



Capillaroscopic features of microangiopathy in rheumatoid arthritis patients with peripheral vascular syndrome

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Sirs,

In the review article of Bertolazzi et al., who addressed the role of capillaroscopy in vasculitides based on the analysis of three capillaroscopic studies [1–4], it has been concluded that in rheumatoid arthritis (RA) patients, the presence of meandering and tortuous capillaries in the nailfold is a common finding and could indicate systemic vascular involvement [1]. In an own study in RA patients, peripheral digital vasculitis was present in 3% (2/62). In addition, in 30.6% of the patients, Raynaud's phenomenon (RP) was present. In the two cases with peripheral digital vasculitis and in 7 patients with secondary RP (overall 14.5% of all patients), a “scleroderma-like” pattern was observed. One of the cases with peripheral vasculitis overlapped with systemic lupus erythematosus with presence of secondary antiphospholipid syndrome [5]. Isolated ischaemic focal digital lesions are common in RA patients. Their course is benign and they do not require specific treatment other than the treatment of RA [6]. “Scleroderma-like” capillaroscopic pattern is analogous to the pattern in systemic sclerosis [7–9] with giant capillary loops (capillary diameter greater than 50 μm) [10] being a mandatory criterion that may present as an isolated finding [11]. According to some authors, a “scleroderma-like” pattern could not be observed in RA patients [12, 13], while others report it in single cases [14]. Similarly to our observation,

Rajaei et al. have detected “scleroderma-like” capillaroscopic pattern with frequency of 20.9% of patients (90/430) [15].

Regarding the distinct capillaroscopic parameters of the “scleroderma-like” pattern ($n = 9$), the following features were observed, i.e. giant capillaries in 9 cases, haemorrhages in 5 patients, avascular areas in 2 cases and neoangiogenic capillaries in 2 patients. Among these four parameters, only haemorrhages were observed also beyond the scope of the “scleroderma-like” pattern in 2 other RA patients (overall in 7 patients). Of note, haemorrhages that are not associated with giant capillaries are nonspecific finding and could be observed also in healthy subjects [16]. In addition, analysis for the presence of staging of microvascular changes in RA was performed by analogy with the capillaroscopic changes in scleroderma that are divided into three distinct stages, i.e. “early”, “active” and “late” phase [17]. “Early” phase changes were observed in 8 out of 9 patients (Fig. 1). A more advanced pattern (“advanced neoangiogenic” type) was present in 2 cases that was with intermediate characteristics between “active” and “late” phase and included presence of neoangiogenic capillaries, mild capillary derangement, moderate capillary loss and single giant capillaries (Fig. 2) [16]. In one of these two cases, the “advanced neoangiogenic” pattern was in association with “early” phase changes and with nonspecific findings (dilated and tortuous capillaries) of some of the fingers. A varying degree of microvascular changes including normal and nonspecific findings in different fingers were detected in RA patients with “scleroderma-like” changes similarly to microvascular inhomogeneity in systemic sclerosis [18, 19].

Further analysis in RA and healthy control groups revealed that capillaries with crossing of the arterial and venous limb at two or more points (defined as tortuous by Sander et al.) [21] were evident in 82% of the RA patients (51/62), which was significantly more frequent as compared to healthy controls (62%, 18/29; $p < 0.05$). However, this is a common finding in healthy subjects and is not a feature of microangiopathy. Of note, different definitions for capillary tortuosity are reported in the literature. Dolezalova et al. considered as tortuous

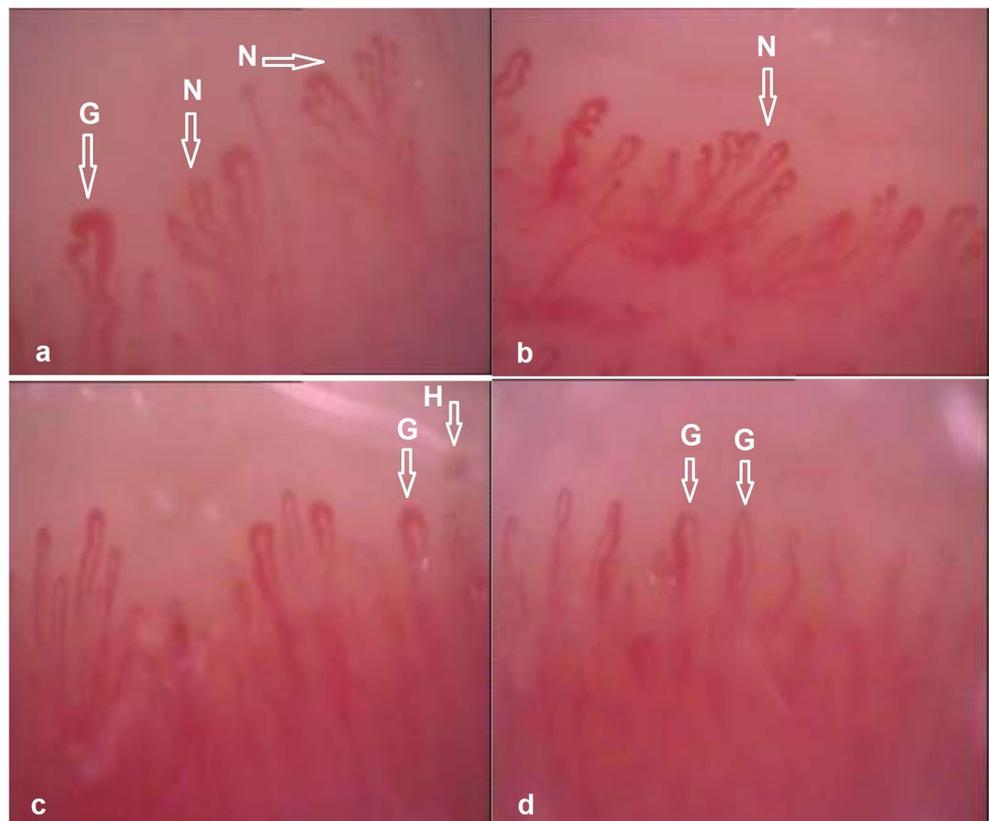
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Fig. 1 “Scleroderma-like” patterns in RA patients: **a** “Scleroderma-like” pattern (“advanced neoangiogenic” type) in RA patient with secondary RP that demonstrates neoangiogenic capillaries (N), low mean capillary density, a single giant capillary loop (G). **b** “Scleroderma-like” pattern (“advanced neoangiogenic” type) in RA patient with features of overlap with systemic lupus erythematosus with secondary RP and secondary digital vasculitis. Neoangiogenic capillaries (N) and low mean capillary density are demonstrated. **c** “Scleroderma-like” pattern, “early” phase in RA patient with secondary RP and secondary digital vasculitis. A single giant capillary loop (G) and a haemorrhage (H) are present. **d** “Scleroderma-like” pattern, “early” phase in RA patient with secondary RP that demonstrates presence of two giant capillary loops (G)

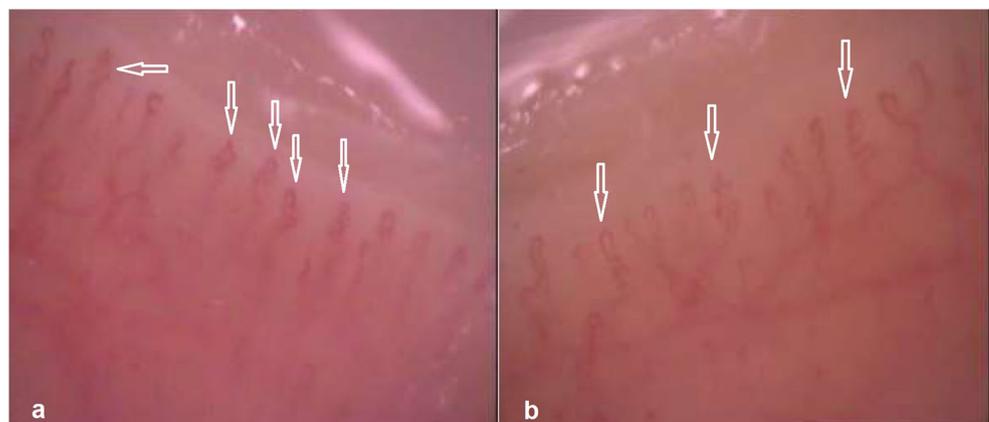


capillary loops, microvessels that are curled, meandering or crossed [21]. Sander et al. defined as tortuous those capillaries whose limbs cross at least in two points [20]. Recently, EULAR study group on microcirculation in rheumatic diseases suggested standardisation of the definitions for the different capillary morphological types. As *tortuous* capillaries were defined those microvessels whose limbs bend but do not cross and as *crossing* capillaries, the microvessels whose limbs cross once or twice, both being a normal finding [22]. Thus, strict definitions of capillary tortuosity and new blood vessel formation/neoangiogenesis are necessary as the latter

indicate microangiopathy especially when it occurs in association with low capillary density, avascular areas and capillary derangement [16]. Presence of capillary ramifications with more than 1–3 capillary loops in a dermal papilla or bushy capillaries indicates neoangiogenesis [10, 23].

In conclusion, “scleroderma-like” capillaroscopic changes can be found in RA patients with peripheral digital vasculitis and in patients with secondary RP. Moreover, these changes are not obligatory associated with an overlap syndrome. However, a true specificity of distinct microvascular pattern in RA patients still needs to be defined.

Fig. 2 Capillary loops crossing at two or more points (arrows) are demonstrated in a patient with RA with symptoms of secondary RP (**a**) and in a healthy subject (**b**)



Compliance with ethical standards

Disclosures None.

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