



In the beloved memory of my brother Himanshu Saharan  
**Bone tumour**

RUBAL SAHARAN (1), AKSHAT PANDEY (2)

- (1) Department of Physiotherapy, MMIPR MMU, Ambala, India
- (2) Assistant Professor, Sports Research Lab, MMIPR MMU Ambala, India

© J ORTHOP TRAUMA SURG REL RES

18(10) 2023

Perspective

**Statistics**

Figures	04
Tables	00
References	00

Address for correspondence:

Akshat Pandey, Assistant Professor, Sports Research Lab, MMIPR MMU Ambala, India  
[pandey.aiims@gmail.com](mailto:pandey.aiims@gmail.com)

2276.2023.18(10).102

Received: 10.10.2023;

Manuscript No. jotsrr-23-116173;

Editor assigned: 12.10.2023,  
PreQC No. jotsrr-23-116173  
(PQ);

Reviewed: 17.10.2023, QC No.  
jotsrr-23-116173 (Q);

Revised: 22.10.2023,  
Manuscript No. jotsrr-23-116173 (R);

Published: 25.10.2023,  
DOI. 10.37532/1897-

**Abstract**

The estimated number of incident cases of cancer in India for the year 2022 was found to be 14,61,427 (crude rate 100.4 per 100,000). In India one in nine people are likely to develop cancer in his / her life time. Lungs and breast cancer were leading sites of cancer in males and females, respectively. Bone tumors are rare amongst the population 0.2 of all cancers reported across all the segments.

Keywords: Malignant tumor, benign tumor, cancer.

## INTRODUCTION

### MALIGNANT TUMOUR

Whenever there is any abnormal growth in the cells of the body, they grow abnormally and in very large speed and their spreading in this speed causes lot of destruction to the body this is called malignant tumor

### BENING TUMOUR

Not all tumors are harmful some may only be in the body without causing any destruction these are called benign tumor

Whereas some abnormal growth (tissues) in the body may grow and spread to cells and then into blood, these spreading of cells may causes destruction which may ultimately lead to death of an individual if not treated. The development of cells is affected by multiple factors .the factors can be inherent or occupied.

When we talk about cancer we mean any abnormal growth that can be present in any part, so here are some of the types of cancer:

1. Breast cancer
2. Lung cancer
3. Prostate cancer
4. Colon and rectal cancer
5. Skin cancer
6. Bladder cancer
7. Leukemia

In this paper we are referring to bone cancer. Bone cancer occurs when a mass of unusual cells growing in a bone, there are several causes of bone tumors are caused by abnormal healing of an injury, inherited condition and radiation therapy. They can also be caused by bone cancer or another cancer that has spread to the bone from other part of the body.

Bone cancer occur in any bone but most commonly affects the (1) pelvis or the (2) long bones in the arm and legs. It is very rare making up less than 1 percent of all cancers. In fact non-cancerous bone tumors are much more common than cancerous ones.

The term bone cancer does not include cancer that begin elsewhere in the body and spread to the bone. Instead, those cancers are named for where they began, such as

breast cancer that has mediatized to the bone. Some types of bones cancer occur primarily in children, while others affect mostly adults. Surgical removal is the most common treatment to be followed .along with the radiation therapy which can be under combination therapy or individual therapy this is decided by the merit of the case

### TYPES OF BONE CANCER

Osteosarcoma: most common form of bone cancer. In this tumor, the cancerous cell produces bone cancer (tissue growth). This type of bone cancer effects most often in children and young adults, in the bones of legs or arms. In this type of bone cancer osteosarcomas can arise outside of bones.

Chondrosarcoma: is the second most common form of bone cancer. In this cancer cell produces cartilages. Chondrosarcoma usually occurs in pelvis, legs or arms in middle aged and older adults.

Ewing sarcoma: Tumors most commonly arises in pelvis, legs or arm of children and young adults.

Risk factors which are associated:

1. Inherited genetic syndrome: certain rare genetic syndromes passed through families increasing the risk of bone cancer.
2. Paget's disease of bone: most commonly occurring in older adults. It can include the risk of bone cancer developing later.
3. Radiation therapy for cancer: exposure to large doses of radiation, such as those that are given during radiation for cancer, increases the risk of bone cancer in future.

## PATHOPHYSIOLOGY

### BONE TUMOR

Osteolytic response (bone destruction) or Osteoblastic response (bone formation).

Bone tumor is more common in males than in Females. it occur in young people between the ages of 10 and 30 , but about 1 in 10 osteosarcoma develop in people older than 60 . It's rare in middle aged people.

Giant cell tumor: these tumor, though rare, grow

aggressively. Females are slightly more likely to develop giant cell tumor. Treatment is almost always surgery. Osteosarcoma is the most common form of bone cancer. In this tumor, the cancerous cell produce bone. This variety of bone cancer occur most often in children and young adult. In the bones of leg or arm. In rare circumstances, osteosarcomas can arise outside of bones (extra skeletal, osteosarcomas) this is because males have larger skeletal size and bone mass than female. This extra larger skeletal mass gives a lot of proportion to the reason of males being more affected.

#### CLINICAL FEATURES

**Persistent pain:** Bone tumors can cause ongoing pain that may worsen over time. The pain may be localized to the affected bone and can be constant or intermitted.

**Swelling or a lump:** A noticeable swelling or a lump may be develop near the affected bone. It can be tender to touch and may increase in size over time.

**Fracture:** Bone tumor can weaken the bone making it more susceptible to fracture. A fracture may occur with minimal trauma or even without any apparent cause

**Limited range of motion:** If a bone tumor affected a joint, it can lead to stiffness and limited movement in that joint

**Fatigue and weight loss:** In some cases, bone tumors can cause general symptoms like fatigue and unexplained weight loss.

**Fever:** One may experience high fever with headache at a particular time that may be at the midnight or during the day. Headache may be segmental or complete.

**Low Hemoglobin:** One may experience low level of blood (Hb) in the body which regularly need to be given to the patient. This is the classical feature of many bone tumor cases in which on investigation we find that hemoglobin levels are either affected or fluctuated

#### FACTORS LINKING TO BONE TUMORS

1. There are certain factors affecting bone tumors

Family history of certain disease or rare cancer. A small number of bone cancers, mostly osteosarcomas, seem to be linked to hereditary diseases (genetic changes that are passed on in families)

2. Previous radiation therapy
3. Chemotherapy
4. Benign tumors or other bone condition. generally radiation therapy goes along .patient undertaking radiation therapy has multiple radiation affects as a result of it .effecting the overall health and fitness of the individual

#### STARTING OF BONE TUMORS

Bone tumors develop when cells within a bone divide uncontrollably, forming a lump or mass of abnormal tissue. Most bone tumor are benign [not cancerous] .benign tumor are usually not life-threatening and, in most cases will not spread to other parts of the body.

**Can bone be crushed:** Most benign tumors respond well to surgical removal. In many cases, the likelihood that the tumor will come back is low basically less than 5 percent. Some benign bone tumors, like giant cell tumors of bone, have a higher rate of return, but there are some of the tumors that remain in the body without any destruction.

#### STAGES OF BONE TUMOR

Benign tumors:

1. Stage 1: latent (Well-defined margin Grows slowly and then stops, Remains static/ heals spontaneously Eg; osteoid osteoma)
2. Stage 2: active (Progressive growth limited by natural barriers Not self-limiting .Tendency to recur Eg; Aneurysmal bone cyst).
3. Stage 3: aggressive (Growth not limited by natural barriers and causes much more damage to the body which in turn makes the person weak Eg; giant cell tumor )

Malignant tumors:

1. Stage1: low grade sarcoma
2. Stage 2: histologically high grade sarcoma
3. Stage 3: distant metastasis

**Intra-compartmental Site: description** Confined within an enclosed tissue space (eg a bone, a joint, a muscle group within a fascial coverage, associated with tissue pressure or excessive pressure on the body because of many factors.

**Extra-compartmental:** no natural barrier, extends across intera fascial planes.

### DIFFERENTIAL DIAGNOSIS

1. Soft tissue hamartomas
2. Myositis ossificans
3. Stress fracture: histopath, may be confused with osteosarcoma
4. Tendon avulsion injuries, Near hip and knee (eg Osgood: schlatter )
5. Gout (large gouty typhus
6. Other bone lesions, cortical defects, bone infarcts, bone islands.

### MANAGEMENT OF BONE TUMORS

Bone tumor basically involves the invasive growth of the cells inside the body, these if not treated with proper time and management would lead to lot of destruction in the body which may ultimately lead to death of an individual which leaves everybody devastated

There are certain management that if followed on time can lead to improve the condition of the patient in the overall management.

1. Surgery
2. Chemotherapy
3. Radiation therapy
4. Cryosurgery
5. Targeted therapy.
6. On the adverse condition one could also go for surgery (limb – sparing surgery)

Limb sparing surgery: it basically involves the removal of the section of the affected bone and some of the surrounding tissues. The removed section of bone may then be replaced with a metal implant called prosthesis or a piece of bone from any other area of the body.

Amputation: It is basically removal of the whole limb from the body part it is done when, cancer has spread beyond the bone into major blood vessels

One when develops an infection after limb sparing surgery and the prosthesis or bone graft had to be removed

It is considered to be the last option to go for.

### RECOVERING FROM SURGERY

Here one of the most important factors includes which is Rehabilitation.

Rehabilitation basically involves the getting back to the normal lifestyle of an individual by doing certain type of exercises, which can help in regaining proper functioning in treated part of the body so that one may not feel awkward in his day to day life. One can also go for occupational therapy, it basically includes skills and day to day activities that help in day to day activities.

After an amputation one may be needing a physiotherapist for coping up day to day life.

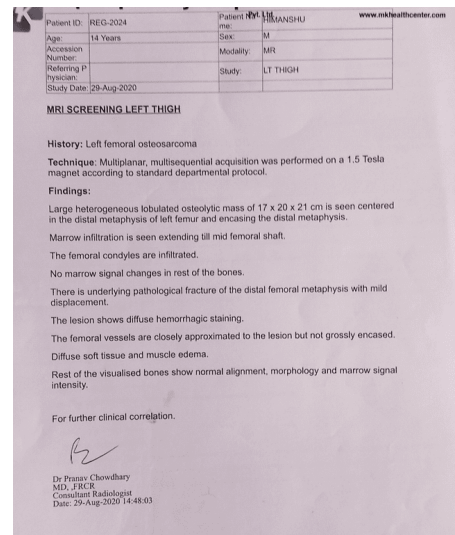
### CASE DETAILS ATTACHED

Name – Himanshu Saharan

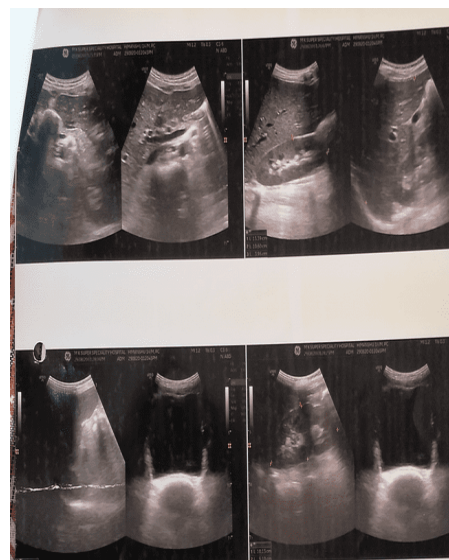
Age- 14 year

Gender – male

Country – India



a.



b.

Fig. 1. (a,b) MRI screening left thigh

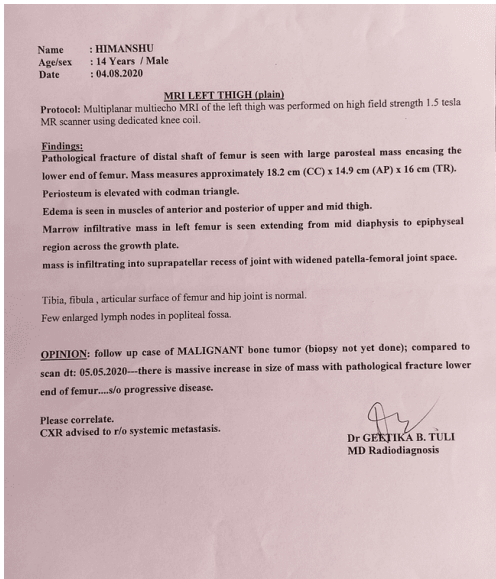


Fig. 2. MRI report of left thigh (plain)

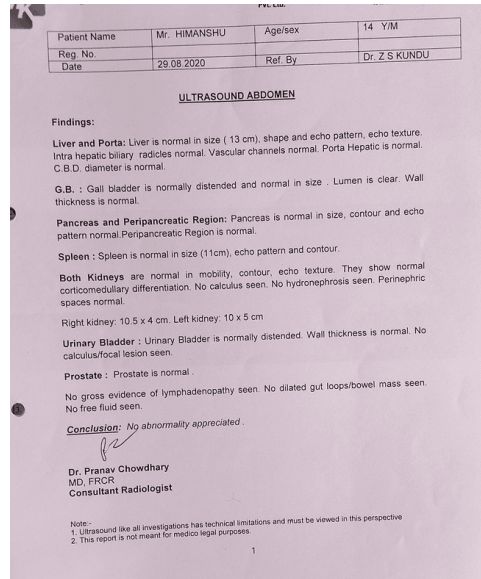


Fig.4. Ultrasound of abdomen.

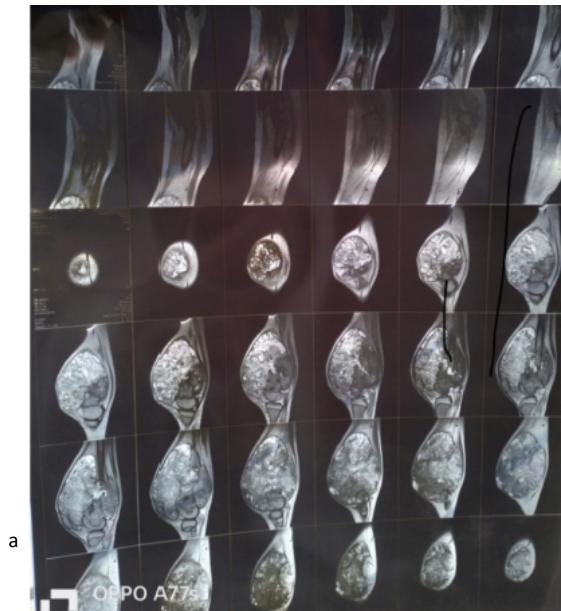


Fig. 3. MRI Screening left thigh