Feet nailfold capillaroscopy is not useful to detect the typical scleroderma pattern

Sirs,

We have read with great interest the letter to the editor by Batticciotto *et al*. addressing the capillaroscopic changes of the feet of patients with systemic sclerosis (SSc) (1). This topic is of great importance for the rheumatologists as the specific "scleroderma type" capillaroscopic pattern of the hands is observed in a high proportion of cases with overt SSc ranging from 70% to 93% (2-5). It is characterised by giant capillaries, haemorrhages, avascular areas, and neoangiogenesis. According to the type and degree of microvascular changes the following stages of capillaroscopic changes in SSc may be assigned "early", "active" and "late" stage (Cutolo, 2000). The "early" phase is characterised by the appearance of few dilated and/or giant capillaries and few haemorrhages with preserved, without loss of capillaries. In the "active" phase, there are high numbers of giant capillaries and haemorrhages appear. In addition, a moderate loss of capillaries, slight derangement and diffuse pericapillary oedema can be found.

The "late" phase is characterised by severe loss of capillaries with extensive avascular areas, bushy and ramified capillaries, more than one capillary loop in a dernal papilla, which are the morphological substrate of the defective neoangiogenesis (6).

In addition, the presence of the "scleroderma type" capillaroscopic pattern improves the early diagnosis of the disease. Thus, in 2001, Le Roy and Medsger suggested criteria for an early diagnosis of SSc, according which the cases with "scleroderma-type" capillaroscopic pattern and/or SSc-specific autoantibodies in patients with Raynaud's phenomenon (RP) have to be diagnosed as ''prescleroderma'' or limited SSc irrespective of the presence or absence of other symptoms of the disease (7). Despite the fact that patients frequently complain of RP of the feet, nailfold capillaroscopy of the toes is not routinely used in clinical practice. La Montagna *et al*. observed symptoms of RP of the feet in 90% of SSc patients among the examined 100 patients for a long period of follow-up (between 1 and 28 years, median 7 years), while RP of the hands was present in 100%. While all the patients showed symptoms of RP of the hands at the initial evaluation, RP of the feet was among the initial clinical features only in 43% of the patients, while 47% developed it in the course of the follow-up (8). In our own study, which included 36 SSc patients, we have registered symptoms of RP of the feet in 94.4% (34/36) *vs*. 100% frequency of RP at the hands ($p>0.05$). In parallel, we have found a significantly lower frequency of digital ulcers and a lower skin score of the feet as compared with hands ($p<0.05$). The disease-specific "scleroderma type" capillaroscopic pattern was observed significantly less frequent at the toes – in 66.7% (24/36) *vs*. 97.2% (35/36) at the fingers ($p<0.05$), (Fig. 1), (9). All the key capillaroscopic parameters, which are markers for microangiopathy *e.g*. giant capillaries, haemorrhages, avascular areas and neoangiogenic capillaries were present, but showed a significantly lower frequency at the toes as compared with fingers (Table I). Therefore, we confirm the conclusion of Batticciotto A. *et al*., that capillaroscopic microvascular changes occur with lower frequency at the toes of SSc patients as compared with the feet, although RP affects feet in the majority of SSc patients (1). Similarly, we have observed a particlularly lower frequency of the haemorrhages and giant capillaris of the toes *vs*. those of fingers (8%, 3/36 *vs*. 58.3, 21/36, $p<0.05$ for haemorrhages and 30.6%, 11/36 *vs*. 77.7%, 28/36 for giant capillaries $p<0.05$), while Batticciotto *et al*. did not observe haemorrhages of the toes in the examined group and found giant capillary loops only in a single case (1). A possible explanation of these findings is the absence of a follow-up. Considering the fact, that feet involvement in SSc frequently occur later in the disease course, while RP of the hands is the most frequent presenting feature, which in a high proportion of patients precedes other phenomena of the disease by years, in our opinion microvascular changes of the toes may and will be observed during the follow-up of these patients. The mean duration of SSc in patients from our group, which showed the characteristic capillaroscopic changes of the toes (10.98±7.35 years) was higher as compared with cases with normal pattern or non-specific changes of the toes (9.21±7.16 years), although the difference in the disease duration was not statistically significant ($p>0.05$).

Of note, we have observed the classic "scleroderma type" capillaroscopic pattern in a single case, in which the capillaroscopic pattern of the fingers did not reveal abnormalities, which could be interpreted because of recent manicure and presented with hazy picture with traumatic haemorrhages. This fact suggests that capillaroscopic examination of the toes may be particularly useful in selected cases and should therefore be done and trained on a routine basis. Severe contractures in SSc, which affect more frequently the hands,

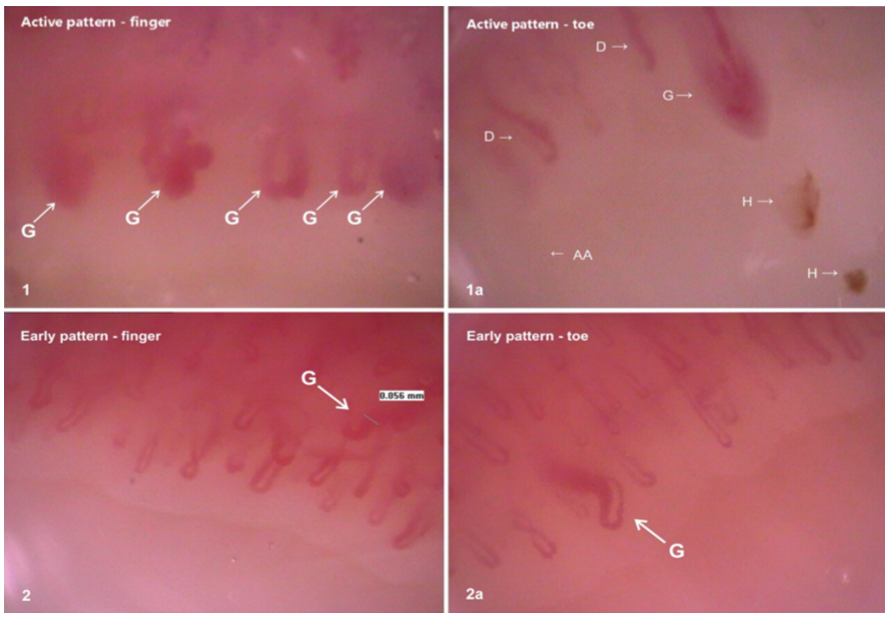

Fig. 1. Capillaroscopic patterns of finger and toe of two patients:
Patient 1: "Active" phase, "scleroderma" type capillaroscopic pattern of finger (1) and toe (1a);
Patient 2: "Early" phase, "scleroderma" type capillaroscopic pattern of the finger (2) and toe (2a);
D-dilated capillary loop, G-giant capillary loop, H-haemorrhage, AA-avascular area.

Table. I. The frequency of the capillaroscopic parameters of the "scleroderma" type pattern in the fingers and toes of SSc patients.

Fingers/Toes Capillaroscopic parameters	Fingers	Toes
Giant capillaries $\chi^2 = 16.16$, $p<0.05$	77.7% (28/36)	30.6% (11/36)
Haemorrhages $\chi^2 = 18.06$, $p<0.05$	58.3% (21/36)	8.3% (3/36)
Avascular areas $\chi^2 = 17.7$, $p<0.05$	88.8% (33/36)	41.7% (15/36)
Neoangiogenesis $\chi^2 = 7.17$, $p<0.05$	52.7% (19/36)	22.2% (8/36)

may seriously impede the capillaroscopic examination of the fingers. Capillaroscopic examination of the toes may be considered in such cases as an option for evaluation of microvascular morphology. When comparing our data with those of Batticciotto *et al*. we would like to underline, that nailfold capillaroscopy of the toes of patients with SSc also shows patterns characteristic of SSc although with significantly lower frequency. In our opinion, this phenomenon is probably related to less-severe RP and lower skin scores at the feet. Moreover, the frequency of microvascular changes of the toes may be underestimated as in most cases symptoms of RP of the toes develop later in the disease course. The vascular pathophysiology in SSc shows systemic although non-homogeneous pattern of involvement. Thus, nailfold capillaroscopy of the toes should be considered in the algorithm of the capillaroscopic evaluation of microcirculation in SSc patients and may be beneficial especially in difficult patients, as it also shows the characteristic microvascular changes although in a smaller proportion of these patients.

S. NIKOLOVA LAMBOVA[1,2,3]
U. MÜLLER-LADNER[2]

[1]Department for Propedeutics in Internal Medicine, Medical University, Plovdiv, Bulgaria;
[2]Department of Rheumatology and Clinical Immunology, Justus-Liebig University Gießen Bad Nauheim, Germany;
[3]MHAT "Health" MS "Palmed" Plovdiv, Bulgaria.

Please address correspondence to:
Sevdalina Nikolova Lambova, Department for Propedeutics in Internal Medicine, Medical University, 15A Vasil Aprilov Blvd., 4002 Plovdiv, Bulgaria.
E-mail: sevdalina_n@abv.bg

Competing interests: none declared.

References

1. BATTICCIOTTO A, ATZENI F, FOGLIA S, ANTIVALLE M, SERAFIN A, SARZI-PUTTINI P: Feet nailfold capillaroscopy is not useful to detect the typical scleroderma pattern. *Clin Exp Rheumatol* 2012; 30 (Suppl. 71):S116-7.
2. MARICQ HR, LE ROY EC, D'ANGELO WA *et al*.: Diagnostic potential of *in vivo* capillary microscopy in scleroderma and related disorders. *Arthritis Rheum* 1980; 23: 183-9.
3. BERGMAN R, SHARONY L, SCHAPIRA D, NAHIR MA, BALBIR-GURMAN A: The handheld dermatoscope as a nail-fold capillaroscopic instrument. *Arch Dermatol* 2003; 139: 1027-30.
4. NAGY Z, CZIRJAC L: Nailfold digital capillaroscopy in 447 patients with connective tissue disease and Raynaud's disease. *J Eur Acad Dermatol Venereol* 2004; 18: 62-8.
5. MARICQ HR, HARPER FE, KHAN MM, TAN EM; LE ROY EC: Microvascular abnormalities as possible predictors of disease subsets in Raynaud phenomenon and early connective tissue disease. *Clin Exp Rheumatol* 1983; 1: 195-205.
6. CUTOLO M, SULLI A, PIZZORNI C, ACCARDO S: Nailfold videocapillaroscopy assessment of microvascular damage in systemic sclerosis, *J Rheumatol* 2000; 27: 155-60.
7. LE ROY EC, MEDSGER T: Criteria for the classification of early systemic sclerosis. *J Rheumatol* 2001; 28: 1573-6.
8. LA MONTAGNA G, BARUFFO A, TIRRI R, BUONO G; VALENTINI G: Foot involvement in systemic sclerosis: a longitudinal study of 100 patients. *Semin Arthritis Rheum* 2002; 31: 248-55.
9. LAMBOVA S, HERMANN W, MÜLLER-LADNER U: Capillaroscopic pattern at the toes of systemic sclerosis patients: does it "tell" more than those of fingers? *J Clin Rheumatol* 2011; 17: 311-4.