

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



دانشگاه علوم پزشکی  
و خدمات بهداشتی درمانی تهران



بیمارستان رازی

# ACNE

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## ETIOLOGY AND PATHOGENESIS:

- GENETIC FACTORS :

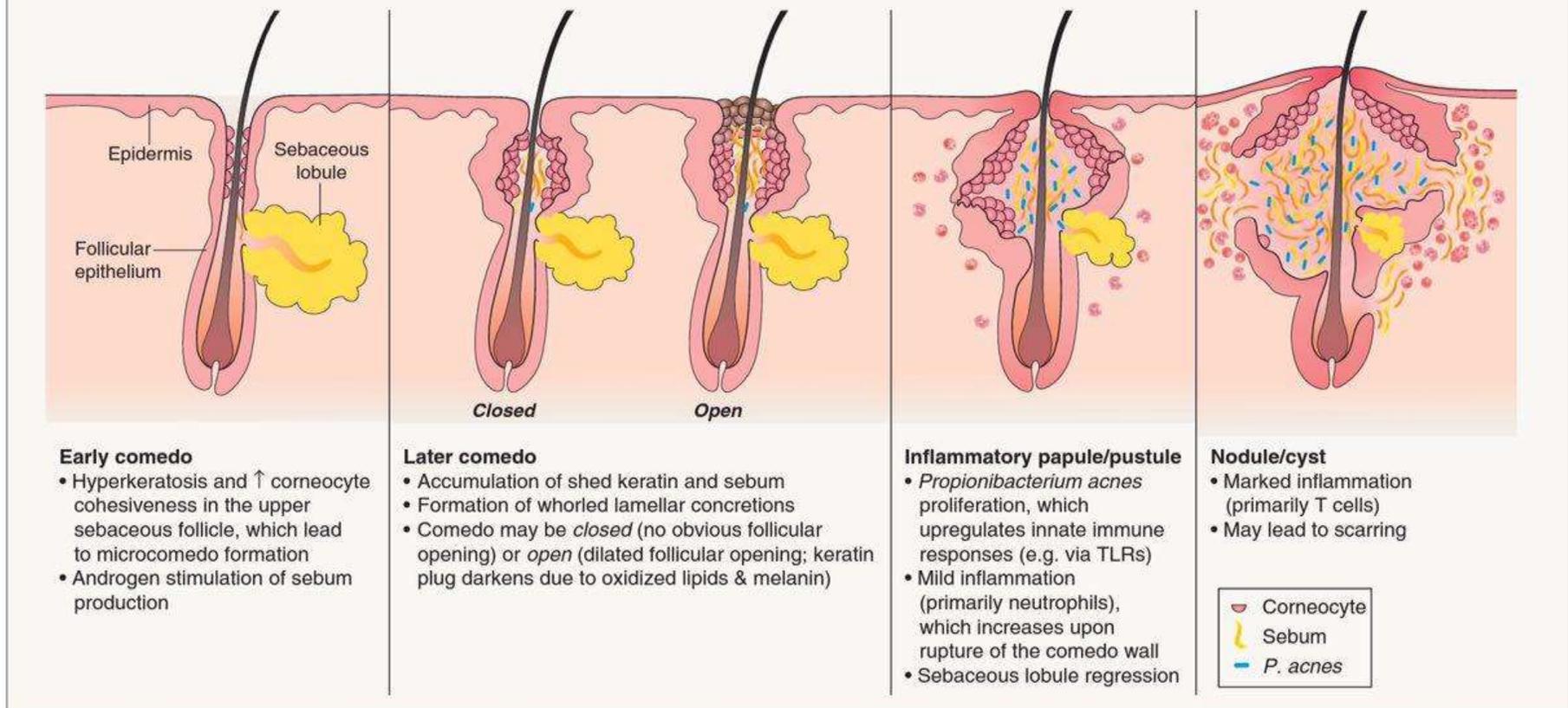
- (*THE NUMBER ,SIZE AND ACTIVITY OF SEBACEOUS GLAND*)

### DIETARY FACTORS:



- FOLICULAR HYPERKERATINIZATION
  - (**MICROCOMEDO**)
- HORMONAL INFLUENCES ON SEBUM PRODUCTION
  - (**ANDROGENS INFLUENCE**)
- INFLAMMATION IN ACNE

## PATHOGENESIS OF ACNE



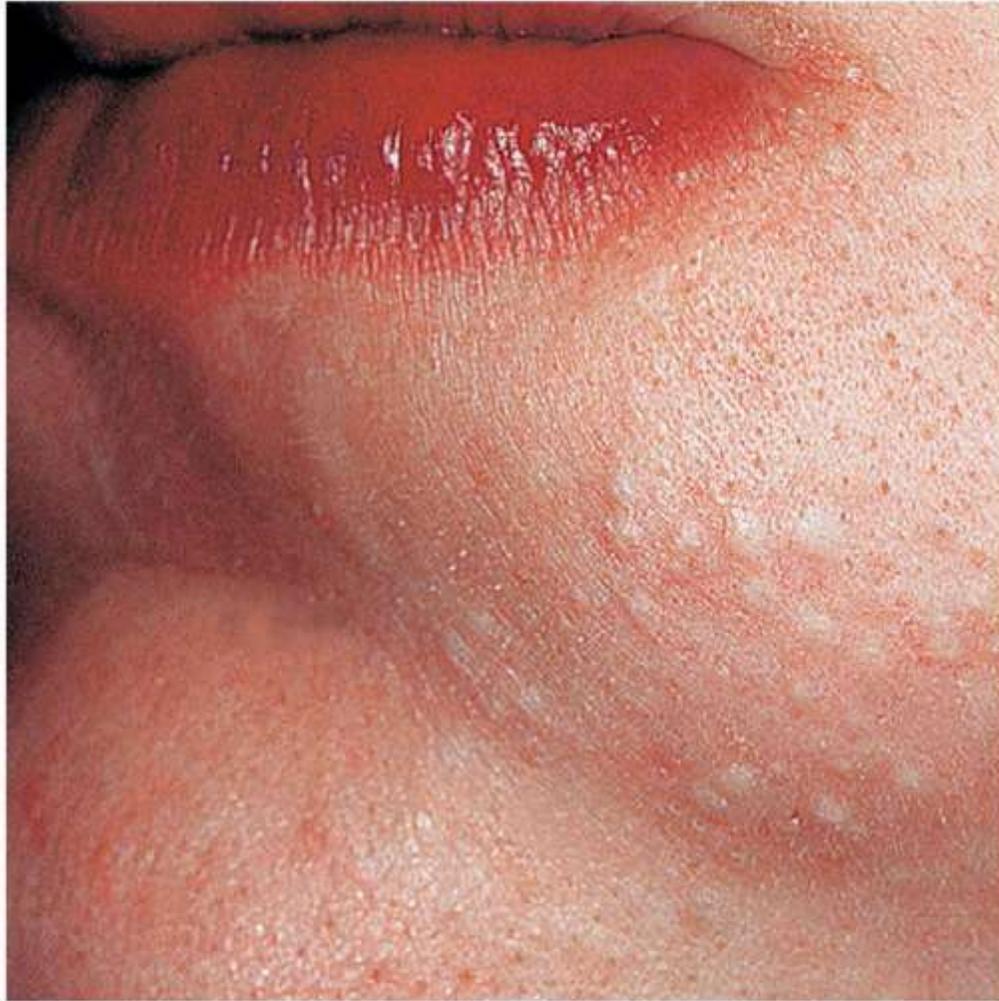
**Fig. 36.1** Pathogenesis of acne.

# BACTERIAL COLONIZATION AND INFLAMMATION

- ***P. ACNES***, AN ANAEROBIC DIPHTHEROID, IS A NORMAL SKIN RESIDENT AND THE PRINCIPAL COMPONENT OF THE MICROBIC FLORA OF THE PILOSEBACEOUS FOLLICLE.
- *P. ACNES* GENERATES COMPONENTS THAT CREATE INFLAMMATION, SUCH AS **LIPASES**, **PROTEASES**, **HYALURONIDASE**, AND **CHEMOTACTIC FACTORS**.
- **LIPASES** HYDROLYZE **SEBUM TRIGLYCERIDES** TO FORM **FREE FATTY ACIDS**, WHICH ARE COMEDOGENIC.
- **CHEMOTACTIC FACTORS** ATTRACT NEUTROPHILS TO THE FOLLICULAR WALL.

# ACNE LESIONS

- **NONINFLAMMATORY:**
  - OPEN COMEDONES
  - CLOSED COMEDONES
- **INFLAMMATORY :**
  - PAPULES
  - PUSTULES
  - NODULES (CYSTS)



Multiple closed comedones in the chin.



Multiple open comedones on the chin of a patient with non-inflammatory acne.



Moderate inflammatory and cystic acne vulgaris.



Acne vulgaris typically starts on the central forehead, nose and chin (T-distribution).



Severe inflammatory and cystic acne vulgaris on the back.



**Fig. 36.6** Moderate to severe acne vulgaris. Multiple coalescing papules, pustules, and small nodules are present on the cheek. *Courtesy, Kalman Watsky, MD.*



Multiple milia on the cheek of an adolescent. These microcysts resemble closed comedone acne.



**Fig. 36.9** "Ice-pick" scarring secondary to acne.

# TREATMENT

- FOR MAXIMUM EFFECT, TREATMENT MUST BE **CONTINUAL AND PROLONGED.**
- COMBINATION THERAPY

# ACNE STAGE

## MILD

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- Comedones and a few papules

## MODERATE

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- More than 20 pustules

## SEVERE

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- Very papules and pustules and cyst or SCAR

# ACNE DRUGS



## Topical comedolytic

- Tretinoin, Adapalen, Tazaroten
- Azelaic acid



## Topical Antibiotic

- Solution Clindamycin 1%
- Solution Erythromycin 2%, 4%
- Benzoyl peroxide 2.5 %, 5%, 10%



## Systemic antibiotic

- Doxycycline
- Minocycline
- Azithromycin



## Systemic retinoid

- Isotretinoin

# THERAPEUTIC AGENTS FOR TREATMENT OF ACNE

- THERE ARE FOUR PATHOGENETIC FACTORS RESPONSIBLE FOR THE DEVELOPMENT OF ACNE:
  - 1) HYPERKERATINIZATION (PLUGGING) OF THE PILOSEBACEOUS FOLLICLES
  - 2) HYPERSEBORRHEA
  - 3) BACTERIAL COLONIZATION WITH *P. ACNES*
  - 4) INFLAMMATION

## ***RETINOIDS***

- RETINOIDS REVERSE THE ABNORMAL PATTERN OF KERATINIZATION SEEN IN ACNE VULGARIS.



- COMEDOLYTIC AND ANTICOMEDOGENIC ARE THE RETINOIDS: **TRETINOIN**, **ADAPALENE**, AND **TAZAROTENE**; **AZELAIC ACID**; AND **ISOTRETINOIN**.
- **AZELAIC ACID** HAS STRONG **ANTIBACTERIAL** POTENCY **ADAPALENE** HAS **ANTI-INFLAMMATORY** ACTIVITY.

**COMEDONAL  
ACNE :  
USE TOPICAL  
RETINOIDS..**



- RETINOIDS MAY CAUSE AN INCREASE IN FACIAL **DRYNESS** AND **ERYTHEMA**.
- CONTINUAL TOPICAL APPLICATION LEADS TO **THINNING** OF THE **STRATUM CORNEUM**, MAKING THE SKIN MORE SUSCEPTIBLE TO SUNBURN, SUN DAMAGE, AND IRRITATION FROM WIND, COLD, OR DRYNESS.
- A **SHORT CONTACT METHOD** MAY BE EFFECTIVE. APPLY THE GEL FOR JUST A FEW MINUTES; THEN WASH IT OFF.
- **ADAPALENE** DOES NOT CAUSE SUN SENSITIVITY.



# RETINOID DERMATITIS

## COMBINATION THERAPY—SYNERGISM

- **RETINOIDS** ENHANCE THE PENETRATION OF **OTHER TOPICAL AGENTS** SUCH AS TOPICAL ANTIBIOTICS AND BENZOYL PEROXIDE.
- THE ENHANCED PENETRATION RESULTS IN A SYNERGISTIC EFFECT WITH GREATER OVERALL DRUG **EFFICACY** AND **A FASTER RESPONSE** TO TREATMENT.

- PATIENTS SHOULD BE WARNED THAT **BENZOYL PEROXIDE** IS A **BLEACHING AGENT** THAT CAN RUIN CLOTHING.

# TOPICAL ANTIBIOTICS

- Topical Antibiotics Are Useful For **Mild Pustular** And **Comedone Acne.**
- **NO MONOTHERAPY WITH TOPICAL AB**
  - SOLUTION CLINDAMYCIN 1%
  - SOLUTION ERYTHROMYCIN 2% OR 4%
  - BPO 2.5%, 5%, 10%



## ***HORMONAL TREATMENT***

- ACNE CAN BE THE PRESENTING SIGN OF THE OVERPRODUCTION OF ANDROGENS.
  - **ORAL CONTRACEPTIVES**
  - **SPIRONOLACTONE**
  - **CYPROTERONE**

# ISOTRETINOIN

- AN **ORAL RETINOID** RELATED TO VITAMIN A, IS A **VERY EFFECTIVE AGENT FOR CONTROL OF ACNE** AND IN THE INDUCTION OF **LONG-TERM REMISSIONS**, BUT IT IS NOT SUITABLE FOR ALL TYPES OF ACNE.
- ISOTRETINOIN AFFECTS **ALL MAJOR ETIOLOGIC FACTORS** IMPLICATED IN ACNE. IT **DRAMATICALLY REDUCES SEBUM EXCRETION**, **FOLLICULAR KERATINIZATION**, AND DUCTAL AND SURFACE **P. ACNES COUNTS**.
- ISOTRETINOIN IS A POTENT **TERATOGEN**; PREGNANCY MUST BE AVOIDED DURING TREATMENT.
- ISOTRETINOIN IS **NOT MUTAGENIC**; FEMALE PATIENTS SHOULD BE ASSURED THAT THEY MAY SAFELY CONCEIVE BUT SHOULD WAIT AT LEAST **1 MONTH** AFTER ISOTRETINOIN IS DISCONTINUED.

# LABORATORY STUDIES FOR ISOTRETINOIN

- PREGNANCY TEST
- TRIGLYCERIDE & CHOLESTEROL
- LIVER FUNCTION TESTS
- COMPLETE BLOOD CELL COUNTS

**TABLE 7-7 Duration of Selected Mucocutaneous Adverse Events as a Percentage of Therapy Period in Patients Who Underwent Daily Therapy with Accutane 1 mg/kg**

| <b>MAE</b>             | <b>Percent of therapy (%)</b> |
|------------------------|-------------------------------|
| Dry chapped lips       | 95.8                          |
| Dry skin               | 77.0                          |
| Itching                | 41.2                          |
| Dryness in mouth       | 33.3                          |
| Thirst                 | 29.4                          |
| Rash or redness (face) | 34.1                          |
| Dry eyes               | 35.3                          |
| Peeling of fingertips  | 20.1                          |
| Nose bleeding          | 19.8                          |

## **SIDE EFFECTS**

- MUCOUS/SKIN EFFECTS (2.5%)
- ELEVATED TRIGLYCERIDE LEVELS (2.0%)
- ELEVATED LIVER ENZYME LEVELS (0.6%)
- MUSCULOSKELETAL EFFECTS (1.3%)
- HEADACHES (1.1%)
- AMENORRHEA (0.4%)

- **CHEILITIS.** IS THE MOST COMMON SIDE EFFECT, OCCURRING IN VIRTUALLY ALL PATIENTS
- **DEPRESSION.** A DIRECT CAUSE-AND-EFFECT RELATIONSHIP BETWEEN USE OF ISOTRETINOIN AND DEPRESSION AND SUICIDE HAS NOT BEEN ESTABLISHED.

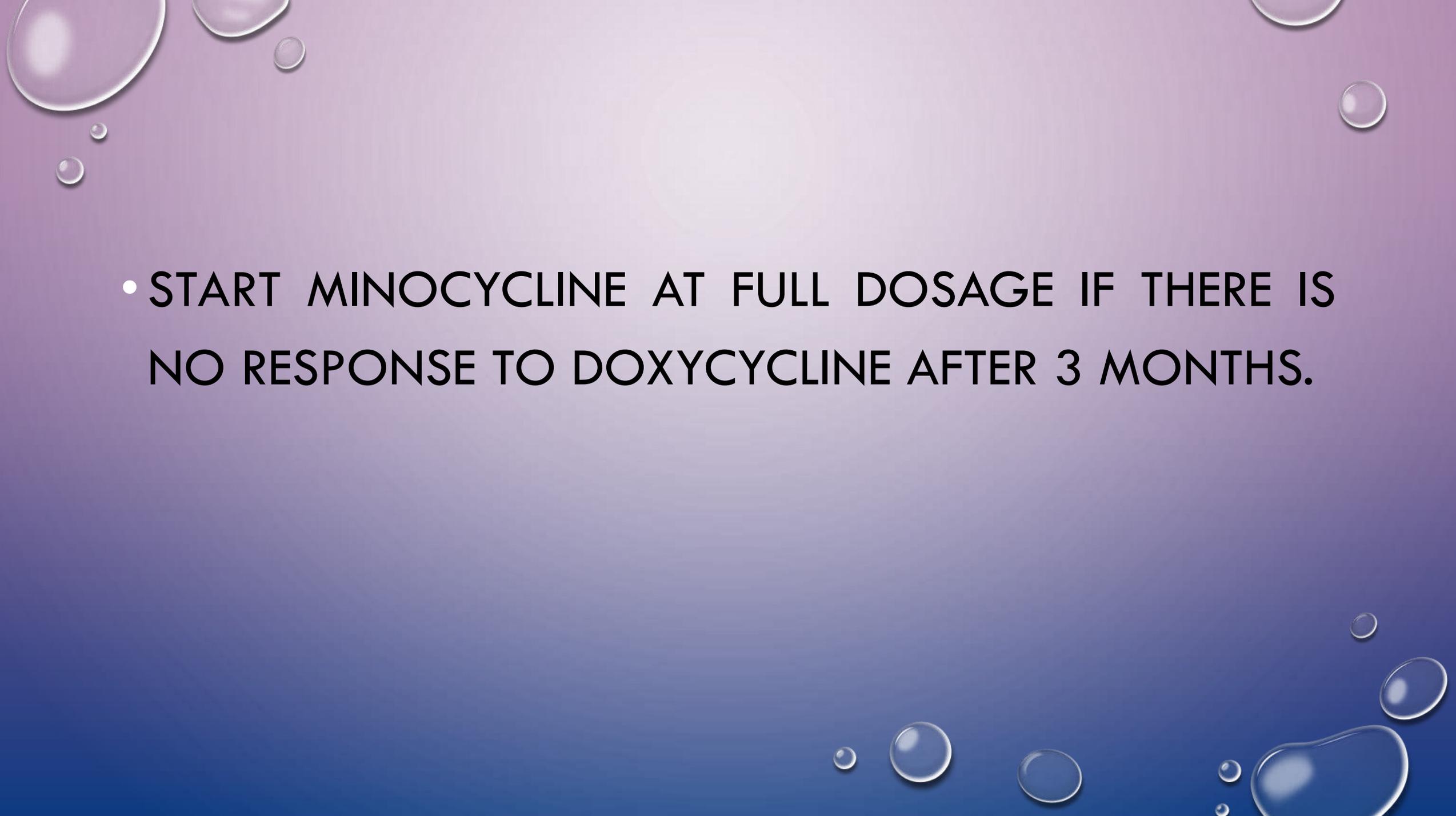
- ***OCULAR ADVERSE EFFECTS.*** ACUTE CONJUNCTIVITIS IS THE MOST COMMON OCULAR ADVERSE EFFECT.
- ISOTRETINOIN THERAPY IS ASSOCIATED WITH A STRONG INCREASE IN THE RISK OF HORDEOLUM, CHALAZION, AND BLEPHARITIS

- ***INFLAMMATORY BOWEL DISEASE:***

- ADVISE PATIENTS THAT THE ABSOLUTE RISK IS LOW AND THAT **NO STUDY HAS DEMONSTRATED A CAUSAL ASSOCIATION**, AND THAT ACNE MAY BE ASSOCIATED WITH OTHER INFLAMMATORY DISORDERS.

- MORE THAN 50% OF PATIENTS PRESENT WITH COMEDONES AND PAPULOPUSTULAR ACNE.
- THESE PATIENTS ARE INITIALLY TREATED WITH **TOPICAL MEDICATIONS**.
- COMBINATION REGIMENS THAT INCLUDE AN **ANTIBIOTIC** AND A **RETINOID** TO REDUCE FOLLICULAR PLUGGING ARE THE MAINSTAY OF TOPICAL TREATMENT.

- ORAL ANTIBIOTICS (DOXYCYCLINE OR MINOCYCLINE) ARE USED FOR PATIENTS WITH MORE THAN 10 PUSTULES.
- TREATMENT SHOULD BE CONTINUED UNTIL NO NEW LESIONS DEVELOP (2 TO 4 MONTHS) AND THEN SHOULD BE SLOWLY TAPERED.

- 
- **START MINOCYCLINE AT FULL DOSAGE IF THERE IS NO RESPONSE TO DOXYCYCLINE AFTER 3 MONTHS.**

# TREATMENT OF NODULOCYSTIC ACNE

- A PRIMARY THERAPEUTIC GOAL IS TO **AVOID SCARRING**
- **PREDNISON** IS SOMETIMES REQUIRED.
- **DEEPER CYSTS** ARE **INJECTED** WITH TRIAMCINOLONE.
- MOST PATIENTS WILL REQUIRE THE RAPID INTRODUCTION OF **ISOTRETINOIN**. START WITH LOW DOSAGES OF ISOTRETINOIN (0.5 MG/KG OR LESS) TO AVOID EXACERBATION OF LESIONS.





The **simultaneous use** of tetracyclines (tetracycline, doxycycline, or minocycline) and isotretinoin is **avoided**, because a higher incidence of **pseudotumor cerebri** may occur with this combination.

## TO REMEMBER



- LOW DOSE OF ISOTRETINOIN CAN BE EFFECTIVE
- DOSE OF INJECTION IN CYST ACNE .....
- AVOIDANCE OF SIMULTANEOUS USE OF ISOTRETNOIN AND CYCLINES .

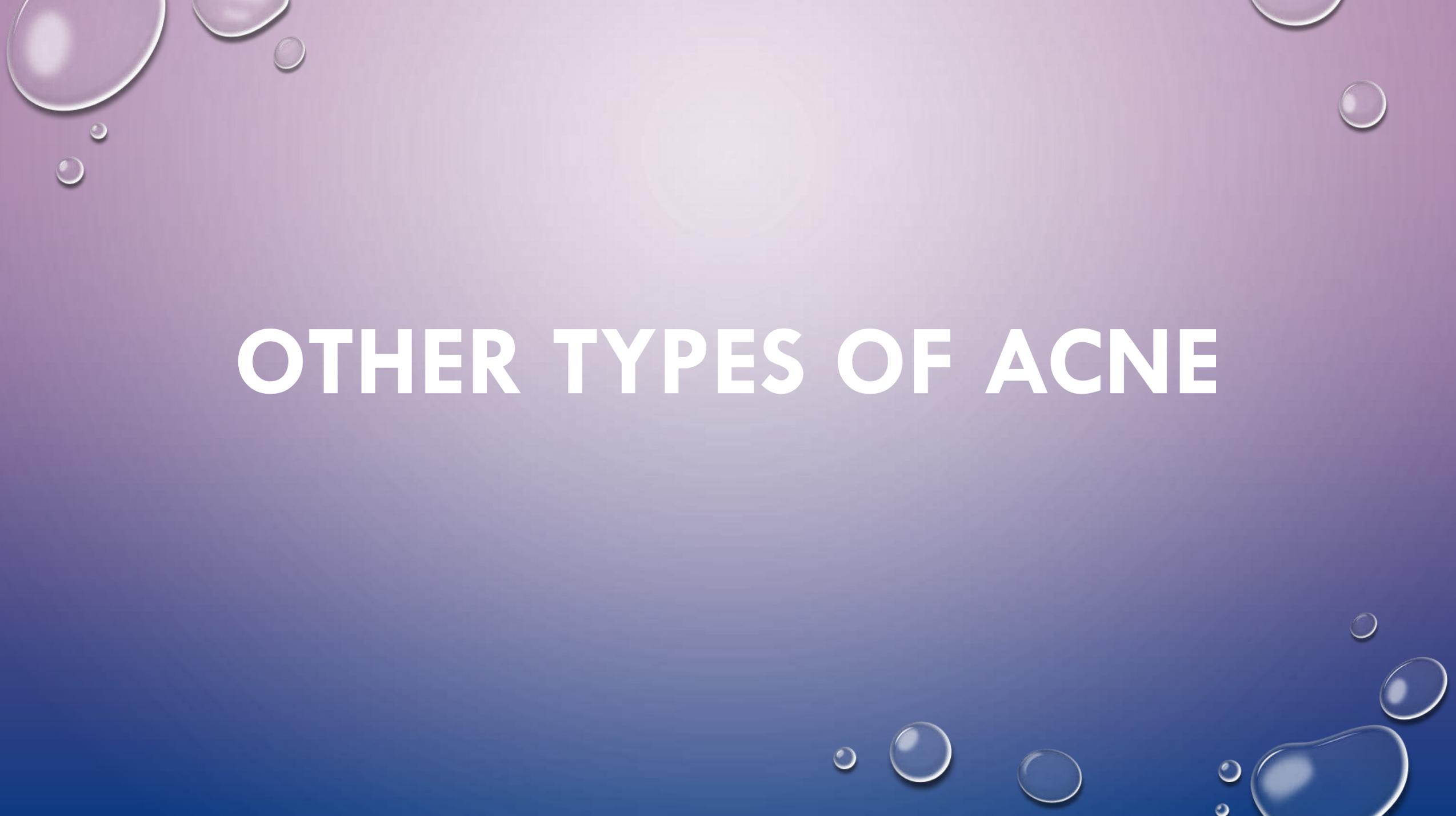
- **ACNE CONGLOBATE:**

- HIGHLY INFLAMMATORY, WITH CYSTS THAT COMMUNICATE UNDER THE SKIN, ABSCESSSES, AND BURROWING SINUS TRACTS

- **ACNE FULMINANT:**

- NODULOCYSTIC ACNE WITH SYSTEMIC SYMPTOMS AND SIGNS (FEVER , ARTHRALGIA, MYALGIA, MALAISE AND ...)



The background is a gradient from light purple at the top to dark blue at the bottom. There are several realistic water droplets of various sizes in the corners: top-left, top-right, and bottom-right. A large, faint, light-colored circle is centered in the upper half of the image.

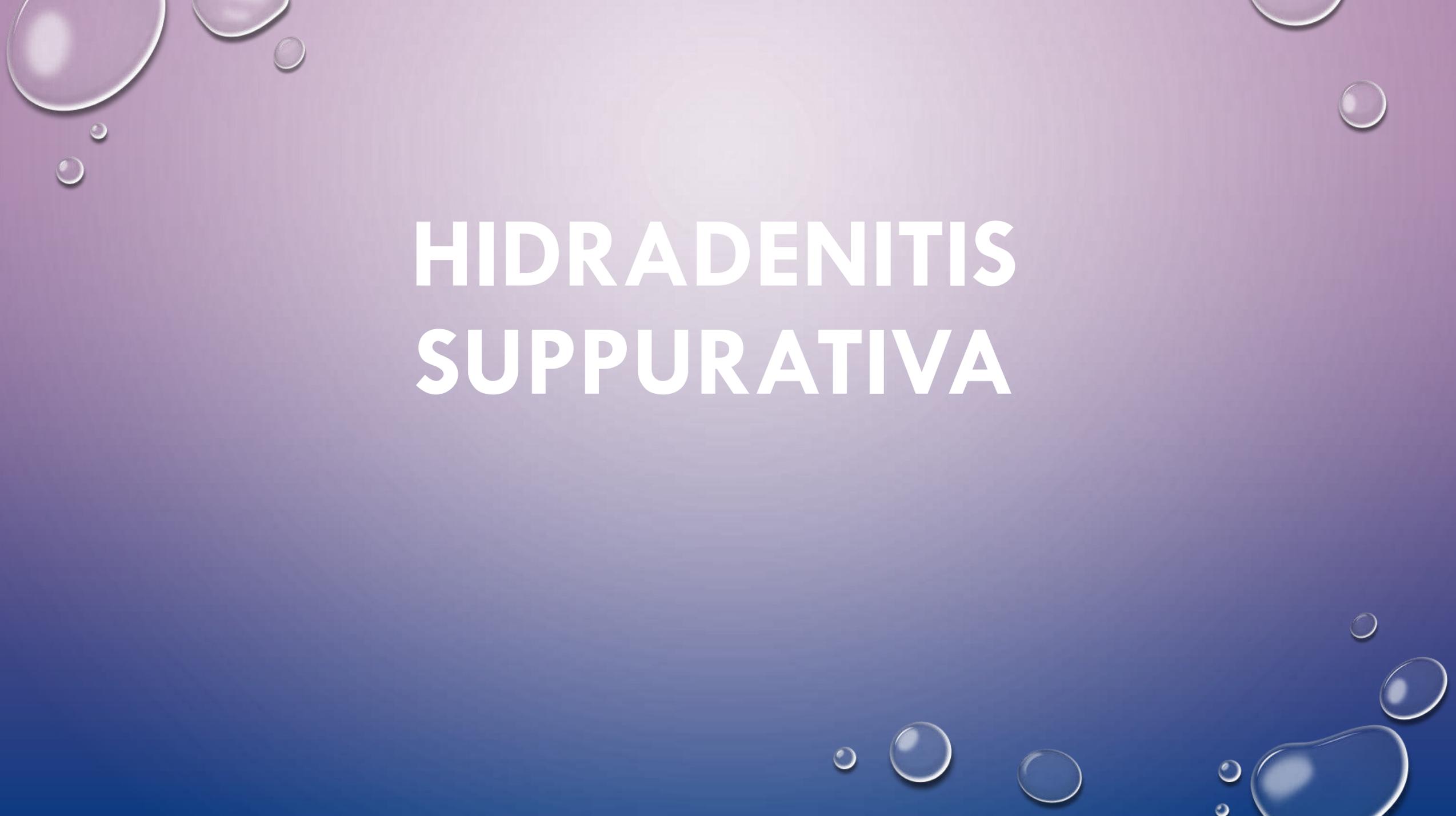
# OTHER TYPES OF ACNE

# NEONATAL ACNE

- ACNEIFORM LESIONS CONFINED TO THE **NOSE** AND **CHEEKS** MAY BE PRESENT AT BIRTH OR MAY DEVELOP IN EARLY INFANCY.
- THE LESIONS CLEAR **WITHOUT** TREATMENT AS THE LARGE **SEBACEOUS GLANDS** **STIMULATED** **BY** **MATERNAL ANDROGENS** BECOME SMALLER AND LESS ACTIVE.

## ***INFANTILE ACNE***

- THE AGE AT ONSET IS **6 TO 16 MONTHS**.
- THERE IS A **MALE** PREDOMINANCE.
- IT IS PREDOMINANTLY **INFLAMMATORY**.
- **TREATMENT** IS SIMILAR TO THAT OF **ADULT ACNE**,  
WITH THE **EXCLUSION OF THE USE OF**  
**TETRACYCLINES**.

The background is a gradient from light purple at the top to dark blue at the bottom. It features several realistic water droplets of various sizes, some with highlights and shadows, scattered across the frame. A faint, light-colored circular graphic is visible in the upper center, behind the text.

# **HIDRADENITIS SUPPURATIVA**

- HIDRADENITIS SUPPURATIVA (ACNE INVERSA) IS A CHRONIC SUPPURATIVE AND **SCARRING** DISEASE OF THE SKIN AND SUBCUTANEOUS TISSUE OCCURRING IN THE **AXILLAE**, THE **ANOGENITAL REGIONS**, AND **UNDER THE FEMALE BREAST**.
- THE DISEASE IS WORSE IN **OBESE INDIVIDUALS**.
- MILD ARE MISDIAGNOSED AS **RECURRENT FURUNCULOSIS**.
- INFLAMMATORY ARTHROPATHY MAY OCCUR IN PATIENTS WITH HIDRADENITIS SUPPURATIVA AND ACNE CONGLOBATA.



**FIGURE 7-65** ■ Hidradenitis suppurativa. An extensive case with cysts and postinflammatory hyperpigmentation.



**FIGURE 7-64** ■ Hidradenitis suppurativa. Years of inflammation in the axillae have resulted in several bandlike scars.



**FIGURE 7-66** ■ Hidradenitis suppurativa. Advanced case with cyst and communicating sinus tracts.

- A HALLMARK OF HIDRADENITIS IS THE DOUBLE COMEDONE—A BLACKHEAD WITH TWO OR SOMETIMES SEVERAL SURFACE OPENINGS THAT COMMUNICATE UNDER THE SKIN



**FIGURE 7-68** ■ Hidradenitis suppurativa. A hallmark of hidradenitis is the double and triple comedone, a black-head with two or sometimes several surface openings that communicate under the skin.

## WHAT TO DO !!

- REMEMBER TO ASK PATIENTS WITH SEVER ACNE ABOUT OTHER SITES OF INVOLVEMENT.
- REMEMBER THE DOUBLE COMEDO SIGN
- ASSOCIATIONS

# ADIOS PAPI

- ARTHRITIS
- DM
- IBD
- OBESITY
- SMOKING
- PYODERMA GANGRENOSUM
- PCOS
- ANXIETY
- INSULIN RESISTANCE

# MANAGEMENT

- **WEIGHT LOSS HELPS TO REDUCE ACTIVITY.**
- **CIGARETTE SMOKING HAS BEEN IDENTIFIED AS A MAJOR TRIGGERING FACTOR. SMOKING CESSATION SHOULD BE ENCOURAGED.** (IT IS UNKNOWN WHETHER THIS IMPROVES THE COURSE OF THE DISEASE.)

- ***ANTIBIOTICS***
- ***ISOTRETINOIN ?***
- ***TUMOR NECROSIS FACTOR-A BLOCKERS***
- ***SURGERY***

## KEY POINTS

- .Personalized Acne Treatment
- .Staging The Severity
- .Isotretinoin Is Good But Not For Everyone
- .Be Aware Of Intertriginous Area Specially In Sever Acne
- .Make Sure You Know The Side Effects



Thank You

For Your Attention



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