Department of Paediatric Therapeutic Stomatology with Dental Diseases Prevention

Lecture

for the 4th year students of foreign students training faculty:

Acute and chronic apical periodontitis in deciduous and permanent children teeth: etiology, pathogenesis, clinic, differentiate diagnosis and treatment

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Etiology and pathology of apical periodontitis.
Structure of periodontium.
Clinic and diagnosis of acute and chronic apical periodontitis.
Roentgenologic diagnosis of chronic apical periodontitis.
X-ray diagnosis clinic apical periodontitis.
Choice treatment for chronic apical periodontitis.
Periodontium

- is defined as that tissue supporting and investing the tooth and consists of cementum, periodontal ligament (PD4), bone lining the alveolus(socket), and that part the gingiva facing the tooth.

- These tissues form a specialized fibrous joint, a gomphosis, and are tough to be of estomesenchymal origin.

- The realization that periodontal tissue lost to disease can be repaired has resulted in considerable effort denoted to understanding the factors and all regulating the formation, maintenance and regeneration of the periodontium.
Fibers that do not insert in alveolar bone:

1. *Gingival Fibers.*
2. *Circumferential Fibers*
3. *Transseptal Fibers.*
4. *Alveolar Crest Fibers.*
5. *Horizontal Fibers.*
7. *Oblique Fibers.*
8. *Interradicular Fibers* (in multicrooted teeth only).
CLASSIFICATION OF PERIODONTITIS

According to the etiological factors: infective, traumatic, medicamental;

According to the localization: marginal, diffuse;

According to the pathomorphological changes in tissue: serous, purulent, fibrous, granulematous, granulate.
Groshikov’s classification:

1. Acute periodontitis:
   a) acute apical periodontitis;
   b) acute marginal periodontitis.

2. Chronic periodontitis:
   a) chronic fibrous periodontitis;
   b) chronic granulematosis periodontitis;
   c) chronic granulate periodontitis;
   d) radicularis cysta.

3. Exacerbation of chronic periodontitis.
C O4.4. The acute apical periodontitis has a pulpal origin acute apical periodontitis.

K O4.5. Chronic apical periodontitis
- Apical or periapical granuloma
- Apical periodontitis

K O4.6. Periapical abscess with cavity
- Dental
  - Dental – alveolaris abscess with the cavity

K O4.7. Periapical abscess without cavity
- Dental
  - Dental – alveolaris
  - Periapical abscess

K O4.8. Radicularis cysta
- Cysta:
  - apical (periodontal)
  - periapical
  - residual radicular

K O4.9. Another and unspecified diseases of pulp and periodontal tissue.
The pathways of exudates:

- Trough root canals;
- Trough bone under the periestium (at the vestibular and lingual surface);
- Fistula (is the symptom of exacerbation of chronic periodontitis);
- Trough gingival sulcus;
- Trough alveoli small cavity (after extirpation of tooth).
Patients complains acute serous periodontitis

- of constant increasing pain in the causative tooth and a feeling of «an evolved tooth».
- The pain increases at biting, therefore children practically do not use the affected side during meal.
- Dental pain is constant (permanent) and spontaneous.
Diagnosis of acute serous periodontitis

- **Vertical percussion** causes acute pain.
- The tooth may be **slightly mobile** due to exudate accumulation in periodontium.
- **Gingival mucosa** around the causative tooth is unchanged, or it may have insignificant inflammatory features; it may be pastose, slightly hyperemic and slightly painful at palpation.
- **Regional lymphatic nodes** are sometimes enlarged, slightly painful, but more often they are not palpated. There are no radiological changes in periodontium in case of acute serous inflammation.
Clinics of acute serous periodontitis.

- It should be noted, that in case of acute periodontitis in permanent teeth in children the process gets a diffuse character rapidly, the serous inflammation phase may pass into the purulent one within a day.
- The patients' general condition does not change much.
- In case of traumatic origin of periodontitis the tooth is intact, or it may have a break-of in the crown part at varying levels (enamel/enamel and dentine).
Clinics of acute serous periodontitis.

- In case of acute toxic periodontitis there are features of partial preparation of carious cavity, partial or complete pulp chamber disclosure.
- In case of acute periodontitis of infectious genesis there is a caries cavity, which is not connected (as a rule) with the pulp chamber. In case of pulp destruction (necrosis) and the periodontium focal process development, the carious cavity probing is painless. There is no reaction to thermal irritation.
Chronic course of periodontitis or its exacerbation are the most common for deciduous teeth. Chronic periodontitis of infectious origin in deciduous teeth may develop as a primarily chronic process, without the acute inflammation stage.

It is explained by the anatomic and morphological peculiarities of deciduous teeth and an alveolar bone, lack of stability in periodontal structure, as well as the peculiarities of the immune system functioning in young children. Chronic granulating periodontitis prevails in deciduous teeth.
Chronic granulate periodontitis

- **Objective picture:** The patient has a deep caries cavity. It’s connected with pulp chamber. The dentine is dark, soft and demineralization. Pulp is dead (pulp necrosis). The oral mucous around the root is swelling. It’s a fistula with granulate tissue and purulent exudates.
- The percussion is painful, may be without pain, palpation is painful (after this procedure you may receive the purulent drop).
- The palpation of lymphatic nodes (near localized) is painful.
- The thermal irritation isn’t painful.
after it the bright hyperemia has been examined. 
**Symptom of Grane:**

if it press with flat-plastic instrument on projection of root in mucous membrane after this measure you can see a depression.

**Symptom Luckomsky I.G. (1955) vasoperesis:**

if it press with oval flat-plastic instrument on gingiva around painful dental roots you can see a turn pale.

**Symptom Marmasse (1974) – hide (dissemble) hyperemia, make 5-10 stroke movement along the vestibular gingiva (area of painful root projection).**

**Symptom of Marmasse (1974) – it’s examined the hide (dissemble) hyperemia. If you make 5-10 stroke movement along the vestibular part of gingiva near projection of painful roots**
Chronic granulomatous periodontitis

- It's a wide spread periodontitis at children. It development at the period of stabilization of deciduous teeth.
- **The complains:** without symptoms. May be the complains on discomfortable feel in the tooth, the pain after bite.
- **Anamnesis of morbid:** the tooth treated (caries, pulpitis, periodontitis).
- **Objective picture:** intact tooth with discoloring of crown (dart color of enamel); caries cavity or seal in the tooth; it has a connection with pulp chamber. The result of examination of root canals is gangrenous necrosis of pulp (gangrenous exudates). The mucous membrane around the pain tooth may be without changes (the symptom of rescission) with cicatrix. The teeth covered with big layer of plaque.
Periapical radiolucencies associated with mandibular incisors. These teeth were vital, and a diagnosis of cemental dysplasia was made.
Chronic apical periodontitis. Extensive tissue destruction in the periapical region of a mandibular first molar occurred as a result of pulpal necrosis. Lack of symptoms together with presence of a radiographic lesion is diagnostic.
Diagnosis methods:

- the probing without pain;
- percussion with painful (or uncomfortable in tooth);
- palpation of root projection of tooth. There is a destruction of alveolar bone that why we can palpated a granuloma (different size).
- Symptom Shmreker (the symptom of vibration of root apex). After vertical percussion on tooth, if one doctor’s finger localized on mucous membrane around of pain tooth, he can filled a vibration.
foci of destruction have a oval form and localized around apex of root.

Diameter of granuloma: before 5mm – granuloma; at 5mm till 1sm – cystogranuloma; more than 1sm – ridiculer cysta.

Histological kind of granuloma:

- simple granuloma – consist with granulate tissue;
- epithelial granuloma – consist with granulate tissue with epithelial fibers;
- cystogranuloma – it’s a epithelial granuloma with cavity. Inside is covered with epithelium.
Condensing Osteitis

- Increased trabecular bone in response to persistent irritant diffusing from the root canal into the periradicular tissue.
- May be either asymptomatic (pulpal necrosis) or associated with pain (pulpitis).
- Therefore, may or may not respond to diagnostic tests, i.e., thermal, electric, palpation, percussion.
- Root canal treatment, when indicated, may result in complete resolution.
Chronic granulate periodontitis
Chronic granulomatous periodontitis
Follicular cyst of permanent tooth
The treatment of periodontitis conservative method

- Acute and exacerbation of periodontitis
  - Preparation of caries
    - cavity and pulp chamber
      - removal of seal
      - trepanation

- Instrumental and medicamental treatment of root canal
  - Macrocanals
    - ramified (forks)
      - antimicrobial preparation
        - filling of root canals
          - and caries cavity
  - Microcanals
    - physiotherapy
  - Impregnative drugs
    - (Step by step) following
The five stages of the tooth root formation:

• tooth germ;
• the growth root in the length (height);
• immature teeth root;
• Immature root apex;
• Unclosed root apex;
• immature periodontum;
• complete root and periodontum
The growth root in the length (height);
Stage of immature apex
Stage of unclosed apex
Stage of complete apex and periodontium
I and II types of resorption
Hypercementosis
Fibrous apical periodontitis
Condensing ostitis
Ill types of resorption
Follicle Death
Failures of treatment
Chronic granulomatous periodontitis
Topical issues

- What kind of treatment in deciduous teeth with immature root?
- What kind of endodontic treatment for apical periodontitis with immature root?
- What kinds of endodontic technique “step back”; “Grown down” using for mature root of permanent teeth?
THANKS FOR YOUR ATTENTION!