

NON-INVASIVE BIOPHOTONIC TECHNOLOGY IN THE TREATMENT OF ACNE VULGARIS

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Summary

Acne vulgaris is a chronic inflammatory disease of the pilosebaceous unit with strong psychosocial repercussions, especially among adolescents. For a long-term effective treatment, the patient must trust his / her dermatologist and be aware of the pathogenicity and chronicity of his / her disease so that together can find the best therapeutic option.

Lately, non-invasive biophotonic techniques have been developed which enhance the intrinsic repair mechanisms of the skin, as for example Kleresca® Light. Optimal delivery of photonic energy to the skin is ensured by a unique combination of LEDs with two different wavelengths. The treatment is based on the interaction between a specially designed gel and a blue light emitted by Kleresca® Light. The chromophores found in the gel cause the photoconversion of the blue light into a fluorescent energy with wavelengths that penetrate simultaneously into different layers of the skin, having in the same time a bactericidal effect and a stimulation of the collagen synthesis.

This type of treatment is indicated for numerous skin conditions such as acne vulgaris and rosacea or even for skin rejuvenation. The effectiveness is long-lasting, without severe side effects, and the patients benefit from a pleasant and comfortable experience. This treatment can be an alternative to other minimally invasive procedures with both immediate and long-lasting results.

Key words: acne vulgaris, photoconverter gel, biophotonic light, Kleresca®.

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Introduction

Acne vulgaris is a chronic skin disease characterized by blockage or clogging of the pilosebaceous unit. It affects approximately 85% of young people aged 12 to 24 years and 15-35% of adults aged 30 to 40 years [1,2,3]. The condition is more common in men, who also develop much more severe forms.

The etiology is multifactorial, but the following should be emphasized: a genetic predisposition, endocrine disorders (androgenital syndrome, Cushing's disease, polycystic ovary syndrome, pregnancy), Propionibacterium Acnes skin colonization, stress, inappropriate cosmetics, halogenated chemicals, exposure to oils and mineral tars in a professional context, diet

(controversial topic - studies have shown a possible association with dairy consumption).

Four main factors are involved in the pathogenesis of acne vulgaris, namely: alteration of the keratinization process of the excretory duct of the sebaceous glands, increased sebum production and secretion, Propionibacterium Acnes skin colonization and release of inflammatory mediators with activation of the innate and adaptive immune system [1]. Therefore, there is a rupture of the comedones with increased inflammation that later leads to scarring [4]. The treatment of these patients aims to modify these four pathogenic mechanisms.

Acne vulgaris lesions are localized mainly on the face (99% of cases), but can also occur on the

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arms and torso [5]. Clinically, there are four types of acne vulgaris: comedonal, papulopustular, conglobate or nodular. In addition to these, there are other unusual forms of acne that depend on the etiological factor or are due to severe complications [6, 7].

Treatment is administered according to the severity of the lesions. Mild forms of disease benefit from topical therapy (such as azelaic acid, benzoyl peroxide, retinoids) [8] or antibiotics (monotherapy for a maximum of 12 weeks or in combination with topical agents such as benzoyl peroxide, zinc or retinoids to prevent possible resistance to applied antibiotics) [1, 9]. Severe forms can be treated with a combination of systemic retinoids (for example isotretinoin) or antibiotics, hormone therapy (for instance oral contraceptives, spironolactone, cyproterone acetate) [3, 6, 7, 10].

In order to obtain an optimization of the results, recently, various therapeutic methods have been tested simultaneously. Some examples of such treatments are: dermabrasion, micro-injections, chemical peels, laser therapy, phototherapy (biophotonic therapy - Kleresca® Light, photodynamic therapy), Jet Volumetric Remodeling technology (EnerJet), ozone therapy, etc.

For a successful long-term result, in addition to efficacy, any treatment must be well tolerated, accessible and convenient in order to benefit from the patient's full compliance. Information on the pathogenesis and natural history of the disease can help the physician-patient team to achieve remission of the disease and sustained maintenance [7,10,11].

Material and methods

Kleresca® Light is a unique concept designed to work in combination with Kleresca® Photoconverter Gel in order to enhance the benefits. Therefore, the resulting fluorescent light stimulates the biological processes and the repair mechanisms of the skin, a process that is called photobiomodulation [12,13,14].

Monochrome LED phototherapy is well known in the field of dermatology and aesthetics and is considered a valid treatment option in various dermatological conditions. The blue light

has been successfully used in numerous clinical investigations, especially in moderate to severe inflammatory acne vulgaris.

Blue light penetrates the epidermis in the first phase, where it produces a modulation of various molecular pathways. Blue light in the range of 415-450 nm has also a bactericidal effect on *Propionibacterium acnes* as it releases oxygen and free radicals. Kleresca® Light is different from other therapeutic options not only by its bactericidal effect, but also by the fact that reduces inflammation, normalizes cellular activity, reduces scars by increasing collagen production. This is a convenient alternative to other systemic therapies used in acne.

Firstly, the patient's skin is cleaned, then the Kleresca® Photoconverter Gel is applied in a manner dependent on the pathology. A mention should be made to the fact that both the doctor and the patient must wear special glasses. Secondly, biophotonic lamp panels are positioned 5 cm from the treated area (figure 1).

Clinical case

We present the case of a 40-year-old woman, living in an urban area, IInd skin phototype, who addressed the Clinic for multiple inflammatory and non-inflammatory lesions, located on the face (figure 1), with an evolution of approximately 22 years. The patient underwent numerous topical and systemic treatments, with unsatisfactory results.

Personal history revealed the presence of virializing polycystic ovary syndrome (diagnosed 20 years ago) treated with specific hormonal therapy. Skin manifestations have been present since adolescence, with improvement during hormonal treatment and aggravation after the two pregnancies. The family history was unimportant.

Together with the patient, who extremely skeptical about the results of any new treatment, we discussed the possibility of performing an innovative therapy, with proven effectiveness, both in the short term as in long-term: the Kleresca® Light biophotonic therapy.

Prior to the treatment, pictures of the patient were taken (figure 2).

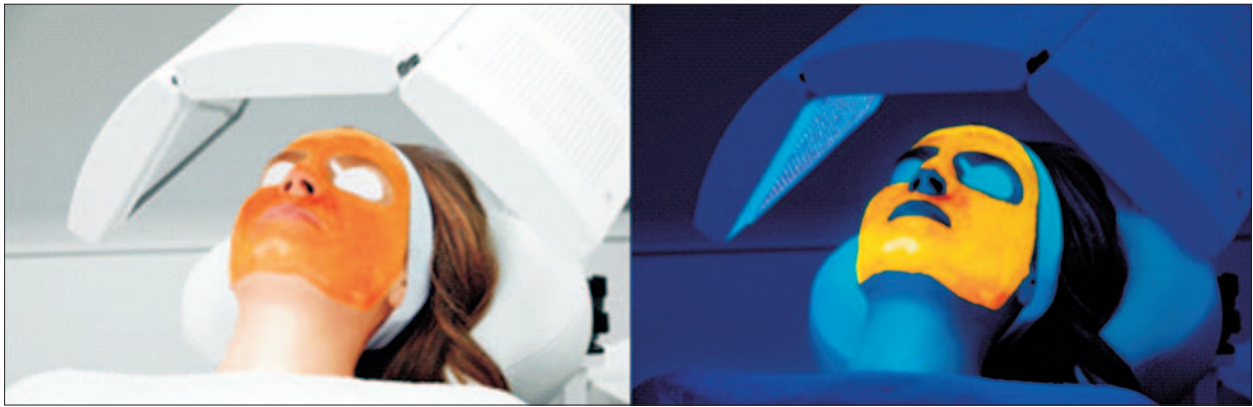


Figure 1. The patient with the Kleresca® Photoconverter Gel and positioned under the blue light.



Figure 2. Before treatment. Papules and pustules, rare nodules, scars and post-inflammatory hyperpigmentation.

The patient was evaluated after each treatment session. There were two sessions per month, in total six treatment sessions. No notable adverse effects were observed (figure 3 and 4).

Discussion

The clinical case presented above is not an uncommon one since moderate-severe forms of acne vulgaris are characterized by a persistent and undulating evolution. From an ethio-pathogenical point of view, high hormone levels

caused by the polycystic ovary syndrome diagnosed during adolescence, can be a solid argument in terms of triggering and especially maintaining acne vulgaris. The disease was somehow controlled with hormonal treatment for a long period until the two pregnancies, after which there was an exacerbation. According to some authors, hormones are involved in increasing sebum secretion and even in altering the keratinization of the pilosebaceous unit.

The important role of hormonal disorders in the ethiopathogeny of acne vulgaris is high-



Figure 3. After four treatment sessions.



Figure 4. After six treatment sessions.

lighted by its onset at puberty and its persistence in case of endocrine dysfunction, as observed in the current clinical case.

In order to help the patient, who was facing some problems and was completely skeptical of any treatment, we offered her other therapeutic options different from the conventional ones tried so far. Together, we decided to make use of

the Kleresca® Light biophotonic therapy. The results were spectacular with maintenance of the effect over time.

The use of the jet volumetric remodeling technology through Kleresca® Light resulted in almost clear skin after only 6 treatment sessions, without any discomfort.

Conclusion

Acne vulgaris is a disease with a strong emotional and psycho-social impact in terms of quality of life, leading to anxiety, social distancing and depression. The dermatologist has a key role in supporting these patients, presenting all the treatment options and trying to combine them in order to obtain the best results. In the case of the patient presented, while all the

traditional methods of treatment were tried (topical and systemic treatments and hormonal treatment), the benefits had soon appeared when using the Kleresca® Light biophotonic therapy.

In acne patients, the biophotonic therapy has shown long-term safety and is both a pleasant and comfortable experience. The possible side effects are transient and the results are maintained over time.

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Conflict of interest
NONE DECLARED

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