



ACNE: ETIOLOGY, PATHOGENESIS AND MODERN THERAPY

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ABSTRACT

The article represents current data on the etiology and pathogenesis, the basics of acne diagnostics. Methods of acne treatment are represented, according to clinical guidelines.

KEYWORDS

Acne, acne vulgaris, etiology, pathogenesis, dermatology, diagnostics, treatment, post-acne, hair follicles, sebaceous glands.

INTRODUCTION

Acne (acne vulgaris) is one of the most common ailments found in the practice of dermatologists and cosmetologists. Acne is a multifactorial polymorphic chronic disease of the sebaceous glands and hair follicles, affecting up to 80% of people aged 12 to 24 years. However, the disease can occur from infancy to old age (Rzany B., 2006). The frequency of severe forms is 5-14% of the total incidence of acne (Adaskevich V.P., 2000; Cargnello A.J., 1996; Brown S.K., Shalita A.R., 1998; Ustadin R.P. et al., 1998; Golden V. et al., 1999; Webster G.F., 2002). The peak frequency

of the disease occurs at 14-16 years of age in girls and 16-17 years of age in boys. The widespread prevalence of this disease and its significant impact on the quality of life of patients necessitate the development of new effective drugs and treatment regimens for the disease.

The prevalence of the disease, clinical variability, cosmetic defects – all these aspects attract the attention of not only dermatologists and

cosmetologists, but also other specialists (Yutskovskaya Ya.A. et al., 2005).

The term "acne" used indicates that the development of skin rashes is a consequence of changes in the processes of the whole organism, emphasizes the chronic and often recurrent course of skin diseases, the complexity of etiology and pathogenesis, and the development of approaches to the treatment of the disease (Masyukova S.V. et al., 2003; Kungurov N.V. et al., 2004; Cunliffe W.J., 2000).

The etiology and pathogenesis of acne are still not fully understood. The etiology can be caused by many microbiological, hormonal, genetic and immunological factors, including disorders of the central and autonomic nervous system, damage to the gastrointestinal tract and other concomitant diseases. But still, the main etiology of the disease is genetically determined hyperandrogenism and secretory type of sebaceous glands.

The pathogenesis of acne is based on four factors: hypertrophy of the sebaceous glands, follicular keratosis, microbial colonization and inflammation. The background for the development of acne is a special condition associated with excessive sebum secretion and changes in its composition – seborrhea.

The largest sebaceous gland (type III) is determined in patients with vulgar acne.

The starting point for acne is often not a direct increase in the content of androgens in the body (absolute hyperandrogenism), but a genetically determined increase in this amount and more often, an increased sensitivity of sebaceous cell receptors to testosterone derivatives (relative hyperandrogenism).

Acne is one of the diseases that have a great impact on the psychoemotional background of the patient. The

degree of adverse effect of acne on the quality of life does not correlate with the objective condition of the patient. Even a mild form of acne can lead to severe dysmorphic phobia, depression, and in some cases to more serious mental disorders and suicide attempts. Acne sufferers are at increased risk of developing depression, anxiety, and suicidal thoughts. Therefore, dermatologists treat not only external manifestations of the disease and secondary ones (post-acne, hyperpigmentation, post-acne scarring, etc.), but also affect the psychoemotional adaptation of an acne patient.

The unfriendly attitude of others towards acne patients adds social significance to this issue. A decrease in self-esteem leads to a number of metabolic changes, which certainly reduces the quality of life of acne patients.

Often, patients suffering from acne have a burdened family history. When collecting anamnesis, it is necessary to find out whether there is a genetic predisposition to diseases of the endocrine and reproductive systems. In the anamnesis, it is important to know the time of the onset of the disease and puberty of the patient, and early or late puberty may indicate pathology of the endocrine or reproductive system. Particular attention should be paid to the age of the onset of menstruation and the nature of menstruation. When collecting an anamnesis of an acne patient, it is necessary to clarify information about past illnesses, the presence of local foci of infection. It is also necessary to pay attention to the professional activity of the patient (harmful production, exposure to insolation), the duration of the disease, the effectiveness of previous treatment, the psychological status and compliance with the patient's treatment regimen, weight and height, body type.

Despite significant advances in the treatment of acne in recent years, further research into the problems of the disease and improvement of treatment remain paramount and very important in dermatology (Korcheval T.A., 2003; Cordain L. et al., 2002).

Currently, there are many methods of treating vulgar acne. This is most likely due to insufficient knowledge of the etiology and pathogenesis of acne, the presence of existing pathologies of internal organs and systems, the wrong choice of therapeutic tactics.

The course of acne is accompanied by repeated exacerbations and an increase in the severity of clinical symptoms, which can lead to scar formation. Thus, the management of patients with acne requires a timely and effective approach at the initial stages of the disease.

Many dermatologists recommend consulting an endocrinologist, gastroenterologist, gynecologist and other specialists as necessary to identify and exclude concomitant diseases before and during treatment. When choosing treatment methods, it is necessary to take into account the age, the psychoemotional state of the patient, the prevalence, the stage of the disease and the clinical course, previous treatment, etc. schemes for teaching patients, adherence to treatment, diet and skin care are necessary components of the effectiveness of treatment. In this case, doctors and patients should develop a treatment and prevention plan (Ryumin D.V., Shashlova T.A., Savelyeva E.M., 2013; Nast A., Dréno B., Bettoli V., et al., 2012).

Acne treatment tactics are based on two criteria: severity of the skin process and the nature of the course of the disease. The aim of treatment is to reduce inflammation, reduce sebum formation and normalize the activity of the sebaceous glands.

Treatment of acne patients, as a rule, is aimed at eliminating pathogenetic factors (Kubanova A.A. et al., 2003; Samgin M.A., Monakhov S.A., 2005).

Acne treatment is currently carried out using systemic and external medications. Systemic treatment includes the administration of retinoids, antibiotics and hormones. For the treatment of acne, antibiotic therapy is used with tetracyclines (doxycycline) and macrolides (erythromycin). Doxycycline is considered more effective than other antibiotics, because it is able to penetrate the follicular apparatus and sebaceous gland.

External therapy drugs are prescribed for a long time, the minimum course of treatment is 3 months, after which drugs should be prescribed for preventive purposes to prevent an exacerbation of the disease. In most cases, no single drug affects all mechanisms and the goal is achieved by a combination of two or three drugs for topical use. Consequently, topical preparations for acne make a significant contribution to achieving therapeutic effectiveness in the mild form of the disease and are an integral part in the treatment of moderate and severe acne when systemic drugs are indicated.

Azelaic acid (15% gel or 20% cream) is recommended for all degrees of acne both in the form of monotherapy and in combination therapy. Azelaic acid has a wide spectrum of action: anti-inflammatory, antibacterial, antikeratinizing, anti-tyrosinase and antioxidant properties.

In 2002, recommendations and algorithms for pathogenetic treatment of various forms of acne were developed (XX World Congress on Dermatology, Paris, 2022). There, local retinoids are the first choice of doctors in the treatment of acne. Topical retinoids affect the process of keratinization (keratinization and

peeling), reduce sebum secretion, enhance the proliferation of epithelial skin cells, have a certain anti-inflammatory effect. The most promising drug is Adapalene, which is well tolerated, does not have a photosensitizing effect, is highly effective for comedones and papular acne. Another drug isotretinoin (roaccutane) is also very effective in the treatment of moderate and severe acne. With regular use, it leads to remission or cure in most people with acne. Isotretinoin affects the processes of differentiation and keratinization of epidermal cells, including sebaceous glands, has a pronounced sebaceous and anti-inflammatory effect.

In many literary sources, local retinoids are considered as the means of the first barrier in the treatment of acne. They have comedonolytic and anti-inflammatory properties, normalize follicular hyperkeratosis and hyperkeratinization, and, in this regard, should be recommended in the presence of microcomedones, comedones and for the relief of focal inflammation (Thielitz A., Gollnick H., 2008; Sinclair W., 2017).

Modern approaches to the treatment of acne include the appointment of not only various systemic and local drugs, as well as the use of special cosmetics. The healing properties of cosmetics are due to its composition, which includes substances that act on the key links of pathogenesis.

Therapeutic cosmetics allow you to carry out basic care for problem skin during periods of remission of the disease, are used for supportive treatment, and can also complement drug therapy during periods of recovery.

The appearance of vulgar acne, as patients often believe, has nothing to do with the lack of facial skin care, starting treatment of the disease with a visit to a cosmetologist. It is recommended to cleanse the skin

daily with various cleansers that maintain a neutral or acidic pH of the skin and have antibacterial properties. A patient with acne should remember the need to exclude cosmetics (ointments, greasy creams), as well as rubbing that causes blockage of the ducts of the sebaceous glands.

Thus, a wide range of acne treatment products and cosmetics for acne-prone skin allows the attending physician to switch from targeted effects on some pathogenesis mechanisms to drugs that affect other links during treatment.

In this regard, the most important are regular modification of the prescribed treatment and long-term dynamic pharmaceutical monitoring of the patient even after achieving clinical remission.

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