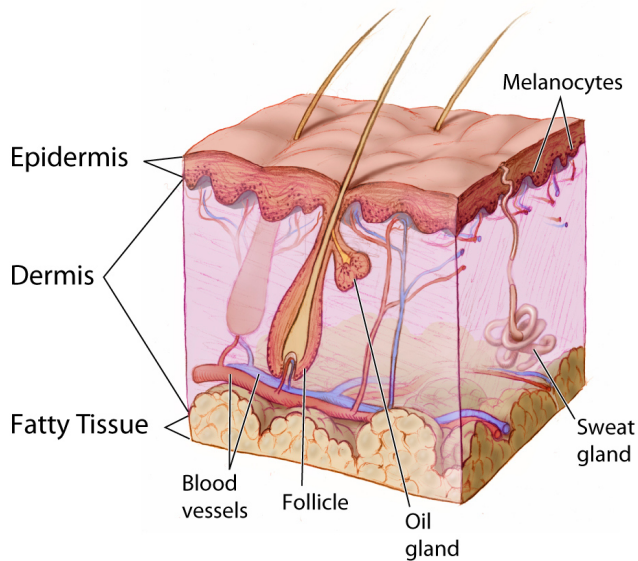


432 Teams

Dermatology



Acne Vulgaris



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Reviewer: *Name Al-Name*

Team Leader: *Basil AlSuwaine*

Objectives

Not given



Introduction

What is Acne?

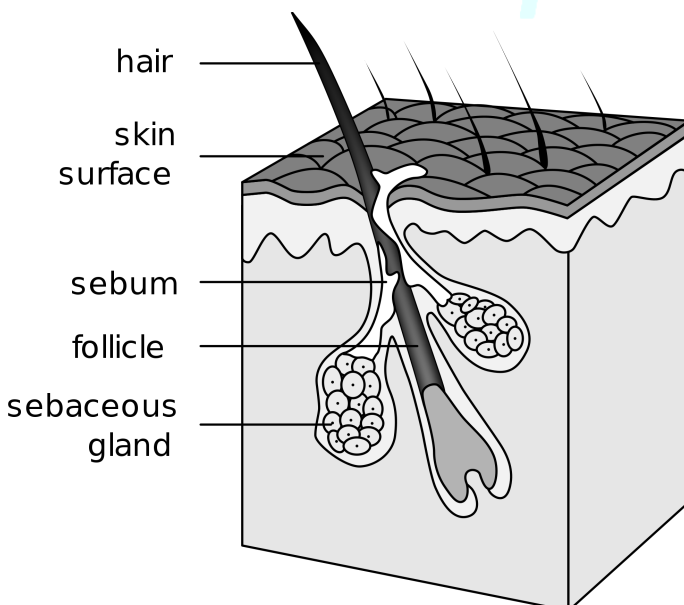
Acne vulgaris is a common chronic skin disease involving blockage and/or inflammation of pilosebaceous units (hair follicles and their accompanying sebaceous gland). Acne can present as noninflammatory lesions, inflammatory lesions, or a mixture of both, affecting mostly the face but also the back and chest.

Why it's important?

- 85 % adolescents experience it
- Prevalence of comedones (lesions) in adolescents approaches 100%
- Acne vulgaris is the most common cutaneous disorder in the U.S .
- 10 percent of all patient encounters with primary care physicians .
- Patients can experience significant psychological morbidity and, rarely, mortality due to suicide. (could come from the treatment or from the acne itself)
- Important that physicians are familiar with Acne Vulgaris and its treatment.

What is pilosebaceous unit?

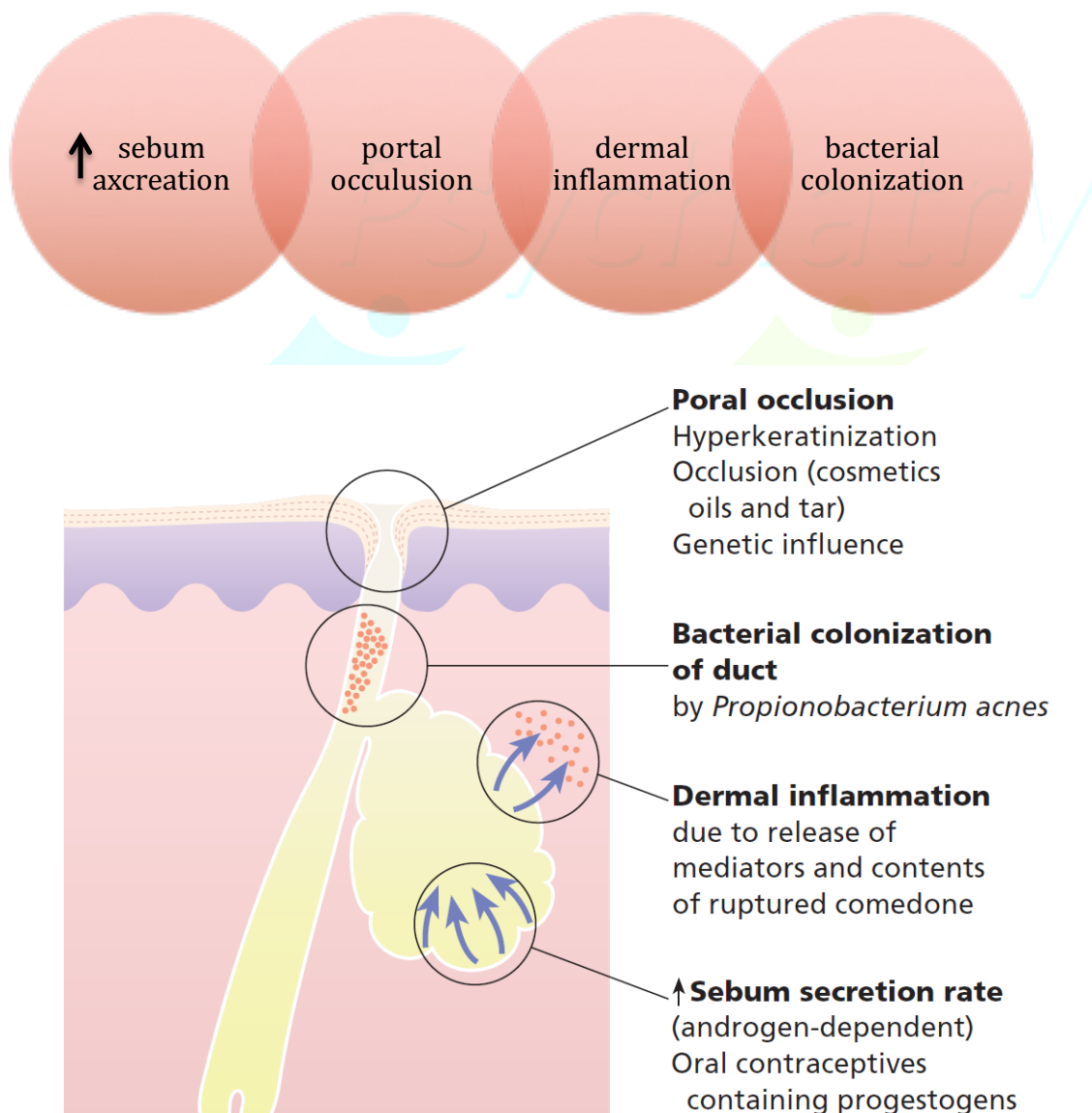
- These units consist of hair follicle and the associated sebaceous glands.
- They are connected to the skin by a duct (infundibulum) through which the hair shaft passes.



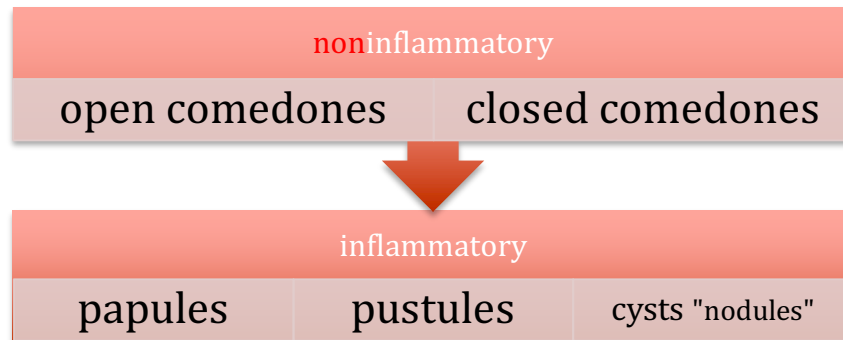
Pathogenesis

Acne vulgaris has a multifactorial pathogenesis, of which the key factor is genetics. Acne develops as a result of interplay of the following four factors:

- **Hormonal rule:** Androgens are the main stimulants of sebum production
- **Portal occlusion:** some cosmetic products (MAKE UP) block the portal cause the epithelium overgrow the follicular surface (Follicular Keratinization)
- **Bacterial:** P.acne causes two things: 1- it contains lipase, which converts the sebum to free fatty acid, which is irritant to the skin. 2- produces proinflammatory mediators (IL-1 TNF)
- **Dermal inflammation.**



Types of Acne



noninflammatory:

Comedones: hyperkeratotic plug made of sebum and keratin in follicular canal.

- Closed comedones (whiteheads)
- Open comedones (blackhead)*

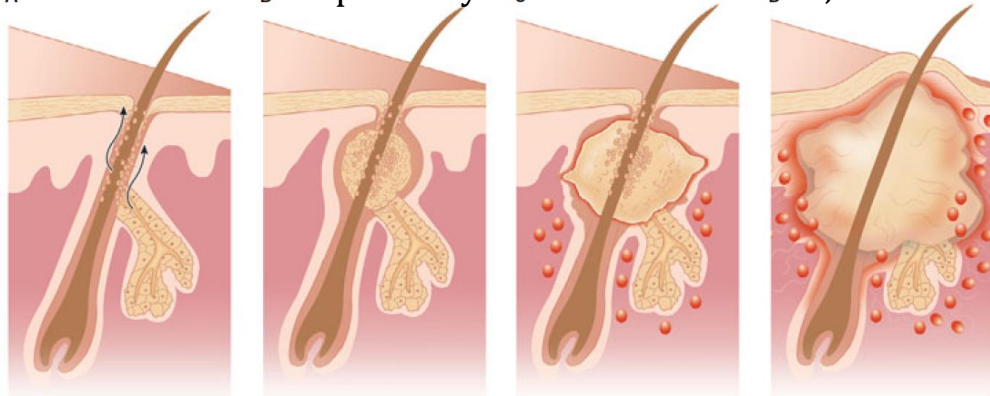
*Blackheads are black because of oxidized free fatty acid, not dirt.

Inflammatory:

Acne characterized by inflammation surrounding the comedones, papules, pustules, and nodulocystic lesions. It may cause permanent scarring.

- **Papules:** are less than 5 mm in diameter.
- **Pustules:** have a visible central core of purulent material.
- **Cysts: When** follicles rupture into surrounding tissues. Are greater than 5 mm in diameter, may become suppurative or hemorrhagic.

Normal sebum does not contain free fatty acids and is nonirritating, however, in the presence of biolytic enzymes produced by (P.acne), triglycerides of the sebum are split and release fatty acids which are irritating to the tissue. The inflamed follicle or pustules either heal in about a week or develop in to cyst or sterile abscesses, which can lead to scaring.



Microcomedone
 • hyperkeratotic infundibulum
 • cohesive corneocytes

Comedone
 • accumulation of shed corneocytes and sebum

Inflammatory papule/pustule
 • further expansion of follicular unit

Nodule
 • rupture of follicular wall
 • marked perifollicular inflammation

Classifications , Aggravating (factors,Medications)

Classification of Acne:

- Typical mild acne: comedones predominate
- More severe cases: pustules and papules predominate, heal with scar if deep
- Acne Conglobata: suppurating cystic lesions predominate, and severe scarring results

Aggravating Factors:

- Change in sebaceous activity and hormonal level (e.g. before or during premenstrual cycle)
- High humidity conditions
- Local irritation or friction
- Rough or occlusive clothing
- Cosmetics(having greasy base) **comedogenic – it causes blocking.**
- Diet;chocolate,nuts,fats colas,or carbohydrates.
- Oils greases , or dyes in hair product. **Moisturizers or emollients are good but not in the face it will cause acne.**

Medications that can cause acne:

- ACTH
- Azathioprine
- Barbiturates
- Isoniazid
- **Lithium**
- Phenytoin Disulfiram
- Halogens
- Iodides
- **Steroids**
- Cyclosporine
- Vitamins B2, 6,12

Treatment

The key of acne treatment is to treat early

- Depends on type of clinical lesions
- Microcomedone matures in 8 weeks
- Therapy must continue beyond this time frame
- Considerable heterogeneity in the acne literature, and no clear evidence-based guidelines are available

➤ **Ingredients in Over The Counter (OTC) products:**

- Sulfur 2-10 % other forms, such as zinc sulfide or sodium thiosulfate.
- Sulfur presents a paradox in that it helps resolve formed comedones but may promote the formation of new ones. Due to this comedogenic effect, the use of salicylic acid or resorcinol is preferred.
- Benzoyl peroxide;(5 to 10%)a primary irritant.
- Salicylic acid is used in concentration of 0.5 to 2%.
- Applied at night after washing the affected area with soap and water.
- Resorcinol (1 to 4%) may produce a dark brown scale on some black- skinned people.

➤ **Tretinoin Transe Retinoic Acid:**

- The acid form of vitamin A, is a strong primary irritant.
- The products are applied at night. They cause a feeling of warmth or slight stinging .
Optimum
- Results occur in 3 to 4 months.
- Care should be taken to avoid touching with eyes, nose, and mouth with tretinoin.
- Exposure to strong sunlight should be avoided because of the increased sensitivity of the skin.
- Does not cause the toxic effects of a large doses of vitamin A

➤ **Antibiotics:**

- Tetracycline and some other antibiotics orally administered reduce bacterial population and the concentration of the fatty acids in the sebaceous follicle.
- Topical antibacterial agents generally are ineffective, because acne is not an infection.
- ERYTHROMYCIN: **the antibiotic of choice in pregnancy**
- Erythromycin reduces level of fatty acid of the follicles. It is lipid soluble antibiotics which can
- Penetrate the sebaceous follicle
- **Minocycline is the BEST.**

Management

Comedonal Acne:

Other topical agents: Useful when topical retinoids not tolerated

- Salicylic acid (promotes desquamation)
- Azelaic acid (antimicrobial, reduces hyperpigmentation)
- Glycolic acid
- Sulfur in OTC rx (keratolytic)

Mild to moderate inflammatory Acne:

- Benzoyl peroxide: (antimicrobial, anticomedonal, pregnancy risk)
- Topical antibiotic
- Combination of both
- Combination rx more effective than mono in increased inflammatory lesions.
- **Combination therapy is best, using benzoyl peroxide-erythromycin gels plus topical retinoids**

Moderate to severe Acne:

- **Oral isotretinoin:** It is routinely given for 4–6 months only, in a dosage of 0.5–1 mg/kg body weight/day
 - MOA: Reduces sebaceous gland size/sebum production
 - MOA: regulates cell proliferation and differentiation
 - Effect last 1 year after cessation
 - Only med altering course of A. Vulgaris
 - **Oral isotretinoin leads to complete remission in almost all cases, which last for months to years in the majority of patients.**
 - **oral antibiotics:**
 - Tetracycline -erythromycin
 - TMP-SMX -Clindamycin
 - Minocycline -Deoxycycline
- Given daily over 4-6 mo ,with taper.

Oral isotretinoin:

1. A full blood count, liver function tests and fasting lipid levels should be checked before the treatment and every month after starting the treatment (especially LFTs).
2. Isotretinoin is highly teratogenic: missing limb (infant without limb/s).
FDA practice rules:
 - 2 negative pregnancy tests before treatment Pregnancy test each month (bring patient in)
 - Pregnancy risk patients must use 2 contraceptive for at least 1 month prior to treatment
3. Suicidal/depression risk.
4. Other side-effects of isotretinoin include a dry skin, dry and inflamed lips and eyes, nosebleeds, facial erythema, muscle aches, hyperlipidemia and hair loss

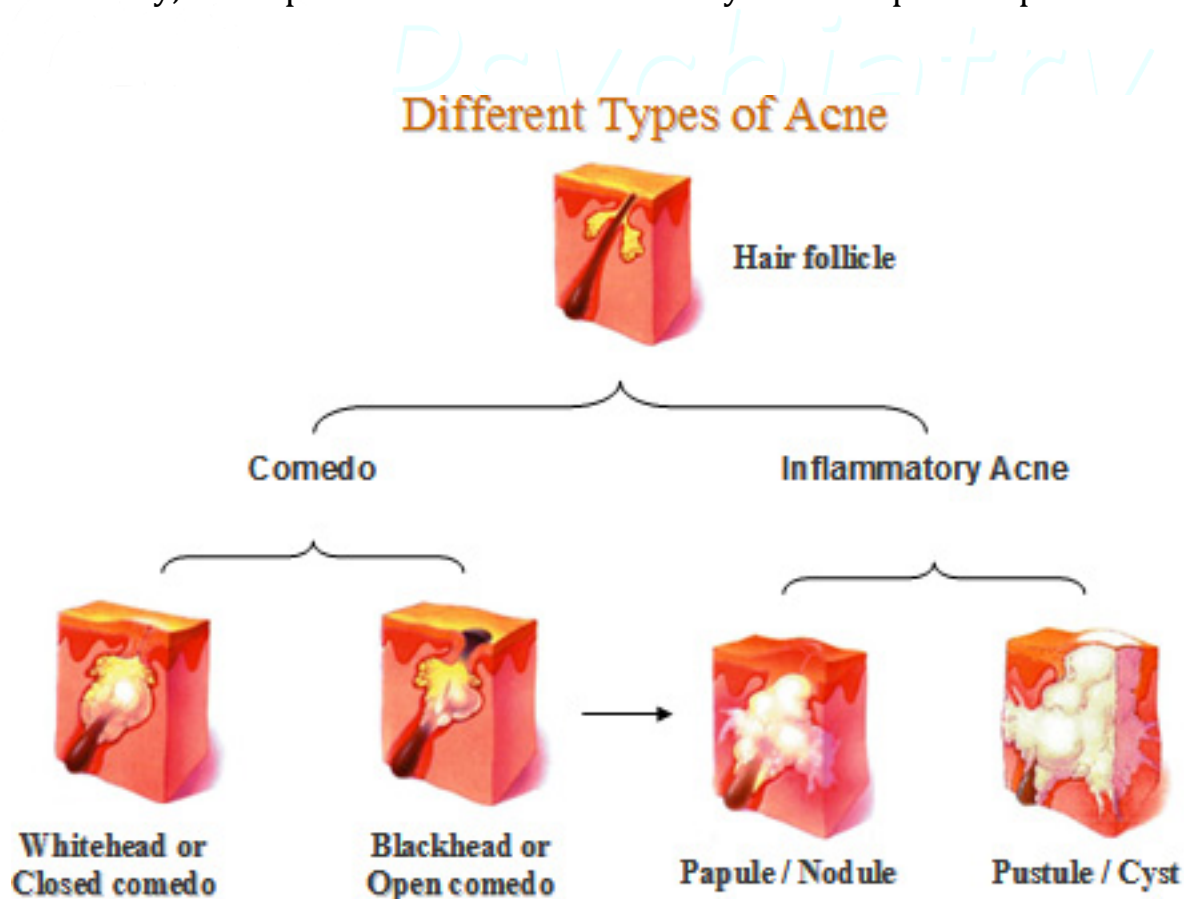
Patients FAQs (Frequently Asked Questions)

- Soaps, detergents remove sebum but do not alter production
- Avoid occlusive clothing
- Water based cosmetic better than oil based
- Diet modification no role in Rx

1. **Tetracycline** : Even with long courses, serious side-effects are rare, although candidal vulvovaginitis may force a change to a narrower spectrum antibiotic such as erythromycin , or Antifungal is given along with tetracycline. Both tetracycline and isotretinoin may cause Pseudotumor cerebri (benign intracranial swelling leading to increased intracranial pressure i.e Headache) should not be taken in pregnancy or by children under 12 years as they are deposited in growing bone and developing teeth, causing stained teeth and dental hypoplasia
2. **Minocycline**: liver abnormalities + lupus-like syndrome + pseudotumor cerebri + it may cause pigmentation (rare)
3. **Deoxycycline**: Photosensitivity

Summary

- An inflammation of pilosebaceous units, very common
- Appears in certain body areas (face, trunk, rarely buttocks)
- Most frequently in adolescents
- Manifests as comedones, papulopustules, nodules, and cysts
- Results in pitted, depressed, or hypertrophic scars
- The three most important factors are Sebum, Hormonal and bacterial.
- Acne conglobate is the most severe form of acne (cysts)
- Never prescribe short courses of many different antibiotics.
- Avoid tetracyclines in children and pregnant women.
- Make sure that females with acne are not pregnant before you prescribe isotretinoin, and that they do not become pregnant during the course of Treatment and for 3 months after it.
- Look out for depression in patients taking isotretinoin. If it occurs, stop the Drug immediately, seek specialist advice and review your therapeutic options.



Quiz

1-A patient diagnosed as having drug-induced acne, what is the most likely drug?

- a) Carbamezapine
- b) Metformin
- c) Benzyl peroxide
- d) Lithium

2- A patient is concerned his acne will leave hyperpigmentation. which lesion is more likely to cause such a complication?

- a) Comedones
- b) Papules
- c) Nodulocystic lesion
- d) Plaques

3- 23 years old patient with Acne, you want to initiate treatment with minocycline and patient is refusing due to one of its side effects, which side effect is it?

- A- Tooth discoloration.
- B- Hyperpigmentation
- C- Photosensitivity
- D- Renal failure

4- What is the early event in the pathogenesis of acne?

- a) Follicular occlusion.
- b) Excess Sebum.
- c) Bacterial colonization.

Which Of the following is most implicated in the pathogenesis of acne:

- a. Follicular hyperkeratosis
- b. Seborrhic keratosis
- c. Follicular mucinosis
- d. ~~OB~~- Vitamin D deficiency
- b)

ans: D-C-B-A-A