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journal or publication title	滋賀医科大学雑誌
volume	32
number	1
page range	24-27
year	2019-05-03
URL	<a href="http://doi.org/10.14999/1521.00012505">http://doi.org/10.14999/1521.00012505</a>

— Case report —

## Breast cancer metastasis to the stomach: A case report

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**Abstract** The stomach is an infrequent site of breast cancer metastasis. It may prove very difficult to distinguish a breast cancer metastasis to the stomach from a primary gastric cancer on the basis of clinical, endoscopic, radiological and histological features. We present a case of a 57-year-old woman of gastric metastasis from breast cancer by immunohistochemistry 6 years after mastectomy. Since no other lesions were observed in the image examination, she underwent laparoscopic gastrectomy and endocrine therapy. The patient remains well after 6 years from gastrectomy. Complete histopathological and immunohistochemical analysis of the gastric biopsies and comparison with the original breast cancer pathology is important.

**Keyword** Breast cancer, Stomach, Metastasis, Immunohistochemistry

### Introduction

Breast cancer has become the most common malignancy in Japanese women as well as women in Western countries. Breast cancer metastasis to the gastrointestinal (GI) tract is rare, with typical metastatic sites being the lung, bones, liver, and brain[1]. Breast cancer cases with lobular pathology show a higher tendency of metastases to the stomach, typically presenting as linitis plastica[2]. It is important to distinguish between breast cancer metastasis to the stomach, and primary gastric cancer since the treatment plans for these two malignancies are different. Here, we report a case of invasive ductal carcinoma of the breast involving the stomach, with the breast confirmed to be the primary site.

### Case report

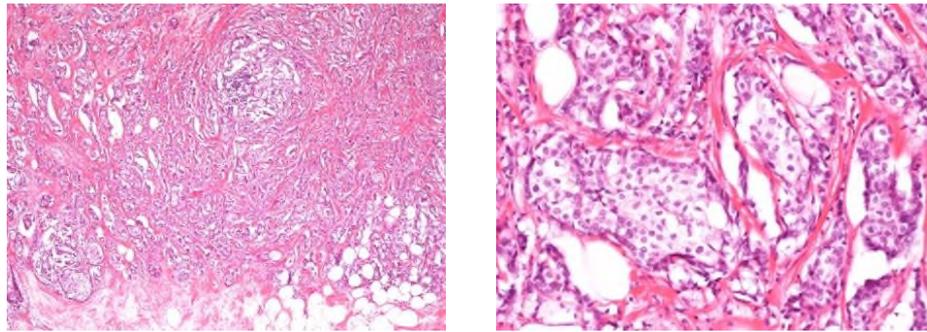
A 51-year-old woman underwent mastectomy with axillary lymph node dissection for invasive ductal carcinoma of the left breast in November 2004 (Fig. 1). Pathological examination revealed lymph node involvement, positive estrogen receptor (ER) and progesterone receptor (PgR), and negative human epithelial growth factor receptor type 2 (HER2) protein. She underwent adjuvant chemotherapy (epirubicin and cyclophosphamide, followed by docetaxel) and endocrine therapy (tamoxifen 20 mg/day switched to letrozole 2.5 mg/day). Two years after mastectomy, she underwent breast reconstruction surgery. Six years after surgery, elevated tumor marker levels were recorded

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Received: January 6, 2019. Accepted: May 3, 2019

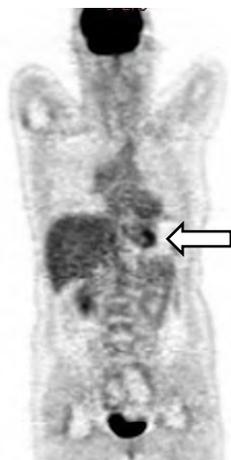
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**Fig. 1 Histological findings of the primary site of breast cancer.**  
Left;  $\times 40$ , Right;  $\times 200$  (H.E stain)

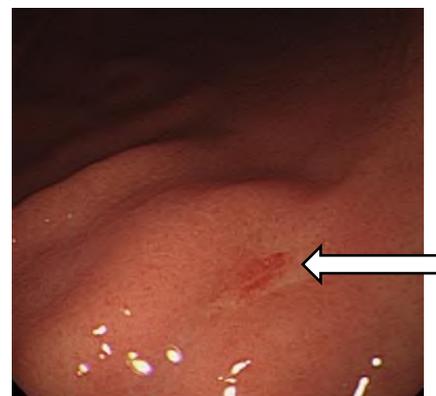
(CEA, 10.9 ng/mL; CA15-3, 53.0 U/mL); Positron Emission Tomography revealed accumulation in the stomach (Fig. 2). Gastroscopy findings showed revealed an IIC like lesion in the mid greater curvature of the stomach (Fig. 3). Biopsy specimen showed atypical cells with slightly enlarged nuclei in the lamina propria. Further immunohistochemical (IHC) findings were positive for ER, negative for PgR, positive for gross cystic disease fluid protein-15 (GCDFP-15), and positive for E-cadherin (Fig. 4). These findings suggested that the gastric lesion was metastatic from the breast cancer. The patient was treated with capecitabine (1250 mg/m<sup>2</sup> bid, days 1–14, q3w) and exemastane (25 mg/day); however the gastric metastasis progressed, with a time to progression of 12 months. As no other metastatic lesions were observed on imaging examination, laparoscopic subtotal gastrectomy was performed in March 2012. Following gastrectomy, hormonal therapy with fulvestrant (500 mg/body) was administered, and the patient has remained well 6 years following gastrectomy.



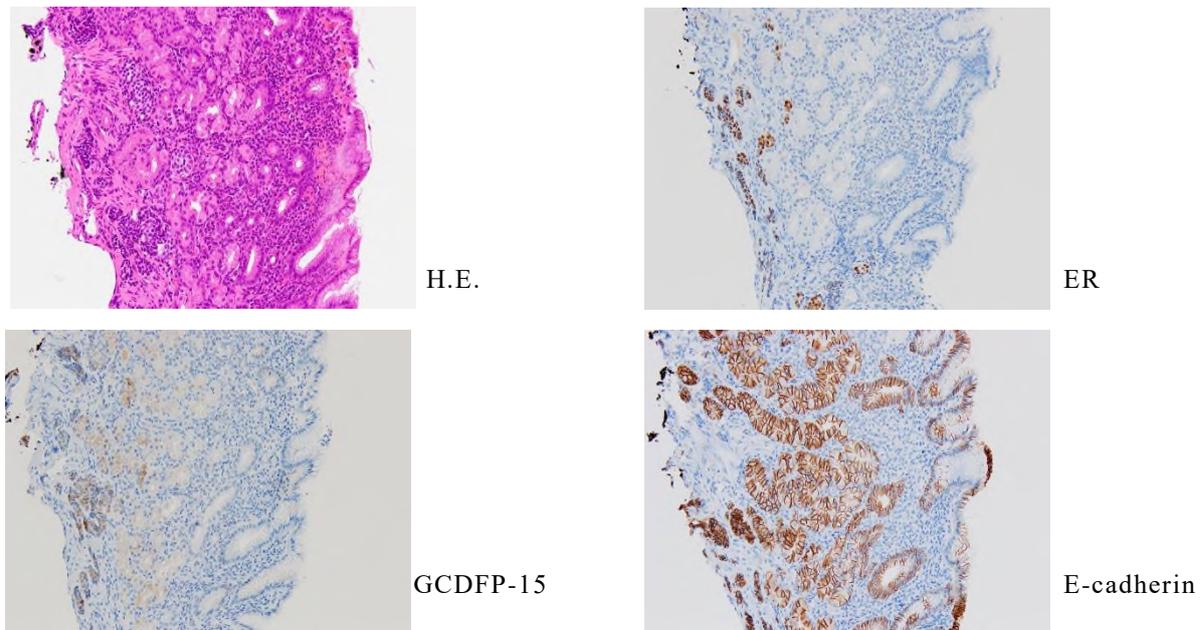
**Fig. 2 PET examination showed accumulation in the stomach fornix.**

### Discussion

The metastasis of primary breast cancer to the GI tract is relatively rare; however there have been case reports documenting recurrences in the stomach and duodenum several years following the initial treatment for primary breast cancer[3]. Lobular carcinomas show a higher propensity to metastasize to the GI tract, with the incidence rate reported to be 2% to 18%[2,5] of all breast cancer cases. Although lobular carcinoma is the most common histological type of gastric metastasis, ductal carcinoma can also metastasize to the stomach[6]. Although the GI tract is a rare metastatic site of extra-abdominal carcinoma, breast cancer is reported to be the second most common primary site responsible, following lung cancer[7,8,9]. The clinical presentation of metastatic breast carcinoma to the GI tract is often the same as that of primary GI malignancies. Regarding clinical symptoms of gastric metastasis, Cormier et al.[2] have reported that 29 of the 31 patients with gastric metastasis showed digestive symptoms, weight loss, nausea, epigastric pain, early satiety, and melena,



**Fig.3 The gastroscopic findings showed an IIC-like lesion in the mid greater curvature side of the stomach.**



**Fig. 4 The biopsy specimen revealed the atypical cells in the lamina propria. IHC examinations showed positive ER, GCDFP-15 and E-cadherin staining.**

while only 2 patients were symptom-free. In the present case, no symptoms were present, and only elevated tumor markers were identified. Diffuse infiltration of the stomach is a characteristic of metastasis from invasive lobular carcinoma, and linitis plastica with diffuse infiltration of the submucosa and lamina propria is a common imaging finding[8]. In invasive ductal carcinoma, endoscopic features are variable, and it is reported to represent gastric metastasis with more discrete nodules[2]. Accurately distinguishing gastric metastasis from either primary gastric cancer or gastritis-based endoscopic features alone may be difficult in invasive lobular and ductal carcinomas, due to the variable endoscopic appearance of the gastric metastasis of primary breast cancer[6,8].

Therefore, detailed IHC staining is necessary to differentiate metastatic carcinoma from primary gastric cancer[10]. IHC staining for ER and PgR appears to be useful for distinguishing metastasis from breast cancer; however, it is noteworthy that ER- and PgR-positivity has been reported in 32% and 12% of the primary gastric cancer cases, respectively[10,11]. GCDFP-15 staining is useful to diagnose whether a case is a metastatic tumor from breast cancer or primary gastric cancer[12], because GCDFP-15 is a sensitive (45%–76%) and specific (91.8%–100%) marker. However, GCDFP-15 is expressed in apocrine and salivary glands. Thus, ER and GCDFP-15 staining is useful for diagnosing metastatic carcinoma from the breast, and it is

important to compare results of IHC staining between primary and metastatic sites.

Taal et al.[6] have reported that gastric metastasis alone was present in 5.8% of the cases of metastatic breast cancer; and that majority of the cases of gastric metastasis were associated with the involvement of another organ, including the bones, liver, or lung. The treatment strategy for gastric metastasis from breast cancer comprises systemic therapy (chemotherapy, hormonal therapy, or both). Surgical resection of the stomach has a limited role in treatment and does not affect the survival outcomes of patients presenting with gastric metastasis[7,13]. However, surgery may be performed in palliative care for symptom relief and supportive care, and decision-making for surgical planning should be based on clinical presentation and symptoms. In the present case, oral chemotherapy and hormone therapy, gastrectomy was performed as there was no other metastatic lesion.

Patients with breast cancer show superior survival outcomes compared to those with other types of cancers, increasing the possibility of a second primary cancer arising during the clinical course. However, metastasis of primary breast carcinoma must also be considered. Gastric metastasis from breast cancer is rarely observed in metastatic breast carcinoma. However, it is important to distinguish gastric metastasis from breast cancer metastasis to determine the initial treatment of breast cancer as a systemic disease.

## Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

## Completing interests

The authors declare that they have no competing interests.

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