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Clinical and pathophysiologic correlates of 1064-nm Nd:Yag laser treatment of reticular veins and venulectasias.

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Abstract

BACKGROUND: The goal of sclerotherapy, laser therapy, and intense pulsed-light therapy is to produce **long**-term, cosmetically significant elimination of disfiguring leg **veins**. This study examines the histologic and clinical effects of using a 1064-nm **Nd:YAG** laser system on lower extremity vessels.

DESIGN: A single treatment using the following parameters: wavelength, 1064 nm (multiple synchronized pulsing); spot size, 6 mm; **pulse** duration, 14 milliseconds (single **pulse**); and fluence, 130 J/cm².

SETTING: Private dermatology practice.

PATIENTS: Thirteen women (mean age, 38.5 years) with blue venulectasia, 0.5 to 1.5 mm in diameter (class 2), and **reticular veins**, 1.5 to 3.0 mm in diameter (class 3), on the thighs.

MAIN OUTCOME MEASURES: Examination of treated and untreated areas by 2 masked observers using macrophotography (1, 2, 3, and 6 months after treatment), Doppler, and optical chromatographic changes. Findings from three 2-mm punch biopsies from treated (immediately and 4 weeks after treatment) and untreated sites. Routine histologic examination; special stains (for elastic and connective tissue and for mucopolysaccharides); and immunohistochemical analysis for expression of the heat shock protein hsp70, tie2 (an endothelial cell-specific receptor tyrosine kinase), and transforming growth factors beta1 and beta2.

RESULTS: Eight patients (62%) manifested 75% to 100% clearing of treated vessel surface area. Treated areas revealed perivascular hemorrhage, thrombi, fragmentation and homogenization of elastic fibers, and eosinophilia of vessel walls. Expression of hsp70 and transforming growth factor beta was increased in treated vessels.

CONCLUSIONS: Our data confirm the effectiveness of 1064-nm **Nd:YAG** laser treatment in clearing dilated lower extremity **veins**, probably by heat-induced vessel damage and subsequent fibrosis. Maintenance of clearing was achieved for up to 6 months. However, the presence of recanalized thrombi in some of the specimens suggests the potential for **long**-term vessel reappearance.



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