Case Report

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Osteosarcoma of Mandible

NagaSirisha Venkata Chundru[1*] Prasanth Thankappan[2] Saranya Kunchala[3] Obili Bharath[4]

[1]Associate Professor, Department of Oral and Maxillofacial Pathology, CKS Theja Institute of Dental Sciences and Research, Tirupati, India.
[2]Professor and Head, Department of Oral and Maxillofacial Pathology, CKS Theja Institute of Dental Sciences and Research, Tirupati, India.
[3]PG Student, Department of Oral and Maxillofacial Pathology, CKS Theja Institute of Dental Sciences and Research, Tirupati, India.
[4]PG Student, Department of Oral and Maxillofacial Pathology, CKS Theja Institute of Dental Sciences and Research, Tirupati, India.

ABSTRACT

Background: Osteosarcoma is a mesenchymal malignancy of bone tissue. Primary osteosarcoma of head and neck region is a rare occurrence and presents with distinct biological behavior compared to osteosarcomas of long bones. They usually arise secondary to underlying pathologies such as Fibrous dysplasia, Pagets disease, bone infarcts and therapeutic irradiation to craniofacial region. Patients with osteosarcoma of jaws usually report to dentist and is sometimes misdiagnosed as periapical lesions, reactive lesions, tumors or cysts of odontogenic or non odontogenic origin due to nonspecific symptoms such as swelling, pain, tooth mobility, ill fitting dentures and paresthesia. We present yet another case of osteosarcoma of mandible which presented as asymptomatic swelling of posterior mandible in a 48 year old female patient.

Keywords: Osteosarcoma, mandible, head and neck.

INTRODUCTION

Osteosarcoma (OS) is a primary malignant tumor of bone that involves usually the extremities of long bones near metaphyseal growth plates. Osteosarcomas of jaws (OSJ) on the other hand are uncommon and accounts for less than 1% of all head and neck cancers and for about 10% of all osteosarcomas. [1] OSJ present with distinct biological behavior as compared to primary osteosarcoma of long bones. Compared to long bone osteosarcoma, OSJ have lower incidence, late median age, ill – defined multiple modality of treatment, lower distant metastasis and larger range of five year survival.

Jaw osteosarcomas usually present in the 3rd & 4th decades of life, about a decade later than in patients with long bone osteosarcomas. Both maxilla and mandible are equally affected. The mandibular tumors arise more commonly in the posterior body and horizontal ramus where as maxillary tumors occur mostly in the alveolar ridge, sinus floor and palate. Males seem to be affected more compared to females. Most common clinical symptoms include pain, swelling, loose teeth, separation of teeth and paresthesia. [2] Histopathologically, OSJ has often better differentiation than osteosarcomas of long bones and chondroblastic variant seems to be more common. [3]

Radiologically, jaw osteosarcomas manifest as mixed, radiolucent or radioopaque lesion mainly. Other radiological features include periodontal ligament (PDL) widening, Codmans triangle and Sun burst appearance. Treatment of this lesion is radical surgery involving complete resection. Adjuvant radiotherapy should be regarded in patients with close margins of high grade tumors. Few studies revealed that high Lactate dehydrogenase and serum alkaline phosphatase levels might have negative effect on survival and presence of recurrent disease independently increases risk of death. [4] However,

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*Correspondence Dr. NagaSirisha Venkata Chundru.
Department of Oral and Maxillofacial Pathology, CKS Theja Institute of Dental Sciences and Research, Tirupati, India.
Email: sirisha@doctor.com

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Fig 1: Swelling on right side of body of mandible in relation to teeth 44, 45, 46 and 47.

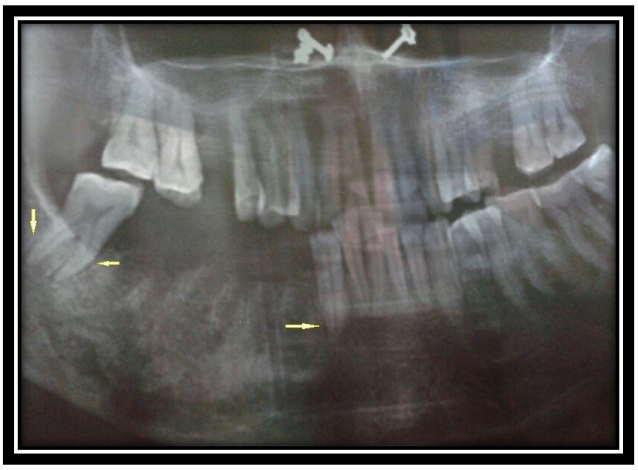

Fig 2: OPG showing widening of PDL space.

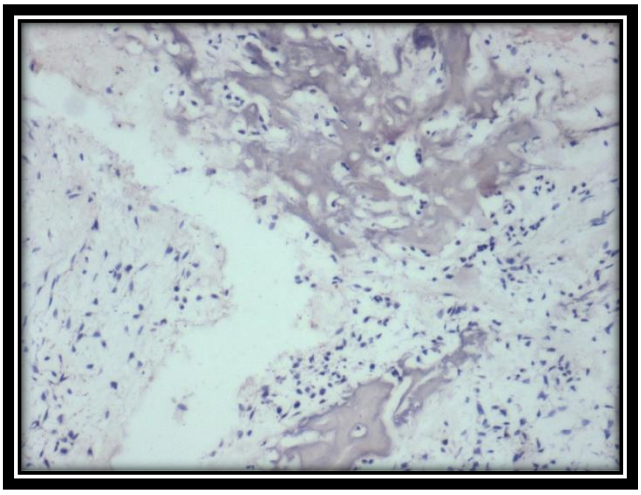

Fig 3: Neoplastic osteoblasts exhibiting considerable variation in size and shape present with in a myxoid background with formation of osteoid (10X).

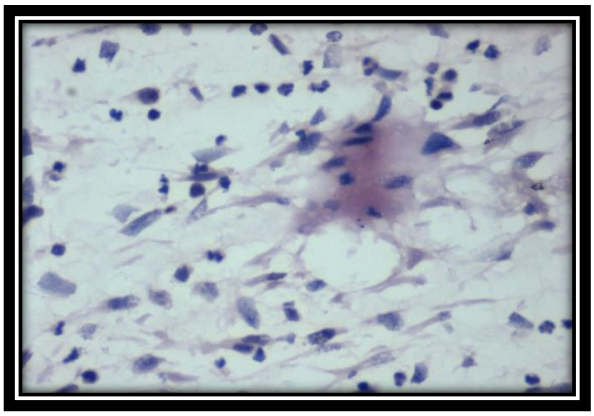

Fig 4: Stromal cells exhibiting marked atypia (40X).

there is still lack of sufficient knowledge about prognostic parameters and optimal treatment modalities owing to rarity and unusual presentation of OSJ and dentists may be first to detect them in their intial stages. In this scenario we report yet another case of mandibular osteosarcoma.

CASE REPORT

A 46 year old female patient reported to a private general dentist with a chief complaint of swelling in her lower right side of the mouth of six months duration. Intraoral examination revealed well circumscribed swelling measuring about 4x3cm present over the right side of body of mandible. (Figure 1) Asymptomatic swelling that is firm and rubbery on palpation was seen in relation to 44, 45, 46 and 47 region. There was obliteration of buccal and lingual vestibule in the affected region. The swelling had distinct margins, lobulated surface and normal color of overlying mucosa. No gross facial asymmetry observed. Patient expressed difficulty in chewing on affected side. Grade III mobility was seen in relation to teeth 44,45,46,47. Based on the clinical findings, the provisional diagnosis at this stage included a large reactive lesion or a benign odontogenic tumor and teeth mobility was assumed secondary to periodontitis. The patient subsequently underwent extraction of 44 to 47 teeth and tissue was subjected to incisional biopsy and was sent to us. No lymph nodes were palpable.

Histopathological examination revealed neoplastic osteoblasts exhibiting considerable variation in size and shape present with in a myxoid background. Focal areas of direct formation of amorphous eosinophilic osteoid from a

sarcomatous stroma seen. (Figure 3) Stromal cells appeared angulated to spindled in few areas showing marked atypia. (Figure 4)

No preoperative orthopantomograph (OPG) was taken as it was provisionally assumed to be a large reactive lesion or benign odontogenic lesion by the general dentist. Post operative radiograph taken after teeth extraction showed widening of PDL space. (Figure 2) Computed tomography(CT) scan was not available because of non affordability of the patient. Based on histopathological, radiographical and clinical findings a diagnosis of osteosarcoma of mandible was established. The patient was referred to regional cancer centre for further management.

DISCUSSION

Osteosarcoma is the most common primary malignancy of bone with extensive destructive potential. OSJ are usually biologically distinct from long bone osteosarcomas in that they have better prognosis than long bones counterpart.

The clinical presentation of the present case was asymptomatic swelling involving the right posterior mandible. Patient had poor oral hygiene and mobility of teeth in the involved region was assumed to be secondary to periodontitis. Post operative OPG taken showed widening of the PDL space. The diagnosis of osteosarcoma must be made histologically with a biopsy before intiation of treatment. It is thought to arise from primitive mesenchymal bone forming cells and the presence of malignant osteoid is a consistent finding. The most frequent sub types are osteoblastic, chondroblastic and fibroblastic osteosarcomas and the present case was osteoblastic variant.

The main stay of treatment is surgical resection followed by chemotherapy. Anatomical limitations in face can sometimes cause difficulties in achievement of uninvolved margins and such cases are usually reported with high local recurrence. [5] Neck dissection must be considered in case of involvement of cervical lymph nodes. Patients with OSJ usually report to dentist and is sometimes misdiagnosed as periapical lesions or odontogenic lesions due to nonspecific symptoms such as swelling, pain, tooth mobility, ill-fitting dentures and paresthesia. The present case reported with an asymptomatic swelling and difficulty in chewing food on affected side.

Conventional radiographic features like Codman's triangle, widening of PDL space and sun burst appearance are not pathognomic of OSJ. Radiographic techniques like CT scan or MRI can be of help in assessing bone destruction and pathogenesis pattern. This may facilitate early diagnosis and treatment plan. Bone matrix protein is thought to assist in recognition of malignant osteoid. Osteocalcin is a bone specific protein which may be used in differentiating a primary bone malignancy from others. [6]

CONCLUSION

Patients with OSJ usually report to dental professionals first due to clinical presentation of swelling which may or may not be associated with pain and mobility of teeth. Histopathology along with imaging techniques are valuable adjuncts to microscopy and knowledge of such highly malignant tumors is essential in arriving at early diagnosis and achieving better prognosis.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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