Fibro osseous lesions of the jaws
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CLASSIFICATION

DESCRIPTION OF INDIVIDUAL LESION WITH HISTOLOGICAL AND RADIOLOGICAL PICTURES

CONCLUSION

REFERENCES
Replacement of normal bone by a tissue composed of collagen fibers and fibroblasts that contain varying amounts of mineralized substance which may be bone or cementum in appearance
Classification
Waldron 1993 JOMS:51;828-835

I  Fibrous dysplasia-Monostotic & Polyostotic

II  Reactive (dysplastic) lesions arising in tooth–bearing area which are of periodontal ligament origin

Periapical cemento-osseous dysplasia
Focal cemento-osseous dysplasia
Florid cemento-osseous dysplasia

III  Fibro-osseous neoplasms

    fibroma

    Juvenile active ossifying fibroma

Ossifying
Fibrous Dysplasia

Lichenstein 1938 - polystotic lesion
Lichenstein & Jaffe - Monostotic form

HAMARTOMATOUS

Developmental tumor like condition that is characterized by replacement of normal bone by an excessive proliferation of cellular fibrous connective tissue intermixed with irregular bony trabeculae.
Fibrous Dysplasia

Sporadic condition
Post zygotic mutation in GNAS1 gene

Mutation occurring at different stages:
Early embryonic life – polystotic + endocrine
Later stages of embryonic development - Polystotic
Post natal - Monostotic
Clinical & radiographic features

MONOSTOTIC
- More common
- Jaws & skull
- Other bones

RIBS
FEMUR
TIBIA
MAXILLA
Clinical & radiographic features

Cranio facial form
M:F::1:1
Second decade
Pain less expansion

Maxilla > Mandible
Clinical & radiographic features

Early stage-unilocular radiolucency
Maturation-Mottled radiolucency
Further Maturation-
GROUND-GLASS
FROSTED GLASS
OR
ORANGE PEEL

MARGINS ARE NOT WELL DEFINED
Clinical & radiographic features

Lack of sharp marginal definition

Ill defined lamina dura
Radiograph of right maxillary opacity (fibrous dysplasia)
Lamina dura is usually obscured and the cortical plates thinned.
Clinical & radiographic features

Most characteristic feature of FD
- Increase in density of the base of the skull involving the occiput, sella turcica, roof of the orbit, & frontal bones
Polyostotic FD

Uncommon
Females
Few bones to 75% of skeleton
Jaffe Lichenstein syndrome
Polyostotic FD

Coastline of Maine

Coastline of California

Jaffe Lichenstein syndrome

Pigmented oral mucosal lesions may be present
Polyostotic FD

Pathologic fracture with pain and deformity

HOCKEY-STICK DEFORMITY-

Leg length discrepancy due to involvement of upper portion of femur
McCune-Albright Syndrome

Polyostotic fibrous dysplasia + café-au-lait pigmentation + multiple Endocrinopathies

Accelerated skeletal growth
Cushing’s syndrome
Hyperthyroidism
Hyperparathyroidism
Diabetes mellitus
Sexual precocity in females
Gynaecomastia
Histopathology
Fibrous dysplasia
No osteoid rim or osteoblastic rimming ???
Maxillofacial fibro-osseous lesions: classification and differential diagnosis.
Slootweg PJ.


Fibrous dysplasia shows evenly distributed islands of woven bone that fuse with surrounding bone. The presence of lamellar bone and osteoblastic rimming does not contradict that diagnosis as they would for lesions occurring outside the maxillofacial bones.
Calcified spherules may be seen but not numerous

FD displays a monotonous pattern unlike OF

Fusion of lesional bone with normal bone
Fibrous Dysplasia

LABORATORY FINDINGS

- Serum alkaline phosphatase increased
- Premature secretion of pituitary follicle-stimulating hormone
- Elevated BMR
Differential Diagnosis

**Ossifying fibromas** - demarcated or encapsulated, broad variation in mineralized material (Fibrous dysplasia shows evenly distributed islands of woven bone that fuse with surrounding bone)

**Osteosarcoma** - osteoid rimming
Differential Diagnosis

Reed viewed fibrous dysplasia as an arrest of bone maturation at the woven stage of development, whereas ossifying fibroma was believed to be a benign neoplasm of bone, in which normal bone architecture was replaced by a tissue composed of collagen fibers, fibroblasts, and various amounts of calcified tissue with the potential for unlimited and destructive growth.
Differential Diagnosis

**Osteosarcoma** - osteoid rimming
Treatment

Smaller lesions may be resected in entirety

Surgical recontouring

25-50% of patients show regrowth after surgical shave-on

Contra-indication-Radiotherapy because of risk of osteosarcoma
Reactive (dysplastic) lesions arising in tooth–bearing area

Most common fibro osseous lesions of the jaws

Periapical cemento-osseous dysplasia

Focal cemento-osseous dysplasia

Florid cemento-osseous dysplasia
Periapical cemento-osseous dysplasia

Apical areas of vital Mandibular incisor teeth

Multiple lesions, rarely exceeds 1 cm in diameter

*Females & blacks*

Over 30 years

Asymptomatic; on radiographic examination
Periapical cemento-osseous dysplasia

Thin radiolucent rim surrounding lesion
Periapical cemento-osseous dysplasia

Does not require any treatment

Isolated lesion- biopsied
Focal cemento-osseous dysplasia

Did not meet the criteria for FD or OF

"localized fibro-osseous cemental lesions"

Designated as osseous dysplasia reaction of bone to injury

Females; posterior mandible; edentulous area

4th to 5th decade

Asymptomatic
Focal cemento-osseous dysplasia

Radiolucent to densely Radiopaque with a thin Peripheral radiolucent rim
Common Is mixed radiolucent-radiopaque stage
No bone expansion
Focal cemento-osseous dysplasia

On surgical exploration the tissue is gritty, hemorrhagic & removed by curettage in small fragments

Simple bone cyst may be associated with FCOD

NO TENDENCY TO ENLARGE
PARTIAL REMOVAL MAY CAUSE REGRESSION ON LESION
Florid Cemento-osseous dysplasia

Middle age to elderly black females

Sclerosing osteitis, multiple enostosis, gigantiform cementoma

Seen only in tooth bearing area

Striking tendency toward bilateral, symmetrical involvement
Florid Cemento-osseous dysplasia

FCOD is defined as "Lobulated masses of dense, highly mineralised, almost acellular cemento-osseous tissue typically occurring in several parts of the jaws".
Florid Cemento-osseous dysplasia

Small - asymptomatic

Large - Symptoms are usually associated with exposure of sclerotic cemental masses to oral environment from alveolar atrophy, tooth extraction and biopsy
Florid Cemento-osseous dysplasia
Fragments of cellular fibrous connective tissue containing scattered trabeculae of bone
Histopathology

Spicules of bone and cementum like hard tissue with moderately cellular fibrous connective tissue. 

*Note hemorrhage around bony trabeculae*
Late stage lesion showing a sclerotic mass of cemento-osseous material
Differential Diagnosis

FD or OF can be distinguished on the basis of clinical presentation

- Bony expansion not seen
- Cementum like calcification are seen
- Grossly gritty & hemorrhage (unlike OF)
- Periapical cemental dysplasia can be found in the tooth-bearing jaw area and are similar to ossifying fibroma but without demarcation.
Differential Diagnosis

OF

PCD
Periapical cemental dysplasia should be distinguished from cementoblastoma, a lesion similar to osteoblastoma but connected with tooth apices.
Treatment

Management is often difficult & not satisfactory

Asymptomatic patient-wise to keep under observation

Symptomatic patient- antibiotic should be administered

Sequestration of cementum like masses will occur slowly followed by healing
Fibro osseous neoplasms

Ossifying fibroma

Juvenile active ossifying fibroma
Ossifying fibroma

1972 WHO – CF: odontogenic

1992 WHO – CF & OF variants

Defined as demarcated & occasionally encapsulated lesion consisting of fibrous tissue containing variable amounts of mineralized material resembling bone and/or cementum
Ossifying fibroma

Hamner *et al* - periodontal origin of ossifying fibroma. capable of producing cementum and osteoid.

Krausen *et al* and Spjut *et al*, postulated that primitive mesenchymal cells in areas such as the ethmoid bone and long bones may produce cementum at sites distant from odontogenic tissue. They discredited the notion that these tumors arise from ectopic periodontal tissue in these locations.
Ossifying fibroma

3rd to 4th decades of life

Posterior mandible may extend into the ascending ramus

70-80% in premolar and molar area

Female predilection

Large tumors – slowly progressing enlargement of jaws

Painless swelling of involved bone

Facial asymmetry
Ossifying fibroma

Unilocular lesion
Root resorption may/may not be seen

Radiopaque

Radiolucent
Ossifying fibroma
Ossifying fibroma

Radiograph of well-defined radiolucency in the body of the mandible (ossifying fibroma).
Ossifying fibroma
Histopathology

Ossifying fibroma
Histopathology

Ossifying fibroma
Ossifying fibroma

Growth rate varies: histopathology cannot predict growth rate

Difficult to distinguish FD & OF histopathologically

OF generally excised in one piece; large lesions may require local resection and subsequent bone grafting

Prognosis is excellent; no recurrence; no malignant change
Juvenile Aggressive Ossifying Fibroma

Trabecular variety

Psammomatoid variety

No sex predilection

5 to 15 years (60\%-70\%)

Cortical expansion may result in clinically detectable facial enlargement
Juvenile Aggressive Ossifying Fibroma
Maxilla, Para nasal sinuses & orbital & frontoethmoidal bone

NASAL OBSTRUCTION
EXOPHTHALMOS
PROPTOSIS
BLINDNESS
MENINGITIS
Juvenile Aggressive Ossifying Fibroma
Trabeculae of cellular woven bone present in a cellular fibrous stroma
Cellular fibrous connective tissue containing spherical ossicles with basophilic centers and peripheral Eosinophilic rims
Distinction from OF

NON ENCAPSULATED

THE TUMOR IS MORE CELLULAR THAN OF

AREAS OF HEMORHAGE; MULTINUCLEATED GIANT CELLS
Treatment & prognosis

Clinical management is uncertain,

Some show rapid growth & are aggressive mostly seen in infants and young children

30-58% recur

No malignant transformation rate
Familial Gigantiform Cementoma

*Disorder of gnathic bone that leads to formation of massive sclerotic masses of disorganized mineral material*

Autosomal dominant disorder
Caucasians and African blacks
Equal in males and females
Limited to jaws
Facial asymmetry, impaction, malposition and malocclusion of involved dentition
Familial Gigantiform Cementoma

Radiographic alterations seen during first decade of life

Clinically obvious swelling by adolescence, followed by a rapid thickening & expansive growth pattern

If not treated enlargement usually ceases during *fifth decade* of life
Familial Gigantiform Cementoma

Radiopaque with radiolucent thin rim
Familial Gigantiform Cementoma

Elevated serum alkaline phosphatase levels

Anemia in females

Histopathology is similar to florid cemento osseous dysplasia
Treatment & prognosis

Dysplastic bone rapidly regrows if removed before sclerotic stage

Once the lesion is radio opaque, partial removal causes sequestration
Paget’s disease

Abnormal and anarchic resorption and deposition of bone, resulting in distortion and weakening of affected bone

Discovered by Sir James Paget
in 1876
Etiology

*Slow virus* infection, e.g. nucleocapsids from a *paramyxovirus* has been detected in osteoclasts in patients with pagets disease

*Circulatory* disturbance

Protracted clinical course, absence of acute *inflammatory process* and geographic and familial clustering favors a *viral* cause

15-30% positive *family* history
Clinical features

Men

incidence over 40 years-3% and tenth decade is 10%

Monostotic and polyostotic

*LINCOLN’ S SIGN/BLACK BEARD SIGN*
Clinical features

*Bone pain*—may be quite severe, is a common complaint

Lumbar vertebrae > pelvis > skull > femur

Bones become thickened, enlarged, bowing deformity (monkey like stance)

Skull—increase in circumference
Clinical features

- Jaw - 17%
- Maxilla > mandible
- Enlargement of middle third of face
- Lion like facies
- Alveolar ridge
- Symmetric enlargement

Tight fitting Dentures
Spacing of Teeth
Radiographic features

Early stage reveals decreased Radiopacity of bone and alteration of trabeculae

Loss of Trabeculae produces a GROUND GLASS appearance

Osteoporosis circumscrippta

Patchy areas of sclerotic bone are formed COTTON-WOOL appearance
Radiographic features
Radiographic features
Biochemical findings

Increased serum Alkaline phosphatase

Increased urine Hydroxyproline

Normal serum calcium and phosphorous
Complications

Pathologic fracture
  Osteosarcoma
  Osteomyelitis
  Bleeding
  Deafness
  Blindness
Histopathologic findings

Jigsaw / mosaic appearance
Histopathologic findings
COMPLICATION

OSTEOSARCOMA
TREATMENT

Bone pain is controlled by Aspirin

use of Bisphosponates

Plicamycin given only in severe cases

Antibiotics prior to extraction

Dentures to be continually remade
CHERUBISM

Familial fibrous dysplasia of jaws; disseminated juvenile fibrous dysplasia
Clinical features

Autosomal dominant

uncommon disease

2-5 years

clinical alteration typically progresses until puberty, then stabilizes and slowly regresses
CHERUBISM

Bilateral involvement of posterior mandible
“Eyes upturned to heaven” appearance
Cervical lymphadenopathy
Painless and bilateral expansion
CHERUBISM
Radiographic features

Multiple, expansile radiolucency

unerupted teeth

multilocular cystic radiolucencies
Radiographic features
Oral manifestations

Agenesis of second and third molars
Displacement of teeth
Premature exfoliation of primary teeth
Delayed eruption of permanent teeth
Transposition and rotation of teeth
Scattered giant cells within background of cellular, hemorrhagic mesenchymal tissue.

The inset demonstrates perivascular Eosinophilic cuffing.
Treatment & prognosis

No treatment required

Radiotherapy- contra indicated

Osteoradionecrosis