Ostitis and osteomyelitis in childhood, Inflammations in orofacial region

6DM
Inflammation of the periosteum, based on milky teeth

**Inflammation of the periosteum - periostitis**

In milk teeth more frequently than permanent (higher frequency of inflammatory complications of dental caries of milky teeth, the greater permeability of the bone tissue, a smaller volume of bone tissue)

**Periostitis incipiens:**

inflammatory exudate starts to spread into bone trabeculae, there is a collateral edema, inflammatory infiltrate accumulates in the periosteum and surrounding soft tissues
periostitis

**Etiology:**
- untreated tooth decay - infection crosses the apical foramen into the surrounding tissues
- gangrene
- non-vital teeth after trauma
- dentitio difficilis,

**Clinical image:**
- Intense pain, feeling of pressure inside the bone
- slight swelling, its location will depend on the affected tooth
Status localis:
- non-vital tooth,
- pain on percussion
- mobility
- swelling of the soft tissues most affected in the root tip
- palpation: diffuse infiltrate (no fluctuation), sensitive to touch
- reg. LU are enlarged and painful

General symptoms:
- general alteration (increased BT, loss of appetite, fatigue)
Subperiosteal abscess

- accumulation of purulent exudate between the bone and the periosteum
- inflammatory infiltrate penetrates under the periosteum
- escalation of pain (due to the pressure of exudate on periosteal sensitive endings)
- palpation - fluctuation
- enlargement of collateral edema - swelling of the face, lower eyelid, lip swelling, swelling in vestibular fold, but the lower edge of Mn is clearly palpable
- general alteration of health status
Submucous abscess

- after perforation of the periosteum inflammatory exudate penetrates under the mucosa
- mucosa livid
- fluctuation present
- sometimes pus is visible
- local and general symptoms cease
- untreated abscess usually perforates into the mouth through the *intraoral fistula* (which may be temporarily closed spontaneously)
Submucous abscess

Treatment:
- release exudate (trepanation, extraction)
- abscess => incision
- Ensure release of pus (purulent exudate) with drainage
- ATB only if general symptoms are intensified
- milky tooth that was causing inflammation is always indicated for extraction

Complications:
- abscessus subcutaneus
- fistula cutanea (healing with scar - excision, plastic surgery)
Inflammation of the jaw and mandible in children

- For suppurative inflammation of the bone, the expressions ostitis and osteomyelitis are used.
- Ostitis - when inflammation affects only the cortical layer.
- Osteomyelitis - if inflammation affects bone marrow
Osteomyelitis in children

- diffuse spread through bone
- acute stage (necrosis and destruction of bone)
- chronic stage (demarcation and exclusion of necrotic parts of bone sequestrer, repair of tissue lost)

**Etiology:**
odontogenic causes (latent periapical lesions that acutely exacerbate during the weakening of the organism)
staphylococcal and streptococcal infection
Osteomyelitis in children

Clinical image:
Local symptoms:

- throbbing pain in bones, subperiosteal abscesses, mobility of teeth in the affected area
- oozing pus of loose teeth sockets
- opening the mouth is painful
- where the inflammation affects the mandibular canal - leads to the lower lip anesthesia on the affected side – Vincent's sign
Osteomyelitis in children

**In the bone:**
on the border of necrotic and healthy bone there is a reactive inflammation, granulations form the wall, which grows out of the intact bone marrow. Protects healthy bone from the effects of toxins. Osteoblasts disrupt necrotic parts of bone. The necrotic portion of bone - sekvester – is bordered by granulation, demarcated – leading to dissolution. Necrotic bone is irregular, different sized particles come out with pus.

Demarcation of necrotic foci, dissolution of sequestrae takes 6-8 weeks and is accompanied by heavy purulent exudation.

Exudation lasts until the last sekvester is excluded.
Osteomyelitis in children

Change in clinical image:
inflammatory infiltrates of soft tissue subside
normal skin color returns
temperature ↓ - subfebris, pain subside

The disease progresses to the stage - regeneration -

The place where the bone was destroyed by inflammation,
new bone formation begins from the preserved periosteum.
Periosteum produces bone spongiosa. The retreating
purulent exudation begins at a depth of new bone formation
due to bone metaplasia of granulation tissue. New bone is
initially without structure, cancellous bone, but due to
operational pressures the normal architectonics occur.
Osteomyelitis in children

X-ray image:

In the first week no changes visible.

After 14 days: marble-like bone structure, formation of sequester (from all sides bordered by permeable tissue)

After the 9th-12th months: restitutio ad integrum
When osteomyelitis in childhood:
germs of permanent teeth still vital even if in the vicinity bone
necrotizes
permanent teeth are not remove with sequester
germs of permanent teeth removed only in
case of protracted purulent exudate of
fistulas in their neighborhood
Complications
lateral deviation of the mandible (jaw moves to the diseased side)
violation of bite

(Cartilage in joint is damaged, lack of new bone, pathologic fractures and bone defects due to the elimination of the necrotic parts of its own or after sekvestrectomy)

Treatment of complications:
Orthodontic and surgical (keep your teeth in the correct position, ensuring the normal AP jaw relationship, after 18 years of age - surgical correction)
Osteomyelitis in children

Prevention of complications:
immediate immobilization of jaws

Treatment of acute osteomyelitis:
- in the acute stage: a broad-spectrum antibiotic + antibiotic-sensitive staphylococcal penicillinases (amoxicillin, clindamicin)
- Antibiotics according to sensitivity - pus cultivation
- vitamin preparations (B complex, C)
- caloric diet, liquid
- incision (intraoral, extraoral) surrounding soft tissue, rubber drains,
- bone trepanation (draining pus from the bone cavities)
Osteomyelitis in children

Treatment of acute osteomyelitis:
immobilization of teeth (end of first week) + intermaxillary fixation

Treatment of chronic osteomyelitis:
- surgical removal of granulation
Pseudotumorous jaw ostitis (primary chronic osteomyelitis)

subacute inflammation of the angle of the mandible
3rd to 12th year age
associated with the development of permanent molars
Pseudotumorous jaw ostitis

Clinical picture:
- Reminds cancer
- Area is swollen at Mn angle
- Swelling of the skin warm, smooth, flexible
- Palpable painless swelling
- Contraction of masticatory muscles
- Enlarged reg. LU

X-ray image:
Inhomogeneous radiolucency limited to the angle of the mandible
Pseudotumorous jaw ostitis

Dg:

- Biopsy
  histologically: thickened periosteum, cortical bone thinner, local defects, areas of granulation tissue and pus

Treatment:

- ATB (PNC Series)
Osteomyelitis in infants

- cause of illness – infected dental follicle from which the infection penetrates into the surrounding tissues
- more frequently affects mandible
- more frequently frontal area is affected

Mortality is high if not early treated.

**Etiology:**
- mastitis, lymphangitis mammae
- careless mechanical cleaning of the oral cavity
- unclean breasts
- hematogenous
- streptococci, staphylococci, pneumococci
Osteomyelitis in infants

**Clinical picture:**
- denial of food, insomnia, restlessness
- digestive disorders
- febrility
- facial swelling, purulent nasal discharge, protrusion of the eyeball

**Status localis:**
alveolar mucosa is oedematous, red, painful to pressure
subperiosteal abscess, perforation and discharge of purulent exsudate

**General symptoms:**
BT 39-40 °C
alteration of the overall state
Osteomyelitis in infants

Complications:
dissemination of inflammation into meningeal structures through orbital structures

Treatment:
- abscess incision
- ATB (PNC rad)
- after acute symptoms have resolved removal of non-vital dental germs
- nutrition

Late complications:
- if Mx - flattening of the half face on the affected side due to underdevelopment
Osteomyelitis in infants

- If Mn - deformation of the mandible and the emergence of so-called bird profile (convex profile)
- Teeth - the milk teeth missing one tooth that was causing inflammation
- adjacent teeth are affected by hypoplasia
- milky teeth later eruption
- permanent dentition not necessarily affected
Abscessus palatinus

- permanent lateral incisor, upper first premolar, upper first molar
- milky upper molars
- swelling on hard palate does not cross midline, palpable fluctuation
- livid mucosa, edematous, painful on palpation
dif.dg. - Osteomyelitis, purulent cyst
TH: incision, triangular closer to the midline (! a.palatina major)
Abscessus perimaxilaris (buccae)

- teeth from Mx
- dissemination of inflammation through the transition from the apex through vestibular fold or to soft tissue
- borders masseter, margo inf. orbitae, nasolabial line
- ↑ collateral edema as subperiost.absces, narrow eye lid
- swelling of the skin stiffer, flushed, hot
- febrility, chills, fatigue, schvátenost
- th: io incision, drainage (drain mules) ATB
- consider hospitalization
Phlegmona buccae

- exaggerated symptoms
- high temperature, chills, general alteration
- swelling of the large, diffuse, firm, the upper eyelid, temporal area
- ATB incision (sangvinolent smelling exudate), drain tube
- hospitalization
- complications: Phlegmona orbitae, thrombophlebitis sinus cavernosa
Phlegmona orbitae - dentogenous

- swelling of both eyelids, livid bluish staining, slit closed,
- protrusion of the globe, immobile
- spread into the infratemporal fossa and pterygopalatina
- febrility, alteration, chills, headache
- th: EO m.inf.orbitae the incision, drainage, antibiotics, hospitalization
- complications: thrombophlebitis sinus cavernosi, meningitis, loss of vision
Abscessus perimandibularis

- in childhood - among the most common abscess
- Cause - milky and permanent teeth Mn (V, 6)
- Solid facial edema in reg. jaw, above the lower edge
- skin hot and flushed, livid, painful at palpation
- swelling in the vestibule (without fluctuations), mucosal inflammation saturated
- febrility

EO incision 1 cm below the bottom edge of the mandible, a rubber drain tube (later mules), removal of causes - together with the extraction incision only if the assumption of light extraction, or until acute symptoms resolved

Antibiotics, hospitalization
Abscessus submandibularis

- lower molars (milky, permanent)
- difficulty opening the mouth and swallowing
- submandibular solid infiltration, gradually increasing up to the neck and face
- IO-edema of vestibular mucosa and sublingual
- th: EO incision, drain tube, antibiotics, hospitalization
Abscessus submentalis

- Cause - lower anterior teeth
- swelling under chin, looks extended
- Intraoral without swelling
- Difficult mouth opening - no contracture
- febrility

th: eo incision in the midline, drain, ATB
Abscessus sublingual

- after tooth extraction (IV, V, 6) or often in combination with a submandibular abscess
- after extraction purulent cavity located on the lingual alveolus
- difficulty swallowing
- febrility

th: io incision, drainage (drain fixed), antibiotics, hospitalization or. eo incision
Cheilitis

- Inflammation of lip
- abscess or phlegmona
- ! thrombophlebitis Sinus cavernosa, meningitis
- furuncul, gangrene of the tooth
- hard, really painful edema, blushed, ↑ reg.LU painful, 39 °C
- abscess in children often
- ice compresses, antibiotics, abscess - incision
- always hospitalized
Glossitis purulenta

- Phlegmona, abscess
- rare in children (in severe stomatitis, the inf. diseases, immunosuppression, injury, foreign body piercing)
- hindered the movement of the tongue, can not eat, talk, TT 39-40 °C, edema - threatening airway - asphyxia!
- always hospitalized
- Antibiotics for abscess incision, tracheotomy