Case Report

Osteoblastoma of Mandible in Child: A Case Report

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Osteoblastoma is considered as a bone tumor, which is benign and arises from non-odontogenic epithelium. This condition is quite rare in children and very few cases of osteoblastoma are reported. The case report describes osteoblastoma affecting mandible in an 8-year-old boy. It was noticed that the lesion began to show gradual enlargement and was painful. An excisional biopsy was carried out. Histopathological examination revealed eosinophilic bony trabeculae, lined by osteoblasts, with osteocytes within lacunae. Intertwining connective tissue showed delicate collagen fibers, numerous vascular channels, and extravasated RBCs. It was finally diagnosed as osteoblastoma based on the features of clinical, histological, and radiographic appearance.

Keywords: Bone, mandible, osteoblastoma

INTRODUCTION

Osteoblastoma (OB) is a bone tumor, which is benign and is shown by osteoblast-like cells and an osteoid comprising a highly vascularized stroma. Jaffe and Mayer in 1932[1] described this condition for the first time. Jaffe[2] and Lichtenstein[3] used the term benign osteoblastoma for this lesion, which covers over approximately 1% of all primary tumors arising from the bone.[4] Gordon et al.[5] reported greater occurrence in a broad age-group of 5–69 years with male predominance. Its occurrence in maxillofacial skeleton is approximately 10%–12% with a greater propensity for mandibular posterior region.[6-8]

It is classified as benign and aggressive based on the clinical pathological features. The benign form is a well circumscribed, highly vascularized lesion with moderate number of multinucleated giant cells forming irregular trabeculae of new bone.[9] The aggressive form of osteoblastomas has atypical histopathological features with epithelioid osteoblasts, high recurrence rate, and shows aggressive behavior. Its occurrence in children is relatively rare.[10]

Most lesions of this nature reported in the literature were often treated by curettage and also by local excision and surgically for complete removal of the tumor.
CASE REPORT

An 8-year-old boy presented with a chief complaint of swelling in the jaw to the left lower region to the department of the pediatric dentistry. The patient was apparently asymptomatic 1 month ago. He first observed swelling on the lower border of the left mandible few weeks back. Pain started 3–4 days back since he reported to the dentist. Pain was localized, spontaneous, continuous, dull aching with increasing intensity gradually.

On inspection, there is a solitary oval-shaped swelling starting at the left parasymphysis region in the inferior border of the mandible 3 × 1 cm in size, extends inferiorly to lower border of the mandible for up to 2 cm. Surface appears normal with no signs of inflammation or scars [Figure 1].

On palpation, all the inspection findings are confirmed. The swelling was tender on palpation with a well-defined border, bony hard in consistency. It was not compressible, no palpable pulsations, and no mobility was seen. There was no rise in temperature. Lymph nodes are not palpable. No significant intraoral findings were observed.

Panoramic radiography showed a mixed radiolucency and radiopacity from the first permanent molar to the mandibular deciduous canine. An excisional biopsy was performed considering it as a benign osteoid osteoma (OO) through intraoral approach [Figure 2].

Histopathology of the specimen showed abundant amount of bone tissue [Figure 3A and B]. The bony trabeculae are highly eosinophilic and are interconnected with each other. The trabeculae are lined by osteoblasts and contain osteocytes within lacunae. Intertwining connective tissue showed delicate collagen fibers, numerous vascular channels, and extravasated red blood cells (RBCs). These findings are suggestive of benign osteoblastoma.

DISCUSSION

Many bony lesions mimic OB. Histologically and clinically, OB resembles OO, cementoblastoma, and ossifying fibroma. Sometimes, it is also similar to fibrous dysplasia and osteosarcoma.

Arriving at the diagnosis of OO or OB is very often confusing. Differentiation between OO and OB should be based on the size, site, and radiological appearance. Clinically size of OB is over 2 cm and is associated with pain and local tenderness. Radiographically, OO has a round, oval radiolucent nidus less than 1 cm diameter, located subperiosteal or intracortex, surrounded by reactive sclerotic bone. On the contrary, OB is radiolucent to mixed radiopaque lesion located in the medullary bone. Reactive sclerosis is usually absent.[11]

Histologically, OO is similar to OB but lacks the characteristic central bone nidus, giant cells, and is less vascularized than OB. Other histological differences, which OB differs over OO, are wider and less irregular bony trabeculae, more osteoblasts.[12] On the basis of obvious histological similarity between these lesions, it was suggested by Dahlin and Johnson,[13] in 1954, that lesion should be termed as giant osteoid-osteoma that is termed as the benign osteoblastoma now. In this case, the presence of numerous vascular channels and high number of osteoblasts helped us to differentiate with OO.[13]

Cementoblastoma shares histological similarities with OB, but it is odontogenic in origin. It is associated with the cementum and dentin of the apical third of the tooth root, whereas OB is a non-odontogenic in origin. OBs are separated from the adjacent tooth by a barrier-derived periodontal ligament. Ossifying fibroma is similar to OB clinically and radiographically. It is reported commonly in young adults, involving the posterior region of the mandible. It is not painful as OB, and has increased fibrous tissue, decreased vascularity, and lack proliferating osteoblasts. Low-grade osteosarcoma has similar clinical signs and symptoms. Radiographically, it may show well-defined or ill-defined
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with cortical destruction. According to Bertoni et al.,[14] the differentiating features of osteosarcoma compared to OB is the absence of tumor maturation involving the margins, infiltration of neoplastic cells into adjacent tissues, and the presence of cartilaginous areas.

CONCLUSION

Benign osteoblastomas resemble wide range bony lesions. Hence, diagnosis should be carried out taking into consideration clinical, histological, and radiological features. These tumors have a high recurrence rate, an inconstant behavior, and they do not metastasize. Therefore, early and accurate diagnosis is of utmost importance for improving prognosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Jaffe HL, Mayer LF. Osteoblastic osteoid tissue-forming tumor of metacarpal bone. Arch Surg 1932;24:550-64.
2. Jaffe HL. Benign osteoblastoma. Bull Hosp Joint Dis 1956;17:141-51.
3. Lichtenstein L. Benign osteoblastoma; a category of osteoid-and bone-forming tumors other than classical osteoid osteoma, which may be mistaken for giant-cell tumor or osteogenic sarcoma. Cancer 1956;9:1044-52.
4. Martin-Ferrer S. Benign osteoblastoma of the parietal bone: case report. Neurosurgery 1989;25:109-12.
5. Gordon SC, MacIntosh RB, Wesley RK. A review of osteoblastoma and case report of metachronous osteoblastoma and unicystic ameloblastoma. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2001;91:570-5.
6. Lucas DR, Unni KK, McLeod RA, O’Connor MI, Sim FH. Osteoblastoma: clinicopathologic study of 306 cases. Hum Pathol 1994;25:117-34.
7. Della Rocca C, Huvos AG. Osteoblastoma: varied histological presentations with a benign clinical course. An analysis of 55 cases. Am J Surg Pathol 1996;20:841-50.
8. Rawal YB, Angiero F, Allen CM, Kalmar JR, Sedghizadeh PP, Steinhilber AM. Giathic osteoblastoma: clinicopathologic review of seven cases with long-term follow-up. Oral Oncol 2006;42:123-30.
9. Woźniak AW, Nowaczyk MT, Osmola K, Golusinski W. Malignant transformation of an osteoblastoma of the mandible: case report and review of the literature. Eur Arch Otorhinolaryngol 2010;267:845-9.
10. Dorfman HD, Weiss SW. Borderline osteoblastic tumors: problems in the differential diagnosis of aggressive osteoblastoma and low-grade osteosarcoma. Semin Diagn Pathol 1984;1:215-34.
11. Manganaro AM, Ragno JR Jr, Karlis V. Mixed radiolucent/radiopaque lesion of the mandible. J Oral Maxillofac Surg 1997;55:1456-9.
12. El-Mofty S, Refai H. Benign osteoblastoma of the maxilla. J Oral Maxillofac Surg 1989;47:60-4.
13. Dahlin DC, Johnson EW Jr. Giant osteoid osteoma. J Bone Joint Surg Am 1954;36-A:559-72.
14. Bertoni F, Bacchini P, Donati D, Martini A, Picci P, Campanacci M. Osteoblastoma-like osteosarcoma. The Rizzoli Institute experience. Mod Pathol 1993;6:707-16.