The University of Jordan

Oral Pathology-II

4th Year
2016/2017

Prof Faleh Sawair: BDS, FDS RCS (England), PhD
Professor of Oral Pathology
Cherubism: الملايكية

- Hereditary (AD), sporadic
- Mutations in the $SH3BP2$ gene

**Clinically:**
- Only jaws
- Mand, posterior, bilateral & symmetrical

Part of mandible always spared
- Max tuberosity
- Painless bony swelling (2-4y) → progressive till puberty then stabilize → regression after 2 to 4 years and resolution by age 30
Teeth

- Premature exfoliation of the primary
- Displacement of developing tooth follicles → ectopic eruption or impaction.
- Missing or malformed permanent teeth
- Significant malocclusions
• **Rx:**
  - Multilocular radcy w expansion
  - Radio-opaque structures
  - Ground glass
- **Hist:**
  - Giant cell lesion
  - Metaplastic bone

**Eosinophilic vascular cuffing**
Inflammatory diseases of bone: Osteitis, osteomyelitis, periostitis
Alveolar osteitis (Dry socket):

- Most frequent painful complication of extraction
- Follows 1-3% of all extractions
- Esp. impacted Mand 3rd molars
- 9.5% following 3rd molar extraction at UJH
• Aetiology:
  ▪ Failure of clot formation or clot loss
    ▪ Excessive trauma
    ▪ Limited blood supply: radiotherapy
    ▪ LA
  ▪ Osteosclerotic disease
• Clinically:
  ▪ Deep-seated, severe throbbing pain
  ▪ Starts a few days after extraction $\rightarrow \geq 1-2$ wks
  ▪ Red, tender mucosa
  ▪ **Socket:** no clot, whitish dead bone

• Healing:
Focal sclerosing (condensing) osteitis:

- Bony reaction to low-grade periapical inflammation

Clinically:

- Lower 6
- < 20y
- Asymptomatic
• **Rx:**
  - Radio-opaque area below apex

• **Hist:**↑ number & thickness of bone trabeculae, lymphocytes, fibrous marrow
Osteomyelitis:

- Uncommon

Predisposing factors:

1- **Local:** fracture, Rxd, osteosclerotic disease

2- **Systemic:**
   - Acute leukemia
   - DM
   - Alcohol
   - Nutrition
   - Anaemia,
   - Immunity
Suppurative osteomyelitis:

- Acute vs. chronic
- Source of infection
- Polymicrobial
Clinically:

- Mandible
- Severe, throbbing, deep-seated pain
- Swelling (oedema)
- Red, swollen & tender gingiva
- Tender, loose teeth
- Trismus & dysphagia
- Enlarged tender LNs
- Anaesthesia or paraesthesia
• **Rx:** moth-eaten (10-14 days)
- **Hist:**
  - Acute inflammation, necrosis & suppuration
  - Extending in the marrow spaces
  - Sinus
  - Periosteum

[Image of histological sections with marked features like Sequestra.]
Sclerosing osteomyelitis:
Superimposition of infection on cemento-osseous dysplasia
Chronic osteomyelitis w productive periostitis

(Garre’s osteomyelitis):

- Uncommon
- Response to low-grade infection
- Reactive subperiosteal new bone formation
Clinically:

- Lower 6
- Young adults
- Mild pain
- Non-tender, hard swelling along lateral border or lateral aspect
Chronic periostitis associated w hyaline bodies:

- “Pulse granuloma” or “Vegetable granuloma”
- Vegetable material via socket, flap, RC, breach in mucosa

Hist:
- Thickening of periosteum
- Hyaline ring-shaped bodies
- FB giant Cs
Osteoradionecrosis:

- Radiation
- Mandible
- Endarteritis obliterans → non-vital bone
- Infection → extensive osteomyelitis
Osteoporosis:

- Bone apposition < bone resorption

• ↓ bone quantity: thin cortex & trabeculae & ↑ marrow spaces
- **Risk factors:**
  - Post-menopause
  - Hyperthyroidism
  - Hyperparathyroidism
  - Cushing’s syndrome

- **Dental aspects:** periodontal disease, tooth loss, denture, surgery, sinus
Rickets & Osteomalacia:

- ↓ Vit D or resistance to its action
- RF, malabsorption of Ca
- Failure of mineralization of Osteoid & cartilage
- Weak bones, bending

Biochemistry:

n/↓ ca, ↓ PO4, ↑ ALKP
Dental aspects:
- E hypoplasia
- Dentine hypocalcification
- Large pulp chambers
- Short roots
- Poorly defined lamina dura
- Hypoplastic alveolar ridge
- Delayed eruption
- Condyle

SIGNS OF RICKETS
- Soft spot on baby’s head is slow to close.
- Bony necklace
- Curved bones
- Big, lumpy joints
- Bowed legs (knees bent out)
Acromegaly:

- Prognathism
- Macroglossia
- Lips & nose
- Hands & feet
Hyperparathyroidism:

Primary:

- Adenoma, Ca, Hyperplasia
- Postmenopausal women

Hypercalcaemia → metastatic calcification
Bone disease:

- Osteoclastic activity
- Brown tumors
- Rx:
  - Osteoporosis
  - Mottled areas of radiopacity & thinning of cortical plates

Salt and pepper skull
**Biochemistry:**  \( \uparrow \) Ca, \( \downarrow \) PO4, \( \uparrow \) PTH, \( \uparrow \) ALKP, \( \uparrow \) urinary Ca & PO4

**Secondary:**

- RF → low Ca
- Rickets & Osteomalacia

**Jaws:** loss of n trabecular pattern, LD, brown tumors
Paget’s disease
**Paget’s disease:**

- Uncoordinated ↑ in osteoclastic & osteoblastic activity
- Primary dysfunction of osteoclasts
- **Aetiology:** slow viral infection + genetic factors
- **Abs:** measles & RCV
- **Three phases:** osteolytic, mixed & osteoblastic

- M > F, > 40 y
- Geographical variation
- Monostotic or polyostotic
Axial skeleton then skull & femur
- Deformity of spine & legs
- Bone pain & joint disease
- Fracture
The jaws are affected in $\approx 20\%$ of patients

- Enlargement of skull & facial bones
- Thick cortical plates of skull
- Skull base; cranial nerves & spinal cord
- Diffuse radiolucency
- Patchy Osteosclerosis “cotton wool” appearance
- Max 2: 1 Mand

- Gross ↑ of alveolar process, flat palate
- Spaces, malocclusion, incompetent lips
- Hemorrhage
- Root resorption
- Hypercementosis & ankylosis, Loss of LD
- Infection
- Rapid bone resorption & replacement

- **Initially:** ↑ Osteoclastic activity → vascular fibrous marrow

- **Then:** Osteoclastic & osteoblastic activity, mosaic pattern
Finally: Osteoblasts predominate → dense lamellar bone

Jaws: cementum (mosaic)
○ **Bone scan**

○ **Biochemistry:**
  - ↑ALKP:
  - Normal Ca & PO4

○ **Complications:**
  - ↑A-V shunt → ↑output HF
  - Osteosarcoma (1-15%)
Central Giant cell granuloma:

- Giant cell lesions
- Less aggressive & destructive than in other bones
Clinically:

- Less common than PGCG
- Majority: 10-30 yrs, F>M
- Mand (75%) > max, Anterior
Rx:

- Cyst-like radiolucency w expansion
- “Soap-bubble” appearance
- Displacement & occasional resorption of roots

- Some are aggressive lesions
Aetiology: ?
Torus/exostosis:

- Non-neoplastic growth of bone
- Aetiology
**Torus palatinus:**

- Develops after puberty in susceptible pts
- Grows slowly over entire life
- Rounded, can become large & pedunculated
- 15.4% (Sawair et al 2009)

- Thin mucosa
- Denture, speech, O.H
Torus mandibularis:

- Worldwide less common
- 25.7% (Sawair et al. 2009)
- Lingual to premolar
- Frequently bilateral
- Usually multiple-lobed
- Tongue movement, denture, O.H
Exostosis

- Buccal alveolus of Max in molar region
- 10% (Sawair et al 2009)
• Hist: cortical bone ± cancellous bone
Bone Tumours
Classification:

- **Bone-forming tumors:**
  - Benign: osteoma & osteoblastoma
  - Malignant: osteosarcoma

- **Cartilage forming tumors:**
  - Benign: chondroma
  - Malignant: chondrosarcoma

- **Marrow tumors:** myeloma

- **Fibrous tumors:**
  - Benign: cemento-ossifying fibroma

- **Tumor-like lesions in bone:** Langerhans cell histiocytosis, haemangioma

- **Metastatic tumors**
Osteoma:

- Benign & slow growing
- Mand > Max
- Single or multiple
- Superficial or intraosseous
- Gardner Syndrome:
  - AD
  - Unerupted normal & supernumerary teeth
Multiple Osteomas
Fibromas,
Epidermoid/sebaceous
cysts of skin

Colonic polyps
Osteoblastoma:

- Rare
- Swelling & pain
- **Rx:** rounded, w-d w central radcy or speckling
- **Hist:** osteoblasts, MNGC, osteoid & FV stroma
Osteosarcoma:

- Most common bone sarcoma
- Long bones, 7% H & N
- Mand > Max, 10 yrs later
  - Bony-hard swelling
  - ± pain
  - Loosening of teeth
  - Paraesthesia
  - Trismus
  - Nasal obstruction & eye symptoms
Rx:

- Variable
- **Osteolytic tumors:** irregular radiacy
- **Sclerotic type:** irregular radio-opacity
- **“Sun-ray”** appearance
- **Hist:**
  - Osteoid
  - Fibroblastic type, chondroblastic type
- **Prognosis:** less metastasis in jaws
Chondroma & Chondrosarcoma:

- Ant Max & post Mand, symphysis, condyle, coronoid

- Hist:
  - Chondroma: mature cartilages
  - Chondrosarcoma:
  - Calcifications

- Clinically: malignant → pain, loosening of teeth
Giant-cell tumor:

- Ends of long bones
- Aggressive & locally invasive W ↑ LRR ± metastasis
- **Hist = CGCG**
  - Uniform distribution of giant Cs
  - No osteoid or bone
- Older age group
Myeloma: ورم نقوي متعدد

- Differentiated B lymphocytes or plasma Cs win bone marrow
- **Solitary plasmacytoma**
- Jaw or oral soft tissues (in 30% of cases)
- 50-70 yrs
- Large amounts of a single homogenous type of Igs
- **Bence-Jones proteins**
- Multiple foci of bone destruction, bone pain
- Anemia, thrombocytopenia, infections
- Hypercalcaemia, proteinuria
- Bones w red marrow

**Rx:** w-d, round/oval punched-out radices

Pepper pot skull
- **Macroglossia** (12-40%).

- **Jaw lesions**: Mand > Max, S & S
- Hist:

Sheets of plasma Cs

Blood smear
Amyloidosis:

- Extracellular deposition of fibrillar protein in a wide variety of tissues
- May lead to RF, HF & LF

**Primary (idiopathic, AL type):** MM, Ig LH

**Secondary (reactive AA type):** CID & malignancy, acute phase protein
Oral features:

- Macroglossia
- Petechiae & ecchymosis & hagic bullae → ulcers
- Yellowish macules & papules
- SGs → xerostomia
- **Hist:**
  - Weakly eosinophilic hyaline homogenous material
  - *Congo red stain* + Polarized light $\rightarrow$ apple-green birefringence
Metastatic tumors:

- Breast, bronchus & kidney
- Bone & soft tissue
- Mand>Max
- S & S
- Osteoblastic tumors

Langerhans cell histiocytosis:

- Langerhans cells

- **3 forms:**

  1. **Unifocal LCH (eosinophilic granuloma) (Chronic focal LCH):**
     - < 20 yrs, M > F
     - Cranium, jaws, ribs & long bones, Mand>Max
     - **Jaws:** localized bone destruction w swelling & often pain
- Hist:
  - Histiocytes w pale, lobulated nuclei & eosinophilic cytoplasm
  - Eosinophils, neutrophils, lymphocytes
  - Hge, necrosis, fibrosis, giant Cs

Kidney- or coffee bean shaped
- **Rx:** “floating in air”
- Spontaneous regression, curettage, excision or Rxd
- → Multifocal lesion
2- Multifocal LCH (chronic disseminated LCH):

- Several bones & often other organs
- Skull
- ± Liver, spleen, LNs
- Hand-Schuller-Christian syndrome
3- Progressive (acute) disseminated LCH:

- Letterer-Siwe disease
- Aggressive
- Infants & young children
- Disseminated → skin, viscera, bone marrow

**Clinically:** fever, malaise, ↑LNs, ↑ liver & spleen, pancytopenia

**Rx:**

- Osteolytic lesions
- **Jaws:** diffuse bone destruction, floating, loosening of teeth
Arteriovenous Malformation of jaw:

- Mand > Max

Clinically:

- Progressive painless swelling
- Pulsatile
- Loosening, bleeding
- Hge
• **Rx:** osteolytic defect, multilocular
• **Hist:** Arteriovenous