

Diode laser therapy for the treatment of idiopathic leg venulectasias and reticular veins

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Dermatology patients very frequently ask for the removal of cosmetically disturbing telangiectases - leg venulectasias and reticular veins.

Sclerotherapy used to be the standard treatment method. But in recent years lasertherapy has gained increased significance.

As the indication for the removal of leg venulectasias and reticular veins merely is a cosmetic one it should be safe, effective and without side effects.

In lasertherapy of vascular lesions hemoglobin is the common target for the different laser systems used. By this they impair endothelial cells via selective photothermolysis which leads to sclerosis and regression of the vessel. Evidently thermic stress is lower in side effects than chemical damage which is induced in sclerotherapy.

Selective photothermolysis is the main therapeutic effect of modern laser systems. The aim of the selective photothermolysis is the thermal damage of the target tissue but minimal impairment of the neighboring structures. By choosing a certain wave length and exposition time thermal damage of the target tissue can be determined. A higher wave length is needed to reach vessels in the deeper dermis. Another variable in treating vascular lesions is the diameter of the vessel. According to the diameter of the target vessel the energy level of the laser has to be adapted. The same is true for the duration of pulse.

Clinical study:

Patients:

In this clinical study data on 30 patients treated with the MeDioStar laser were investigated. Selected were patients with acquired vascular lesions on the legs. All patients were treated twice.

Laser device and method:

The laser system used was the MeDioStar laser device by Asclepion Meditec. This device is a pulsed diode laser primarily used for hair removal. The wave length of this laser system is 808 nm, the spot used 6 mm.

Before therapy we applied a topical analgesic cream. Cooled gel cushions were used as contact.

The treated vessels were between 0,5 and 2 mm in diameter.

Control visits were conducted 14 days, 8 weeks, and 6 months after therapy.

In 15 of patients we took a small biopsy right after laser treatment, from the other 15 patients we took a biopsy 8 weeks after laser treatment.

Treatment:

We chose a symptomatic area (10 x 10 cm) in which we treated all vascular lesions. Photodocumentation was performed.

The laser energy used was between 60 J/cm² and 100 J/cm². The frequency used was 1,5 Hz. There was no after treatment.

Results:

In 67 % (20/30) of patients the vascular lesions had disappeared right after the first treatment. 33 % showed a significant regression of vascular lesions. Two weeks after the first treatment 95 % of patients showed a significant regression of vascular lesions.

8 weeks after laser therapy 53 % showed a significant regression of vascular lesions, in 6 % the lesions had disappeared.

6 months after therapy 23 % showed a significant regression of vascular lesions. 6 % showed a total resolvment of lesions.

In 56 % of the 30 patients we found no significant impact of the treatment.

Side effects:

In 50% of patients there was superficial crusting which resolved without scarring.

Two patients showed purpuriform skin lesions in the treated area.

One patient had scarring.

Discussion:

The MeDioStar laser system is a pulsed diode laser developed specially for hair removal. By altering the diameter of spot (round to oval, spot 6 mm) a treatment of vascular lesions can be easily performed. The therapy is low in side effects, pain can be relieved by steady cooling during treatment.

For the treatment the spot-an-spot technique should be used to prevent burns and vessel damage with successive purpura.