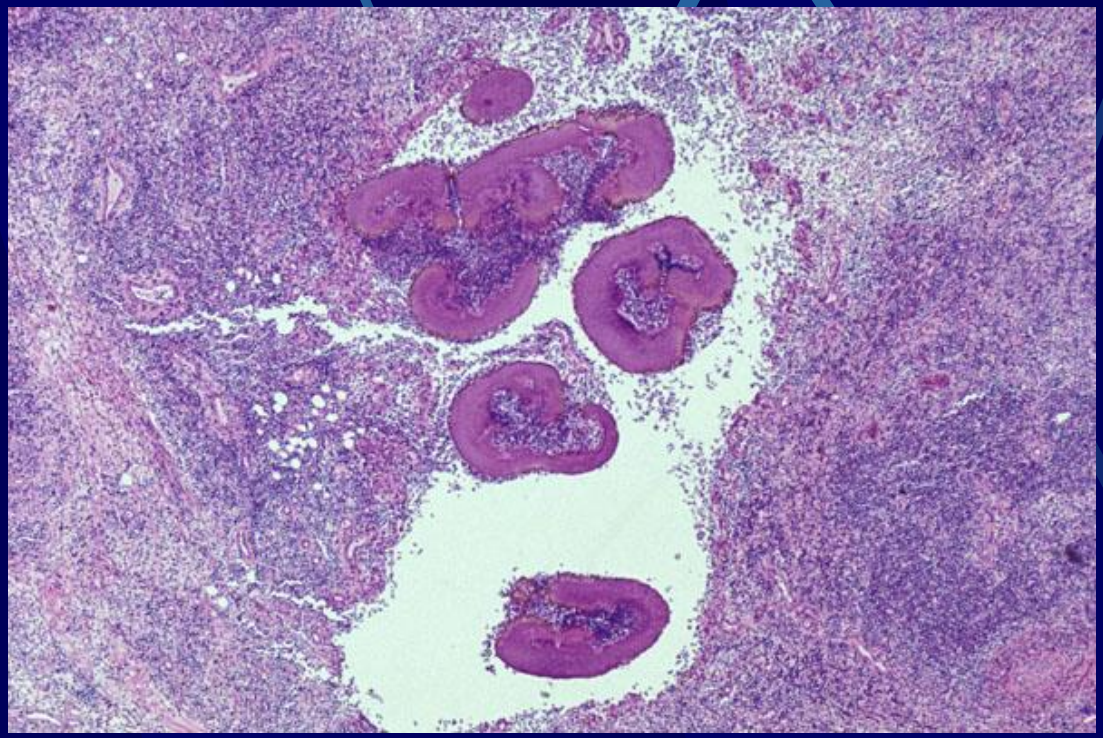
Odontogenic inflammation I. Pathology, pathophysiology, and microbiology of pyogenic inflammations.

Histology of Actinomycosis



- Odontogenic inflammation
- Dental inflammation
- Dental infections
- Odontogenic infections

Inflammation: the reaction of tissues to different types of irritation, involving the whole organism

- Local cell necrosis – demarcation of damaged tissues - replacement
- Liberation of histamine and H-substances, activation of kinine-kallikrein system
- Accumulation of Prostaglandins
- Leukotoxin: increasing of permeability, leukocyte migration
- Necrosin: necrosis of tissues
- Pyrexin: fever

Provocative agents

- Physical irritation (cold, hot)
- Mechanical irritation
- Chemical agents
- Hetero proteins
- Auto proteins (autoimmunisation)
- Infective agents

Pathogenic agents (living agents)

- Bacteria, fungi, protozoa
- Virus
- Parasite, Rickettsia

Clinical features of inflammations

- calor, rubor, tumor, dolor (Celsus)

  Elevated temperature, redness, swelling, pain

- functio laesa (Galenus)

  Malfunction

Phases of inflammation

- 1. Accelerated blood circulation, acute hyperaemia (fluxio)
- 2. Decelerated blood circulation, capillary dilatation (peristasis, hyperaemia)
  - Elevated permeability,
  - Protein-exudation
  - sticky capillary–endothelium:

    emigration of leukocytes

3.a. Exsudative- infiltrative phase

proteins, leukocytes

Immunoglobulines phagocytosis

Exudation stops, resorption

healing

- **3.b. Proliferative – infiltrative phase**

  exudation

  proliferation: histiocytes

  lymphocytes

  plasma cells

  monocyte infiltration

3.a. or 3.b. Reasons

- Features of pathogenic agents
- Protective ability of the organism
- Humoral agents: modification of local reactions

  (prophlogistic, antiphlogistic)

Specific –proliferative-inflammations

- Tuberculosis
- Syphilis
- AIDS
- Actinomycosis
- Tularaemia

Classification of inflammations

- Type of exudate:
  - Serous
  - Fibrinous
  - Purulent
  - Haemorrhagic
  - Necrotic

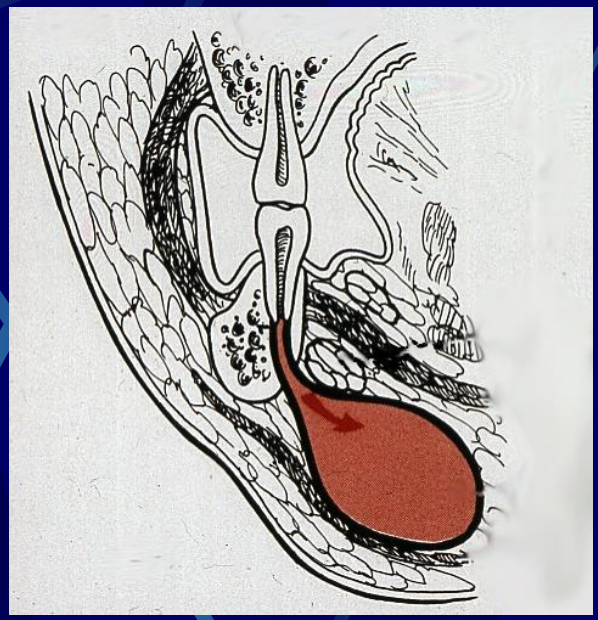
Classification of inflammations

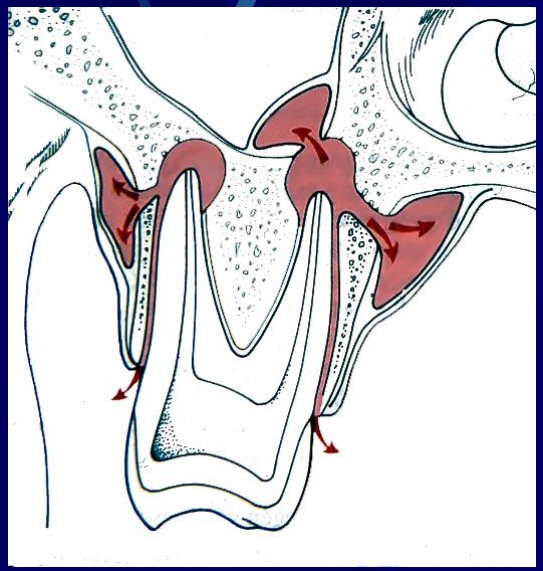
- Acute
- Chronic
- Subacute

Abscess

Pus bonum et laudabile (Good and laudable pus)

- **Circumscribed pus accumulation combined with tissue lys**
- **Empyema: Pus accumulation in a preformed cavity**
  - **Paranasalium (in the maxillary sinus)**
- **Chronic abscess: bordered by a 1-2 mm wide yellow pyogenic membrane**
- **Fistulization**





Changes in blood count in inflammations

- 1. Stage (neutrophil reaction):
  - Leukocytosis
  - Qualitative changes: ratio of neutrophils, stabs and early differentiated cells is elevated
  - Ratio of eosinophils is decreased
- 2. Stage (monocytic protective):
  - Number of monocytes increased
  - Number of leukocytes and granulocytes decreased
- 3. Stage (lymphocytic healing):
  - Ratio of lymphocytes elevated
  - Number of leukocytes decreased more
  - Early differentiated cells disappeared
  - Number of eosinophils increased

Changes of blood count in dental inflammations

- NB: Changes are characteristic in extradental inflammations!
- Elevated sedimentation: 85%
- Leukocytosis: 60%
- Absence of Eosinophils : 50%

Microbiology of infections in the oral cavity

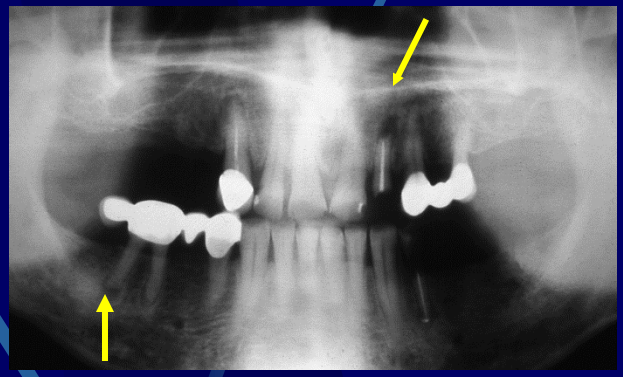
- 92-94% odontogenic origin
- Pathogenic agents: 70-80%: mainly anaerobe, mixed flora
  - Components: Gram-positive + negative, obligate and facultative anaerobe bacteria
  - Streptococci, Staphylococci relatively rarely

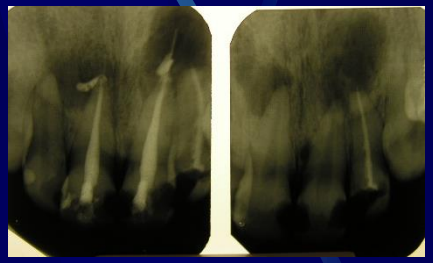
Microbiology

- Streptococcus (alfa-haemolyticus)
- Streptococcus pyogenes (n.normal Flora)
- Staphylococcus aureus (n.normal Flora)
- Neisseria
- Actinomyces genus
- Fusobacterium species
- Treponema microdentium

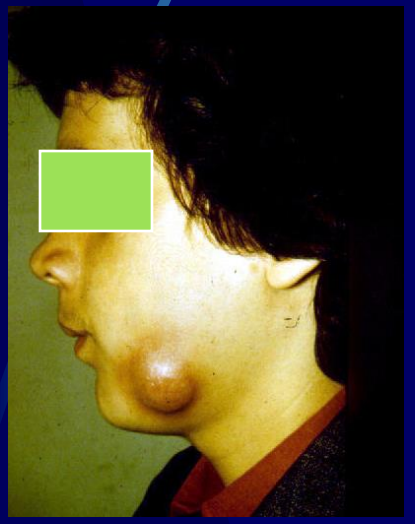
Therapy of infections

- Endodontic
- Endodontic + excochleation
- Endodontic + apicectomy
- Incision + endodontic + apicectomy
- Extraction
- Physiotherapy: laser (soft)
  US
  SW
  IR
  packing





Antibiotic therapy



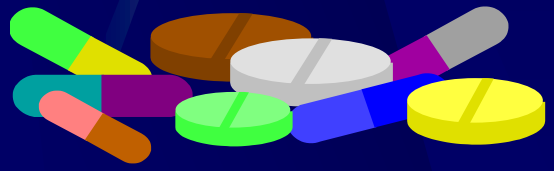
penicillin

clindamycin

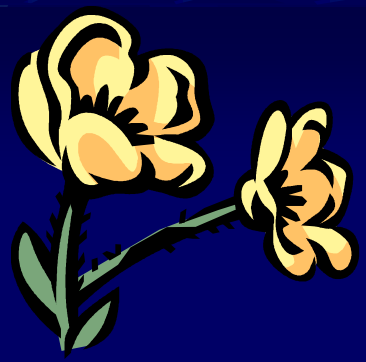
metronidazol

macrolid

- Aktil-Duo, Augmentin, Ciprobay, Dalacin C, Duomox, Klacid, Klion, Rovamycin, Pyassan



Packing /hydrotherapy/

- **Compress (cold):**
  - Decreasing of oedema
  - Painkiller effect
- **Wet pack**
  - Cream (fatty e.g.petrolatum)
  - Wet cotton
  - Plastic foil
  - Dry cotton (thick)
  - Fixing

- Thank you for your attention