Lec 1 + 2 (6 + 7)

Giant Cell Tumor of Bone

1. most are benign locally aggressive
2. Osteoclast-like giant cells with mononucleated cell in between
3. high level of RANKL → activation of osteoclast
4. Epiphysis of long bones, adults
5. equal distribution + well circumscribed

Aneurysmal Bone Cyst

1. Benign tumor, well circumscribed
2. Blood filled cyst
3. Metaphyis of long bones, adults

Non-ossifying Fibroma

1. Benign lesion, not areal tumor
2. Metaphysis
3. Bland (normal) fibroblastic proliferation ⇝ no bone just fibroblast

Fibrous Dysplasia

1. not areal tumor
2. developmental abnormality (osteoblast diffrentiation) → no normal bone marrow
3. Forms
   - monostotic ⇝ 1 bone → maxilla / mandible → called cherubism; tibia
   - polystotic ⇝ multiple bones
   - Mazabraud syndrome ⇝ FD + soft tissue tumor = myxoma
   - McCune-Albright syndrome ⇝ polystotic FD + café-au-lait pigmentation + endocrin abnormalities
     - ★ chinese letters

Lec 1 + 2 (6 + 7)

Metastatic Tumors to Bones

1. much more common than primary bone tumor
2. mostly multiple + axial → pelvic, shoulder, vertebrae
3. mostly hematogenous spread
4. Forms → Lytic ↝ more osteoclast; mixed; blastic ↝ more osteoblast

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Osteoarthritis (DJD)

primary ↝ cartilage

1. degeneration of cartilage
2. Primary ↝ aging process.
3. Secondary ↝ pre existing disease.
4. Characteristics → eburnation (loss of cartilage); reduce joint space; osteophytes; subchondral cyst formation
5. Clinically → pain worsens with use; crepitus; range limitation

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Rheumatoid Arthritis

primary ↝ synovial

1. Chronic inflammatory, autoimmune disease
2. proliferative not suppurative (no pathogen)
3. primary target ↝ synovial fluid → synovitis
4. 80% ↝ Rheumatoid Factor positive (RF ↝ autoantibodies against Fc portion of self IgG)
5. Characteristics → inflammation; Ankylosis → Bony / Fibrous; pannus; Rheumatoid nodules
6. Clinically → painful; warm; swollen; stiffness (when inactive, in morning); waxing + waning; ☆ Ulnar deviation special; Subcutaneous nodules

Lec 1 + 2 (6 + 7)

Juvenile idiopathic arthritis

primary ⇝ synovial

1. Rheumatoid arthritis for children
2. Characteristics
   - mostly Oligoarthritis
   - mostly large joints rather than small ones
   - Systemic disease is more common
   - RF + Rheumatoid nodules usually absent
   - Anti Nuclear Antibody (ANA) ⇝ positive

Seronegative

primary ⇝ Ligament

1. Autoimmune disease
2. Features
   - RF negative
   - HLA-B27 gene
   - Ligament pathology
   - mainly sacroiliac joint
   - Bone ankylosis
3. types
   - ☆ prototype Ankylosing spondylitis ⇝ HLA-B27 gene , sacroiliac joint
   - Reiter syndrome ⇝ initiated by Bacterial infection ⇝ Triad
     - arthritis
     - urethritis
     - conjunctivitis (red eye)
   - Enteropathic arthritis ⇝ secondary bowel infection (Salmonella, shegilla) , HLA-B27 gene
   - Psoriatic arthritis ⇝ starts in DIP joints

Suppurative arthritis

1. Bacterial infection
2. Hematogenous spread
3. mainly affecting the Knee
4. types
   - <2 years ⇝ H. influenza
   - adults ⇝ S. aureus
   - Sickle cell disease ⇝ Salmonella
5. Clinical features
   - acute pain
   - warm
   - swollen
   - systemic manifestation

Lec 3 (8)

Gout

1. transient arthritis attacks
2. Due to deposition of MSU — mono sodium urate crystals
3. mainly in Big toe
4. Lysosomal enzyme + protease attack joints
5. Morphologic changes
   - Acute gouty arthritis ⇝ treatment → NSAIDs , Colchicine
   - Chronic tophaceous arthritis ⇝ treatment → Allopurinol
   - tophi in various sites
   - Gouty nephropathy
6. Negative Bierfringence ⇝ needle shaped yellow

pseudogout

1. CPPD crystals — calcium pyrophosphate dehydrogenase
2. less acute attacks than gout
3. positive Bierfringence ⇝ rod shaped Blue

Joint Tumors

1. Ganglion cyst
   - common condition
   - dorsum of wrest usually
   - not true cyst (no communication with synovial)
   - can cause pressure pain
2. True synovial cyst
   - Baker cyst around the Knee
   - herniation of synovial fluid
3. Tenosynovial giant cell tumor
   - Benign neoplasm of synovium
   - Diffused ⇝ pigmented villonodular synovitis | large joints (mainly knee)
   - localized ⇝ small hand tendons
   - affecting type VI collagen – type 6–

Lec 3 + 4 (8+9)

Soft Tissue Tumor

1. Benign more common than malignant
2. Sarcomas → aggressive
   → metastasize to lung
   → hematogenous spread
3. simple Karyotype, signature mutation → Ewing sarcoma t(11:22)
   → synovial sarcoma t(X:18)
4. 80% complex Karyotype ⇝ no need for molecular testing
5. Adipose tissue tumor → Lipoma → most common soft tissue tumor
   → well-encapsulated
   → Mature Fat cells
   → Liposarcoma → most common sarcoma in adults
   → Extremities + retroperitoneum
   → types → well differentiated ⇝ MDM2
   → myxoid t(12:16)
   → pleomorphic

Librous tumors: Nodular fasciitis

1. reactive process after trauma
2. self-limiting
3. clonal t(17:22) ⇝ MYH9-USP6
4. do not diagnosed as malignant

Librous tumors: Fibromes

1. benign proliferation of fibroblast.
2. mucus surfaces, skin, subcutaneous tissue

Lec 4 (9)

Fibrous tumors:

Fibrosarcomer

1. malignant fibroblast proliferation
2. superficial, close to skin
3. ↑mitosis
4. storiform pattern

Fibrous tumors:

Superficial Fibromatoses

1. benign infeltrative fibroblastic proliferation
2. do not metastesize
3. may impact function, but do not kill
4. locations → palms, soles, penis

Fibrous tumors:

Deep Fibromatosis

1. deep infiltrative Blauel (normals) fibroblastic proliferation
2. do not metastasize but recur.
3. Kill by infiltration
4. mutation in CTNNBL (βCatenin) + APC gene
5. Location → Abdomin, mesentry, limbs
6. Gardner synadrom are susceptible

Lec 4 (9)

Skeletal muscle tumor

1. Almost All malignant
2. malignant prototype ⇝ Rhabdomyosarcoma
   - most common children sarcoma
   - bulky, fleshy, and hemmorage.
3. the benign one ⇝ Rhabdomyoma → rare

Smooth muscle tumor

1. Leiomyoma ⇝ benign, very common
   - Mostly in uterus
   - menorrhegia, infertility
2. Leiomyosarcoma ⇝ malignant, more in female
   - hemorrhage, necrosis, ↑mitosis, infiltration

Tumors of uncertain origin

1. Synovial Sarcoma
   - do not araise from Synoviocyte
   - t(X:18)(p11,q11)
   - forms
     - monophasic → only spindle cells
     - Biphasic → spindle + glands
   - metastasize to lung + lymph nodes
   - usually in large joints (Knee joint)
2. Undifferentiated pleomorphic sarcoma
   - high grade mesenchymal sarcomas of pleomorphic cells ↓ LacK cell lineage

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