17.71) sec at the third time. The BHT time showed a statistically significant negative correlation with Borg scale (pre-test, $r = -0.336$, $p = 0.002$; post-test, $r = -0.252$, $p = 0.034$; Figure 1 and Table 1), while 6MWT showed a negative correlation with only post-test Borg scale (pre-test, $r = -0.113$, $p = 0.343$; post-test, $r = -0.351$, $p = 0.002$; Table 1). The BHT time was positively correlated with DLCO (%), $r = 0.409$, $p < 0.001$ and FVC (liters, $r = 0.402$, $p < 0.001$) (Table 1). We also found a statistically significant correlation between BHT time and SHAQ score ($r = -0.451$, $p < 0.001$; Table 1). However, EF and PASP by TTE showed no significant relationship with BHT time (EF, $r = -0.108$, $p = 0.374$; PASP, $r = -0.246$, $p = 0.054$; Table 1).

Figure 1. Association of Borg dyspnea scale with breath-holding time.

Table 1. Pearson's correlation coefficients (r) for the relation between BHT and clinical parameters in comparison to 6MWT.

	Pre-test Borg scale	Post-test Borg scale	DLCO (%)	FVC (L)	FVC (%)	FVC /DLCO (%)	EF (%)	PASP (mm Hg)	SHAQ (score)
BHT (sec)	-0.366**	-0.252*	0.409***	0.402**	0.191	-0.244***	-0.108	-0.246	-0.451***
6MWT (m)	-0.113	-0.351**	0.297*	0.321**	0.063	-0.250*	0.137	-0.354**	-0.531***

BHT, breath-holding test; 6MWT, 6-minute-walk test; DLCO, diffusing capacity for carbon monoxide; FVC, forced vital capacity; EF, ejection fraction estimated by transthoracic echocardiography; SHAQ, Scleroderma Health Assessment Questionnaire.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Conclusion: The BHT is a simple, safe, and less time-consuming test, reflective of pulmonary parameters and SHAQ, as compared with 6MWT. Our results suggest that the BHT might be a useful surrogate marker of cardiopulmonary capacity in SSc patients.

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IMMUNOSUPPRESSANTS (CYCLOPHOSPHAMIDE AND MYCOPHENOLATE MOFETIL) VERSUS RITUXIMAB A SINGLE-AGENT THERAPY IN SCLERODERMA-RELATED INTERSTITIAL LUNG DISEASE: REAL CLINICAL PRACTICE

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Background: Although interstitial lung disease (ILD) occurs in the majority of patients with systemic sclerosis (SSc), treatment options for this manifestation is empirical and at present consists of Cyclophosphamide (CyP) or Mycophenolate Mofetil (MMF). However, the immunosuppressants (IS) use leads to rather limited improvement of ILD and is associated with many adverse reactions. The search for novel, more efficacious agents has been continued, such as attracting much attention RTM. However, the limited number of RTM-treated patients, considerably different dose regimens, cumulative doses, and observation periods does not allow univocal conclusions on RTM efficacy or definitive recommendations on RTM use in the patients with SSc.

Objectives: To compare the impact of IS and RTM a single-agent therapy on SSc clinical manifestation and activity, and the safety of these agents in the open-label prospective non-randomized study.

Methods: 116 patients with the confirmed SSc diagnosis and ILD evidence based on MSCT findings were enrolled into the study. All patients received low and moderate-dose glucocorticoids regimens. Group A (n=35) received RTM as a single therapy agent for 13.3±2.3 months at total dose 1.35±0.5g (the patient's average age was 45.0±15 years, with female proportion 80%; SSc duration 6.3±2.3 years; diffused/localized forms 1.3/1). Group B (n=36) received parenteral CyP for 12±6 months at total dose 10.6±5g (the average age 47±12 years, females 92%, SSc duration 5.0±4.8 years, diffused/localized forms 1.6/1). Group C (n=45) received MMF for 12±6 months at a dose of 2 grams per day (the average age 49±13 years, females 91%, SSc duration 7.1±5 years, diffused/localized forms 1/1.3). The time courses of FVC, modified skin count (mRss, points), activity index (EScSG, points) were assessed into the study.

Results: In Groups A, B and C the therapy was associated with significant decrease in mRss ($p=0.02$, 0.008, 0.007, respectively) and EScSG ($p=0.00017$, 0.000165, 0.01, respectively).

Evaluation of FVC time course revealed significant FVC increase only in Groups A ($p=0.002$) and B ($p=0.034$), with median increment about 5%.

In Groups A and B 10% FVC increase was found in the third of the patients thus exceeding respective parameter twice in Group C ($p=0.15$ and 0.008, respectively). The patient percentage with FVC decrease by ≥10% did not differ significantly between groups.

The therapy was better tolerated in RTM-treated group: during RTM therapy adverse reactions emerged in lower proportion of the patients (4/11%) compared with CyP (19/53%, $p=0.0000$) and MMF-treated group (12/27%, $p=0.5$).

Parameters	Group A	Group B	Group C
Activity Index 1	2.8±1.4*	3.2±1.9*	1.9±1.5*
M ± SD			
Activity Index 2	1.4±1.2*	1.4±1.2*	1.2±0.9*
M ± SD			
Skin count 1	11.5±9.5 *	11.2±7.9 *	7.5±6.9 *
M ± SD			
Skin count 2	8.2±6.2 *	7.9±6.8 *	4.8±3.9 *
M ± SD			
FVC 1 M ± SD	78.7±20.0 *	80.5±20.1*	90.3±20.8
FVC 2 M ± SD	84.2±20.0*	85.8±20.4*	92.2±21.0
Δ FVC %	5.3	5.7	1.9
	[0.8; 11.1]	[0; 11.2]	[-3.5; 6.0]
FVC increment by ≥10%, n/%	9/26	14/31	6/13.3
FVC decrement by ≥10% n/%	2/5.7	2/4.4	4/8.9

Notes: in Parameters column 1 = before treatment, 2 = after treatment; M ± SD = mean value and standard deviation; * = significant difference between the values measured before and after the treatment

Conclusion: All agents effectively alleviated skin induration and EScSG, but only RTM and CyP significantly improved FVC. The RTM single therapy was better tolerated compared to IS. The study findings substantiate potential use an RTM single therapy both as a first-line agent for ILD treatment in the patients with a progressive course of ILD damage SSc, and in the event of CyP inefficacy of poor tolerability. The MMF use is more preferable in patients with less pronounced ILD.

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POS0858

POTENTIAL EFFICACY PREDICTORS OF ANTI-B-CELL THERAPY IN THE PATIENTS WITH SYSTEMIC SCLEROSIS ASSOCIATED WITH INTERSTITIAL LUNG DISEASE

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Background: Rituximab (RTM) is considered as a promising therapeutic agent for treatment of With Interstitial Lung Disease (ILD) in the patients with systemic sclerosis (SSc). However, the limited number of RTM-treated patients, considerably