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Case Report

A Case Report of an Unusual Localization of Osteosarcoma:The Maxillary Sinus

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Abstract

Osteosarcoma is one of the most common primary bone tumors. Clinically, it is mostly presented by swelling with or without pain and loosening teeth. Imaging, especially CT scan can show the invasive masticator space mass which is often larger than 4 cm. MRI is realized for soft tissue extension which is found in 86% of cases. The cranio-facial localization of the osteosarcoma is rare. We report the case of 34-year-old woman presenting for a right jugal mass revealing an osteosarcoma of the right maxillary sinus.

Keywords: *Osteosarcoma; Maxillary Sinus; MRI*

Introduction

Osteosarcoma is one of the most common primary bone tumors. The cranio-facial localization is less common than long bones. Imaging has a primordial role in the diagnosis, especially CT scan. MRI is realized for soft tissue extension which is found in 86% of cases. The diagnosis is based on anatomopathological analysis, and therefore a biopsy is necessary for the therapeutic management [1,2].

Case Report

A 34-year-old woman with no previous history, presented to the emergency department for a right jugal mass progressively increased in size. The clinical examination found a solid right jugal mass, fixed and painful on palpation measuring 6cm (Figure 1). The rest of the clinical examination was normal. A CT scans was initially performed showing a large lytic tumor of the right maxillary sinus with irregular contours, enhanced heterogeneously, envading the right maxillary bone (Figure 2). An MRI was performed (Figure 3) for a better lesional characterization. It showed an osteolytic tumor of the right maxillary sinus, enhanced heterogeneously after gadolinium injection, with diffusion restriction and low ADC (1,1. 10-3 mm^2/s). it invaded the right infra-temporal fossa, the small and large zygomatic muscles and the subcutaneous jugal soft tissues with partial bone lysis of the right zygomatic arcade. it infiltrated the maxillary bone and came into contact with the orbital floor without endo-orbital extension.

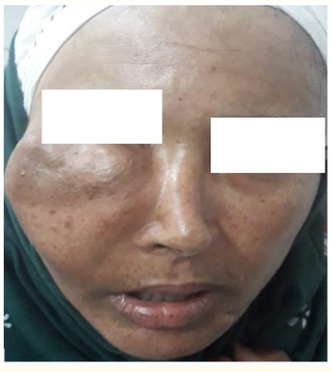

Figure 1: *Photo showing the right jugal mass.*

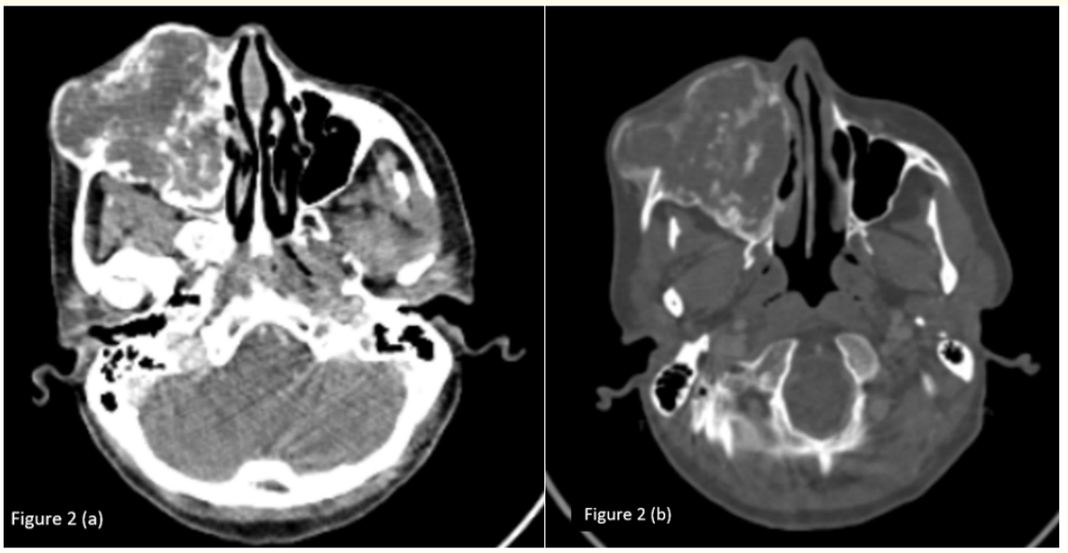

Figure 2: *(a) ct scan axial view with soft tissue window shows large mass of the right maxillary sinus with irregular contours, heterogeneous contrast up-take, envading the right maxillary bone.*
(b) ct scan axial view with bone window shows that the mass is responsible for bone lysis.

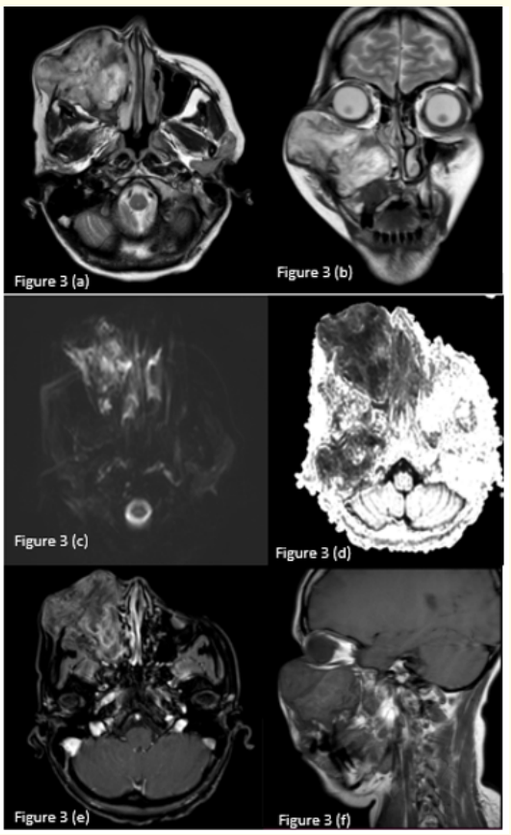

Figure 3: *a) axial T2 weighted sequence shows a high signal intensity mass of the right maxillary sinus invading the right infra-temporal fossa the small and large zygomatic muscles and the subcutaneous jugal soft tissues with partial bone lysis of the right zygomatic arcade. b) coronal T2 weighted sequence shows the mass in contact with the orbital floor without endo-orbital extension. c)and b) axial diffusion weighted sequence high-signal intensity on DWI with corresponding reduced apparent diffusion coefficient (ADC) values (1,1. 10-3 mm2/s). e) T1 weighted sequencef) gadolinium enhanced T1 weighted fat- suppressed sequence show a heterogenous contrast up-take of the mass.*

A biopsy of the mass was realized and the anatomopathological findings were in favor of malignant sarcomatous proliferation occurring in diffuse sheets and developing tumor osteoid spans and islets. This proliferation is directly surrounded by tumor cells and containing malignant cells in the osteoblasts. The tumor cells were undifferentiated spindle-shaped with more or less abundant cytoplasm and comprising a nucleus increased in size with marked anisokaryosis. Chromatin was clumped (Figure 4).

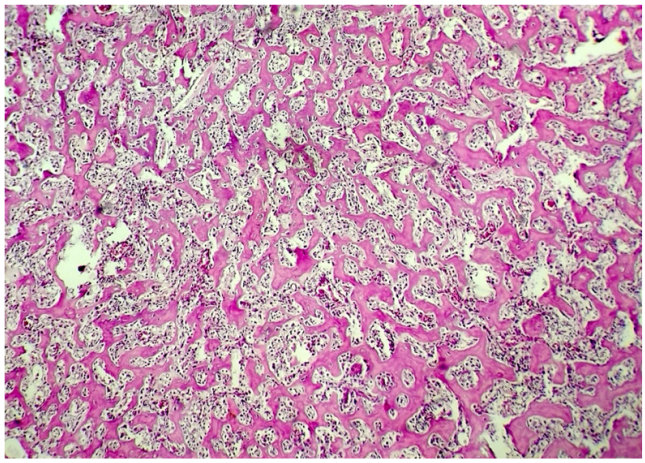

Figure 4: *Histological appearance of osteosarcoma: malignant sarcomatous proliferation occurring in diffuse sheets and developing tumor osteoid spans and islets surrounded by tumor cells that are undifferentiated spindle-shaped with more orless abundant cytoplasm and comprising a nucleus increased in size with marked anisokaryosis. The presence of malignant cells in the osteoplasts. Abnormal chromatin clumping.*

A chest abdomen pelvic CT was performed for the extension assessment, showing no distant metastasis.

A surgical excision of the tumor were performed with neoadjuvant radiotherapy and chemotherapy with a good evolution.

Discussion

Osteosarcoma is one of the most common primary bone tumors, in which the neoplastic cells produce osteoid or bone [1]. It usually affects metaphyseal growth plates of long bones such as femur, tibia or humerus [2]. A cranio-facial localization of the disease is rare, it represents only 6 to 10% of all osteosarcomas [3]. Within the craniofacial region, the most frequent site involved are equally the mandible and the maxilla followed by and the skull [3-5].

The average age of patients with this particular localization is in the third to fourth decade of life, which is about 10 to 15 years older than those with osteosarcomas of other regions (long bones).

A modest male predilection is shown in some studies [1], others propose a more of a feminine predilection [6], while other reports have found an equal gender distribution [7].

The risk factors are similar to osteosarcoma of other regions: previous radiation, trauma, Paget's disease, fibrous dysplasia, or other pre-existing benign bony lesions [8].

The clinical presentation is mostly represented by swelling with or without pain and loosening teeth [1], other symptoms such as nasal bleeding, numbness, altered sensation or weight loss can be seen in some cases [8].

Radiographic features are similar to osteosarcoma in long bones. Usually, the size of lesions is considerable when first observed [2].

On plains radiographs findings are not specific, lesions are usually lytic but they may also be sclerotic or mixed [1]. Periosteal reactions are often found, a sunburst pattern with radiating spicules of bone is considered a characteristic feature of osteosarcoma off the jaw [9,10]. Unilateral symmetric widening of periodontal ligament space of teeth in absence of dental disease can also be found. soft tissue infiltration and neoplastic tissue ossification can be present [11].

These lesions should be followed by CT-scan, that confirms an invasive masticator space mass that is often large (> 4 cm), poorly marginated or more and less multilobulated, typically heterogeneous with variable enhancement pattern. Soft tissue extension is found in 86% of cases, and periosteal reaction in 62% [12].

MR is more effective in the evaluation of soft tissues: T1 weighted images provide a better anatomic definition, it shows a heterogeneously iso to hyperintense mass in comparison with normal muscle. T2 weighted images demonstrate the peritumoral edematous reaction and a mass that is heterogeneously hyperintense to muscle. Diffusion weighted images can help to distinguish between the osteosarcoma and infection. An ADC value lower than 1.20 x 10-3 mm^2 s^{-1} is more suggestive of malignancy, while a higher value suggest infection. T1 weighted images C+ shows a typical heterogeneous enhancement [12,13].

Conclusion

Osteosarcoma of the maxilla is less common than the other localization. CT and MR imagining have an important role in the diagnosis and the evaluation of its extent for the surgical planning.

Conflict of Interest

I declare that no financial interest or conflict of interest exists.

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