Name

Skin acne disease

Affiliation

Contents

[Abstract 3](#_Toc21640142)

[Introduction 4](#_Toc21640144)

[Name of disease 4](#_Toc21640145)

[History of disease 4](#_Toc21640146)

[Effects on other body system 6](#_Toc21640147)

[Sign and symptoms 7](#_Toc21640148)

[Diagnosis method 8](#_Toc21640149)

[Treatment and side effects 9](#_Toc21640150)

[Prognosis with treatment 10](#_Toc21640151)

[Conclusion 11](#_Toc21640152)

[Research studies 11](#_Toc21640153)

[Prevention 12](#_Toc21640154)

[References 14](#_Toc21640155)

# Abstract

This paper is about discussion of acne disease which is a deadly skin disease. The paper also shed light on cause, symptoms, diagnosis and treatment of acne. The paper starts with brief generic introduction which follows the history of aforementioned disease. Acneisa chronic disease starting with a blockage of the sebaceous ducts (follicular hyperkeratosis) against the background of oily seborrhea in adolescence. In this section, detailed description and background of acne is given. Next section outline the sign and symptom of the disease. Various symptoms are discussed in this section and a detailed description is given. After this, diagnosis method of disease is presented. Treatment methods are given in next last part of the paper. The choice of treatment method is determined by the individual characteristics of the body, including the structure of the skin and sebaceous glands, the function of the endocrine glands, the state of general and local cellular immunity, the presence of concomitant diseases, as well as adverse environmental influences. Modern treatment of acne is aimed at all links of pathogenesis, while it should be borne in mind that it takes time to achieve a therapeutic effect. Research studies which have been undertaken so far has been presented in “Research studies section of the paper. The paper ends with prevention methods of disease.

# Introduction

Every day we face different problems. Sometimes we manage to solve them ourselves, sometimes we seek help from relatives and friends, but in these cases, almost always we want to choose our tactics of behavior in dealing with difficulties and, perhaps, get an opportunity to hide the problem. However, in some situations this is impossible, the problem is in the public eye, and this can significantly affect our lives. Especially if the problem is about appearance. To care for skin problems, there are many products, including lotions, tonics, moisturizers and matting creams, special gels, mousses and foams for cleansing the skin, scrubs and home peels. On the shelves of any pharmacy you can find at least a dozen of them. However, at the same time there is a massive advertising of these funds, promising the maximum effect and complete recovery, which cannot be achieved in all patients. *The purpose of this paper is to discuss, explore and provide solutions for one of the deadly skin disease which is known as acne.*

# Name of disease

The name of the disease is ***skin acne disease*** which is an external disease.

# History of disease

Acneisa chronic disease starting with a blockage of the sebaceous ducts (follicular hyperkeratosis) against the background of oily seborrhea in adolescence. Particular attention should be paid to children 10-17 years old, when black dots, small “pimples” appear on the face in the area of ​​the nose, cheeks, and chin.  On the contrary, stagnation of sebum in the sebaceous duct is a favorable environment for the development of infection. If the procedure is not done in time and proper care is not established, then an inflammatory process occurs and chronic acne develops.

The background for the development of this disease is seborrhea - a special condition associated with overproduction of sebum and a change in its composition. Normally, sebum is used to lubricate the surface of the epidermis. The sebaceous glands that produce sebum are located throughout the skin, with the exception of the palms and soles, and are usually in close contact with the hair follicles, forming a common greasy hair follicle (SVF).

In recent decades, acne has a tendency to “aging” and manifests itself at any age. The disease is aggravated by excessive use of cosmetics such as powders, blush, foundation, and irrational use of medicines (cosmetic, medical acne). With incorrect and untimely treatment, post-acne elements develop on the site of inflamed elements like keloid, hypertrophic and normo-atrophic scars, stagnant spots with hypo- and hyperpigmentation. That is why self-medication and a violation of the regimen prescribed by the doctor, care and therapy are unacceptable (Antiga, Verdelli, Bonciani, Bonciolini, Caproni, & Fabbri, 2015).

Acne irritants are: stress (75%), pregnancy (35%), premenstrual syndrome (70%), skin lesions (53%), drugs and contraceptives (29%), cosmetics (21%), gastrointestinal pathologies intestinal tract (3%) and others (3%).

Acne disease develops as follows:

1. The sebaceous glands increase with increased sebum secretion, which is manifested by a greasy sheen and enlarged pores.
2. The upper layer of the skin thickens, clogging the output ducts of the sebaceous glands. As a result, blackheads similar to black dots and millet grains are formed.
3. An inflammatory reaction occurs, various purulent elements, stagnant red spots, hyperpigmentation appear.
4. Combing, steam bathing, massage, self-medication, attempts to hide defects with the help of various cosmetics lead to the spread of acne over the entire surface of the skin.

The development of acne is facilitated by an increase in the pH of the skin in an alkaline environment, which leads to a decrease in the bactericidal properties of sebum and to a sharp increase in the growth and reproduction of representatives of saprophytic and conditionally pathogenic.

The development of the disease is accompanied by the accumulation of sebum and a change in its composition, which begins to have a local irritant effect; the appearance of acutely inflamed hyperemic flaky spots and plaques. Violation of the outflow of sebum leads to the formation of micro cysts, upon rupture of which an immune reaction occurs. Analysis of the biopsy results revealed that leukocytes moving into the wall of the follicle either destroy its epithelium, or, moving further to the surface between the wall of the follicle and eel, form a pustule, forming a residual scar. At the same time, the inner surface of the follicle is either restored, without leading to clinical inflammation, or is destroyed, which causes the focus of inflammation (Bowe, & Logan, 2011).

# Effects on other body system

The skin takes an active part in the metabolism of steroid sex hormones, in particular in the extra glandular formation of androgens from precursor steroids, being simultaneously the main target tissue for androgens. For such a type of dermatosis as acne vulgaris, possible predisposing factors are an increase in blood levels of testosterone and an increased sensitivity of hair follicles and sebaceous glands to androgens. Hyperandrogenism leads to hypertrophy and increased functioning of the sebaceous glands. Stimulation of androgen receptors increases mitotic activity and differentiation of epidermal cells, enhances desquamation of follicle epithelial cells, increases the synthesis of intercellular lipids, and stimulates hair growth and sebum secretion.

# Sign and symptoms

The main reason for the appearance of acne is the formation of a keratin plug inside the hair follicle. That is, ordinary acne is a disease of the hair follicles caused by their blockage and subsequent expansion. The keratin plug blocks the bulb duct, and its lower part is more and more stretched under the influence of incoming sebum. Acne develops when excess sebum, and in some cases keratin protein, clogs hair follicles. In the accumulated sebum, bacteria develop that infect the surrounding tissue and cause various skin lesions. After clogging of the bulb with dead cells, skin fat begins to accumulate inside, which the bacteria break down into fatty acids. If the sebaceous plug is so strong that the swollen bulb bursts, its contents penetrate the dermis and cause inflammation of the skin.

Acne appearing in adolescence is considered the result of an increased sensitivity of the body to androgens (male sex hormones) present in the body of both boys and girls. Androgens cause an increase in the sebaceous glands and increase the secretion of sebum. The influence of genetic factors is proved, because the tendency to acne is often familial. Among the causes of the appearance of ordinary acne can be called Cushing's syndrome, due to an excess of corticosteroid hormones (Magin, Adams, Heading, & Pond, 2009).

The formation of blackheads may increase during stress. In girls, increased rashes are often associated with hormonal fluctuations during the menstrual cycle.

Neglecting hygiene almost does not cause acne, but contributes to the accumulation of sebum and dead cells on the skin surface, increases the risk of clogging of hair follicles and creates favorable conditions for the growth of bacteria. The role of nutrition as an exacerbating factor is considered minimal.

Ordinary acne appears where there are especially many sebaceous glands. In adolescence, the skin on the face, scalp and upper body becomes the oiliest - due to increased secretion of sebum. Acne usually appears on the face, but can also appear in other places: on the upper back, shoulders and neck. Usually, rashes intensify in winter, and improvement occurs in summer, when the skin receives more sunlight.

Almost all types of acne can be recognized by the following signs:

- Small black dots;

- Small and dense abscesses with white tops;

- Red acne, often with yellow purulent stems;

- Painful, large, dense and red swelling of the skin;

- Soft, located under the skin, bumps without obvious tips (cysts).

# Diagnosis method

The diagnosis is made clinically in the presence of one or several elementary lesions. In some patients in whom acne is associated with other alterations, such as menstrual disorders, hair loss, seborrhea or increased hair, it is necessary to perform a complementary hormonal analysis that will rule out the presence of hormonal alterations and better guide the treatment.

# Treatment and side effects

The first step is to consult a specialist. Dermatologists and doctors of other specialties (pediatricians, neonatologists, gynecologists, endocrinologists), who in some cases take part in the examination and treatment of such patients, often face acne. In the case of the patient’s initial treatment with acne rash to narrow specialists, a comprehensive examination by a dermatologist, gastroenterologist, gynecologist, and in some cases by an endocrinologist is recommended.

Thus, the diagnostic model for the management of women with acne includes examination, taking into account not only the dermatological, but also the hormonal-endocrine profile with the obligatory involvement of a gynecologist-endocrinologist. Timely diagnosis of acne and the correct clinical assessment of the condition by specialists guarantee a rational prescription of effective drugs (topical and systemic) depending on the clinical manifestations of the disease.

The tactics of treatment depend on the form of the disease, the severity of the process (mild, moderate, severe), gender, age, and concomitant pathology. When choosing a therapy, not only the features of clinical manifestations are taken into account, but also the patient's psycho-emotional state. Patho-genetic treatment of acne should be based on anamnestic data, taking into account the duration of previous treatment, its effectiveness, patient age, developmental features and course of relapses, their duration, the presence of concomitant diseases of internal organs and foci of chronic infection (Wang at al, 2010).

Modern treatment of acne is aimed at all links of pathogenesis, while it should be borne in mind that it takes time to achieve a therapeutic effect. Both the complexity of pathogenesis and the variety of clinical forms of the disease are the cause of the variety of acne treatment methods. They can conditionally be divided into three groups depending on their focus on: 1) a decrease in sebum secretion; 2) normalization of keratinization processes of the SVF channel; 3) microbial factors.

According to the method of application, the drugs are divided into external (local) and systemic, affecting the formation of sebum, removing the exfoliated follicular epithelium, bactericidal and bacteriostatic effect on the skin flora. External therapy is the first line of treatment for the debut of vulgar acne, mild inflammatory and non-inflammatory acne, and non-inflammatory acne of moderate severity. As a rule, for the successful treatment of acne, mild to moderate local therapy is sufficient.

# Prognosis with treatment

The choice of treatment method is determined by the individual characteristics of the body, including the structure of the skin and sebaceous glands, the function of the endocrine glands, the state of general and local cellular immunity, the presence of concomitant diseases, as well as adverse environmental influences. For example, in the initial stage of the disease, when comedones prevail with a small amount of inflammatory elements, in the form of nodules and pustules located on the face, in most cases, local treatment brings the expected effect. It should be emphasized that to achieve a noticeable improvement in the condition of the skin, the duration of regular therapy is at least 4-8 weeks.

The reason for the majority of treatment failures is the irregular use of drugs, a too short treatment period or poor tolerance to drugs. Should be considered, that at the first time of treatment, an exacerbation of the disease is possible, which is associated with the dynamics of the disease process and with the mechanism of action and side effects of the use of drugs. But at the same time, treatment should not be interrupted, because the achieved temporary improvement in the condition of the skin can be replaced by a new exacerbation.

# Conclusion

In short, Acne is a chronic dermatosis of the face, back and chest. This skin lesion can often be found under such names as acne, seborrhea, acne, and acne vulgaris. Acne is a consequence of the interaction of several pathological factors, resulting in an increase in the production of sebaceous secretion, thickening of the stratum corneum of the ducts of the sebaceous glands, irregular exfoliation of these dead cells and blockage of the follicle duct with horny scales. All this leads to active reproduction of a conditionally pathogenic microorganism Propionbacterium acnes in the follicle and, accordingly, to the onset of an inflammatory process.

Each hair follicle is surrounded by a sebaceous gland and is connected to it through an appropriate duct. The sebaceous secretion produced by the gland covers the skin and hair, thereby not only protecting them from all environmental influences, but also moisturizing them accordingly. Excessive amount of fat sticks to keratinized cells, thus forming a plug in the mouth of the hair follicle. This sebaceous hair plug most often provokes bulging of the follicle wall.

# Research studies

In recent years, the attention of dermatologists and cosmetologists has been increasingly attracted by the problem of the relationship between skin diseases and organs of the gastrointestinal tract. So, in patients with acne, clinical and histological signs of gastritis were detected (50–70%), pathological conditions of the jejunum mucosa (30%) and dysbiosis (60%) were noted.

Recently, publications on the effects of food on appearance of rashes have appeared. Such a hypothesis was already expressed about half a century ago, but then was rejected. Currently, studies are being conducted abroad on the effect of diet on the course of acne. It was revealed that products with a significant content of sugar and other carbohydrates, increasing the level of glycemic load, affect the concentration of insulin and insulin-like growth factor-1.

Recent studies have identified the role of smoking in the development of acne. According to the data obtained, the authors conclude that nicotine increases the production of sebum and reduces the concentration of vitamin E in the body. Two studies conducted in 2009 and 2010 revealed that smoking is one of the factors in the development of comedic (non-inflammatory) acne in women. It was also found that smoking women are characterized by more severe forms of acne compared with non-smokers.

# Prevention

Although there is no effective way to prevent acne, patients who suffer from it can take into account a series of recommendations that will help reduce its impact and the severity of injuries.

* Clean the face twice a day. This way you can remove excess oil from the surface and dead skin cells that can block pores. However, keep in mind that excessive cleaning can cause damage, such as drying out excess skin or irritating persistent acne.
* Apply the recommended products to treat the condition topically after washing.
* Dry the skin without rubbing it.
* Practice outdoor sports and wash your face after doing it to prevent sweating clogging pores.
* Reduce hair contact with facial skin. In fact, experts do not recommend wearing bangs or long hair.
* Try not to abuse foods such as pork, pastries, seafood, alcohol, nuts, strong cheeses and foods that contain chocolate.
* Choose cosmetics that do not contain oils or fats in their composition.
* Select non-fatty photo protectors.
* Do not touch the beans
* Be patient: Acne takes at least three months to heal.
* Avoid stress.
* Do not share treatments with others who have or have had acne.
* Do not treat scars while the lesions are active (Zeeuwen, Kleerebezem, Timmerman, & Schalkwijk, 2013).

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