STRUCTURE AND FUNCTIONS OF THE SKIN

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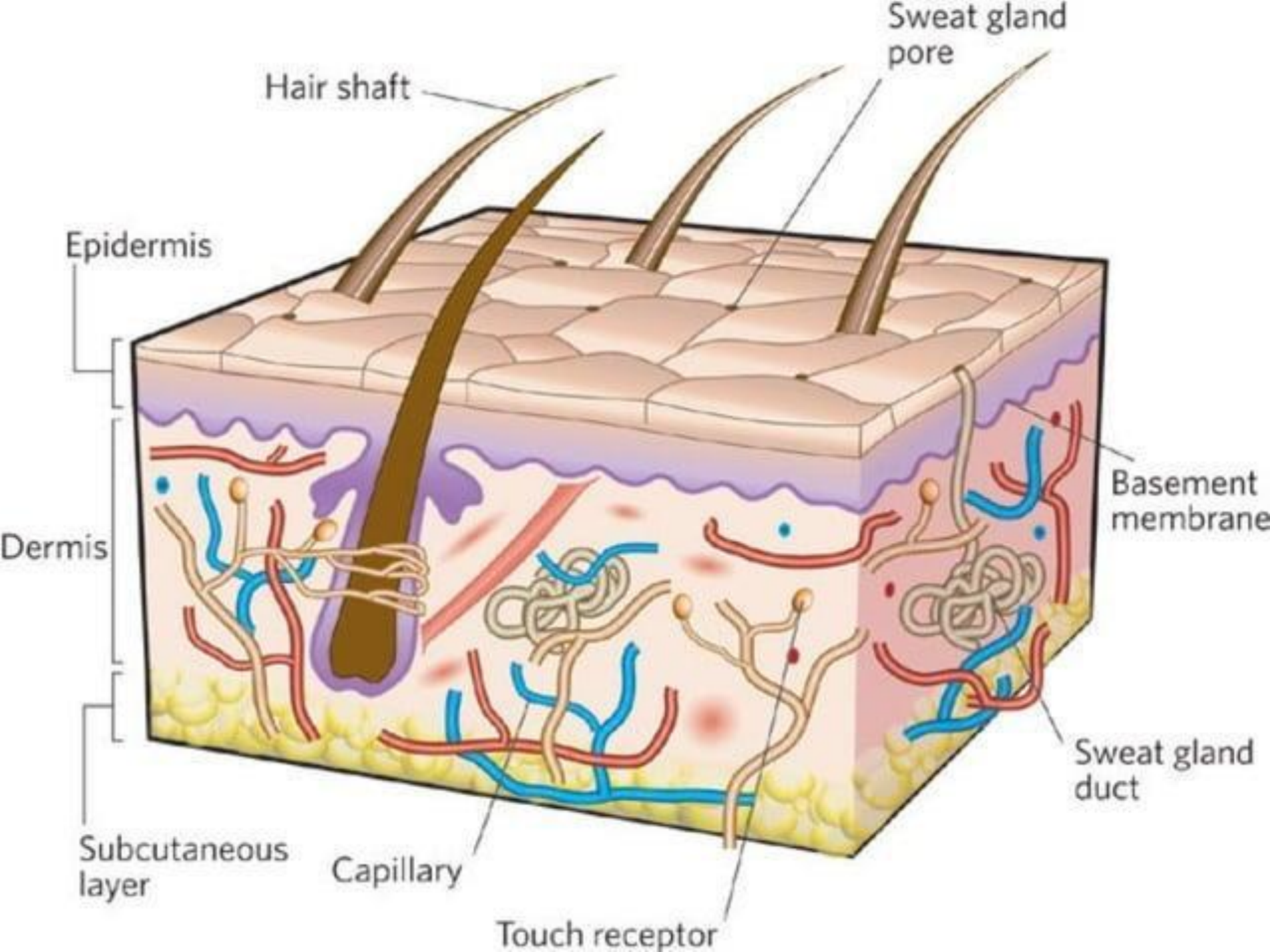
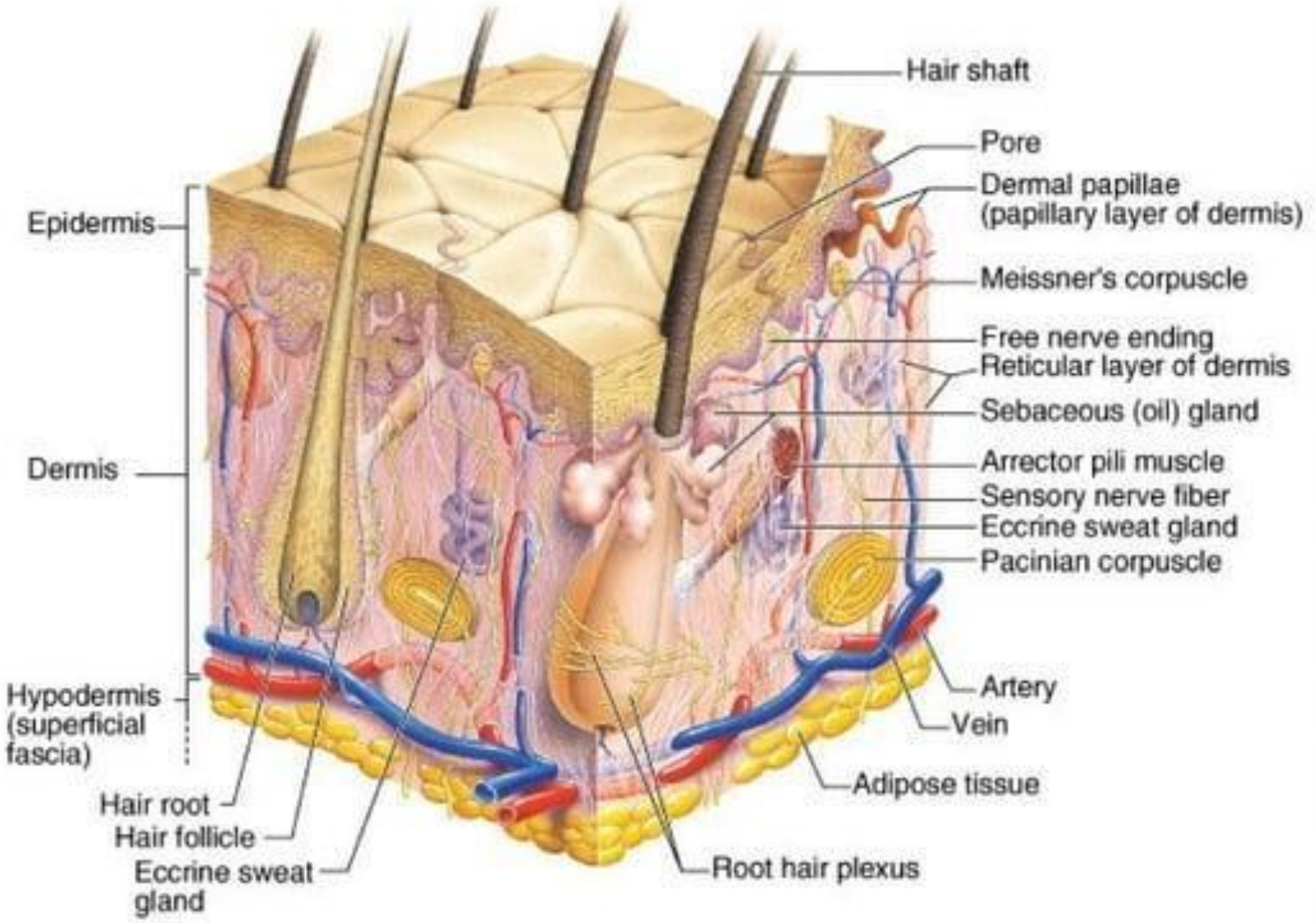
Layers of skin

- The skin is composed of three layers: epidermis, dermis and hypodermis (***subcutis***).
- ***Epidermis***: is composed of cellular components only.
- ***Dermis***: is formed of three types of components: cellular, fibrous matrix, diffuse and filamentous matrix. It is also a site of vascular, lymphatic, and nerve networks.
- ***Hypodermis*** (***subcutis***) contains the larger vessels and nerves.


Sweat gland pore
Hair shaft
Epidermis
Dermis
Basement membrane
Sweat gland duct
Subcutaneous layer
Capillary
Touch receptor



Epidermis

- It is formed of keratinocytes and dendritic cells.
- Dendritic cells include melanocytes, Langerhans cells and indeterminate dendritic cells.
- Layers of Epidermis:

r **BASAL LAYER (Stratum Germinativum)**

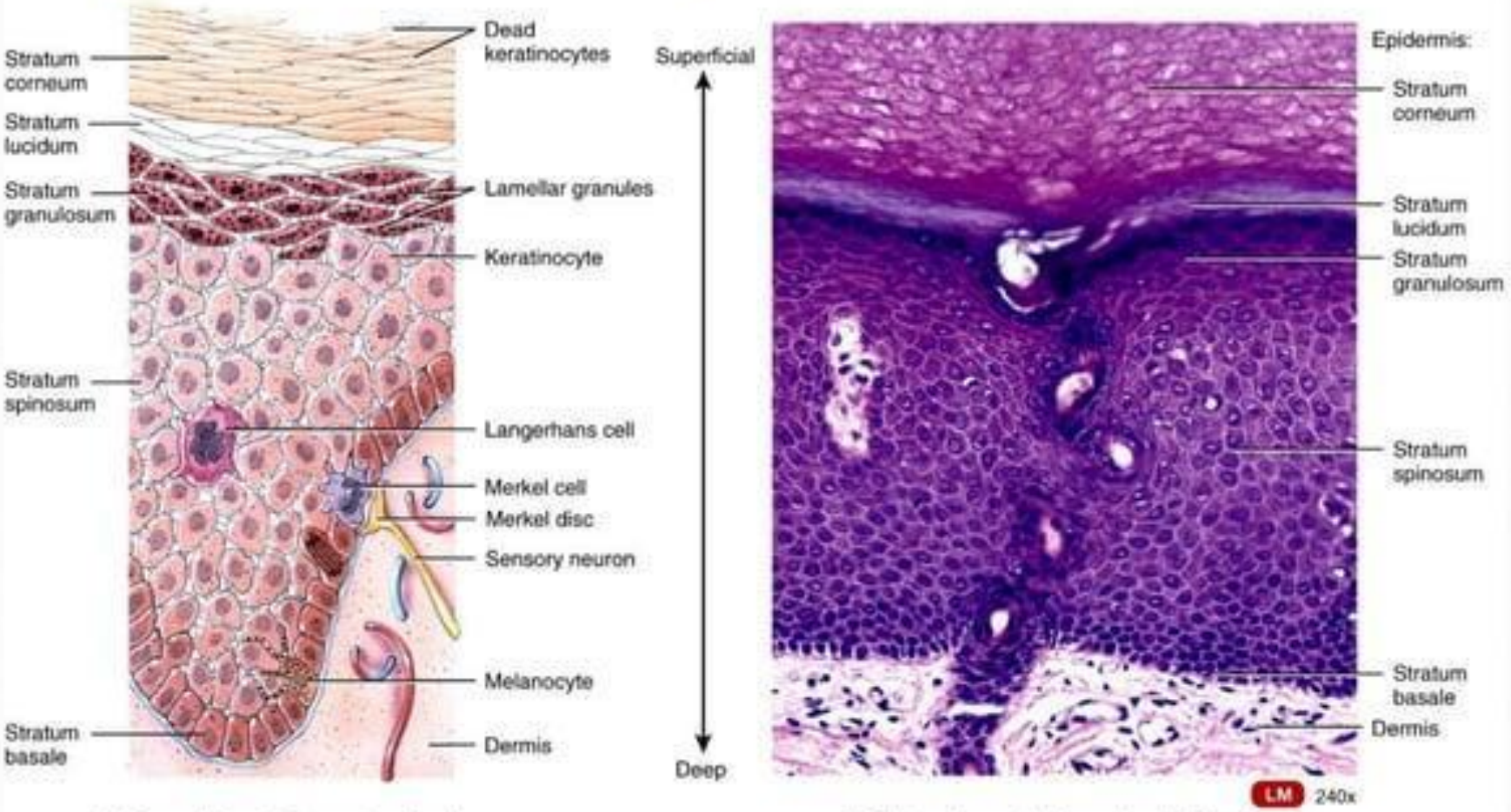
a **SPINOUS LAYER (Stratum spinosum)**

t **GRANULAR LAYER (Stratum granulosum)**

S **CLEAR CELL LAYER (Stratum lucidum)**

HORNY LAYER (Stratum corneum)

Layers of the Epidermis



(a) Four principal cell types in epidermis

(b) Photomicrograph of a portion of thick skin

Figure 05.03 Tortora - PAP 12/e

Dermis

- It is composed of fibrous and cellular connective tissue elements and contains nerve and vascular networks, skin appendages and many cell types.
- It is arranged into two regions:

3. The upper papillary dermis and
4. The deeper reticular dermis.

- The papillary dermis takes the contour of epidermis, and is usually no more that twice its thickness.
- The reticular dermis forms the bulk of the dermal tissue

Hypodermis (Subcutis)

- It is primarily composed of adipose tissue.

2. It insulates the body,
3. It serves as a reserve energy supply
4. It protects the skin
5. It allows for its mobility over the underlying structures.
6. It has a cosmetic effect in molding body contours

Functions of the Skin

- Temperature Regulation
  - Sweat glands
  - Vasodilation and vasoconstriction
- Cutaneous Sensation
  - Meissner's corpuscles
  - Pacinian corpuscles
  - Root hair plexuses
  - Pain and heat/cold receptors
- Metabolic Functions
  - Vitamin D synthesis
- Blood Reservoir
  - Shunts more blood into the circulation when needed.
- Excretion

Functions of the skin

Function	Tissue layer
• Permeability barrier	• Epidermis
• Thermoregulation	• Epidermis
• Ultraviolet protection	• Epidermis
• Wound repair/regeneration	• Epidermis & Dermis
• Physical appearance	• Epidermis-Dermis & Hypodermis
• Sensation	• Epidermis – Dermis – Hypodermis

Primary skin Lesions

- lesions with which skin diseases begin
- They may continue as such
- They may undergo modification, passing into the secondary skin lesions.

Primary skin lesions

- **Macule:** a circumscribed area of change in normal skin color without elevation or depression of the surface relative to the surrounding skin and less than 1 cm in diameter. e.g. pityriasis versicolor.
- **Patch**: a macule greater than 1 cm. e.g. tuberculoid leprosy
- **Papule:** a solid lesion, usually dome-shaped, less than 1 cm in diameter. Most of it is elevated above, rather than deep within, the plane of the surrounding skin. e.g. ,lichen planus and warts

Primary Skin Lesions


nodule


cyst


bullae


macule

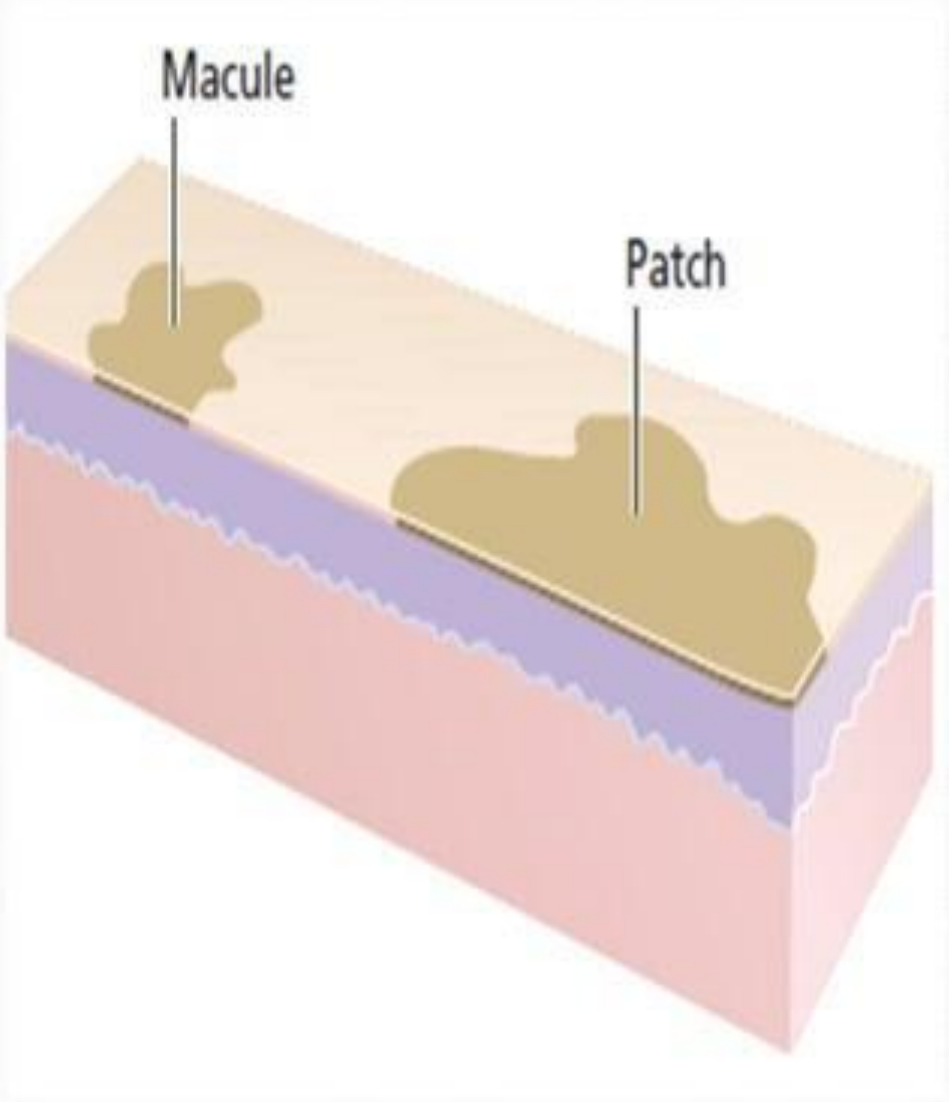

plaque

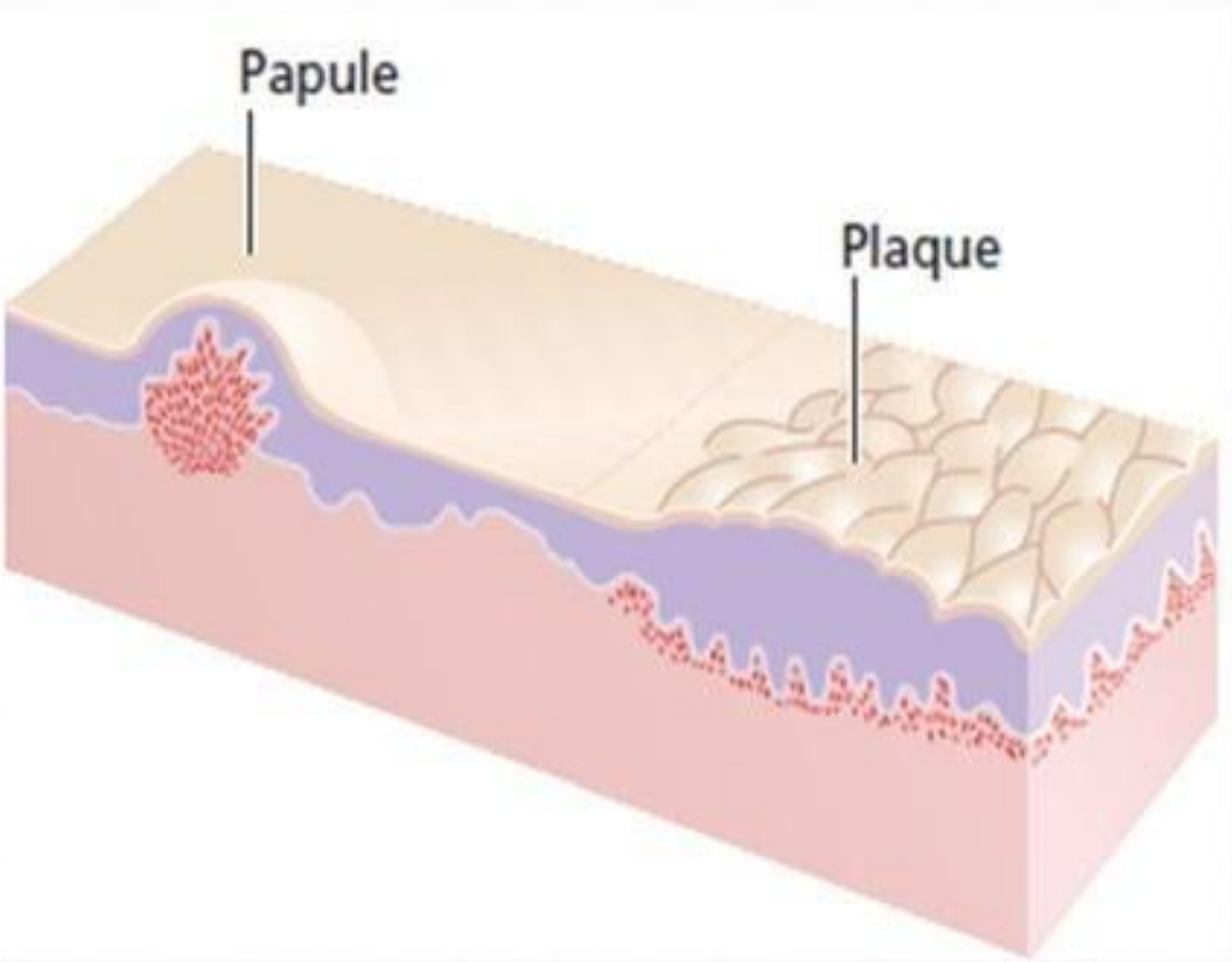

wheal


vesicle


pustule

- **Nodule:** a palpable, solid lesion usually larger than 1cm, deeper than a papule and may extend into the dermis or subcutaneous tissue e.g. lepromatous leprosy, lupus vulgaris and erythema nodosum
- **Plaque:** an elevation above the skin surface that occupies a relatively large surface area in comparison with its height above the skin. Frequently it is formed by confluence of papules. e.g. psoriasis, lichen planus and discoid lupus erythematosus.


Macule
Patch


Papule
Plaque

Recognizing common skin lesions

MACULE
A small (usually less than 1 cm in diameter), flat blemish or discoloration that can be brown, tan, red, or white and has same texture as surrounding skin

BULLA
A raised, thin-walled blister greater than 0.5 cm in diameter, containing clear or serous fluid

VESICLE
A small (less than 0.5 cm in diameter), thin-walled, raised blister containing clear, serous, purulent, or bloody fluid

PUSTULE
A circumscribed, pus or lymph-filled, elevated lesion that varies in diameter and may be firm or soft and white or yellow

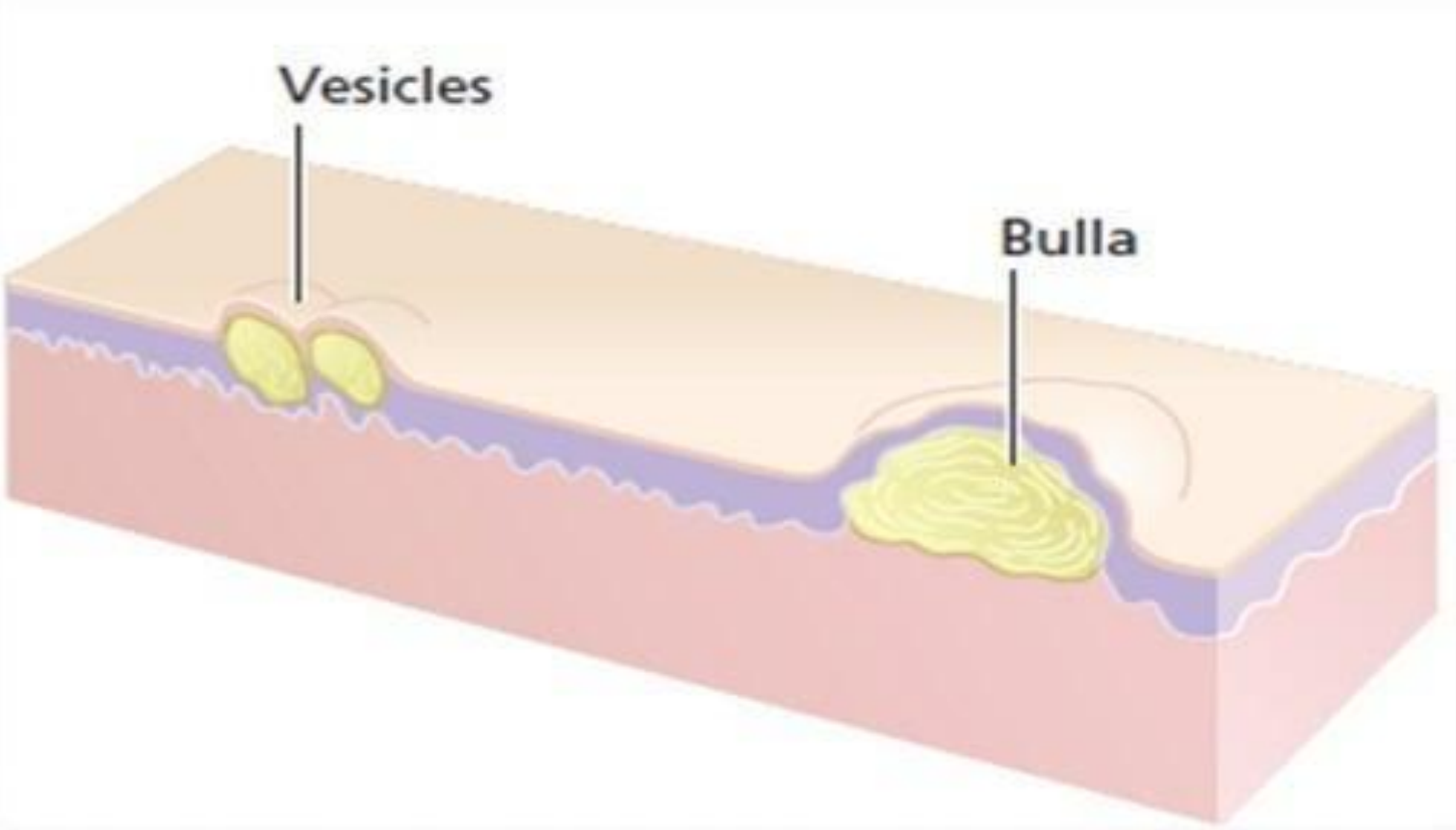
WHEAL
A slightly raised, firm lesion of variable size and shape, surrounded by edema; skin may be red or pale

NODULE
A small, hard, circumscribed, elevated lesion 1 to 2 cm in diameter with possible skin discoloration

PAPULE
A small, solid, raised lesion less than 1 cm in diameter, with red to purple skin discoloration

TUMOR
A solid, raised mass usually larger than 2 cm in diameter with possible skin discoloration

- **Vesicle**: a circumscribed, thin-walled, elevated lesion containing serous fluid. Less than 1 cm in diameter. e.g. herpes simplex and herpes zoster.
- **Pustule:** like vesicle but containing pus. e.g. pustular psoriasis .
- **Bulla:** a cystic swelling like the vesicle but greater than 1 cm in diameter. e.g. bullous impetigo& second degree burn.


Vesicles
Bulla

Primary skin lesions

- **Comedo (comedones):** a plug of keratin and sebum in a dilated pilosebaceous orifice leading to the formation of black heads. It is the primary lesion of acne vulgaris.
- **Burrow:** a greyish irregular small tunnel in the horny layer of skin that houses a parasite (Sarcopts scabiei) and is characteristic of scabies
- **Wheal (weal):** an evanescent, edematous plaque, lasting only a few hours, with peripheral redness and usually pruritus. It is the primary lesion of urticaria.

Secondary skin Lesions

- They may evolve from primary lesions
- They may be caused by external forces such as scratching, rubbing, trauma, infection, or the healing process.
- **Pustules:** results from secondary infection of vesicles
- **Scales**: due to peeling of skin following superficial inflammation as in eczema and following scarlet fever .
- **Crust:** Crusting is the result of the drying of plasma or exudate on the skin. e.g. crusted impetigo

Secondary skin lesions

- **Atrophy**: thinning or absence of the epidermis, dermis or subcutaneous fat. e.g. atrophic lichen planus.
- **Lichenification**: thickening of the epidermis seen with *hyperkeratosis*, *hyperpigmentation* and *exaggeration of normal skin lines.*
- **Erosion**: slightly depressed areas of skin in which part or all of the epidermis has been lost.
- **Fissure**: linear cleavage of skin which extends into the dermis. e.g.the cracks of chapped lips and hands and fissured heel.

Secondary skin lesions

- **Ulceration**: necrosis of the epidermis and dermis and sometimes of the underlying subcutaneous tissue. e.g. chancre and varicose ulcer.
- **Scar**: permanent fibrotic changes that occur on the skin following damage to the dermis.
- **Keloids**: an exaggerated connective tissue response of injured skin leading to extensive fibrosis that extends beyond the edges of the original wound.

- **Petechiae, Purpura, and Ecchymoses**: bleeding that occurs in the skin.
- Generally, the term "petechiae" refers to smaller lesions.
- "Purpura" and "ecchymoses" are terms that refer to larger lesions.

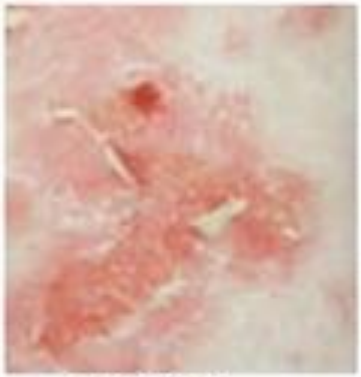
Secondary Skin Lesions

ulcer

fissure

scale

lichenification

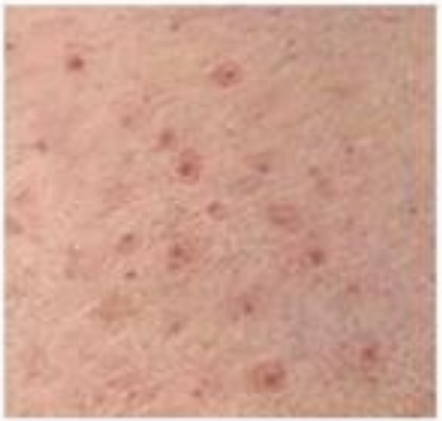


erosion

atrophy

Vascular Lesions

purpura



petechiae

telangiectasia:

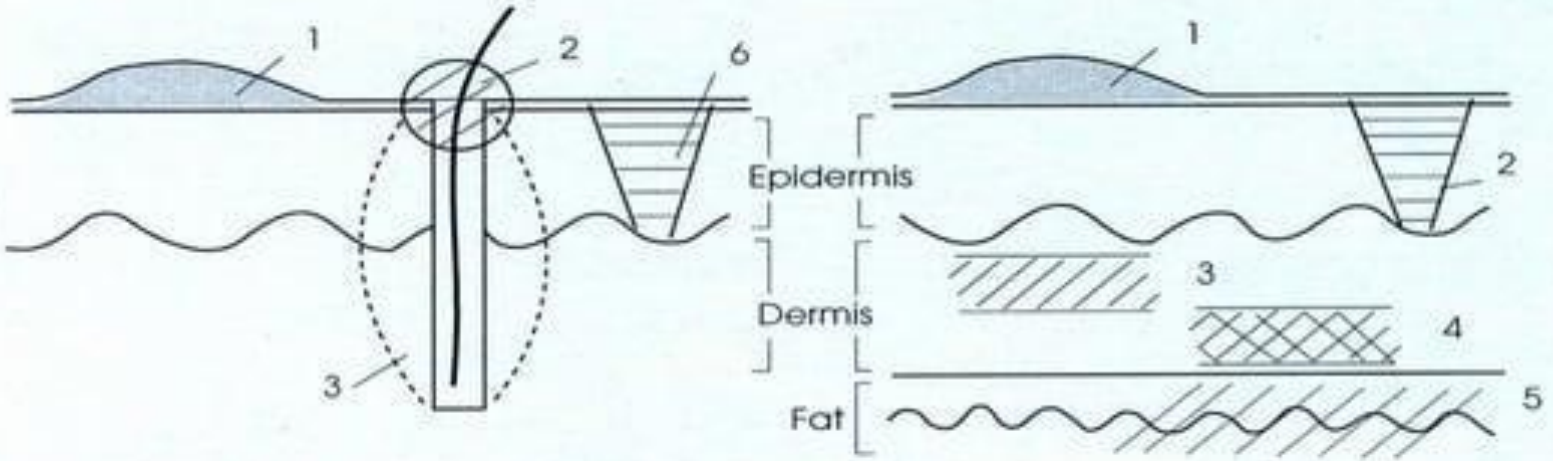
BACTERIAL SKIN DISEASES

- Impetigo contagiosa
- Cellulitis and Erysipelas

Bacterial Infections

Staph. → Appendages

Strepto. → skin



1. Impetigo
2. Folliculitis
3. Boils
4. carbuncle
5. Hidradenitis suppurativa
6. Ecthyma

1. Impetigo,
2. Ecthyma
3. Erysipelas,
4. Cellulitis
5. Necrotizing fasciitis
6. Intertrigo

Impetigo contagiosa

- **Bullous impetigo** is mainly caused by Staphylococcus *aureus*.
- **Non bullous Impetigo:** may be caused by staphylococci; group A beta haemolytic streptococci and /or Staphyloccocus aureus
- **Clinical picture:**

4. The lesion is a thin walled vesicle on an erythematous base
5. It ruptures early, leaving a crusted exudate of a honey or yellowish brown color over the superficial erosion.
6. Crusts eventually dry and separate to leave erythema which fades without scarring.
7. The most common sites:the face around nose and mouth, limbs and scalp but lesions can occur on any site of the body

BACTERIAL SKIN INFECTIONS

- **Impetigo:**

  1- Non-bullous impetigo (Impetigo contagiosa)

Bullous impetigo

- It presents with superficial, flaccid fragile bullae
- The bullae are less rapidly ruptured and become much larger (1-2 cms) or even more. The fluid contents are first clear then become turbid.
- After rupture; thin flat brownish crusts are formed. Central healing and peripheral extension may give rise to circinate lesions

2- Bullous Impetigo

Complications

- Post-streptococcal acute glomerulonephritis
- Scarlet fever, urticaria and erythema multiforme
- Occasionally, deeper infections like cellulitis

Treatment:

- Good hygiene and hand washing should be encouraged.
- Treatment of underlying predisposing causes (scabies, pediculosis ...etc)
- Removal of crusts with saline soaks, washing with soap and water and frequent application of antibiotic ointment.
- Topical treatment alone may suffice.

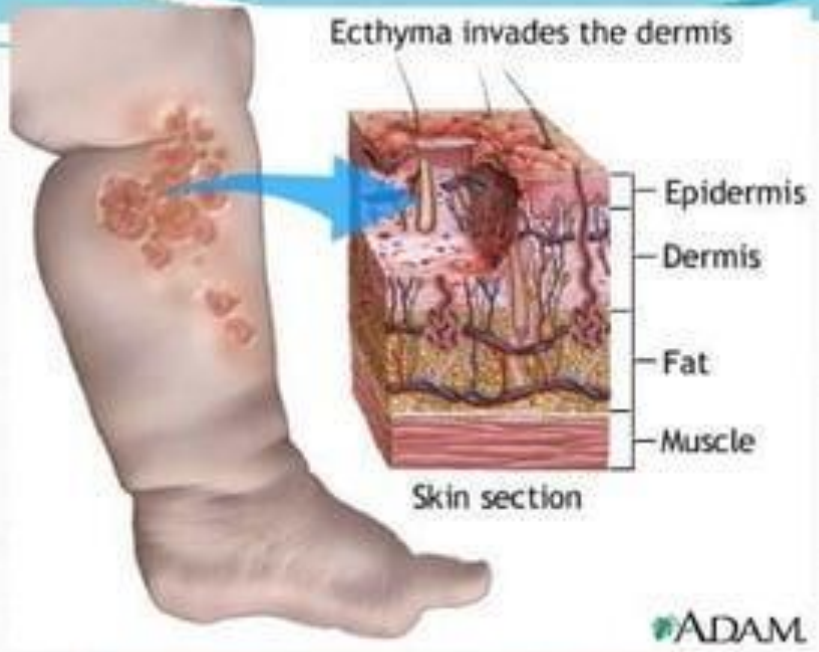
5. Potassium permenganate 1/10000 lotion is a drying, antiseptic lotion applied 4-5 times daily
6. Antibiotic creams; gentamycin, neomycin, bacitracin&, fucidic acid twice daily.

- Systemic antibiotics are indicated in :bullous impetigo and for non bullous type if the infection is widespread, severe, or is accompanied by lymphadenopathy

Ecthyma

- Streptococcal & staph
- Common in children
- Small bullae or pustules on erythematous base
- Formation of adherent dry crusts
- Beneath which ulcer present
- Indurated base
- Heals with scar and pigmentation
- Buttocks, thighs and legs, commonly affected

- ***Ecthyma (ulcerative impetigo):*** adherent crusts, beneath which purulent irregular ulcers occur. Healing occurs after few wks, with scarring.




DOIA

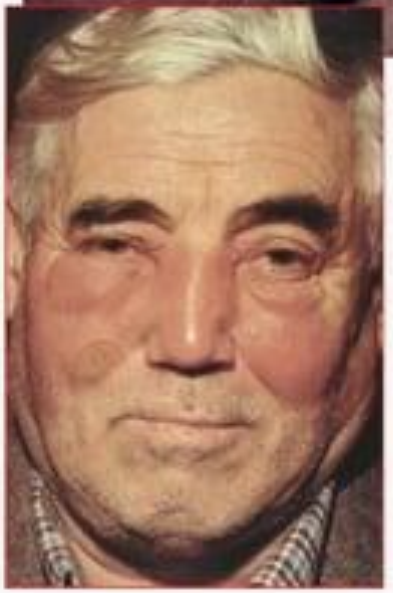
- ***Site:*** more on distal extremities (thighs & legs).

Cellulitis and Erysipelas

- Cellulitis is an acute, subacute or chronic bacterial inflammation of loose connective tissue in the subcutaneous area.
- Erysipelas is a bacterial infection of the dermis and upper subcutaneous tissue.
- **Causes:** Group A beta haemolytic streptococci (*S. pyogenes*) , *Staphylococcus aureus*, *Haemophylus influenzae* type b, or *Pseudomonas aeruginosa*
- Both cellulitis and erysipelas begin with a minor incident, such as a scratch. They can also begin at the site of a burn, surgical cut, or wound

- **Cellulitis** is an infection of subcutaneous tissues.
- **Ersipelas:** It's due to infection of the dermis & upper subcutaneous tissue by gp A streptococci. The organism reaches the dermis through a wound or small abrasion. It is regarded as a superficial "dermal" form of cut. cellulitis.

- Erythema, heat, swelling and pain or tenderness.
- Fever and malaise which is more severe in erysipelas.
- In erysipelas: blistering and hemorrhage.
- Lymphangitis and lymphadenopathy are frequent.



- Edge of the lesion: well demarcated and raised in erysipelas and diffuse in cellulitis.

- - Erysipelas
- - Cellulitis

Clinical picture

- Erythema, heat, swelling and pain or tenderness
- Fever and chills and other constitutional manifestations
- **Erysipelas** :the onset is more abrupt, the edge of lesion is *well demarcated* and raised. The surface is usually shiny bright red and vesicles or bullae are common.
- **Cellulitis** :the skin is dusky red, the *edge is diffuse ill defined* and fades into the surrounding skin and no blisters are present.

Treatment:

- Rest and cool compresses on the affected areas
- Symptomatic treatment for pyrexia and pain
- Oral antibiotics may be sufficient but high doses of intramuscular or intravenous antibiotics are needed in severe cases.
- For presumed streptococcal infection penicillin is the treatment of choice:

5. Benzyl penicillin 600-1200 mg i.v. 6 hourly for at least 10 days.
6. Benzathine penicillin (G) 600, 000 units IM twice daily till signs and symptoms disappear then 600,000 units daily for one week to prevent recurrence. Erythromycin 500 mg every 8 hours for 10 days or clindamycin are alternatives
7.

Complications

- Lymphangitis and lymphoedema
- Elephantiasis
- Glomerulonephritis, gangrene, endocarditis and septicaemia

TB and Leprosy

CUTANEOUS TUBERCULOSIS

- **Causative organism:***Mycobacterium tuberculosis*, a nonmotile, nonsporing facultative anerobic, acid fast, intracellular curved rods.
- **Classification:**
- **Inoculation tuberculosis (exogenous)**

4. Tuberculous chancre (primary complex)
5. Warty TB (tuberculosis verrucosa cutis)
6. Lupus vulgaris (some cases)

- **Secondary TB (endogenous):**

8. Contagious spread: scruofuloderma
9. Autoinoculation: tuberculosis cutis orificialis

Classification of cutaneous TB

- **Haematogemous:**

2. Acute miliary TB
3. Lupus vulgaris (some cases)

- **Eruptive TB (tuberculides)**

e *Micropapular*: lichen scrofulsorum

s *Papular*: papulonecrotic tuberculide

Nodular: erythema induratum

Tuberculous chancre

- It results from direct inoculation of the organism into the skin or mucous membranes of an individual *who is not previously infected with TB*.
- An inflammatory papule develops in 2-4 weeks at the site of inoculation.
- It breaks down into firm indolent nontender undermined shallow ulcer with granulomatous base
- Painless regional lymphadenopathy is evident in 3-8 weeks
- The ulcer heals spontaneously leaving a scar.

Tuberculosis verrucosa cutis

- It occurs after direct inoculation of TB into the skin of an individual *previously infected with the organism and has a high degree of immunity.*
- A purplish or brownish-red warty growth on the knees, elbows, hands, feet and buttocks.

Lupus vulgaris(apple jelly nodule)

- A persistent and progressive form of cutaneous TB. It occurs in persons with moderate or high degree of anti-TB immunity
- A sharply defined reddish brown soft palque composed of deep seated nodules with gelatinous consistency (apple jelly nodules).
- . It heals with thin smooth unhealthy contractile scar. :Active lupus vulgaris frequently appears in the scar tissue.
- **Clinical varieties:**Plaque,nodular,vegetating,ulcerative &Tumor forms

Complications

- Disfigurments:

M Ectropion,

M Eating up of the nasal cartilage while the remaining ala nasi and intact central portion of the nose form the picture of "**parrot- beak**" nose.

a Mouth: microstomia

i Pseudo-ankylosis of joints.

- Recurrent attacks of erysipelas due to secondary streptococcal infection
- Tuberculous meningitis or pulmonary TB
- Squamous cell carcinoma.

Diascopy test

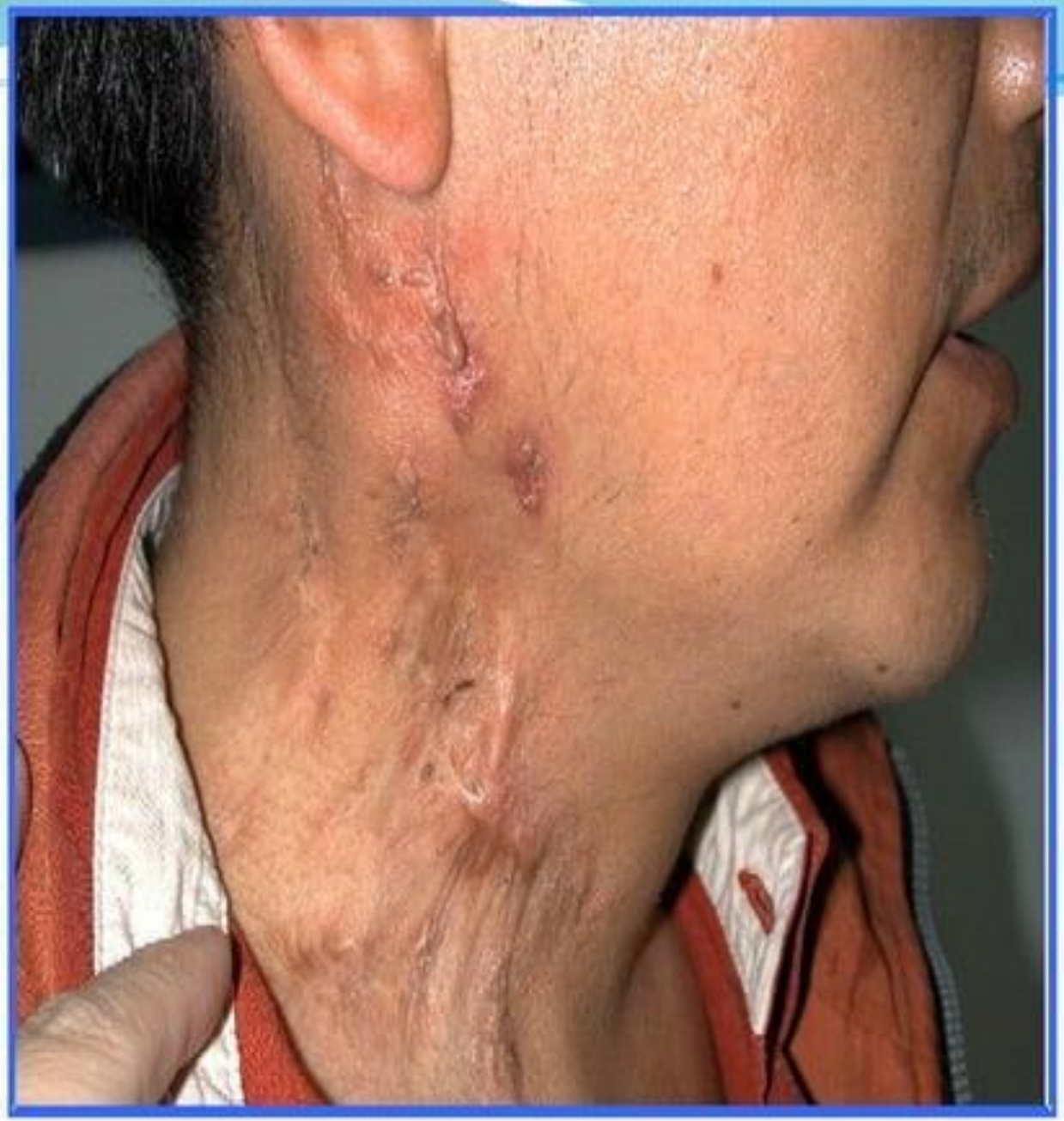
- If the lupus vulgaris nodules are pressed with a glass slide to eliminate the vascular component of inflammation; individual nodules appear as brownish yellow spots (*apple jelly colour).*

Lupus Vulgaris


D@nderm

Scrofuloderma

- Direct extension of TB infection to the skin from underlying tuberculous focus in lymph nodes, bone or joints
- firm painless bluish red nodule or nodules overlying the affected site.
- They break down to form one or more ulcers with bluish irregular undermined edge, granulating base and discharging caseous purulent exudate
- It may heal even without treatment leaving an unsightly puckered scar.



Tuberculosis cutis orificialis

- Red papules evolve into painful soft ragged shallow ulcers with undermined edges, purulent necrotic floor and no tendency to spontaneous healing
- In young adults with severe advanced visceral TB (lung, GIT and genitourinary tract)
- large numbers of mycobacteria are shed and inoculated into the skin and mucous membranes of orifices; the nose, mouth, tongue, anus and urinary meatus.

Tuberculides

- This is a generalized exanthema in an individual with good health and moderate to high degree of immunity to TB
- Erythema induratum (Bazin disease): recurring lump on the back of legs usually in women that may ulcerate and heal with scar.
- Papulonecrotic tuberculides: recurrent crops of crusted red papules on the knees , legs , buttocks and lower trunk that heal with scarring after about 6 months
- Lichen scrofulosorum: an extending eruption of small perifollicular brownish papules on the trunk, they heal without scarring.

Diagnosis

- 1-History and Clinical examination
- 2-Tuberculin test
- 3-Postero-anterior chest radiography
- 4-Bacteriological examination of sputum: three specimens on three successive days stained with Zeil-Nielsen stain.
- 5-Skin biopsies with routine and acid fast stains
- 6-Culture (Lowenstein- Jensen medium).
- 7- PCR

Treatment

- Treatment should be continued for six months to one year. Two or three drugs are administered simultaneously.
- 1- Isoniazid 300 mg daily (5 mg/kg in adults) and 5-10 mg /kg in children.
- 2- Rifampicin 10 mg/ kg in adults and 20mg/kg in children not exceeding 600 mg daily before breakfast.
- 3- Pyrazinamide 15-30 mg /kg/day in adults and children not exceeding 2 g daily.
- 4- Ethambutol 15-25 mg /kg in adults and children.
- 5- Streptomycin 15 mg/kg in adults and 15-30 mg/kg in children not to exceed 1000 mg IM daily.

LEPROSY

- A chronic granulomatous infectious disease caused by *Mycobacterium leprae*, an obligate intracellular acid fast bacillus
- The areas affected by leprosy are

3. The skin
4. Peripheral nerves
5. Mucous membranes of upper respiratory tract, testes, anterior chamber of the eye.

- These areas tend to be cooler parts of the body.
- **Incubation period**: 6 months to 40 years with average 2-3 years.

Classification

- **Leprosy is classified into 6 types**

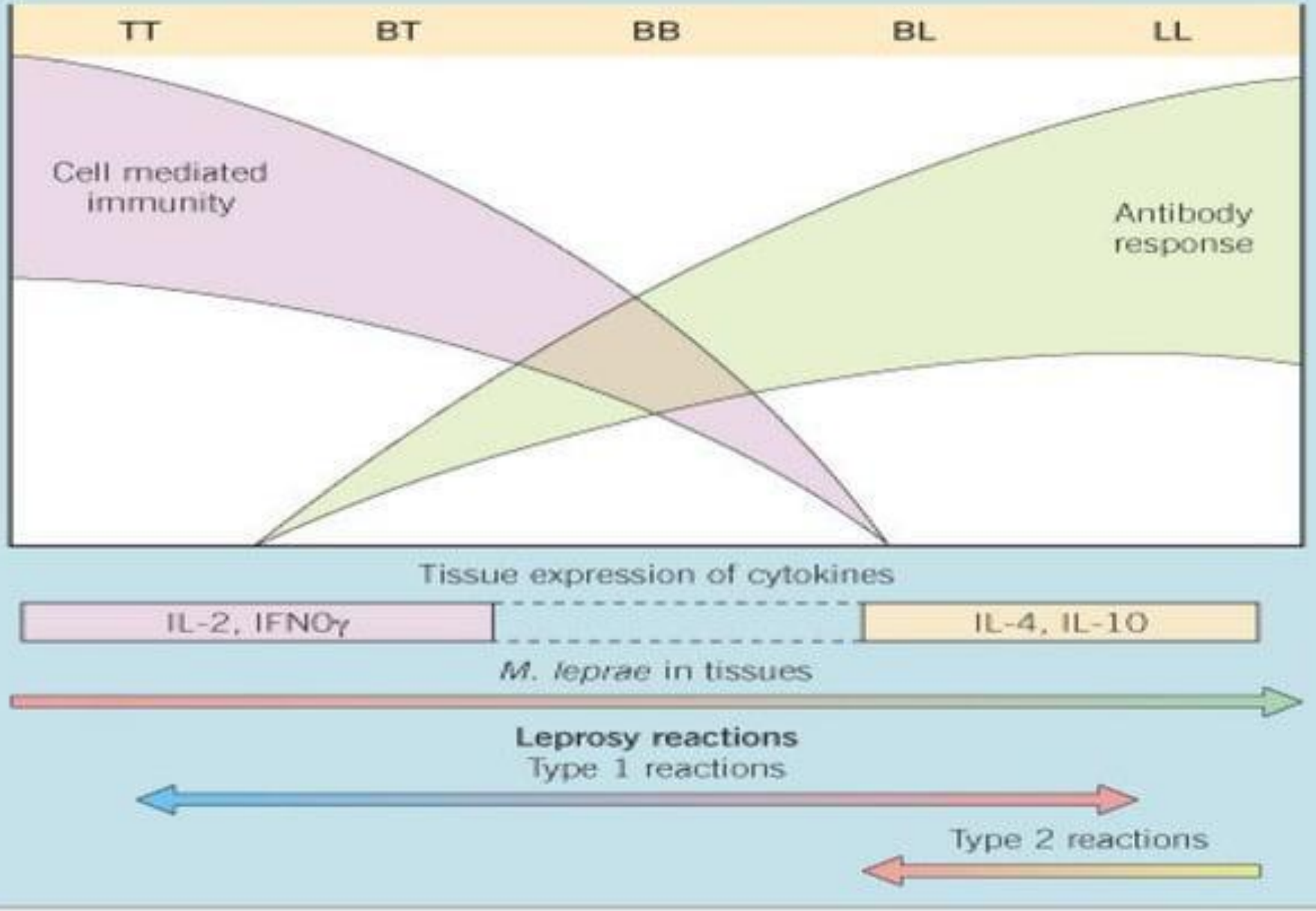
2. **Tuberculoid (TT),**
3. **Border line tuberculoid (BT),**
4. **True border line (BB),**
5. **Border line lepromatous (BL),**
6. **lepromatous (LL)**
7. **Indeterminate type.**

Clasification of Leprosy

Table 75.2 Classification of leprosy. Modified from the WHO A Guide to Leprosy[22]. LL, lepromatous leprosy; BL, borderline LL; BB, mid borderline leprosy; BT, borderline-tuberculoid; TT, tuberculoid leprosy; I, intermediate.

CLASSIFICATION OF LEPROSY						
Clinical findings	**LL**	**BL**	**BB**	**BT**	**TT**	**I**
Type of lesions	Macules, papules, nodules, diffuse infiltration	Macules, plaques, papules, infiltration	Plaques and dome-shaped punched-out lesions	Infiltrated plaques	Infiltrated plaques	Macules
Number	Numerous	Many	Many	Single, usually with satellite lesions, or more than 5 lesions	One or few (up to 5) Often hypo-pigmented	One or few Often hypo-pigmented
Distribution	Symmetrical	Tendency to symmetry	Evident asymmetry	Not diffuse, asymmetrical	Localized, asymmetrical	Variable
Definition	Vague, difficult to distinguish normal and affected skin	Vague, less well defined border	Vague, poorly defined border	Well-defined with sharp borders	Well-defined with sharp borders	Not always defined
Sensation	Not affected	Diminished	Diminished	Absent	Absent	Impaired
Bacilli in skin lesions	Many (globi)	Many	Many	Few (1+), if any detected	None detected	Usually none detected

THE CLINICAL–IMMUNOLOGIC SPECTRUM OF LEPROSY



Indeterminate leprosy

- One to few hypopigmented or sometimes erythematous macules, few centimeteres in diameter with poorly defined edge.
- Prodromal symptoms are slight.
- Hair growth, sweating and sensation are usually normal
- Most cases evolve from this state to one of the other forms of the disease depending on the patient immunity.
- Lepromin test is variable

Tuberculoid leprosy (TT)

- This type affects only nerves and skin and may be purely neural (neural leprosy)
- It affects persons with good immunity
- Skin lesions are few, often solitary with asymmetrical distribution. They occur on the face, limbs or anywhere
- ***The typical lesion*** :an erythematous plaque with raised and clear cut edge sloping towards a flattened and hypopigmented centre. The surface of the lesion is usually dry (anhydrotic), hairless and anesthetic.
- Nerve involvement :marked &localised to few nerves (e.g; ulnar, great auricular, posterior tibial).

Borderline leprosy (BB):

- Skin lesions are intermediate in number between those of the two polar types (TT and LL)
- Takes the form of macules, plaques and annular lesions &distributed asymmetrically
- Nerve involvement is early, affects several nerves and is asymmetrical.
- Lepromin test is variable

Borderline tuberculoid leprosy (BT)

- Lesions in this form are similar to those in tuberculoid leprosy but they are smaller and more numerous.
- The nerves are less enlarged

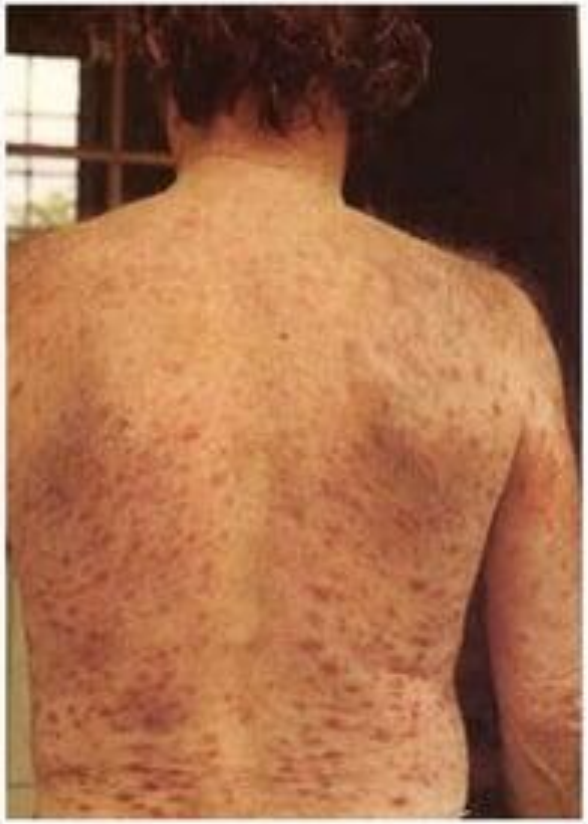
Borderline lepromatous leprosy (BL)

- Lesions are numerous and consist of macules, papules, plaques and nodules.
- They are less symmetrical than in the lepromatous type

Lepromatous leprosy (LL)

- Skin, nerves, mucous membrane, eyes, bones and internal organs are involved.
- Lepromin test is negative due to impaired cell mediated immunity.
- Cutaneous lesions consist of macules, papules, infiltration or nodules,bilateral and symmetrical
- Macular lesions are *small ill defined pale erythematous or hypopigmented.*
- Nodules : numerous skin coloured, pink or coppery with shiny surface. On the face, ears, arms, legs and buttocks but may be anywhere. Infiltration and deepeing of the lines of the forehead ("leonine facies".)

Lepromatous Leprosy




NEBOUT/IMTSSA

Characteristics of the two polar types of leprosy

	Tuberculoid	Lepromatous
Number of lesions	1-10	Hundreds
Lesions	Plaques, hypopigmented, hairless, anhidrotic, well-defined edge	Macules, papules, plaques, nodules, ill-defined edge, shiny surface
Anesthesia	Early, marked	Late, initially absent
Nerve enlargement	Marked, in a few nerves	Slight but widespread
Organ involvement	Skin and nerves only	Skin, nerves, mucosae and internal organs
Slit-skin smear	Negative	Positive
Lepromin test	Positive	Negative
Histopathology	Tuberculoid granuloma, no bacilli	Granuloma of bacillus -laden histiocytes
Treatment	Dapsone, rifampicin 6-12 months	Dapsone, clofazimine rifampicin, 2 years

Diagnosis

- **Clinical diagnosis**
- **Slit skin smear test:** an incision is made in the lesion after gripping it firmly to become blood free and its base is scraped to obtain fluid from the lesion. The fluid is then placed on a glass slide, fixed over a flame and stained by using the Ziehl-Neelson acid fast method to look for and count the bacilli.
- **Lepromin test:** it indicates host resistence to M leprae and is useful in determining the type of leprosy. It is a prognostic rather than a diagnostic test. A positive finding indicates good cell mediated immunity

Lepra Reactions

- Type 1 reaction:
2. it occurs in border line leprosy
3. It is due to the rapid change in cell mediated immunity and occurs most commonly after starting treatment
4. Nerves become swollen and tender with loss of sensory and motor functions. Serious complications as facial palsy and dropped foot may occur.
5. Existing skin lesions become erythematous, edematous and may ulcerate.
6. Sometimes new lesions appear.

LEPRA REACTIONS

- Type 2 reaction (erythema nodosum leprosum) ENL
2. it is an immune complex disorder which occurs in patients with LL and BL
3. It is manifested as :painful, red nodules on the face and extensor surfaces of limbs with suppuration or ulceration and fading over several days.
4. Fever and malaise are common & accompanied by uveitis, arthritis, lymphadenitis, myositis, orchitis and peripheral neuritis
5. Nerve involvement is less than that of type 1 reaction.

Type 1 Reaction

Medical classification of leprosy:

- Paucibacillary (PB) leprosy: two drugs for six months.
- Multibacillary (MB) leprosy: two or more drugs for 2 years.
- **By counting the skin patches;**

4. If five patches or less ----PB
5. More than five patches --------MB

- When a skin smear is negative and the patient has five patches or less-------PB
- If the smear is positive classify the patient as MB whatever the number of skin patches.

Therapy

Therapy of leprosy: Multiple drug therapy (MDT)

- **PB leprosy**

2. Monthly supervised treatment: Rifampicin 600 mg
3. Dapsone :100 mg daily treatment.
4. Duration of treatment: 6–9 months.

- **MB leprosy**

6. Monthly supervised treatment: Clofazimine (Lamprene) 300 mg , Rifampicin 600 mg
7. Daily treatment: Clofazimine 50 mg and Dapsone 100mg
8. Duration of treatment 18-24 months

- Ofloxacin and minocycline are other antibiotics with proven action against the leprosy bacillus

Treatment of lepra reactions

- Early diagnosis and initiation of anti-inflammatory measures. The possible precipitating factor should be removed,
- MDT should be continued in full dosage without interruption.
- Rest, both physical and mental with appropriate sedation.
- Analgesics and anti-inflammatory drugs
- Chloroquine in mild cases
- Clofazimine is given in a dose up to 300 mg daily for one month then gradually reduced.
- *Systemic corticosteroids :* in severe cases e.g; with neuritis and iritis
- *Type 1 lepra reaction:* prednisolone single daily dose 40-60 mg (maximum 1mg/kg/day) according to severity.
- *Type 2 lepra reaction:* prednisolone 20-40 mg/day.