

# Pathological study on some common bone tumors in human

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## Abstract:

The study aimed to find the most common bone tumors , affected ages and to identify gross and microscopical appearances . Thirty bone tumor were obtained ; 28 cases diagnosed as primary bone tumor and 2 cases diagnosed as secondary bone tumors . The primary benign bone tumors (13) while malignant bone tumor (11) and the rest (4) cases were tumor like conditions.

The primary bone tumors are diagnosed as follows osteoid osteosarcoma (4), osteoma (2), chondroblastoma (1), osteochondroma (6), chondrosarcoma (2), fibrosarcoma (1) , giant cell tumors (5) , hemangiosarcoma (1) , ewing sarcoma (1) , lymphoma (1) . aneurysmal bone cysts (3) and fibrous dysplasia (1) . The secondary bone tumors (2) metastatic bronchial carcinoma case and another case poorly differentiated prostatic carcinoma

**Conclusion:** Osteosarcoma is the most common malignant primary bone tumors and osteochondroma is the most common benign primary bone tumor .

**key word:** pathology of some bone tumors in human patients

## Introduction:

Cancer is a disorder of cell growth causes invasion of healthy tissue , cancer now ranks second only to heart disease as a major cause of death in the world (1) .

In Iraq , cancer is considered as one of the most important cause of death especially after the thirty state aggression in 1991 . This can be illustrates in the annual number of cancer cases registered by ministry of Health (2) . For this reason , large numbers of studies have been carried out on Various forms of cancer with a view to understanding the biology , diagnosis and treating of this disease Rosai (3) reported the incidence of malignant bone tumors one case per 100.000 in habitants and the number of cases increased gradually , approximately 7000 new sarcomas of bone and soft tissue are dignosed each year account for 1 – 2 % of the solid tumor cause death in adult (4) . Few studies on bone tumors in Iraq for this reason this study aimed to identify the most common

bone tumor in Iraqi people .

## Materials and Methods:

Thirty bone tumors specimens obtained from Al-Kindy , nursing house , medical city , AL-yarmook and Al-Hilal private hospitals .

The tumors specimens were either an excisional biopsy , resected tumor or amputated limbs , bone tumor specimens were kept in 10% buffered formalin for histopathological study , after 48 hrs the soft tissue were separated from the bony part and processed routinely , cut at 5 micron thickness and stained with hematoxylin and Eosin (5) .

Regarding the bony pieces were kept in 10% nitric acid , and after complete decalcification processed routinely and stained with hematoxyline and eosin (5).

## The Result:

This study were carried out on 30 cases of bone tumors , classified accordiny to WHO system . The primary bone tumors were 28 cases while secondary tumors were 2 cases .

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The benign primary bone tumors were 13 cases 3 cases were in the first decade of life , 10 cases were in the 2nd decade of life . Malignant bone tumors . were 11 case : in the 2nd . decade of life (4) cases , in the third decade of life (4) cases and (2) cases and (1) case in the fourth and fifth decade of life respectively . Tumor like lesions were 4 cases ( 2 cases in first decade and 2 cases in 3 rd decade of life ) .

#### **Among the common tumors :**

##### **1- bone tissue forming tumors :**

##### **Osteogenic sarcoma :**

It was the commonest malignant tumor in this study of the total primary malignant tumor , affected patients were in 2nd decade (3) cases and (1) case in 3rd decade of life .

##### **Gross appearance :**

These tumor case were located in tarsal bone (1) , ,Metaphysis of tibia (1) , distal femur (1) and last one in pelvic bone accompanied by necrotic areas and hemorrhage , the tumor mass was osteolytic type lesion as soft bone mass

##### **microscopic appearances ;**

There is extensive proliferation of pleomorphic osteoblast cells with mitotic figures and hyperchromatic and osteoid and cartilage formation between osteoblastic malignant cells together with foci of giant cells and extensive necrosis and hemorrhage . ( Fig , 1 , 2 , 3 ) .

##### **1- Benign cartilage forming tumor .**

##### **1- Osteochondroma :**

Is the most common benign neoplasms of bone, (6) cases of all primary bone tumor , affected patients in their first decade of life (3) cases and in the 2nd decade of life (1) case and in third decade of life (2) cases . Osteochondroma affected the long bone of the extremities , in the femur (1) case in tibia (2) cases in humerus (2) and in pelvic (1) case.

##### **Gross appearance :**

A hard mass of bony excrescence covered by cartilage continuous with proximal end of long bones tibia , femur , humerus and in pelvic bone .

##### **microscopical appearances :**

There was mature bony tissue capped with proliferating cartilagenous cells with hyperchromatic nuclei and the proliferating

erating cartilage covered by thin layer of fibrous tissue perichondrium . (Fig – 4)

##### **2- Chondroblastoma :**

One case were found of all benign bone tumors affecting male with young Age .

##### **Gross appearance :**

The tumor located to the upper epiphyseal cartilage plate of femur characterized by well out lined osteolytic lesion , gray in colour with granular texture .

##### **Microscopic appearance :**

Numerous multinucleated giant cells separated by small polygonal cells resemble osteoblast , the lesion was highly cellular with deposition of cartilagenous matrix .

##### **3- Malignant cartilagenous forming tumors ; (chondrosarcoma):**

Two cases were detected and considered the 2nd primary malignant bone tumors located in the medulla of diaphysis of tibia (1) case another case in the pelvic bone .

##### **Gross appearance :**

Avery large tumor with lobulated texture

Glistening white in colour and soft in consistency , there is extensive calcification and ossification , the tumor protruded into the surrounding tissue .

##### **Microscopic appearance :**

There is an extensive proliferation of malignant cells which was lacunar in nature , pleomorphic , hyperchromatic . Also there is inflammatory reaction with hemorrhage .(Fig – 5)

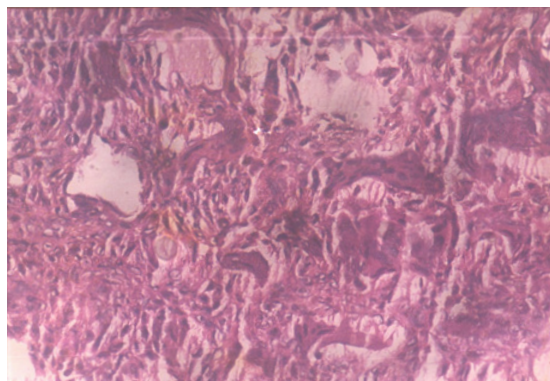
**4- Giant cell tumors costeoclastoma :** five cases were detected in the 3rd decade (4) cases and in the sixth decade (1) cases .

##### **Gross appearance :**

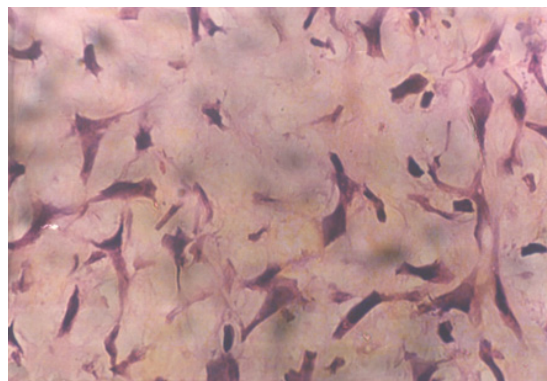
The tumor mass involved upper epiphysis and metaphysis of tibia . tumor mass was friable , granular with hemorrhagic area .

##### **Microscopic appearance :**

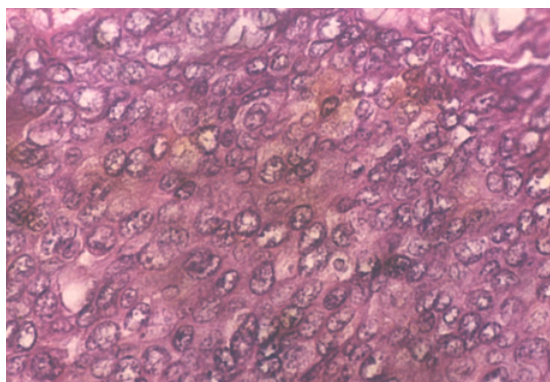
There was ovoid mononuclear cells interspread with giant cells containing many nuclei with wide hemorrhagic areas together with foci of necrosis . Also there was hemosiderine laden macrophages . (Fig – 6)



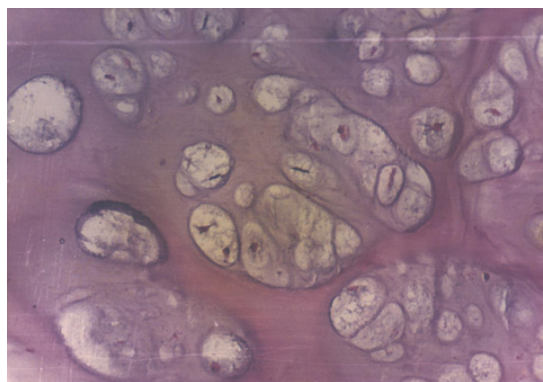
**Fig - 1:** Talangiectatic osteosarcoma , The section showing blood filled cystic structures accompanied malignant osteoblast. H and E stain (40 x)



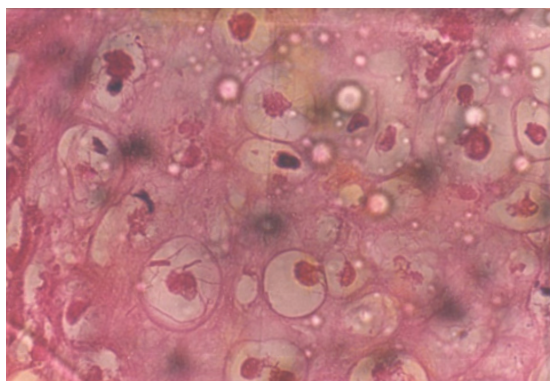
**Fig - 2 :** osteosarcoma , The section showing the neoplastic cell , which characterized by pleomorphism , mitotic figure and hyperchromaticia . H and E stain ( 40x)



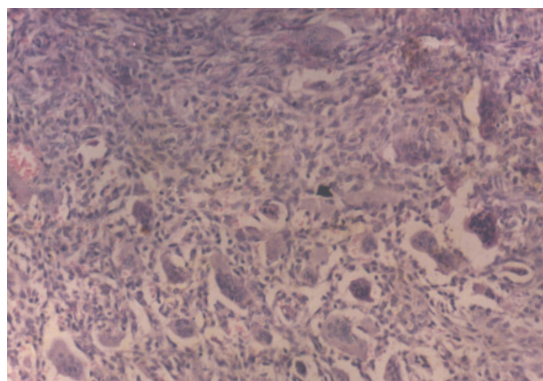
**Fig - 3 :** osteosarcoma , The section showing extensive osteoid and cartilage formation and extensive proliferation of osteoblast malignant cells H and E (x 10)



**Fig - 4:** Osteochondroma , this is a mature bone tissue , capped with proliferation cartilaginous cells H and E Stan (10x)



**Fig - 5:** Chondrosarcoma , The section showing Malignant chondroblasts cells , lacunar , single cell in lacunae H and E Stain (40x)



**Fig - 6 :** Giant cell tumor . The section showing giant cells containing many nuclei . H and E stain (10x)

## Discussion:

Osteosarcoma was the most common malignant tumor in this study , similar finding reported by Abbas (6) that osteosarcoma is the most common primary malignant tumor in Iraq , so the difference was not too high from this study but it might be due to the difference in the number of cases studied in these two studies . Other workers (7) reported that this bone tumor was also common but in Iraq mostly common following thirty state aggression in 1991 due to bad environmental conditions Also this study revealed that male affected more than female similar to result reported by (8) , and osteosarcoma considered to be a disease of 2nd decade of life (9) . Regarding cartilage forming tumors : osteochondroma represented the most common primary benign tumor in this study comparable to the results obtained by (6) and with the similar location sites in bone . chondroblastoma , is a rare benign bone tumor , only one case was found in the 2nd decade of life and this finding in agreement with (6) and (7)

who reported that chondroblastoma a rare tumor and affected 2nd decade of life .

Regarding malignant cartilage forming tumor (chondrosarcoma) were representing two cases in this study of the malignant primary bone tumors compared to results obtained by (6) with the equal presentation in male in this study comparable to high incidence in male than female (10) . this difference may belong to the number of cases studied . Regarding Giant cell tumor (osteoclastoma) , it is benign bone tumor but aggressive lesion with tendency to recurrence and malignant transformation . So only (5) cases of osteoclastoma were present in this study of all benign primary bone tumor a similar finding to result obtained by (6) and (7) . As for gross appearances and microscopic appearances for all these common bone tumors were similar to finding reported (11)

Regarding the identification of histomorphological features of these all bone, cartilage forming tumors and giant cell tumors were similar finding (12,13,14,15,16,17,18,19)

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