OSTEOBLASTOMA OF THE LEFT MANDIBLE: CASE REPORT

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ABSTRACT

Osteoblastoma, a benign osteoblastic bone tumor, is rarely localized in the jaw. Mandibular involvement is more frequent than maxillary involvement. It is usually located at the posterior mandible and it has been observed two fold more in males compared with females. Hereby, we present here a seven-year-old female patient with left jaw pain and swelling.

Keywords: Osteoblastoma, osteoblastic, mandible, posterior location

INTRODUCTION

Osteoblastoma is a benign osteoblastic bone tumor constitute about 1% of all bone tumors1-4. Mandibular involvement is rare. Usually manifests as a painless swelling, and pain fails to respond to drugs of salicylates and nonsteroidal anti-inflammatory (NSAID)1. Radiological appearance is, well-defined expansile osteolytic bone lesion. We aim to discuss an osteoblastoma case located at the posterolateral portion of the mandible with radiological-histopathological features and differential diagnosis.

CASE STUDY

Seven-year-old girl admitted to our hospital with swelling in his left jaw remaining at a constant size for four months. There was a history of tooth extraction prior to 20 days in the left side of the jaw. At the local physical examination lump was found approximately 2X2 cm in size. At maxillofacial CT examination; 4 x 2 cm lytic lesion was detected in the posterolateral part of left mandibular corpus accompanied by dense calcified component and cortical irregularity in the bone (Figure 1). At MRI examination; it was hypointense on T1 series and except hypointense central calcific component it was isointense on T2 series. After intravenous injection of contrast material it showed intense enhancement except central calcific component. Benign bone lesions were considered in the differential diagnosis such as giant cell granuloma, osteoblastoma, cementoblastoma,
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aneurysmal bone cyst. The lesion was surgically excised and sent for pathological examination. At histological examination; there was benign tumoral lesion which consist of trabecular structure with thin osteoid and benign looking osteoblasts were observed around (Figure 3), there was no evidence of malignancy and diagnosed as osteoblastoma. Postoperatively the patient did well and no recurrence occurred in the short-term follow-up.

Figure 1. Large lytic lesion at the left mandibular corpus separate from the tooth root. a. At axial CT image, calcified component is shown with arrow . b and c. Coronal multiplanar reformatted (MPR) CT images d. Three-dimensional volume-rendering image.

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Figure 2. Mass lesion at the left mandibular corpus, which is hypointense on T1-weighted images, isointense on T2-weighted images and enhancing intensively on contrast-enhanced series. a. Axial T1-weighted image b. Axial fat-suppressed T2-weighted image c. Coronal fat-suppressed T2-weighted image d. After contrast administration Coronal fat-suppressed T1-weighted image.
Figure 3. The tumor with felty osteoid structures. Around osteoid, there are benign looking osteoblasts. a. cellular b. hypocellular areas HE 200 x.

DISCUSSION

Benign osteoblastoma is a benign osteoblastic bone tumor which was reported first time in 1956 by Jaffe and Lichtenstein. It consists 1% of all bone tumors and of all benign bone tumors account for approximately 3% - 4%. Osteoblastoma settles in about 11% of the skull base and generates about half of their mandibular involvement. The etiology is unknown, but it is thought to be a true neoplasm of the bone. The tumor is two times more common in men. The tumor may be seen between 5-78 years of age and is often seen in third decade. It is usually detected on vertebral column, sacrum, calvarium, long bones and small bones of the foot. Placement in the jaw has been reported at the first time in 1956 by Borello and Sedano. Mandibular involvement is more frequent than the maxillary involvement. Usually the posterior part of the mandible is held, in our case it was located in the left posterolateral region.

Lesion size is usually between 2 - 4 cm, but may grow until 10 cm in diameter. Clinically, osteoblastoma is a solitary lesion with the size of 2 cm and up, which is usually painless. If pain occurs, it is unresponsive to medication of aspirin and nonsteroidal anti-inflammatory (NSAID) drugs. Radiographic appearance varies according to tumor size and extent. Osteoblastomas are expansile lytic bone lesions, usually more than 2 cm in diameter. Reactive sclerosis is not common in the surrounding tissue. Soft tissue components and the matrix mineralization may be seen. At CT examination; outside the matrix mineralization it is seen as lytic lesions with low attenuation. At MRI examination; it is hypointense on T1-weighted images and iso-hyperintense on T2-weighted images. Mineralized calcific components is low signal on T2-weighted images. Depending on the tumor matrix mineralization degree; the lesion can be seen in mixed intensity or completely hypointense. All tumors enhance after intravenous injection of contrast material.
The variable signal intensity of lesion on MRI causes the limitation of tumor characterization and local staging.\textsuperscript{13}

Histopathologically, the tumor typically consists of osteoid trabeculae with variable degree of calcification.\textsuperscript{15}

The most important diagnostic factor is to differentiate osteoblastoma from the osteoblastic osteosarcoma.\textsuperscript{16} Because of variability of histologic appearance, it can be difficult to distinguish them but dysplastic view, the invasion of the bone, high rate of mitotic activity or the presence of atypical mitosis facilitates the diagnosis of osteosarcoma.\textsuperscript{5, 17-19}

We didn’t consider osteosarcoma radiologically because there was no aggressive periosteal reaction, cortical destruction and soft tissue swelling. Furthermore, histological examination findings were suggestive of no malignancy.

Histologic appearance is similar of osteoblastoma and osteoid osteoma but they have different history and clinical findings.\textsuperscript{20}

The size of osteoid osteoma smaller; usually less than 2 cm in diameter. It causes nocturnal pain and responses to aspirin and NSAID drugs. Osteoblastoma may show progression or may be local aggressive. But osteoid osteoma is prone to the regression.\textsuperscript{20} Typical radiological findings of osteoid osteoma is intracortical nidus with variable amounts of mineralization. On CT, the nidus is seen like an oval or round shaped hypodensity, with central hyperdense component showing mineralization.\textsuperscript{21} On dynamic CT, hypervascular nidus shows enhancement.\textsuperscript{22}

In our case; because of clinical findings, the lesion size and at the radiological examinations absence of nidus, we didn’t consider the diagnosis of osteoid osteoma. It may be difficult to distinguish osteoblastoma from cementoblasto which has a similar histopathologic features. Clinical findings of cementoblasto are jaw pain and swelling, it usually locates at the posterior mandible like osteoblastoma, but because of cementoblasto locates adjacent tooth roots and non-lytic apperance, differential diagnosis is made easily.\textsuperscript{23}

In our case, the lesion was not adjacent to the tooth root and radiologic apperance was lytic, we didn’t consider the diagnosis of cementoblasto.

"Aggressive osteoblastoma" is a term used for growing locally aggressive lesions with atypical histologic features.\textsuperscript{19} The presence of osteoclast-like giant cells with prominent large osteoblasts and atypical osteoid differs from conventional osteoblastoma. It occurs in older patients and usually over 30 years of age.\textsuperscript{24} It causes fever, pain, anorexia, hypergammaglobulinemia and cachexia. It has similar radiological findings like osteoblastoma.

Central giant cell granuloma has a similar clinical and radiological features with osteoblastoma at initial period. In time; the lesion progresses midline, moves between the tooth roots, resorption develops in the lamina dura and teeth. Radiological appearance is multilocular cystic lesion with internal septation. Local excision and curettage is the preferred treatment method. Recurrence is rare.\textsuperscript{25} In our case, no recurrence occurred in short-term follow-up.
CONCLUSION

In conclusion; Mandible is an uncommon localization for osteoblastoma, it should be considered in the presence of swelling in this region. Cross-sectional imaging gives useful information, definitive diagnosis is made histopathologically. In histological examination; it is very important to distinguish osteoblastoma from osteoblastic osteosarcoma. Although recurrence is rare, followed recommended.

CONSENT

The authors obtained written, informed consent from the patient for the publication of this article.

COMPETING INTERESTS

There is no conflict of interest.

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