Introduction

- Sebaceous glands are holocrine glands i.e. discharge their secretions by complete disintegration of the glandular cells.
- They give the skin a smooth, shiny appearance by controlling moisture loss.
- They protect the skin from fungal and bacterial infections-fatty acid in sebum.
- They may also be found in eyelid (Meibomian glands), mucous membrane, nipple, peri-anal region & genitalia.
- Androgenic hormones, especially dihydrotestosterone, stimulate sebaceous gland activity.
- The sebaceous glands react to maternal androgens for a short time after birth, and then lie dormant until puberty when a surge of androgens produces a sudden increase in sebum production and sets the stage for acne.

Disorders of the Sebaceous glands:

- Acne
- Comedones (black heads)
- Milia (white heads)
- Rosacea
- Seborrhoea
- Asteatosis
- Perioral Dermatitis
- Steatoma
- Boils-Furuncle

Acne vulgaris

- An androgenically-stimulated, chronic inflammatory disease of the pilosebaceous follicles, resulting in comedones, papules, pustules, cysts, nodules and occasional scarring.
- Sites of predilection are the face (cheeks, nose, forehead and chin), ears, neck (nuchal areas), upper trunk (chest & back), and upper arms.
- Not found on palms and soles

Aetiology

The aetiological factors are:

- Increased sebum production
- Follicular hyperkeratinization (resulting in blackheads and whiteheads)
- Colonization of the pilosebaceous unit with Propionibacterium acnes, staphl spp, pityrosporon ovale
- Chronic inflammatory states.
- Genetic and hormonal factors also have a role.

Epidemiology

- 90% of the cases are adolescents
- Equal occurrence in both sexes
- Less common in adults after 4th decade
- More in blacks
Pathology

- Androgens cause increased production of sebum by the sebaceous glands, and proliferation of keratinocytes, with resultant increase in keratin production. This causes occlusion of the duct orifice, with accumulation of sebum in the lower part of the ducts.
- There’s disruption of the follicular epithelium, permitting discharge of follicular contents into the dermis, resulting in inflammation, papules, pustules & nodulocystic lesions.

Clinical Features

- Lesions are usually limited to the face, shoulders, upper chest and back
- There is seborrhoea (greasy skin)
- Open comedones (black head)
- Closed comedones (white heads) due to accumulation of sebum and keratin deeper in pilosebaceous ducts
- Inflammatory papules, pustules, nodules and cysts may occur
- There may be scarring

Clinical variants

- **Infantile (neonatal):** This rare type of acne is present at, or appears soon after birth. It is more common in males and may last up to 3 years. Its morphology is like that of common acne and it may be the forerunner of severe acne in adolescence.
- **Fulminans:** Acne fulminans is a rare variant in which conglobate acne is accompanied by fever, joint pains and a high erythrocyte sedimentation rate (ESR).
- **Exogenous:** by exposure to Tars, chlorinated hydrocarbons, oils, and oily cosmetics can cause or exacerbate acne. Suspicion should be raised if the distribution is odd or if comedones predominate.
- **Excoriated:** This is most common in young girls. Obsessional picking is common among them.
- **Late onset:** This too occurs mainly in women and is often limited to the chin. Nodular and cystic lesions predominate. It is stubborn and persistent.
- **Tropical:** This occurs mainly on the trunk and may be conglobate.
- **Drug-induced:** Suspicion should be raised when acne, dominated by papulo-pustules rather than comedones, appears suddenly in a non-teenager and coincides with the prescription of a drug known to cause acneiform lesions. Some athletes still use anabolic steroids to enhance their performance (steroid acne).

Treatment (depends on degree of involvement)

Aim is to control:

- Sebum production and accumulation
- Bacterial colony
- Keratinisation of follicular epithelium

Can be:

1. General (reassurance & diet)
2. Medical
3. Surgical
Medical

Can be *topical* or *systemic*

**Topical:**

- **Sebum production**
  - Cleansing with soap at least twice daily
- **Bacterial colony**
  - Benzoyl peroxide
  - Clindamycin
  - Erythromycin
  - Tetracycline
- **Keratinolytic:**
  - Azelaic acid (Azelex)
  - Tretinoin (Retin-A)
  - Salicylic acid

**Systemic**

- **Sebum Production:**
  - Hormones: OCPs, combined anti-androgen- OCPs. It causes feminization in males and side effects include weight gain, depression and loss of libido
- **Bacteria Colony:**
  - Tetracycline
  - Minocycline
  - Clindamycin
  - Erythromycin
  - Sulfonamides
- **Keratinolytic Agents:**
  - Vitamin A
  - Isotretinoin (Accutane) 1-2mg/kg/day in 1-2 doses for 15-20 wks, side effects include dryness of the skin and mucous membranes, chelitis, epitaxis and conjunctivitis. It is teratogenic and should not be used in a woman of childbearing age, depression and suicidal ideation, abnormal lipid profile (high cholesterol).

**Rosacea (acne rosacea)**

- It is a chronic inflammatory congestion of the cheeks, centre of the forehead and nose. It occasionally affects the trunk, arms and legs.
- Epidemiology—after or during middle age. Commonly affects women.

**Aetiology**

Unknown but could be aggravated by:

- Consumption of hot liquids,
- Spicy foods or alcohol,
- Exposure to extremes of temperature
- Sunlight and
- Stress
Clinical features

- Redness—underground erythema and teleangiectesia-Dilatation of blood vessels,
- Papules and Pustules
- Absence of comedones
- Seborrhoea
- Rhinophyma

Seborrhoea

- It is a skin condition caused by over activity of sebaceous gland resulting in excessive production of sebum.
- Often is the basis of acne.
- *Treatment*: Wash with warm water and soap and use of astringent condition

Perioral dermatitis

- It is the inflammation of the skin around the mouth
- Epidemiology—women between 20 and 60 years
- Aetiology----Unknown but corticosteroids and some oily cosmetics esp moisturizers tend to it or make it worse
- *Treatment*: Oral Tetracycline

Boils and furuncles

- Subcutaneous abscess
- Caused by bacteria that enter the skin through the hair follicle
- *Clinical features*: Pain, swelling, fever, tachycardia
- *Treatment*: antibiotics

Disorders of Sweat Glands:

- Sweat glands are a component of the dermis.
- Sweat glands play an important role in temperature control, the skin surface being cooled by evaporation.
- Up to 10L/day of sweat can be excreted.

Introduction

Three stimuli that induce sweating

1. *Thermal*: sweating is a reflex response to a raised environmental temperature and occurs all over the body, especially the chest, back, forehead, scalp and axillae.
2. *Emotional*: sweating is provoked by fear or anxiety and is seen mainly on the palms, soles and axillae.
3. *Gustatory*: sweating is provoked by hot spicy foods and affects the face.

Types

There are 2 types of sweat glands:

- Eccrine sweat glands:
  - Distributed all over the body, but most numerous over palms, soles and axillae.
- Apocrine sweat glands:
  - Are limited to the axillae, nipples, peri-umbilical area, perineum and genitalia.
Eccrine sweat glands

- These are coiled tubular sweat glands occurring all over the body. There are 2–3 million sweat glands distributed all over the body.
- The tightly coiled glands lie deep in the dermis, and the emerging duct passes to the surface by penetrating the epidermis in a corkscrew fashion.
- Sweat is formed in the coiled gland by active secretion, involving the sodium pump.

Disorders of eccrine sweat glands

- Clinical disorders can follow increased or decreased sweating, or blockage of sweat gland ducts. Thus it may be:
  - Hyperhidrosis: excessive or profuse sweating
  - Hypohidrosis: reduced sweating
  - Anhidrosis: absence of sweating

Miliaria

- Miliaria is a common disorder of the eccrine sweat glands that often occurs in conditions of increased heat and humidity.
- Miliaria is thought to be caused by blockage of the sweat ducts, which results in the leakage of eccrine sweat into the epidermis or dermis.
- So Miliaria is due to interference with sweat delivery
- This is the result of plugging and rupture of sweat ducts.
- It occurs in hot humid climates, at any age and is common in over-clothed infants in hot environment.
- The physical signs depend on where the ducts are blocked (level of obstruction).

Miliaria crystallina: This presents as tiny clear non-inflamed vesicles that look like droplet of water. This is the most superficial type.

Miliaria rubra (prickly heat): Tiny erythematous and very itchy papules.

Miliaria profunda: These consist of larger erythematous papules or pustules. This is the deepest type.

Treatment

- The best treatment is to move to a cooler climate or into air conditioning.
- Clothing that prevents the evaporation of sweat (e.g. nylon shirts) should be avoided; cotton is best.
- Topical steroids reduce irritation but should only be used briefly.
- Calamine lotion, cool sand soothes.
- There is controversy on the use of ascorbic acid

Disorders of apocrine sweat glands

- Suppurative hidradenitis (apocrine acne)
- Fox–Fordyce disease
Suppurative hidradenitis (apocrine acne)

- More common in women.
- Its cause is unknown, but an underlying follicular abnormality seems likely.
- This is a severe chronic suppurative disorder of the apocrine glands. Many papules, pustules, cysts, sinuses and scars occur in the axillae, groin and perianal areas.
- The condition may coexist with conglobate acne.
- Slightly raised androgen levels are found in some affected females.
- It is probably not an immunodeficiency or a primary infection of the apocrine glands, although Staphylococcus aureus, anaerobic streptococci and Bacterioides spp. are frequently present.
- Streptococcus milleri has implicated as the main pathogen.

Treatment

- It is unsatisfactory may include:
- Local treatment e.g. regular gentle cleansing with soap and water.
- Topical antibiotics e.g. Benzoyl peroxide
- Systemic antibiotics e.g. clindamycin, erythromycin help early lesions to resolve but are ineffective for chronic draining abscesses and sinuses.
- Incision and drainage of abscesses, and injections of intralesional triamcinolone (5–10 mg/mL) may reduce the incidence of deforming scars and sinus formation.

Fox–Fordyce disease

- This rare disease of the apocrine ducts is comparable to miliaria rubra of the eccrine duct. It occurs in women after puberty.
- Itchy skin-coloured or light brown papules appear in the axillae and other areas where apocrine glands are found, such as the breasts and vulva.
- Treatment is not usually necessary but removal of the affected skin, or electrodessication of the most irritable lesions can be considered.