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Osteoblastoma of Maxilla: A Case Report Emphasizing the Clinical, Radiolological and Histopathological

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Abstract

Osteoblastoma is a rare benign bone tumor characterized histologically by production of osteoid seams bordered by prominent osteoblasts. It accounts for 1% of all bone tumors and about 3% of all benign bone tumors. It mainly affects male teenagers and young adults. The lesion is more frequently seen in long bones and rarely involves maxilla and mandible. Very few cases of osteoblastoma involving maxillofacial region have been reported in the literature. We report an interesting and rare case of osteoblastoma of maxilla in a eleven years old male patient. An emphasis is made on its clinical, radiographic and histopathological differential diagnosis.

Keywords: Osteoblastoma, Osteoid Osteoma, Maxilla, Differential Diagnosis.

Introduction

The term "osteoblastoma" was first described by Jaffe and Lichtenstein in 1956 [1]. It is a vascular osteoid forming benign tumor of bone characterized cytologically by the abundant presence of osteoblasts. The first case of benign osteoblastoma of the maxilla was reported by Borello and Sedano in 1967 [2].

It accounts for about 1% of all bone tumors and many involves the spine and sacrum. In approximately 10% cases this tumor has been found in the maxillofacial skeleton with greater frequency occurring in mandible [1.]

Jones et al reviewed 77 cases of osteoblastomas of the jaws including their 24 cases out of these 22 were from maxilla most of them affected the posterior region of the jaws[2.] Males are commonly affected than female (2:1) [3]. We present here a very rare case of osteoblastoma arising in the maxilla, and its clinical, radiographic and histopathological differential diagnosis.

Case report

An 11 year old male patient reported with a chief complaint of pain and slowly progressive enlargement of the left maxilla since 2 years. The enlargement was initially asymptomatic but two months later the onset of

enlargement the patient experienced a dull pain. On extra oral examination, there was a diffuse bony enlargement extending from left anterior portion of maxilla to posterior surface of zygomatic arch. The enlargement was hard in consistency and measured approximately 4x2 centimeters in greatest dimension. Intraoral examination revealed obliteration of left buccal vestibule extending from first premolar to molar area, which was roughly elliptical in outline. Premolar and molars displacement noted without any mobility. Overlying mucosa was normal. There were no associated nasal, ocular or neurological symptoms. There was no regional lymphadenopathy. Radiographic examination revealed a well circumscribed, radio-opaque lesion with areas of mixed radiolucency (Figure 1). Computed tomography scan revealed a well defined smoothly marginated, lobuted expansile lesion involving left maxilla and whole left maxillary antrum was calcified (Figure 2,3).

Based on clinical background and radiographs, provisional diagnoses of benign fibro osseous lesion and odontogenic tumor were made. Incision biopsy was made and histopathological examination of H&E stained decalcified section showed cellular fibrous connective tissue with immature bony trabeculae with entrapped osteocytes in lacunae, lined by flattened to angular cells with moderate to ample amount of cytoplasm and deep basophilic nuclei (osteoblastic rimming) (Figure 5). Discernible numerous reversal lines were seen in the mineralized tissue (Figure 6). Based on this a final diagnosis of osteoblastoma was made. Complete excision of the tumor mass was planned under general anesthesia. Cut section of the lesion on gross was brown with gritty consistency (Figure 4)**.** Again histopathological section confirmed the diagnosis of osteoblastoma. There was no sign of recurrence on a follow up of one year.

Discussion

The first case of osteoblastoma of the maxilla was reported by Borello and Sedano in 1967 [2]. In maxillofacial region mandible is more commonly affected than maxilla and often affects mandible posterior region [3]. Males are more oftenly affected than females (M: F 2:1) [6]. It affects patients in the age range of 10-30 years with extremes of 50 – 70 years old[1]. Osteoblastoma shows a variety of sign and symptoms. Patients usually present with a mild painful, localized enlargement in the region of the tumor [2]. From the aforementioned symptoms long standing slowly progressive enlargement with mild pain were noted in the present case. Size is usually between 2-4 cm but large lesions of upto 10 cm has been reported[1]. The tumor usually grows slowly and rarely shows aggressive behavior[2]. On very rare occasions, however these tumors may demonstrate agressive growth, local recurrence and less frequently malignant transformation[5]. The nature of osteoblastoma is still unknown. Jaffe and Lichtenstein suggested that osteoblastoma is a true neoplasm of osteoblastic derivation but others suggested that osteoblastoma occurs as a result of trauma / inflammation. Smith reported that the entity of osteblastoma may be regarded as a peculiar local response of the tissues to injury or even possibly as a localized alteration in bone physiology rather than as a true neoplasm[1].

There are two main clinicopathological entities of osteoblastoma: 1.Benign form, which grows slowly over many years and has well defined sclerotic margin.2. Aggressive form (Epitheloid osteoblastoma, Pseudomalignant osteoblastoma/ Malignant osteoblastoma)[5], exhibits locally aggressive behavior with propensity to recur and has atypical histopathological features [4]. Aggressive osteoblastoma is characterized by plump epitheloid osteoblasts and presence of

multinucleated giant cells and is generally larger than conventional osteoblastomas [4].

Radiographic picture of osteoblastoma is not very consistent and varies from case to case dependent on duration [4]. A combination of radiopaque and radiolucent patterns depending on the degree of calcification and absence of perilesional sclerotic border is general radiographic finding for osteoblastoma. Radiographic differential diagnosis includes fibrous lesions fibro-osseous lesions and odontogenic tumours. Fibro-osseous lesions includes ossifying fibroma and fibrous dysplasia. In early ossifying fibroma a relatively well demarcated radiolucency but later the lesion becomes more mineralized, and manifest as central radiopaque masses surrounded by a radiolucent rim mimicking osteoblastoma and more frequently seen in mandible [4, 5]. Fibrous dysplasias are largely sclerotic and radiographically have classic ground glass appearance with poorly defined borders blending with surrounding normal bone. Among odontogenic tumors cementoblastoma, odontoma, and desmoplastic ameloblastoma may show radiographic similarities, but histopathologically show distinct features [6]. Clinically and radiologically, cementoblastoma is always attached to a tooth root whereas odontomas are hamartomatous lesion having either multiple tooth like mass or a single large radiopaque mass in tooth bearing jaw region, and desmoplastic ameloblastoma is ill defined lytic jaw lesion having mixed radiodensity and ill defined margins[4].

Histologically, osteoblastoma is a bone forming tumor characterized by osteoid and woven bone deposition with abundant osteoblasts that are frequently seen in close association with newly formed bone. Osteoid osteoma is most closely related lesion from a histological aspect but its origin differentiates as the origin of osteoid osteoma is cortical bone and osteoblastoma is medullary origin[1]. Osteoid osteoma is generally of upto 2 cm size and its pain is relieved by prostaglandin inhibitor such as aspirin whereas osteoblastoma is of larger sizes and its pain is not typically relieved by by prostaglandin inhibitor. Osteosarcoma is another entity which needs to be considered while dealing with osteoblastoma. Distiction of osteobastoma from osteosarcoma is based on the absence of atypical mitotic figures cellular pleomorphism, neoplastic cartilage and premeative growth in adjacent bone tissue.

The widely accepted treatment for osteoblastomas is surgical excision. A more conservative approach of surgical curettage has been suggested in the literature. Now Parast et al stated that osteoblastoma has a good prognosis and is best treated by curettage or conservative surgical excision. Considering the recurrence rate of 13.6% for osteoblastomas, surgical excision of the entire tumor would be the preferred treatment as curettage may lead to recurrence [5 6].

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Legends Figure

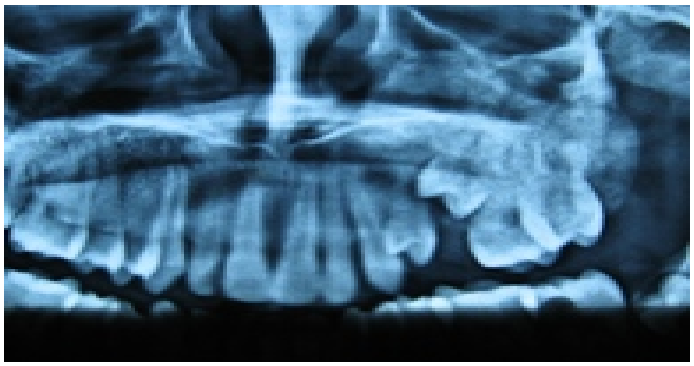

Figure 1: Panoramic radiograph showing radio-opaque mass in the left maxilla irt 23-26 with displacement of 24,25 and 26.

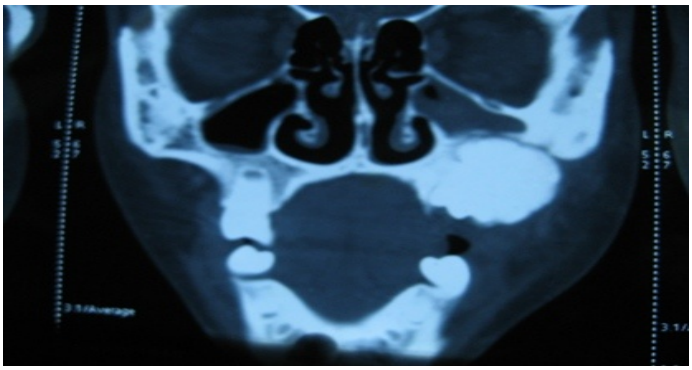

Figure : 2 Computed tomographic images showing large well defined smoothly marginated, lobuted expansile lesion involving left maxilla and whole left maxillary antrum was calcified.

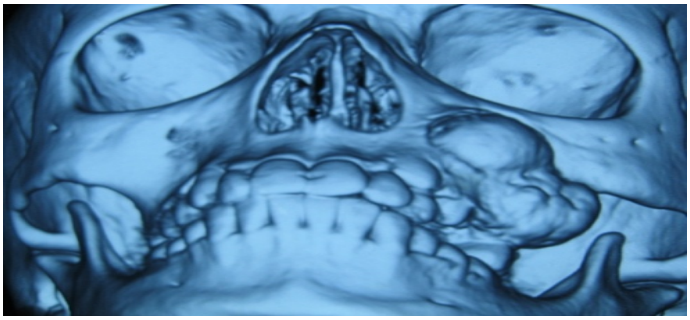

Figure 3: 3D reconstruction image showing an expansile bony destruction in region 24, 25 and 26.

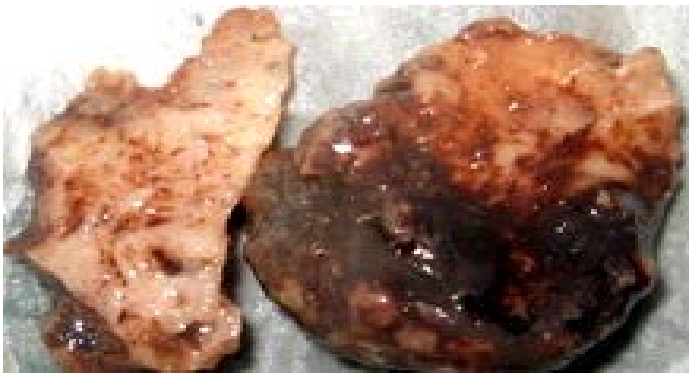

Figure 4: Excised specimen.

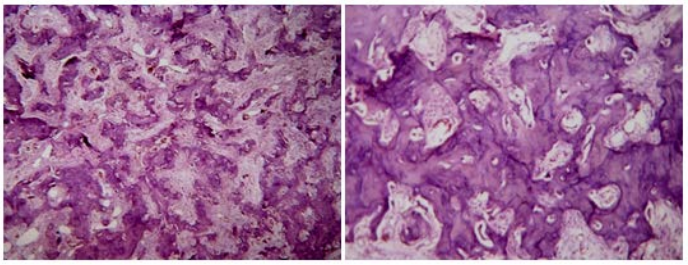

Figure 5: Histopathological examination shows cellular fibrous connective tissue with immature bony trabeculae lined by flattened to angular cells with deep basophilic nuclei (osteoblastic rimming) (H&E 10 x and 40 x respectively).

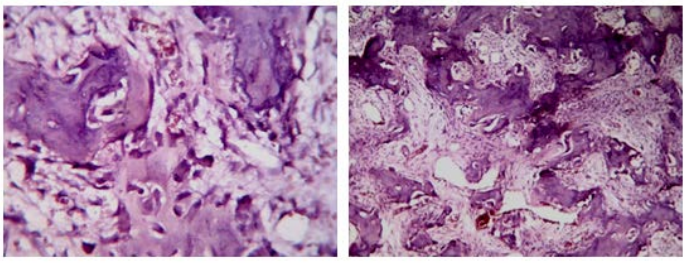

Figure 6: Histopathological examination shows irregular trabeculae with entrapped osteocytes showing reversal lines (H&E 10x and 40 x).