

Acne, Rosacea, and Related Disorders

Acne vulgaris is a chronic inflammatory disease of the pilosebaceous unit, characterized by **comedones, papules, pustules, nodules, and often scar.**

The comedon is the primary lesion of acne.

- **Comedon** may be seen as a flat or slightly elevated papule with a dilated central opening filled with blackened keratin (**open comedon or blackhead**)
- **Closed comedones** (whiteheads) are usually 1-mm yellowish papules that may require stretching of the skin to visualize.
- The clinical picture can vary significantly, from mild comedonal acne to fulminant systemic disease.
- **The follicular occlusion triad** represents a group of diseases – hidradenitis suppurativa, acne conglobata, and dissecting cellulitis – that often occur together and result from occlusion of the follicle.

Epidemiology

- **Occurrence:** Very common, affecting approximately 85% of young people.
- **Age of Onset:** Puberty: **10 to 17 years in females, 14 to 19 in males;**
However, may appear first at 25 years or older.
- **Sex:** More severe in males than in females.
- **Genetic Aspects:**
Multifactorial genetic background.
Familial predisposition: majority of individuals with cystic acne have parent(s) with a history of severe acne.

Pathogenesis

The four major factors involved in the aetiology of acne are:

- 1- Seborrhoea
- 2- Comedo formation (comedogenesis)
- 3- Colonization of the intrafollicular duct with *Propionibacterium acne*.
- 4- Inflammation.

Contributory Factors

- **Occupations:** people working with halogenated hydrocarbons, electrical insulators, tar, oils, dioxin and others.
- **Drugs:** Lithium, hydantoin, isoniazid, glucocorticoids, oral contraceptives, iodides, bromides and androgens (e.g., testosterone), danazol. Mineral oils
- **Emotional** stress can definitely cause exacerbations.
- **Occlusion and pressure** on the skin, such as by leaning face on hands, very important and often unrecognized exacerbating factor (acne mechanica).
- **Diet:** Acne is not caused by chocolate or fatty foods
- **Cosmetics** :(greasy creams and cheap pomades)
- **Premenstrual flare:** 2 -7 days premenstrual (70% of females)
- **Endocrine disorders** such as polycystic ovaries, Cushing's syndrome, virilizing neoplasm, or exogenous corticosteroids/androgens

Clinical Features

- Lesions of acne are confined to the face, shoulders, upper chest, and back.
- Seborrhea is always present.
- Comedones are the noninflammatory lesions of acne,
- The rest of the lesions; papules, pustules, nodules, and cysts are the inflammatory lesions of acne.

Skin Lesions:

- **Non-inflamed lesions** are the earliest lesions to develop in younger patients and embrace both **open (blackheads) and closed (whiteheads) comedones**. **Open comedones** represent dome-shaped papules in which there are dilated follicular outlets filled with keratin. The apparent black color is thought to be due to melanin deposited within the cellular debris. **Closed comedones** or whiteheads are generally 1 mm in diameter; skin colored and has no visible follicular opening. These lesions are often inconspicuous and require adequate lighting and stretching of the skin to be seen. Most patients have a mixture of lesions.
- **Inflammatory lesions** arise from the microcomedo or noninflammatory lesions and can develop into **superficial or deep lesions**. The superficial lesions are usually papules and pustules and the deep lesions are deep pustules and nodules.
- The term nodulo-cystic acne is incorrect. Acne 'cysts' are not true cysts because they are not lined by an epithelium. It is therefore more accurate to describe such lesions as pseudocyst.
- **Sinuses:** draining epithelial-lined tracts, usually with nodular acne.
- **Scars:** atrophic depressed (often pitted) or hypertrophic (at times, keloidal).
- **Sites of Predilection** Face, neck, trunk, upper arms, buttocks.

The disease has a range of clinical expression and can be classified according to the predominant lesion type:

- **Noninflammatory** or comedonal acne is primarily composed of open comedones (blackheads) and closed comedones (whiteheads), with little or no inflammatory involvement.
- **Inflammatory acne** is characterized by inflamed lesions (pustules, papules, and nodules) and can be further subdivided into papulopustular, nodular, and conglobate, depending on the predominant lesion type.

Acne Variants

- Acne excoriee: predominantly in females (nervous one).
- Acne medicamentosa: (acneform eruption) many drugs have been incriminated like steroid, anti-TB, anti-epileptic, PUVA, sulphur, chloral hydrate, B12, bromide, iodide.
- Preadolescent acne: Neonatal, infantile, childhood variants.
- Acne venenata: (chemical acne) acnegenic chemicals can produce comedones, like chlorinated hydrocarbons, cutting oils, petroleum oil, coal tar, pitches.
- Acne cosmetica.
- Acne detergentica.
- Acne aestivalis: mostly in females, during spring, summer, papular, no or sparse comedones & pustules.
- Acne mechanica.
- Post hair epilation acne.

TABLE 4.2

Differential diagnosis of acne

DISORDER	MAIN DISTINGUISHING FEATURES
Rosacea	No comedones, cysts or scars in rosacea and only face affected
Perioral dermatitis	Micropapules and pustules in nasolabial folds and periorally. Occasionally paranasally and even periocularly. Minimal erythema
Acne agminata	Fixed brownish-red papules on face and upper trunk. No comedones. Leaves scars. Recalcitrant to treatment
Plane warts	Small flat pink-white papules. No comedones or inflamed lesions
Sycosis barbae	Uniform inflamed papules and papulopustules in shaving areas – particularly neck

Complications of Acne

- **Acne conglobata** (gathered into balls, globus is Latin for ball). This form of acne consists of abscesses or nodules and cysts with intercommunicating sinuses. Multiple fused comedones and extensive scarring are characteristic features. Therapy is difficult; oral isotretinoin is the treatment of choice.
- **Acne fulminans**. A severe form of nodulocystic acne, with systemic signs and symptoms of fever, malaise, joint pains, and swelling.
- **Pyoderma faciale**. In this condition, the acne suddenly develops purulent nodulocystic lesions; there are no systemic symptoms.
- **Gram-negative folliculitis**. This is seen when the patient has been on antibiotic treatment for a long time for their acne. A sudden eruption of small monomorphic follicular pustules occurs.
- **Scars**. On the chest the scars are usually hypertrophic or keloidal, and on the face the scars are atrophic due to the loss of collagen resulting in “ice pick” and other forms of atrophic scars.
- **Pyogenic granuloma**. This is a rare complication of healing nodular lesions; it occurs more frequently with isotretinoin therapy.
- **Solid facial edema**. This may be symmetrical or asymmetrical; it is due to abnormal lymphatic drainage. The condition is slowly progressive and it should be treated aggressively.

Management of Acne

Acne is treated according to its severity, type of lesions present: noninflammatory or inflammatory, duration, psychological impact on the patient, socioeconomic condition of the patient, compliance of the patient, and response to previous treatment.

The treatment is aimed at targeting the abnormal pathology present:

- Reduce abnormal sebum production
- Reduce the number of P acnes bacteria
- Normalize the abnormal keratin

The other factors to be considered before initiating the treatment of acne are the duration of acne, previous treatments, presence of scarring, and socioeconomic status of the patient.

There are numerous antiacne drugs available in the market.

Mild acne can be treated by topical medications; systemic treatment is required in the following cases:

- Severe acne
- Acne not responding to local treatment.
- Prolonged duration.
- Acne excoriee.
- Patients with gram negative folliculitis.
- Active acne, causing postinflammatory hyperpigmentation and scarring.

A. Topical treatment:

- Antibacterial: (clindamycine, erythromycin, recently Dapsone 5% gel).
- Benzoyl peroxide: combined with erythromycin, It has 3 mode of action (potent antibacterial, comedolytic, peeling effect).
- Topical retinoid: it acts as comedolytic, keratolytic.
- Azeleic acid.
- Local physical therapy:
 - a. Comedone removal by comedone extractor.
 - b. Cryotherapy: by nitrous oxide probe, for cystic acne.
 - c. Intralesional corticosteroid injection: for nodulo-cystic
 - d. Photodynamic therapy.
 - e. LASER

B. Systemic treatment:

- Antibacterial: (tetracycline, doxycycline, minocycline, erythromycin, azithromycine, clindamycine, sulphonamides, dapsone). For 3-6 months.
- Hormonal therapy: (oral contraceptives, spironolactone, finestrade 1mg).
- Oral retinoid: Isotertinoin (Roaccutane) 0.5-1 mg/kg up to total dose of 120mg/kg/course.
- Oral corticosteroid: only for special reasons like severe nodulocystic acne, acne conglobata, acne fulminans & cover of the first few weeks of retinoid therapy.

C. Treatment of complications:

- Scarring: Dermabrasion (mechanical, chemical), filler injections (collagen, gelatin matrix) for ice-pick scar, laser.
- Keloid: intralesional steroid injection.

Regardless of the treatment, the patient should observe the following guidelines:

- Do not squeeze the pimples.
- Use noncomedogenic cosmetics.
- Gently wash the face two to three times a day, depending upon the greasiness of the skin, too much washing may worsen acne.
- Avoid aggravating factors that block the pilosebaceous ducts, e.g., oil, airborne grease, clothing, or occlusive sporting equipment.
- Avoid drugs that aggravate acne; oral contraceptives that contain progestogens, halogens, phenobarbitone, isoniazid, androgens, and lithium.
- Avoid humid conditions.
- **Antibiotics** and other drugs in acne have to be taken for 4–6 months.
- Do not prescribe short courses of different antibiotics. This encourages bacterial resistance.
- **Tetracyclines** should not be given to pregnant women and children.
- **A dermatologist** should only prescribe retinoids.
- If depression occurs in a patient on retinoids, stop the treatment immediately.

Rosacea

- Rosacea is a chronic inflammatory condition of the central face. The condition was thought to primarily affect fair skinned Caucasians; however, several studies have shown that all races including people with colored skin are affected.
- Although not a life threatening disease, Rosacea produces conspicuous facial redness and, in some patients, papules, pustules and rhinophyma that can have a deep impact on a patient's quality of life.

Epidemiology:

- **Occurrence:** Common, affecting approximately 10% of fair-skinned people.
- **Age of Onset:** 30 to 50 years; peak incidence between 40 and 50 years.
- **Sex** Females predominantly, but rhinophyma occurs mostly in males.
- **Race** Celtic persons (skin phototypes I and II) but also southern Mediterraneans; less frequent or rare in pigmented persons (skin phototypes V and VI, i.e., brown and black).

Staging:

The rosacea diathesis: episodic erythema, "flushing and blushing"

- Stage I: Persistent erythema with telangiectases
- Stage II: Persistent erythema, telangiectases, papules, tiny pustules.
- Stage III: Persistent deep erythema, dense telangiectases, papules, pustules, nodules; rarely persistent "solid" edema of the central part of the face

Note: progression from one stage to another does not always occur. Rosacea may start with stage II or III and stages may overlap.

Pathogenesis:

The pathogenesis of Rosacea is yet not fully understood; however, some major contributing factors have been identified:

1. **Exposure to UV radiation** and cutaneous reactive oxygen species (ROS), including superoxide and hydroxyl radicals, hydrogen peroxide, and singlet oxygen;
2. **Vascular hyperreactivity** and neuropeptides;
3. **Exacerbation** of innate immune response; and
4. **Microbes and mites**, in particular *Helicobacter pylori* and *Demodex folliculorum*.

Clinical features:

- Usually affects mid-face, most frequently the nose, and cheeks. Sometimes brow, chin, eyelids & eyes (ocular Rosacea).
- The disease is characterized by the appearance of flushing in association with erythema, papules and pustules. Pustules can be seen sitting on erythematous papules & telangiectasia. There is No comedone & no scarring.
- Secondary features that often occur include burning and stinging of the face, occasional dermatitis or scaling of the face, and edema.
- In many sufferers, Rosacea can be worsened or triggered by factors that initiate flushing, such as exercise, hot drink, emotion, menopause and alcohol
- Ocular involvement with blepharitis and conjunctivitis is present in more than 50% of patients.
- The course of the disease is typically chronic with remissions and relapses.

Differential diagnosis:

Facial Papules/Pustules

- Acne (in Rosacea there are no comedones),
- S. aureus folliculitis, gram-negative folliculitis,
- perioral dermatitis,

Facial Flushing/Erythema

- Seborrheic dermatitis,
- Prolonged use of topical glucocorticoids, systemic
- Lupus erythematosus; dermatomyositis.
- Contact dermatitis.
- Lupus erythematosus.

Complications:

- Rhinophyma.
- Facial lymphoedema.
- Ocular complications may lead to blindness.

Treatment:

- **Stage I:** Topical metronidazole gel; Alternatives include topical erythromycin, which is less effective. Use sun screens; avoid triggers if any seem clinically relevant.
- **Caution:** Topical corticosteroids are absolutely contraindicated in rosacea. They are responsible for worsening in many cases.
- **Stage II:** Systemic antibiotics, usually minocycline 50mg daily or b.i.d for 3months. Tetracycline 250mg q.i.d. on empty stomach for 3months. In either case, can gradually taper dose.
- Isotretinoin 0.2–1.0mg/kg for 6months; not with tetracycline.
- **Stage III:** Surgical intervention; debulking with scalpel, Dermabrasion, or laser ablation.

Perioral Dermatitis

Definition:

Papular dermatitis primarily involving perioral region, with distinctive pattern.

Epidemiology: Most common in young women.

Etiology Unknown but may be markedly aggravated by potent topical (fluorinated) glucocorticoids.

Clinical features:

- Tiny Erythematous papules and pustules without comedones grouped around mouth with distinctive zone between vermilion and first lesions;
- May also be Periorbital or perinasal.

Differential diagnosis:

- Allergic contact dermatitis.
- Atopic dermatitis.
- Seborrheic dermatitis.
- Rosacea,
- Acne vulgaris.
- Steroid acne.

Treatment:**Topical:**

- Avoid topical glucocorticoids.
- Metronidazole , 0.75% gel two times daily or
- 1% once daily Erythromycin , 2% gel applied twice daily

Systemic:

- Minocycline or doxycycline, 100 mg daily until clear, then 50 mg daily for another 2 months (caution, doxycycline is a photosensitizing drug)