Hand ultrasound guided therapeutic decisions in inflammatory arthritis associated with Systemic Lupus Erythematosus and Sjögrens syndrome

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Objectives

- Evaluate inflammatory joint involvement of the hands in a real life cohort of SLE and SS patients referred for US assessment of their hand joints in the context of clinical symptoms of arthralgia and arthritis
- To review the ultrasound characteristics of patients in systemic sclerosis and SLE
- Correlate US findings with clinical and laboratory markers, and disease activity scores (musculoskeletal ESSDAI and BILAG).

Design

A retrospective, observational study was conducted in 41 patients (902 joints) diagnosed with SLE and SS.

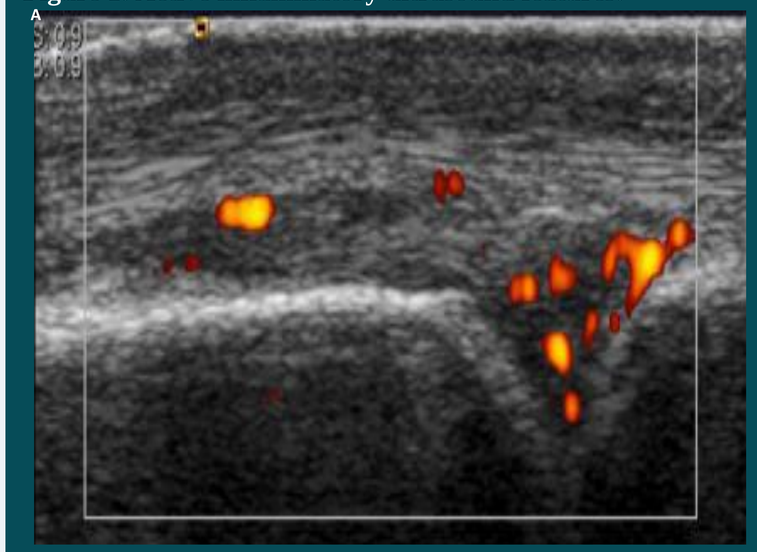
Methods

- Information about age, disease duration, ESR, CRP, ultrasound (US) and clinical joint examination (CJE) were captured for every patient.
- The joints in the hand were scanned using the US machine, Logiq S8 (GE Medical Systems Ultrasound and Primary Care Diagnostics, Wauwatosa, WI, USA). SH grade was recorded based on results of an ultrasound scan conducted on both hands looking at 22 joints (MCPs 1-5 and PIPs 1-5) and the intercarpal, radial, ulnar aspects of the wrist too. On US, synovial hypertrophy (SH), Power Doppler (PD) signal, number of osteophytes (OPs) and erosions were assessed.
- On CJE, tender joint count (TJC), swollen joint count (SJC) and pain scores (VAS) were obtained.

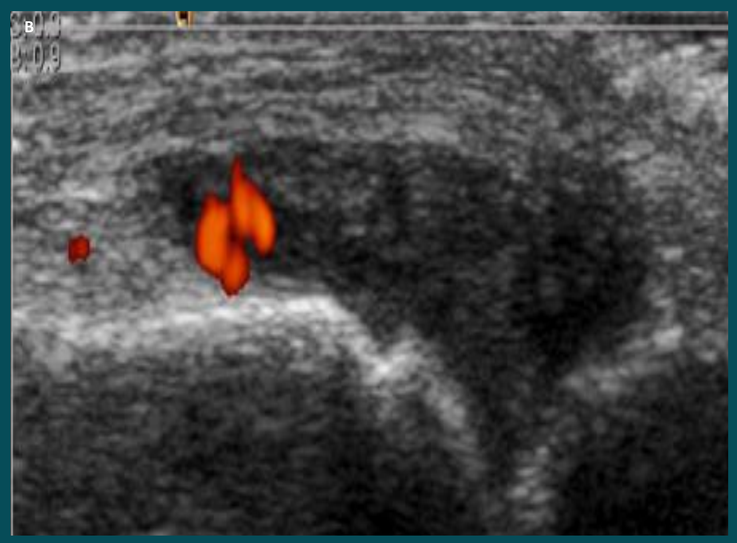
Statistical analysis:

- Analysis conducted using IBM SPSS Statistics. Means and SD were compared using Student's T test. Medians and IQR were compared using Mann Whitney U test.

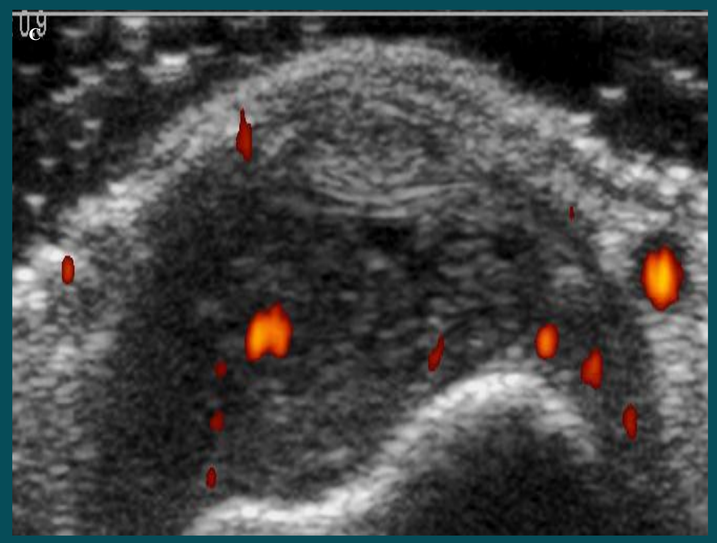
Figure 1: Active inflammatory ultrasound features:



MCP longitudinal view – SH grade 2, PD grade 2



MCP longitudinal view – SH grade 3, PD grade 1



MCP transverse view – PD grade 2

Results

	SLE (n=18)	SS (n=23)	
Age (mean +/- SD)	45.7+/- 12	51.4 +/- 14	p=0.18
Gender (% females)	94.4	100	p=0.25
Disease duration (months, mean +/- SD)	14.04+/-14.8	8.9+/-9.8	p=0.21
% of patients on steroids	44.4	4.3	**p=0.002**
% of patients on cDMARDs	88.9	52.2	**p=0.012**
% of patients on Rituximab	11.1	8.7	p=0.79
% ANA	77.8	34.8	**p=0.006**
%dsDNA	27.8	13	p= 0.23
% ENA	55.6	56.5	p = 0.95
CRP (mean +/- SD)	4.98 +/- 4.17	4.69 +/- 6.04	p= 0.87
ESR (mean +/- SD)	31.41 +/- 26.11	23.35 +/- 19.78	p= 0.27
SJC (mean +/- SD) (swollen joint count)	3.29 +/- 4.29	2.24 +/- 6.11	p= 0.58
TJC (mean +/- SD) (tender joint count)	7.69+/-7.96	6.20+/-7.68	p= 0.59
Power Doppler (PD) score Mean +/- SD	1.35+/-2.7	0.52+/-1.68	P=0.24
% of patients with PD signal	27.8	21.7	P = 0.65
Erosions score (mean +/- SD)	2.71+/- 3.62	2+/- 5.01	P=0.6249
% of patients with erosions	55.6	34.8	P = 0.18
Correlation of total Grey scale score with BILAG (SLE) and ESSDAI (SS)	R = 0.41 p= 0.09	R = 0.084 p = 0.70	
Correlation of PD score with BILAG (SLE) and ESSDAI (SS)	R = 0.36 p = 0.14	R = 0.32 p = 0.13	

- There was no significant correlation between the total PD score and musculoskeletal BILAG and ESSDAI scores.
- There was no significant correlation between the total Grey Scale score with either BILAG or ESSDAI scores.
- More than one in two SLE patients had erosions, while more than one in three SS patients had erosions.
- US assessment prompted treatment changes (including both optimisation of immunosuppressive therapy or analgesia based on the results of the scan) in up to 61% of SLE patients and in 35% of SS patients, who would have otherwise not had their treatment changed based on BILAG/ESSDAI scores alone.

Conclusions

- Ultrasound examination was proven superior to clinical examination and blood test results for optimising the management of hand arthralgia/arthritis associated with SLE and SS.
- Our study provides useful information on the pattern of joint changes in SLE as we showed that active joint inflammation was found in 27.8% of SLE patients while twice as many already had erosions.
- Future research is needed to establish if the development of erosions could be prevented by early diagnosis and prompt treatment of inflammatory arthritis associated with SLE and SS.