

Digital ulcers in patients with systemic sclerosis: prevalence, location, nailfold capillaroscopy and functional impact

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Background

- Digital ulcers are a common manifestation of vascular abnormality in patients with systemic sclerosis (SSc) (Figures 1 and 2).
- There have been few studies of prevalence, functional impact and pathophysiology.
- The definition of active SSc digital ulcers is contentious and inter-rater agreement is poor.
- Current incidence and prevalence estimates of active SSc digital ulcers vary widely (17-40%).



Figure 1. Digital ulcer overlying area of calcinosis.



Figure 2. Digital ulcer on extensor surface of proximal interphalangeal joint.

Aim

- To investigate point prevalence of active digital ulcers in a cohort of SSc patients.
- To assess ulcer location.
- To correlate presence or absence of digital ulcers with associated findings on quantitative nailfold capillaroscopy and impact on hand function.

Patients

- 148 patients with SSc (median 60 (range 21-88) years of age; 84% female, 74% diffuse) were recruited.

Methods

- Patients recruited over a 12 month period when they attended SSc clinics for routine annual review.
- Each patient underwent the following: assessment for active digital ulcers and the Hand Mobility in Scleroderma (HAMIS) test performed by a specialist tissue viability nurse; the Cochin Hand Function Scale (CHFS) and Scleroderma Health Assessment Questionnaire (HAQ) self-assessments (including a pain Visual Analogue Scale or VAS); quantitative nailfold capillaroscopy.

Results

- Clinical and demographic features of the 148 patients (74% of those approached) are shown in Table 1.

Variable	Total study population N=148	No Digital Ulcers N=133	Digital Ulcers N=15
LcSSc, n (%)	109 (74)	100 (75)	9 (60)
Age, median (range), yrs	11 (1-54)	11 (1-43)	13 (1-54)
Disease duration, median (range), yrs	11 (1-54)	11 (1-43)	13 (1-54)
Capillary density (inter-capillary distance), median (range)	27821 (574-149840)	26914 (574-149840)	49924 (26540-74242)*
Pain VAS, median (inter-quartile range)	0.8 (0.1-1.5)	0.8 (0-2.4)	1.2 (0.8-2.1)*
CHFS, median (range)	17 (0-80)	13.5 (0-80)	24.5 (3-64)
HAQ, median (range)	1.4 (0-3)	1.3 (0-3)	1.75 (0-2.25)

Table 1. Clinical and demographic features of study sample as a whole, and by those with and without active digital ulcers.

* $p > 0.05$ vs. no digital ulcers.

- Total of 25 digital ulcers (9 digital-tip and 16 extensor surface) found in 15 patients.
- Overall point prevalence of 10% (95% CI 6-16%) as shown in Figure 3.
- Point prevalence of 6% (95% CI 3-11%) for each ulcer type.
- Intercapillary distance was higher (and therefore density lower) in patients with active ulcers ([log distance], $p=0.03$).

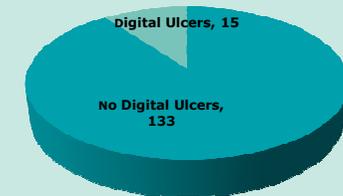


Figure 3. Point prevalence of active digital ulcers.

- Presence of ulcers associated with higher pain VAS CHFS and HAQ scores but statistically significant only for pain VAS (mean difference 0.45 [0.04-0.08], $p=0.04$).
- All 15 patients with active digital ulcers were right-handed.
- Presence of ulcers on the left hand associated with significantly reduced HAMIS left scores (mean difference 8.8 [3.2-14.5]. $p=0.02$). This was similar regardless of ulcer location.
- A similar association was found with extensor surface, but not fingertip, ulcers on the right (dominant) hand.

Conclusions

- In this prospective study, all active digital ulcers were documented in a standardised manner by a specialist nurse.
- Digital ulcers were associated with reduced capillary density (reflecting severity of microvascular disease).
- The association between burden of pain and functional impairment with active digital ulcers was confirmed.
- The finding that fingertip ulcers of the right (dominant) hand may have a less detrimental impact than others is unexplained, but may reflect coping mechanisms in patients with chronic disabling disease.

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