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Case Report

Chondrosarcoma of the great toe clinically mimicking osteoclastoma-An unusual presentation

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ABSTRACT

Chondrosarcoma is cartilage forming neoplasm which mostly occurs in pelvis, femur and humerous. Chondrosarcoma is rare in the foot and the involvement of phalanges is extremely rare. It is a malignant neoplasm which mimics various epiphysial tumors clinically and radiologically, so histopathology is the gold standard for confirming the diagnosis. We report an unusual case of Grade II Chondrosarcoma in a 60 years old male, who complained of swelling and pain in left great toe for the past two years, which clinically mimicked Osteoclastoma. Imprint smear from swelling in the left great toe showed scattered mononucleated to binucleated oval to plump to polygonal cells with coarse chromatin and moderate eosinophilic cytoplasm in a chondromyxoid background suggestive of malignancy with differentials of Osteosarcoma and Chondrosarcoma. Histomorphology with immunohistochemistry led to the confirmation of diagnosis of this tumor at a rare site.

1. Introduction

Chondrosarcoma is the third most common malignant neoplasm of the bone after osteosarcoma and multiple myeloma, comprising about 20.0% of all primary malignant tumors of bone.[1] Chondrosarcoma is a malignant cartilaginous tumor in which the basic neoplastic component is cartilage, without bone or osteoid formation. The most common sites for chondrosarcoma are pelvis, humerus, femur and ribs. The small bones of the hand and foot are rarely involved with less than 1.0% of reported cases, although hand involvement is more prevalent than foot.[2]

The cause for primary chondrosarcoma is unknown, where as secondary chondrosarcoma can araise from enchondroma, osteochondroma, ollier disease and mauffucci syndrome.[3] Chondrosarcoma mostly presents as local swelling with gradual enlargement and pain. X-ray Radiography of chondrosarcoma shows lytic lesion with popcorn like calcification, however CT scan and MRI are helpful modalities in determining the extent of tumor.[4] We report an unusual presentation of chondrosarcoma of distal phalynx of the great toe.

2. Case Report

A 60 year old male presented to the orthopedics outpatient department with complaints of swelling and pain in the left great toe for past two years, Initially the swelling was non-progressive, with dull aching pain, but for the past 6 months its size has almost doubled and was associated with severe pain which progressed to the whole leg. On local examination the swelling was present on dorsal aspect of left great toe of size 4x4 cm. On palpation it was firm and tender to touch. Transillumination test was negative. On systemic examination all other organs were within normal limits.

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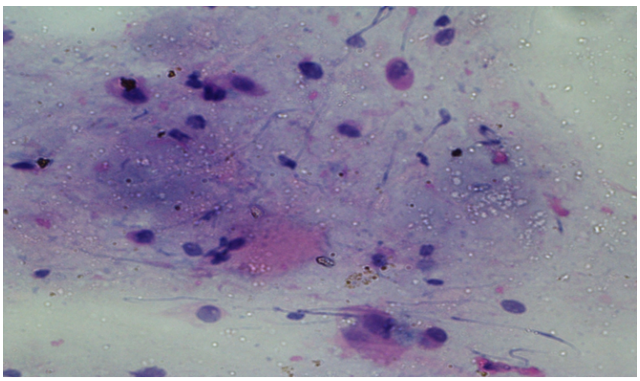

Fig. 1: Imprint smear showed scattered mononucleated to binucleated oval to plump to polygonal cells with coarse chromatin and moderate eosinophilic cytoplasm in a chondromyxoid background suggestive of malignancy. Papanicolaou stain x 40X.

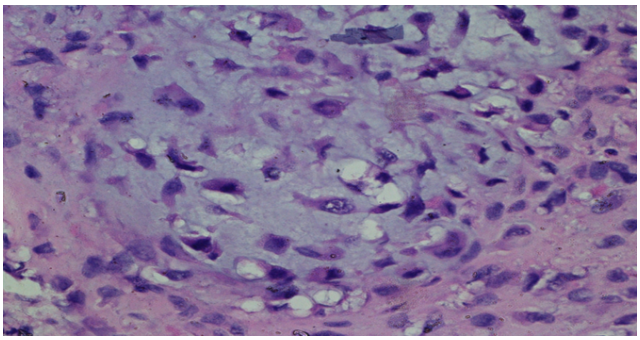

Fig. 2: Microscopic examination showed clusters of mononucleated and few binucleated chondrocytes having mild to moderate nuclear atypia with extracellular chondroid matrix along with mixed inflammatory infiltrate and areas of hemorrhage and necrosis. Haematoxylin and Eosin x 40X.

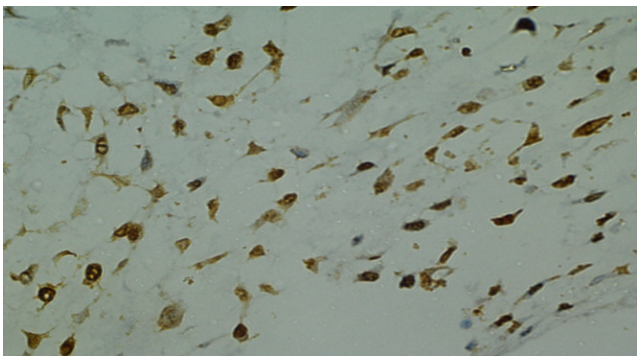

Fig. 3: Immunohistochemistry showed strong cytoplasmic and nuclear positivity for S100. IHC S-100 x40X.

X-ray imaging showed an expansile septated lytic lesion with cortical breach on medial aspect, involving proximal phalynx of left great toe. MRI showed ill defined altered signal intensity expansile lytic lesion involving proximal phalynx of great toe, and causing cortical erosion and adjacent soft tissue extension.T2 weighted image showed hyperintense signal. A provisional diagnosis of Osteoclastoma was made.

Hematological investigations showed mild anemia with hemoglobin of 10mg/dl. No other positive findings were recorded in the routine tests. Imprint smear from swelling in the left great toe showed scattered mononucleated to binucleated oval to plump to polygonal cells with coarse chromatin and moderate eosinophilic cytoplasm in a chondromyxoid background suggestive of malignancy with differentials of Osteosarcoma and Chondrosarcoma (Figure 1).

Our patient underwent wide local excision and gross specimen showed whitish ulcerated hard growth on medial aspect of left great toe measuring 4.8x3x2.5cm in size. Microscopic examination showed clusters of mononucleated and few binucleated chondrocytes having mild to moderate nuclear atypia with extracellular chondroid matrix along with mixed inflammatory infiltrate and areas of hemorrhage and necrosis (Figure 2). Immunohistochemistry showed strong cytoplasmic and nuclear positivity for S100 (Figure 3). A final diagnosis of Grade II Chondrosarcoma was given and our patient was administered 6 cycles of pegylated liposomal doxorubicin in 50mg/m^2 at 28 day cycle. Six months after the surgery, our patient is doing well, with no signs of metastasis or recurrence.

3. Discussion

In the foot, chondrosarcoma most commonly involves the calcaneum, the talus and the first metatarsal bone.[3,4] Unlike this our case presented with lesion in proximal phalynx of the left great toe and the X-ray showed expansile septated lytic lesion with cortical breach on medial aspect, on plain radiography. On MRI altered signal intensity expansile lytic lesion involving proximal phalynx of left great toe was seen T2 weighted image showed hyperintense signal, mimicking osteoclatoma radiologically.

Chondrosarcoma of the phalynx is generally locally aggressive with very less metastatic potential. However secondary chondrosarcomas are seen to have better prognosis and have a much lower recurrence rate than primary chondrosarcomas.[3] It is seen that most pedal chondrosarcomas are primary tumors as seen in our case, rather than secondary to a preexisting cartilaginous lesions like enchondroma, osteochondroma etc.[4–6]

Females are slightly more susceptable for phalangeal chondrosarcoma in comparison to other locations in the body and most common presentation is pain and swelling.

On X-ray, chondrosarcoma of low grade can simulate enchondroma, therefore CT scan and MRI are helpful in differentiating between the two.[5,6]

Chondrosarcomas have been divided into three degrees of differentiation. Grade 1 is has minimal cellularity and rare atypical cells. Grade 2 is characterized by moderate cellularity and presence of atypical cells but they also have normal cartilaginous cells, and Grade 3 is characterized by high cellularity and the marked predominance of atypical cells and rare normal cartilaginous cells. Chondrosarcomas show radioresistance and have very little response to adjunctive chemotherapy, with five year survival rate of about 75.0%.[7]

Phalyngeal chondrosarcoma rarely metastasize in comparison to chondrosarcoma located elsewhere and also have good survival data.[8,9] Our patient had undergone wide local excision of left great toe, followed by anthracycline based chemotherapy. As chondrosarcomas show radioresistance and have very little response to adjunctive chemotherapy, so surgical resection is the treatment of choice for chondrosarcoma.[10] The histological grade, tumour site and adequate surgical excision are the major factors in prognosis of the patients. Six months after the surgery our patient is doing well with no signs of metastasis or recurrence.

4. Conclusions

Phalangeal chondrosarcoma of great toe is a very rare occurence, which needs prompt diagnosis and treatment for better prognosis.

5. Source of Funding

None.

6. Conflict of Interest

None Declared.

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