Osteosarcoma of Mandible

Chandra Shekhar¹, Ramesh², Pavan Kumar B³, Shwetang Goswami⁴

ABSTRACT:
Osteosarcoma arises in bone during periods of rapid growth and primarily affects adolescents and young adults. Osteosarcoma is a highly malignant bone forming tumor. Most of the clinicians consider osteosarcoma of head and neck to be distinct from osteosarcomas that arise from long bones. Jaw osteosarcoma presents a wide spectrum of clinical and radiological features along with highly variable histopathology. In the present case report, a 33 year old patient reported to our college with a complaint of pain and swelling in left lower back tooth region which was diagnosed to be a periodontal infection and treated locally followed by extraction of the teeth. The pain and swelling did not subside but increased in size. Biopsy and radiological investigations revealed osteosarcomatous changes in the jaw. The patient was treated with segmental resection and reconstruction with reconstruction plate followed by chemotherapy.

Key words: Osteosarcoma, Sarcoma, Osteosarcoma of jaw, Mandible

INTRODUCTION
Osteosarcoma (OS) is a malignant mesenchymal tumor characterized by formation of osteoid tissue. It is most common primary malignant bone tumor, accounting for approximately 20% of sarcomas but only 5% osteosarcomas occur in jaws. Osteosarcoma of jaw is uncommon and despite its histopathologic similarities with long bones osteosarcoma, it is biologically different.

Osteosarcoma of jaw bones have some distinct features such as older age at presentation, longer median survival, rare metastases and local recurrences difficult to control, typically leading to death of the patients.

Case report
A 33 year old female patient reported to the institution with a chief complaint of swelling in left posterior mandible region. Initially it was diagnosed as periodontal abscess in 36 and was treated with curettage. But the pain and swelling did not subside and mobility in 36 and 37 increased and hence 36 and 37 were extracted.

Patient came back after 2 weeks with an increased swelling in left posterior mandibular region which was now evident extra orally.

An occlusal radiograph (Fig 1) showed sun burst appearance leading to a provisional diagnosis as osteosarcoma. An OPG (Fig 2) revealed widening of periodontal ligament in 33 to 38 and also widening of the inferior alveolar neurovascular bundle. A CT scan and MRI were advised to see extent of soft tissue involvement.
The serial axial section (Fig 3a) of CT showed extension of lesion into the adjacent soft tissue and ossifications with in the tissue on the buccal side and on the lingual side there was a breach in the periosteum and bone deposition between elevated periosteum and adjacent normal bone. The serial coronal sections (Fig 3b), showed the radioopacity within the marrow space of the left mandible compared to that of right suggestive of osteoblastic proliferation. In 3D reconstruction images (Fig 3c), we found the new bone formation both on the buccal and lingual sides.

The MRI (Fig 4a) sections showed the extent of soft tissue involvement both on the buccal and lingual sides. Anterior border of masseter on the buccal side and a portion of mylohyoid on the lingual side are involved. The coronal sections (Fig 4b) showed the bucco lingual extension. And this extension appears to be connected through the extraction socket.

A biopsy was done. The histopathologic (Fig 5) variant showed cellular connective tissue with presence of osteoid surrounded by tumor cells. Tumor cells are spindle shaped, plump and few are round cells. These tumor cells are arranged around immature osteoid. Immature osteoid is showing bizarre osteocytes. There is also presence of extravasated RBCs and skeletal muscle tissue. The histopathologic features were suggestive of osteoblastic variant of osteosarcoma. Hence confirmed as osteosarcoma of mandible.

The patient was treated with segmental resection and reconstruction with reconstruction plate followed by chemotherapy.

DISCUSSION

Osteosarcoma of the jaw bones is a rare entity (6.5% to 7% of all osteosarcoma), but it is still a common primary bone tumour of the jaw. In mandible tumours, the body of the mandible is usually the primary site, which is the presenting site in our case, followed by the symphysis and ascending ramus; the alveolar ridge and antrum are the most common sites in the maxilla. The usual presentation is of a rapidly growing swelling with loosening and displacement of teeth which may cause dysaesthesias. In our present case, even loosening of teeth was seen with severe pain.

Radiologically the findings may be the same as those of osteosarcoma in other sites - osteolytic, osteoblastic, or a mixture of the two with the poorly defined irregular margins that are characteristic of malignant lesions. The radiographic appearance is usually suggestive of malignancy but it is certainly not a dependable criterion for definitive diagnosis. CT and magnetic resonance imaging are helpful in showing intramedullary and extramedullary involvement, tumour calcification, and invasion into adjacent tissue, particularly the pterygo palatine fossa, infratemporal fossa, and cranial cavity. In our case osteoblastic appearance was seen.

Because of the complexity of the clinical features and radiography, the final diagnosis can be made only after histopathological investigations. The predominant histological components described by various groups have been osteoblastic, fibroblastic, and chondroblastic. In the jaws the tumour often has a mixed appearance. There are other variants of Osteosarcoma present such as juxtacortical, periosteal and central low grade (fibrous dysplasia like and osteoblastoma like).

The treatment of osteosarcoma of the jaw should be approached in two ways. Primary treatment should be directed towards eradication of the local disease, which requires operation and chemotherapy.

Radiotherapy has been used for residual, and recurrent disease and for unresectable tumours. Alone or in combination with surgery, it has resulted in long term survival.

Ever since Jaffe et al reported good results with high dose methotrexate for the treatment of osteosarcoma of the long bones, chemotherapy has become an important therapeutic adjunct in the treatment of osteosarcoma at all sites.

The effective therapy for management of osteosarcoma of the jaws is wide surgical excision with tumor free margins and addition to that adjuvant therapy like radiation and chemotherapy.

CONCLUSION

As surgical methods have improved and important diagnostic tools have emerged (such as CT scanning), early diagnosis, better treatment planning and improved follow up have probably accounted for the improved survival. More important, the introduction of aggressive multiagent chemotherapy as adjuvant treatment in higher-grade lesions, appears to offer a still better prognosis for jaw lesions in the future.
Fig 1: OCCLUSAL RADIOGRAPH
Occlusal radiographs showing sunburst appearance on lingual side

Fig 2: OPG showing PDL widening in 33 to 38

Fig 3a: Axial CT showing ossifications on buccal side
Fig 3b: Coronal CT showing more radiopacity on left side than right
Fig 3c: 3D CT showing bone formation on buccal side

Fig 4a: Axial MRI showing soft tissue involvement
Fig 4b: Coronal MRI showing connection through the extraction socket

Fig 5: Histopathology

Osteosarcoma of Mandible Chandra Shekhar, et al.
Osteosarcoma of Mandible

Chandra Shekhar, et, al.

PRE OPERATIVE

PRE OPERATIVE

REFERENCES


Gain quick access to our journal online
View our journal at
www.nacd.in