

Hand Ultrasound guided therapeutic decisions in inflammatory arthritis associated with Systemic Lupus Erythematosus and Sjögren's syndrome.

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Background: Musculoskeletal Ultrasound (US) is increasingly used as a valid and reliable tool for diagnosis and management of inflammatory arthritis. However, its use in Systemic Lupus Erythematosus (SLE) and Sjogren's syndrome (SS) patients in clinical practice remains less established.

Objectives: To analyse 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/arthritis, to review their characteristics and correlate US findings with clinical and laboratory markers, and disease activity scores (musculoskeletal ESSDAI and BILAG).

Methods: We performed a cross-sectional study of patients with SLE and SS referred to our US clinic in the last year. The OMERACT US scoring system was used to assess patients' wrists, metacarpophalangeal and proximal interphalangeal joints bilaterally.

Results: Patient characteristics and differences between ultrasound findings in SLE (n=18) and SS (n=23) patients are shown in Figure 1. There was no correlation between the total PD score and musculoskeletal BILAG and ESSDAI scores ($R=0.36$, $P= 0.12$, and $R=0.32$, $P=0.13$, respectively). Similarly, there was no correlation between the total Grey Scale score (assessing the degree of synovial hypertrophy) with either BILAG or ESSDAI scores ($R=0.41$, $P=0.09$, and $R=0.084$, $P=0.7$, respectively). Interestingly, more than one in two SLE patients had erosions, while more than one in three had erosions in the SS group (Table 1). In addition, the 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.

Conclusion: US 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 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.

	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 (years, 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)	3.29 +/- 4.29	2.24 +/- 6.11	p= 0.58
TJC (mean +/- SD)	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
Percentage 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
Percentage of patients with erosions	55.6	34.8	p = 0.18