Original Research Paper

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"CASE REPORT: DIAGNOSTIC DILEMMA OF MANDIBULAR OSTEOSARCOMA MIMICKING A BENIGN LESION"

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ABSTRACT Osteosarcoma of the mandible, a rare malignant tumor, can present with features resembling benign lesions, complicating diagnosis. In this case report, we discuss a patient with mandibular osteosarcoma that initially presented with features suggestive of a benign lesion. The malignant nature of the lesion was ultimately revealed by histopathologic examination. This case highlights the importance of thorough evaluation and biopsy in distinguishing between benign and malignant conditions. Early and accurate diagnosis is crucial for timely treatment and improved patient outcomes.

KEYWORDS : Osteosarcoma, giant cell lesions, bone tumours

INTRODUCTION

Osteosarcoma (OS), a malignant bone tumor characterized by the production of osteoid tissue, is relatively rare in the mandible compared to its occurrence in the long bones. Mandibular osteosarcoma represents a diagnostic challenge due to its ability to mimic benign lesions both clinically and radiographically. This deceptive presentation can lead to delays in diagnosis and treatment, potentially impacting patient outcomes. There exists the critical need for thorough evaluation and a high index of suspicion in atypical presentations of mandibular lesions.

Case Report

A 22/f came with chief complaint of swelling over right mandibular posterior region for 2 months which was insidious in onset, slow growing, not associated with pain. There was history of blunt trauma in the same region one year back. Swelling was roughly 1×1cm, 2cm above lower border of mandible. On intraoral examination there was root canal opening done with respect to 42, 43, 44, 45, no change in color of mucosa, no active pus discharge. On palpation there was buccal cortical expansion, no mobility of teeth, tenderness with respect to 43, 44,45, no paresthesia. On aspiration, blood-tinged aspirate was obtained, cytology revealed multinucleated giant cells in hemorrhagic background. CBCT revealed single well defined hypodense lesion of approx. 25.7×12.1mm extending from mesial of 31 to distal of 45 with thinning of labial and lingual cortices with perforation. Involvement of inferior alveolar canal of same side seen, no root resorption noted. Patient's serum ca, PTH, ALP was in normal range. The first differential diagnosis made was central giant cell granuloma considering the age, location, presence of multinucleated giant cells in the aspirate. Others included giant cell tumour, traumatic bone cyst, eosinophillic granuloma. Considering age of the patient curettage and peripheral ostectomy with extraction of 41-46 was planned. The defect was primarily closed. Specimen was sent for histopathological examination which revealed atypical spindle to oval neoplastic osteoblast with marked pleomorphism, hyperchromatism and abnormal mitosis laying down multiple trabeculae of neoplastic bone rimming with malignant osteoblast. Numerous scattered multinucleated giant cells were seen, Features were suggestive of osteosarcoma. Patient was sent for radiotherapy. Patient didn't appear for follow up since then.

Fig.1

Fig. 2

Fig. 3

Fig. 1 Pre operative front profile, fig. 2 side profile, fig. 3 intraoral picture with root canal opening with respect to 42 43 44 45

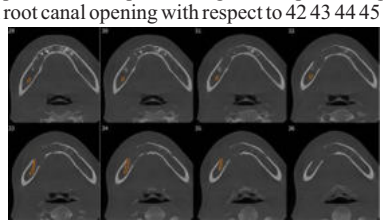

Fig. 4

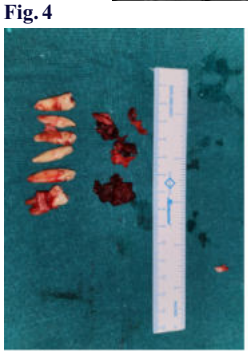

Fig. 5.

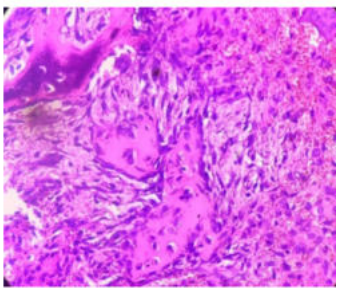

Fig. 6

Fig. 4 axial section of CBCT, Fig. 5 curetted tissue with extracted teeth, fig. 6 Histopathologic picture showing features of osteosarcoma

DISCUSSION

Osteosarcoma (OS) represents 0.2% of all malignancies and is a high-grade primary bone cancer with a high rate of metastasis and local recurrence. [1]. The long bones in the limbs are the most often afflicted anatomical areas. Head and neck OS is uncommon, making up fewer than 10% of all OS cases. [2] 30 to 39 years old is the highest age range for jaw tumours. In cases that have been documented, males somewhat outweigh females [3]. Mandible and maxilla are equally impacted. In decreasing order of frequency, mandibular lesions can be seen in the body, symphysis, angle, or ramus. Because OS patients often present with nonspecific symptoms like as pain, swelling, loose teeth, separation of teeth, and paraesthesia, they are often misinterpreted as periapical lesions, impactions, or odontogenic lesions [4]. Misdiagnosis results in alternate treatments that promote tumour metastasis and dissemination, such as enucleation, marsupialization, curettage, or segmental responses. OS can be generically classified as Primary or Secondary based on their aetiology. The aetiology of primary tumours is uncertain, while other environmental variables and genetic influences may play a role. Secondary tumours typically arise in elderly people with fibrous dysplasia, skeletal Paget's disease, or as a post-treatment effect of craniofacial radiation therapy. Since the

patient had no known risk factors for the lesion, such as fibrous dysplasia, radiation exposure in the past, or Paget's disease, the lesion in our case was classified as primary. In addition, radiographs of all the long bones were ordered in light of the final diagnosis, and none of them revealed any metastases. Three subtypes of conventional OS—the most common kind of OS—are distinguished: chondroblastic, fibroblastic, and osteoblastic OS [1]. About 80% of cases of distant metastases occur, and 20–30% of patients survive for five years following surgery without the use of adjuvant and neoadjuvant treatment. Furthermore, when the main tumour is first discovered, 20% of individuals with OS have distant metastases, often in the lungs [5]. Benign bone diseases and low-grade OS, such as parosteal and central OS, and intermediate-grade OS, like periosteal OS, can occasionally coexist morphologically and clinically. Osteosarcoma of the jaw is characterised by swelling, often accompanied by numbness, and restricted mouth opening, not seen in present case. The lesion's well-defined margins and the lack of a distinct periosteal reaction in the CBCT pictures supported its benign nature. These tumours may be misinterpreted as Ewing sarcoma, aneurysmal bone cyst, or giant cell tumour of the bone, respectively [6, 7]. The radiographic appearance of OS may vary according on the quantity of bone produced by the tumour. The tumor's perimeter exhibits the characteristic “sunray” look, which is not pathognomonic for jaw OS. Depending on the degree of ossification, the lesions can be primarily radiolucent, radio-opaque, or any combination of these [8]. In the early stages of the illness, the changes could be extremely subtle and challenging to notice. One traditional indicator of early osteosarcoma has been characterised as widened periodontal ligament space [9]. Histologically, OS are made up of malignant spindle cells that form immature or osteoid bone foci. Roughly 50% of the lesions in the jaws show cartilaginous differentiation [10]. OS of the jaws is generally more well-differentiated than that of the long bones, and some tumours have a histological appearance that is surprisingly bland. Therefore, the diagnosis depends on the histological features' agreement with the clinical and radiographic data. The way that head and neck OS is managed differs greatly throughout institutions and is not standardised. There are two methods that OS of the jaws should be treated. While it cannot be considered the only treatment option, radical surgery is the mainstay for OS of the jaws and long bones. Because of the anatomical restrictions that preclude broad resection in jaw OS, a clear surgical margin of at least 1 cm has been advised. This margin, meanwhile, may still be insufficient and likely raises the possibility of a local recurrence. Thus, if reconstructive surgery is feasible, 2-cm bone margins and at least 5-mm soft tissue margins have been advised [6]. Granowski LeCornu et al. additionally, Seng et al. showed a correlation between the metric width of the resection margin and an improvement in survival [11]. OS of the mandible exhibit a better prognosis than those of the maxilla because tumor-free resection margins are easier to reach in the mandible [12]. It is commonly known that neoadjuvant and adjuvant therapy can be used in addition. Compared to traditional osteosarcomas, OS of the jaws have a better prognosis and a higher 5-year survival rate, which can range from 10% to 85% [13]. Kämmerer and associates said that the most common reason for OS death was a local recurrence [14]. Neoadjuvant chemotherapy, adjuvant chemotherapy, and surgical excision of the original tumour are the current gold standards of therapy for tubular bone OS. 60–70% is now the 5-year survival rate for OS, mostly because to chemotherapy.

CONCLUSION

This case report underscores the diagnostic complexities posed by osteosarcoma of the mandible, especially when it presents with features mimicking benign lesions. The atypical presentation can lead to misdiagnosis or delayed diagnosis, emphasizing the necessity for careful and comprehensive evaluation of mandibular masses. Clinicians should maintain a high index of suspicion and consider osteosarcoma in the differential diagnosis when encountering lesions with ambiguous characteristics. Early and accurate diagnosis is crucial for timely intervention, which significantly influences the prognosis and overall outcome for the patient. This case highlights the importance of a multidisciplinary approach in managing such deceptive presentations to ensure optimal patient care.

Declaration by Author
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