

Bony beard: Osteosarcoma of the mandible with exuberant sunburst periosteal reaction

Bhatia V*, Sharma S, Sood R.G, Jhobta A

Department of Radio-diagnosis, IGMC, Shimla Himachal Pradesh, India.

*Corresponding Author: drvikasbhatia@gmail.com

ABSTRACT

Background: Osteosarcoma of jaw is an uncommon disorder found in approximately 5 % of cases. Unlike axial skeletal osteosarcoma, they present in 3rd to 4th decade and carry a favourable prognosis. Soft tissue swelling, cortical disruption and periosteal reaction are radiological hallmarks of osteosarcoma in appropriate clinical setting. **Aim:** We present a case of osteosarcoma of mandible in 38 year old female showing exuberant sunburst periosteal reaction. **Materials and Methods:** This is a case report of a 38-year-old female presenting with swelling in the right submandibular region for two months. **Results:** CT scan of the patient was done that revealed destruction of right side of mandible with exuberant sunburst periosteal reaction. Histopathology revealed osteoblastic osteosarcoma. **Conclusion:** Osteosarcoma of the mandible is a relatively rare tumor. Such extent of exuberant sunburst reaction of periosteum has not been reported before.

Key words: Osteosarcoma, sunburst, periosteal reaction, mandible

INTRODUCTION

Osteosarcoma of the jaw region is an uncommon entity with an incidence of approximately 5%^[1]. Osteosarcomas of the jaws show behavioural features that are different from the lesions of the rest of the skeleton.^[1] These lesions is likely to occur at an older age with pain and swelling. They rarely metastasize and show a favourable prognosis with survival rate at 5 years approximately 40% versus 20% for non-jaw lesions. Radiological features are soft tissue, cortical destruction and periosteal reaction that can be sunburst, hair-on-end or laminated.

CASE REPORT

We present a case of a 38-year old previously symptomatic female who presented with pain in

right side of jaw and swelling in the right submandibular region for past 2 months. The swelling was rapidly progressive. There was associated pain which was increasing in severity, initially dull then sharp in nature. There was no radiation of pain and it was not referred to any part. Pain aggravated with mouth opening. The swelling was noticed by patient himself two months back. There was no history of trauma or tooth loss. She complained of difficulty in opening mouth since last two weeks. There was no intervention prior to presentation.

On examination, the lesion was warm to touch and stony hard on palpation. Intraoral examination could not be done properly due to inability to properly open the mouth. Antero-posterior and lateral skull X-rays were obtained which showed sclerotic lesion involving the ramus and condylar process of mandible on right side

with extensive sunburst periosteal reaction. Multi-detector computed tomography was done which showed sclerotic destructive lesion involving the right side of mandible extending up to the condylar process (Figure 1). There was evidence of enhancing soft tissue adjacent to it. There was extensive sunburst periosteal reaction (Figure 2 and 3). Volume rendered images showed the extent of involvement and the exuberant periosteal reaction (Figure 4a and 4b). Biopsy of the lesion was done which showed osteoblastic osteosarcoma. The patient was referred to the department of maxillofacial surgery for further management.

DISCUSSION

Osteosarcoma implies to a heterogeneous group of primary malignant tumours affecting bone forming or mesenchymal tissues that have histopathologic features of osteogenic differentiation.^[1] Osteosarcoma is a highly malignant bone neoplasm which is a relatively rare disease in the head and neck region. Annual incidence in axial skeleton has been reported to be 1.6 to 2.8 million children under 15 years of age with a female to male ratio of 1.6:1.^[2] In the jaw the reported incidence is less than 4%.^[3] Osteosarcomas of the jaws show behavioural features that are different from the lesions of other skeleton.

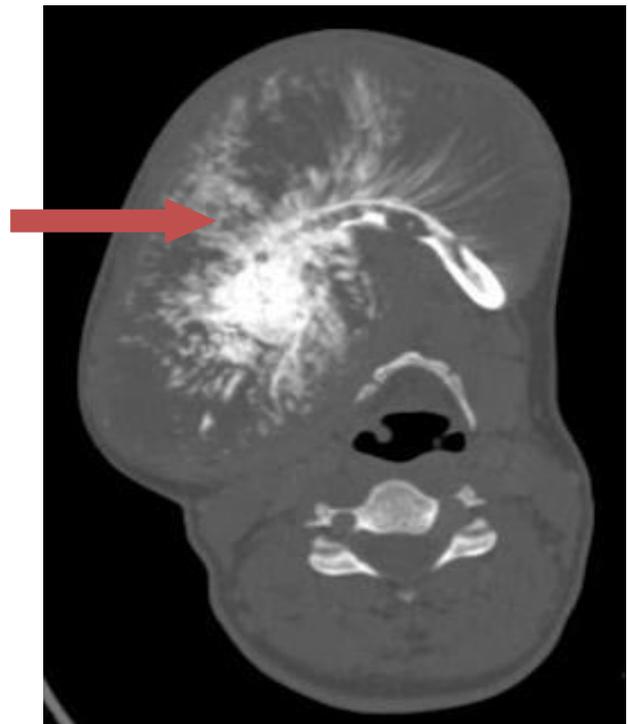


Figure 2: Axial CT image (bone window) showing extensive sunburst periosteal reaction (arrow)



Figure 3: Axial CT image (mediastinal window) showing extensive soft tissue mass with sunburst periosteal reaction.

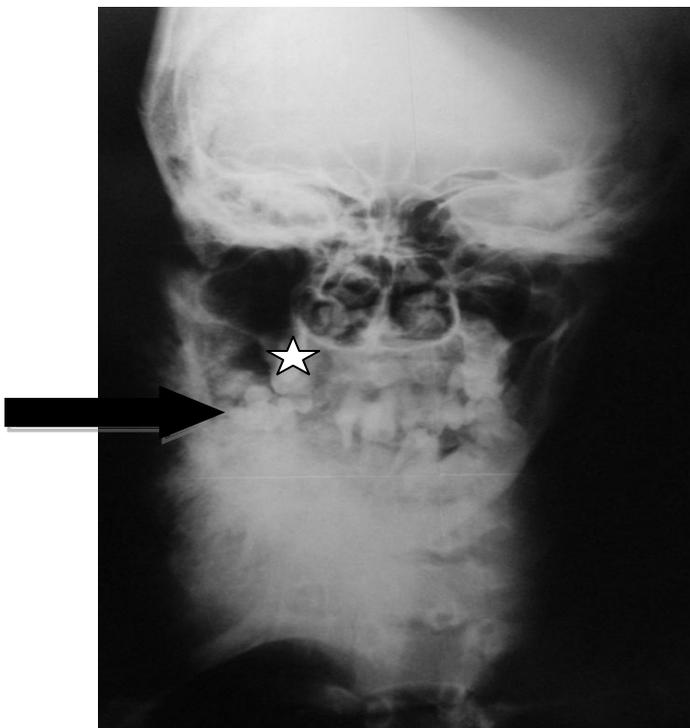


Figure 1 : skull AP view showing sclerotic lesion involving the mandible with cortical destruction (star) and extensive sunburst periosteal reaction (arrow).



Figure 4a



Figure 4b

Figure 4a and 4b : Volume rendered image showing the extent of lesion with exuberant sunburst periosteal reaction

These lesions tend to occur at an older mean age (fourth decade versus second decade for non-jaw lesions).^[4] Pain and swelling are more frequent in jaw lesions. They rarely metastasize and show a favourable prognosis.^[4] Survival rate of 5 years is approximately 40% versus 20% for non-jaw lesions.^[4] In the jaws conventional osteosarcomas involving the mandible and maxilla display a predilection for males, some studies display slight

predilection for females. There is a nearly equal involvement of the maxilla and the mandible.^[5] Some authors have found that mandibular tumors were predominant in females.^[6] Primary osteogenic sarcoma of the jaw shows a peak incidence between 30 and 39 years of age. Although lesions may occur anywhere in jaw, the most commonly affected is the posterior part of the mandible. Radiologically, osteogenic sarcoma can appear as osteolytic type or osteoblastic type or can have a mixed pattern.^[7] Osteosarcoma may cause cortical erosion with widening of periodontal ligament space. This may lead to a spiculated pattern of new bone formation in association with a soft tissue mass peripheral to outer cortical boundary of the involved bone.^[5] The commonest in the jaw is the osteoblastic type which may show a sunburst type of periosteal reaction as a result of radiating mineralised spicules. Periosteal reaction occurs when cortical bone reacts to one of many possible insults such as tumour, trauma, infections, certain drugs, and some arthritic conditions. The intensity, aggressiveness, and duration of the insult determines the appearance of periosteal reaction. The osteosarcoma can show sunburst, hair-on-end, or Codman triangle subtypes of periosteal reaction frequently. However, laminated, solid, thin, or disorganized forms of periosteal reaction can also be present. A wide zone of transition, cortical breakthrough, and soft-tissue mass are all concerning features for osteosarcoma.^[1-8] Radiological findings may be a very subtle with widening of the periodontal ligament or a localised radiolucency around one or more teeth.^[9] Cornerstone of treatment for osteosarcoma is surgery.^[2] However poor surgical resection can result in poor prognosis and recurrence. Combined multidrug chemotherapy in conjunction with surgery results in improved survival rates.^[10]

CONCLUSION

Osteosarcoma of the jaw is an uncommon tumour. Possibility of this tumour should be kept in any patient with jaw swelling for appropriate management. These tumors show sunburst periosteal reaction with soft tissue swelling which is classic for these tumors.

REFERENCES

- Schajowicz F, Sissons HA, Sobin LH. The World Health Organization's histologic classification of bone tumors. A commentary on the second edition. *Cancer* 1995;75:1208-1214.
- Craft AW. Osteosarcoma and chondrosarcoma. In : Voute PA, Barrett A, Lemerle J. editors. *Cancer in children. Clinical management.* London Springer-verlag, 1992. Pp 282-94.

3. August M, Magennis P, Dewitt D. Osteogenic sarcoma of the jaws: factors influencing prognosis. *Int J Oral Maxillofac Surg* 1997;26:198-204.
4. McClatchey KD, Courtney RM, Crissman JD. Osteosarcomas and chondrosarcoma of the jaws: Immunohistochemical correlations. *Oral Surg Oral Med Oral Pathol* 1987;64:302-307.
5. Yeşilova E, Akgünlü, F, Dolanmaz D, Yaşar F, Şener S. Osteosarcoma: A Case Report. *European Journal of Dentistry* 2007;1:60-63.
6. Bennett JH, Thomas G, Evans AW, Speight PM. Osteosarcoma of the jaws: A 30-year retrospective review. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2000;90:323-333.
7. Weber AL, Bui C, Kaneda T. Malignant tumors of the mandible and maxilla. *Neuroimaging Clin N Am* 2003;13:509-24.
8. Rana R S, Wu J S, Eisenberg R L. Periosteal Reaction. *AJR* 2009;193:W259–W272.
9. Neyaz Z, Gadodia A, Gamanagatti S, Mukhopadhyay S. Radiographical approach to jaw lesions. *Singapore Med J* 2008;49:165.
10. Huvos AG, Rosen G, Bretsky SS and Butler A. Telangiectatic osteogenic sarcoma: A clinicopathologic study of 124 patients. *Cancer* 1982;49:1679-1689

doi: <http://dx.doi.org/10.14194/ijmbr.1114>

How to cite this article: Bhatia V, Sharma S, Sood R.G, Jhobta A. Bony beard: Osteosarcoma of the mandible with exuberant sunburst periosteal reaction. *Int J Med Biomed Res* 2012;1(1):85-88

Conflict of Interest: None declared