

Metastatic Breast Carcinoma Initially Diagnosed as Pulpal/Periapical Disease: A Case Report

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Abstract

Introduction: Metastatic tumors to oral cavity and jaws are rare, and mandible is the most commonly involved location. Because the most common jaw symptom is pain, these lesions could be misdiagnosed as pathologic entities with dental origin. In this article a case of metastatic breast carcinoma initially diagnosed as pulpal/periapical disease is presented and discussed. **Methods:** A 40-year-old female patient was referred to our department with vague pain in right mandibular area. Clinical and radiographic examinations were performed, leading to the initial diagnosis. Patient's medical history was reevaluated, and an incisional biopsy was performed to confirm the final diagnosis. **Results:** Regarding the initial signs and symptoms, a pulpal/periapical inflammatory process was considered in the differential diagnosis. Because lip paresthesia was also noted, a more aggressive process was suspected. Patient's medical records and histopathologic slides were requested and reviewed carefully. The diagnosis of metastatic breast carcinoma was confirmed by comparing the histopathologic findings of the jaw lesion with previous slides of the breast. **Conclusions:** Despite their rarity, metastatic tumors should be considered in the differential diagnosis of inflammatory and reactive lesions of the jaws. These lesions might be diagnosed first by the patient's dentist or by the maxillofacial surgeon. This case emphasized the importance of a complete and careful work-up with particular attention to detailed medical history as well as careful clinical and radiographic inspection for unusual signs and symptoms. (*J Endod* 2010;36:922–925)

Key Words

Breast carcinoma, mandible, metastasis, mouth neoplasm

Malignant tumors metastatic to the oral cavity are uncommon, comprising about 1% of newly diagnosed oral malignancies (1–4). They most commonly involve the jawbones, and mandible is the most common site of involvement (2, 3, 5). Although no particular malignancy seems to favor the oral cavity, some primary tumors are found more often than others (2). Some tumors prefer the jawbones as their metastatic target (5, 6). Patients with metastatic jaw disease demonstrate various clinical signs and symptoms that include pain, swelling, paresthesia of the lip, loose or extruded teeth, regional lymphadenopathy, mandibular nerve involvement and numb-chin syndrome, cortical expansion of the jawbones, ulceration, and exophytic growth. The disease might be totally asymptomatic as well (7–9). These symptoms do not draw attention to a potential malignancy at the time of the initial presentation (9). 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 (8, 10–12). Therefore, early diagnosis requires a high degree of astuteness, and histopathologic evaluation is essential. 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 cancer (13). In this report, a metastatic tumor of the mandible originating from breast carcinoma, with initial clinical and radiographic presentation of pulpal and periapical disease, is discussed.

Case Report

A 40-year-old female patient was referred to the Department of Oral and Maxillofacial Pathology of Tehran University of Medical Sciences (TUMS) in October 2007, complaining of vague pain in right mandibular second premolar area of 2 months' duration. On clinical examination the oral mucosa appeared normal, and no bony mass or expansion was noted. The premolar tooth was nonvital without any cavity or restoration. Lip paresthesia was also present. The patient did not mention any abnormal medical condition, and a pulpal/periapical inflammatory process was considered in the differential diagnosis.

Radiographic examination revealed a unilocular well-circumscribed radiolucency with ill-defined border in periapical region of the tooth and slight widening of the periodontal ligament. No periosteal reaction or root resorption was observed (Fig. 1). Regarding radiographic findings along with lip paresthesia, a more aggressive process was suspected. Patient's medical history was reevaluated carefully, and at this time she gave a history of breast cancer treated 2 years ago without any evidence of recurrence. Patient's medical records were requested, which revealed the diagnosis of breast cancer that was an invasive ductal carcinoma histologically. The patient was treated with mastectomy followed by chemotherapy and radiotherapy.

An incisional biopsy of the mandibular lesion was performed under local anesthesia and sent to the oral pathology laboratory. Histopathologic examination showed malignant epithelial cells with eosinophilic cytoplasm and pleomorphic, hyperchromatic nuclei arranged in irregular nests and glandular islands in a dense fibrous stroma (Fig. 2).

Previous histopathologic slides of breast tumor were reviewed, and a final diagnosis of metastatic tumor of breast origin was established accordingly. Whole body bone scan showed the metastatic lesion of the mandible and abnormal increased activity of the occipital region of the skull. Degenerative changes of the spine and knee joint were also noted.

The patient was referred to the oncologist for further management and underwent the Chang Tam method of chemotherapy. One year later a second bone scan was

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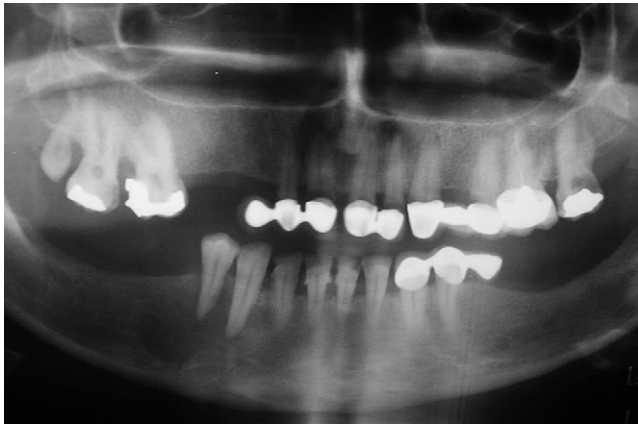


Figure 1. Unilocular well-circumscribed radiolucency with ill-defined border in periapical region of mandibular second premolar. Widening of the periodontal ligament is also noted.

performed, which showed widespread bone metastasis and significant disease progression (Fig. 3). In March 2009 the patient developed metastasis in pulmonary soft tissue. She is still alive after 20 months from the diagnosis of her jaw metastasis but is suffering end stages of her disease.

Discussion

Metastatic tumors to the oral cavity and jaws represent less than 1% of all oral malignancies. This figure might be less than reality because the possibility that jaw metastases remain undetected must always be considered (1, 6, 7). In fact, radiographic surveys of the jaws are not routine, even at autopsy. Therefore, a prospective screening study in patients with advanced stage malignancies, in which the jaws are imaged routinely by conventional radiographs and bone scintigraphy, would help to make a more accurate estimation (1). This rarity makes the diagnosis challenging, and these tumors should be considered in the differential diagnosis of many inflammatory and reactive lesions in the area (5, 8, 10, 11). Recently, Panossian et al reported a case of undiagnosed breast carcinoma presented initially as

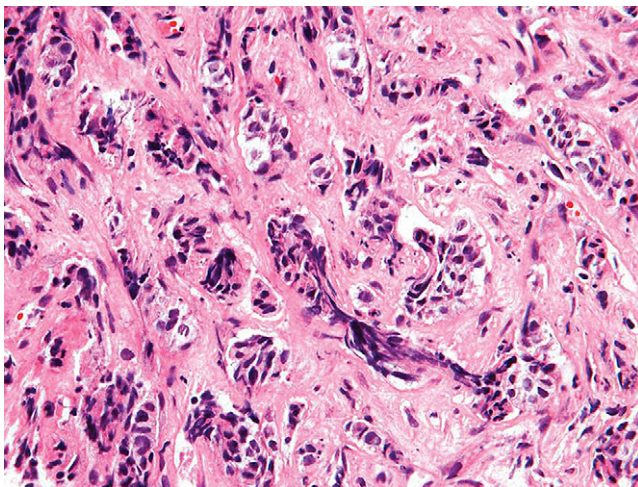


Figure 2. Photomicrograph of the jaw lesion. Malignant epithelial cells are observed in a dense fibrous stroma (hematoxylin-eosin; original magnification, $\times 200$).

a persistent, progressive facial swelling that was managed as chronic parotitis (12). Because the symptoms persisted and even worsened over time, a more serious disease was suspected. Careful medical work-up including a mammogram confirmed the diagnosis of breast carcinoma. Furthermore, multiple metastatic foci involving the vertebrae, ribs, iliac wing, and right femoral neck were noted on skeletal examination. The metastatic work-up also showed lung and hepatic nodules (12).

Detection of oral lesions has great importance because they might be diagnosed first by the patient's dentist or the maxillofacial surgeon. The clinical presentation of metastatic lesions is different in various oral sites (5). Patients often have vague or innocuous symptoms that can mimic dental infections, and sometimes the disease might be totally asymptomatic (1, 7). In a review of 114 cases of metastatic jaw tumors, 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, 7-9). Special attention should be given to patients with numb-chin syndrome or mental nerve neuropathy, a symptom that should always raise the suspicion of a metastatic disease in the mandible (5). In our case the patient complained of vague pain, and she did not mention any abnormal feature in her medical history; however, lip paresthesia and the radiographic features led to a more serious process. D'Silva et al pointed out that frequently patients do not report a history of cancer at the time of dental treatment or are unaware of having an undiagnosed primary malignancy (1). In most cases of oral metastasis, the distant primary tumor has already been diagnosed and often treated. Sometimes, however, the discovery of an oral metastasis leads to the detection of an occult primary malignancy elsewhere in the body (2, 5). In about one third of patients the oral lesion is diagnosed before the primary tumor (2, 9).

In our case the patient was aware of her disease, which was diagnosed and treated 2 years ago.

The fact that patients in such conditions do not inform the clinician of their medical history could be explained in different aspects. Possibly psychological factors cause patients not to express such problems, because they do not want to face their new problem as a result of a previous disorder that they consider treated. The cultural attitude of patients should be considered as well. Sometimes patients think dentists and related specialists can just help them with their problems in the mouth and jaw region. In such situations the importance of accurate medical history taking and the knowledge and skills of the clinician are emphasized again. Pruckmayer et al reported a similar situation in which a 74-year-old woman consulted her dentist with pain in her right mandible (9). A panoramic x-ray was inconclusive, and it was presumed that her dental prosthesis might not fit well. After about 3 months of dental procedures and unsuccessful antibiotic and analgesic therapy, she was referred to an otolaryngologist, and atypical neuralgia of trigeminal nerve was suspected. Conservative treatment was initiated, without significant relief of symptoms. When additional swelling of the right mandibular area occurred 3 weeks later, she was referred to the university clinic of maxillofacial surgery. Clinical investigation 5 months after the onset of symptoms disclosed third molar region pain, swelling, and anesthesia of the lower lip. In addition, lower back pain and severe discomfort of both hips and the occipital skull were present. A new panoramic x-ray showed an osteolytic defect in the right mandible. A careful history revealed the patient's past treatment for breast cancer. Whole body scintigraphy showed multiple sites of increased bone metabolism over the whole skeleton (9). It seems to be overzealous to suspect the presence of a metastatic disease in every patient with

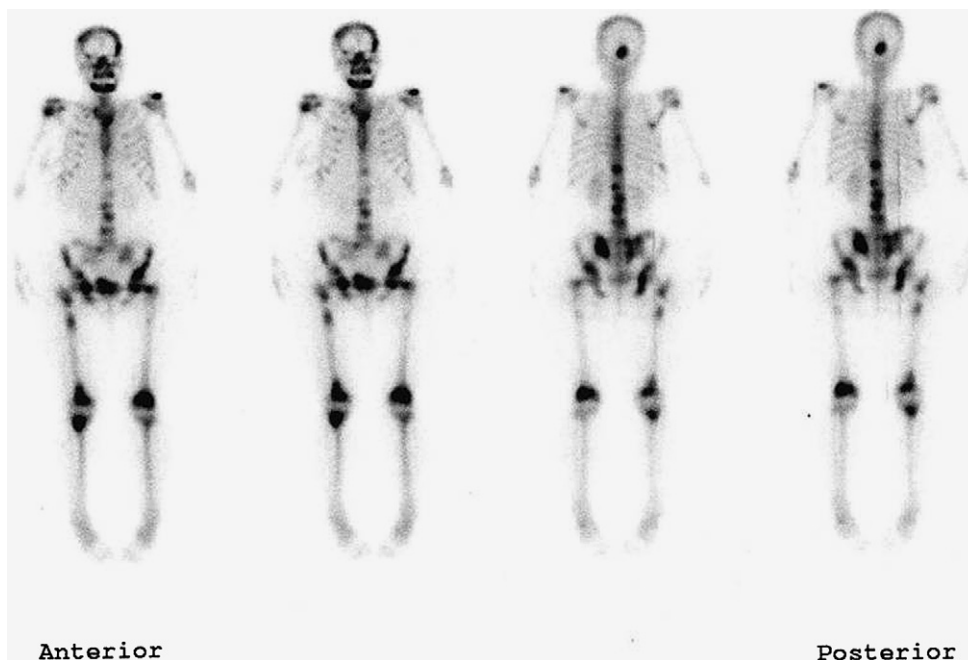


Figure 3. Bone scan showing disease progression with multiple sites of metastasis.

jaw pain, but patients with a history of cancer or subjects not responding to conventional management for a prolonged time span should undergo specific investigations to rule out a neoplastic basis of complaints. Because patients often call their dentists when thinking of dental origin of their pain, a high index of suspicion is crucial for early diagnosis and efficient management of these rare conditions (14).

Primary malignant neoplasms could also affect jawbones, and on periapical involvement, they could be misdiagnosed both clinically and radiographically. Favia et al reported a case of adenoid cystic carcinoma primarily affecting the mandibular bone (15). Root canal therapy resulted in increased pain and progressive bone expansion. Apicoectomy was conducted, and the intraosseous tumor was diagnosed at histopathologic examination. A case of gingival squamous cell carcinoma that mimicked a dentoalveolar abscess of endodontic origin in its early presentation is also reported (16).

The radiographic appearance of metastatic disease in the jaws varies from well-circumscribed to poorly circumscribed radiolucencies; the latter also is known as a “moth-eaten” appearance. Alveolar bone extension might be confused with periodontal disease. Because metastatic carcinomas from the breast and prostate might stimulate bone formation, these metastases might appear as mixed lesions (1). Interestingly, in approximately 5% of the cases, radiographs did not show any pathologic changes (5). In our case the radiographic findings were somehow confusing because except for the widening of the periodontal ligament space, no sign of a malignant process could be determined with some level of certainty. A unilocular well-circumscribed radiolucency with ill-defined borders as seen in our case is rather nonspecific and could be attributed to several lesions and pathoses.

The clinical presentation and radiographic findings of a metastatic lesion can be deceiving, leading to a misdiagnosis of a benign process; therefore in such cases, especially in patients with a history of malignant disease, biopsy is mandatory (5, 11). The histologic appearance of metastatic jaw disease often is poorly differentiated, making it challenging to determine the location of the primary lesion. Taking a thorough medical history along with a panel of immunohistochemical stains might facilitate the diagnosis (1). In

our case, after the history of breast cancer was established, a biopsy was performed. In addition, the pathologic slides of the breast tumor were requested and compared with the jaw lesion, which confirmed the final diagnosis. Therefore, additional immunohistochemical studies seemed unnecessary. However, in evaluating patients with cancer of unknown primary origin, histologic diagnosis is a keystone.

Most patients with a metastatic tumor in the oral cavity also develop metastases at other sites, often leaving no other option than palliation (2, 8, 9, 12). Local treatment relieves pain and might prevent loss of function (2). In general, survival of patients with advanced disease including metastases is poor, with most patients dying within a year of detection of the bony metastasis (1). In our case, the bone scan at the time of diagnosis revealed additional metastasis in skull, which spread to multiple bones after 1 year despite extensive chemotherapy. At present, the patient is still alive nearly 2 years after the diagnosis of her jaw lesion, suffering from end stage of the disease with multiple bone and soft tissue metastases.

Conclusion

Because of its rarity, the diagnosis of a metastatic lesion in the jaw is challenging. Detection of these lesions has great importance because they might be diagnosed first by the patient's dentist or the maxillofacial surgeon. This case emphasized the importance of a complete and careful work-up, with particular attention to detailed medical history as well as careful clinical and radiographic inspection for unusual signs and symptoms such as lip paresthesia or widening of the periodontal ligament space, which might increase suspicion to a more serious process.

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ERRATUM

Because of a publication error, Figure 4 of the article titled “Effectiveness of Three Different Retreatment Techniques in Canals Filled With Compacted Gutta-Percha or Thermafil: A Scanning Electron Microscope Study” by Pirani et al published in *J Endod* 35:1433–1440, 2009, contained 2 identical images as parts A and C. The journal regrets this error.

