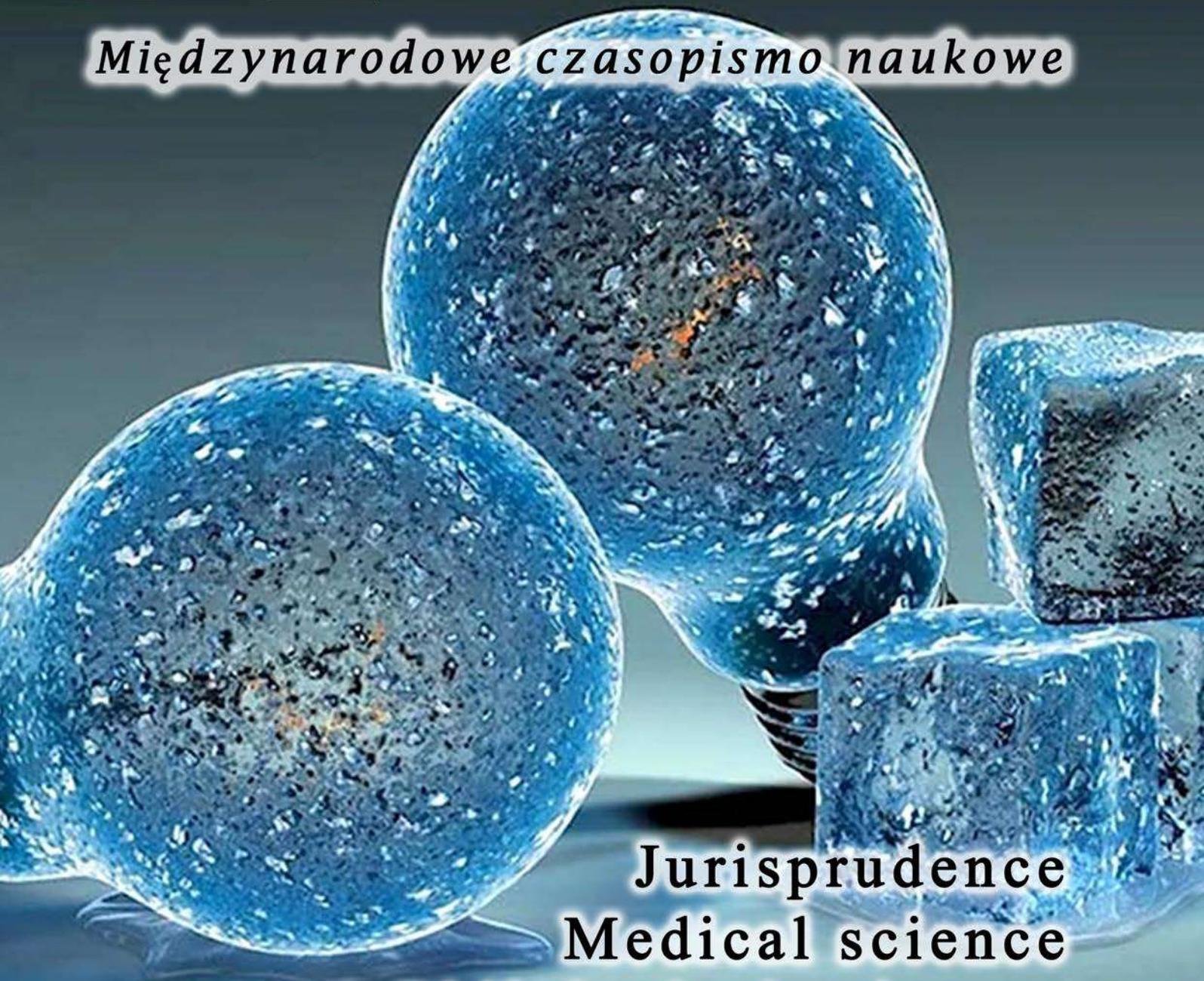




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TYPES, SYMPTOMS AND WAYS OF TREATING ACNE IN MODERN CONDITIONS

Resume.

The most urgent dermatological problem among young people around the world is teenage vulgar acne - acne. Such a problematic condition of the skin of the face forces teenagers, and often adults, to fall into deep depression, to avoid contact with persons of the opposite sex. Acne affects about 9.4% of people, making it the eighth most common disease in the world. Acne often affects adolescents aged 12-18 years, but 20-40% of women develop acne for the first time after the age of 25.

Acne usually first appears during puberty, when the sebaceous glands become active, but can occur in people of any age, including adults. Acne typically develops in areas of the skin with an increased number of sebaceous or oil glands: the face, chest, arms and back. Many factors influence the development of acne, including genetics, environmental influences, inflammation, excess oil production, hormonal imbalances, bacteria, and excess dead skin cells that clog hair follicles.

Key words: *acne, types, causes, principles of treatment*

Acne is a chronic skin disease in which sebaceous glands located in the skin at the base of the hair follicle (follicle) become inflamed. Sebaceous glands produce sebum (sebum) and are sensitive to sex hormones — androgens (testosterone and its derivatives). When the level of androgens increases, there is increased secretion of sebum. Phases of acne development:

- increase in the size of the sebaceous gland;
- increased secretion of sebum;
- clogging of pores with sebum mixed with horny scales of the hair follicle (formation of comedones);
- microbial colonization and inflammation.

Propionibacterium acnes bacteria, which feed on sebum, actively multiply in a clogged sebaceous gland. They secrete enzymes and other substances that provoke local irritation and inflammation of the skin. Inflammation can be superficial or deep, leaving scars on the skin.

The main cause of acne is an increased level of androgens in the blood or a high sensitivity of the receptors of the sebaceous gland to them (with a normal level of androgens). Other causes of acne:

- genetic predisposition;
- viruses, fungi and bacteria;
- excessive production of sebum;
- friction and pressure on the skin;
- high air humidity;
- improperly selected skin care products;
- facial skin contact with dirty objects and hands.

Taking medications containing lithium, testosterone, or corticosteroids can increase the risk of acne. Smoking and drugs weaken the immune system and contribute to the appearance of dermatological diseases (especially acne).

The development of acne is also affected by the increased level of sugar in the blood. To reduce sugar, the pancreas produces more insulin, which leads to increased sebum production and the appearance of acne.

Hormonal acne occurs in every second woman between the ages of 20 and 29, and in every fourth woman between the ages of 40 and 49. Open and closed comedones, papules are formed in the lower part of the cheeks and along the line of the lower jaw. The causes of acne are a high level of androgens, polycystic ovary syndrome, fluctuations in the level of hormones before menstruation, hormonal changes in the body due to pregnancy or menopause.

Symptoms of acne

The main symptom of acne is *comedones* (light bumps), *papules* (inflamed lumps under the skin) and *pustules* (pus-filled papules) on the forehead, cheeks, chin, chest and back. Other symptoms of acne:

- enlarged pores;
- increased oiliness of the skin of the face, head;
- reddish-purple spots on the skin after acne;
- scars, pits on the skin with smooth or ragged edges.

Acne can lead to inflamed areas of skin that hurt when pressed or touched. Acne causes skin discoloration, including redness, hypopigmentation (light spots), and hyperpigmentation (dark spots).

Stages of acne are distinguished depending on the number of comedones and pustules, the presence of nodes and cysts on the skin. Degrees of acne:

➤ *acne of the 1st degree* (characterized by the appearance of no more than 30 comedones and 10 papules on the skin). With mild acne scars and scars do not form;

➤ *acne of the 2nd degree* (more than 30 comedones, up to 10 papules and up to three subcutaneous nodes appear). With moderate severity of acne, the presence of scars on the skin is possible;

➤ *3rd degree acne* (characterized by the presence of more than three nodes or cysts, a large number of comedones and papules). A severe degree of acne is complicated by the presence of scars on the skin.

The consequence of the second and third degrees is "postacne", which includes enlarged pores, scars,

pigmented or red (erythema) spots at the place of acne, which do not go away for a long time. Depending on the severity of scars and spots after acne on the chin or forehead, the dermatologist will recommend drug or laser treatment.

A possible complication of acne is sepsis (blood infection), the risk of which increases in case of self-extraction of deep acne, especially in the area of the nasolabial triangle. Because of the many blood vessels that connect to the vessels of the brain, the infection can enter the blood and lead to meningitis (inflammation of the membranes of the brain).

Types of acne

Acne on the face occurs most often, affecting mainly the cheeks, lower jaw, forehead and temples (Table 1). Acne on the back develops in every second patient, and acne and comedones on the shoulders and in the chest area is diagnosed in approximately 15% of cases.

Table 1

Types of acne		
Type of acne	Causes of acne	Symptoms of acne
Open comedones (blackheads)	They appear due to clogging of pores with sebum and keratinized skin scales. Melanin pigment gives comedones a dark color.	They appear as small black dots, usually no larger than a few millimeters in diameter, and do not cause pain or itching. Open comedones usually appear on the face.
Closed comedones (milia)	They are formed due to the hyperfunction of the sebaceous glands, which changes the composition and amount of sebum produced. A person has a deficiency of useful lipids, which leads to the formation of whiteheads.	With comedonal acne, small, dense, light bumps appear under the skin with a diameter of one to three millimeters.
Papules	Papules are formed from comedones (mostly closed). They can be caused by hormonal changes in the body, have a viral or bacterial nature.	Small, inflamed, reddish bumps appear under the skin, which can be painful when pressed.
Pustules	They arise during the "ripening" of papules. However, they can be caused by increased sweating, hormonal changes before menstruation, and improper nutrition.	They are papules with a white head in the center, filled with pus, which can be released when pressed. Pustules are painful and sensitive during palpation, hard to the touch.
Nodes	Nodes can appear in the case of defective pustules or papules, the spread of infection from the pustule (during squeezing) to the surrounding tissues.	Deep subcutaneous pimples on the face that are painful when pressed. Nodules are denser than papules to the touch and usually exceed five mm in diameter. The color of subcutaneous nodules in acne varies from red to bluish-purple.
Cysts	Usually occur in case of hormonal imbalance, may appear in people with a genetic predisposition.	They are subcutaneous nodes filled with pus. Outwardly, the cysts resemble boils. After dissection and healing of the cysts, dimples (atrophic scars) remain on the skin. In some cases, hypertrophic or keloid scars (excess skin) may form on the skin after cystic acne.

In the papulo-pustular form of acne, small pink and red nodules first appear on the skin, and later pustules with purulent contents inside.

They also distinguish fungal acne, which is caused by fungi and is accompanied by a small red rash on the chest and face.

Acne of newborns

Newborn acne usually develops within two to four weeks after birth and manifests as small, inflamed pimples on the face, neck, back, and chest. In babies, acne is usually caused by the mother's hormones before the baby is born.

In the case of newborn acne, care consists in daily washing of the child's face with warm water and a soft moisturizing soap (without lotions, ointments and oils). After washing, it is necessary to carefully wipe the child's skin dry, without rubbing and pressing on the pimples.

Acne in teenagers

Acne in teenagers develops due to an excess of sex hormones androgens and is manifested by comedones, papules and pustules on the face, neck, shoulders, chest and back. Acne treatments may include (Table 2):

- benzoyl peroxide. Reduces sebum production and has antibacterial properties;
- azelaic or salicylic acid. They reduce swelling, are used to treat skin discoloration, kill bacteria;
- retinoids for acne. Prevent clogging of hair follicles;
- antiandrogens. They are prescribed to block the action of androgenic hormones on the sebaceous glands;

In the case of nodular and cystic lesions, steroid injections can help reduce inflammation and relieve pain. The doctor can also recommend mesotherapy for the face — the introduction of vitamins and trace elements under the skin. Medical treatment for acne may include antibacterial drugs to fight the infection.

Table 2

Modern schemes of acne treatment					
Therapy	Acne severity				
	Light		Average		Difficult
	Comedonal	Papulo-pustular	Papulo-pustular	Nodal	Nodal
Drugs of first choice	Topical retinoids	Topical retinoids and topical antibiotics	Systemic antibiotics, topical retinoids and/or benzoyl peroxide	Systemic antibiotics, topical retinoids and/or benzoyl peroxide	Isotretinoin
Alternative	Azelaic or salicylic acid	Topical retinoids and (or) benzoyl peroxide	Systemic antibiotics, topical retinoids and/or benzoyl peroxide	Isotretinoin. Topical retinoids and/or benzoyl peroxide) or topical antibiotics	High-dose antibiotics, topical retinoids, and benzoyl peroxide
For women			Hormonal drugs (antiandrogens, oral contraceptives). Topical retinoids and/or benzoyl peroxide) or topical antibiotics	Hormonal drugs (antiandrogens, oral contraceptives). Alternative: topical retinoids and/or benzoyl peroxide) or topical antibiotics	Hormonal drugs (antiandrogens, oral contraceptives) Alternative: topical retinoids and (or) benzoyl peroxide) or topical antibiotics

Also, such patients are recommended to consult a gastroenterologist and an anti-acne diet, which involves the rejection of foods with a high glycemic index (white rice, sugar, and pasta), chocolate, as well as dairy products, saturated fats and trans fats. *Recommended diet for acne:*

- complex carbohydrates (whole grains, unprocessed fruits and vegetables, legumes);
- foods containing zinc (beef, seafood, pumpkin seeds, lentils, cashews);
- vitamin A (peaches, carrots, broccoli, melons);
- vitamin E (fish, shrimp, avocado, asparagus, spinach);
- antioxidants (blueberries, blackberries, cranberries, prunes, raspberries).

It is also recommended to include omega-3 fatty acids in the diet in the case of acne, which are found in

red fish, mackerel, flax and chia seeds, soybeans. Following an acne diet will help reduce inflammation and prevent acne breakouts.

To reduce the risk of exacerbation of acne on the cheeks and the appearance of new blackheads, washing no more than twice a day with warm water with a special product (gel, foam) designed for skin with acne. It is important that the product is selected by a dermatologist, as each drug has a different composition and may be contraindicated individually.

Prevention of acne:

- refuse face and body scrubs if you have acne (scrubbing can lead to the spread of infection and the appearance of new inflammations);
- do not squeeze pimples yourself. Squeezing pus from pustules can lead to scarring;
- always remove makeup before going to bed (prevents clogging of pores);

- try to touch your face less with your hands;
- during a conversation, hold the phone so that it does not touch your face;
- wash your hands before applying face care products or make-up;
- regularly wash makeup brushes;
- use special cosmetics for acne that do not contain fats and substances that cause clogging of pores. Cosmetics must have a "non-comedogenic" label;
- try to avoid stress (increases the levels of cortisol and adrenaline, which leads to excessive production of sebum).

In the case of acne on the forehead and chin, it is important to avoid prolonged exposure to the sun, as the sun's rays lead to increased activity of the sebaceous glands. If you use topical retinoid or have recently completed acne treatment, exposure to direct sunlight may cause skin burns or age spots. When using retinol for acne, it is mandatory to apply sunscreen to the skin.

One of the most modern methods of acne treatment is laser therapy, which can be used to remove scars and scars after acne.

Laser treatment of acne:

1. The dermatologist applies a local anesthetic to the damaged skin.
2. The doctor directs a high-frequency beam at the scars and scars left after acne and «vaporize» them under the influence of high temperatures.
3. Under the influence of the laser, the pathological areas of the skin are destroyed, leading to the formation of a crust that falls off on its own within a week.

Laser therapy is contraindicated in case of skin cancer, impaired blood coagulation, infectious process of the skin, as well as in case of febrile condition. Laser removal is not performed in the case of skin inflammation (in particular, in the case of "active" acne) due to the risk of worsening the condition and progression of the disease.

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