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Case Report

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Osteosarcoma Of Mandible A Rare Entity - A Case Report

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Abstract
Osteosarcoma is a malignant neoplasm of mesenchymal origin in which the neoplastic cells have the capacity of direct osteoid formation or primitive bone production. Osteosarcoma accounts for 20%of sarcomas but only 5%of Osteosarcoma occur in jaw. Osteosarcoma of jaws (OS) occurs in adults with an age range of 3rd and 4th decade of life which is about a decade later than their long bone counterparts. There is an equal gender distribution. The WHO has listed many variants depending upon the site of origin, clinical behaviour and cellular atypia .The classical Osteosarcoma is most frequent variant which develops in the medullary region and it can be classified as osteoblastic, chondroblastic and fibroblastic type depending upon the extra cellular matrix produced by the neoplastic cells.

Key Words
Osteosarcoma, jaw, mesenchymal, female

Introduction

Osteosarcoma (OS) is a malignant mesenchymal tumor predominantly occurring in long bones and occasionally in the maxillofacial region. It is the most common primary malignant bone tumor, accounting for approximately 20% of the sarcomas, but only 5% of the osteosarcomas occur in the jaws[1].

Osof the jaws occur most often in third decade of life with a mean age distribution of 33yrs which is 10 to 15yrs later than long bones[2],[3].It occurs more commonly in men as compared to women[4].

The most common presenting symptoms are swelling of the involved site , often producing facial deformity and pain ,followed by loose teeth ,paresthesia ,toothache ,bleeding, nasal obstruction and variety of other manifestations [1],[2],[3],[4].

Radiographically, the findings may include either radiolucency or radiopacity, or a mixture of both with poorly defined irregular margins [3],[5],[6],[7]. OS of jaws differs from OS of the long bones in its biological behaviour, presenting a lower incidence of metastasis and a better prognosis[5],[8].

Case Report:

A 15 year old female patient was referred to the department of oral surgery of GianSagar Dental College and Hospital with a history of swelling in relation to the left lower posterior tooth region since 3 months as seen in **Fig.1.** There was no history of trauma or injury .On examination intraorally a single localised oval shaped swelling was seen extending from the distal of 33 to mesial of 36 as seen in **Fig.2** ,measuring5cmx3cms . On palpation, the swelling was firm in consistency, non tender and non compressible in nature. The overlying mucosa was normal in color .The teeth in relation to the swelling 34, 35, 36 were non -vital with negative aspiration.

Radiographic features: OPG revealed mixed radiolucent & radiopaque lesion with ill- defined margins in relation to 33,34,35,36 as seen in **Fig. 3**. IOPA showed resorption of roots of 35,36as seen in **Fig.4**, with displacement of 33&35 as seen in **Fig.3,4**.

A C.T scan showed lytic lesion in body of left mandible with associated spiculated periosteal reaction and enhancing soft tissue swellings seen in **Fig.5**. The C.T. findings were suggestive of mitotic lesions in left mandible likely to be sarcomatous.

Based on history and clinical examination the following differential diagnosis was considered:

Ossifying fibroma is commonly seen in

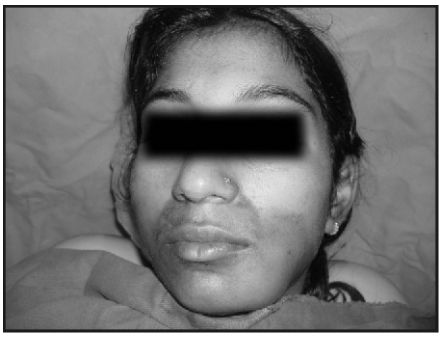

Fig.1. Swelling in relation to the left.

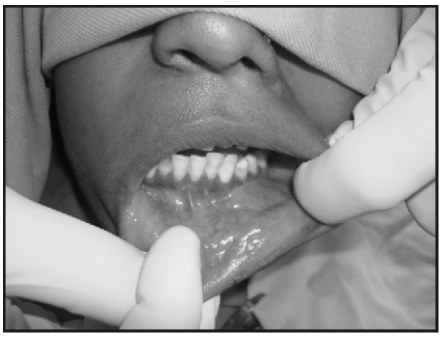

Fig.2. Oval shaped swelling was seen extending from the distal of 33 to mesial of 36.

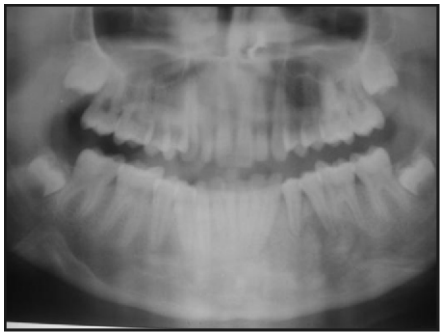

Fig.3. O.P.G. revealing mixed radiolucent & radiopaque lesion with ill- defined margins.

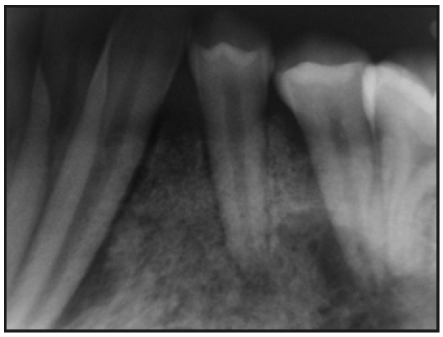

Fig.4. IOPA shows resorption of roots.

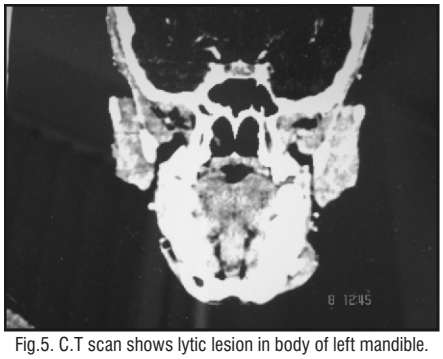

Fig.5. C.T scan shows lytic lesion in body of left mandible.

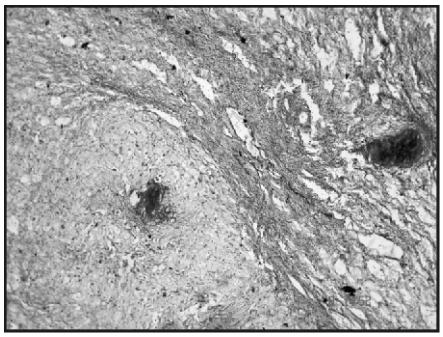

Fig.6. Chondroid and osteoid area appreciated.

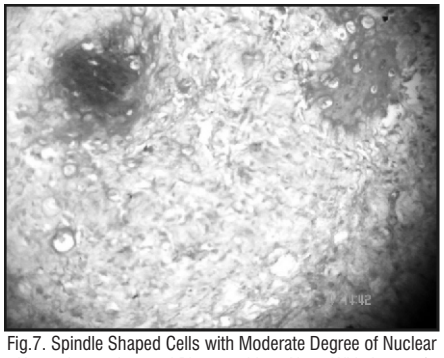

Fig.7. Spindle Shaped Cells with Moderate Degree of Nuclear Hyperchromatism and Pleomorphism Along With Areas of Osteoid and myxochondroidFormation.

females with the involvement of mandible more often than maxilla. In mandible the premolar and the molar areas are the most common site. The lesion when enlarges causes swelling with obvious facial asymmetry rarely associated with pain and paresthesia. Depending upon the amount of calcified material it may appear radiolucent with varying degree of radiopacity. Root resorption and root divergence of the teeth associated with the lesion may be noted .All the above clinical and radiographic findings were in favour of ossifying fibroma.

Fibrous dysplasia was also taken as one of the differential diagnosis. It appears as a painless swelling in maxilla or mandible leading to the deformity of the jaw involved. The mucosa overlying the lesion is intact. Radiographically it may show a radiolucent and radiopaque pattern with displacement of the teeth at the site involved. An incisional biopsy was performed and was sent for microscopic examination.

Histopathology revealed the presence of highly cellular areas of spindle shaped cells showing moderate degree of nuclear pleomorphism and hyperchromatism as seen in **Fig 7**. Diffuse areas of myxochondroidalong with osteoid tissue are also seen in **Fig 6 and 7**. The features are suggestive of chondroblastic type of osteosarcoma.
The patient was recommended for oncologic treatment.

Discussion:
Osteosarcomas are rare malignant neoplasms of mesenchymal origin with a high rate of mortality. They are characterized by the proliferation of neoplastic cells that are able to directly form bone or osteoid tissue [9]. Excluding hematopoietic neoplasms, osteosarcomas are the most common intraosseous tumors. The tumor shows a discrete predominance in men and affects all ages from small children to the elderly. The highest prevalence of osteosarcoma is observed during the second decade of life, which coincides with the period of maximal bone growth. The tumor most commonly occurs in the long bones, mainly affecting the distal metaphysis of the femur, proximal region of the tibia and metaphysis of the humerus close to the shoulder. A second peak incidence is observed in adults above the age of 50, with the tumor involving the axial skeleton and flat bones such as vertebrae and the hip bone [7],[8],[9],[10].

Like other malignant tumours OS is of unknown cause. However bones that have been previously irradiated and bones affected with Paget's disease show an increased incidence. OS of jaws differ in the following ways from that found in other bones:

1) The average age of onset is in the third to fourth decade , about a decade later than that observed in other bones
2) The jaw lesions have less tendency to metastases
3) The prognosis is better for jaw lesions

OS metastizes almost exclusively by hematogenous spread. Lymph node involvement is rare[11].

Osteosarcoma of the jaw bones corresponds to only 5% of all osteosarcomas[1]. It is usually seen in the third decade of life [2]. Frequency of involvement of maxilla and mandible is almost same. Mandibular tumors arise more frequently in posterior body and ramus. Maxillary lesions are discovered more commonly in the inferior portion (alveolar ridge, sinus floor,palate)than the superior aspect(zygoma,orbital rim)[3].

The main clinical manifestations of OS of jaws are pain of variable intensity , swelling of bone and adjacent soft tissues, Tooth bulging and dislocation, lack of healing and swelling at the site of tooth extraction, trismus, hypoesthesia or paresthesia in the case of mandibular tumors and nasal obstruction in maxillary tumors have been reported[2],[3],[6].

Radiography reveals variable bone density depending on the amount of bone formed by the neoplasm. In some cases,

the typical "sunray" appearance is observed at the periphery of the tumor. Imaging techniques are important and essential for the evaluation of the tumor. Axial computed tomography is a valuable tool in evaluating bone destruction and bone production by the neoplasm and permits the precise definition of the extraosseous extent of the tumor and its relationship with neighbouring tissues. Another important technique for the diagnosis of invasion of adjacent tissues by the tumor is nuclear magnetic resonance imaging, which is extremely valuable for preoperative staging[9].

Osteosarcomas of jaws display a considerable histopathologic variability .The essential microscopic criteria is the direct production of osteoid by the malignant mesenchymal cell .In addition to osteoid the tumor cells may produce chondroid material and fibrous connective tissue. Depending upon the amount of the osteoid, cartilage or collagen fibres produced by the tumor, they are subclassified into[3]:

- Osteoblastic
- Chondroblastic
- Fibroblastic

OS are usually graded according to the histopathologic criteria in low - grade (Grade I) to high grade (Grade III) malignancies. The low grade OS may be misdiagnosed as fibrous dysplasia or other benign fibro-osseous lesion[4].

Diagnosis of OS is usually easy. Relying on imaging studies alone, may be occasionally misleading .OS may mimic Malignant Fibrous Histocytoma, Fibrosarcoma ,Giant Cell Tumors, Ewing's Sarcoma Or Lymphoma. Histologically OS may have to be distinguished from a Malignant Fibrous Histocytoma or Poorly Differentiated Fibrosarcoma. Exceptionally, an OS histologically mimics An Osteoblastoma or an Aneurysmal Bone Cyst.[12]

Treatment protocols for osteosarcoma include radical or conservative surgery complemented by radiotherapy and/or chemotherapy[1],[2],[3]. OS of jaw have less tendency to metastasize than do OS of long bones. When comparing mandibular and maxillary OS, metastasis is noted more frequently from mandibular neoplasm, where as local recurrence is associated more frequently with maxillary tumors [1],[3].

The prognosis remains poor. Overall 5year survival rate of 25% to 50% are reported for OS of jaws[1].

Here we present a case of OS on the left side of the mandible in 15 year old female patient which is in contrary to the documented age of occurrence and sex.

Conclusion:

In conclusion as suggested by review of literature prognosis of long bone OS is worse in patients of less than 25yrs as compared to the older patients. While in case of OS of jaws factors of age, sex, site and histological types seems to have no effect on prognosis. Only early detection and early treatment is the key for a comparative better outcome. OS of jaws have a better prognosis than the long bone OS.We are hoping for improved prognosis and healthy post treatment period in the discussed case keeping in the view the tender age of presentation of disease.

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