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ORIGINAL ARTICLE

The influence of Multiwave Locked System (MLS) laser therapy on clinical features, microcirculatory abnormalities and selected modulators of angiogenesis in patients with Raynaud 's phenomenon

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Abstract The aim of this study was to investigate the influence of the Multiwave Locked System (MLS) laser therapy on clinical features, microvascular changes in nailfold videocapillaroscopy (NVC) and circulating modulators releasing as a consequence of vascular endothelium injury such as vascular endothelial growth factor (VEGF) and angiopoietin 2 (Ang-2) in patients with primary and secondary Raynaud's phenomenon. Seventy-eight RP patients and 30 healthy volunteers were recruited into the study. All patients with RP received MLS laser irradiation for 3 weeks. Clinical, NVC and laboratory investigations were performed before and after the MLS laser therapy. The serum concentration of VEGF and Ang-2 were determined by an enzyme-linked immunosorbent assay (ELISA). After 3 weeks of MLS laser therapy, the clinical improvement manifested by decreasing of the number of RP attacks, mean duration of Raynauds attack and pain intensity in RP patients was observed. After MLS laser therapy in 65 % of patients with primary and in 35 % with secondary RP, an increase in the loop number and/or a reduction in avascular areas in NVC were observed. In comparison with a control group, higher serum concentration of VEGF and Ang-2 in RP patients was demonstrated. After MLS laser therapy, a reduction of Ang-2 in both groups of RP patients was found. Our results suggest that NVC may reflect microvascular changes associated with clinical improvement after MLS laser therapy in patients with primary and secondary RP. Ang-2 serum levels may be a useful marker of microvascular abnormalities in RP patients treated with MLS laser therapy.

Keywords Angiogenesis modulators · Multiwave Locked System (MLS) laser therapy · Nailfold videocapillaroscopy (NVC) · Raynaud's phenomenon

Abbreviations

RP	Raynaud 's phenomenon
MLS	Multiwave Locked System
NVC	Nailfold videocapillaroscopy
VEGF	Vascular endothelial growth factor and Ang-2, angiopoietin-2

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