Association of Dermoscopic Profiles of Telangiectases with Nailfold Videocapillaroscopic Patterns in Patients with Systemic Sclerosis

To the Editor:

The etiology of systemic sclerosis (SSc) remains elusive, but microangiopathy is considered to be significantly associated with disease pathophysiology.

Morphological microvascular studies in patients with SSc use nailfold videocapillaroscopy (NVC) to examine the papillary capillaries in the nail bed, which run with their major axis parallel to the skin surface (Figure 1a). Cutaneous telangiectases (TA) are small enlarged end vessels, mainly permanent dilatation of postcapillary venules of the subpapillary plexus.

They are readily visible; nevertheless, few studies have focused on cutaneous TA.

Dermoscopy (DC) is a noninvasive technique used in the early diagnosis of melanoma and nonmelanoma skin cancers, as well as inflammatory skin disorders (psoriasis, lichen planus, seborrheic dermatitis). The vascular structures of these conditions are detectable by DC, which has also provided data similar to NVC images commonly used in the study of nailfold capillaries in connective tissue diseases.

In our study, DC was used to better appreciate vascular features of TA on selected anatomic sites (e.g., face, chest, hands, forearms) and to provide a morphological description of altered skin microcirculation in patients with SSc from a novel perspective. Using this approach, capillaries perpendicular to the skin, as well as the deeper portions of cutaneous...
microcirculation, usually not visible, become visible as they appear similar
to TA.

DC patterns were investigated from 31 women with SSc (median age
55 yrs, median disease duration 8 yrs) showing skin TA and grouped into
limited (ISSc) and diffuse (dSSc) SSc-subtypes, according to clinical
classification. They were investigated for antinuclear antibody (ANA) and
specific antibodies, i.e., anticientromere (ACA) and antitopoisomerase
(ATA), using standard immunofluorescence and ELISA methods. Patients
were all women because of the high prevalence of this disease in this sex.

Two main DC patterns were found (25×/40× magnifications): a spot
pattern (uniform rounded patches) and a reticular pattern (a reticular
network; Figure 1a, 1b); they correspond to what Maricq et al labelled as
punctate and “mini-spider” using NVC on several areas of cutis and, more
recently, others described clinically as matted and stellate TA, respectively8,9.

Based on the prevalence of one pattern to the other, a DC index was
created, with ≥ 1 indicating that the reticular DC pattern exceeds the spot
pattern. The index was computed by calculating the difference between the
number of reticular and spot DC lesions observed in each patient: briefly,
an index ≥ 0 indicated that the reticular lesions outnumber the spot lesions.

We then investigated whether there was a relationship between the DC
patterns of TA, NVC patterns (early, active, late) (Figure 1d, 1e, 1f); SSc
clinical subtypes, and severity of disease (modified Medsger’s index; Table
1). In a logistic regression analysis, a DC index ≥ 1 compared to an index
≤ 0 was found to be strongly associated with dSSc (adjusted OR 5.9, 95%
CI 0.9–38.5, p = 0.06) and with the late NVC pattern (adjusted OR 13.2,
95% CI 1.7–102.8, p = 0.01), independent of other variables shown in
Table 1.

DC patterns of TA are related to the architecture of the cutaneous
microcirculation under both normal and altered conditions10. The upper
horizontal plexus occupies the papillary dermis and the most superficial
part of reticular dermis, following an undulating path. Arterioles and
accompanying venules join to each other forming a vascular network.
From this tangled horizontal plexus, hairpin capillaries rise perpendicularly
into the dermal papillae.

Hairpin capillaries run with the major axis parallel to the skin surface2
(Figure 1c) at the nailfold sites and at the mucous membranes, although
they have a perpendicular array at other skin sites10. Thus, combining
dermoscopic with NVC analysis would allow a more complete vision of
SSc microangiopathy. This consists of progressive alteration and rarefaction of papillary capillaries (early, active NVC patterns) and further
altered microvessels, ultimately leading to avascular areas (late NVC
pattern). In SSc microangiopathy TA occur, consisting of ectasia of subpapillary plexus, detectable by DC, especially in dSSc TA.

We present for the first time preliminary cross-sectional data investigat-
ing in vivo SSc TA by ultrastructural, 3-dimensional, and qualitative
descriptions of dilated postcapillary venules mainly in horizontal plexus10
and in papillary dermis2,3.

According to our results, DC is able to better identify alterations of the
horizontal microvascular plexus (reticular DC TA pattern corresponds to
the late NVC pattern) in patients with advanced SSc, whereas NVC allows the early detection of the papillary microvascular damage (early/active
NVC pattern) only partially recognized by DC (spot DC TA pattern).

The index here, obtained by the qualitative DC analysis, may represent
a potential clinical marker of disease severity, correlating with the other
quantitative studies8,9. Further, it links the excess of reticular TA to diffuse
dSSc and late NVC pattern. Indeed, patients with a positive DC index show
a 6-fold risk of dSSc occurrence and a 13-fold risk of late NVC pattern
occurrence (compared to patients with an index ≤ 0).

This is the first study using dermoscopy to evaluate abnormalities of
cutaneous microvessels in SSc TA and to investigate their relationship with
NVC patterns.

Table 1. Percentage of patients in each level of each variable of interest within clinical subtype of scleroderma (SSc) and nailfold videocapillaroscopy (NVC) pattern.

<table>
<thead>
<tr>
<th>Level</th>
<th>N (%)</th>
<th>Clinical Subtype</th>
<th>NVC Patterns</th>
<th>p*</th>
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<tr>
<td></td>
<td></td>
<td>Limited, ISSc %</td>
<td>Diffuse, dSSc %</td>
<td>Early/Active, %</td>
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* Fisher’s exact test, 2-tailed; p < 0.05 are in bold type. † Difference between the number of reticular and spot lesions. TA score: categorical score telangiectases; DC: dermoscopic.
REFERENCES


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