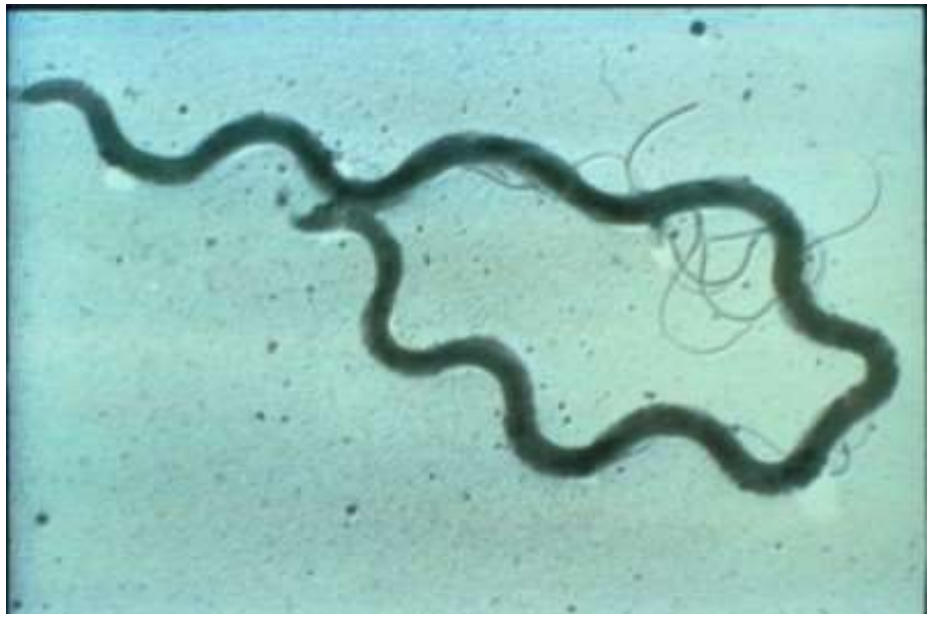
Syphilis



- Syphilis is a worldwide chronic infection produced by ***Treponema pallidum. (also seen in ANUG)***
- The organism is extremely vulnerable to drying; therefore, the primary mode of transmission are sexual contact or from mother to fetus.

Syphilis - *Treponema pallidum* on darkfield

Syphilis

- Although the risk of infection from blood transfusion is negligible because of serological testing of donor, transmission through exposure to infected blood is theoretically possible because the organism may survive upto 5days in refrigerator blood.
- Humans are the proven host for syphilis.
- In patients with syphilis, the infection undergoes a characteristic evolution that classically proceeds through three stages.
- A syphilitic patient is highly infectious during the first two stages but a pregnant woman may transmit the infection to the fetus, during the latent stage.

Syphilis

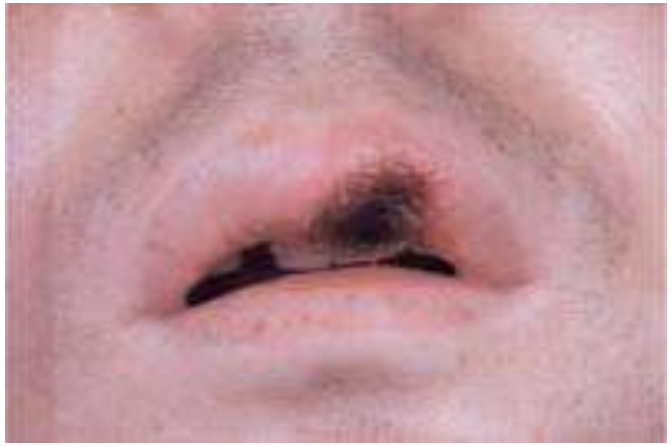
- Maternal transmission during the first two stages mostly results in miscarriage, stillborn or an infant with congenital malformations.
- Infection of the fetus may occur at any stage during pregnancy but the stigmata do not begin to develop until after the 4th month of gestation.
- The clinical changes secondary to the fetal infection are known as **congenital syphilis**.

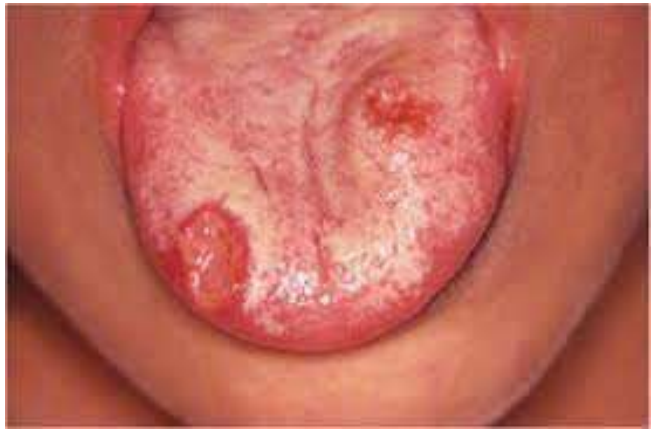
Syphilis

- **Primary syphilis:**

1. It is characterized by the **chancre** that develops at the site of inoculation, becoming clinically evident 3 to 90 days after the initial exposure.
2. Progresses from macule to papule to ulcer
3. Typically painless, indurated, and has a clean base
4. Highly infectious
5. Heals spontaneously within 1 to 6 weeks
6. It could be solitaryor multiple.
7. 25% present with multiple lesions

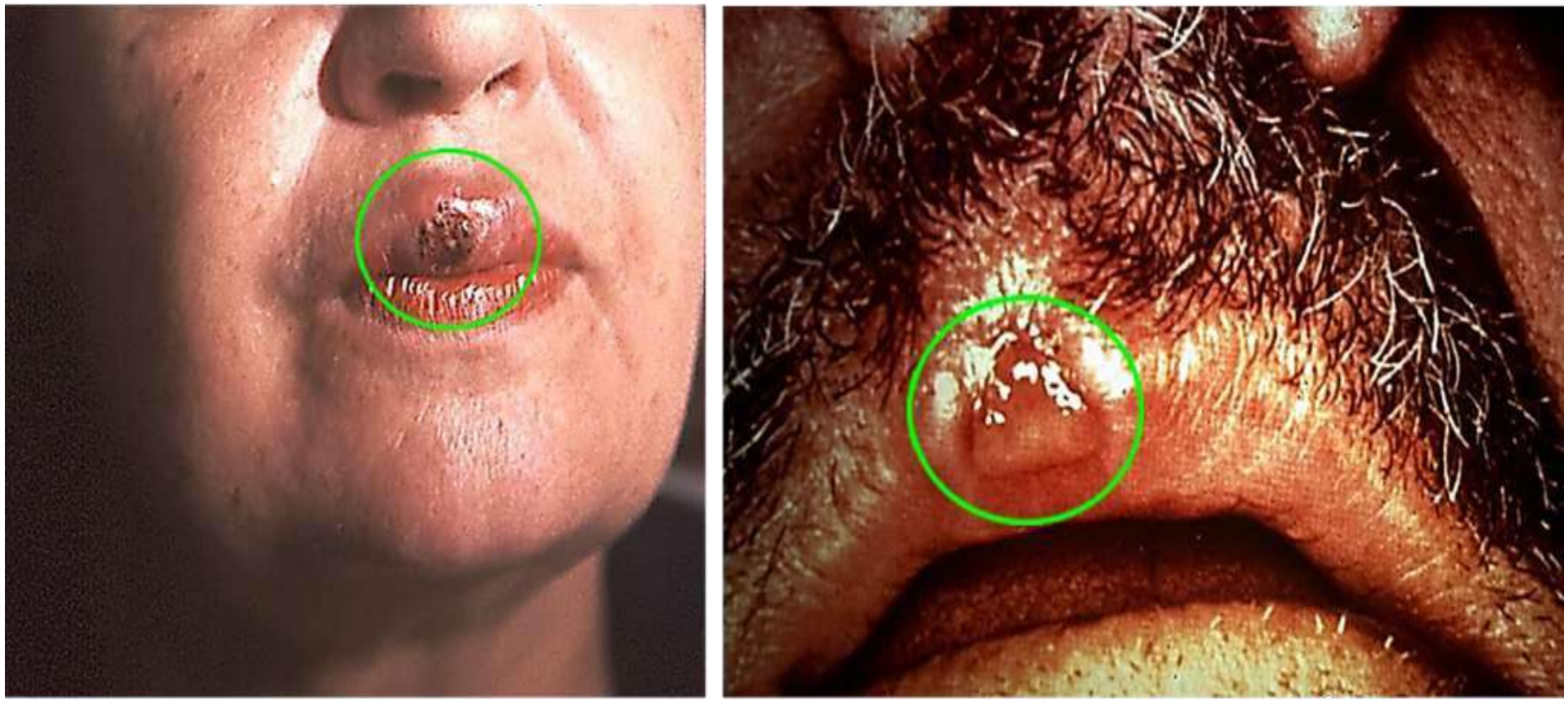
8. The external genitalia and the anus are the most common site of infection followed by the oral cavity.
9. Oral lesion are most on the lips, but the other sites include the tongue, palate, gingiva, and tonsils.
10. Upper lip is mostly affected in males while the lower lips is mostly affected in females.





- The oral lesion appears as a painless, clean-based ulceration or, rarely as a vascular proliferation.
- Regional lymphadenopathy which may be bilateral is seen in most of the patients.
- At this time the organism spreading systemically through the lymphatic channels, setting the stage for furtherprogression.

FIGURE 1: PRIMARY SYPHILIS – THE CHANCRE



The ulcer on the lip of the people in these images is known as a *chancre*. The primary stage of syphilis begins with the appearance of the chancre—which is usually a single, round, small, painless ulcer—and typically lasts three to six weeks. This lesion is highly infectious, but will resolve spontaneously.

Syphilis

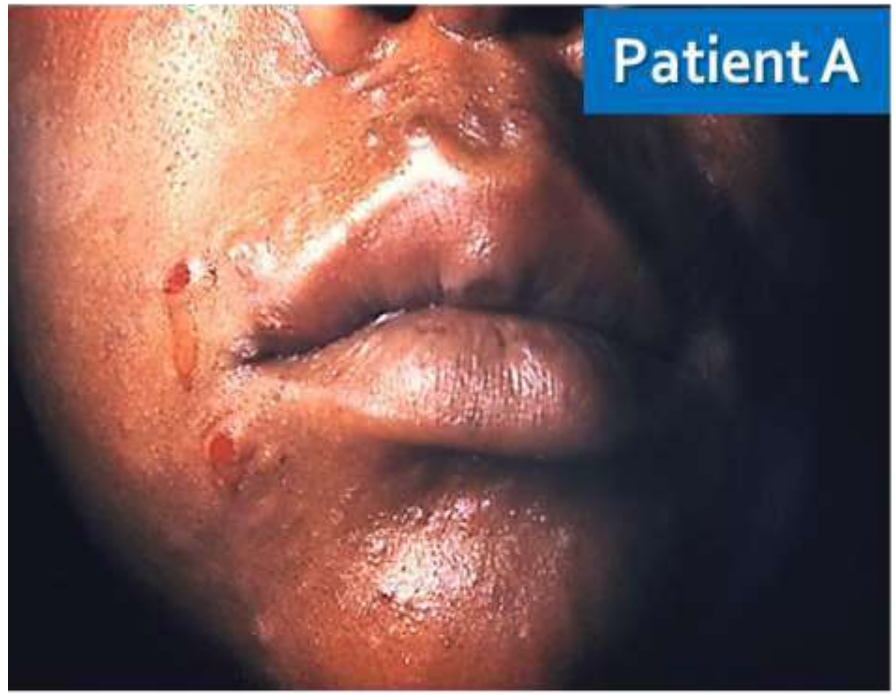
- **Secondary syphilis:**
- the next stage is called secondary syphilis and is discovered after 4-10 weeks of initial infection.
- The lesions may arise before the primary lesion has resolve completely.
- During secondary syphilis, systemic symptoms often arise.

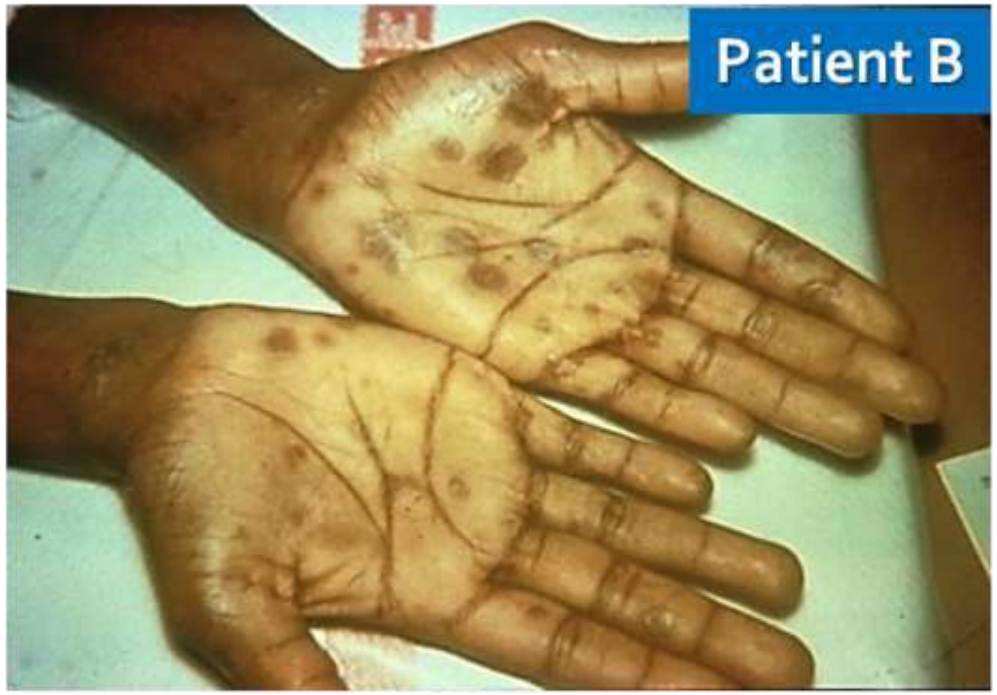
- The mostcommon systemic symptoms are

1. Painless lymphadenopathy
2. Sore throat
3. Malaise
4. Headache
5. Weight loss
6. Fever
7. Musculoskeletal pain
8. The consistent sign is a diffuse, painless, maculopapular cutaneous rash which is widespread and can even affect the palmar and plantar areas.

- These rashes may appear as the chancre is healing, or may be delayed several weeks after the healing process has completed.
- The characteristic rash of secondary syphilis is maculo-papular (flat and slightly bumpy).
- It may appear as being rough, red, or having reddish-brown spots on either the palms of the hands and/or the bottoms of the feet, which is a unique characteristic of this disease and several others. However, a rash is still a common symptom of many other diseases, which can make the diagnosis difficult. Sometimes rashes associated with secondary syphilis are so faint that they are not noticeable.

FIGURE 2: LESIONS OF SECONDARY SYPHILIS

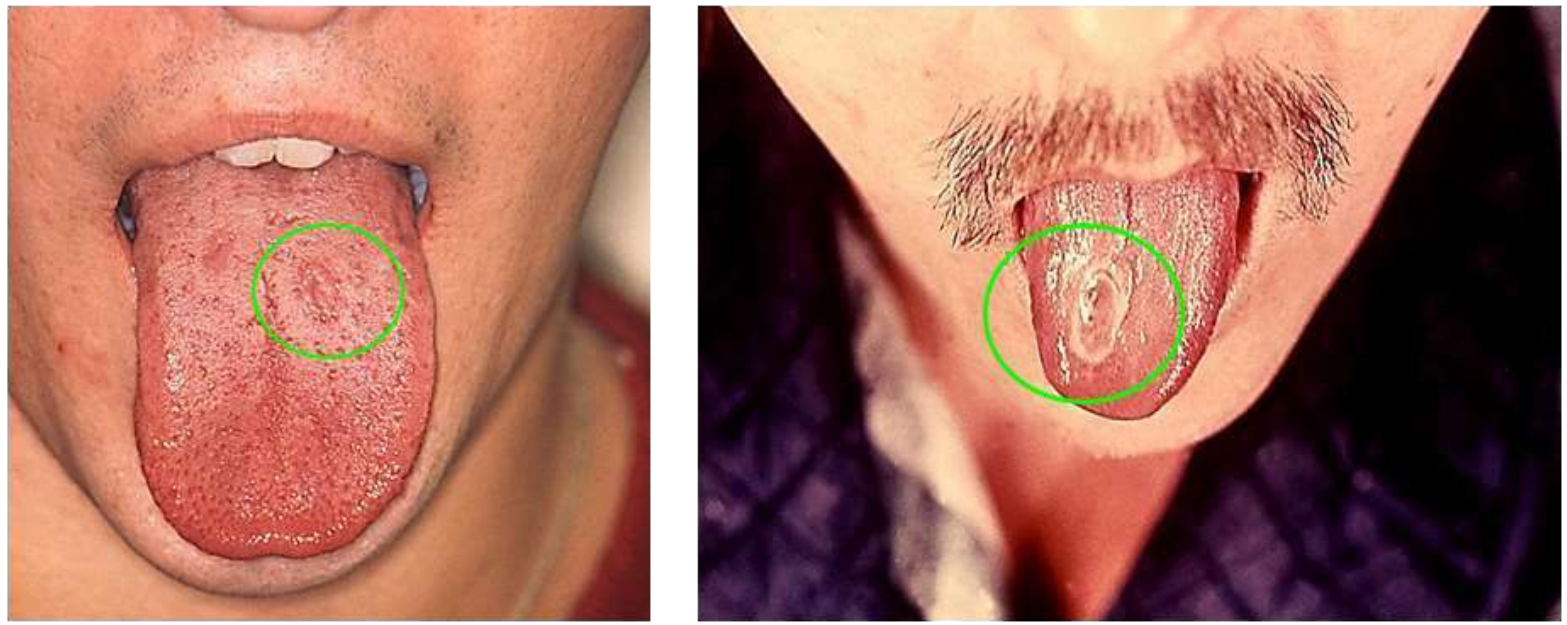




Patient A presents secondary syphilitic lesions on the face. The secondary stage of syphilis starts with mucous membrane lesions on either the face and genitalia, or in the mouth, vagina, or anus (as shown on Patient A). This also happens when one or more areas of the skin breaks into a rash that appears as rough, red or reddish brown spots on the palms of the hands, and the bottoms of the feet (as shown on Patient B). Even without treatment, the rash will resolve spontaneously.

Source: Images courtesy of the CDC Image Library http://phil.cdc.gov/phil/details.asp

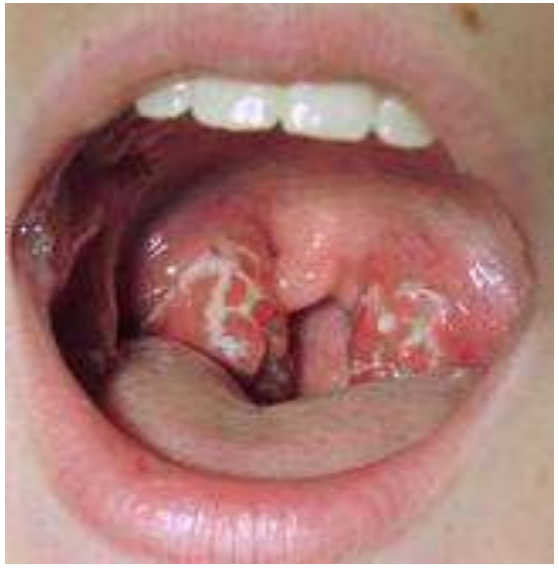
FIGURE 3: MUCOUS PATCH LESIONS OF SECONDARY SYPHILIS



These patients display symptoms indicative of the secondary stage of syphilis, which includes generalized lymphadenopathy, and lingual mucous patches. Both images depict a lingual mucous patch on the tongue of a patient who was subsequently diagnosed with secondary syphilis, due to the *Treponema pallidum* bacterium. Secondary syphilis is the most contagious of all stages of this disease, and is characterized by a systemic spread of the *Treponema pallidum* bacterial spirochetes. Skin rash and mucous membrane lesions characterize this secondary stage.

Syphilis

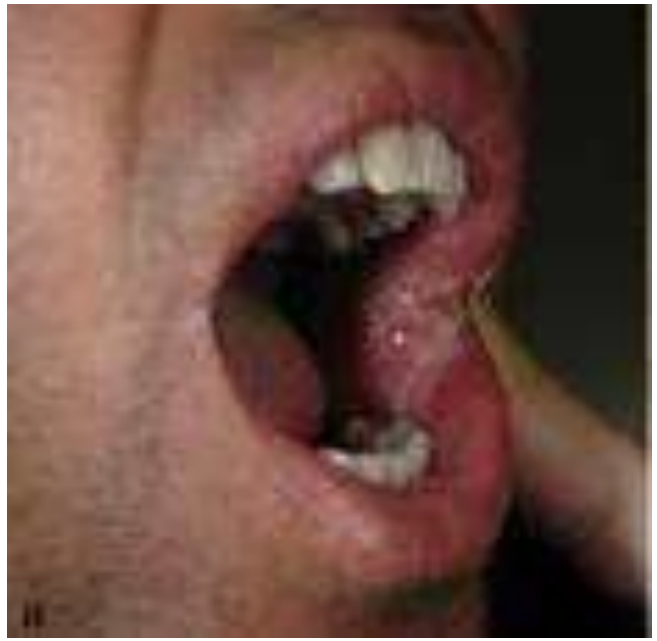
- Some patients have focal areas of intense exocytosis & spongiosis of the oral mucosa leading to zone of whitish mucosa known as **mucous patch**.
- Occasionally several adjacent patches can fuse and form a serpentine or snailtrack pattern.



Syphilis

- Elevated mucous patches also may be centered over the crease of the oral commissure and have been termed as **split papules**.
- Occasionally papillary lesion may resemble HPV infection and are known as

  Condylomata lata.

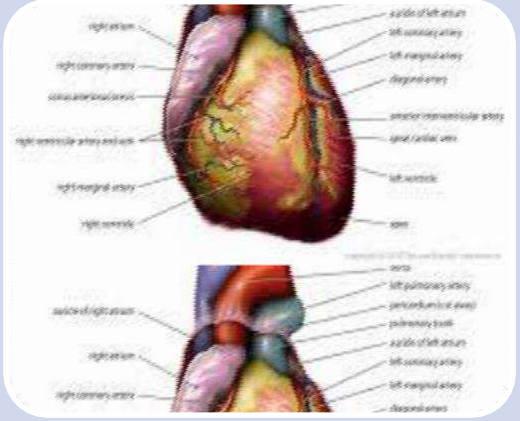


- In patients with compromised immunity, secondary syphilis can exhibit an explosive and widespread form known as **lues maligna**.
- The symptoms are

1. Fever
2. Headache
3. Myalgia
4. Necrotic ulceration of face & scalp.

Syphilis

- **Tertiary syphilis:**
- After the secondary stage patient enters a period in which they are free of lesions and symptoms, known as **latent syphilis**.
- This period may last from 1 to 30years.
- This stage includes the most serious complications of vascular system, CNS, ocularregion.

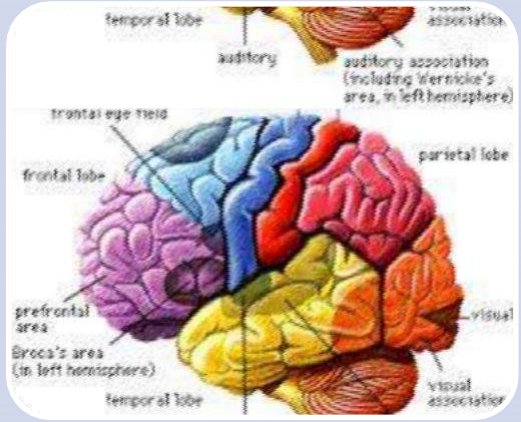


Aneurysm of the ascending aorta.

Left ventricle hypertrophy

Aortic regurgitation

Congestive heart failure



General paralysis

Psychosis

Dementia

Paresis

Tabes dorsalis

Death

Iritis

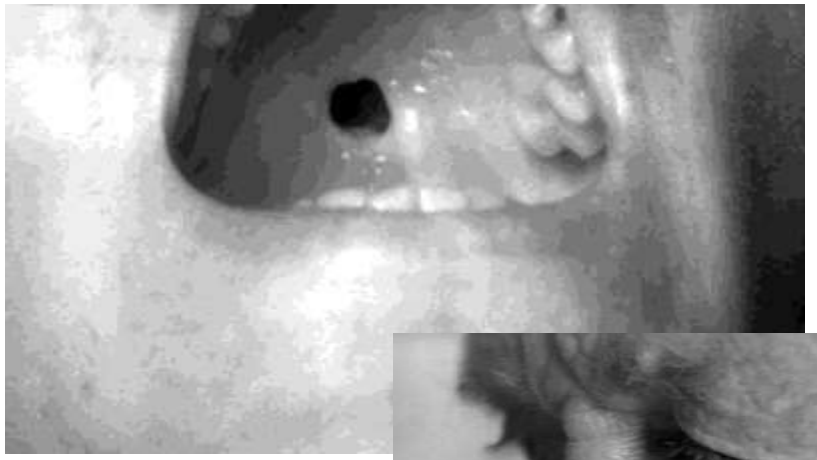
Choroidoretinitis

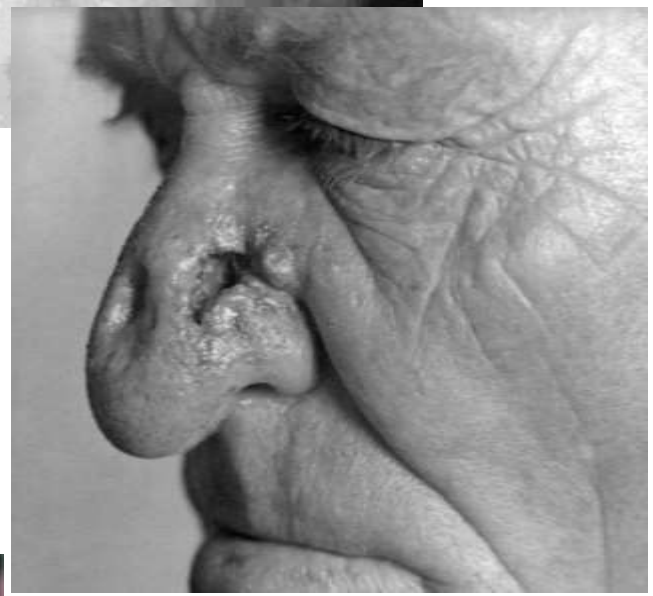
Argyll Robertson pupil

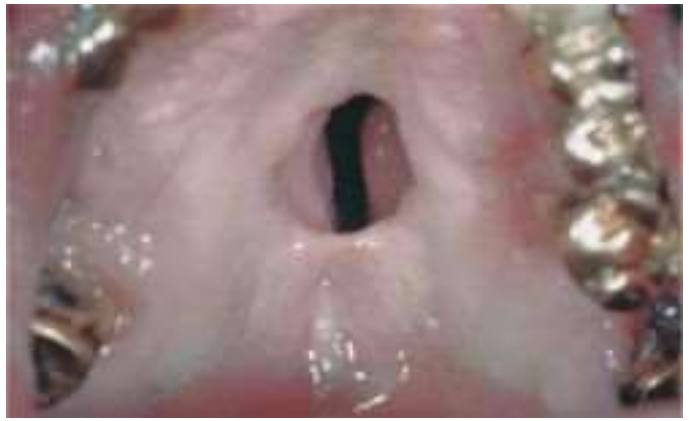
Syphilis

- Scattered foci of granulomatous inflammation, which may affect the *skin, mucosa, soft tissue, bones, and internal organs*.
- This active site if granulomatous inflammation, is known as ***gumma***.
- It appears as an *indurated, nodular, or ulcerated lesion* that may produce extensive *tissue destruction*.

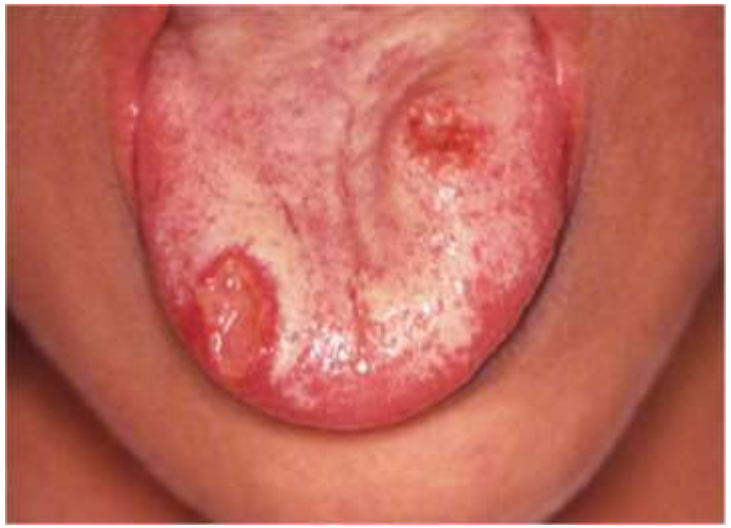
- Intraoral lesion usually affect the palate & tongue.
- When the palate is involved, the ulceration usually perforates through to the nasal cavity.



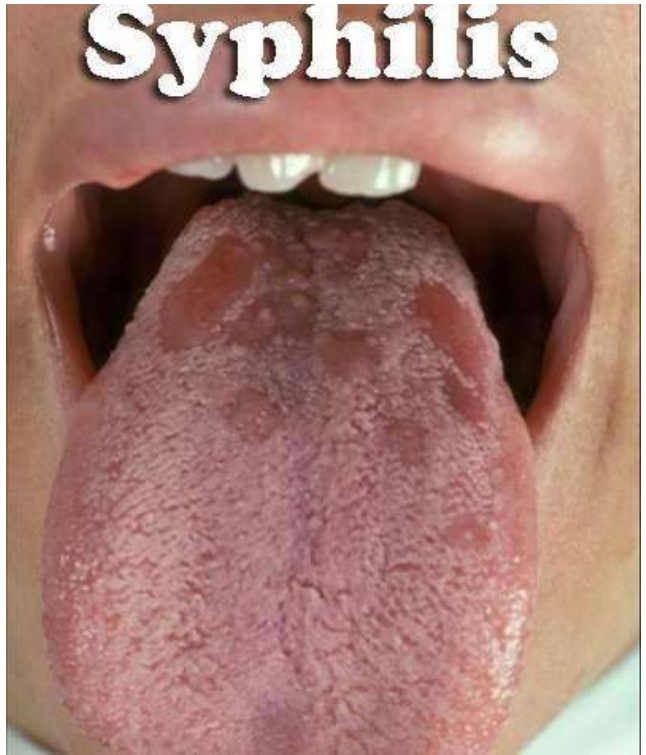




Syphilis



- The tongue may be involved diffusely with gummata and appear *large, lobulated, and irregularly shaped*.
- This lobulated pattern is termed as ***intertitial glossitis.***
- This is thought to be caused due to contracture of the lingual musculature after healing of the gumma.
- Diffused atrophy and loss of the papillae produce a condition called ***luetic glossitis.***



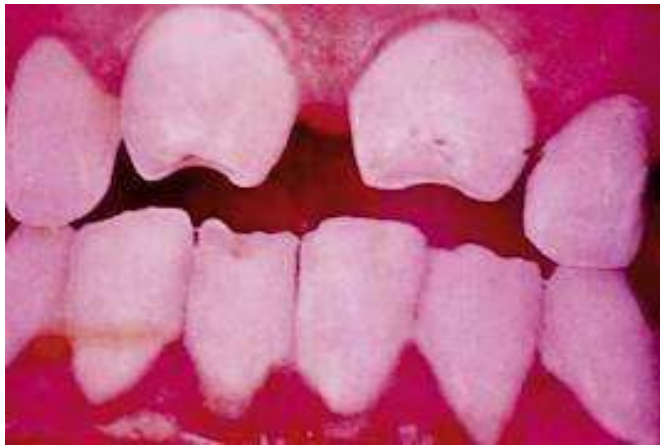
Syphilis

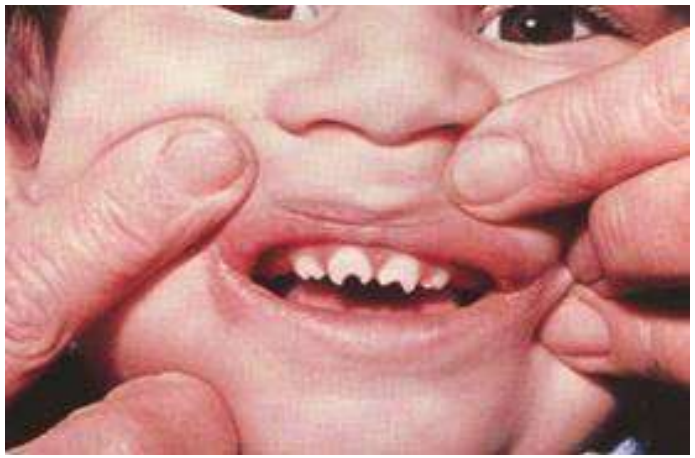
- **Congenital syphilis**:
- In 1858 sir Jonathan Hutchinson described thechanges found in congenital syphilis and defined the 3 pathognomic diagnostic features, knownas **Hutchinsons's traid:**

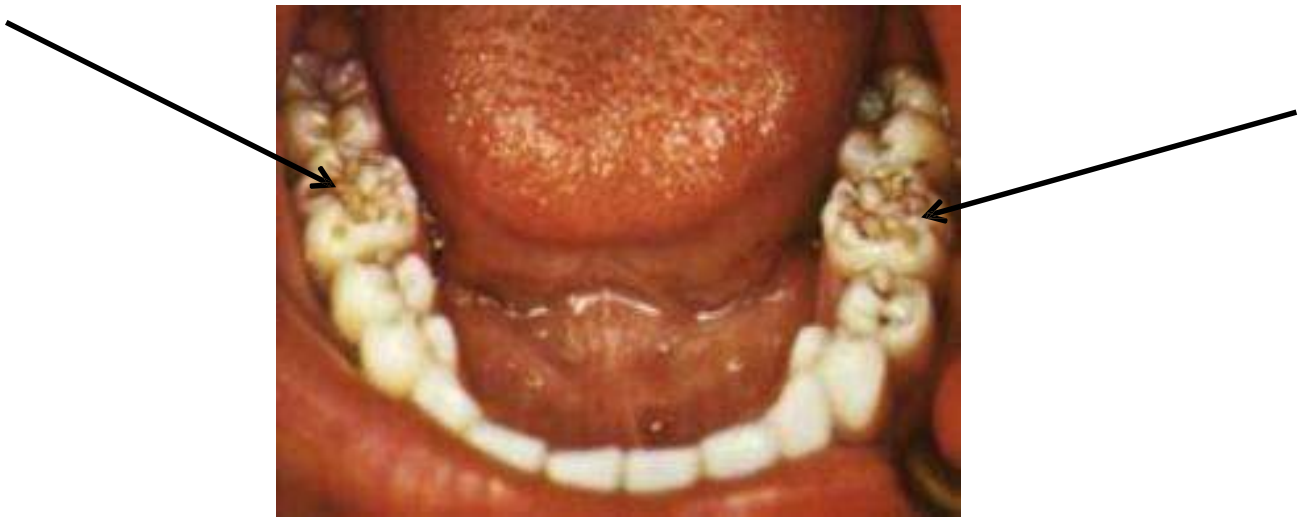
1. **Hutchinsons's teeth**
2. **Ocular intertitial keratitis**
3. **Eighth nerve deafness**

Few patients exhibits all the three features

Hutchinsons's teeth







- **Ocular intertitial keratitis** means corneal scarring due to chronic inflammation of the corneal stroma.
- It is not present at birth, it develops at the age of 5-25 yrs.
- It may result in loss ofvision.

- **Pathophysiology**
- The corneal scarring is the end result of the initial invasion of blood vessels into the corneal stroma as part of the inflammatory response.
- Since normal corneal tissue should be avascular and therefore clear to allow light to pass, the presence of blood vessel and the infiltration of cells as part of the inflammatory process results in scarring or hazing of the cornea

- **Other causes**
- TB
- Leprosy
- immunological response, such asa hypersensitivity reaction.
- and parasitic infections

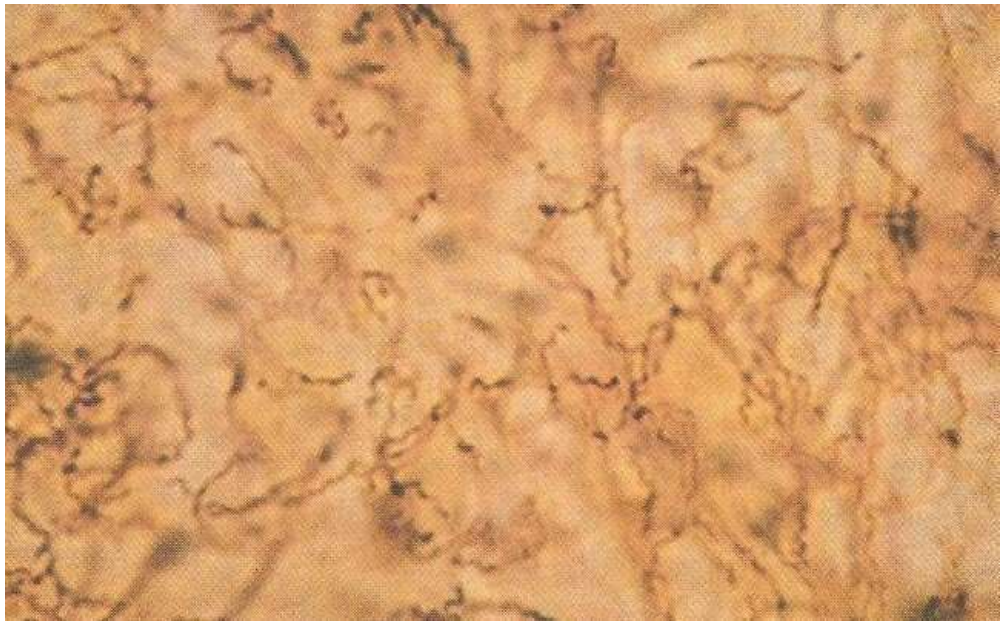
Syphilis

- This infection alters the formation of bothanterior (**Hutchinsons's incisors**) & posterior dentition (**mulberry molars, Moon's molar**).
- In addition to Hutchinsons's triad, other alteration like

1. Saddle-nose deformity
2. High arch palate
3. Frontal bossing
4. Hydrocephalus
5. Mental retardation
6. Gummas &
7. Neurosyphilis may be seen.

- Silver impregnation technique- Warthin Starry or Steiner Stains shows "**corkscrew likespirochaetal organism**".

Treponema pallidum smear Stained by silver impregnation Technique (Fontana Stain) showing the spiral morphology



Dark ground microscopy is **the most specific and sensitive technique to diagnose syphilis (and other spirochetes such as borelia, leptospira)** when an active chancre or condylomalata is present. This technique allows for a presumptive diagnosis of syphilis even before antibodies have developed. Humans are infected when the leptospires in contaminated water (by the urine of carrier animals like dogs, cattle, rodents and pigs) enters the body through cuts or abrasions on the skin or through intact mucosa of mouth, nose or conjunctiva. Incubation period is usually 10 days.Antibodies appear in the blood of untreated patients after 5-7 days of illness. Benzyl penicillin should be administered I.V. for upto7 days in a daily dose of 6-8 mega units

Syphilis Serologic Assays

Nontreponemal Assays

- **Venereal Disease Research Lab (VDRL)**
- **Rapid Plasma Reagin (RPR)**
- **Automated Reagin Test (ART)**

The Wassermann test or Wassermann reaction (WR) is **an antibody test for syphilis**, named after the bacteriologist August Paul von Wassermann, based on complement fixation. It was the first blood test for syphilis and the first in the nontreponemal test (NTT) category

Treponeme Specific Assays

- **Fluorescent Treponemal Antibody – Absorbed (FTA-ABS)**
- **Micro Hemagglutination Antibody – *T. pallidum* (MHA-TP)**
- **Automated *T. pallidum* Enzyme Immunoassay**

Tuberculosis

- Tuberculosis (TB) is an infectious disease caused by bacteria, Mycobacterium tuberculosis (acid fast bacilli)
- It was first isolated in 1882 by a German physician named Robert Koch who received the Nobel Prize for this discovery.
- TB most commonly affects the lungs but also can involve almost any organ of the body. Best cultivated at 37 degree C.
- Mycobacteria Cell wall contains complex mycolic acids and free lipids. Once stained, AFB resist de-colorization with acid alcohol (HCl) hence the term acid fast → best demonstrated by Ziehl Neelsen stain
- For rapid diagnosis → Auramine rhodamine stain is used (fluorescent dye)
- Difference of AFB stain vs. modified or partial acid fast (PAF) stain
- AFB stain uses HCl is to decolorize Mycobacteria (+) Nocardia (-)
- PAF stain uses H2S04 to decolorize Mycobacteria (+) Nocardia (+)
- Gram stain = poorly stained / appear beaded Gram positive
- Aerobic, no spores, rarely branch

* **Nocardial brain abscesses are a rare central nervous system infection with high morbidity and mortality. Infection is acquired through inhalation or direct innoculation and then spreads hematogenously.**

- Virulent stains of tubercle bacilli are able to bind neutral red alkaline buffer solution, while avirulent strains are unable to do so. (test of differentiation)

Signs and symptoms:

- Tuberculosis may infect any part of the body, but most commonly occurs in the lungs (known as pulmonary tuberculosis).
- Extrapulmonary TB occurs when tuberculosis develops outside of the lungs, although extrapulmonary TB may coexist with pulmonary TB as well.

- General signs and symptoms include

1. fever
2. chills
3. night sweats
4. loss of appetite
5. weight loss
6. **Evening rise of temperature**
7. and fatigue.

Pulmonary

Symptoms may include chest pain and a prolonged cough producing sputum.

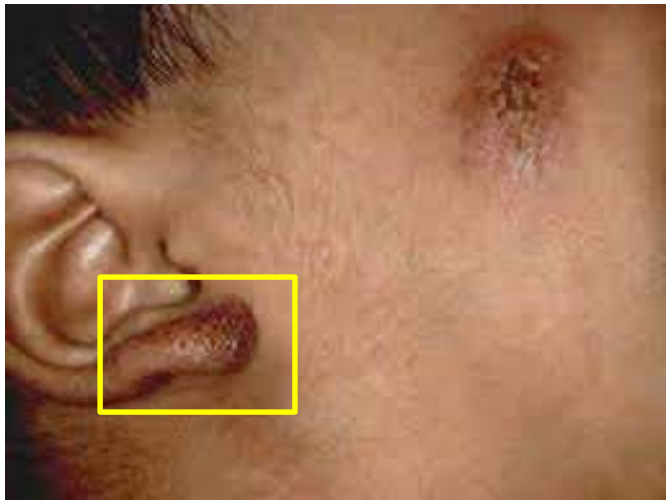
Occasionally, people may cough up blood in small amounts, and in very rare cases, the infection may erode into the pulmonary artery, resulting in massive bleeding .

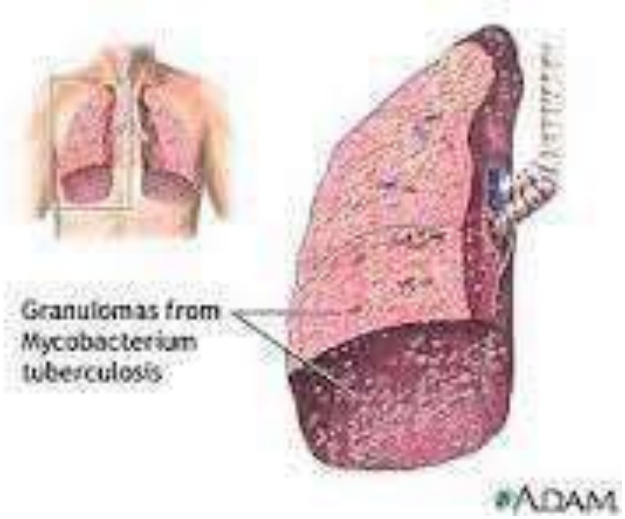
Extrapulmonary

- Extrapulmonary TB occurs more commonly in immunosuppressed People and young children.
- In those with HIV, this occurs in more than 50% of cases. Notable extrapulmonary infection sites include the pleura (in tuberculous pleurisy), the central nervous system (in tuberculous meningitis), the lymphatic system (in scrofula of the neck), the genitourinary system (in urogenital tuberculosis), and the bones and joints (in Pott's disease of the spine), among others. When it spreads to the bones, it is also known as "osseous tuberculosis". a form of osteomyelitis.
- Sometimes, bursting of a tubercular abscess through skin results in tuberculous ulcer.
- An ulcer originating from nearby infected lymph nodes is painless, slowly enlarging and has an appearance of "wash leather"

- Involvement of the skin may develop and has been called **lupus valgaris**.
- The most common extrapulmonary sites in the head & neck are the cervical lymph nodes followed by the larynx and middle ear.
- Much less common sites are nasal cavity, nasopharynx, oral cavity, parotid gland, & esophagus.
- Oral TB involves the gingiva, mucobuccal fold, & extraction sites.
- Secondary lesions are more common on tongue, palate & lip.

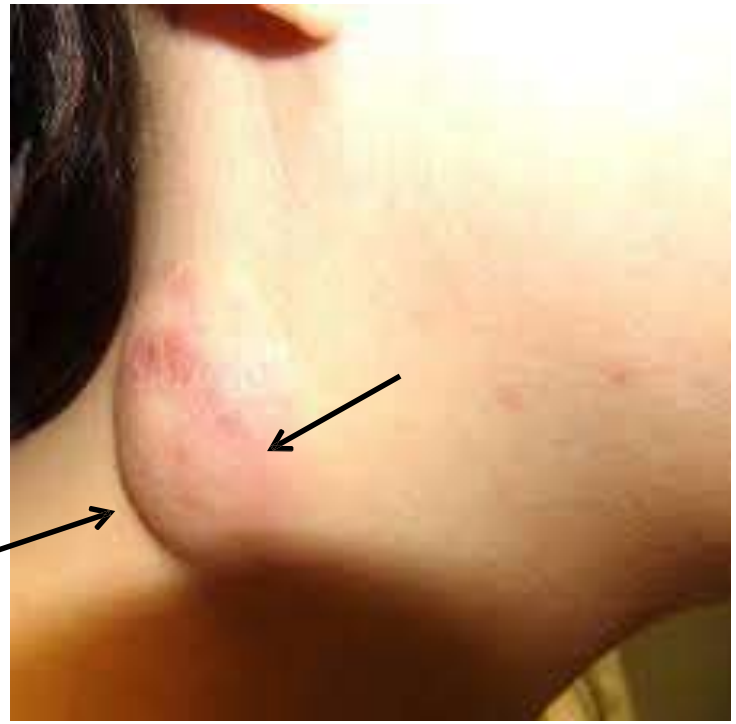
- A potentially more serious, widespread form of TB is called "disseminated" TB, commonly known as miliary tuberculosis.
- Miliary TB makes up about 10% of extrapulmonary cases.





Diffuse dissemination through the vascular system may occur and often produces multiple small foci of infection that grossly and radiographically resemble millet seed, resulting in the nickname, miliary tuberculosis.

- Drinking contaminated milk can result in a form of mycobacterial infection known as **scrofula**.
- Scrofula is characterized by enlargement of the oropharyngeal lymphoid tissue & cervical lymph node.
- Occasionally the involved lymph node may develop caseous necrosis and form numerous sinus tracts through the overlying skin.
- Radiographically it appears as calcified lymph node.



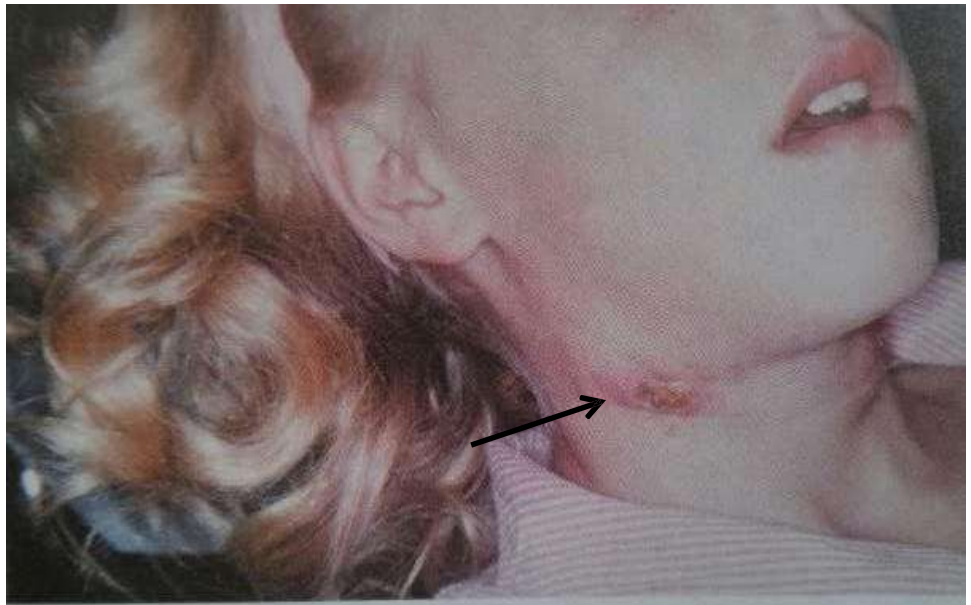


Fig. 5-22 **Tuberculosis.** Submandibular fistula secondary to involvement of underlying cervical lymph nodes.

ORAL MANIFESTATION

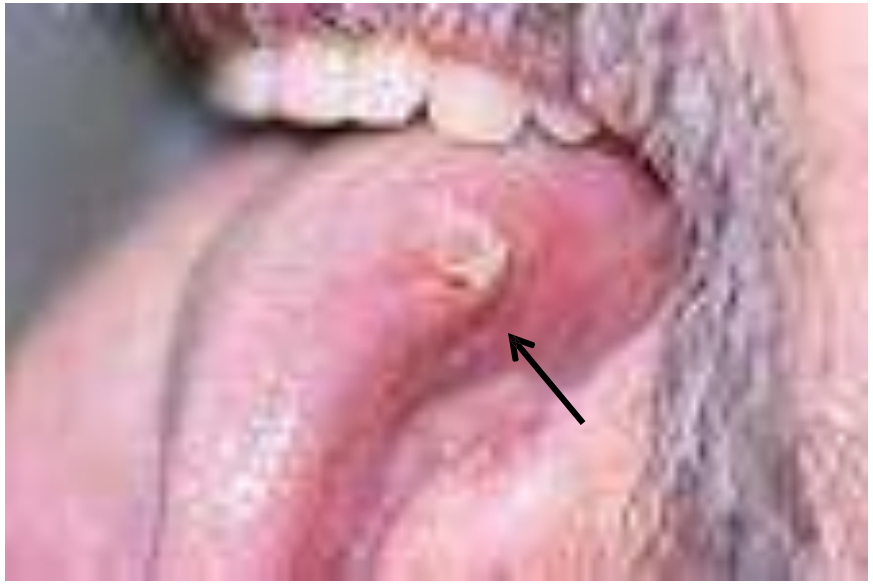
- Organism enters through sputum and reaches mucosal tissue due to break in the surface. (primary lesion)

- Enters through haematogenous spread and get deposited to submucosal tissue. (secondary lesion)

ORAL MANIFESTATION

- PRIMARY TB
- Gingiva- most common site, and appears as diifused, hyperemic, nodular/ papillary proliferation of gingiva.
- Mucosal lesions shows swelling, granular, nodular,or fissured lesion.

- SECONDARY TB
- Any site in oral cavity.
- Tongue most common site.
- Irregular, deep, painful ulcer.



- BONE OF MAXILLA /MANDIBLE-
- Enters by anachoretic effect/ direct migration from open pulp chamber to periapical areas.

- Tuberculous periapical granuloma/ tuberculoma
- Painful.

- Tuberculous osteomyelitis- latercase.

Tuberculin Skin Test (TST) is also known as the **Mantoux Test**. It is a skin test to detect if individual have been infected with TB bacteria → cell mediated immunity. It involves injecting a small amount of a substance called PPD tuberculin into the skin of forearm. The tuberculin (antigen abstract) is administered using a single-dose disposable tuberculin syringe that has a **one- quarter to one-half inch, 27-gauge needle with a short bevel**.

1

Result Interpretation

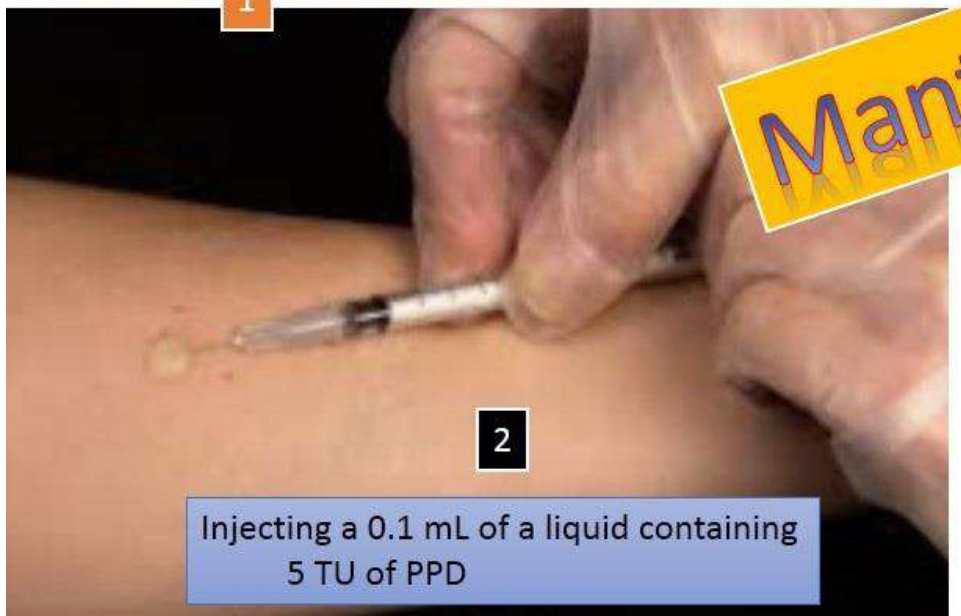
Negative: Induration < 5 mm (always)

Positive: Induration ≥ 5 mm not always but conditional e.g. in Immunosuppressed persons

10 mm induration to be positive e.g. IV drug abusers, children under 4 years old, people in high risk areas

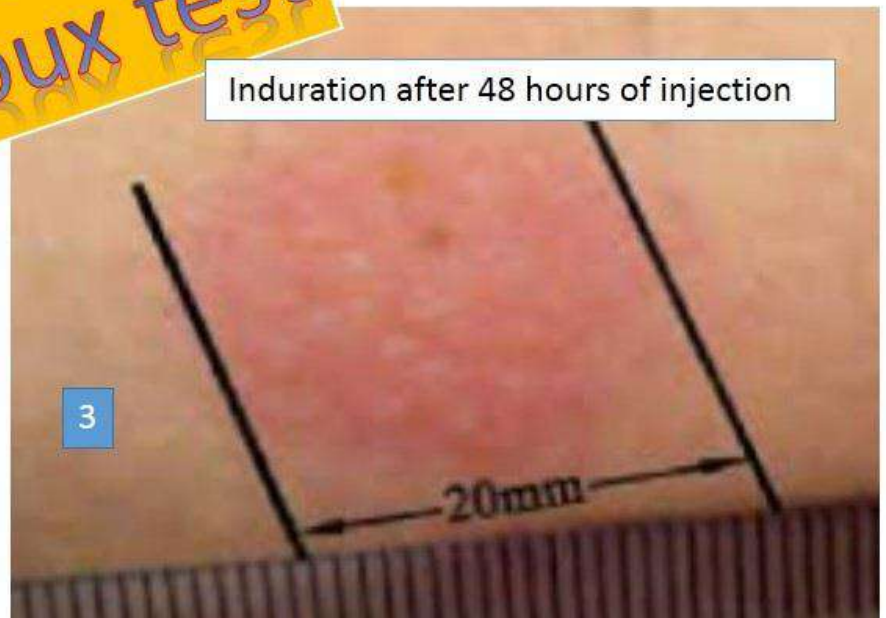
≥ 15 mm induration to be positive in a healthy person whose immune system is normal

Mantoux test



2

Injecting a 0.1 mL of a liquid containing 5 TU of PPD



3

Treatment:

- Such drugs as:

1. Isoniazid
2. Rifampin
3. Pirazinamid
4. Ethambutol
5. Streptomycin (for multidrug-resistant cases)

- Combination of that drug are often used in 6-, 9-, 12-month to 2 year.

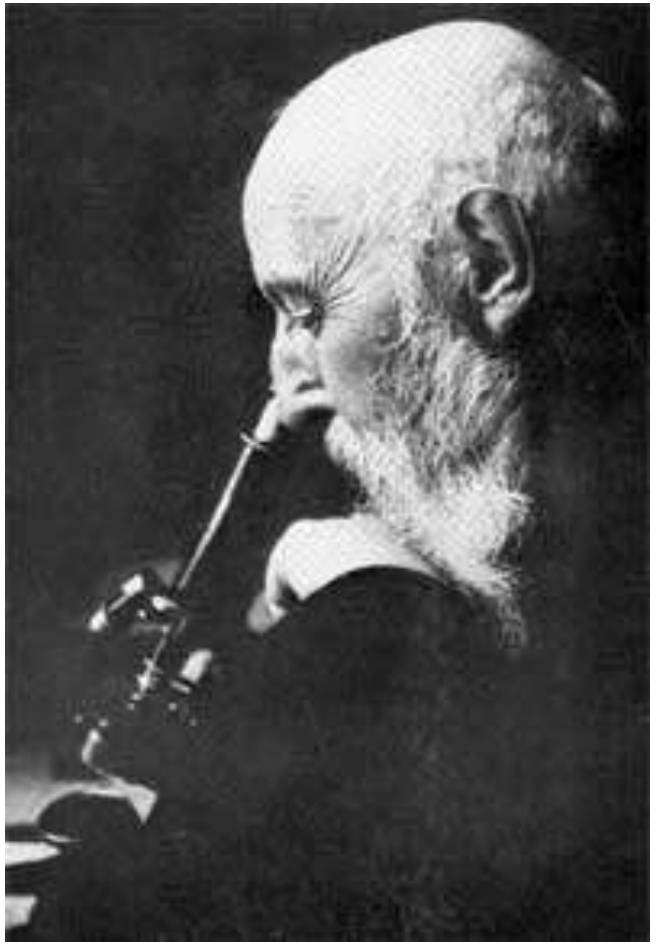
Leprosy

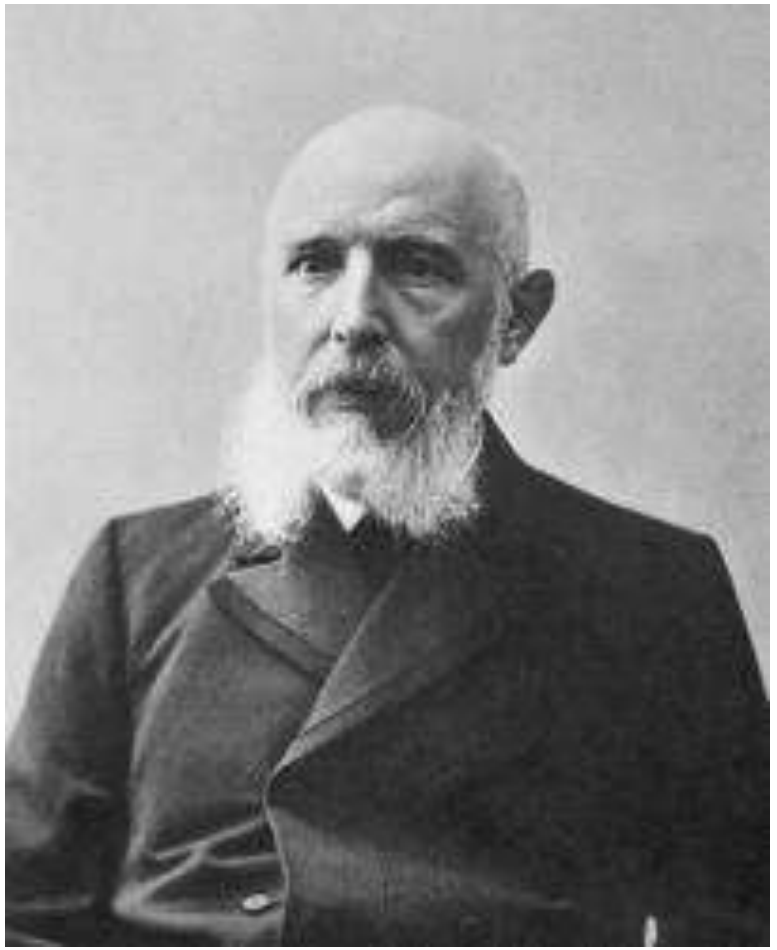
HANSEN DISEASE

Leprosy is a chronic infectious disease produced by ***Mycobacterium leprae*.**

Leprosy takes its name from the Latin word *Lepra*, which means "scaly", while the term "Hansen's disease" is named after the physician *GerhardArmauer Hansen*.

Because of worldwide efforts coordinated by the WHO a dramatic decrease in the prevalence of leprosy has been seen over the past 15 yrs.





Gerhard Henrik Armauer Hansen (29 July 1841 – 12 February 1912) was a Norwegian physician, remembered for his identification of the bacterium *Mycobacterium leprae* in 1873 as the causative agent of leprosy.

However, leprosy remains a public health problem in many area of world.

82% of all current cases reported were from,

1. Brazil
2. India
3. Indonesia
4. Myanmar
5. Nigeria

Transmission

Although the mode of transmission of leprosy remains uncertain, many think that *M. leprae* is usually spread from personto person in nasal droplets, from open sore and through intact skin. Studies have shown that leprosy can be transmitted to humans by armadillos. They can be grown in foot pad of armadillo.

Although Humans are the major host , other animals like

1. Chimpanzee
2. Armadillo
3. Mangabey monkey

- Related to immune reaction to the organism leprosy can be of two types:

1. **Tuberculoid leprosy**
2. **Lepromatous leprosy**

Tuberculoid leprosy- develops in patients with high immune reaction.

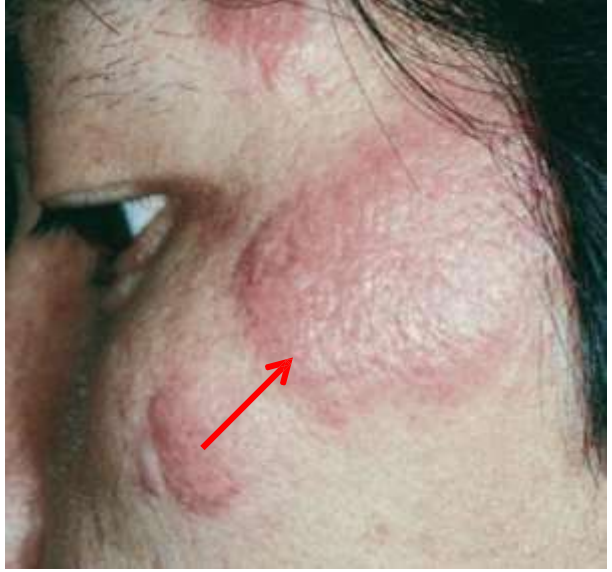
Lepromatous leprosy – develops in patients who demonstrate a reduce cell-mediated immune reaction.

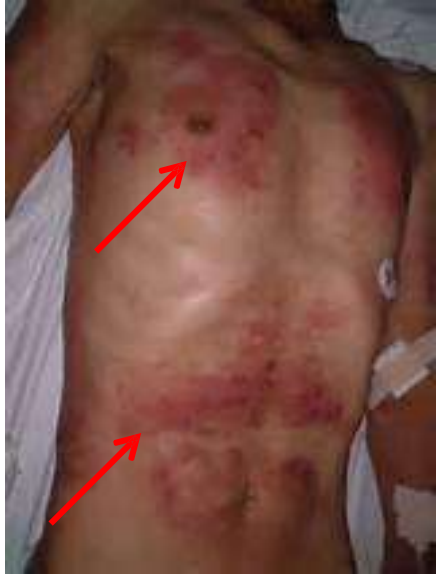
Clinical features

- Currently, leprosy is classified into two separate categories, on the basis of clinical manifestationsand skin smear results.

1. Paucibacillary leprosy
2. Multibacillary leprosy

Patients showing *negative smears* at all sites are grouped *as paucibacillary leprosy* (PB), while those showing positive smears at any site are grouped as having *multibacillary leprosy* (MB).



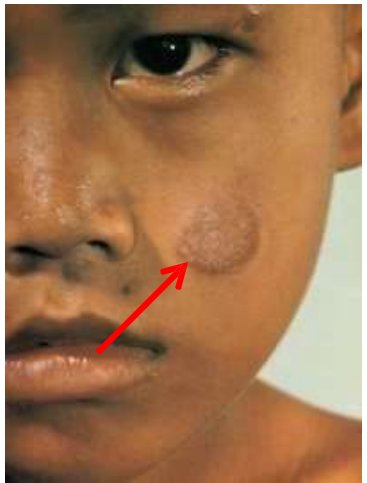


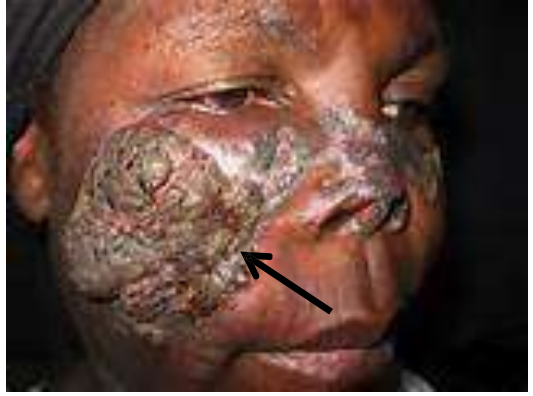
Paucibacillary leprosy – corresponds closely to the tuberculoid pattern of leprosy .

Exhibits a small number of well circumscribed, hypo pigmented skin lesion.

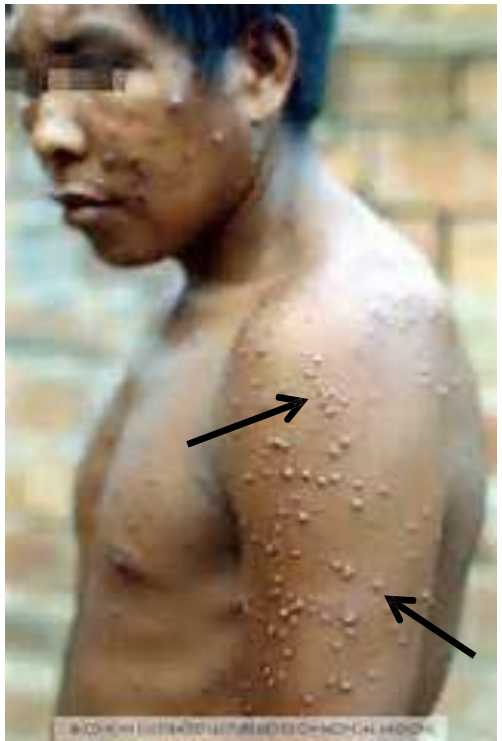
Nerve involvement usually result in anesthesia of the affected skin, often accompanied by loss of sweating.

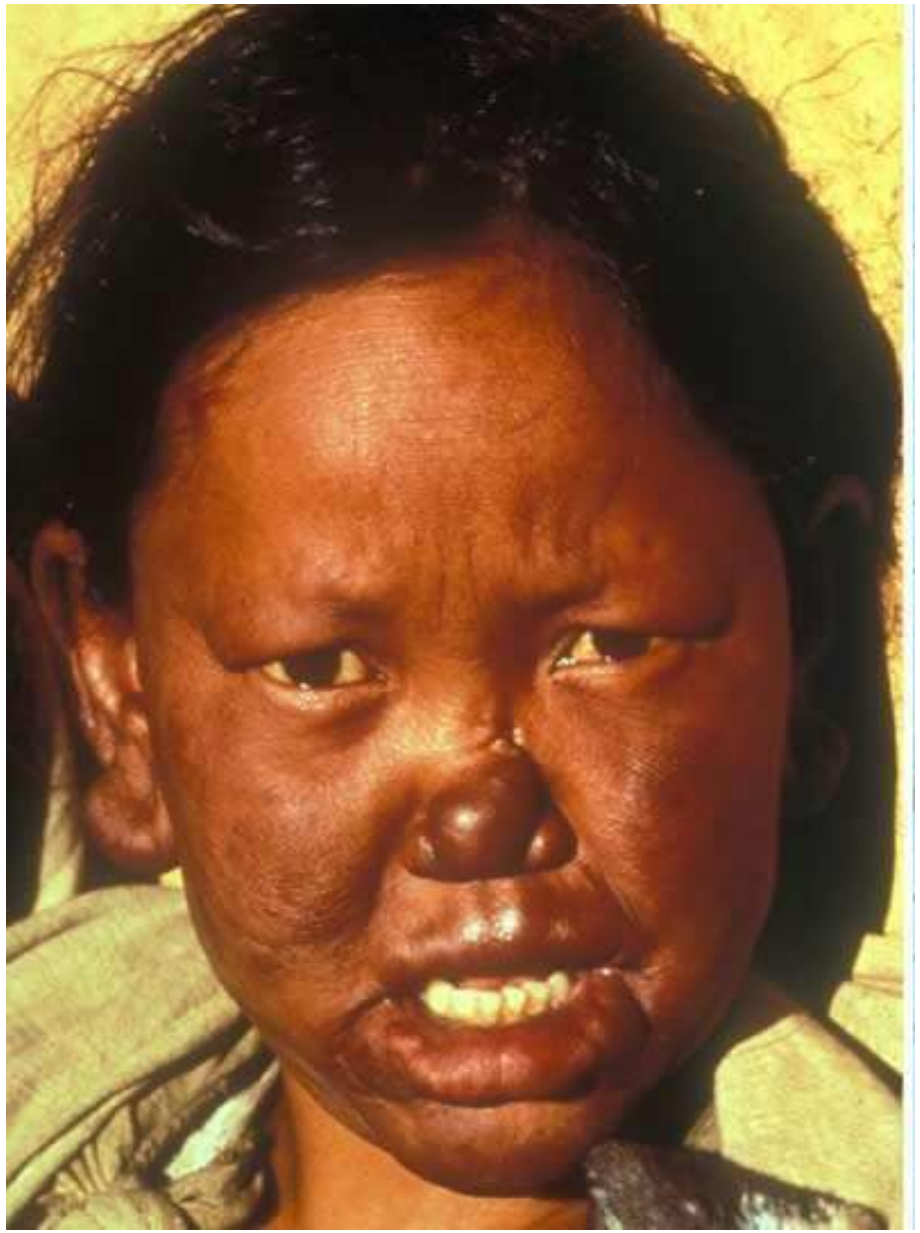
Oral lesion are rare in this variant.



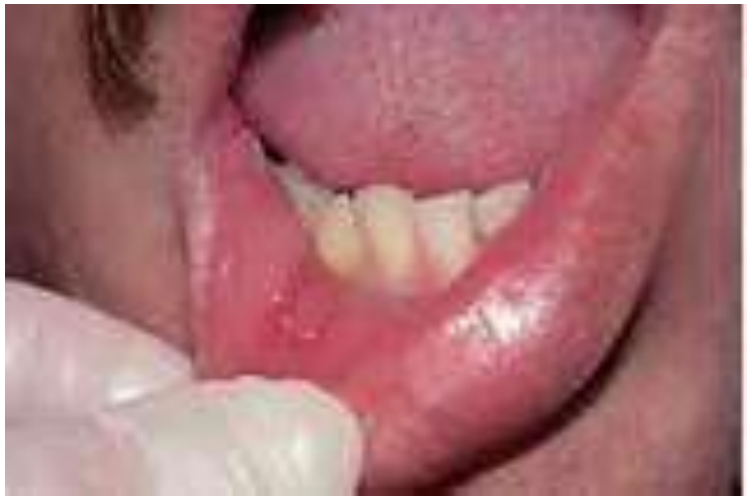


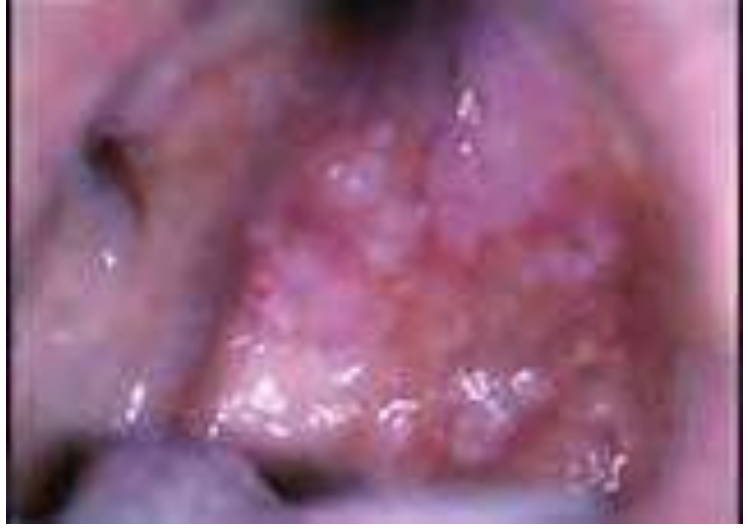
- **Multibacillary leprosy** – correspond to lepromatous pattern of leprosy.
- Ill-defined macules or papules on the skin that, with time becomes thickened.
- The face is the most common site.
- Hairs including the eyebrows and lashes, are often lost.





- Nasal involvement result in nosebleeds, stuffiness, and a loss of sense of smell.
- The hard tissue of the floor, septum, and bridge of nose may be affected.
- Collapse of the bridge of the nose is considered pathognomomic.





Oral lesions are not rare in multibacillary leprosy.

The locations affected in order of frequency are:

1. Hard palate
2. Soft palate
3. Labial maxillary gingiva
4. Tongue
5. Lips
6. Buccal maxillary gingiva
7. Labial mandibular gingiva
8. & buccal mucosa.

Affected soft tissue initially appears as **yellow** to **red**,

Firm, sessile Enlarging papulesthat develops in ulceration and necrosis, followed by attempted healing by secondary intention.

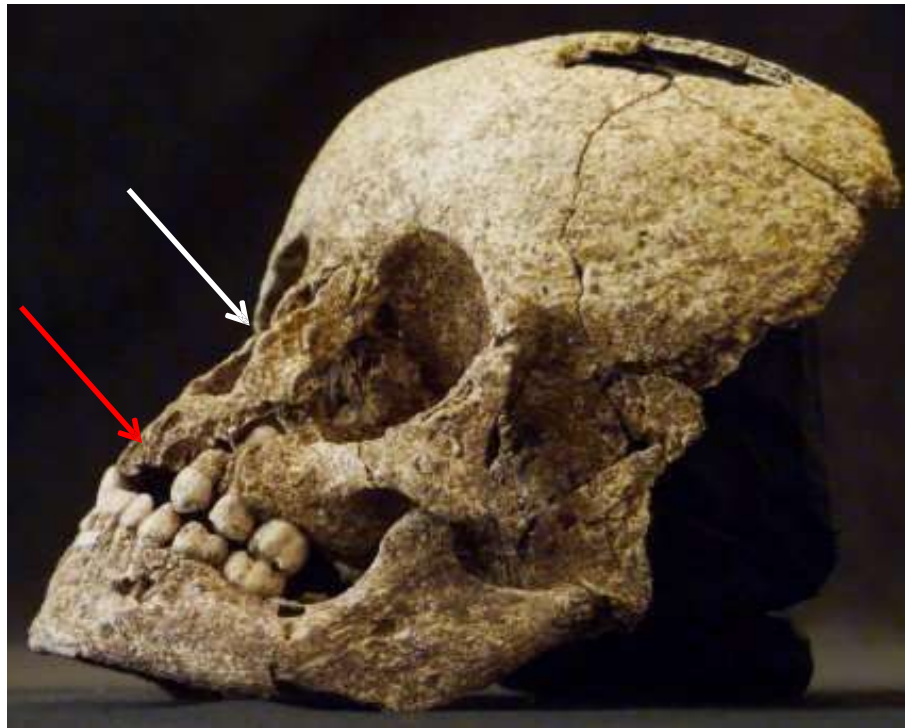
Continuous infection of an area can lead to scarring & loss of tissue.

Complete loss of uvula may occur.

Lingual lesion appears on anterior 1/3 as areas of erosionwhich develops into large nodules.

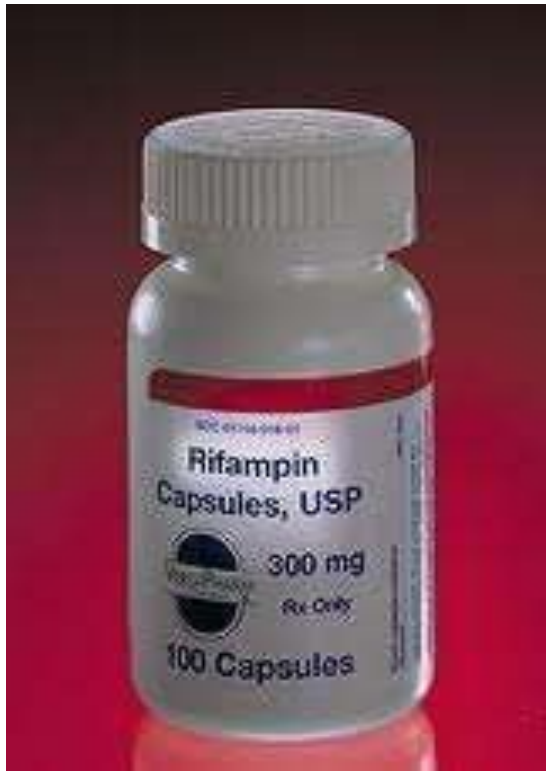
- Facies leprosa, a term used to describe resorption of bone in the facial region of patientswith leprosy.
- It is triad of lesion consistingof

1. Atrophy of the anterior nasalspine
2. Atrophy of the anterior maxillary alveolar ridge
3. Endonasal inflammatory changes.



Treatment

Paucibacillary leprosy -6 month regimen



Treatment

Multibacillary leprosy – 24 month regimen

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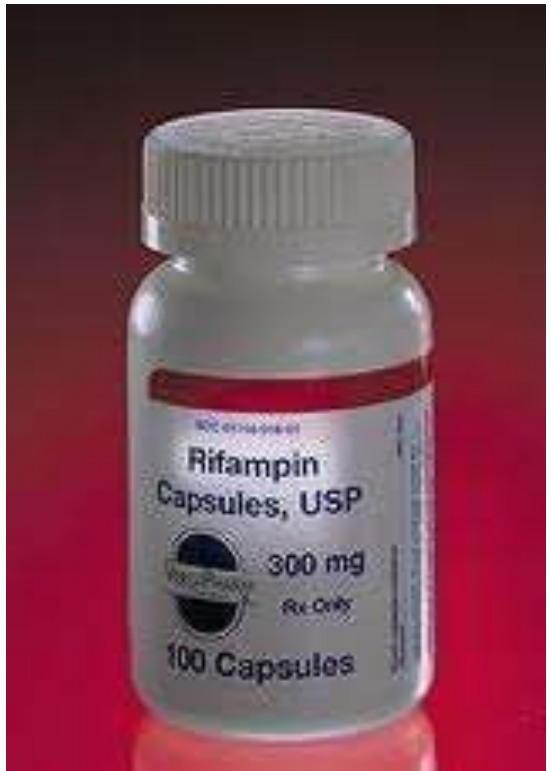

Treatment

Patients allergic to rifampin are treated with 24 month regimen

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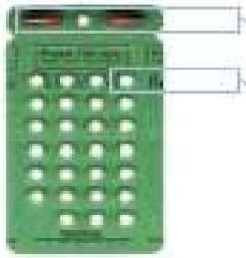
MDT Regimens

It is crucial that patients understand which drugs they have to take once a month and which every day.

Each blister pack contains treatment for 4 weeks.



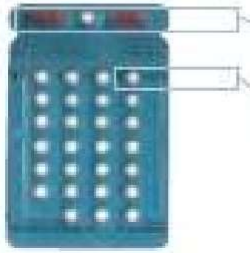
PB adult blister pack

PB adult treatment:

Once a month: Day 1
- 2 capsules of rifampicin (300 mg X 2)
- 1 tablet of dapsone (100 mg)

Once a day: Days 2–28
- 1 tablet of dapsone (100 mg)

Full course: 6 blister packs



PB child blister pack

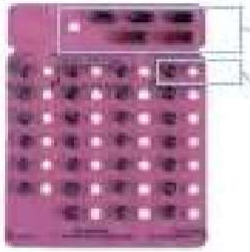
PB child treatment (10–14 years):

Once a month: Day 1
- 2 capsules of rifampicin (300 mg+150 mg)
- 1 tablet of dapsone (50 mg)

Once a day: Days 2–28
- 1 tablet of dapsone (50 mg)

Full course: 6 blister packs

For children younger than 10, the dose must be adjusted according to body weight



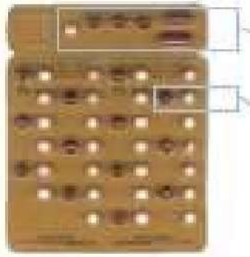
MB adult blister pack

MB adult treatment:

Once a month: Day 1
- 2 capsules of rifampicin (300 mg X 2)
- 3 capsules of clofazimine (100mg X 3)
- 1 tablet of dapsone (100 mg)

Once a day: Days 2–28
- 1 capsule of clofazimine (50 mg)
- 1 tablet of dapsone (100 mg)

Full course: 12 blister packs



MB child blister pack

MB child treatment (10–14 years):

Once a month: Day 1
- 2 capsules of rifampicin (300 mg+150 mg)
- 3 capsules of clofazimine (50 mg X 3)
- 1 tablet of dapsone (50 mg)

Once a day: Days 2–28
- 1 capsule of clofazimine every other day (50 mg)
- 1 tablet of dapsone (50 mg)

Full course: 12 blister packs

For children younger than 10, the dose must be adjusted according to body weight

Multibacillary (MB or lepromatous) is a 24-month treatmentof rifampicin, clofazimine, and dapsone. Paucibacillary (PB or tuberculoid) is a six-month treatment of rifampicin and dapsone.

Treatment

After resolution of the infection, the therapy must be directed towards reconstruction of the damage , in addition to physiotherapy and patient education.