clinically convenient objective methods is crucial to better clinicians' care for SSc patents.

Objectives: Explore the potential of commercially available handheld, non-invasive devices for SSc skin analysis.

Methods: 1.Measure skin surface Adenosine Triphosphate (ATP) level with handheld ATP bioluminator (SystemSURE Plus, Hygiene) over the forearm of SSc(n= 51) and controls (n=50) 60seconds after sterilization to eliminate extrinsic factors. The bioluminometer expresses ATP test results in Relative Light Units (RLU) that is directly proportional to the amount of ATP on the test sample (Unit conversion: 1RLU = 1fM).

2.In-vivo Raman Spectra measurement of SSc skin comparing with matched healthy controls on proximal phalangeal, area between 2nd and 3rd metacarpal and forearm. Our measurements include laser power of 250mw, excitation length of 785nm and spectral range from 500 to 2800cm⁻¹. Measurements were analysed with patients' phenotypes and clinical characteristics.

Results: Flow cytometry showed increase expression of P2X7 (purinergic) receptor and CD206 in M2-Macrophage in SSc compare to controls [(724.4 vs 472.9, 776.1 vs 632.2)]. CD206 expression positively correlated with P2X7 levels (p<0.001, r²=0.76) and mRSS (p<0.05, r²=0.26). In real life scenario, measurement of purinergic metabolites is laboratorial tedious. ATP bioluminator measurement reviewed significant higher skin surface ATP in SSc than controls (188fM ± 53 [95% CI = 84, 300] vs 44fM ± 6 [95% CI = 33, 56], p< 0.003). And the intensity is negatively correlate with duration of disease in SSc (r = - 0.25, p = 0.096).

We obtain Raman spectra in SSc patient and control. Our study both groups have similar Raman curve when Raman Spectrometry were performed on skin surfaces. However, the relative intensity of each peaks of the curve were overtly flatter in SSc. This finding were similar for both Limited and Diffuse SSc in gross review of the graph representative. In addition to that, our analysis reviewed a peak at Raman shift of 2410cm⁻¹ that is characteristically present in forearm of a SSc but not in controls (Figure 1). Its significant yet to be determined.

Conclusion: Both ATP bioluminator and Raman Spectrometry is widely available commercially which are widely used in industrial, agriculture and cosmetology and dermatology in particular for Raman Spectrometry. It is commonly for assessing physically property of skin, determine drug administration and diagnosis of variable skin condition in particular cancer diagnosis. The advantages of these tools in SSc skin analysis include:

- 1.Non-invasive nature of skin analysis (compares to skin biopsy),
 - 2.Portable devices easily mobilized in clinic setting,
 - 3.Advanced technology allows molecular analysis of skin hence able to objectively classify grades of skin inflammation and determine drug efficacy
 - 4.Possible better accuracy compares to other methods (eg. Ultrasound) which are operators dependent,
 - 5.Widely available Raman signal database of different types of chemical compounds and expertise made the collection and analysis of date convenient
- Our study has provide preliminary outlook and idea of utilizing commercially available devices on skin analysis in SSc. Further study in larger cohort are to be considered.

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ANTI-IL-6 THERAPY EFFECT FOR REFRACTORY JOINT AND SKIN INVOLVEMENT IN SYSTEMIC SCLEROSIS: A REAL-WORLD, SINGLE CENTER EXPERIENCE

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Background: Emerging evidence during the last two decades supports a pivotal role of Interleukin 6 (IL-6) in the pathogenesis of Systemic Sclerosis (SSc). Standard immunosuppressive agents are often inadequate to control disease activity in SSc patients and treatment failure of multiple regimens is frequent in real-world practice.

Objectives: To examine the efficacy and safety of interleukin-6 receptor inhibition by tocilizumab in selected real-world patients with SSc.

Methods: Twenty-one patients (20 women, 16 diffuse SSc, mean age: 52±10 years, mean disease duration: 6.4±3.7 years, all with negative rheumatoid factor and anti-cyclic citrullinated antibodies, none with overlap syndrome with RA) with active joint and skin involvement refractory to corticosteroids (n=21), methotrexate (n=17), cyclophosphamide (n=10), mycophenolate (n=7), rituximab (n=1), leflunomide (n=2), hydroxychloroquine (n=2), and hematopoietic stem cell transplantation (n=2) who received weekly tocilizumab (162 mg subcutaneously) in an academic center, were monitored prospectively. Changes in Eustar modified activity index (MAI), modified Rodnan skin score (mRSS), disease activity score (DAS)28, lung function tests (LFTs) and patient reported outcomes (PROs) were analyzed at one year of treatment and at the end of follow-up.

Results: One patient discontinued tocilizumab after 3 months due to inefficacy. During the first year of treatment, 12 patients achieved low disease activity (mean MAI change -2.9±1.8, p<0.001) and significant clinical improvement was evident in 12 patients regarding skin involvement (mean mRSS change: -6.9±5.9, p<0.001) and in 16 patients regarding polyarthritis (mean DAS28 change: -1.9±0.8, p<0.001); Accordingly, improvements were recorded for all PROs (all p<0.001) (Table 1). Lung function tests' stabilization was also observed in 16/20 patients. During the second year, 3 patients discontinued tocilizumab (cytomegalovirus infection in 1, inefficacy in 2) and one died. Beneficial effects were sustained in all 16 patients at follow-up end (mean duration of Tocilizumab treatment 2.2 ± 1.1 years), apart from LFTs deterioration in 3. Except for recurrent digital ulcer infection in 3 patients, tocilizumab was well-tolerated.

Conclusion: Tocilizumab was effective in refractory joint and skin involvement irrespective of SSc disease duration or subtype. Long-term retention rates and disease stabilization for most real-world patients suggest that tocilizumab might be a valuable choice for difficult-to-treat SSc.

Table 1. Clinical and laboratory parameters and measures (mean ± SD) at baseline and after one year of treatment with tocilizumab in 20 patients with Systemic Sclerosis

	Baseline	1 st year	change	p
Modified activity index	4.9 ± 1.6	2.0 ± 1.2	-2.9 ± 1.8	<0.001
mRSS	21.5 ± 9.5	14.6 ± 6.6	-6.9 ± 5.9	<0.001
DAS28	5.3 ± 0.7	3.4 ± 0.6	-1.9 ± 0.8	<0.001
FVC (% of predicted)	82 ± 19.5	79 ± 19.1	-2.9 ± 12	0.389
DLCO (% of predicted)	60.4 ± 16.3	61.1 ± 18.4	0.7 ± 12.3	0.844
ESR (mm/1 st hr)	35.6 ± 17.2	12.9 ± 11.8	-22.8 ± 19.1	0.001
CRP (mg/l)	13.2 ± 12.5	1.2 ± 2.1	-12 ± 13.1	0.006
SHAQ	1.6 ± 0.8	1.0 ± 0.7	-0.6 ± 0.5	<0.001
VAS	37.8 ± 16.8	60.5 ± 15.4	22.7 ± 20.3	<0.001
VAS patient global score	33.4 ± 13.2	63.2 ± 13.9	29.8 ± 15.6	<0.001

mRSS: modified Rodnan skin score; DAS28: disease activity score 28; FVC: forced vital capacity; DLCO: diffusing lung capacity for carbon monoxide; ESR: erythrocyte sedimentation rate; CRP: c-reactive protein; SHAQ: scleroderma health assessment questionnaire; VAS: visual analogue scale

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