BACTERIAL INFECTION OF ORAL CAVITY

Department of Oral Pathology & Microbiology

Bacterial infections

- Scarlet fever
- NOMA
- Pyogenic granuloma
- Diphtheria
- Tuberculosis
- Sarcoidosis
- Leprosy
- Actinomycosis

Scarlet fever

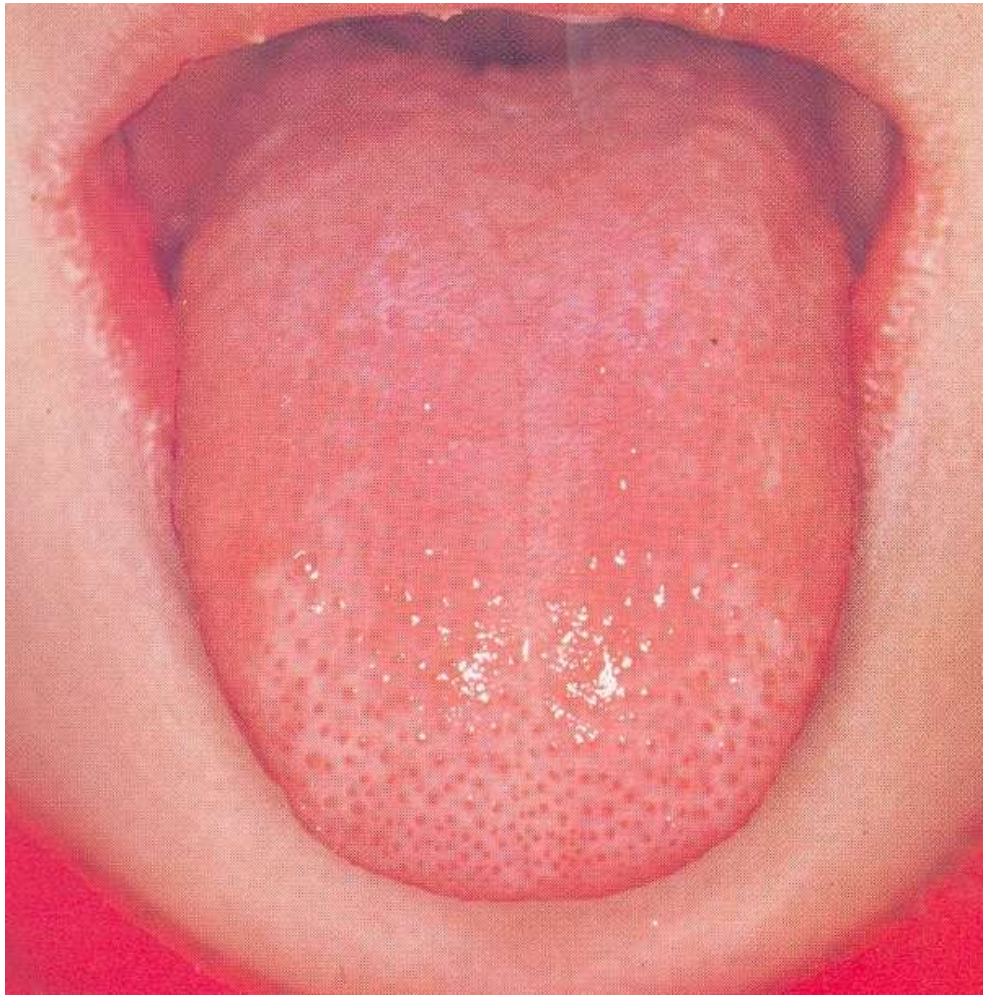
- Occurs predominantly in children during winter months.
- Caused by β-hemolytic streptococci.

Clinical features

- Incubation period 3-5 days
- Sever pharyngitis, tonsillitis, headache, fever, chills, vomiting
- Enlargement of cervical lymphnodes.

Clinical features

- 2nd or 3rd day –characteristic, diffuse bright red scarlet skin rash.
- Rash prominent in skin folds, & produced due to toxic injury to the vascular endothelium producing dilation of blood vessels & hyperemia.



Oral manifestations-

- Palatal mucosa congested, throat fiery red
- Strawberry tongue
- Raspberry tongue

Complications-

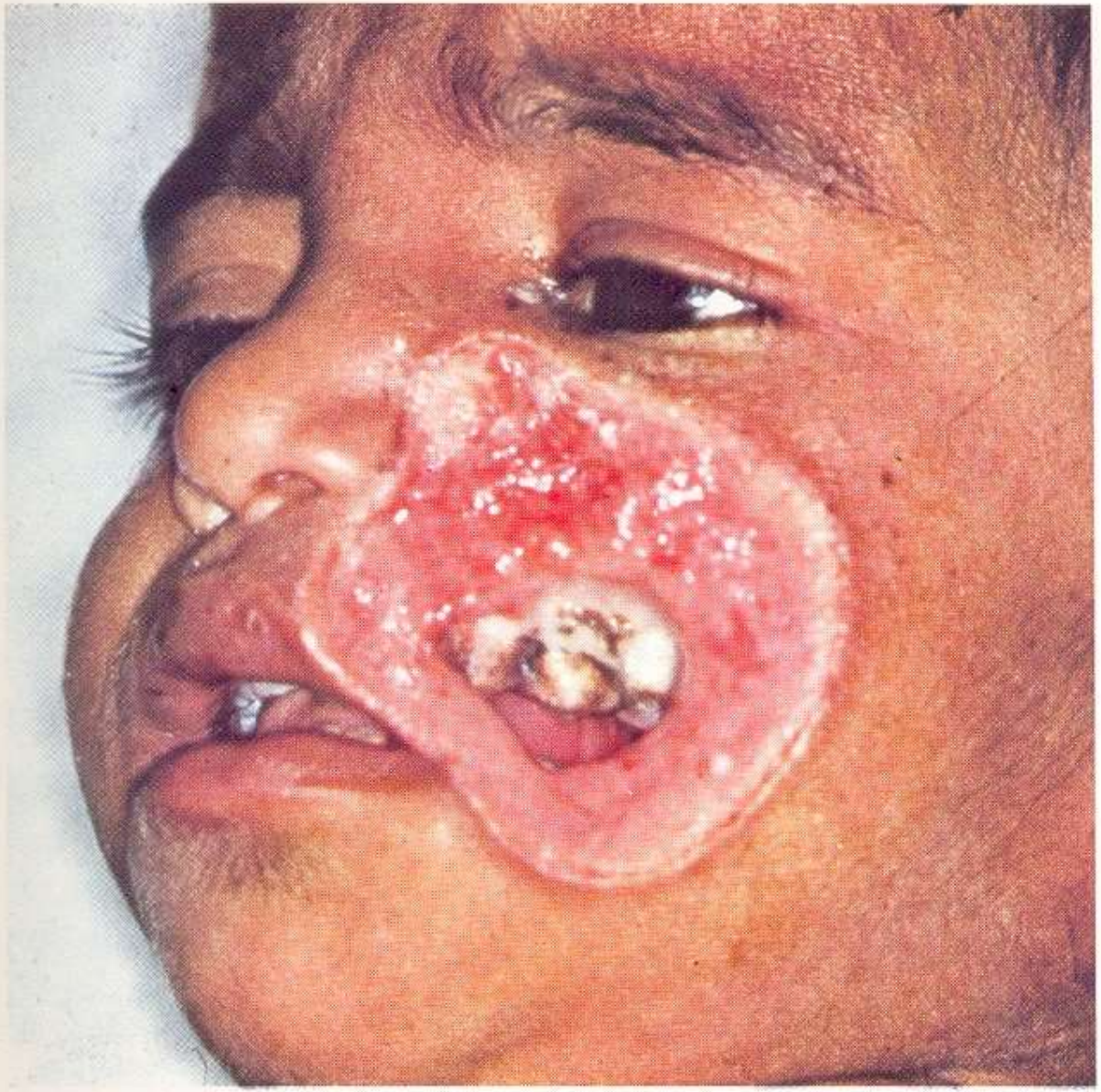
Peritonsillar abscess, rhinits, sinusitis, otitis media, mastoiditis, pneumonia, rheumatic fever

NOMA (CANCRUM ORIS)

- Rapidly spreading gangrene of oral and facial tissues that usually occurs in debilitated or nutritionally deficient patients.

Clinical features-

- Begins as small ulcer of gingival mucosa which rapidly spreads to involve the surrounding tissues of jaws, lips and cheeks by gangrenous necrosis.



Cancrum oris

- Initial site is usually one of stagnation around a fixed bridge or crown.
- Overlying skin becomes inflamed, edematous and necrotic
- A line of demarcation develops between healthy and dead tissue and large masses of tissue slough out leaving jaw exposed.
- Occasionally tongue may be involved.

Pyogenic granuloma

Clinical features-

- Frequently found on gingiva, lips, tongue , buccal mucosa and other areas.
- Elevated, pedunculated, or sessile mass with smooth, lobulated or warty surface.
- surface is commonly ulcerated, showing tendency for hemorrhage.
- Deep red or reddish purple depending on the Vascularity
- Soft in consistency.

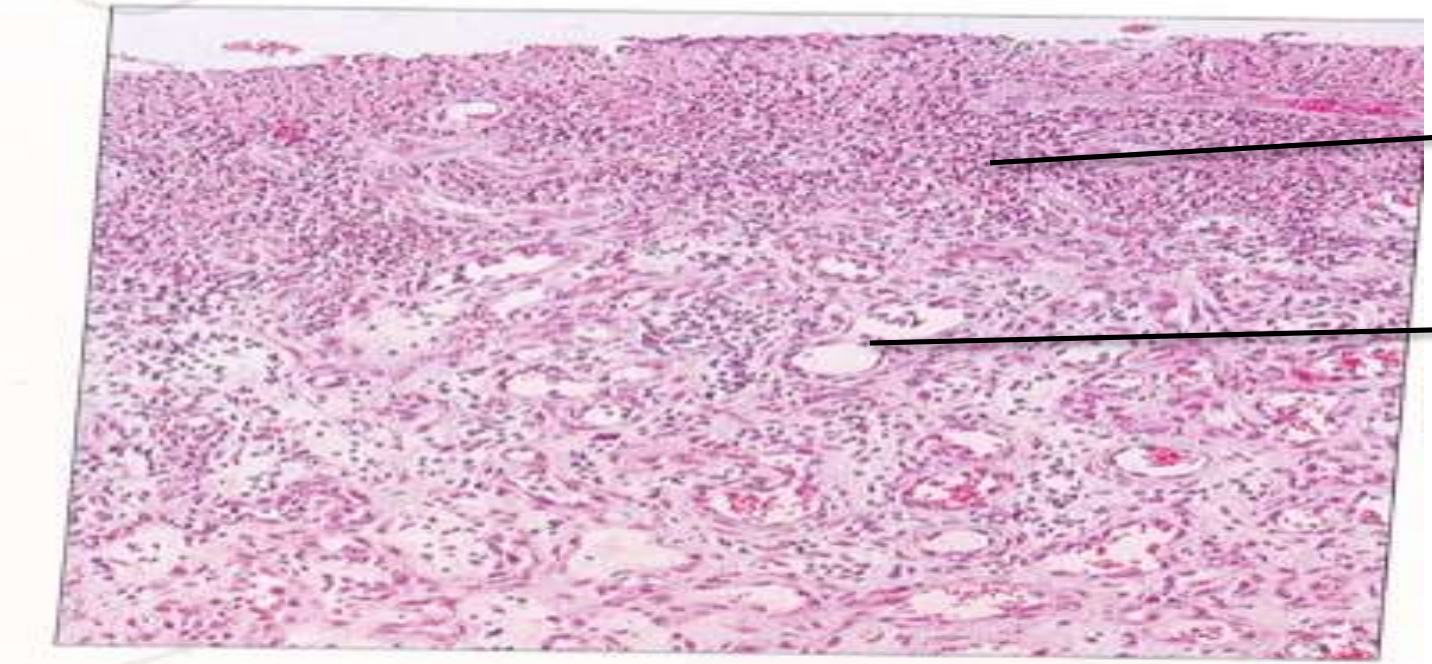
Pyogenic Granuloma

(Granuloma pyogenicum)

Figure 5-13. Pyogenic granuloma occurring in women during the later months of pregnancy-P- 461

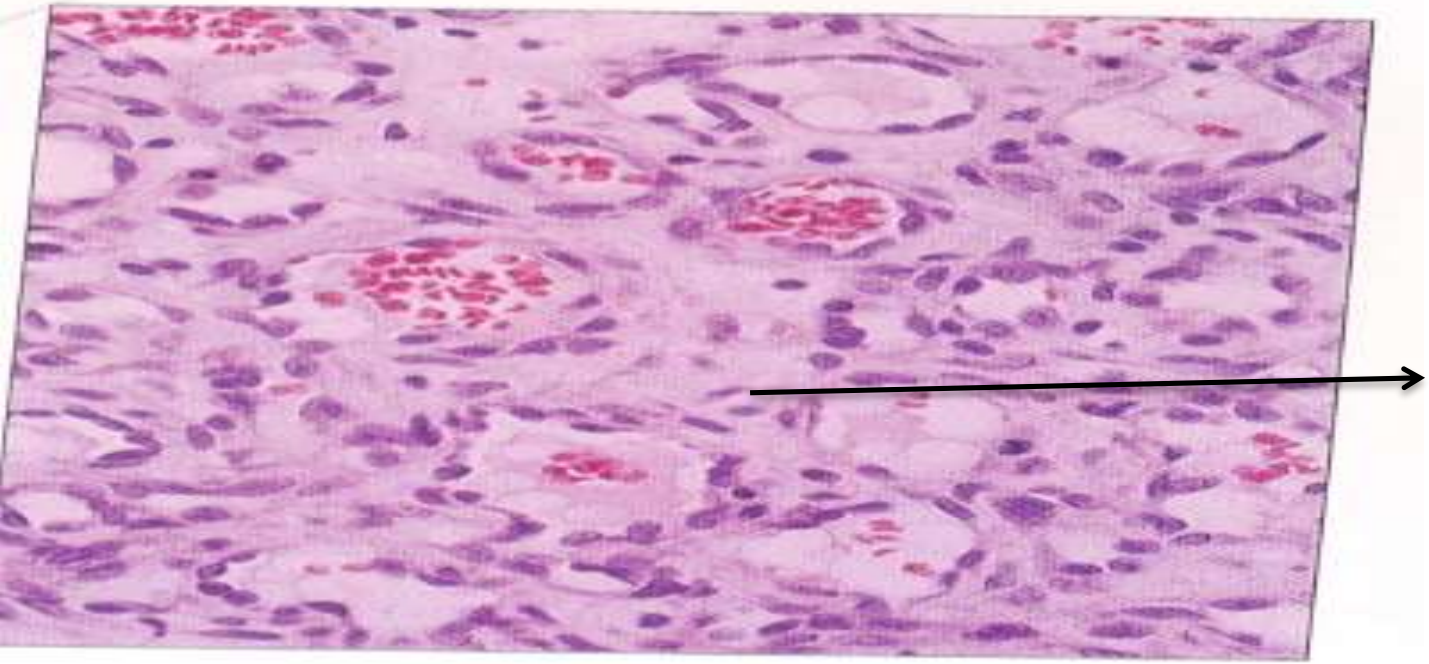
Histopathologic features-

- Overlying epithelium is thin and atrophic, may be hyperplastic.
- Large number of endothelium lined spaces, proliferation of fibroblasts and budding endothelial cells.
- Moderate inflammatory cell infiltrate is seen.



proliferation of inflammatory cells

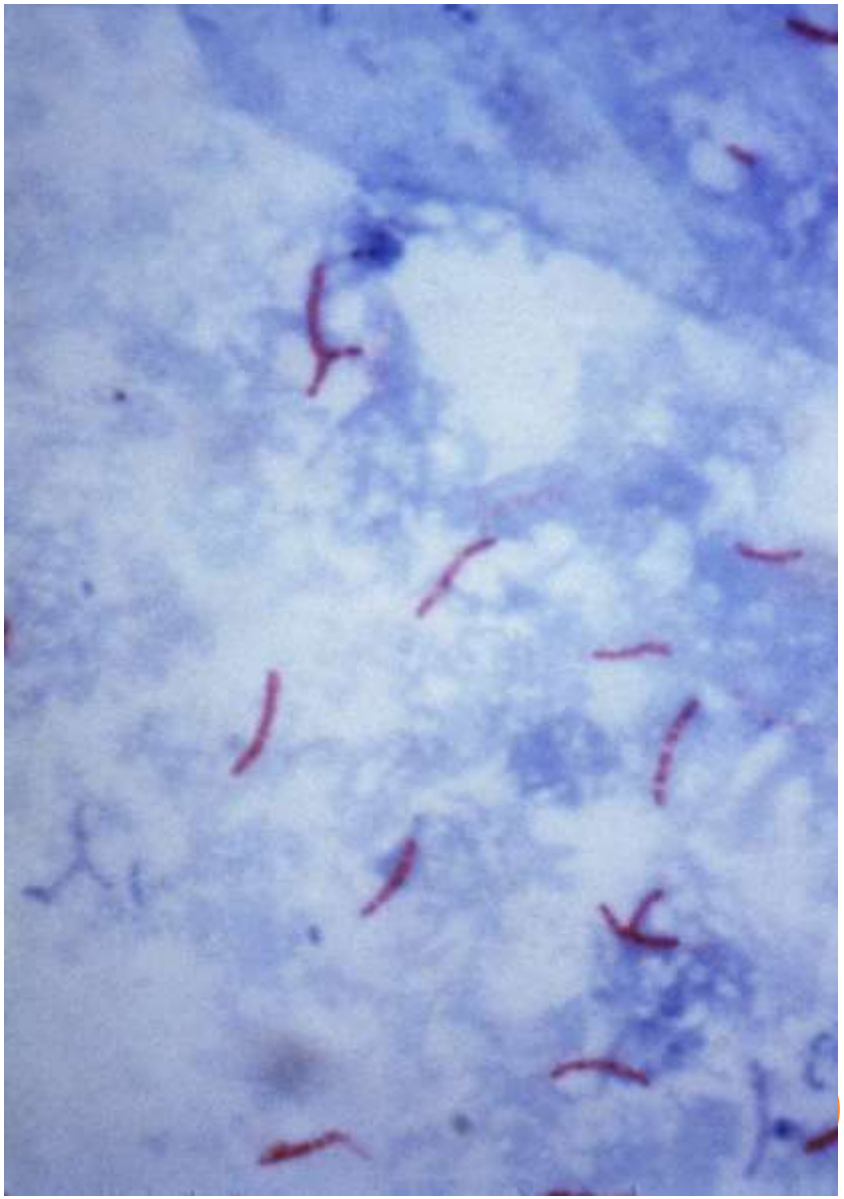
Large number of endothelium lined spaces,



Proliferation of fibroblasts

TUBERCULOSIS

- Caused by mycobacterium tuberculosis.
- Rod shaped, nonspore forming and thin aerobic bacteria called acid fast bacilli.



PATHOGENESIS

- Droplet nuclei from infectious patient are inhaled

Initial stage – host bacterial interaction

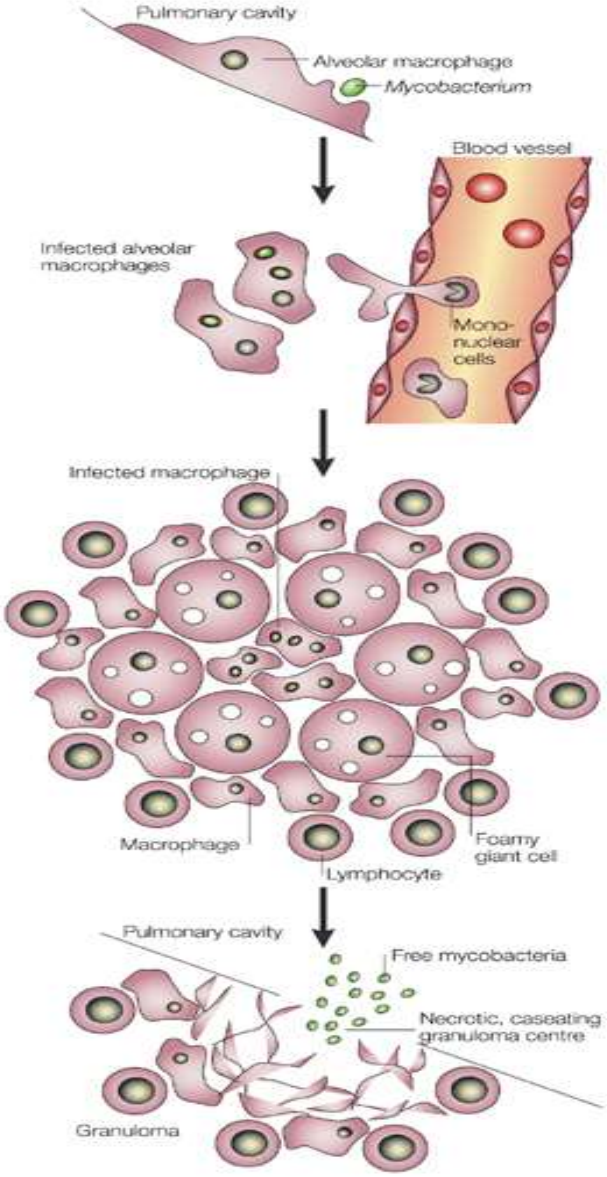
1) Host's macrophages control the multiplication of bacteria or bacteria grow and kill macrophages.

2) Nonactivated monocytes attracted from blood stream to the site by various chemotactic factors, ingest the bacilli released from the lysed macrophages.

Initial stages are asymptomatic about 2 or 4 weeks after infection

1) Tissue damaging
2) Macrophages activating response develop.

Due to specific immunity and accumulation of large amount of activated macrophages at site of primary lesion, Granulomatous lesion or Tubercle are formed.



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- Large macrophages are activated and lymphokines are released which neutralizes the bacilli and prevents further tissue destruction.
- The central part of the lesion contains caseous, soft and cheesy necrotic material.
- This necrotic material may undergo calcification at a later stage called Ranne Complex.

Clinical features-

- Episodic fever, chills, weight loss, persistent cough, easy fatigability
- Pulmonary tuberculosis- Primary, secondary or miliary
- Extrapulmonary site – lymph node, pleura, genitourinary tract, bones, joints, meninges and peritonieum
- Scrofula- tuberculous infection of submandibular and cervical lymph nodes.

Oral manifestations-

- Lesions are secondary to pulmonary disease-the organism may be carried to the oral tissues through a small break in the surface.
- Tongue most commonly affected followed by lips, buccal mucosa, gingiva, frenula.
- Irregular, deep painful ulcer, slowly increases in size.
- Tuberculosis may also involve the bone of the maxilla or mandible

- Tuberculous gingivitis- diffuse, hyperemic,nodular

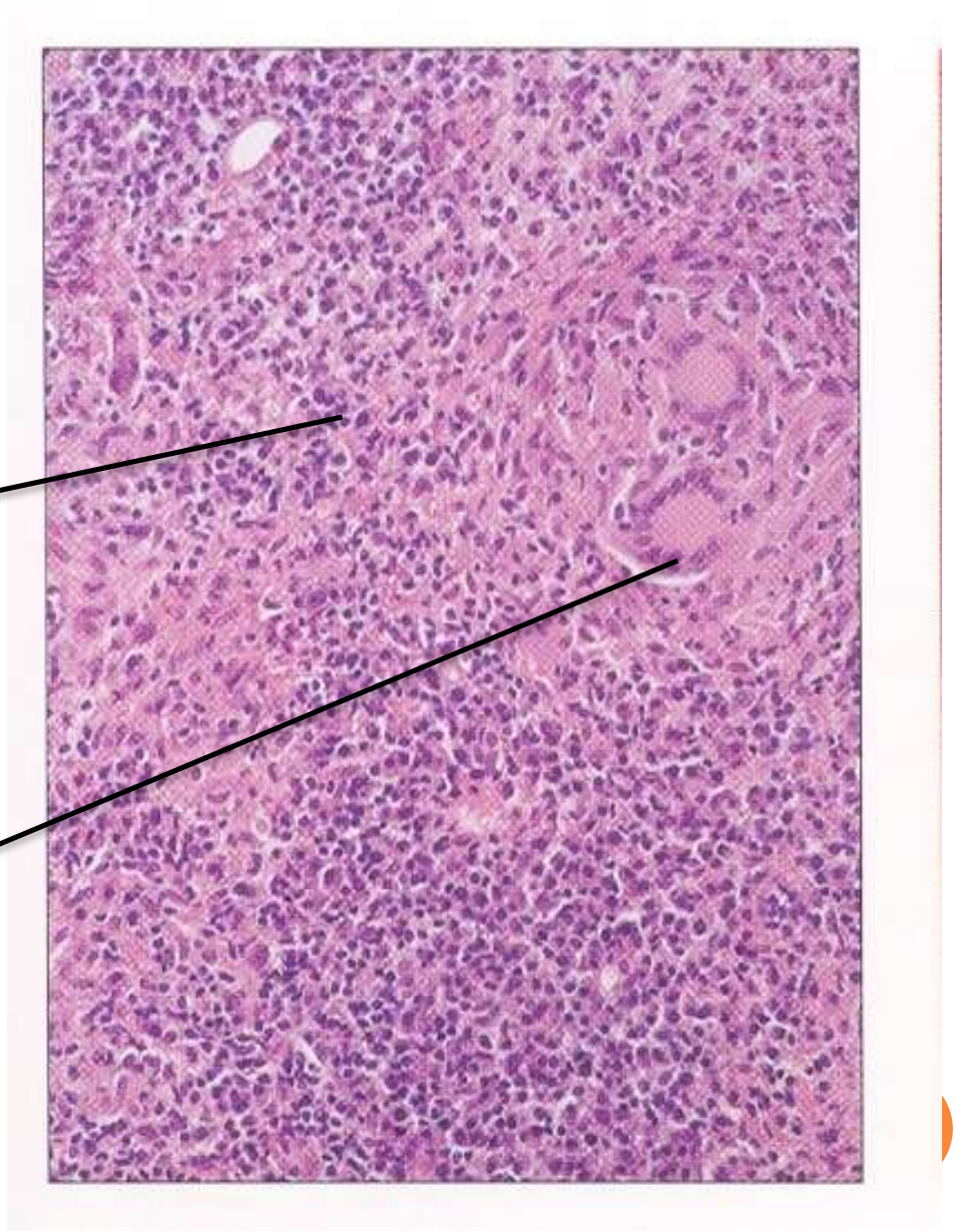
or papillary proliferation of gingival tissue.

Tuberculosis

Figure 5-3.Tuberculous gingivitis. Primary tuberculosis of gingiva.-P-442

Histologic features-

- Foci of caseous necrosis surrounded by epitheloid cells, lymphocytes, occasional multinucleated giant cells (Langhans cell)



Diagnosis

- By special microbial stains and culture of infected tissue or sputum
- Tuberculin test (Mantoux Test)
- The presence of acid fast bacilli (AFB) in sputum smear is the gold standard for the diagnosis of TB.
- Stains – Ziel Nielsen (Z-N) stains

  Kinyoun's stains

  Rhodamine staining for fluorescents microscopy
- Culture – Lowenstine –jensen medium

  Middle brook medium
- PCR

LEPROSY

- Chronic granulomatous infection caused by mycobacterium leprae It is an obligate intracellular. Gram positive acid fast bacilli.

Classification -

- Tuberculoid leprosy
- Borderline tuberculoid
- Borderline leprosy
- Borderline lepromatous
- Lepromatous leprosy

Clinical features

- Tuberculoid lesions- single or multiple macular, erythematous eruptions, with dermal and peripheral nerve involvement with loss of sensations.

- Lepromatous lesions lead to progressive thickening of skin and nodule formation, producing disfigurement.

Oral manifestations

- Small tumor like masses called lepromas
- Seen on tongue, lips or hard palate
- Nodules show tendency to break down and ulcerate
- Gingival hyperplasia with loosening of teeth seen.

Diagnosis

- Mainly on clinical and bacteriological examination
- Ziehl – Nielsen Method
- Skin biopsy, nerve biopsy

Treatment

Multidrug therapy- rifampicin, dapsone and clofazimines

Actinomycosis

- A chronic granulomatous suppurative and fibrosing disease.
- Caused by non acid fast, gram positive filamentous bacteria called Actinomycosis
- Formation of abscess with tendency to drain by sinus formation.
- Pus shows presence of sulfur granules or colonies of organisms which appear in suppurative material as tiny yellow grains.

Classified as-

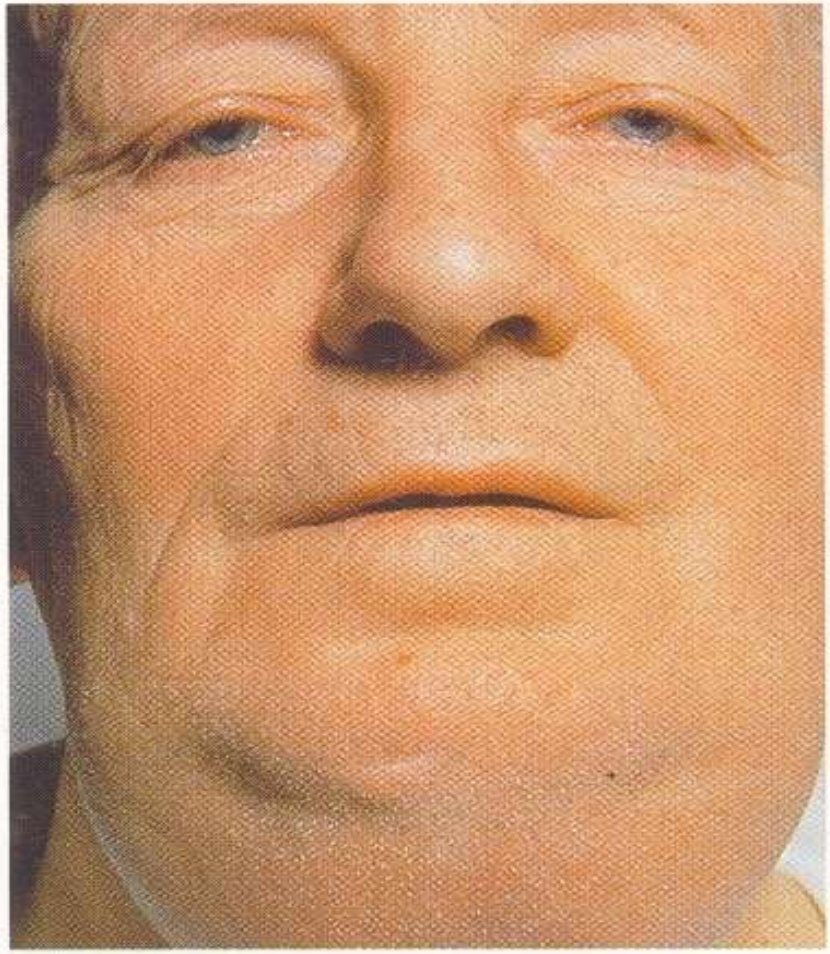
a) Cervicofacial
b) Abdominal
c) pulmonary

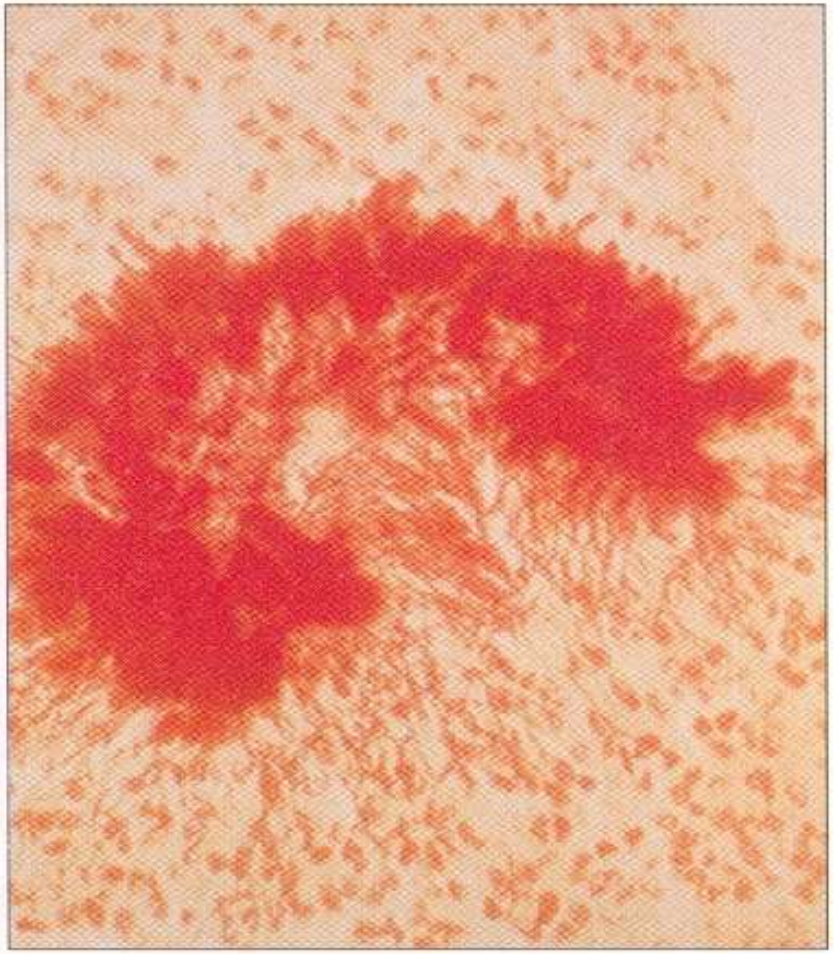
Epidemiology

- Throughout life time with peak incidence in the middle age
- Males are more affected than females

Clinical features-

- Cervicofacial-produce swelling and induration of tissues which develop into abscess and tend to drain on the skin liberating pus containing sulfur granules.
- Skin overlying abscess is purplish red, indurated and fluctuant.
- Sinuses heal and form in other areas producing scarring.





Abdominal- serious form

Fever, chills, intestinal involvement

Pulmonary –

Productive cough with pleural pain, fever chills.

Histopathologic features-

- Central abscess in which microorganisms are seen.
- Colonies appear to float in a sea of PMN associated with multinucleated giant cells and macrophages around periphery of lesion.
- The colonies appear round or lobulated and made up of meshwork of filaments

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THANK YOU ☺☺