

DENTO-MAXILLARY RADIOLOGY AND IMAGING

Course 6

ORO-FACIAL CYSTS RADIOIMAGING DIAGNOSIS

6.1. IMAGING DIAGNOSIS METHODS

6.2. ETHIOPATHOGENY - CLASSIFICATION

6.3. EPITHELIAL ODONTOGENIC CYSTS

6.4. EPITHELIAL NON - ODONTOGENIC CYSTS

6.5. NON - EPITHELIAL CYSTS – PSEUDOCYSTS

ETHIOPATHOGENIC DEFINITION

Cysts are defined as abnormal, sac-like lesion with a distinct epithelial membrane known as the capsule, usually containing a gaseous, liquid, or semisolid substance.

They may be found anywhere in the body with different etiology: congenital, retention, odontogenic, parasitic, infection.

6.1. IMAGING DIAGNOSIS METHODS

RADIOGRAPHY

Appear as regional radio transparency due to fluid collection, +/- thin wall of radio opacity, +/- septations and calcifications.

ULTRASOUND

Detected as black, transonic (anechoic) thin walled fluid containing formations, with posterior enhancement, +/- septations, infections, calcifications, haemorrhagic transformation.

CT - SCAN

Identify cysts as sharply defined thin walled formations , with fluid density and only capsular contrast uptake, +/- septations, infections, calcifications, haemorrhagic transformation.

MRI

Cysts appear as sharply defined thin walled formations, with characteristic fluid signal: hyper T2, hypo T1 and only capsular contrast uptake, +/- septations, infections, calcifications, haemorrhagic transformation.

6.2. ETHIOPATHOGENIC CLASSIFICATION

Unanimously accepted is the oro-facial cysts classification that separate epithelial from non - epithelial cysts (pseudocysts), with demarcations depending of the presence or the absence of odontogenic origins.

I. EPITHELIAL CYSTS

1. ODONTOGENIC:

- radicular cyst
- dentiger cyst
- lateral periodontal cyst
- keratocyst
- calcifying odontogenic cyst
- glandular odontogenic cyst

2. NON-ODONTOGENIC:

- globulo-maxillary cyst
- naso-labial cyst
- median mandible cyst
- naso-palatin canal cyst

II. NON - EPITHELIAL CYSTS (PSEUDOCYSTS)

- Aneurysmal bone cyst
- Simple bone cyst
- Static bone cyst
- Medullary focal osteoporotic defect
- Stafne osseous defect

III. CERVICAL SOFT TISSUE CYSTS

- Branchial cysts
- Dermoid cysts
- Thyroglossal canal cysts

6.3. EPITHELIAL ODONTOGENIC CYSTS

RADICULAR OR PERIAPICAL CYST

Developed in the inner aspect of a periapical granuloma is a chronic inflammation outbreak in the surrounding tissue of the dental apex, reactive to a pulp necrosis.

Radiographic there is no difference between periapical granuloma and radicular cyst, both appearing as a round or oval shape radiolucency with diameter between 5 mm and several cm, with a thin radiopaque margin,

continuous with lamina dura of the affected tooth, with variable presence depending on growth cyst speed of the cyst.

DENTIGER OR FOLLICULAR CYST

Usually appear at the level of the third molar region or of the maxillary canine, include rudiments or rests of a tooth.

Radiographic appear the crown of an unerupted tooth in the inner aspect of a common cystic radiolucency;

The eruption cyst is a separate infantile form of dentiger cyst that appears by fluid accumulation in the follicle space of an ongoing eruption tooth.

LATERAL PERIODONTAL CYST

Formed by cystic degeneration of periodontal rests from periodontium may appear in any groups of teeth, usually at the level of mandible premolars and molars.

Rarely at the lateral incisor level, radiographic appear as uni or multiloculated form with general cysts characters.

KERATOCYSTS

Develop in the place of a dental segment by dental lamina degeneration of a normal or supernumerary tooth, before the hard dental structure formation, being from this cause also named primordial cyst.

Keratinization of the coating membrane epithelium gives it the name of keratocyst.

Radiographic appear as solitary or multiple radiolucencies, not outlined, without contact with an included or erupted tooth.

CALCIFYING ODONTOGENIC CYST

Is juxtaosseous situated; with the cyst cavity containing calcifying material resulted from the residual elements proliferation: phantom cell or dentinoid material.

Radiographic appear as cystic radiolucency with internal calcareous radioopacities.

GLANDULAR ODONTOGENIC CYST

Is a histopathologic form of cystic mucoepidermoid carcinoma with low grade of aggressivity.

Combine the epithelial odontogenic cyst characters with those of a salivary gland tumor, radiographic usually appearing as multiloculated form.

6.4. EPITHELIAL NON - ODONTOGENIC CYSTS

GLOBULO-MAXILLARY CYST

Is a bone cyst developed between superior lateral incisors and canines causing divergence of their roots.

Initially considered to be a fissural cyst, today is believed to have an epithelial odontogenic origin.

NASO-LABIAL CYST

It is an extraosseous cyst with origin in the inferior portion of nasolacrimal canal or at the junction between external nasal buds and the maxilla.

Improper named naso-alveolar cyst it is not a true maxillary cyst but a soft tissue cyst, without alveolar implication.

Ultrasound is the elected imaging method for its exploration; radiography being used to detect the osseous involvement appeared by secondary pressional resorption at the adjacent lip inferior maxillary level.

MEDIAN MANDIBLE CYST

Initially considered to be a fissural cyst, today is believed to have an epithelial odontogenic origin, radiographic appear as cystic radiolucency in the mediosagittal mandible region.

NASO-PALATIN CANAL CYST

Also known as median anterior maxillary cyst or naso-palatin, develop in median region between central incisors roots.

It is formed by epithelial cells from both incisors canals walls, this being the cause of bilaterally cyst evolution.

Has the origin in any points of naso-palatin canal ie from nasal orifice to incisive papilla emerging.

Radiographic appear as a characteristic heart shape radiolucency with the peak pointing inferior between the central incisors roots, in the middle of antero - inferior nasal spine projection.

6.5. NON - EPITHELIAL CYSTS - PSEUDOCYSTS

ANEURYSMAL BONE CYST

Cystic formation with blood containing cavities it is a pseudocyst because even has a radiographic aspect of uni or multiloculated cavity does not contain epithelial structures.

It is believed to be secondary to a reactive process in antecedents when it is consider that existed a primitive osseous lesion which initiated an arterio-venous malformation of which pressional gradients caused the osteolysis process.

Radiographic appear as an uni or multiloculated osteolysis with extended destruction of regional osseous tissue.

SIMPLE OR TRAUMATIC BONE CYST

Also without epithelial containing elements, being considered a pseudocyst due to radiosurgical aspect,

It is believed to be secondary to a trauma in antecedents which by lymph and venous block initiate the regional osseous tissue to cysticize.

STATIC BONE CYST

Has the same character as the simple bone cyst, being totally asymptomatic, Absence of in time dimensional variability gives the static attribute.

MEDULLARY FOCAL OSTEOPOROTIC DEFECT

Appearing as a focal radiolucency usually associated to a regional dental extraction certifying their development by an aberrant osseous regeneration. Hystopatologic is detected hematogenic marrow in other sites that where it is normally present: mandible angle and maxillary tuberosity.

OSSEOUS STAFNE DEFECT

It is a radiolucency localized in posterior 1/3 of mandible body, described by Stafne in 1942 and correlated with an anatomic variant in which the internal cortical has a concavity that is the expression of submandibular gland impression.

Similar defects are rarely present in anterior 1/3 of mandible body by sublingual glands impression.

Salivary glands have no pathologic modification even when there is an extension and palpable thinning of the margin of the mandible.