

ASSESSMENT OF PERIPHERAL VASCULOPATHY AND THERAPEUTIC MANAGEMENT OF SYSTEMIC SCLEROSIS PATIENTS TREATED WITH SYNTHETIC PROSTANOIDS: THE ROLE OF INFRARED THERMOGRAPHY

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I. Cecchi, M. Radin, E. Rubini, S. Foddai, C. Massara, D. Rossi, S. Sciascia, D. Roccatello

Department of Clinical and Biological Sciences, Turin

Background. Skin lesions represent the leading feature of systemic sclerosis (SSc), with Raynaud's phenomenon (RP) the most frequent and early clinical manifestation of the disease. Nevertheless, standardized treatment strategies and non-invasive tools for the management of RP and SSc skin manifestations are badly needed. The aim of this study was a) to evaluate the efficacy of infrared thermography in the assessment of peripheral vasculopathy in a cohort of SSc patients treated with cyclic intravenous infusions with synthetic prostanoids b) to identify those patients who might benefit from an intensified infusional treatment protocol with prostanoids.

Materials and Methods. Twenty-six SSc patients, attending the San Giovanni Bosco Hospital of Turin (Italy) for their routinely 28-days apart intravenous therapy with prostanoids (Il-proprost) based on the presence of severe secondary RP and/or digital ulcers, were enrolled in this study. Thermographic evaluation of both hands was made at baseline (T0), and at days 14 and 28 after the first prostanoid infusion (named T1 and T2, respectively). Statistical analyses have been performed and a p-value <0.05 was considered statistically significant.

Results. A total of 26 SSc patients, 24 (92.3%) female, mean age 65.3 ± 12.6 yrs, mean disease duration at time of data collection 12.4 ± 6.6 years, were prospectively enrolled in the study. Among them, 15 patients (57.7%) presented with limited cutaneous SSc, while 11 patients (42.3%) showed an extra-cutaneous form of the disease. Demographic, clinical, and laboratory characteristics of the patients included in the study are detailed in Table I.

The thermographic assessment showed a substantial stability of the temperature values when comparing T0 and T1 (mean differences of the right hands 0.4 ± 5.6 ; mean differences of the left hands 1.2 ± 4.5), while they are significantly reduced when comparing T1 and T2 (mean differences of the right hands -3.1 ± 9.3 , $p=0.049$; mean differences of the left hands -3.4 ± 8.5 , $p=0.012$ respectively) (Fig. 1a). When stratifying according to clinical manifestation, a higher differences in tem-

Table I - Characteristics of the patients included in the study.

SSc means Systemic Sclerosis; ANA, antinuclear antibodies; ENA, extractable nuclear antigen.

	Total of patients (n=26)	Skin-limited forms of SSc (n=15)	SSc with systemic involvement (n=11)
Age, years (mean, SD)	65.3 ± 12.6	69.6	61
Female (n,%)	24 (92.3)	13	11
Disease duration, years (mean, SD)	12.4 ± 6.6	12	13
Interstitial lung disease (n,%)	7 (27)	0	7
Pulmonary hypertension (n,%)	2 (8)	0	2
Cutaneous telangiectasia (n,%)	14 (54)	8	6
Skin thickening (n,%)	25 (96)	15	10
Digital ulcers (n,%)	11 (42.3)	4	7
Raynaud's phenomenon (n,%)	26 (100)	15	11
Articular involvement (n,%)	14 (54)	7	7
Cardiac involvement (n,%)	2 (8)	0	2
Gastrointestinal involvement (n,%)	1 (4)	0	1
Abnormal nailfold capillaroscopy (n,%)	26 (100)	15	11
ANA positivity (n,%)	26 (100)	15	11
ENA positivity (Scl70) (n,%)	11 (42)	6	5

perature variations were observed between T1 and T2 in SSc patients with systemic involvement, when compared to those with limited cutaneous SSc (mean of the differences of the right hands -5.0 ± 11 ; mean of left-hands differences -4.9 ± 11.5 vs. mean right-hands differences -2.5 ± 11 ; mean left-hands differences -3 ± 8.6 ; $p=0.035$ respectively) (Fig. 1b).

Conclusions. Thermography could represent a reliable, non-invasive, manageable and cost-effective method for the assessment and monitoring of peripheral vasculopathy in patients with SSc. These data also show that SSc patients with systemic involvement could benefit more from an intensified infusion protocol with prostanoids compared to SSc patients with a limited skin form of the disease. Thermography has shown excellent potential to be a reliable and objective outcome measures to facilitate clinical trials of novel treatments SSc-related RP.

Keywords: Systemic sclerosis, thermography, peripheral vasculopathy.

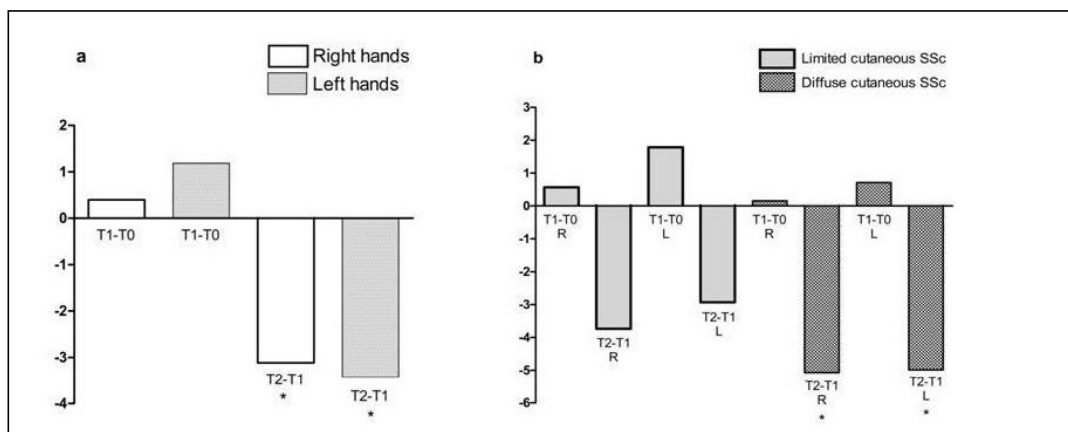


Figure 1 - (A) Differences of temperature variants between T0 and T1 and between T1 and T2, * $p=0.049$ and $p=0.012$, respectively. (B) Differences of temperature variants between T0 and T1 and between T1 and T2, based on the clinical manifestation of SSc, * $p=0.035$. SSc, means systemic sclerosis; R, right hands; L, left hands.