433 Teams

DERMATOLOGY

Lecture (1)

Acne Vulgaris

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Objectives:

Not given

Color index: slides, doctor notes, 432 notes

Introduction:

Acne vulgaris is a common chronic skin disease involving blockage and/or inflammation of **pilosebaceous units**.(hair follicles and their Accompanying sebaceous gland)

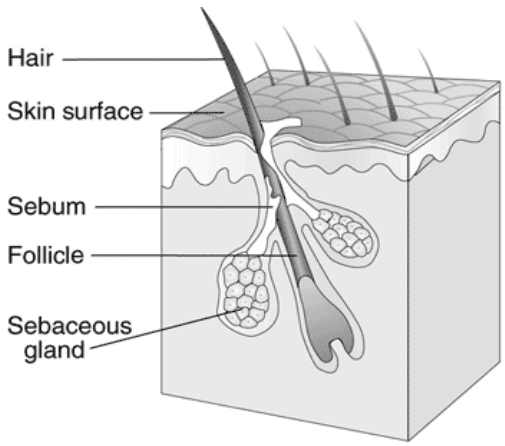
What is pilosebaceous unit?

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.

Why do we study Acne?

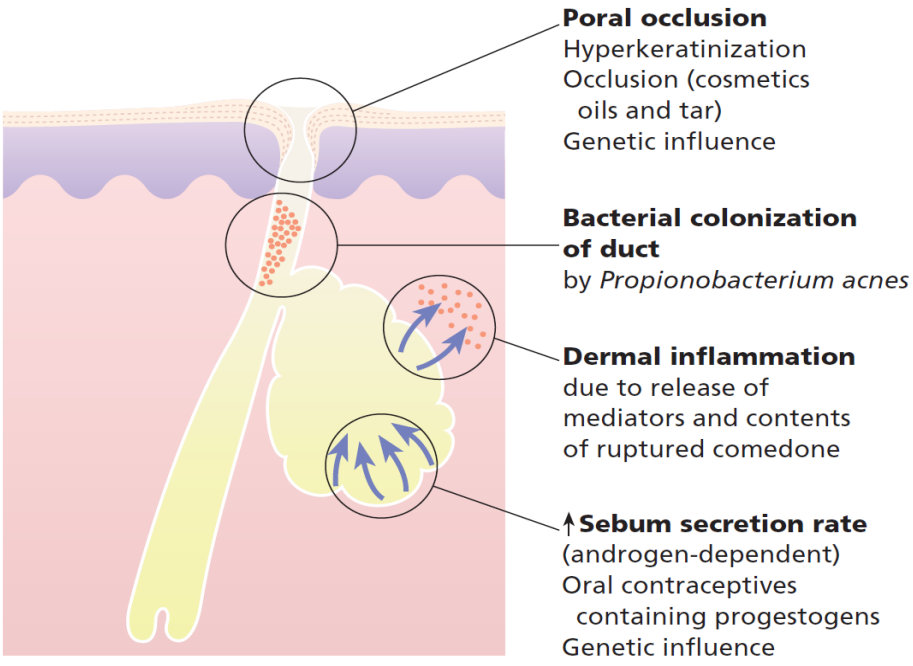
- 85% adolescents experience it.
- Prevalence of comedones (lesions) in adolescents' approaches 100%.
- Acne vulgaris is the most common cutaneous disorder in the U.S.
- 10 percent of all patient encounters with primary care physicians.
- Pts can experience significant psychological morbidity and, rarely,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



Pathogenesis:

Acne develops as a result of interplay of the following four factors:

- **Hormonal rule:** **Androgens** are the main stimulants of sebum production by making sebaceous glands bigger and by increasing 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 (ILT1 TNF).
- **Dermal inflammation.** **As a result of releasing the sebum due to destruction of the comedones.**



Types of acne:

Non inflammatory:

o Closed comedones (whiteheads).

o Open comedones (blackhead) due to oxidation of free fatty acids.

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

Inflammatory:

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

Papules: **A small, circumscribed elevation of the skin less than 1 cm.**

Pustules: **have a visible central core of purulent material (pus).**

Cysts: **When follicles rupture into surrounding tissues, may become supportive 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.

Severity of acne:

o mild acne: comedones predominate.

o More severe cases: pustules and papules predominate, heal with scar if deep.

o 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.

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 o.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.
- Results occur in3 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:

- Topical antibacterial agents generally are ineffective, because acne is not an infection
- Tetracycline and some other antibiotics orally administered reduce bacterial population and the concentration of the fatty acids in the sebaceous follicle.
- **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:

- 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 is 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:

1- Reduces sebaceous gland size/sebum production

2- 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 (one of the side effects is Pseudo tumor cerebri (benign intracranial swelling leading to increased intracranial pressure i.e Headache)- should not be taken in pregnancy)

Minocycline (side effects include liver abnormalities + lupus like syndrome + pseudo tumor cerebri + it may cause pigmentation)

Erythromycin ▪ TMPTSMX ▪ Clindamycin

- Doxycycline (photosensitivity)

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 contraceptives 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.

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) Nodulocyctic lesion d) Plaques

3- 23 years old patient with Acne, you want to initiate treatment with minocylcline 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.

5-Which of the following is most implicated in the pathogenesis of acne:

a) **Follicular hyperkeratosis b) Seborrheic keratosis c) Follicular mucinosis d) DT Vitamin D deficiency**

ans: D-C-B-A-A

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