Osteoblastoma of Mandible: A Case Report

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Conflict of Interest: None declared

This article has been peer reviewed.

Article Submitted on: 1st May 2013

Article Accepted on: 30th October 2013

Funding Sources: None declared

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Cite this Article: Sheikh S, Pallagatti S, Singla I, Kaur S, Aggarwal A. Ostoeblastoma of mandible- a case report. J Pioneer Med Sci. 2014; 4(2): 60-63

ABSTRACT

The clinical facts and radiologic findings are very important in the diagnostic evaluation of jaw swellings, and must be considered along with histologic findings. Osteoblastoma is a rare, benign, bone-forming tumor that is histologically related to the more common osteoid osteoma. We report a case of osteoblastoma in a 45-year-old female with pain and swelling in the right mandibular posterior region. Radiological imaging disclosed a well-circumscribed lesion in which some parts were calcified. Histologic examination showed large irregular bony trabeculae present within loose and highly cellular connective tissue stroma with few myxoid areas. Areas with clusters of plump osteoblasts and few osteoclasts were also seen. Surgical excision was performed as treatment. This case report is an attempt to help the dental community in developing familiarity with the clinical presentation and at the same time advocating the development development of a high index of suspicion in recognizing such cases.

Keywords: Osteoblastoma; Benign Tumor; Histopathology

INTRODUCTION

Osteoblastoma is an uncommon benign bone forming tumor which accounts for approximately 1% of all bone neoplasms and 3.5% of benign bone neoplasms [1]. It is a solitary, vascular and slowly progressive tumour [2] that usually occurs in young adults with a mean age of 20 years [3].

More frequent sites for this tumor include the vertebral column, long bones, small bones of hands and feet, and facial bones including the jaw [4]. According to Dorfman and Czerniak, the second most frequent location is the mandible, followed by other craniofacial bones [5]. The tumor shows a sex predilection for males [6].

Clinically, it is characterized by swelling, pain, erosion and expansion of the bony cortex, depending on the site and size of the lesion [6]. Occasionally, this neoplasm may reach several centimeters in size and has a greater growth potential than an osteoid osteoma. Affected patients may be asymptomatic. However, the pain does not occur at night nor is it relieved with aspirin or other non-steroidal anti-inflammatory drugs, which is typical of an osteoid osteoma [5]. An osteoid osteoma is smaller in size than an osteoblastoma, with a central nidus that is usually less than 1 cm in diameter [7].

Histologically, benign osteoblastoma consists of a highly vascularized, fibrocellular stroma in which there are abundant newly formed trabeculae of immature bone and osteoid [8]. Diagnosing osteoblastoma at first clinical presentation is usually difficult because of its rarity and nonspecific presentation [7].

The objective of this article is to add one more case of this rare entity to the academic literature. Here, we are presenting a case of osteoblastoma of the jaw, together with clinical, radiological and histopathological findings.

CASE REPORT

A 45-year-old woman presented to the Department of Oral Medicine and Radiology, with pain and swelling in the lower right, lateral region of the face for 1 year. There was no history of trauma and her past dental/medical history was unremarkable. Verbal consent was

Figure 1: Facial asymmetry due to swelling in the lower right lateral region of her face

Figure 2: Skin overlying the swelling was normal

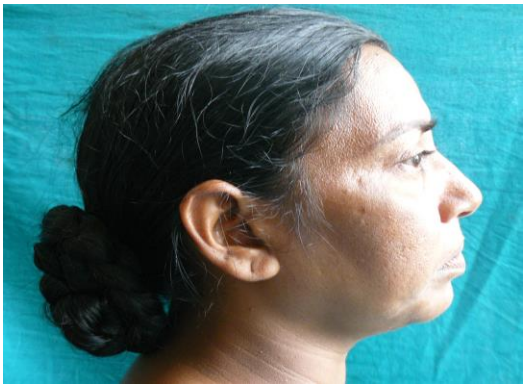


Figure 3: The surrounding mucosa was covered with slough and appeared grayish-white with inflamed gingiva

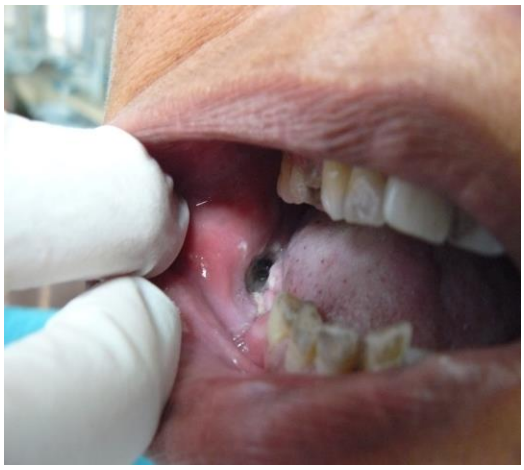
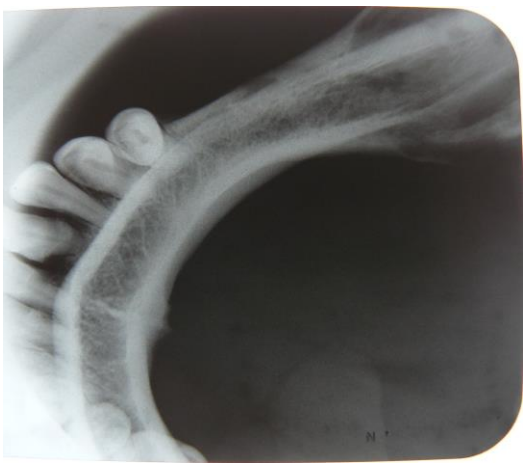


Figure 4: Radiographic examination reveal -ed expansion of buccal and lingual cortical plates on mandibular occlusal radiographs



taken. The physical examination revealed facial asymmetry due to the swelling, which was oval in shape and had a smooth surface (**Figure 1**). The skin over the swelling appeared normal. It was tender on palpation.

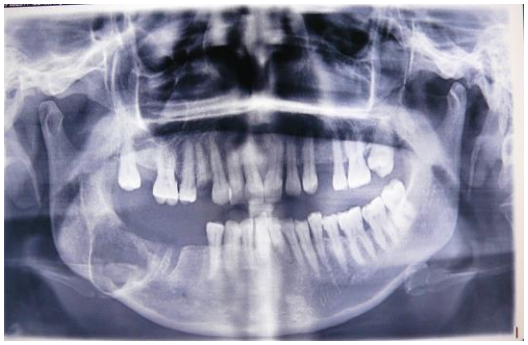
The extra-oral examination revealed a single diffuse swelling near the angle of right side of mandible. The swelling extended 3cm away from angle of mouth to the posterior border of the ramus (antero-posteriorly). Supero-inferiorly, it extended 4cm below the inferior border of the right orbit down to the inferior border of the mandible. The swelling measured approximately 2x1 cm in size and was well defined, oval in shape and had a smooth surface. The skin overlying the swelling was normal. There was no bleeding or discharge (**Figure 2**).

On palpation, swelling was diffuse, firm, tender, non compressible and non reducible over the right side of the mandible. It was fixed to the underlying structures. The temperature of the overlying skin was similar to the adjacent skin. Right submandibular lymph nodes were palpable, tender and fixed to underlying structures**.**

The intraoral examination revealed a denuded area with exposed bone in the right mandibular region. The surrounding mucosa was covered with slough and appeared grayish-white with inflamed gingiva (Figure 3). On palpation, tenderness was present in relation to the 47, 48 tooth region with pus discharge in relation to 48.

Radiographic examination revealed expansion of buccal and lingual cortical plates on mandibular occlusal radiographs (**Figure 4**). Panoramic radiograph revealed a mixed radiolucent-radiopaque lesion of approx. 2x3.5 cm in diameter in relation to the 47, 48 tooth region with sclerotic borders. It extended from the distal aspect of 47 to the retromolar area (antero-posteriorly), and from the crest of the alveolar ridge to the lower border of mandible supero-inferiorly. There was also loss of trabecular

Figure 5: Loss of trabecular pattern observed. Surrounding bone was unremarkable.



in this area. The surrounding bone was normal. (**Figure 5**)

Based on the clinical appearance, a provisional diagnosis of localized osteitis was made. But the radiographic appearance was typical of a benign tumor or a cystic lesion. A complete hemogram was normal. An incisional biopsy was performed under local anaesthesia to establish a definitive diagnosis. Histologically, the features were suggestive of osteoblastoma (**Figure 6**). Therefore, a surgical excision was advised to the patient. Our patient was asked to report for follow-up after the surgery but in spite of repeated attempts, she did not return.

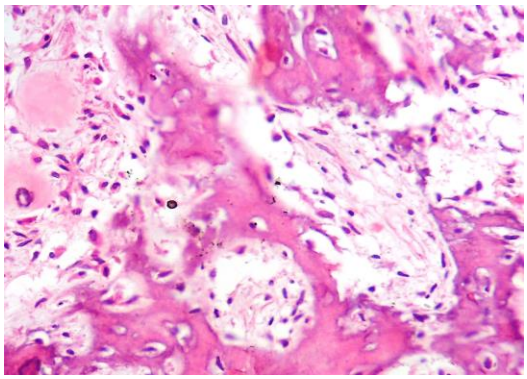
DISCUSSION

We reported this case because osteoblastoma in the jaw is rare. It is a primary bone tumor that was first recognized as a distinct neoplasm by Lichtenstein and Jaffe in 1956 [6]. The first well-documented case of osteoblastoma of the jaw bones was described by Borello and Sedano in 1967 [7]. It is a vascular osteoid and bone-forming benign tumor characterized cytologically by the abundant presence of osteoblasts [6].

According to Gordon et al. in 2001, the age range in the reported cases was 5 to 69 years, with a slight predominance in male patients (58%) and a definite prevalence in the mandible (74%) in comparison to the maxilla [9].

Asada et al [10] in 1991 reviewed the literature and surveyed 45 cases of benign osteoblastoma of the jaw bones. Strand-Pettinen et al [11] in 1990, Svensson and Isacsson [12] in 1993, and Ataoglu et al [13] in 1994 reported 1 case each. These 5 cases were located in the mandible. In our case report, the tumour was present in a female patient in the mandibular region. Radiologic features of osteoblastomas vary widely and often are nonspecific. In general, they

Figure 6: Histological features suggestive of osteoblastoma



appear as well-circumscribed, rounded or ovoid, central to slightly eccentric areas with an average size of 3cm. The lesions are typically radiolucent with occasional central radio densities. Although some lesions may exhibit considerable surrounding reactive sclerosis, many only show a thin sclerotic rim [14]. In the present case, radiographic features were consistent with other studies.

Histologically, osteoblastoma shows proliferation of plump osteoblastic cells forming trabeculae of osteoid and immature bone in a loose, well-vascularized stroma [6]. Due to its rarity and close resemblance with other bony tumors of the jaws, osteoblastoma presents a diagnostic challenge at the clinical presentation [15]. A diagnostic pitfall in connection with the benign osteoblastoma is the possibility of its confusion with osteoid osteoma. On the clinical side, the benign osteoblastoma does not tend to produce pain, so pain is characteristic of osteoid osteoma. Also, osteoblastoma is a larger lesion, which by definition exceeds 1cm in its greatest diameter and is not generally associated with outstanding bony sclerosis typical of osteoid osteoma [16]. On microscopic examination, both can be differentiated since the bony trabeculae of osteoblastoma are slightly wider than those of osteoid osteoma, and there is less irregularity in their arrangement and greater number of osteoblasts [8]. Further, osteomas lack giant cells and are not as well vascularized as osteoblastomas [17].

In the present case, histopathological evaluation of biopsy specimens showed large irregular bony trabeculae within loose and highly cellular connective tissue stroma with few myxoid areas. The bony trabeculae contained large osteocytes within the lacunae. Areas with clusters of plump osteoblasts and few osteoclasts were also seen. The connective tissue stroma also showed few

areas of cementum-like material, few large blood vessels with RBCs. Areas with islands of odontogenic epithelium were also seen.

Based on the histological features, a definitive diagnosis was made and surgical excision was advised to the patient.

Another differential diagnosis of osteoblastoma of the jaw includes Paget's disease. However, this differential was ruled out in this case as it was not associated with other typical skull features seen in Paget's.

CONCLUSION

Osteoblastoma is a rare tumor of the jaw bones. In the delineation of differential entities, the clinical facts and radiologic findings are very important in the diagnostic evaluation of the lesion, and must be considered along with the histologic findings. At the same time, adequate representative sections of the entire lesion must be submitted to ensure adequate histologic diagnosis.

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