

A rare case of breast carcinoma metastasis to mandible and vertebrae

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ABSTRACT

Oral cavity metastases are considered rare and represent approximately 1% of all oral malignancies. Due to their rarity and atypical clinical and radiographic appearance, metastatic lesions are considered a diagnostic challenge. This article presents a rare case of breast carcinoma with metastasis to mandible and vertebrae. A case is presented of a 40-year-old female patient with a history of breast carcinoma which was surgically treated approximately 2 years back. The diagnosis of metastatic breast carcinoma was confirmed by radiographic examination, bone scan and histopathologic findings. She was referred to radiotherapy department since it was not amenable to surgery due to metastasis in vertebrae. A high index of clinical suspicion of metastatic cancer is necessary when evaluating patients who complaint of jaw pain and swelling with a history of non-head and neck carcinoma.

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INTRODUCTION

Malignant tumors metastatic to the oral cavity are uncommon, comprising about 1% of newly diagnosed oral malignancies.^[1-4] The mandible is affected more frequently than the maxilla, with a predilection for the areas distal to the canines, including the body and ramus.^[1,4-6]

Cancers from almost any primary site can metastasize to the jaws, but those from the breast, lung, kidney and prostate do so most frequently.^[7-9] In males, primary cancer of the lung most commonly metastasize to the jaws followed in frequency by prostatic and renal cancers. In females, jaw metastasis most commonly originates from breast primaries followed by primaries of the adrenal and genitalia.^[1,5,10]

Patients with metastatic jaw disease demonstrate various clinical signs and symptoms that include pain,

swelling, paresthesia of the lip, loose or extruded teeth, halitosis, regional lymphadenopathy, mandibular nerve involvement and numb-chin syndrome, cortical expansion of the jawbones, ulceration, trismus, exophytic growth and rarely pathological fracture.^[1,4,6] The disease might be totally asymptomatic as well.^[1-13] These symptoms may not draw attention to a potential malignancy at the time of the initial presentation.^[13]

In addition, sometimes these lesions might be mistaken with inflammatory or infectious diseases of the jaws and adjacent structures as a result of clinical and radiographic similarities.^[12,14-16] Therefore, early diagnosis requires a high degree of astuteness and histopathologic evaluation. In spite of their rarity, metastatic diseases of the jaw must be considered in the differential diagnosis of unknown jaw lesions especially in patients with a history of malignancy elsewhere in the body.^[17]

In this report, a metastatic tumor of the mandible originating from a breast carcinoma, with atypical clinical and radiographic presentation is discussed.

CASE REPORT

The present case report is about a 40-year-old female

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patient with the complaints of a swelling in the mandibular angle region of 5 months duration she was referred to our department by her oncologist with the differential diagnosis of osteomyelitis or osteogenic sarcoma. On palpation a hard, non-tender, localized, round swelling of size 4 cm × 3 cm on left angle-ramus region was felt [Figure 1]. There were no palpable regional lymph nodes. Oral cavity examination did not reveal the existence of any ulcer, fistula or wound except missing lower left first molar.

Her medical history revealed a modified radical mastectomy 2 years back for invasive ductal carcinoma of the left breast. The tumor was positive for c-erbB-2(HER-2/neu) assay with score 3 plus in immunohistochemistry. Hence, she was on adjuvant hormone therapy.

A panoramic radiograph showed a retained root remnant of left mandibular first molar, carious second molar and an area of rarefaction on left angle region with indistinguishable margin [Figure 2].

Serial axial and coronal computed tomography (CT) scan of mandible (1 mm-thick slice) showed destructive lesion on left angle of mandible extending in to the ramus [Figure 3]. Features like Codman triangle and sunray appearance were seen in the margins of the lesion and minimum soft-tissue component were seen adjacent to it [Figure 4 axial view, Figure 5 coronal view].

The CT scan differential diagnosis included chronic osteomyelitis, osteogenic sarcoma and secondary metastasis. A fine-needle aspiration cytology (FNAC) revealed loosely cohesive group of epithelial cell having increased N: C ratio and hyperchromatic nuclei in adenoid pattern [Figure 6]. It was diagnosed as infiltration from poorly differentiated adenocarcinoma, possibly of mammary ductal origin.

A full body radionuclide scan was carried out and it was suggestive of skeletal metastases. A technetium-99m-methylene diphosphonate bone scan located a region of increased radioisotope uptake in the ramus of mandible on the left side as well as in the T-2 and T-10 vertebrae [Figure 7].



Figure 1: Swelling on left mandibular angle region



Figure 2: Orthopantomogram shows an area of rarefaction on left angle region with indistinguishable margin

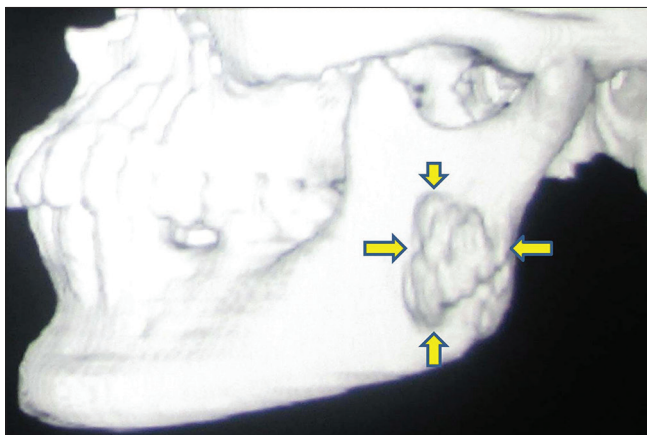


Figure 3: 3D computed tomography scan shows destructive lesion on left angle of mandible extending in to the ramus

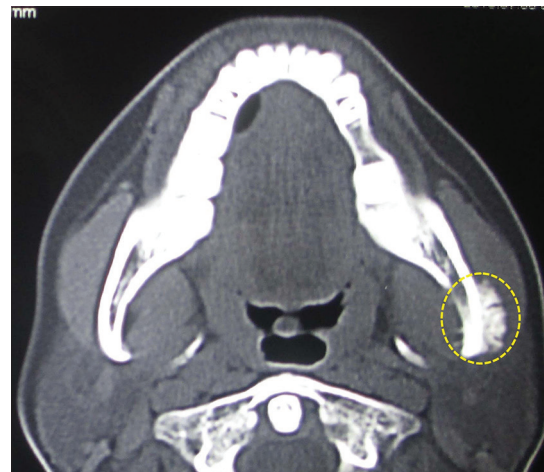


Figure 4: Axial computed tomography scan showing destructive lesion on left angle of mandible extending into the ramus. Codman triangle and sunray appearance seen in the margin of the lesion

The patient was referred back to her oncologist for further treatment since it was not amenable to surgical management.

DISCUSSION

A review of literature revealed that intraoral metastatic lesions have varied clinical presentations.^[5] Patients often have vague or innocuous symptoms that can mimic dental infections and sometimes it might be asymptomatic.^[1,11] In a review of 114 cases of metastatic jaw tumors by D'Silva *et al.*,^[1] found that the most common jaw symptom was pain. Other signs and symptoms included swelling, presence of intraoral mass, loose or extruded teeth, cortical expansion, regional lymphadenopathy, gum irritation, ulceration, exophytic growth, halitosis, numbness or paresthesia of the lower lip and trismus.^[4,11-13] In the present case the patient complained only of a swelling on left mandibular angle region.

The classical radiographic appearance of metastatic disease in the jaws varies from well-circumscribed to poorly circumscribed radiolucency, often described as a "moth-eaten" appearance. Metastatic carcinomas from the breast and prostate might stimulate bone formation; hence these might appear as mixed radiopaque radiolucent lesions.^[1] Interestingly, in a study of 673 cases by Hirshberg *et al.*, in 2008 reported that approximately 5% of the cases did not show any radiographic changes.^[5] In the present case the radiographic findings were that of a destructive lesion on the ramus region and a sunray appearance in the margin of the lesion [Figures 4 and 5].

As the clinical and radiographic presentation of a metastatic lesion can often be deceiving there lies the possibility of a misdiagnosis of a benign or malignant process. Therefore in such cases, especially in patients with a history of a malignant disease, biopsy is mandatory.^[5,15]

Taking a thorough medical history along with proper clinical and laboratory investigation including immunohistochemical staining might facilitate the diagnosis.^[1] In the present case, history of breast cancer was known and therefore an FNAC was performed. In addition, the pathologic slides of the breast tumor were requested and compared with the jaw lesion [Figures 6 and 8], which confirmed the final diagnosis.

Most patients with a metastatic tumor in the oral cavity also develop metastases at other sites, often leaving no other option other than palliation.^[2,12,13,16] In this case, the bone scan at the time of diagnosis revealed additional metastasis in vertebrae.

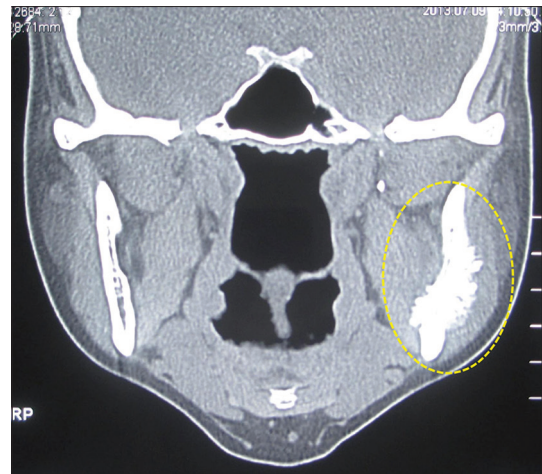


Figure 5: Coronal computed tomography scan showing destructive lesion on left angle of mandible extending into the ramus. Codman triangle and sunray appearance seen in the margin of the lesion

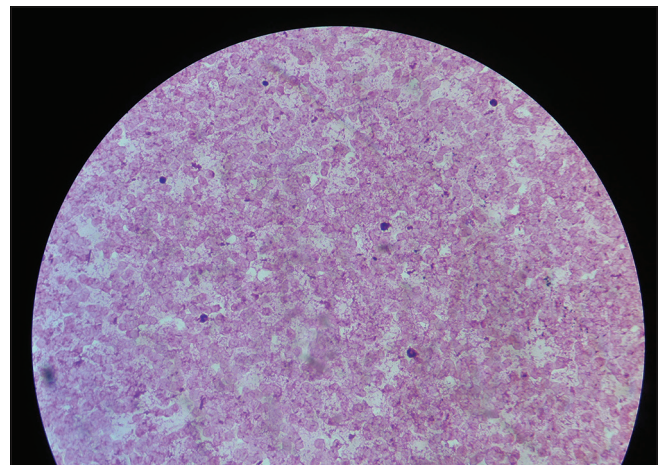


Figure 6: Photomicrograph of fine-needle aspiration cytology (x40)-poorly differentiated adenocarcinoma, possibly of mammary ductal origin

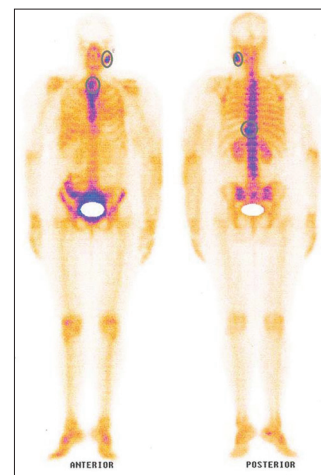


Figure 7: Skeletal scintigraphy showing abnormally increased focal trace uptake of technetium-99m isotope in the ramus of mandible on the left side and T1, T10 vertebrae

Regardless of the site of origin, oral cavity metastases are reported as the first clinical symptom of a primary

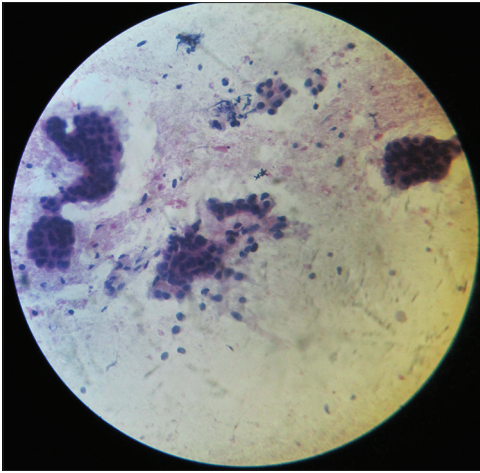


Figure 8: Photomicrograph of radical mastectomy specimen (x40)-invasive ductal carcinoma of breast with metastasis

malignancy in 22-33% of patients.^[18-20] Several authors have reported that adenocarcinoma is the most common histologic type and that breast adenocarcinoma is the most common malignancy that metastasizes to the mandible or maxilla.^[2,20,21]

Pain relief and avoidance of possible infections, fractures or hemorrhage should be the major goals in the management.^[20] The management of metastatic breast carcinomas of the oral cavity is primarily palliative and may include radiotherapy, chemotherapy, hormone therapy and rarely surgical intervention.

CONCLUSION

Despite their rarity, metastatic tumors should be considered in the differential diagnosis of inflammatory and reactive lesions of the jaws. This case emphasizes the importance of a complete and careful work-up with particular attention to detailed medical history as well as careful clinical, radiographic and histopathologic examination. As these lesions are associated with a poor prognosis, early detection is of extreme importance.

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