**Primary Boone Lesions**

Classification into 3 types

* Malignant bone tunours (sarcomas)
* Benign bone tumours
* Lesions that simulate bone tumours (Tumour like conditions)

Which may be reactive and miscellaneous

Common lesions that are not of mesenchymal origin include

* Metastatic bone disease
* Myeloma
* Lymphoma

Common classification of Bone tumours –Primary

|  |  |  |
| --- | --- | --- |
| Histology | Benign | Malignant  |
| Haemopoietic  |  | Myeloma  |
| Chondrogenic  | Ostechrondroma  | Primary cheudrosarcom  |
|  | Choridroma  | Secondary chondrosarcous  |
|  | Chondromyiod fibroma |  |
|  |  |  |
| Osteogemic  | Osteoid osteoma  | Ostesarcoma  |
|  |  | Parosteal  |
|  |  | Periostead |
| Unknown origin  | Giant cell tumour  | Ewing’s timour  |
|  | Fibrous  | Malignant giant  |
|  | Historictoma  | Cell tumour  |
| Fibrogenic  | Fibroma  | Fibrosancoma  |
|  | Desmoplastic fibroma | Malignant fibrous histiocytoma |
|  | Fibroma  | Histlocytoma  |
| Notochordal  |  | Chordoma  |
| Vascular  | Haemangioma  | Haemaugio endotheluoima  |
| Lipoma | Lipoma  | Haemangio pericytoma  |
| Neurogenic  | Neurilemoma  |  |

**Tumour like conditions**

Many lessons may simulate primary bone tumours and must be considered in the differential diagnosis.

1. Young patients
2. Eosinophilic granuloma (Histiocytosis x) reticuloendotherial disease
3. Osteomylitis
4. Avutsion fractures
5. Aneuriysimal bone cyst
6. Fibrous dysplasia
7. Osteofibrous dysplasia – especially tibia
8. Heterotopic ossification
9. Unicameral bone cyst
10. Giant cell reparative granuloma
11. Exuberant callus
12. Adults
13. Synovial chondromatosis
14. Pigmented villonodular synovitis
15. Stress fractine
16. Heterotopic ossification
17. Ganglion cyst
18. Old adult
19. Metastatic bone disease
20. Mastocytosis
21. Hyperparathyraidism
22. Paget’s disease
23. Bone infarcts
24. Bone islands
25. Ganglions cyst
26. Cyst 2 to joint disease
27. Epidermiod cyst

**Staging** – value

- To develop evaluation strategies

- Planning treatment

- Predicting prognosis

Most popular and useful for musculoskeletal lesions is Ennekcing system.

Two systems

- One for malignant lesions

- One for begin lesions

Grading – is lesion high grade with high potential for distant metastasis or low grade.

Grading is difficult and requires a morphologic range and most grading systems are based on 3 grade

Grade I – well differentiated

Grade II – moderately differentiated

Grade III – poorly differentiated

Grading is difficult and is based on

- Nuclear annaplasia (degree of loss of structural differentiation)

- Pleomorphism (variation in size and shape)

- Nuclear hyperchromasia (nuclear staining)

Tumour site

- Plane x-rays

- Special studies CT, MRI Redisactive scan-skip lesions

Metastasis

- Chest radiograph

- CT scan for chest

- Technetium scan – other bone lesions

Evaluation – clinical presentation

- Musculoskeletal pain- initially may be intermittent but becomes continuous and deep-seated.

- Physical exam

- Plane x-ray AP+Lat. If normal do selected studies

- Formualtiosn of differential diagnosis

a) Age of patient

b) No of bone lesions – monostotic or polyostotic

c) Anatomic location

d) Effect of lesion on bone

e) Response of bone to the lesion low grade malignancy causing periosteal elevation – codman triangle

**Matrix characteristic –**

is matrix cartilage calcification or mineralization of osteoid Cartilage calcification often appears stippled or show arcs or rings

Ostead mineralization is often cloud like

**Laboratory studies**

* Younger age group , blood count with diff, peripheral blood smear, ESR
* Older age group , blood count with differential, ESP, Ca P04, Pho4, serum or urine protein electrophoresis, tumour markers.

Biopsy – performed after complete .Evaluation of the patient so that the pathologist and the surgeons already have a narrow working diagnosis. Points to remember – orientation and location of the biopsy, meticulous **haemostasis.**

Open versus Closed Biopsy. Frozen biopsy may be done. Needle biopsy may not provide adequate specimen to make a diagnosis of bone pathology.

**Surgical procedures**– Radial, Wide margins, Intralesional margin

Radical – tumor and all surrounding muscles, ligaments and connective tissue are removed. Amputation and Disarticulation

Adjuvant therapy.

**Metastatic Bone disease**

Most common entity destroying bone in the older patient. When a destructive bone lesion is found in a patient say 40 years and above metastasis must be ruled out. Five tumours commonly going to bone are breast, lung, prostate kidney and thyroid.

Most common locations of metastasis – pelvis, vertebra bodies, ribs and proximal limb girdles.

Pathogenesis related to Batsons vertebral venous plexus into which the venous flow from breast, lung, prostate kidney drain. Intimate connection to vertebral body, pelvis, skull and proximal limb girdles makes this spread possible.

X-ray – destructive lesion which may be purely lytic or mixed, or purely sclerotic as in pelvis

Histology – hallmark cells in a fibrous stroma, often the cells being arranged in a granular fashion.

Bone destruction – not by tumour itself but activations of osteoclasts.

**Treatment:**

 Control pain by strong analgesia and radiotherapy. Antiresoptive agents. (diphosphonates).

Prophyilactic fixation of metastasis or fixation of established pathological fractures.

Osteosarcom 4

Spindle cell neoplasm’s that produce osteoid are arbitrarily classified as osteasarcoma.

Many types of osteosarcomas and this include

1. High grade intramedually osteasarcoma (ordinary or classic osteosarcoma)
2. Parosteal sarcoma
3. Periosteal sarcoma

**Tumour like conditions**

**Aneurysmal bone cyst**

Pain. Swelling

X-ray – eccentric expansile area of bone destruction in the metaphyseal region

Histology – cavernous blood filled spaces without on endothelial lining careful curaestage andbone grafting

**Unicameral bone cyst**

common in proximal humerus, proximal femur, distal tibia characterized by cystic, Symmetrical expansion with thinning of involved cortices.

**Paget disease**

characterized by abnormal bone remodeling. Medical treatment – aim at retarcling the abnormal tradeculae activity of osteoclastic e.g. use of diphosphoriage