Osteoblastoma of the mandible with root resorption: A case report

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This article reviews the clinical behavior, histologic features, differential diagnosis, and treatment of a benign osteoblastoma. Benign osteoblastoma is a rare tumor constituting 1% of all primary bone tumors. Only 15% of osteoblastomas occur in the skull and jaw bones. The most common clinical presentation is a painful or tender swelling. A case is presented of a 21-year-old female who had noted discomfort for approximately 2 years, and the pain was not relieved by any analgesic. The choice of treatment was local excision and curettage. In this case, root resorption of the adjacent tooth, which is not a characteristic behavior of osteoblastoma, is seen. (Quintessence Int 2003;34:135–138)

Key words: mandible, osteoblastoma, tumor

Benign osteoblastoma is a rare tumor of bone representing fewer than 1% of all tumors of the maxillofacial region. The tumor is most often found in the vertebral column, sacrum, calvarium, long bones of the appendicular skeleton, and in the small bones of the hands and feet. Although the etiology of osteoblastoma is unknown, it is considered to be a true neoplasm of bone.1–7

In review of the literature, the ages of the patients presenting lesions of the jaws ranged from 3 to 78 years, but nearly 90% of the patients were less than 30 years old. The male to female ratio was 2 to 1. Patients usually reported pain and swelling. Dull, aching pain, usually localized and often occurring insidiously, is the main complaint, and the pain is typically not responsive to aspirin. The swelling may be tender to palpation and the teeth may become tender or mobile if the supporting bone is involved. The duration of symptoms varies from a few months to 3 years.1,5,7

The radiographic appearance is extremely varied and is largely dependent upon the degree of calcification. Well-circumscribed lesions on radiographs have usually consisted of combinations of radiolucent and radiopaque patterns. A thin peripheral radiolucency may be noted; however, sclerosis of perilesional bone is usually absent.1,5,6

Treatment of osteoblastoma typically includes two options: local excision with vigorous curettage, followed by bur ablation of the margins with copious irrigation, or block resection. Data suggest that postoperative radiation therapy is not usually indicated, and only aggressively expanding lesions or recurrent growths should receive this additional mode of therapy.1,5,7

A case of osteoblastoma of the mandible and root resorption of the adjacent tooth are presented in this paper. The differential diagnoses are also discussed.

CASE REPORT

A 21-year-old female was admitted to the Oral and Maxillofacial Surgery Department of Cumhuriyet University, Faculty of Dentistry, Sivas, Turkey, in May 2000, with a chief complaint of a painful swelling on the buccal aspect of the left mandibular first molar. The patient had noted discomfort for approximately 2 years, and the pain was not relieved by any analgesic. In June 1998, with a chief complaint of pain, she presented to a general dentist. A periapical radiograph was taken, and the dentist prescribed antibiotics.

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A panoramic radiograph taken at the dental school revealed a well-circumscribed mottled opacity with a lucent rim (Fig 1). In the periapical radiograph that was taken by the general practitioner, a lesion with a 1.5 × 1.2-cm diameter was seen producing resorption of half of the root structure (Fig 2). In the panoramic radiograph taken two years later, the lesion had enlarged to 3 × 2.5 cm in diameter, and root resorption had extended to involve the cervical area of the tooth.

Upon intraoral examination, a conspicuous hard swelling was observed in the first molar region that was tender to palpation and measured 2 × 2 cm in area. The overlying mucosa was intact. There was no extraoral facial deformity, no complaint of paresthesia, and no limitation of opening capacity. Mobility of the adjacent tooth was noted. Based on clinical and radiographic findings, a presumptive diagnosis of ossifying fibroma was made.

Under local anesthesia, the mandibular first molar was extracted without exerting any excessive force during extraction, and the tooth separated cleanly from the lesional tissue. Local excision and curettage was performed until the visible lesion was removed to an apparently normal bone margin. The patient recovered uneventfully from the surgery and was well 8 months later. At follow-up evaluation in February 2001, the patient was asymptomatic and the radiographic examination showed no sign of recurrence (Fig 3).

PATHOLOGIC EXAMINATION

The surgical specimen consisted of multiple irregular fragments of hard, granular, brown-yellow tissue, measuring 3 × 2.5 × 2 cm in aggregate. It was composed of haphazardly interconnecting trabeculae of woven
bone. The trabeculae were rimmed by osteoblasts and surrounded by loose connective tissue (Fig 4). Numerous extravasated red blood cells and multinucleated giant cells were also scattered through the stroma. Cytologic atypia and abnormal osteoblastic mitotic activity were not observed. Distinct demarcation from the surrounding tissue was noted. Maturation, indicated by mineralization of the osteoid matrix, was seen progressing toward lamellar bone formation with varying degrees of calcification.

DISCUSSION

Benign osteoblastoma is a relatively rare tumor constituting 1% of all primary bone tumors. Only 15% of these occur in the skull and jaw bones. The posterior tooth-bearing regions are the usual sites of involvement in the jaws. The maxilla is rarely affected. The most common clinical presentation is a painful or tender swelling.1-35 Radiographic findings and the biologic behavior of osteoblastoma are not constant, varying from case to case. Osteoblastoma may recur and show aggressive behavior or sarcomatous transformation.2,4,5,7-9

Osteoblastoma accompanied by an aneurysmal bone cyst or a simple bone cyst has also been reported.9

In the current case, histologic evaluation revealed varying amounts of poorly cellular bone in a richly vascular fibrous stroma. At the surface of the bony trabeculae, proliferating osteoblasts were present. Multinucleated osteoclast-like giant cells were also observed. The loose fibrous connective tissue areas contained many congested vessels, and hemorrhage.

Males seem to be affected more commonly than females, by an approximate 2:1 ratio.1,10 The study subject is female. The patient hid her periapical radiograph for two years prior to presenting to our clinic. We compared the periapical radiograph with the panoramic radiograph taken in May 2000. As a result, we saw that in two years, the lesion expanded approximately 1.5 cm in every direction. This data supports the slow-growing nature of the lesion. Also, the root resorption seen in the periapical radiograph continued, eventually involving the cervical area of the tooth. Root resorption is not a common feature in osteoblastoma. The lesion also expanded through the body of the mandible and, although it involved the superior border of the inferior alveolar canal, there was no complaint of paresthesia.

Osteoblastoma must be differentiated from a number of bone-producing lesions such as osteoid osteoma, cementoblastoma, and osteosarcoma. Aneurysmal bone cyst, central giant cell granuloma, ossifying fibroma, and fibrous dysplasia also have some histologic similarities.1,6,9

The distinction between osteoid osteoma and osteoblastoma is primarily dependent on the size of the lesion. Classically, a lesion is considered osteoid osteoma when it is less than 2 cm in diameter and osteoblastoma when greater than 2 cm. In addition, however, osteoid osteoma radiographically typically produces a marked peripheral sclerosis in the bone adjacent to the lesion. The pain in osteoid osteoma is also characteristically nocturnal, and relieved by salicylates.6,10

Cementoblastoma is considered an odontogenic equivalent of the osteoblastoma. It arises from the root surface of a tooth, and the difference between cementoblastoma and osteoblastoma depends on whether or not the lesion is fused to the root. In the current case, the adjacent mandibular first molar was mobile and was extracted very simply without extra force exerted. The lesion did not appear to be attached to the tooth root. It should be remembered that osteoblastoma may secondarily involve a tooth as in our case.10,11

Although the clinical and radiographic features of ossifying fibroma may be similar to osteoblastoma, pain is not a usual feature in ossifying fibroma.6

Radiographically, fibrous dysplasia exhibits a poorly defined margin in contrast to the well-circumscribed appearance of osteoblastoma, and upon histologic evaluation, new bone formation is lamellar and lacks osteoblastic and/or osteoclastic activity.6,10

Differentiation of osteoblastoma from osteosarcoma may sometimes be difficult, especially the sclerosing form of osteosarcoma in which osteoid and new bone production is prominent and cellular atypia is not pronounced. Presence of cytologic pleomorphism and fine, compacted osteoid strands and mitotic figures favor a diagnosis of osteosarcoma.7

Aggressive osteoblastomas show a tendency for local invasion and recurrence but do not show metastasis. The aggressive osteoblastoma is similar to benign osteoblastoma histologically; however, the aggressive variant is said to exhibit epithelioid osteoblasts.4

According to Ohkubo et al,4 the tendency for recurrence is due to inadequate therapy. Indeed when the initial treatment of osteoblastoma is conservative, the recurrence risk increases. Therefore, block resection has been recommended.5,9 Sometimes, complete regression may occur even with limited treatment.5

CONCLUSION

Although in the present case the subject is a female and root resorption of the adjacent tooth was seen, the location of the tumor, the age of the patient, the duration of the symptoms, and the radiographic and histologic features are appropriate to the literature. The absence of recurrence is largely due to adequate initial treatment.
REFERENCES


