Dermatology Team 441

MED441
KING SAUD UNIVERSITY

BH
Bassam Alhubaysh
REVIEWED BY

Acne Vulgaris & its related disorders

Objectives:

- To know the multiple pathogenetic mechanisms causing acne.
- To recognize the clinical features of acne.
- To differentiate acne from other acneiform eruptions such as rosacea.
- To prevent acne scars and treat acne efficiently.
- To recognize the clinical features of rosacea, it's variable types, differential diagnosis and treatment.
- To recognize the features of perioral dermatitis, differential diagnosis and treatment.
- To recognize the features of hidradenitis suppurativa and treatment.

Color index:

- Main text
- Important
- Dr's explanation
- Golden notes
- Extra

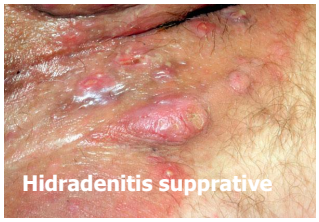
Dermatology Team 439

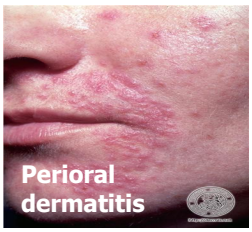
DERMATOLOGY TEAM 438

This lecture was originally done by both 438 & 439 teams.
So great thanks to them

Acne vulgaris and related disorders

Main subtopics





A)Acne Vulgaris

- Acne is an old disease, the problem dated back to the pharaohs in the Egypt 4000 years ago
- Multifactorial disease pilosebaceous unit
- Affects both male & female
- The most common dermatological disease
- Mostly prevalent between 12-24 yrs.
- affects 8% between 25-34, 4% between 35-44.
- it's a chronic disease originating within the pilosebaceous follicles.

Four interrelated processes are involved:

- ➔ Sebum overproduction
- ➔ Abnormal shedding of follicular epithelium
- ➔ Follicular colonization by Cutibacterium acnes (previously called Propionibacterium acnes)
- ➔ Inflammation

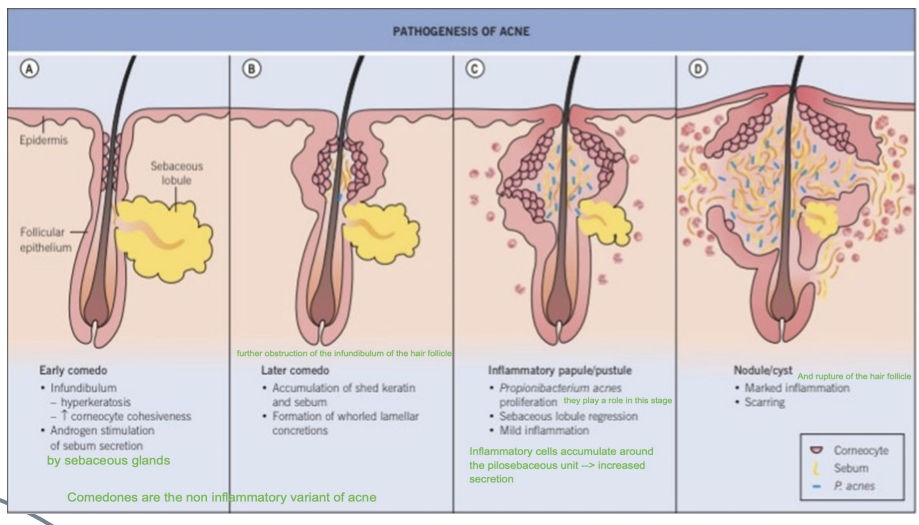
Pathogenesis:

-Ductal cornification occlusion **(micro-comedo),** it is pathognomonic of acne (characteristic). due to altered keratinization (micro-pathogenesis).

-Increased sebum secretion (Seborrhoea). Altered keratinization due to increase cell production (cornification) that lead to occlusion, dilation of sebaceous gland and increase sebum production (non inflammatory acne).

-Ductal colonization with propionibacterium acnes. Manipulation and scratching of comedone lead to bacterial colonizations that lead to inflammation (it is non infectious inflammation).

-Rupture of sebaceous gland and inflammation. Inflammation characterized by redness and pus (inflammatory acne).



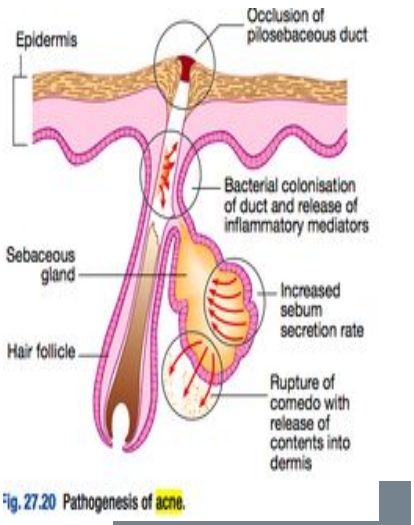
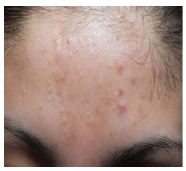
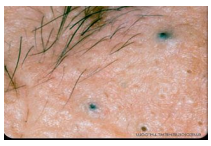


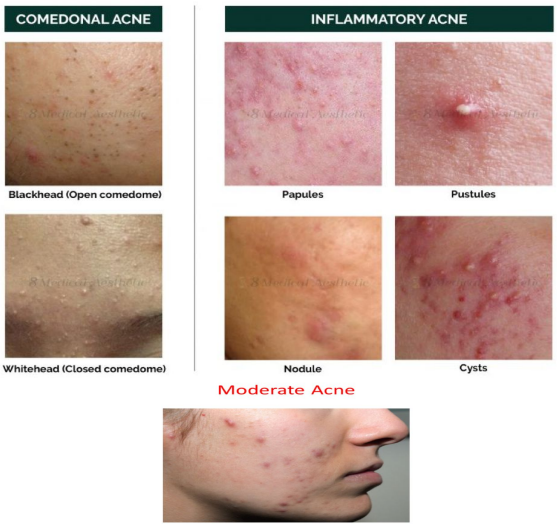
Fig. 27.20 Pathogenesis of acne.

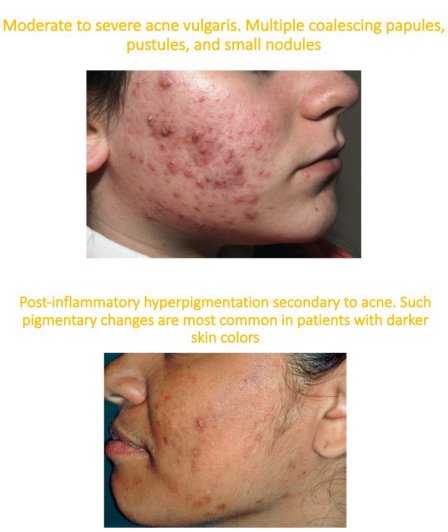
Acne vulgaris

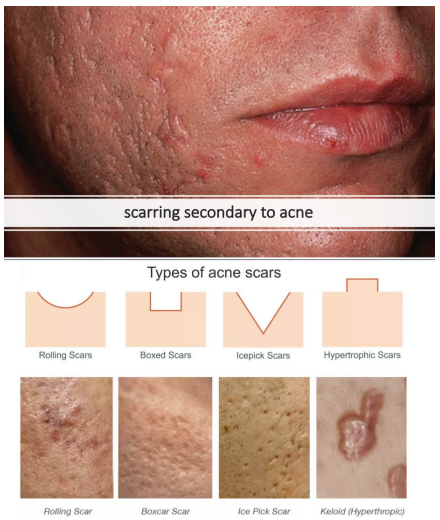
Microcomedone: (Pathognomonic)
Hyperkeratotic plug made of sebum and keratin in follicular canal.

Close vs Open comedone (MCQ)

Closed comedone (white head)	Open comedone (Black head)
• Closed follicular orifice, accumulation of sebum and keratin. 	• Open follicular orifice with melanin and oxidized lipid due to exposure to O_2 that lead to karatin oxidation. 





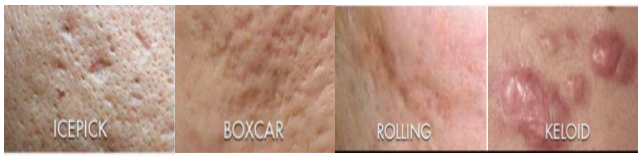


Clinical features

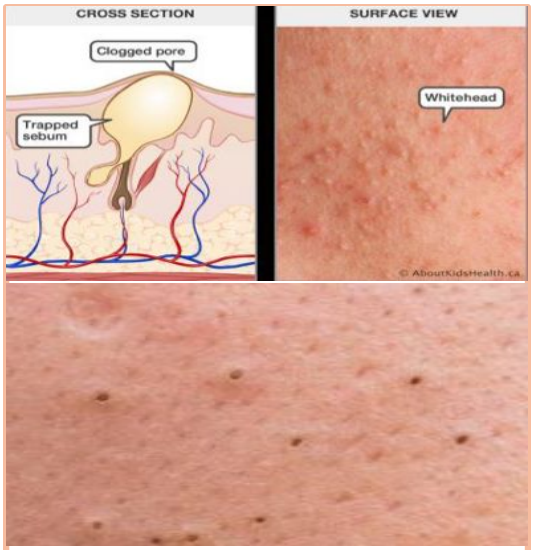
- **Acne lesions are divided into:**
  1- Inflammatory lesion (papules, pustules, nodules, cyst).
  2 - non inflammatory lesion (open, closed comedones).
- **The comedones are the pathognomonic lesion.**
- **Seborrhea.**
- **Post inflammatory hyperpigmentation.**
- **Scaring (Atrophic and hypertrophic)**
- Lesion predominate in sebaceous rich gland including **face,chest, upper arm and upper back.**
- When follicles rupture into surrounding tissues they result in inflammatory lesion (we treat acne early to avoid these things):
  1-papules. 2-pustules. 3-nodules. 4- cyst.
- The severity of acne ranges from mild, moderate, severe according to the predominant lesion.
- **Comedon predominance is considered to be mild,** while extensive papulopustules and nodules or **cysts are considered severe.**
- Acne has psychosocial impact which is involved in determining the severity.

Types of scar

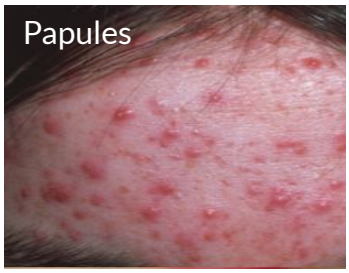
- **Ice pick scar.**
- **Boxcar scar.**
- **Rolling.**
- **Keloid.**

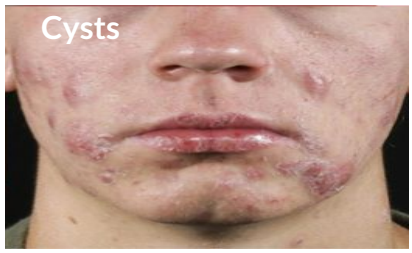


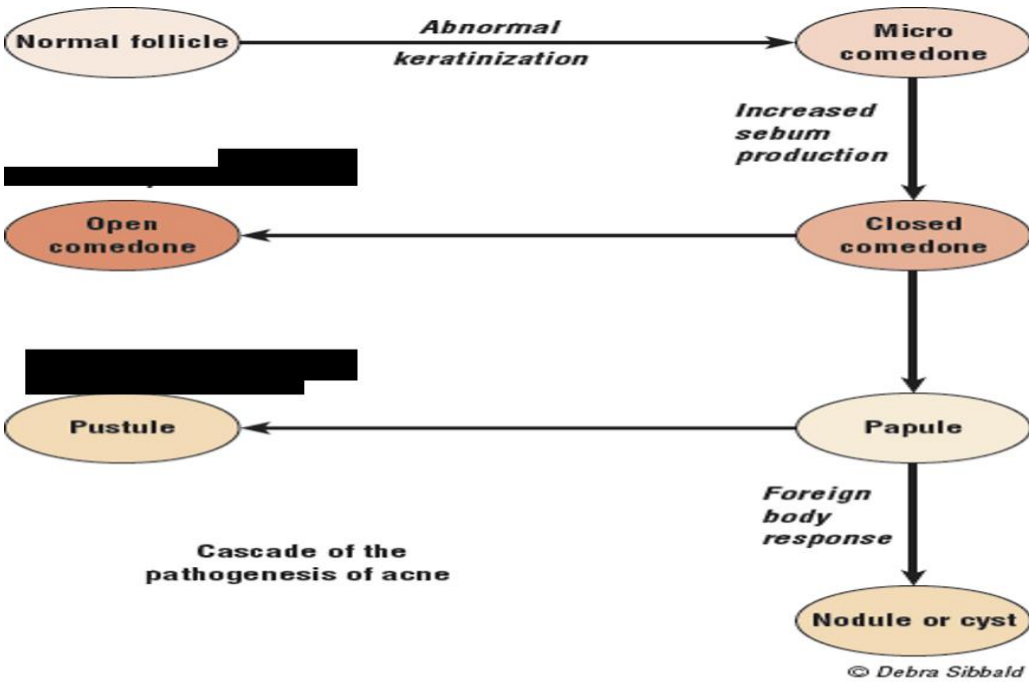
Acne vulgaris



Non inflammatory lesions
closed and open comedones







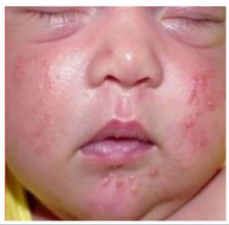
Cascade of the pathogenesis of acne

Source: J.T. DiPiro, R.L. Talbert, G.C. Yee, G.R. Matzke, B.G. Wells, L.M. Posey: Pharmacotherapy: A Pathophysiologic Approach, 10th Edition, www.accesspharmacy.com

Acute subtypes

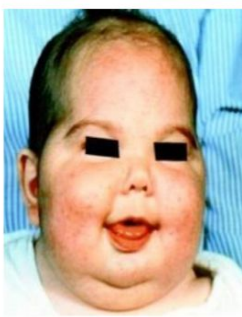
Neonatal acne

- Onset between 0-6 w of age.
- Characterized by closed comedones.
- Resolve spontaneously within 1-3 months.
- No relation with later development of acne.



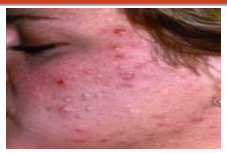
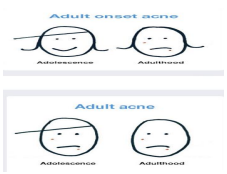
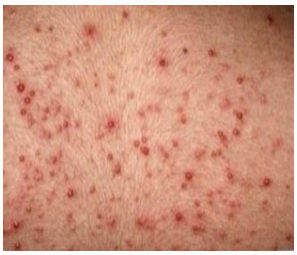
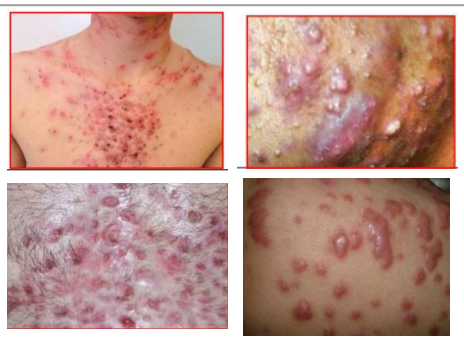
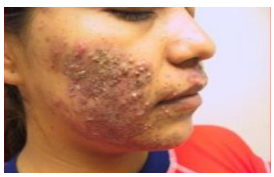
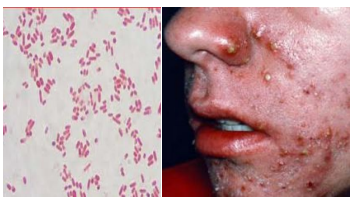
Infantile acne

- Onset between 3-6 m.
- Characterized by inflammatory lesions.
- Can be associated with precocious androgen secretion to **brain (hamartoma and astrocytoma).**
- Think of hormonal issues that could continue with him throughout his life, must be treated.
- **Endocrinology examination (LH)** and **bone age** is important.
- There is increased risk of development of severe acne later in life.



Acne vulgaris

Acute subtypes (cont')

Teenage acne	• More in boys. **(Most common disease derma)** • Mainly comedonal. • May be the first sign of puberty. 
Adult acne	• Affects adults above 25 years. • Can be continuation of teenage acne or start denovo. • IF associated with hirsutism, irregular periods evaluate for hyper secretion of ovarian androgens (e.g. **Polycystic ovary syndrome**). 
Drug induced acne	• Steroids, Iodides, Bromides, INH, Lithium, Phenytoin, Epidermal growth factor inhibitors (cetuximab) cause acneiform eruption. • The characteristic feature of **steroids acne is the absence of comedones** and **monomorphic lesions** as small pustules and papules all looking alike. It has a predilection to the chest & back 
Acne conglobata	• Highly inflammatory (severe form of acne); with comedones, nodules, abscesses, draining sinuses, over the back and chest. • Often persist for long periods. • Affect males in adult life (18-30 years). • **Heal with scars (Depressed or Keloidal).** • **No systemic involvement in acne conglobata.** 
Acne Fulminans	• Sudden massive inflammatory tender lesions with ulceration Heals with scarring. • Associated with fever, increased ESR & CRP, polyarthralgia, Leukocytosis. Systemic involvement. • The patient might needs admission. 
Occupa -tional acne	• Due to contact with **oils – tars –chlorinated hydrocarbons** used in the synthesis of insecticides and solvents. • Lesions appear at site of contact including large comedones, papules,pustules, nodules. • The most serious form is the chloracne due to systemic effect (liver damage, CNS involvement, decrease lung vital capacity).
Gram negative folliculitis	• Infection with G –ve organisms (Klebsiella, proteus, E.coli). • Seen in patients under chronic antibiotic acne treatments. • Superficial pustules without comedones or even cysts involving from intranasal area to chin and cheeks. • Response to ampicillin, Isotretinoin and TMP-SM. 

Aggravating Factor

01 **Diet has not relation to acne**

02 **Pre menstrual flare**

03 **Sweating**

04 **UV Radiation**

05 **Stress**

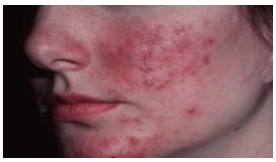
06 **Friction**

07 **Cosmetics**

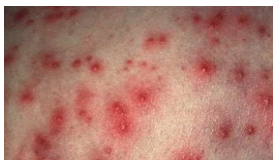
Acne vulgaris

Differential diagnosis for acne vulgaris

Rosacea

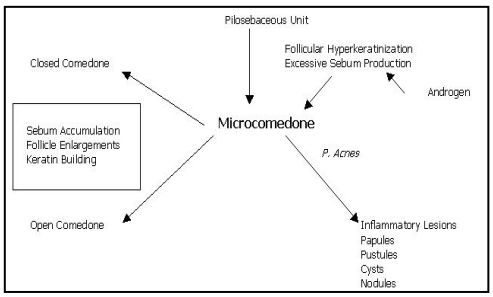


Folliculitis



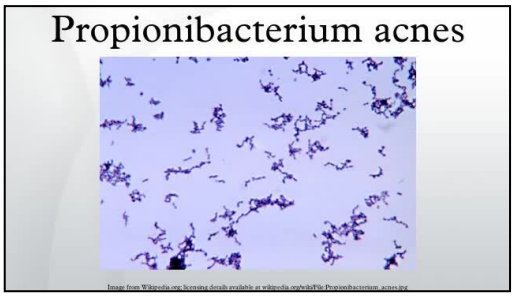
Acne treatment goals

- **Decrease scarring** + Hyperpigmentation.
- Decrease unsightly appearance.
- Decrease psychological stress.
- Explain length of treatment, may be several months and initial response may be slow but must persevere.



Principle in treating acne

- Reverse the altered keratinization.
- Decrease the intra-follicular P.acnes.
- Decrease sebaceous gland activity.
- Decrease inflammation.

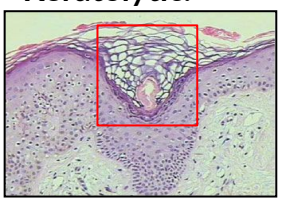


Treatments

Oral Oral therapy used To kill the bacteria	Topical Topical therapy used to alter keratinization	Miscellaneous
Antibiotics:	Benzoyl peroxide	Laser resurfacing
Doxycycline	Retinoic acid	Chemical peel
Minocycline	Adaplene Tazarotene	Comedo extraction
Erythromycin	Resorcinol, Sulfer	Dermaberasion
Retinoids:	Azeliac acid	Intralesional steroid
Isotretinoin	**Antibiotics:**	CROSS
Hormons:	Clindamycin	-
Antiandrogens	Erythromycin	-
OCP		

Acne vulgaris

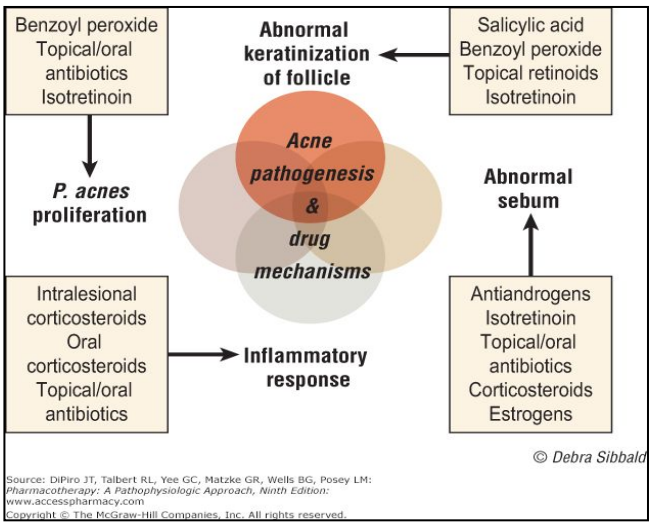
Topical therapy (Result is noticed within 2 month)

Benzoyl peroxide	Retinoic acid	Salicylic Acid	Resorcinol and sulfur	Azelaic acid
- High **antibacterial** activity. - Drying effect. - Could cause irritation and contact dermatitis.	- **Comedolytic** activity. - Advice patient not to expose to sun as it may lead to burn.	- **Comedolytic**, less potent than retinoic acid.	- **Keratolytic.** 	- **antibacterial** and **bleaching**.

Oral therapy

Drug	Dose	Recommendation & duration
Tetracycline	0.5 BD	• Taken on empty stomach to promote absorption. • Not to be taken with milk or antacid. • Not to be given to pregnant women.
Erythromycin	0.5 g BD	• For **pregnant women** with bad acne.
Azithromycin	250 mg	• 3 consecutive days/w for pregnant women.
Doxycycline	100 mg/day	• Can be taken with food, photosensitivity.
Minocycline	100 mg/day	• Drug could cause blue–black pigmentation in scars, lupus, hepatitis, photosensitive drug rash.
Clindamycin	—	• Could cause pseudomembranous colitis.
Trimethoprim/ Sulphamethoxazole	—	• Used only in resistant cases .
Isotretinoin	0.5-1 mg/kg	• Give long term remission. • Given in resistant acne.

- Systemic antibiotic have to be used for **3 months to avoid resistance.**



Acne vulgaris

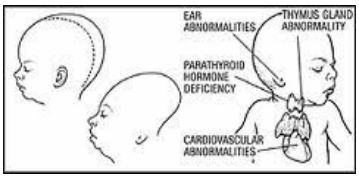
Side effects: (very common)

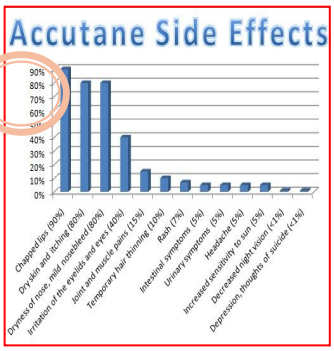
- Dryness of mucous membranes (Cheilitis, Conjunctivitis).
- **Headache** and increased intracranial pressure (Pseudotumor cerebri).
- Contact lens intolerance.
- Isotretinoin should not be given with tetracycline.
- **Bone** and joint pains.
- Increases triglycerides and cholesterol (most important investigation we do with patient on Isotretinoin) or LFT.
- Patients should avoid pregnancy 4 week after discontinuation of drug because of teratogenicity.
- Depression and mood swing.

Isotretinoin (Accutane)
Vitamin A analogue

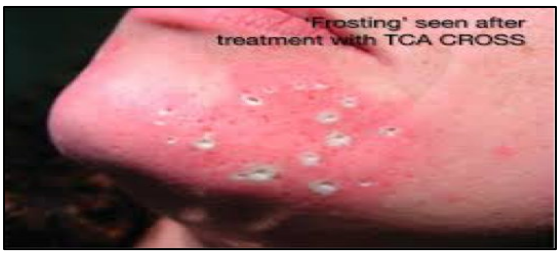
Hormonal

- OCP consider less androgenic progestogen, eg: marvelon/cilest, but increased risk of DVT.
- Consider cyproterone acetate (antiandrogen). With oestrogen (dianette). flutamide (antiandrogen).
- Used in polycystic Ovarian syndrome (POS). Think about female with hirsutism and acne.

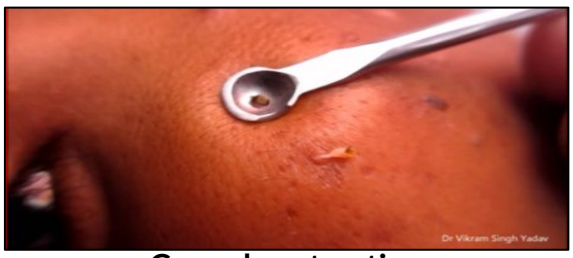




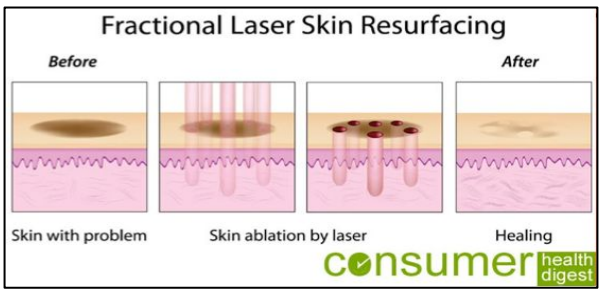
Other Treatments:

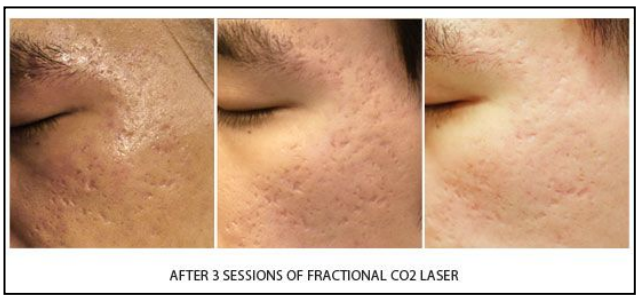


CROSS (chemical reconstruction of skin scars)



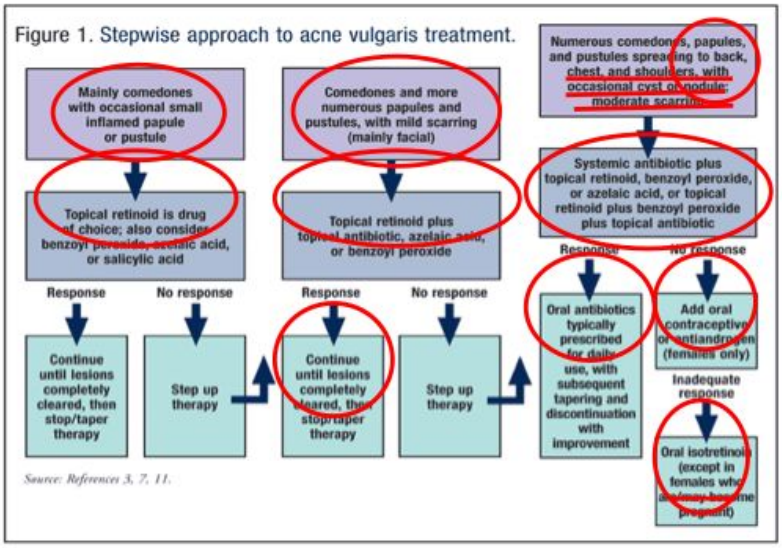
Comedo extraction





Take Home Massage:

- **A** avoid squeezing and manipulation.
- **C** comply with medication.
- **N** no cosmetics and moisturizers.
- **E** early treatment to avoid scaring.

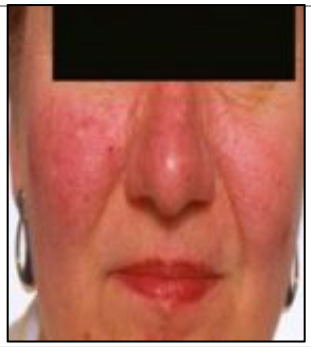


Acne related disorders

B)Rosacea

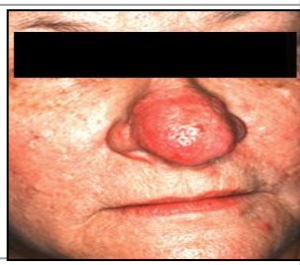
Definition

- A chronic skin rash involving the central face
- Papules and Papulo-pustules in the **center of the face and nose** against vivid erythematous background with **telangiectasia**. (pathognomic feature).



Incidence

- Common in 3rd and 4th decade, Peaks between 40-50.
- Starts between the age of 30 and 60 years.
- Common in fair skin.
- Women are affected more than men **but rhinophyma is more in men.**



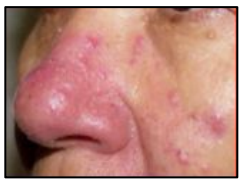
Pathogenesis

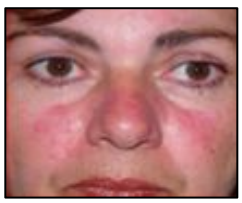
- Unknown.
- Genetic predisposition (38% have a relative).
- Sunlight and heat (in kitchen and crowded places).
- Constitutional predisposition to flushing & blushing.
- **Demodex folliculorum mite.**
- H. Pylori infection.

Clinical Findings

The Hallmark Is:

- **Episodes of flushing and erythema in butterfly distribution**. (MCQ)
- Papules and pustules.
- **Erythema** (flushing on the face) and telangiectasia.
- **Telangiectasia is only in rosacea not in acne.**
- **Absent comedones.**
- **Granulomas** (firm papules).
- 438 only:
- **Stage 1: persistent erythema and telangiectasia**
- **Stage 2: persistent erythema and telangiectasia , papules and pustules**
- **Stage 3: Solid edema and rhinophyma**
- **Ocular Rosacea : blepharitis , conjunctivitis , episcleritis**



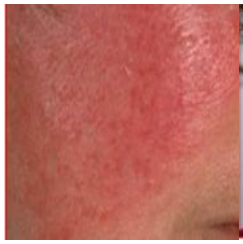


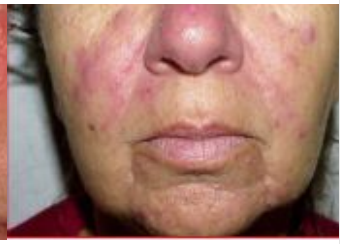
Localization:

- The **nose, cheeks**, chin, forehead and glabella (between eyebrows).
- May involve ears and chest.

Types of Rosacea

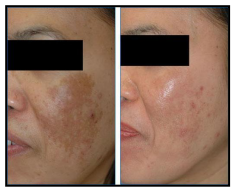
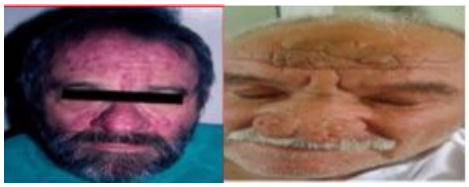
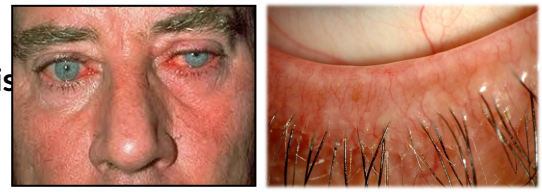
- Erythematotelangiectatic.
- Papulopustular.
- **Ocular** (it develops conjunctivitis).
- Phymatous.

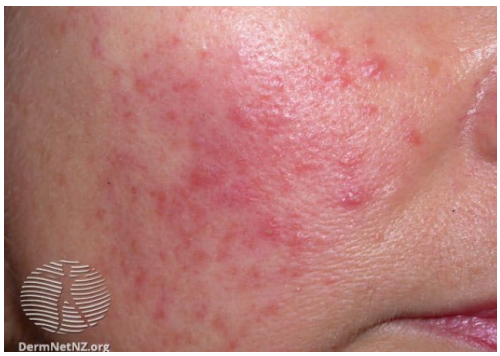


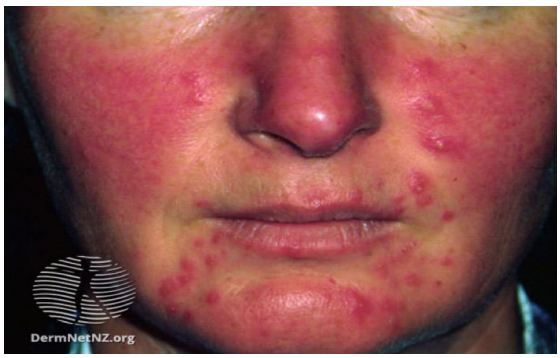


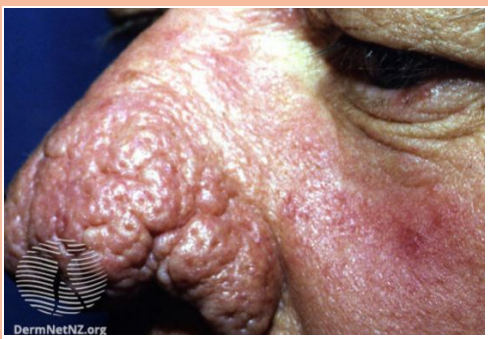
Acne related disorders

B)Rosacea

Triggers	• Hot or cold temperatures, Wind. • Hot drinks, Caffeine, Spicy food and Alcohol. • Exercise, Emotions. • Topical products that irritate the skin and decrease the barrier. • Medications that cause flushing (nicotinamide). • UVR
Associated diseases	• **MARSH syndrome:** Melasma + Acne + Rosacea + Seborrheic dermatitis + Hirsutism. 
Phymatous complication	• **Rhinophyma**: Swelling of the nose due to sebaceous gland hyperplasia. • Other phymatous complications include: gnathophyma, otophyma, blepharophyma and metophyma. 
Eye complications	**Occurs in 50% of cases including:** • **Blepharitis (the most common), conjunctivitis Keratitis, Iritis and Eyelid telangiectasia.** 

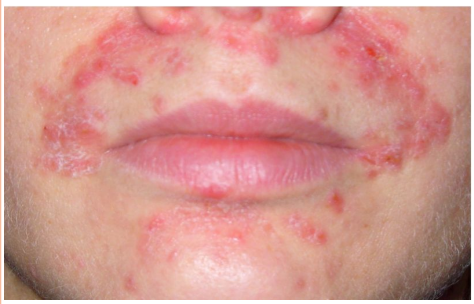






stage 3: rhinophyma --> thickening of the skin over the nose (treatment: surgery & resurfacing laser)

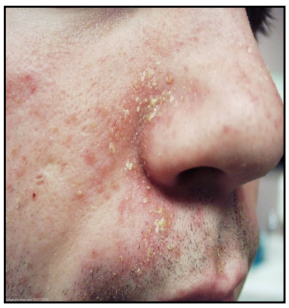
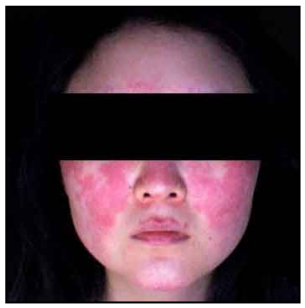
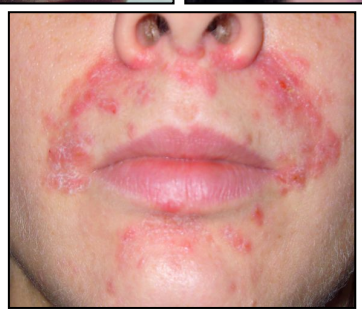
Perioral dermatitis



Another variant of rosacea exactly like rosacea: same triggers & pathogenesis -- only difference is distribution.. here: around the mouth

Acne related disorders

Differential diagnosis for Rosacea: IMP

- **SLE (erythema only).** (No telangiectasis)
- **Acne (comedones).**
- Seborrheic dermatitis (no pustules).
- Perioral dermatitis.

Treatments:

- **General measures:**
  - Schedules are determined by stage & severity.
  - The skin of rosacea patients is delicate to physical insults.
  - Patient should use mild soaps or diluted detergents.
  - Protection against sunlight by sunscreen
  - Avoid hot drinks, spicy food, Alcohol and heat
  - Reduce the exposure to steroid

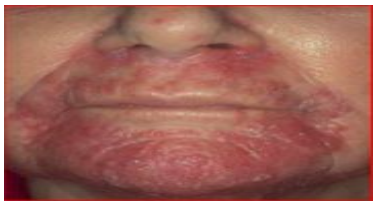
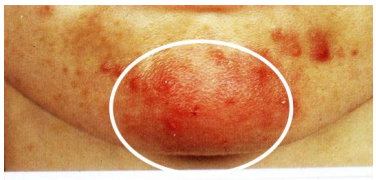
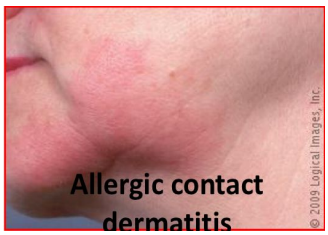
Topical	Systemic
1. Topical antibiotics: • Clindamycin • Erythromycin (2% gel bed) (In pregnancy).	• Tetracycline reduces erythema. 500 mg bid till clear then taper.
2. Metronidazole (gel 0.75%)**:** • Affects papules or pustules but no effect on erythema (most important drug).	• Oxy-tetracycline.
3. Imidazoles: • e.g. Ketoconazole cream, Has anti-inflammatory action.	• Minocycline 100 mg bid till clear then taper.
4. 2-5% sulfur lotion,sulfacetamide	• Doxycycline 100 mg bid then taper.
5. Isotretinoin 0.1% in cream	• Isotretinoin in resistant phymas cases (0.1 - 0.2 mg/kg).
6. Antiparasitic : • Lindane, permethrin, Benzyl benzoate, Crotamiton, ivermectin.	• Metronidazole 500 mg for 20-60 days. • Azithromycin. (Macrolides)
7. Calcineurin inhibitors (eg, tacrolimus and pimecrolimus)	• Oral Ivermectin
• Sunscreen, Vascular laser, brimonidine α-adrenergic blocker.	• Anti H.pylori therapy.

- Alpha-2 agonist : brimonidine, oxymetazoline hcl Azelaic acid to minimize the erythema - something that causes vasoconstriction .. unfortunately effect only lasts for 8 hours & sometimes ends up with rebound erythema.. so not first line
- for more severe disease (stage 2, combine oral + topical))

Take Home Massage:

- **R** recognize triggers.
- **O** ocular hygiene.
- **S** sunblock.
- **A** avoid hot food.
- **C** comply with instructions.
- **E** early treatment.
- **A** avoid scrubs and harsh cleansers.

C) Perioral dermatitis

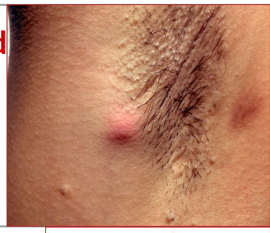
Features	• Occurs mainly in young women (Rare). • **Discrete & confluent papulo-pustules over the perioral or periorbital skin sparing the vermilion border of the lips.** • **No comedones.** • Predominant in females at 20-30 years of age. • Aggravated by topical steroids, dentifrice and moisturizers. • Occasionally itchy or burning or feeling of tightness.  
Differential Diagnosis	• Acne. • Rosacea. • Seborrheic Dermatitis. • Atopic Dermatitis. • Allergic Contact Dermatitis.  Atopic dermatitis  Allergic contact dermatitis
Treatment	• Wean patients of topical steroid. • Stop any moisturizers. • In pregnant mild cases use topical antimicrobial therapy with metronidazole gel and erythromycin solution. • Pimecrolimus cream in steroid induced perioral dermatitis. • Topical anti acne medication like adaplene and azelaic acid. • In severe cases oral doxycycline or minocycline . • Isotretinoin for resistant cases.

Acne related disorders

D) Hidradenitis Suppurativa (HS)

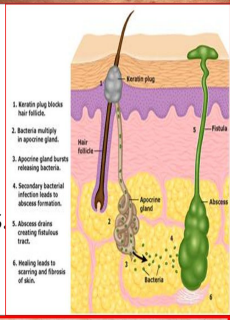
Definition

- Chronic recurrent suppurative scarring disease of **apocrine gland**
- bearing skin **(axillae, anogenital region, under female breast)**.
- Associated with obesity.
- Develops in 2nd and 3rd decades



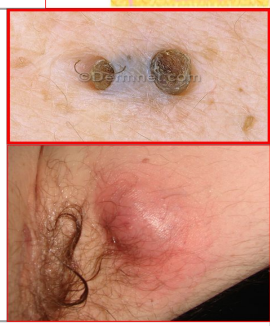
Pathogenesis

- Unknown
- • **Apocrine duct occlusion**.
- • Dilatation and **rupture of apocrine gland.**
- • **Secondary bacterial infection** with (Coagulase negative
- staphylococcus, anaerobes are often cultured) and draining sinuses
- Genetic predisposition [38% have a relative affected].



Clinical presentation

- Intermittent severe pain and tenderness.
- Pus drainage.
- **Double headed comedones [characteristic lesion].**
- Nodules, abscess, sinus tracts, scarring.
- **Submammary, axillary , inguinal regions** are common in females.
- **Perineal involvement** occurs more in males.



Associated findings

- **The follicular occlusion tetrad including:**
- Extensive acne vulgaris (conglobata variety).
- Perifolliculitis of the scalp.
- Pilonidal sinus.
- Crohn's disease in 39% of patients.
- Irritable bowel syndrome.
- **Sjogren syndrome.**

Appendix Table 3. **Hurley Stages**

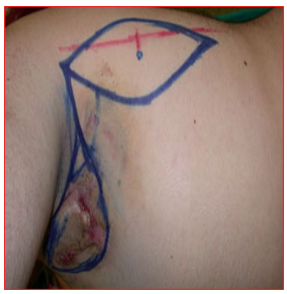
Stage	Description
I	Abscess formation (single or multiple) without sinus tracts and cicatrization
II	Recurrent abscesses with tract formation and cicatrization; single or multiple, widely separated lesions
III	Diffuse or near-diffuse involvement or multiple interconnected tracts and abscesses across the entire area

Treatment

- **General measures:**
- Practicing proper hygiene.
- Using soaps and antiseptic and antiperspirant agents.
- Using warm compresses. Wearing loose-fitting clothing.
- Smoking cessation, Weight reduction.
- Pain management by paracetamol.

Medical Treatment

- Intralesional triamcinolone acetonide for acute lesions
- **Antibiotics** (minocycline , doxycycline clindamycin, rifampicin,
- metronidazole)
- **Retinoids** (Acitretin better than isotretinoin
- **Antiandrogens**.
- Biological therapy (infliximab, adalimumab)

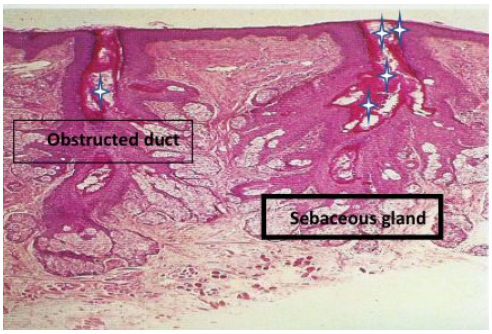


Surgical Treatment

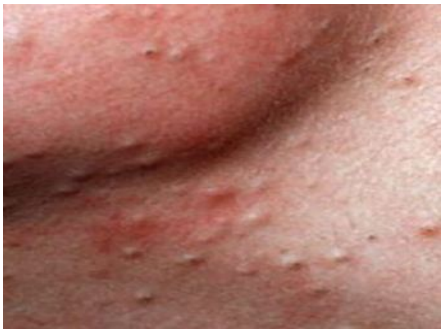
- Incision and drainage of abscess better avoided . (Surgery is effective)
- Excision of sinus tracts and chronic nodules
- Complete excision of the area and grafting.
- CO2 laser

Acne vulgaris and related disorders

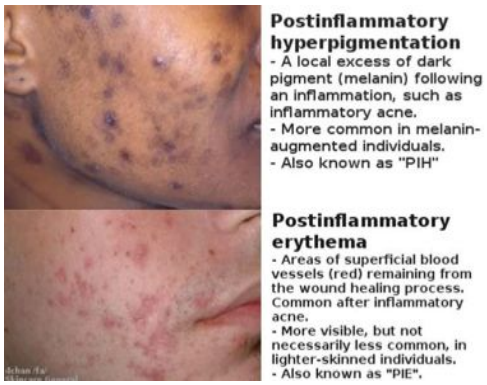
❖ Pictures from the slides :



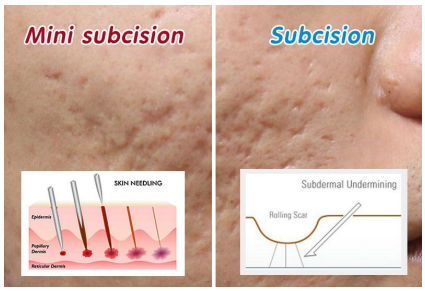
Obstructed sebaceous duct



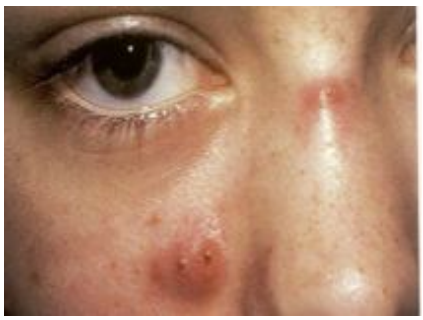
Closed and open comedones



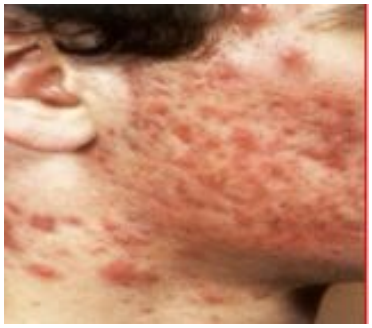
Marked post inflammatory hyperpigmentation and erythema



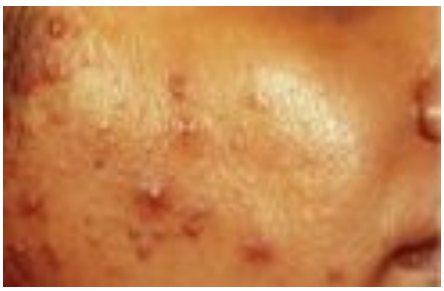
Rolling acne scars



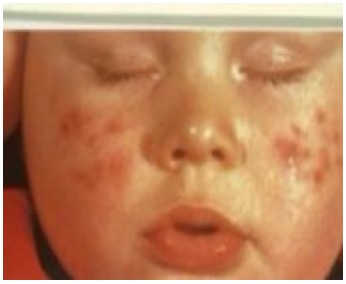
Nodules



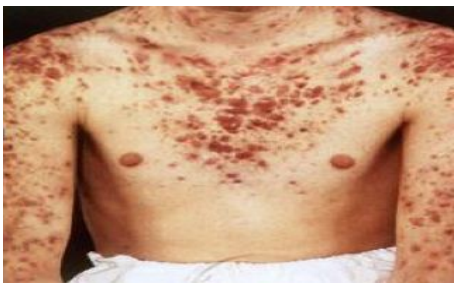
Acne conglobata with nodules and scars



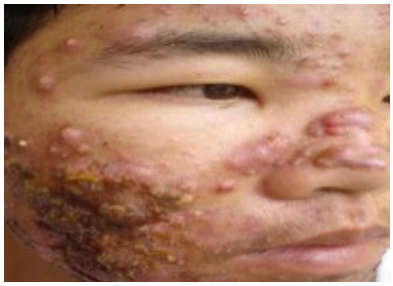
Seborrhea and papules, pustules



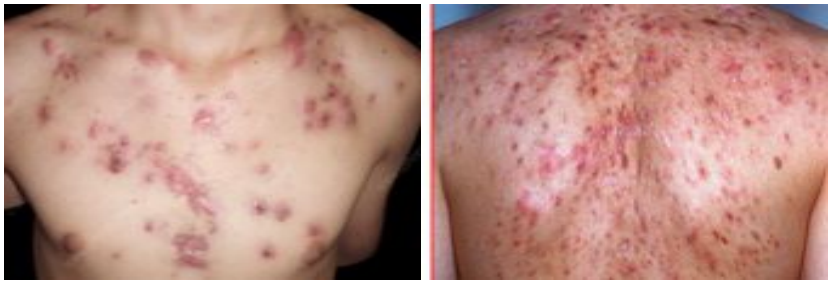
Neonatal Acne



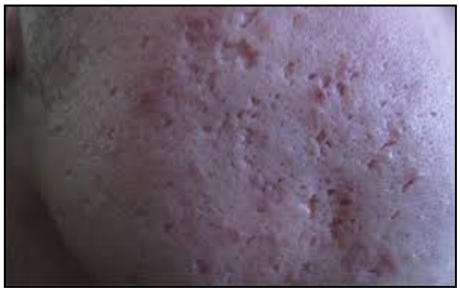
Nodules, Keloides



Acne fulminans (Nodules, pustules, closed comedones, Papules and pus)

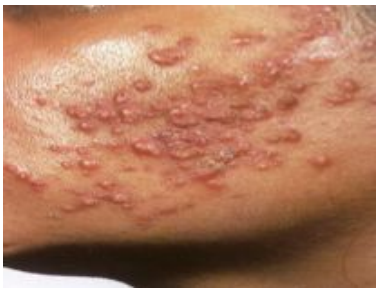


Acne conglobata
(Nodules, keloides sinuses, scars)



Acne ice pick and boxcar scars

Chloracne

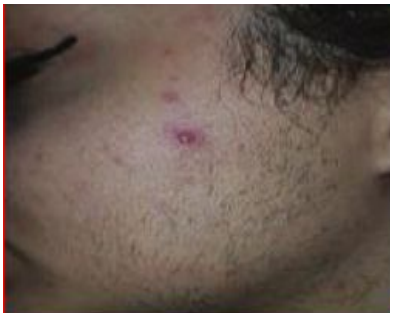


Monomorphic steroid Acne

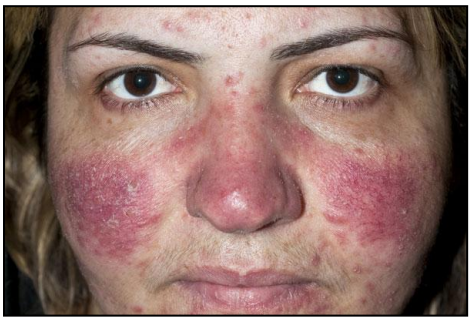
Same morphology indicates drug-induced.

Acne vulgaris and related disorders

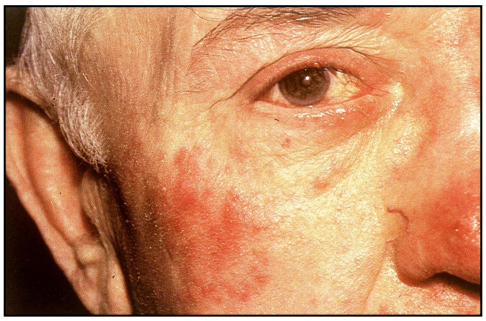
❖ Pictures from the slides :



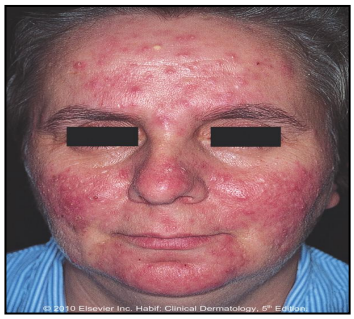
Hirsutism and Acne



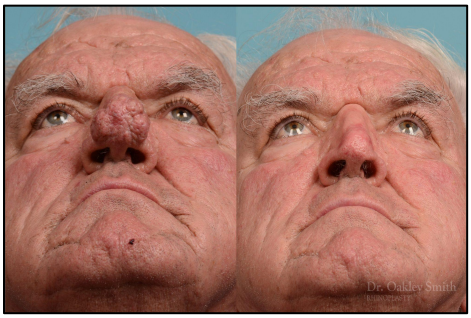
Malar erythema and scales



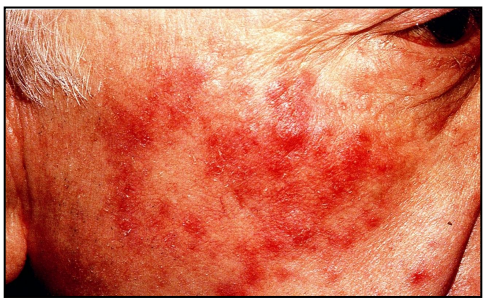
Telangiectasia, papules, blepharitis, conjunctivitis



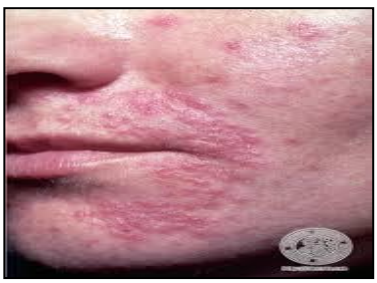
Papules on erythema background



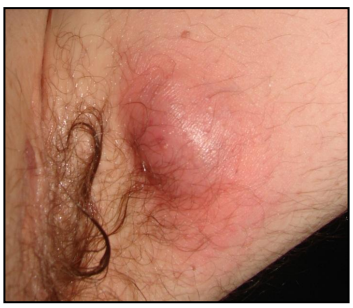
Rhinophyma



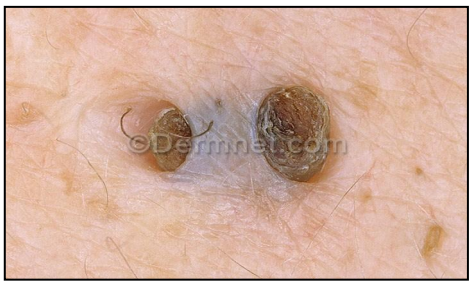
Papules on erythematous background, Telangiectasia



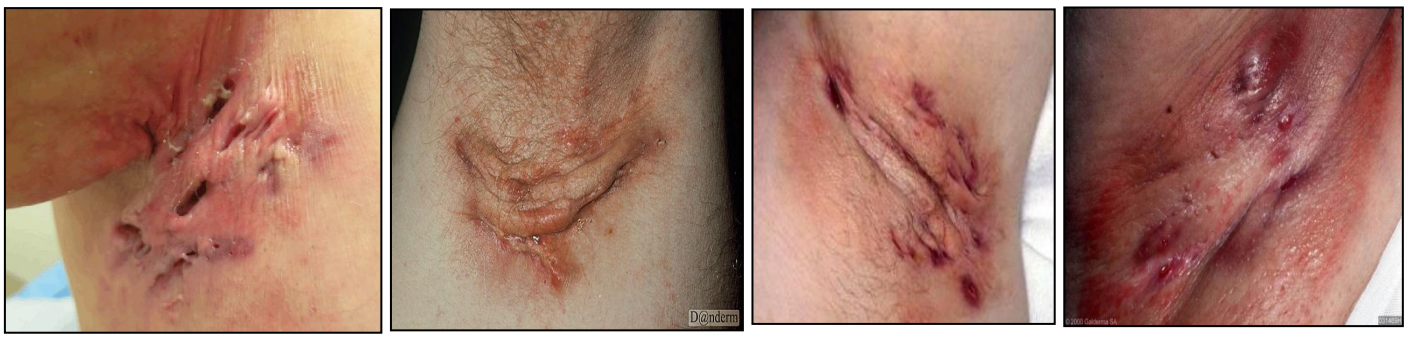
Female with papules over chin



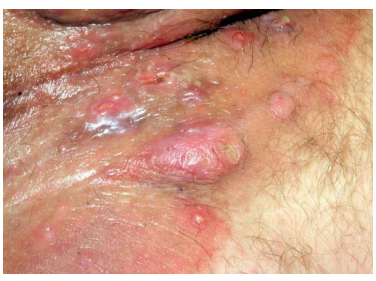
Nodules (Hidradenitis suppurativa)



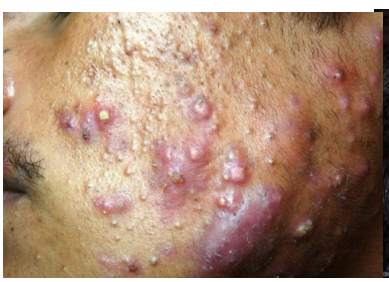
Double headed comedones



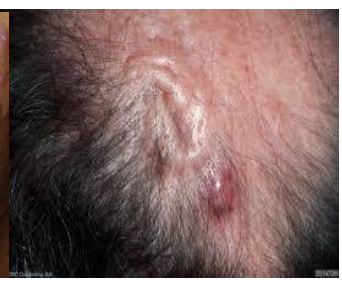
Hidradenitis suppurativa



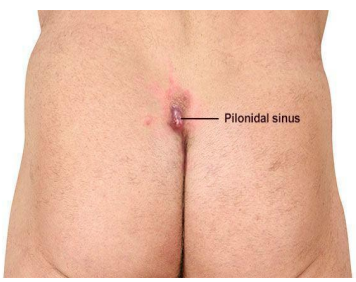
Hidradenitis supprativa



Acne conglobata



Perifolliculitis



Quiz!

1- A patient has acne and with a resistant acne on topical antibiotic what would you give with antibiotic to enhance antibiotics role and to treat his condition:

A) Tretinoin
C) Azelaic Acid
B) benzoyl peroxidase
D) Metronidazole

2- Which of the following makes diagnosis of acne vulgaris more likely over rose acne (rosacea)?

A) pustules
C) papules
B) telangiectasia
D) comedones

3- Which of these findings favors a diagnosis of acne instead of rosacea?

A) Methotrexate
C) Steroid
B) Bed rest
D) Immunosuppressive agents

4- 58 years old female came to ophthalmology complaining of redness of eye with pain diagnosis of conjunctivitis was made. which of following dermatological disease can cause this complication:

A) Acne vulgaris
C) Rosacea
B) Perioral dermatitis
D) Hidradenitis Suppurativa

5- A 30-year-old lady who has recently exposed to the sun and taking vitamin B6 supplements for over a year. She presented with episodic flushing, telangiectasia, few papules and pustules over both cheeks and forehead. The clinical picture is characteristic of which of the following diseases?

A) Hidradenitis Suppurativa
C) Drug induced acne
B) Folliculitis
D) Rosacea

Answers:
1:B, 2:D, 3:A, 4:C, 5:D

Quiz!

1- An Inflammatory lesion in acne include:

A) Open comedones
B) Cyst
C) Closed comedones
D) A&C

2- Chronic inflammatory skin condition that affects apocrine gland-bearing skin in the axillae, groin, and under the breasts:

A) Acne vulgaris
B) Perioral dermatitis
C) Rosacea
D) Hidradenitis Suppurativa

3- Absence of comedones and monomorphic lesions:

A) Adult Acne
B) Acne Fulminans
C) Acne Conglobata
D) Drug induced Acne

4- Severe form of acne without systemic involvement that heal with scarring:

A) Adult Acne
B) Acne Fulminans
C) Acne Conglobata
D) Drug induced Acne

5- Episodes of flushing and erythema in butterfly distribution is a Hallmark of which disease?

A) Hidradenitis Suppurativa
B) Folliculitis
C) Drug induced acne
D) Rosacea

Answers:
1:B, 2:D, 3:D, 4:C, 5:D

Thanks!!

DERMATOLOGY TEAM 438

Dermatology Team 439

438 Team leader:
Mohsen Almutairi

439 Team leader:
Mohammed Albabtain

438 Done by:
Abdullah Alnuwaybit
Noura AlTurki
Haifa Alwaily

439 Done by:
Khalid Alsubaie

438 Academic leader
Saud Bin Queid

439 Academic leader
Hamad Almousa

This lecture was updated by: 441 Academic Leader *Bassam Al Hubaysh*

Dermatology Team 441

MED441
KING SAUD UNIVERSITY

BH
Bassam Alhubaysh
REVIEWED BY