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Case Report

Osteosarcoma of the femur in early adult: a case report

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ABSTRACT

Osteosarcomas are primary malignant tumors of bone that are characterized by the production of osteoid or immature bone by the malignant cells. Osteosarcomas are uncommon tumors. Most articles reveal difficulty in diagnosing osteosarcoma in early stage due to its resemblance to benign lesion. That's why we prefer to do case report for documentation. Diagnosis of the tumor is important especially in early stages for improving prognosis. This case report is of a 21 years old female who presented at Primary Health Care Centre with swelling above right knee post trauma a month ago. Previously she was diagnosed as Non ossifying fibroma (which is a benign lesion and uncommon to change to malignant lesion) at the same site in 2017.

Keywords: Biopsy, Non ossifying fibroma, Osteosarcoma, Radiography, Tumor

INTRODUCTION

Osteosarcoma (OS) is a primary malignant bone tumor with a worldwide incidence of 3.4 per million people per year.[1] For most of the twentieth century, five-year survival rates for classic OS were 20%. In the 1970s, the introduction of adjuvant chemotherapy in the treatment of OS increased survival rates to 50%.[2-4]

OS is the third most common cancer in adolescence, with only lymphomas and brain tumors being more prevalent, and with an annual incidence of 5.6 cases per million children under the age of 15. 1 Peak incidence is in the second decade of life.[5,6]

CASE REPORT

A 21 -year-old female came to health center in July 2019 complaining of painless swelling above right knee for 1 month post simple trauma while playing. Before 2 years in September 2017, She had pain in right knee and was investigated by x-ray of right knee (Figure 1) (Figure 2) which was reported as Cortical-based sclerotic lesion in the posterior aspect of the distal femur with differential diagnoses of healing non-ossifying fibroma. At same time (2017) she did MRI of Right knee with contrast in hospital which was reported as Distal femur and posterior cortical-based lesions, suggesting healing non-ossifying fibromas NOF. The extra osseous small ossification noted in relation to the lesion are atypical for NOF.

This patient was discharged from orthopedic clinic after reassurance. Two years later, the patient presented to health center with one-month history of painless swelling above right knee following a trivial trauma. She did not have any other systemic symptoms.

Examination of the right knee revealed an ill-defined, fixed, non-tender swelling of 3x3 cm on distal thigh at anterior aspect with normal skin and temperature.

Neurological examination was normal without any muscle wasting. She had normal range of movement at knee joint. no sign of effusion or inflammation. Normal gate no limping.

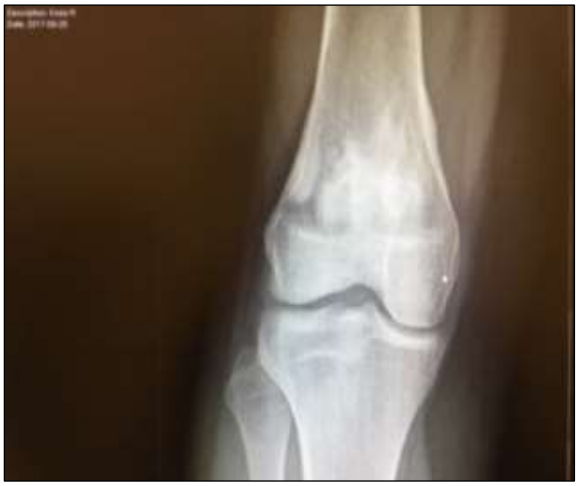

Figure 1: AP view x-ray knee.

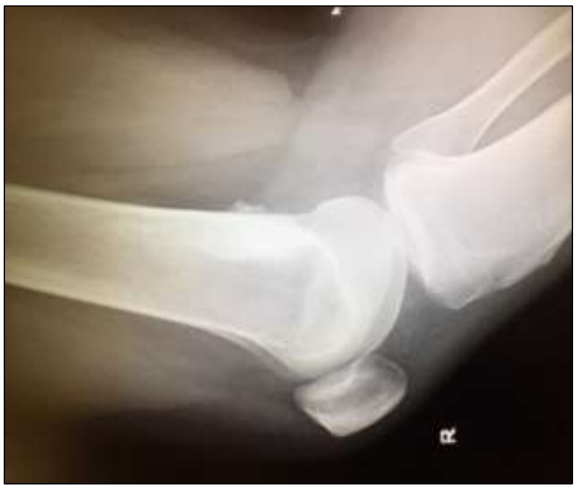

Figure 2: Lateral view x-ray of right knee.

Cortical-based sclerotic lesion noted in the posterior aspect of the distal femur? healing non-ossifying fibroma. No cortical break is seen. At least 2 soft tissue radiopaque densities are noted adjacent to lesion, may represent soft tissue calcification (Figure 1 and 2).

X-ray of right knee in 30-07-2019 was requested (Figure 3) (Figure 4) which was reported as the medial cortical aspect of the lower femur showing exostotic bony lesion with periosteal reaction showing Codman's triangle suggestive of aggressive bone lesion.

For further referral and imaging. No bony or articular abnormalities seen. No definite intra articular radiopaque loose bodies seen. Ultrasound was requested on the same day and was reported as below.

At the area of interest, no obvious subcutaneous mass could be seen at the time of scan.

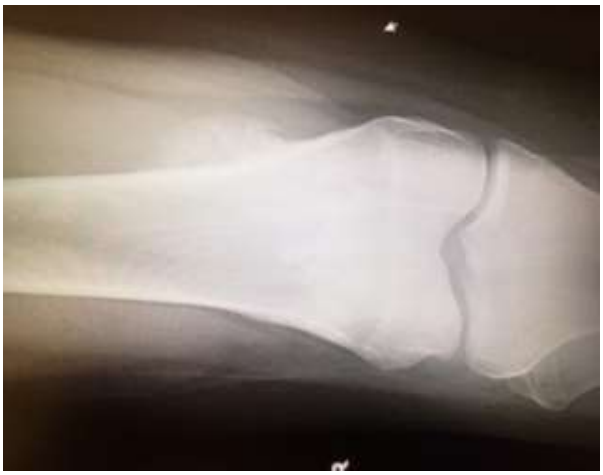

Figure 3: AP x-ray of right knee.

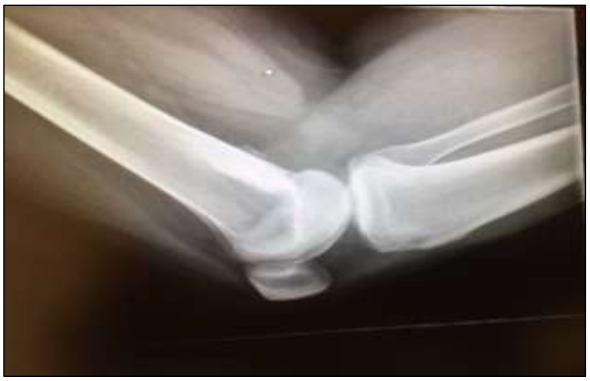

Figure 4: Lateral view x-ray of right knee.

Later, patient was called and was referred to orthopedic department as a case of highly suspected osteosarcoma or bone tumor.

Patient had repeat MRI of right thigh and knee which was reported as below,

As compared to the previous MRI, newly seen malignant-looking extra-osseous mass along the medial aspect of the distal femur with underlying elevated periosteum craniocaudally. Redemonstrations of the cortical based sclerotic lesion of the posterior distal femur, findings could represent healed non-ossifying fibroma however its relation to the newly seen extra osseous mass to be considered. Overall appearance is non-aggressive and likely to represent bone forming tumor such as periosteal osteosarcoma.

Later, she had incisional biopsy which confirmed the diagnosis of periosteal osteosarcoma.

CT Upper leg Rt report (Figure 5), (Figure 6), as Distal femur met diaphyseal juxtacortical lobulated ossified mass along the medial cortex with underlying cortical

thickening. Imaging appearances are likely to represent periosteal osteosarcoma.

NM Whole body FDG PET CT showed Intense uptake in the known extraosseous periosteal osteosarcoma. No PET sign of lymph node or distant metastasis was found in relation to this lesion.

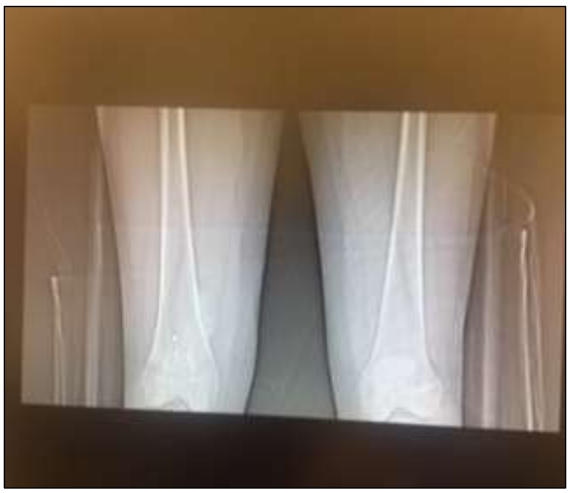

Figure 5: CT Upper leg Rt.

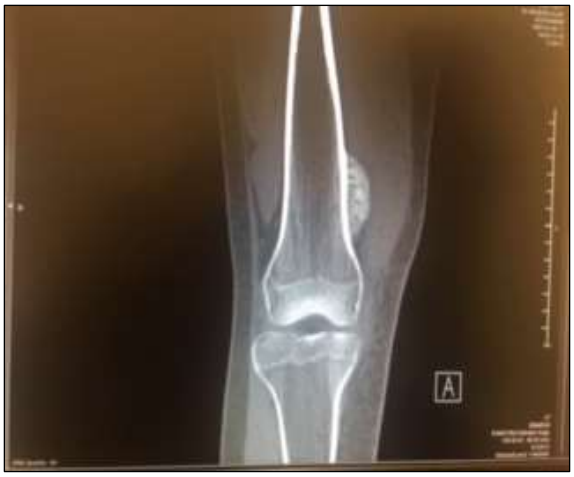

Figure 6: CT Upper leg Rt.

Imaging appearances are likely to represent periosteal osteosarcoma Distal femur met diaphyseal juxtacortical lobulated ossified mass along the medial cortex with underlying cortical thickening (Figure 5, 6).

CT chest abdomen and pelvis were requested for systemic staging. Which reported a presence of tiny right pulmonary nodule of a 2.3 mm nodule in the lateral segment of the right middle lobe.

Final diagnosis of periosteal osteosarcoma of right knee was made and wide excision of the tumor and replacement with distal replacement prosthesis was recommend.

DISCUSSION

In the Literature Review osteosarcoma is an uncommon tumor; it accounts for only 1 percent of all cancers diagnosed annually in the United States as review of many published studies. there is a bimodal age distribution of osteosarcoma incidence, with peaks in early adolescence and in adults over the age of 60.5.[7]

Osteosarcomas in adults are often considered secondary neoplasms, attributed to sarcomatous transformation of Paget disease of bone, secondary sarcomas in irradiated bone, bone infarcts, or some other benign bone lesions, these include chronic osteomyelitis, sites of bone infarcts, and benign bone lesions such as fibrous dysplasia.[8]

The primary differential diagnosis includes other malignant bone tumors i.e. Ewing sarcoma, lymphoma, and metastases.[9] Or benign bone tumors (e.g., chondroblastoma, osteoblastoma, and nonneoplastic conditions, such as osteomyelitis, Langerhans cell histiocytosis, and aneurysmal bone cysts.[9]

Occasionally, the abnormalities on plain radiographs will be subtle. In such cases, Magnetic Resonance Imaging (MRI) should be obtained if clinical suspicion for a bone tumor is high (i.e, pain in a long bone that progressively worsens or persists longer than would be anticipated following an injury, e.g., six weeks or more). Even for patients with characteristic plain radiographic findings, MRI is indicated for surgical planning.[10]

Calcification can be a sign of benign disease; it may also be seen in metastases from osteosarcoma.[11]

In this case reported patient, according to the initial knee x-ray and MRI, diagnosis of Non ossifying fibroma was made. Non ossifying fibroma is defined as a common benign fibrous lesion that is also known as metaphyseal cortical defect, fibrous cortical defect, and benign metaphyseal bone scar. It is a developmental defect in which areas that normally ossify are filled with fibrous connective tissue.[12]

Non ossifying fibroma is usually an incidental radiographic finding in teenagers. It occurs most commonly in the distal femur, followed by the distal tibia and the proximal tibia. Girls are affected as often as boys.[12]

This is usually an asymptomatic condition and discovered incidentally after trauma.[12]

Large lesions may be associated with pathological fracture. The treatment for small, asymptomatic non ossifying fibromas that are discovered incidentally do not require any further follow up.[13]

The prognosis for non-ossifying fibroma is generally excellent.[14] They usually fill in during adolescence. The risk of recurrence is lower than for other benign tumors.[15]

The aim of this case report is to highlight the rare possibility of transformation of non-ossifying fibroma to periosteal osteosarcoma. Even though if this is confirmed as benign lesion by radiological investigation, it still needs further evaluation and investigation by biopsy as per recommendation.

The golden point to learn is any new complain different from previous symptoms for long standing lesion should be taken seriously and properly in order to improve prognosis and patient safety.

Recommendation

Authors recommendation MRI is an investigation of choice according to current practice.

However, Biopsy is required to confirm the diagnosis in all cases in order to prevent delay in diagnosis and for patient safety.

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