Case Report

Post radiation sarcoma-secondary osteosarcoma

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Abstract

Abstract: Post Radiation Osteosarcoma is type of secondary osteosarcoma that occurs in the tissues that were treated with radiation for malignant degeneration/malignancy process. The tumor occurs after a latency period at several years (average 17 yrs.) following radiation treatment. The younger the patient is at time of radiation higher the risk of osteosarcoma. Males and females get affected equally. Age range is 10-84 years old, average -45 years. The axial and appendicular skeleton are equally affected.
Keyword: Post radiation sarcoma, Post radiation osteosarcoma, Secondary osteosarcoma.

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INTRODUCTION

Post radiation sarcoma is an uncommon tumor with an overall incidence rate of less than 1% for cancer patients treated with radiation who survive for five years. It affects wide range of age group and the prognosis, response to treatment is comparable with primary osteosarcoma. The incidence of secondary post radiation sarcoma is related to incidence of primary cancers and disease that are treated with high dose radiation which include childhood and adult cancers such as lymphoma, rhabdomyosarcoma, Ewing sarcoma, prostate cancers, breast cancer, primary osteosarcoma, retionablastoma. Post radiation osteosarcoma patients are affected later than patients with primary osteosarcoma because it takes years before the tissues treated with radiation undergo malignant changes.

CASE HISTORY

A 53 yr. old male patient presented with history of pain in right knee joint since and minimal trauma to same sight two months back. Past history is known case of pleomorphic sarcoma of distal metaphysis of right femur in 1987,diagnosed on histopathology report then he receives radiotherapy for 45 days, alternate day radiation given. On examination patient having marked tenderness, minimal swelling with wasting of quadriceps. The patient is subjected for X-ray of knee joint AP and lateral view, MRI and CT of thorax and knee joint. IMAGES: X-ray knee joint – AP and lateral view

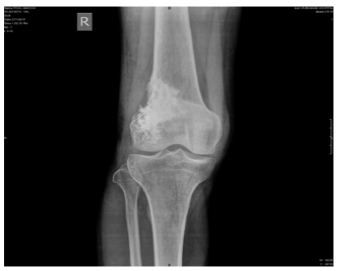

Figure 1: Knee joint-ap view, Destructive, sclerotic lesion with cortical break at distal metaphysis of femur

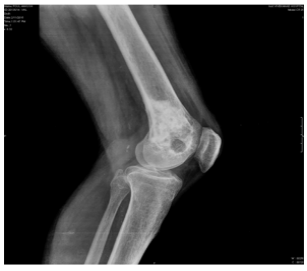

Figure 2: Knee joint- lateral view, Sclerotic lesion seen.

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IMAGES: CT thorax and both knee joints.

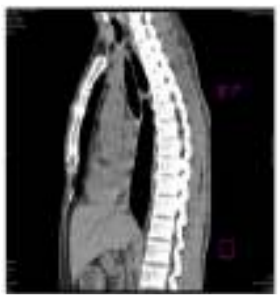


Figure 3: ct-thorax saggital view-lytic lesion at lowar part of sternum.

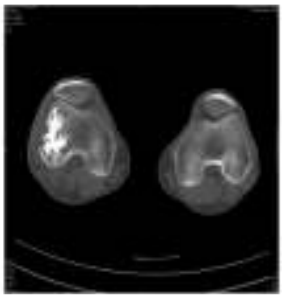


Figure 4: ct both knee joint sclerotic-lytic lesion with destruction of distal metaphysis of femur.

IMAGES: MRI of knee joint.

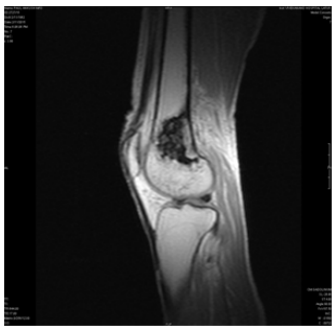
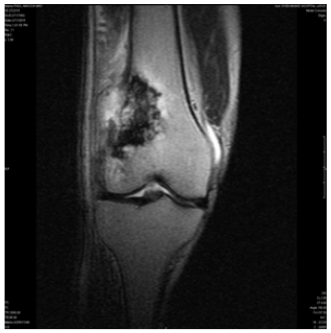


Figure 5: Mri knee joint t1w1 sagital view-hypointense lesion at distal metaphysis of femur



Figuere 6: Mri knee joint t2 coronal view-hypointense lesion with cortical break with peritumoral edema

DISCUSSION

Post radiation sarcoma (PRS) is a type of secondary osteosarcoma. Incidence rate of PRS is less than 1% for cancer patients. Patients may develop PRS after treatment of breast cancer, William's tumor, lymphoma, rhabdomyosarcoma, E wing sarcoma, prostate cancer, retinoblastoma, primary osteosarcoma. Minimal dose of 30 Gy is required o induce PRS. Symptoms can be misinterpreted by the patient and the doctor. Then acute onset of constant and progressive pain or swelling occurs. The pain is worse at night and usually not relieved with aspirin/non-steroidal drugs. Other symptoms – development of mass or pathologic fracture near to irradiation area with tenderness or bleeding. Diagnosis made on radiograph, MRI and CT. Confirmation done by histopath report. CT guided core needle biopsy is preferable option for suspected lesion i.e. located deep inside the body and are not felt by the physician. Biopsy may lead to complications if done incorrectly, can lead to spread in other normal tissues. Histopath reports characteristics-osteroid production, miotic activity, variable necrosis, marked nuclear pleomorphism, spindle cells, possibility of having haemorrhage and necrosis, soft tissue mass.

Treatment options for this tumor

Chemotherapy→Surgery→Chemotherapy.

In Surgery wide resection with limb salvage or amputation is done. It depends upon stage, location of tumor, age, overall well-being and metastasis work up. Reports show thatoutcomes of treatment and prognosis is median survival of 33 months-5 yrs, overall 38%. Localized, non-metastatic tumors in shoulder, hip or knee has better prognosis than larger tumors as in spine and pelvis.

Imaging features

Radiograph most often shows aggressive pattern, cortical break/destruction within radiation field with a mineralized soft tissue mass, changes of sclerosis and osteopenia permeative or moth eaten type periosteal reactions. Pulmonary metastases can be detected in CT. Bone isotope scan be used to rule out metastases. MRI and CT determine stage, degree of tumor also shows soft tissue mass.

Assosciated features

Extra measures should be taken to verify whether a patient indeed has radiation sarcoma because post radiation changes such as fracture and other complications may present similar symptoms. Careful biopsy with several tissue samples may be necessary to confirm the post radiation osteosarcoma. Lung metastases is common in secondary osteosarcomas, so screening for it should do.

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