

Pathogenesis and Treatment of Acne Vulgaris

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DESCRIPTION

Acne vulgaris is a common chronic skin disease characterized by blockage and/or inflammation of pilosebaceous units (hair follicles and associated sebaceous glands). Acne can appear as non-inflammatory lesions, inflammatory lesions, or a mixture of both and primarily affects the face, but also the back and chest. Acne affects approximately 85% of teenagers but it can occur at any age and often persists into adulthood.

Overproduction of sebum is the result of increased sensitivity of the sebaceous glands to excess androgenic hormones, or to normal levels of androgenic hormones. Activation of inflammatory pathways is evident at all stages of acne progression. Acne also has a genetic component. Certain foods and drinks, especially those with a high glycemic index (e.g., sugary drinks, starchy foods, highly processed foods) and skim milk, appear to influence acne severity. Other factors that may contribute to the onset or progression include psychological stress, cigarette smoke, and damaged or unhealthy skin.

Acne is mainly caused by the interplay of four factors.

- Excessive production of sebum
- Occlusion of hair follicles by sebum and keratinocytes
- Colonization of follicles by *Cutibacterium acnes* (formerly *Propionibacterium acnes*), a common human anaerobic bacterium
- Release of multiple inflammatory mediators

Acne vulgaris is caused by a combination of hormones, oils and bacteria. In addition to hormonal changes, lifestyle factors such as diet and skin care can also affect breakouts. The most common trigger is puberty.

During puberty, surges in androgens stimulate sebum production and keratinocyte hyper proliferation.

Other triggers include hormonal changes that occur during pregnancy or during the menstrual cycle. Occlusive cosmetics, detergents, lotions, clothing, high humidity, and sweating are also causes for acne.

The association between exacerbations and improper facial cleansing and masturbation is unfounded. Some studies suggest a possible link between dairy products and a high-glycemic diet. Acne may abate during the summer due to the anti-inflammatory effects of sunlight. Proposed associations between acne and hyperinsulinism require further investigation. Some drugs like corticosteroids, lithium, phenytoin, and isoniazid can make acne worse or cause a pimple-like rash.

Treatment of acne depends on the severity and location of the skin. Effective topical treatments are available over-the-counter and by prescription, and come in multiple formulations (washes, creams) and strengths that permitting individualized treatment. Mild acne may be treated with over-the-counter topical creams, gels, and washes containing benzoyl peroxide or salicylic acid. Benzoyl peroxide targets acne-causing bacteria and is found in Over-The-Counter (OTC) acne products such as panoxyl acne foaming wash and clean & clear continuous control acne cleanser. Side effects of benzoyl peroxide include burning, dryness, stinging, erythema, sensitivity, and bleaching of hair and clothing. Salicylic acid reduces inflammation and unclogs pores.

Retinoids are vitamin A derivatives recommended as components of first-line treatment of non-inflammatory acne and most inflammatory acne, regardless of severity. Retinoids are effective against microcomedo and comedo formation and have anti-inflammatory effects. Moderate acne is often treated with oral antibiotics such as doxycycline, minocycline, azithromycin, erythromycin, and tetracycline. Doctors may suggest using one of these topical treatments for about 12 weeks, and then stop the oral medication to see if acne can be kept under control with just the topical option.

Severe acne can be treated with antibiotics and topical medications. If these drugs fail to treat acne, doctors may suggest the oral drug zenatane (isotretinoin). This drug can cause birth defects.

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