Acne Vulgaris Presentation and Pathophysiology

Acne is a common disorder of the skin characterized by recurrent or chronic papules/comedones, pustules, or nodules most commonly localized to the face but also appearing on the trunk, neck, and shoulders. Acne occurs as a result of inflammation of the pilosebaceous unit, which consists of the hair follicle and sebaceous gland. Multiple underlying factors are thought to contribute to this inflammation, such as increased androgen production (hence acne being especially common among adolescents), increased sebum production, abnormal keratinocyte desquamation, and colonization by Cutibacterium acnes. Treatment of acne depends on severity and can be conceptualized in a step-wise fashion, and will be discussed in a separate Picmonic.



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Presentation

Papules/Comedones in Mild Cases

Papule plaque people saying "come-on" at bottom of mountain

Acne is characterized by the presence of papules, pustules, or nodules localized to the face, neck, and/or trunk. Recall that papules are solid raised lesions under 5mm in diameter, and in the context of acne are aso sometimes referred to as comedones, which can be further described as closed comedones (whiteheads) or open comedones (blackheads). Papules in isolation are typically seen in mild cases of acne.

Blackheads Open, Whiteheads Closed

Black man with open-book, white man with closed-book

Comedones are frequently further described as being "open" or "closed" comedones. Open comedones are characterized as papules with a central, dilated follicular orifice containing gray, brown or black keratotic material and are referred to in layman's terms as "blackheads". Closed comedones are dome-shaped, skin colored and white to gray colored and referred to as "whiteheads".

Pustules in Mild-Moderate Cases

Erupting pus-pustule midway up mountain

Pustules are characteristic of slightly more severe cases of acne. Recall that pustules are defined as a raised exudative or purulent lesion localized to the epidermis.

Nodules/Cysts in Severe Cases

Sisters with doorknobs

Severe cases of acne are characterized by the presence of nodules or cysts. Recall that nodules are defined as solid-raised lesions greater than 5mm in diameter, and a cyst is a fluid-containing pocket that is typically greater than 5mm. Technically, cysts are rarely found even in severe cases of acne, however severe acne with the presence of nodules is often incorrectly referred to as "cystic acne".

Pathophysiology

Inflammation at Hair Follicle/Sebaceous Gland

Follicles on saber-tooth-fish by fire

Acne is caused by inflammation at the pilosebaceous complex, areas in the skin containing sebaceous glands and hair follicles. Recall that sebaceous glands produce sebum, which is thought to act as a growth medium for C acnes, the bacterium thought to be responsible for some of the inflammation leading to the clinical manifestations of acne.

Increased Androgens

Up-arrow Android-genie Thinks-of-Loot

Increased androgens are thought to contribute to the development of acne. It is thought to contribute by increasing the growth and activity of sebaceous glands. Given there is increased androgen production during adolescence, this explains why acne is especially prevalent among teenagers.

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Colonization by Cutibacterium Acnes

Cutie-bacteria with acne

Cutibacterium acnes (previously known as Propionibacterium acnes) is thought to colonize pilosebaceous follicles which thereby leads to inflammation and the subsequent skin manifestations seen in acne. C. acnes thrives in this environment specifically due to the production of sebum, which is thought to serve as an ideal growth medium.

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