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# FEATURES OF LOCAL THERAPY OF ACNE

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**Abstract** *Acne is a chronic relapsing skin disease predominantly of young people, which is the result of hyperproduction of sebum and blockage of pseudo sebaceous glands with their subsequent inflammation. The disease often manifests itself during puberty, affecting up to 85% of people aged 14 to 24 years. According to a number of authors, acne causes mental suffering to patients, causes anxiety, depression, and interpersonal problems.*

**Key words:** *anxiety, depression, interpersonal problems, blockage of pseudo sebaceous glands.*

## Introduction

Despite significant advances in acne therapy, the problem of improving treatment methods, as well as further study of the causes of the disease, remain very relevant. External acne therapy and rational skin care are an essential component of the therapeutic complex. Evidence-based clinical studies show that topical retinoids, azelaic acid (AA) preparations at a concentration of 15.0% (gel) or 20.0% (cream), antibacterial drugs, benzoyl peroxide, combined external agents with antibiotics, are most effective for external therapy, topical retinoids. At the end of the main course of therapy and the achievement of a clinical effect, maintenance topical therapy is indicated for up to 6–12 months in order to prevent recurrence of the disease by suppressing the development of clinically - undetectable microcomedones and subclinical inflammation that may be present on visually unchanged skin. The use of antibacterial agents is not indicated due to the development of P. acnes bacterial resistance ; The drugs of choice are adapalene and AK can be used as a maintenance therapy to achieve a clinical effect in any degree of acne, as well as to reduce the risk of hyperpigmented post-acne spots, while topical retinoids as monotherapy during the maintenance period are indicated up to the severe course of the process. when it is preferable to use them as a combination with topical benzoyl peroxide (BPO). AA has an inhibitory effect on oxygen-reducing enzymes, reduces the formation of reactive oxygen radicals by neutrophils, and acts as an antioxidant. Also, AK has an antibacterial effect against anaerobic and aerobic flora; is

predominantly bactericidal compound by inhibiting the synthesis of bacterial proteins. AK reduces the synthesis of filaggrin, inhibiting the process of keratinization disorders. Bacteria do not develop drug resistance to AA. In the focus, AA has an anti-inflammatory effect due to the elimination of bacteria and associated pro-inflammatory mechanisms, as well as due to the direct suppression of inflammation by inhibiting the formation of reactive oxygen species. These effects are dose-dependent, which, together with the need for a sufficient concentration of AA to create an effective amount in the skin and its appendages (15.0–20.0%), is a problem. In addition to the positive properties, AA preparations also have side effects that can reduce patient adherence. to therapy: burning at the site of application, tingling, itching, dry skin. Increasing the intracutaneous delivery of AA to the sebaceous glands and epidermis, for example, through the use of conductors that facilitate transdermal penetration, can provide an effective effect of drugs at a lower content of AA and prevent the occurrence of adverse events . As a component of the base of the new care product, one of these conductors was chosen - organosilicon glycerohydrogel (KGG), which exhibits pronounced anti-inflammatory, wound healing, regenerating and intracutaneous activity and is used as a topical medicinal agent both independently and as part of various pharmaceutical compositions. The high intradermal activity of CHG enhances the effectiveness of the active agent and reduces the risk of dose-dependent side effects. CHG is characterized by non-toxicity, antimicrobial activity, structural compatibility with the lipid component of cell membranes, the ability to protect tissues from drying out and swelling, and increase their oxygenation. Silicon stimulates proliferative-reparative processes in tissues. Many proven acne medications damage the skin barrier and increase transepidermal water loss, which can lead to reduced adherence to treatment or use of inappropriate moisturizers that can reduce the effectiveness of the primary treatment. Under these conditions, it would be logical to use non-comedogenic care products that have a prophylactic effect on exacerbation due to their own anti-inflammatory activity and the action of pharmacological agents introduced into the composition. In most cases, acne can be treated with various over-the-counter acne medications (lotions, creams, gels). The most common ingredients in acne treatments include benzoyl peroxide, azelaic acid, resorcinol, salicylic acid , and sulfur. Benzoyl peroxide destroys the bacteria that cause acne. Azelaic acid has antibacterial, anti-inflammatory and keratolytic effects. Resorcinol, salicylic acid and sulfur, although not as widely used today as they used to be, can help remove comedones (both closed and open). It is recommended to apply anti-acne products every day on the affected areas after cleansing the skin. If the skin begins to dry out and becomes irritated, reduce the frequency of application to once every two to three days. Do not squeeze or open pimples and pustules on your own, this can spread the infection and lead to scarring. Cleanse your face with a mild soap or other gentle cleanser (preferably one made specifically for problem skin) twice a day. Wash your hair every day. Use moisturizers and cosmetics that are water-based and labeled “non-comedogenic,” which means these products won’t clog pores. Use face masks that remove excess sebum. Avoid stress. Consult your doctor if acne progresses, if your skin condition is severe, or if acne scars remain. Given the above, it can be noted that AA is a promising choice for active skin care in acne, since it is possible to use drugs with AA administered in various forms of the disease: the substance does not accumulate in the body and does not have a systemic, teratogenic or mutagenic effect; lack of drug resistance to AA in bacteria; also important is the fact that there is no increase in skin sensitivity to ultraviolet radiation.

**Purpose of the study:** To study the effect of the best drugs in the local treatment of acne.

**Materials and methods of research:** The study involved 60 patients with an established diagnosis of "acne" aged 18 to 33 years. Patients were randomized by the method of "impermeable envelopes" into 2 groups. Patients of group 1 used a new external agent 2 times a day for 6 weeks. Patients in group 2 were recommended standard care using other over-the-counter topical agents for 6 weeks. A follow-up visit for all patients was carried out after 6 weeks; within the framework of this visit, all patients in groups 1 and 2 were re-determined by the overall severity of acne (OTS), the severity of oily skin, as well as the assessment of the IGA indicator, and a new external agent with AA was also prescribed. Subsequently, patients of both groups used a new external agent from the 6th to the 10th week.

**Results and discussion** : The main tasks were aimed at studying the dynamics of the development of juvenile acne in accordance with the stages of puberty, identifying endogenous and exogenous factors that support the persistent course of acne and refractoriness to therapy, as well as determining the tactics for examining patients with acne in adolescence and youth .

The pre-study standardized OTR score in both groups indicated a moderate nature of the clinical manifestations of acne (10.9 ± 1.0 in the first group and 9.8 ± 1.1 in the second ($p > 0.05$)). As a result of the study, a dynamic, statistically significant decrease in the mean values of the OTU index in acne patients of group 1 was established from 10.9 ± 1.0 points to 5.8 ± 0.6 after 6 weeks and to 4.8 ± 0.4 points after 12 weeks of application for the care of a new product (table). In patients of group 2, the OTU increased in the first 6 weeks of monitoring, when patients did not use the study new agent. From the 7th to the 12th week after the appointment of a new agent, a decrease in the OTR to 6.9 ± 0.8 points was recorded. Patients in group 2 showed a slight increase in skin oiliness in the first 6 weeks when patients did not use the study new agent. In the period from the 7th to the 12th week after the appointment of a new agent, the fat content of the skin decreased and did not significantly differ from that in patients of group 1.

An assessment of the severity of the process showed that in groups 1 and 2 there were patients with acne with varying degrees of activity of the process from "0", which means skin free from rashes, to "3", which indicates the presence of a moderate process, moderate acne with the presence of non-inflammatory and inflammatory rashes in the face in the form of papules and pustules and no more than one inflammatory node. Comparison of data on the severity of acne manifestations in patients of the group The average index of the severity of oily skin in points (M ± m) before the start of the study in patients of group 1 was 5.2 ± 1.1 points. In patients in group 2, the mean value was 5.5 ± 1.3 points, not significantly different from that in group 1 ($p > 0.05$). oiliness of the skin in patients of group 1 significantly decreased from 5.2 ± 1.1 points before the start of the study to 2.8 ± 0.2 points after the use of a new external agent for 12 weeks. Problematic skin during the first 6 weeks, there was an increase in the number of patients with IGA 3 (moderate acne) up to 17.8%, with mild acne - up to 50% and, accordingly, a decrease in the number of patients with "clear" skin (IGA 0 ) to 3.6%. Comparison of indicators in patients of group 1 revealed after 6 weeks of using the new agent a decrease in the severity of acne by 46.7% in terms of OTU and a decrease in VAS by 31.7% compared with that before the start of the study. Acne patients in group 2 had an 11.3% increase in VAR from baseline after 6 weeks, and a 5.5% increase in visual analogue scale (VAS) compared with pre-study visit 1. Comparison of the severity of acne manifestations in patients of group 1 in terms of IGA after 6 and after 12 weeks of using the new agent indicates a further increase in patients with IGA 0 and IGA 1, that is, with “clear” and “almost clear” skin: 35.4% and

38.7%, that is, 74.1% of the number of patients in group 1. During the period from the 7th to the 12th week of monitoring among patients of group 2, there was also a decrease in the number of patients with an IGA score of 3 (moderate acne) to 7 .2%, with mild acne - up to 42.8%, and, accordingly, an increase in the number of patients with "clear" skin (IGA 0) to 21.4% and "almost clear" skin (IGA 1) to 28.6 %. Among the patients of group 1, after 12 weeks of using the new agent, the number of patients with "clean" and "almost clear" skin increased from 8 to 23 (from 25.8% to 74.2%). Among the patients of group 2, the number of patients with "clean" and "almost clear" skin before the start of the study was 12 (42.8%), and after using the new agent for 7–12 weeks of use, their number increased to 14 (50.0 %). In terms of 6 to 10 weeks, the CADI dynamics vector (Cardiff Acne Disability Index) was positive in both groups. 0.71 points respectively. It was found that the 12-week use of the new external agent (group 1) contributed to a more positive dynamics of CADI, its decrease by 1.8 times or 56.5% of the original, while the 6-week period of using the new external agent (group 2) determined a decrease in CADI by 1.4 times or 28.2% from that before the start of the use of a new agent. Comparison of the average scores of the answers to each of the questions of the questionnaire showed no significant differences in the data in groups 1 and 2. The overall score of the CADI index in group 1 after 6 weeks of using the new agent significantly decreased from 6.75 ± 0.9 to 4.84 ± 0 .3 points, while in group 2 for the first 6 weeks a tendency to increase in indicators was revealed; the overall mean CADI increased from 7.1 ± 0.31 to 7.7 ± 0.4 points.

**Conclusions:** It was found that the 12-week use of the new external agent (group 1) contributed to a more positive dynamics of CADI, its decrease by 1.8 times or 56.5% of the original, while the 6-week period of using the new external agent (group 2) determined a decrease in CADI by 1.4 times or 28.2% of that before the start of the new agent. Thus, the conducted studies of indicators characterizing the severity of acne and skin condition in patients of group 1, unidirectionally demonstrated positive changes after 6 and 12 weeks of using the new agent, a statistically significant decrease in the OTU index, the degree of oily skin (VAS), a change in the structure of IGA indicators towards "clear" and "almost clean" skin. In group 2, where patients used the study drug for only 6 weeks (from weeks 7 to 12 of monitoring), after the start of the new study drug, the TTR decreased significantly, and VAS of oily skin and the number of patients with "clear" and "almost clean skin also had positive trends. The CADI index, which characterizes the impact of acne on the quality of life of patients, highly and positively correlated with the objective parameters of the severity of the manifestations of the process before the start of treatment. It was found that the 12-week use of a new external agent (group 1) contributed to a more significant positive dynamics of the CADI index, its decrease by 1.8 times or 56.5% of the original, while the 6-week period of using a new external agent (group 2) determined the decrease in the CADI index by 1.4 times or by 28.2% from that before the start of the use of a new remedy.

**Conclusion:** As our study showed, the longer the rashes exist on the skin of a teenager, the more reduced their quality of life index. At the age of over 20 years, many patients with acne experience psychological discomfort associated with the fact that peers, unlike them, no longer have acne or the number of rashes decreases sharply . This fact was clearly demonstrated by a test to determine the quality of life in patients with acne. On average, the quality of life in patients with pubertal acne was 72.9 ± 12.7, and in patients with persistent acne - 55.2 ± 20.8, these indicators

indicate a statistically significant decrease in the quality of life in patients with persistent acne according to compared to pubertal acne.

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