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Case Series

Case Series: Infrared Energy Device for the Treatment of Erythematotelangiectatic Rosacea

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Rosacea is a common chronic dermatosis which occurs mainly in middle-aged patients. The etiology of the disease remains unknown but immune and vascular factors are seen to play a crucial role. Diagnosis is established based on clinical manifestation. We present four case reports of rosacea therapy using a medical device emitting near-infrared light.

INTRODUCTION

Rosacea is a relatively common, chronic dermatosis affecting adults, more often females than males. There is a wide range of clinical features in rosacea including persistent erythema, facial flushing, telangiectasia, inflammatory papules and phymas (1, 2). According to different researchers, it affects from 1 to 10% of the population. It usually affects people above 30 years of age, and more often affects people with skin phototypes I and II (2–7).

Among those affected by rosacea, women are much more likely to suffer from the disease, but severe, hypertrophic forms, most often of the rhinophyma type, mainly affect men. In women, the changes become more severe during perimenopause, pregnancy, menstruation and ovulation. The course of the disease is chronic with periods of exacerbations and remissions, and the etiopathogenesis is complex and still not fully explained (8-11). Recently, the greatest role has been attributed to immunological phenomena and vasomotor disorders. Skin lesions in rosacea are most often located on the face, mainly in its central part (10). The typical location of the lesions is primarily on the cheeks, but also the nose, forehead and chin. Much less frequently, lesions occur on the scalp, behind the ears, on the side surfaces of the neck, on the neckline and in the upper part of the trunk (12). Treatment for rosacea is varied and depends on the phase of the disease and its severity. Treatment consists primarily of achieving and maintaining remission, which, unfortunately, is often incomplete (9, 12).

In this case series, the focus was concerned only on one of the treatment methods, the use of light to reduce erythema and telangiectasia. There are many reports in the literature indicating the beneficial therapeutic effects of light, including laser light, in the treatment of telangiectasia and erythema, both paroxysmal and permanent (13). The therapy uses a pulsed dye laser (long-pulse dye laser) and intense pulsed light therapy (IPL). The latter method uses a wide range of light waves of varying lengths (515-1200 nm). In the case of rosacea with severe sun damage, attempts are also made to conduct photodynamic therapy using light and aminolevulinic acid, a method currently used in the treatment of actinic keratosis (14).

For the treatment of our patients, we used the Zaffiro Z200NG medical device (Berger & Kraft Medical Sp. z o.o., Poland). The device is designed for high-energy light therapy, it is used to deliver polychromatic light to the skin surface in a contact manner in therapeutic procedures in the field of aesthetic medicine, dermatology and cosmetology. The Zaffiro device has a special handpiece finished with sapphire glass, which enhances the emission of infrared light leading to a thermal effect on the skin. The device emits radiation in the wavelength range of 750–1800 nm to obtain energy density in the range of 5–75 J/cm2. Zaffiro Z200NG is a CE-certified device, as a class IIa, rule 9 medical device.

CASE SERIES

We present the cases of four female patients aged 45-71 (mean age 59.5 years), with skin phototype I-IV and diagnosed with erythematotelangiectatic rosacea. Each patient signed an informed consent document. Patients underwent the following protocol.

Day 0: All subjects were treated with the infrared device (Zaffiro Z200NG, Berger & Kraft Medical Sp. z o.o., Poland) applied to the entire face. The treatment combined a wavelength range of 750-1800 nm with a fluence of 35-45 J/cm^2. Medical documentation and photo documentation (using Observ skin analysis device) were performed followed by an interview to collect information on subject satisfaction and a doctor's assessment of skin parameters and Physician Global Aesthetic Improvement Scale (PGAIS).

Day 30: Control visit. Photo documentation using Observ skin analysis device was performed followed by an interview to collect information on subject satisfaction and a doctor's assessment of skin parameters and PGAIS.

The photos below show patients before the procedure - with visible changes in the middle part of the face (Fig. 1 a, b, c, d).

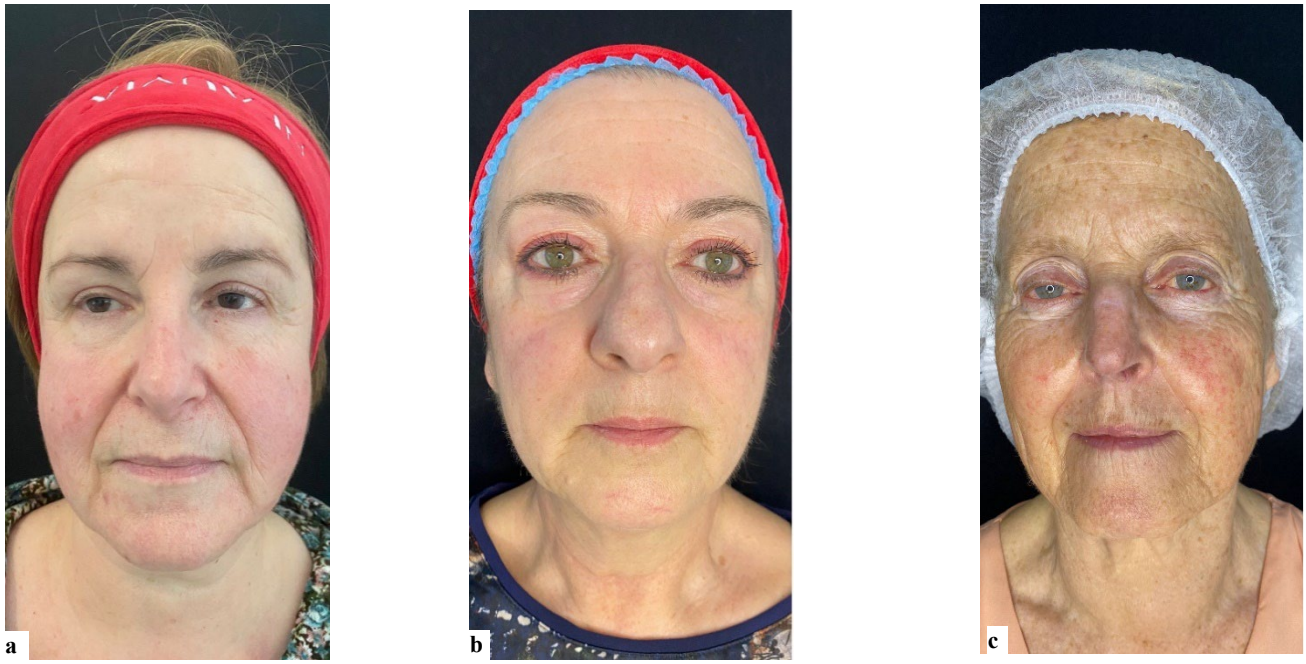

Fig. 1 a, b, c. *Condition before treatment with the Zaffiro device - visible erythematotelangiectatic changes on both cheeks.*

Fig. 1 d. *Condition before treatment with the Zaffiro device - visible erythematotelangiectatic changes on both cheeks and perioral area.*

30 days after the procedure, patients came for a follow-up visit to assess the effectiveness and safety of the treatment. Photographic documentation was made and data were collected on the condition of the skin after the procedure, along with an assessment of subject satisfaction and PGAIS. Table I shows the results of our procedure.

Table I. *Treatment results - based on pre-treatment and 30 days after the treatment condition.*

Subject Satisfaction	
Very Satisfied & Satisfied	100%
PGAIS	
Very much improved & Much Improved	75%
Skin hydration	
Very much improved & Much Improved	100%
Skin elasticity	
Very much improved & Much Improved	100%
Skin tone - Brightening effect	
Very much improved & Much Improved	75%
Redness	
Very much improved & Much Improved	75%
Skin irritation	
Very much improved & Much Improved	100%
Skin texture	
Very much improved & Much Improved	100%

The photos below show patients before and after the procedure - with visible improvement of the telangiectasia and erythema (Fig. 2 a-d).

Fig. 2 a. *Before and after Zaffiro infra-red treatment.*

Fig. 2 b. *Before and after Zaffiro infra-red treatment*.

Fig. 2 c. *Before and after Zaffiro infra-red treatment.*

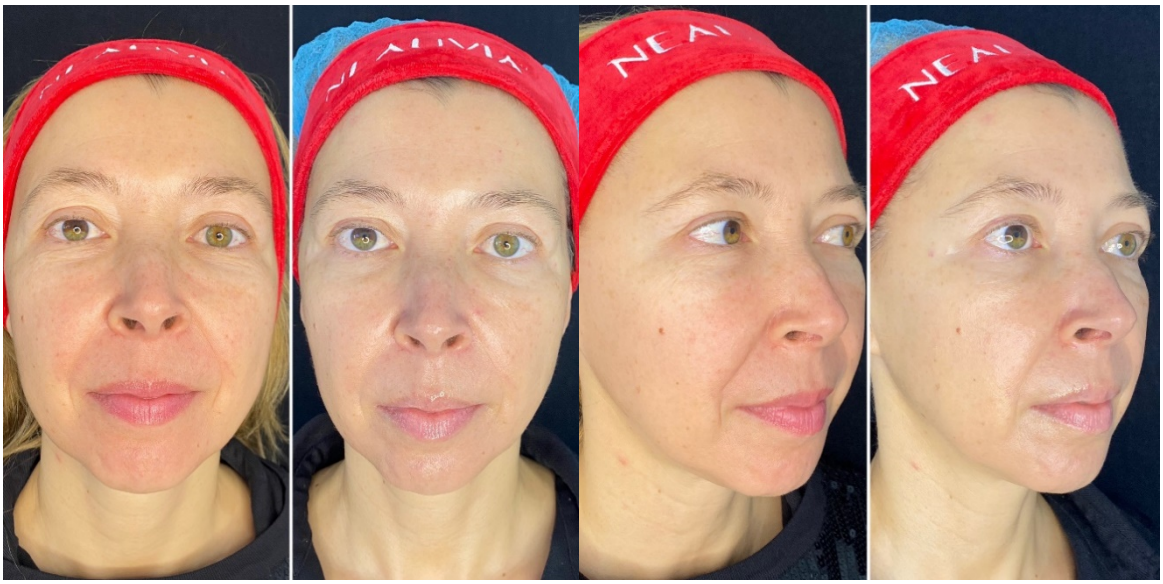

Fig. 2 d. *Before and after Zaffiro infra-red treatment*.

DISCUSSION

Vascular laser therapy for rosacea began in the early 1980s with the argon laser, initially dedicated to post-rhinoplasty treatment (15-18). During the last few years laser and light therapy for rosacea has evolved, in addition to telangiectasia, the focus for rosacea light therapies now encompasses a broader approach, from remodelling of dystrophic dermal connective tissue to strengthening of the epidermal barrier. Light therapies are thought to achieve their effects in a variety of ways, possibly including thermally induced fibroblast and endothelial proliferation, or endothelial disruption leading to cytokine, growth factor, and heat shock protein activation (19).

The subjective results of the assessment of skin improvement (very much improved & much Improved) in such key parameters as redness (75%), skin irritation (100%) or subject satisfaction (100%) - make us optimistic when it comes to the use of an infra-red emitting device in the therapy of certain types of rosacea. Assessing the presented cases, we can conclude that infrared therapy is a promising solution available to professionals in the field of aesthetic medicine. It is mainly used in anti-aging skin treatments primarily on the face, to achieve visible and significant effects associated with high patient satisfaction and safety profile. Additionally, a short recovery time or no recovery time after an individual procedure and no or minimal adverse events in the area of procedure are the advantages.

CONCLUSIONS

Rosacea is an insidious, chronic inflammatory disease of the facial skin that manifests various clinical symptoms and is associated with periodic relapses. Treatment of rosacea is not easy and involves not only the use of appropriate external or general treatment or a combination of both but also often a change in the patient's lifestyle and avoidance of trigger factors. We must also remember about proper skin care and photoprotection, which play an important role in the treatment of rosacea and should be included in the treatment plan to help optimize the therapeutic result.

This series discusses therapeutic cases - successfully completed with the use of an infra-red medical device. Considering the results, the procedure seems to be one of the promising options to treat rosacea. Due to the limited number of patients in this series and few scientific reports, further research is recommended.

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Conflicts of Interest: Diogo Pereira Forjaz is a scientific external consultant of Matex Lab. The author declares no other conflicts of interest.

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