

Metastasis of breast carcinoma to the whole mandible

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ABSTRACT

Metastatic tumors to the jawbones are an infrequent but not rare phenomenon. The most common site of distant primary tumor metastasis to the jaw bones is the breast. The clinical signs and symptoms, and radiographic appearance of these lesions can be quite variable. In this report, an invasive ductal carcinoma of the breast that metastasized to the whole mandible is presented. The patient's medical history revealed that she had undergone a modified radical mastectomy on the right breast eight years ago. (*Korean J Oral Maxillofac Radiol* 2004; 34 : 195-7)

KEY WORDS : Breast; Carcinoma; Neoplasm Metastasis; Mandible

Metastatic tumors to the jawbones are uncommon. In 1989 Zachariades¹ reviewed 422 literature metastatic lesions in the mouth, jaws and the surrounding tissues in 365 patients and summarized that 5% of all malignancies involve the oral cavity and 1% of these malignancies were secondary to neoplasms that are usually found below the level of the clavicles. Of these 22.5% of the metastasis were from the lung, 18% from the breast and 12% from the kidney. In 1994 Hirshberg, Leibovich and Buchner² reviewed 390 well-documented English language literature cases of metastatic lesions to the jawbones apart from their previous review³ of 157 metastatic cases to the oral mucosa. They found the primary site differed between the genders: for women, it was the breast followed by the adrenal, colo-rectum, female genital organs and thyroid; for men, it was the lung, followed by the prostate, kidney, bone and adrenal.

The object of this report is to add one reported case of breast carcinoma to the mandible as female breast cancer is the most frequent metastatic lesion to the mandible and its metastasis is well documented, there were few separately reported cases in recent literature review.

Case report

37-year-old female was referred to the department of maxillofacial radiology, Pusan National University Hospital

by her oncologist for evaluation of dull pain on anterior teeth after her recent radiation therapy. Clinical examination revealed xerostomia, some ulceration on lower lip, but the mandibular central incisors, left mandibular lateral incisor, canine, first molar, left maxillary central and lateral incisors didn't respond to the electric pulp test with no apparent cause. A panoramic radiograph (Fig. 1) revealed numerous ill-defined radiolucencies throughout the whole mandible including both mandibular condyles and coronoid processes. Patient refused to take standard periapical views because of painful intraoral ulcers. Closer examination of panoramic radiography revealed possible metastatic involvement of left maxillary posterior region including maxillary tuberosity and also cervical vertebrae.

Her medical history was significant for metastatic breast cancer with multiple bone involvement. Eight years ago the patient initially presented to the department of general surgery for evaluation of rapidly increasing breast mass on the right side. Mammography, ultrasonography (Fig. 2), ^{99m}Tc-MIBI-breast scan and needle biopsy revealed 17 × 15mm sized right breast mass with palpable axillary lymph nodes. Under the diagnosis of invasive ductal carcinoma the patient received modified radical mastectomy on the right breast, and the patient underwent postoperative chemotherapy.

Four years ago, her left breast was also excised because recurrence was suspected but the histologic diagnosis revealed fibrocystic change with ductal hyperplasia. Three years ago during the courses of taxotere treatment, the patient developed complaints of low back pain. Whole body bone scan with Tc-^{99m}MDP (Fig. 3) revealed abnormally increased uptake on

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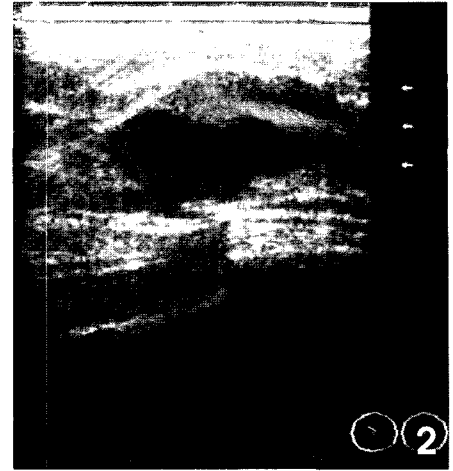
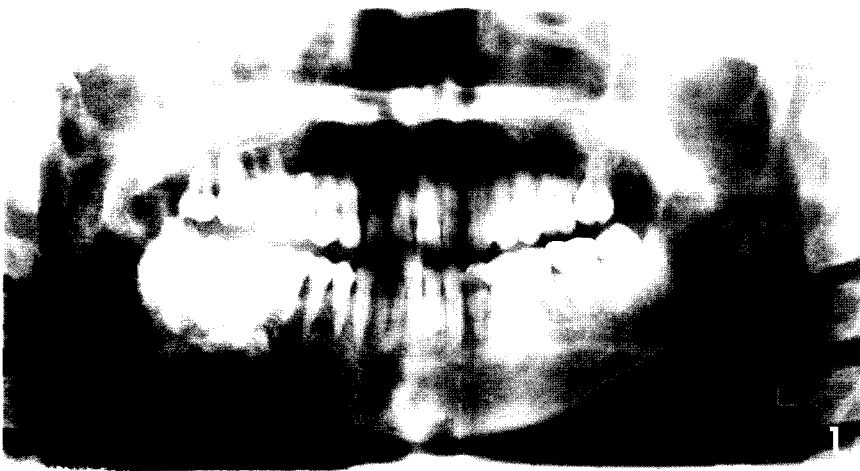


Fig. 1. A panoramic radiograph showed numerous ill-defined radiolucencies throughout the whole mandible including both mandibular condyles and coronoid processes.

Fig. 2. Ultrasonography showed 17 x 15 mm sized rapidly increasing right breast mass as a hypoechoic area.

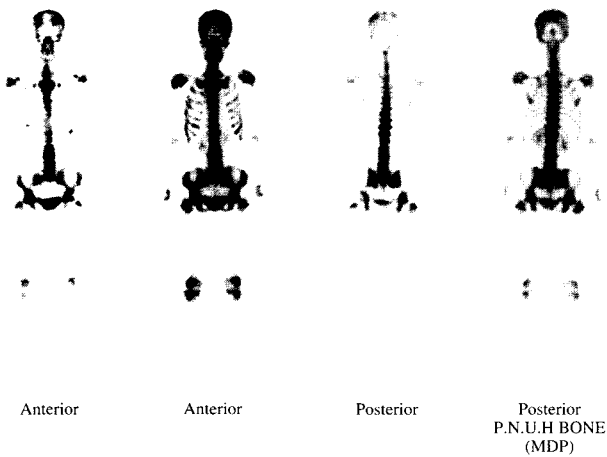


Fig. 3. Whole body bone scan with Tc-99 m MDP (Fig 3) showed abnormally increased uptake on the vertebral body of T6, 9-12, L3-4, right 2, 6th ribs, left 7th rib, and both proximal femurs.

the vertebral body of T6, 9-12, L3-4, right 2nd, 6th ribs, left 7th rib, and both proximal femurs. After taxotere and gemzar treatment was completed, whole body bone scan with Tc-99 m MDP was reexamined. Some improvement of bone metastasis was observed but active bone lesion on the vertebral body of T10-12, L3, and both proximal femurs was remained and radiation therapy was initiated. Four months later the patient developed complaints of dyspnea and computed tomography of chest was taken (Fig. 4). Multiple patchy or diffuse areas of ground glass opacity and focal consolidation and small pleural effusion were observed on both lungs. Opportunistic pulmonary infection such as pneumocystis carinii pneumonia or

mixed viral infection was suspected and multiple osteolytic lesions and pathologic fracture of rib consistent with bone metastasis were also confirmed.

Histological features of right breast mass showed cords of ductal carcinoma cells diffusely infiltrating in dense fibrous stroma (Fig. 5).

Discussion

Breast cancer continues to be one of the leading causes of death among women and its metastasis is well documented.⁴ The most common sites are the lungs (42% to 58%), pleura (31% to 41%), liver (48% to 55%), bone (20% to 43%), and less frequently, brain, kidney, stomach, uterus, and spleen.⁴ Bone metastasis most commonly involves the vertebrae, proximal femur, pelvis, ribs, sternum, and skull.⁵ Although the jaws are considerably less frequently involved than other bones, metastases are important because of the poor prognosis they carry.⁶

Breast carcinoma is the most frequent metastatic lesion to the mandible² and it may appear as dental abscess,⁷ periodontal disease,⁶ toothache projected into the third molar region⁸ or unremitting pain,⁵ temporomandibular joint pain, osteomyelitis, or trigeminal neuralgia.⁸

In this reported case, patient complained of toothaches from already nonvitalized teeth. Recently, it has been proposed that the infrequent detection and reporting of metastatic jaw lesions may be attributed to the fact that the jaw bones are not included in the routine skeletal survey for bony metastasis.

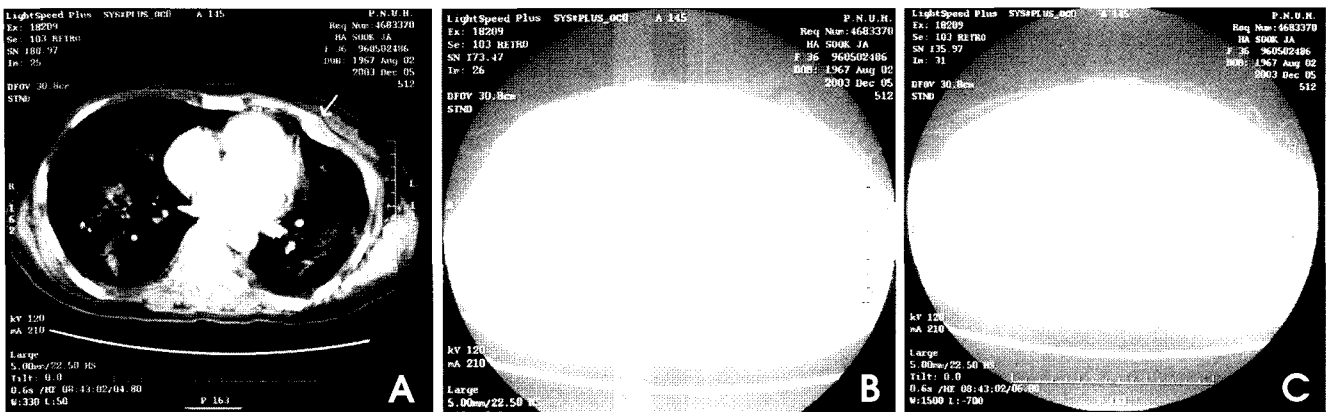


Fig. 4. A. Computed tomography of chest at mediastinal setting showed multiple osteolytic lesions and pathologic fracture of rib (white arrow) consistent with bone metastasis. B. Computed tomography of chest at lung setting showed multiple patchy or diffuse areas of ground glass opacity and focal consolidation on both lungs. C. Computed tomography of chest at lung setting showed small pleural effusion on both lungs. Opportunistic pulmonary infection such as pneumocystis carinii pneumonia or mixed viral infection was suspected.

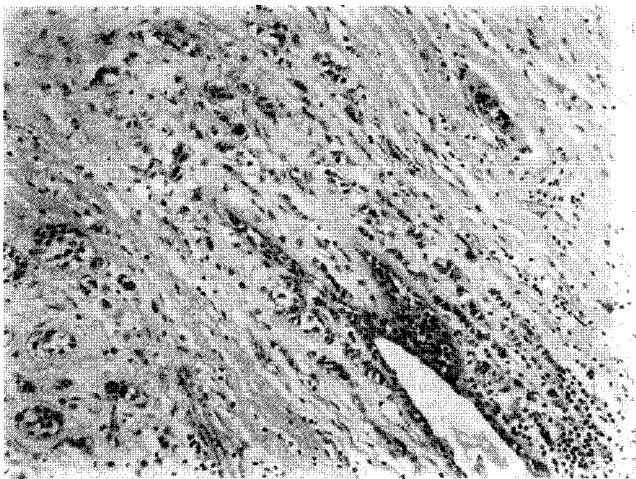


Fig. 5. Cords of ductal carcinoma cells showed diffuse infiltrative growth in dense fibrous stroma. (H & E, ×200)

Furthermore, the most sensitive test for detecting early signs of metastatic disease to bone is bone scanning. This is rarely, if ever, performed on the asymptomatic jaw bones.⁵ Glaser et al.⁸ suggests tomographic slices produced by SPECT should be favored rather than conventional planar scanning, because of the complex anatomy of the maxillofacial region. A hot spot in bone scintigraphy indicates altered regional perfusion and increased access to the anorganic constituents of the bone. Tumor-cell emboli metastasize into the mandible hematogen-

ously, where regional predisposing factors favor the settlement and growth of secondary neoplastic lesions.

Although single metastasis to the mandible do occur, they usually indicate generalized metastatic cancer. This metastatic site has clinical importance because it may indicate a yet unknown cancer, generalization of an already diagnosed cancer, or recurrence of the disease.^{6,8}

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