

Skeletal Tumors - Benign Osteoid forming tumors ①

1) Osteoma

Def: Benign, sessile round bosselated tumors, project from the subperiosteal or endosteal surfaces of cortex, almost exclusively restricted to the skull and facial bones.

S/p: Multiple osteomas = Gardner's Syndrome

Mls: Well-differentiated mature lamellar bony trabeculae separated by fibrovascular tissue.

2) Osteoid osteoma vs Osteoblastoma

Nature	Benign	Benign
Size	< 2 cm	> 2 cm
Site	Cortex of long bone	Spine, ribs
Pain	Severe pain, responds to Aspirin	Dull pain, no response to Aspirin.
X-ray	Radiolucent central nidus surrounded by reactive bone formation	Absence of reactive bone formation
GIA	Round/oval masses, hemorrhagic gritty tan tissue	Round/oval masses, hemorrhagic gritty tan tissue
Mls	Well circumscribed, composed of interconnecting trabeculae of woven bone rimmed by osteoblasts.	Well circumscribed, composed of interconnecting trabeculae of woven bone rimmed by osteoblasts.

Benign Cartilage forming tumors

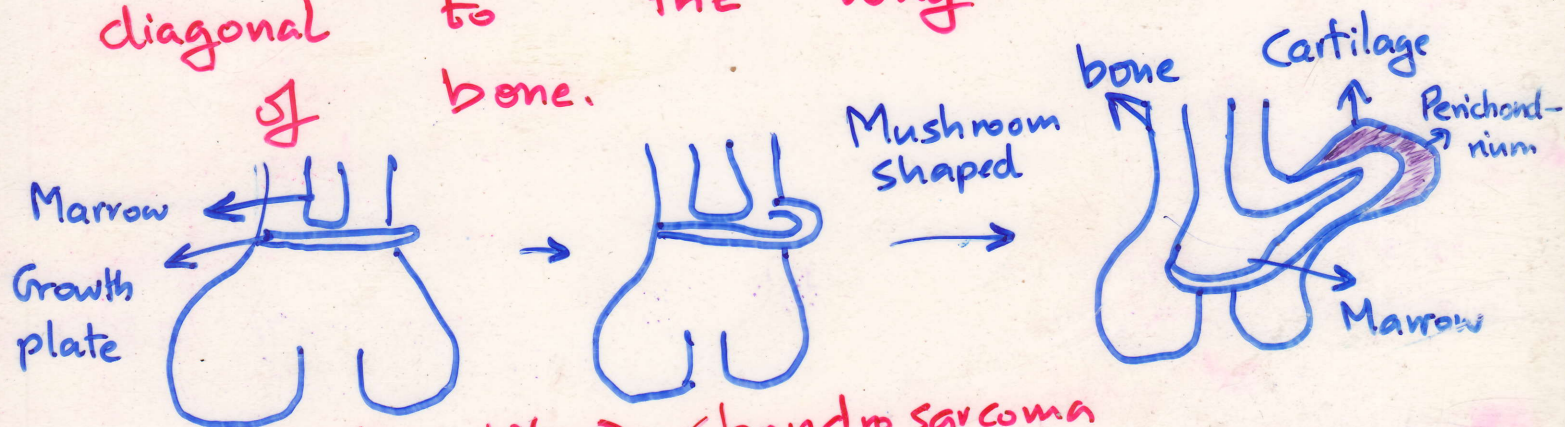
(2)

1) Osteochondroma (Exostoses)

Def: Benign cartilage capped outgrowth that is attached to the underlying skeleton by a bony stalk.

Location: Metaphysis. Multiple osteochondromas occur in multiple hereditary exostosis (AD).

Pathogenesis: Displacement of the lateral portion of the growth plate $\Rightarrow$ proliferation of it to the long axis of bone.



Complication 1% $\Rightarrow$ Chondrosarcoma

② Chondroma
Multiple enchondromas - Olliers disease.
Multiple enchondromas associated with soft tissue hemangiomas - Maffucci Syndrome.

③ Chondroblastoma
Benign most arise about the knee
M/s: Polyhedral chondroblasts with hyaline matrix around it in a lace like fashion which gets calcified $\Rightarrow$ chicken-wire calcification.

Chondrosarcoma - Malignant Cartilage forming tumor (3)

Site: → 1) Intramedullary - Central - diaphysis or metaphysis (Femur)
→ 2) Juxtacortical or peripheral (Hip joint, shoulder)

Histologically 1) Conventional = (Hyaline and/or myxoid)

2) Clear cell = Abundant clear cytoplasm

3) Dedifferentiated = 2nd high grade Sarcoma.

4) Mesenchymal = Well differentiated hyaline cartilage

Surrounded by sheets of small round cells.

Age: 3rd → 6th decade (40's and older)

G/A = Tumor varies in size from a few
Centimeters to extremely large and
lobulated masses of firm consistency.

C/S = Translucent bluish-white, gelatinous or myxoid
appearance with foci of spotty calcification, necrosis.

MLS: i) Lobules of anaplastic cartilage → Pleomorphic,
hyperchromatic, mitotic figures, tumor G.C.

ii) Infiltrating margins.

Grading: Grade I → III depends on cellularity, cytologic
atypia & mitotic activity.

Chondrosarcoma Can arise from preexisting
enchondroma, osteochondroma, chondroblastoma, fibrous
dysplasia or Paget's disease.

Metastasis → Lungs & skeleton

Prognosis is related to grade.

EWING'S SARCOMA

④

Def: Highly malignant small round cell tumor arising in the medullary canal of diaphysis of shaft of long bones $\Rightarrow$ Femur, tibia, humerus & fibula in children (10:15 yrs). Predilection in females.

- 1) classic ES
 - 2) Soft tissue ES
 - 3) PNET
- $t(11:22)(q24;q12) \Rightarrow EWS-FLI-1$
- $\rightarrow$ shows neural differentiation.

G/A Located in medullary cavity $\Rightarrow$ expansion of diaphysis, invades the cortex & periosteum & produces soft tissue mass.

C/s: Tan white, soft friable with areas of necrosis & hemorrhage.

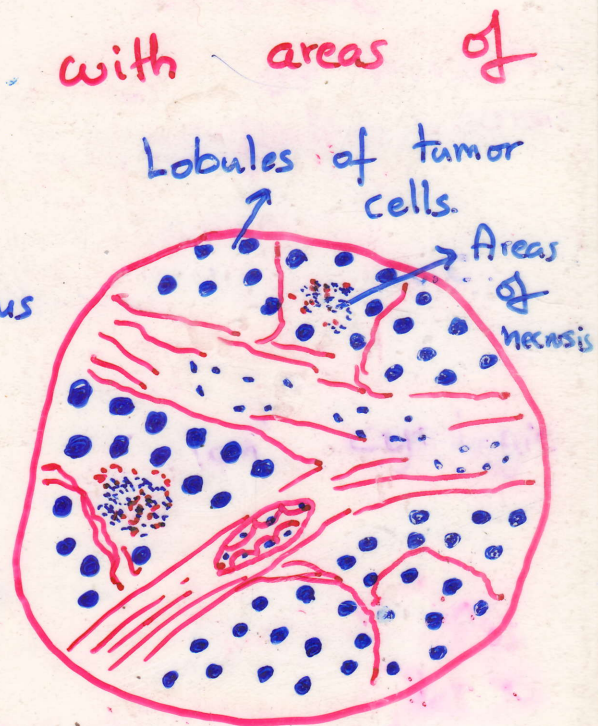
M/E: i) Sheets of uniform small round cells divided by fibrous septa into irregular lobules

ii) Cells are small, uniform slightly larger than lymphocytes, scanty cytoplasm, contains glycogen

(PAS +ve).

iii) Homer-Wright rosettes - neural differentiation.

iv) Necrosis.



C/F Painful, tender, warm mass - mimics osteomyelitis.

X-ray Onion skin pattern of periosteal reaction

Metastatic Disease

(5)

(a) Osteolytic

Kidney, Lung, GIT, Malignant Melanoma

(b) Osteoblastic - Sclerotic response.

Carcinoma prostate.

Route:

① Direct

② Lymphatic or Vascular

③ Intraspinal seeding (Batson plexus of veins).

Children

Metastases originates from
Neuroblastoma, Wilms tumor, Osteosarcoma, Ewings
Sarcoma, Rhabdomyosarcoma.

Usually metastases are multifocal.

RCC & thyroid producing metastases are notorious
for solitary lesions.

