- Tumor of orthopedics//

- معظم benign tumers في ال Male / ulligmancy في ال female

- To dignosis tumers :-

first/ ① **History** :-

- Mass
- weight loss
- pain → cancer مؤشر خطر غالبا بيبين

due to

- hypervascular → Conjestion → Compressed on nerve.
- Compressed by Mass

benign tumor take long time to swelling
ذو أعراض قصيرة الوجع

② **examination** :-

- lesion → - Mobile /size
  - deep /superficial
  - painful
  - hard /soft
  - Dilatation of veins ← Bad Sign

enchondromas ~~osteochondroma~~ :-
x-ray نقدر نقرأها عن
MRI , CT محتاج

③ **Radilogy**

① x-rays →

- osteosarcoma لازم نطرحها MRI , CT

④ **labratory** /

① anemia / ② ↑ WBCs /leukopenia / ③ ↓ platlets

④ ↑ alkaline phosphates [In active phase, theirs destruction]

⑤ ↑ Ca+ / ⑥ normal or slightly increase phosphorous

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* location of tumor is important /

As ~~oste~~ 50% of osteosarcoma around the knee [distal femor or proximal tibia]

- osteoid ostoma prefrer proximal femor or posterior element of spin

①

- 50% of enchodroma in tubular bone of hand and feet

- epiphysral tumor
  - chondroblastoma → In pediatric
  - giant cell tumor → In adult

- Staging System /

① Type 1 → Intra Medullary

② Type 2 → broken the Cortex, expensile

③ Type 3 → Metastasis to L N adjucent or away from tumor.
(Metastasic type of tumor)

* sub type

A	B
- Intracompartmental	- extra compartmental - Worse

- X-ray feature of benign tumor /

① well defined lesion → محدد واضح

② sclerotic reactive margin → suggest long standing tumor

③ no periosteum reaction

④ no broken cortex.

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classification of tumor

- osteoid forming
- cartilage forming
- fibrous
- soft tissue.

- osteoid forming tumor /

(I) Benign

(A) osteoid osteoma. // If not resolve spontaneously surgical removal [In Block excision] is needed.

→ استئصال الـ osteoid

→ او عن طريق Radiofrequenty ablation ← نحط انبوب في nidus الـ center ونعطي حرارة تفجر المنطقة هاي.

→ مش كثير بنلجأ للتفجير خصوصا في مناطق زي الـ spine لأنه ممكن يأثر على الـ spinal cord او nerves .

- اذا حجمها من 1 - 2cm تصير osteoblastoma

(B) osteoblastoma

(C) osteofibrous dysplasia

- Benign chondroid forming tumor /

(1) Enchondroma /

- In Middle age. / symptom: pain /
  اذا كان موجود

- عند الصغير بنكسر الـ Enchondroma مما يعطي فرصة للمنطقة انها تصير destruction of Membrane and spontaneous healing or resolve.

- بالكبار نعمل grafting للـ Enchondroma بناخذ جزء عظم من iliac bone or distal femur or proximal tibia.

ملاحظة: للبنات بنجيب الـ graft من iliac bone لأسباب تجميلية

(2) osteochondroma /

- occur in epiphyseal plate. on Metaphyseal side.

- Continuation of Medull ~~and~~ and Cortex مع بعض يعني

- اذا كانت الـ cap اكبر من 2,5cm -
  اذا كانت اكبر من هيك تحولت لـ Malignancy
  ↓
  [osteosarcoma / or chondrosarcoma]

- calcification in Cap → bad sign suggest ~~from~~ convert to Malignancy.

- osteochondrom ~~x~~ go towards joint → bad sign.

- If theirs suspection to Malignancy → take excision biopsy to know the type of tumor, and how to mange it.

- متى نلجأ للجراحة (1) اذا صار epiphyseal closure وهي ما زالت تنمو
  ↓ Sign of Malignancy.

  Compression on Bl. vessels or nerve (2)

  Calcification (3)

  Cap > 2,5cm (4)

Benign fibrous tumor of bone / In pediatric age

① Fibrous cortical defect

- due to failuer of ossification.

- كل ٦ شهور بدها متابعة لمدة ٣ سنوات، بتقل ا. حجمها عمر ١٦ للاولاد
و ١٤ للبنات

② Nonossifying fibroma.

- Risk for pathological fracture.

- اذا حجمها كبير بنعمل fixation (فتحة عظم نبني عليه)

بعمل / ← bone plate in intact cortex
- bone graft
- or injection of corticosteroid

③ Fibrous dysplasia

زي دهان الراس

- monostatic → عظمة وحدة / polystatic → اكتر من عظمة

- Cafe au lait → May see in neurofibromatosis
  Smooth border ← بسبب تجاعيد

- بتظل علمية التبغل active (In adult) بعد ما يسكر growth plate

* Cystic lesion of bone /

Simple bone cyst

- not Contain Blood.
-

- العلاج بحسب
  - active or not
  - الحجم
    - Small → Conservative
    - large → Curettage and bone graft or injection multiple time with Corticosteroid

- on x-ray → حافة بالعرض
  - Concentric.
  - well demarginated
  - no extra Compartmental.
  - in bone itself.
  - fully olive ورقة زتون لسقطة

- المرضى كل femur تحتاج fixation

aneurysmal bone cyst

- after AVM [Arteriovenous Malformation]
- Contain Blood.
- eccentric site
- More aggressive.
- Cause thinning in Cortex.

العلاج ←

Biopsy → Blood علاج

- well septation.

(1) embolization of vessels that cause this deformity (AVM)

(2) Bone graft.

(3) injection alcohol

* Giant cell tumor of bone / [GCT]

- located in Metaphyseal epiphyseal area. لم أكثر
- Benign aggressive tumor.
- عالية جداً نسبة recurrence

من العلاج:

- embolization, نحل

In recurrence

- Curettage and bone graft

(6).

Malignant bone tumor

(1) osteosarcoma :- (4 types)

(1) classic

- Codmans tringle / elevation of periosteum and junction with bone. hypervascularization زي منه شعاع
- May be
  - Intracompramental
  - extraco
- Surl rise appearance on x-ray / MRI in Metaphyseal area due to revascularization and hypervascularization
- chemotherapy sensitive
- new adjuvent chemotherapy نعطي chemo قبل العملية عشان حجم الكتلة تقل
- If their skin necrosis More 9% → ✓ response
- If theirs no response to chemo. this bad prognosis to ostosarcoma عشان نشوف response بنشوف حجم نسبة الـ

(2) parosteal

9 – 50 Y

- survival rate more than 5Y
- treatment by resection with or without chemotherapy.

(3) periosteal

- telangectid زي osteosarcoma.

(4) Hemorrhagic osteosarcoma

- worset type of osteosarcoma.
- لا يتعدى 10%
- يكون شبيه ال GCT
- ABC

(5) Secondary

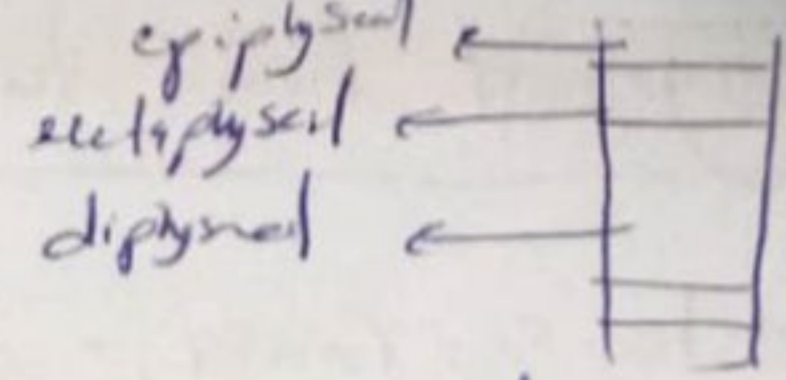
(3) لو حد كان عنده paget أو أخد Radiotherapy يحول ostosarcoma.

- يحول Benign لـ Secondary بسبب Radiotherapy

العلاج

- Surgical (1) resection → (2) replacment by Custimated arthoplasty. (مفصل مخصوص)
- (3) → Chemotherapy

(2) Chondrosarcoma /



- العلاج excision لأنها Radiochemo resist

- الصورة توضح eccentric Mass و periosteal reaction.

- لازم نعلم ان ال tumor نبطر على جدول الآتي :-

1. locate in epiphyseal / Metaphyseal or diphyseal
2. Concentric or eccentric
3. In Medulla or Cortex
4. Destruct the Cortex or not
5. There's periosteal elevation or not.
6. Destruction of periosteum and enter compartment.
   خرج منها و راح لل other compartment
7. osteolytic or osteoblastic or Mixed.

- الجزء المفيد في التشخيص عن biopsy

* Roles of biopsy /

1. longitudinal insion.
2. one Compartment
3. Control of bleeding and be away from the Bl. vessels (protection from Contamination).
4. tide repair
5. put the drain in the same wound.

(3) Round cell tumor
→ Ewing sarcoma
→ MM
→ lymphoma

* Ewing sarcoma /

- In diyphysis
- onion skin in Radio
- If we take aspirate → pus like appearance.
- CBC → ↑ WBCs
- ECR → ↑

→ مشتبك بنبرصا رسيب
osteomylitis

treatment

- Three combination
→ Radio - chemo - surgical
[Radio - chemo sensitive].

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* MM /

Proximal femur tumor. → ~~MM or metastatic~~ tumor from lung

- Most area in pelvic and proximal femur.
- Bence-Jones protein not diagnostic, but it indication to MM.