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Modern Treatment of Acne

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Abstract. In today's modern cosmetology, acne is an important problem. This article discusses the modern methodology of acne treatment.
Keywords: acne, chemical peels, post-acne, biorevitalization, mesotherapy, platelet-rich plasma.

Introduction

Acne (acne vulgaris) is a chronic recurrent multifactorial disease of the pilosebaceous follicles [1]. Acne affects an average of 60 to 80% of people aged 12–24 years. If the course is favorable, the process is completed by 18–22 years. But in 20% of cases, regression is slow, and acne persists both at the age of 25–34 years (8% of cases) and at the age of 35–44 years (3%). In some patients (usually women), the disease continues throughout life. Approximately 2% develop severe nodular and phlegmonous forms of acne with the formation of atrophic and hypertrophic scars, foci of hyperpigmentation and stagnant spots, telangiectasias

Materials And Methods

Currently, the term “post-acne” has been formed, which includes a symptom complex of secondary rashes that developed as a result of the evolution of various forms of inflammatory acne. The most common manifestations of post-acne are: hyperpigmentation, pathological scars, as well as the formation of atheromas and milia. Clinical manifestations of acne and post-acne have an adverse effect on patients, contributing to the occurrence of psychosocial maladjustment. Patients with acne often distance themselves from society even with mild forms of dermatosis; among them there is a high percentage of unemployed and lonely people [3]. In this regard, it is important for a dermatocosmetologist to prescribe effective and safe acne therapy, as well as to correct cosmetic defects due to post-acne.

Results And Discussion

An important link in the pathogenesis is hereditary hyperandrogenism. It can be expressed as an increase in the amount of hormones (absolute hyperandrogenism) or as an increase in the sensitivity of receptors to the normal amount of androgens (relative hyperandrogenism). Against the background of hormonal disorders, hypertrophy of the sebaceous glands and increased secretion of sebum occurs, as well as follicular hyperkeratosis in the duct of the pilosebaceous follicle and bacterial hypercolonization of P. acnes. In this case, sebum is hydrolyzed by bacterial lipases to free fatty acids, which promotes inflammation [2].
During the period of exacerbation of acne, it is possible to sanitize foci of inflammation using phototherapy methods (PDT, laser therapy). Ultrasound therapy and phonophoresis with anti-inflammatory drugs are used for infiltrative and nodular-cystic forms of acne.

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Cryotherapy is prescribed for papulopustular rashes [4]. The course consists of 10–15 procedures, performed 2–3 times a week. Cryotherapy has an anti-inflammatory and drying effect, reduces sebum secretion and promotes the resorption of infiltrates. In addition, exposure to cold causes constriction of blood vessels and reduces redness of the skin. It is possible to apply refrigerants locally, directly to inflammatory elements.

Indications for chemical peels: comedonal and papulopustular forms of acne, as well as atrophic scars and post-inflammatory hyperpigmentation (Fig. 1, 2) [6].

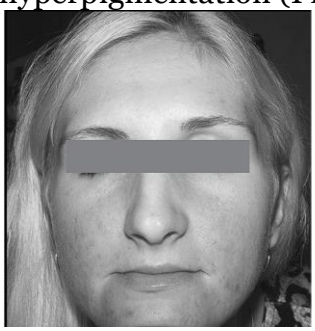

Figure 1. Post-inflammatory hyperpigmentation

Figure 2. Atrophic scars

With the help of chemical peels, it is possible to influence one of the links in the pathogenesis of acne – pathological follicular hyperkeratosis. Alpha-hydroxy acids, according to numerous studies, help eliminate follicular hyperkeratosis, accelerating the exfoliation process [5].

Most chemical peels contain glycolic acid. It has been established that glycolic acid induces the release of cytokines by keratinocytes, which affect the renewal of the matrix and the synthesis of new collagen by dermal fibroblasts [7]. This effect clinically leads to the elimination of stagnant spots, leveling and smoothing of the skin texture. Under the influence of glycolic acid, the thickness of the epidermis increases due to living cells, and the level of hyaluronic acid in the epidermis and dermis increases. Indications for glycolic peeling: comedonal acne with a predominance of open comedones, as well as severe hyperkeratosis [6]. Acne treatment protocols include peelings with a high concentration of glycolic acid (50–70%) and a low pH value (less than 2). With the papulopustular form of acne, on average, 6–10 procedures are required; with the comedonal form, the effect is achieved faster [2].

Biorevitalization (injections of unstabilized hyaluronic acid preparations). Most often, hyaluronic acid preparations are used to correct atrophic scars after acne [5]. However, preparations based on high molecular weight hyaluronic acid, used for biorevitalization, also have a pronounced anti-inflammatory effect, in contrast to preparations based on low molecular weight hyaluronic acid, which have a pro-inflammatory potential. High-molecular hyaluronic acid is involved in protecting cells and extracellular structures from oxidative degradation, that is, maintaining the structural integrity of tissues, which is important for optimizing the wound healing process and shaping the outcome of the disease [2]. Esters of high molecular weight hyaluronic acid have a pronounced sebum-regulating effect. According to the results of a clinical study conducted in 2023 at the Beauty Institute cosmetology clinic, within a week after the introduction of the IAL-System ACP drug into the skin of seborrheic areas, the level of sebum secretion decreased by 2 times, and the effect persisted for 4 weeks [3].

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In platelet-rich plasma, activated platelets secrete a complex of growth factors, such as platelet-derived growth factor, fibroblast growth factor, epithelial growth factor, vascular endothelial growth factor, transforming growth factor. Platelet-derived growth factor stimulates cell proliferation, angiogenesis, and collagen synthesis. Fibroblast growth factor helps stimulate the synthesis of collagen and hyaluronic acid and tissue repair. Transforming growth factor and epithelial growth factor stimulate epithelial cell proliferation, angiogenesis and tissue repair. Vascular endothelial growth factor stimulates angiogenesis.

CONCLUSION

Properly prescribed combination therapy, which includes methods with different mechanisms of action, not only reduces the appearance of acne, but also has a revitalizing effect on the skin. The results of such treatment come quickly and last for a long time. It is important to inform patients about the need for supportive and anti-relapse therapy and careful regular skin care.

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