Case report

Gastric Metastasis of Breast Cancer in a Male Patient: Report of a Case

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Abstract

A 65-year-old male patient presented with epigastralgia. At 57 years of age, the patient was diagnosed as cancer of the right breast (T1cN0M0) and underwent a mastectomy and axillary dissection. ER and PgR were positive, and HER2 was 2+. At six years after surgery, multiple metastatic lung tumors were found to have developed, and the patient underwent a partial resection of the left lung. Supraclavicular and mediastinal lymph nodes and pleural metastasis also developed post-operatively and were treated with chemotherapy. The patient developed epigastralgia at 30 months after the lung surgery, and underwent upper gastrointestinal endoscopy. An elevated lesion with a bridging fold was detected in the middle body of the stomach, and the results of a biopsy showed adenocarcinoma. The immunohistochemical staining results were positive for cytokeratin (CK) 7 and negative for CK20, and the patient was diagnosed as breast cancer metastasis to the stomach. Although breast cancer metastasis to the stomach has been detected in a small percentage of cases based on autopsy findings, it is extremely rare that a diagnosis of this disease is made in the clinical setting. A case of breast cancer metastasis to the stomach in a male patient is even rarer. A search of the Japan Centra Revuo Medicina database revealed only one such case among previous reports in Japan. In conclusion, it is necessary to address the possibility of breast cancer metastasis to the stomach when searching for a gastric tumor in a patient with a past history of breast cancer.

Keywords: Male breast cancer, gastric metastasis, metastatic breast cancer

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Introduction

Distant metastases from breast cancer are commonly observed in the bone, lungs and liver, but gastric metastasis is extremely rare. Furthermore, cancer of the male breast accounts for from 0.44 to 1% of the total cases of the breast cancer, which is also a relatively rare disease^{1,2)}. This report describes a case of male breast cancer metastasis to the stomach.

Case Report

A 65-year-old male patient presented with epigastralgia. At 57 years of age, the patient was diagnosed as cancer of the right breast (T1cN0M0, Stage I) and underwent a mastectomy and axillary dissection. A histopathological diagnosis of invasive ductal carcinoma, a scirrhous type, n (0/18) was made (Fig. 1). Immunohistochemical staining (IHC) for hormone receptors revealed that both ER and PgR were positive, and the human epidermal growth factor receptor 2 (HER2) was 2+. Tamoxifen 20 mg/day was administered as postoperative adjuvant therapy for 3 years.

Six years after surgery, bilateral multiple pulmonary metastases were detected, and the patient underwent a partial resection of the left lung. The lung tumor was diagnosed to be metastatic adenocarcinoma with ER (+), PgR (-) and HER2 (-). After surgery, the patient was placed on 6 courses of ET therapy with epirubicin 70 mg/m² and docetaxel 60 mg/m². An enlargement of both the supraclavicular and mediastinal lymph nodes was newly detected based on chest computed tomography conducted for the purpose of evaluating the therapeutic effects of the chemotherapy. This indicated that the disease condition was progressive disease (PD). Thereafter, the patient was switched to anastrozole 1 mg/day, but an exacerbation of the metastasis to the lymph nodes and lungs, as well as bone metastasis were found, and capecitabine and THP-doxorubicin were therefore sequentially administered.

Thirty months after the surgery for the lung metastasis, during hospitalization for chemotherapy, the patient developed epigastralgia. Upper gastrointestinal endoscopy revealed an elevated lesion with a bridging fold was observed in the middle body of the greater curvature of the stomach. Morphologically, the lesion appeared to be a submucosal tumor with the surface covered by the mucosa, but there was a visible vascular pattern (Fig. 2). A biopsy was performed, and the tissue was obtained from this site. Hematoxylin and eosin staining of the gastric

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biopsy specimen revealed tumor cells with strong nuclear atypia and histological atypia, which invaded/proliferated in a cord-like manner in the gastric gland mucosa. A diagnosis of Group V adenocarcinoma was made (Fig. 3).

Furthermore, the primary breast lesion was found to be positive for cytokeratin (CK) 7 and negative for CK20 according to the results of IHC staining (Figs. 4a, 4b). Similarly, the gastric tumor exhibited CK7 positive and CK20 negative staining, and thus the final diagnosis was breast cancer metastasis to the stomach (Figs. 4c, 4d). After the diagnosis was made, the patient's condition worsened, and because the patient was unable to receive chemotherapy, the best supportive care was implement-

ed. The patient died of respiratory failure associated with lung metastasis and pleural metastasis which developed 2 months after the gastric metastasis was found.

Discussion

The incidence of male breast cancer is reportedly approximately 1% of the total cases of breast cancer¹⁾, but in Japan the actual percentage ranges from 0.44 to 0.60%, according to the cumulative cases since the 1970s²⁾. Male breast cancer manifests more commonly in patients in their 60s, who are approximately 10 years older on average than women who develop breast cancer²⁾. The clinical manifestations frequently include a lump in the areo-

Fig. 1 Pathological findings of the primary breast lesion: Invasive ductal carcinoma, scirrhus type (HE staining 40×)

Fig. 3 Pathological findings of the biopsy specimen from the gastric lesion: Group V adenocarcinoma (HE staining 100×) containing tumor cells with strong nuclear atypia and structural atypia.

Fig. 2 Upper gastrointestinal endoscopic findings: An elevated lesion with a bridging fold is observed in the middle body of the stomach. The surface of the lesion is covered by the mucosa with visible vascular pattern.

Fig. 4 Findings of immunohistochemical staining of the primary breast lesion and gastric lesion: The primary breast lesion is positive for CK7 (a) and negative for CK20 (b). Similarly, the gastric lesion is positive for CK7 (c) and negative for CK20 (d) (40×).

la of the breast commonly noted in the E region. Surgery is indicated for the disease as the first-line therapy, and a mastectomy preserving the pectoral muscles is selected in most of the reported cases. Considering the higher hormone receptor positive rate in comparison to the female cases, hormone therapy is administered as adjuvant therapy in many male breast cancer cases²⁾. In addition, in the present case, tamoxifen was administered as post-operative adjuvant therapy because the primary lesion was positive for both ER and PgR.

Distant metastasis from breast cancer frequently occurs in the bone, lungs and liver; however, gastric metastasis is extremely rare. Nakamura et al.³⁾ reviewed 135 autopsy cases of breast cancer and showed that metastasis to the lung was observed in 79.3% of the cases, to the liver in 71.1% and to the bone in 69.6% while the incidence of metastasis to the gastrointestinal tract was 8.9%. In European countries and the United States, breast cancer metastasis to the stomach has been reported at a frequency of 3.2 to 7.4% in autopsy cases^{4,5)}. However, gastric metastasis has rarely been clinically confirmed, and it is only found occasionally in the literature^{6,7)}. In Japan, most cases of gastric metastasis of breast cancer have been reported in female patients, while such cases in male patients are extremely rare. A search of the Japan Centra Revuo Medicina database between 1983 and 2008 revealed only 1 such case⁶⁾, other than the present case, among the previous reports in Japan.

The most frequent histological type of the primary lesion of breast cancer metastasis to the stomach is invasive lobular carcinoma⁸⁾, and scirrhous carcinoma like the present case, papillotubular carcinoma, solid tubular carcinoma and medullary carcinoma are also occasionally reported³⁾.

Endoscopic findings of breast cancer metastasis to the stomach are characterized by a varioliform erosion-like appearance, and it is speculated that they fuse together as cancer progresses and evolve toward a linitis plastica-like appearance⁹⁾.

Since its metastatic form is hematogenous or lymphogenous, metastasis evolves through the subserosa or submucosa, which have abundant vascular channels, and frequently form a submucosal tumor as seen in the present case. Therefore, the number of tumors in the mucosa is small, and in many cases it is difficult to make a diagnosis based on a gastric biopsy. Furthermore, even though the tumor tissue can be collected, the histopathological manifestation of primary stomach cancer and that of breast cancer metastasis to the stomach are similar, and thus it is sometimes difficult to differentiate them only based on biopsy results. In such a case, IHC is useful for the differential diagnosis. In the present case, CK staining was performed, and breast cancer and gallbladder cancer usually exhibit positivity for CK7 and conversely gastric cancer and colon cancer frequently exhibit posi-

tivity for CK20. Tot et al.¹⁰⁾ reported 100% positivity of CK20 for gastric cancer and Kawabata et al.¹¹⁾ reported 50% positivity. In the present case, both the primary lesion of breast cancer and the lesion of gastric tumor were positive for CK7 and negative for CK20, and thus a diagnosis of gastric metastasis was made. In addition, staining for ER, PgR, and GCDPF-15 has also been reported¹²⁾.

Gastric metastasis of breast cancer is considered to be the terminal status of significantly advanced cancer accompanied by systemic metastasis, thus multiple organs have already been metastasized in many cases by the time that a diagnosis of gastric metastasis is made, thus leading to a poor prognosis. In the present case, the patient died of respiratory failure associated with lung metastasis and pleural metastasis which developed 2 months after he had been diagnosed as gastric metastasis. Nonetheless, there is a case in which long-term survival was seen after chemotherapy and hormone therapy⁹⁾; therefore, if the patient's general condition allows aggressive treatment, such strategies should be considered.

In conclusion, although breast cancer metastasis to the stomach, as observed in the present case, is extremely rare, it is believed that when performing a search for a gastric tumor in a patient with a past history of breast cancer, it is necessary to address the possibility of breast cancer metastasis to the stomach.

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