福岡大医紀（*Med. Bull. Fukuoka Univ.*）：44(1)，29–33，2017

Gastric Metastasis from Breast Cancer Resembling Primary Gastric Cancer: A Case Report

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Abstract

A 72-year-old woman was referred to our hospital because of multiple gastric depressed lesions that were found by upper GI endoscopy screening. The endoscopic finding was a slightly depressed lesion that resembled a primary undifferentiated-type early gastric carcinoma. Five years ago, the patient underwent surgical and radiation treatment for breast cancer. Given the patient's history of invasive ductal carcinoma of the breast, the findings of the gastric biopsy and immunohistochemical analysis, we diagnosed the patient with gastric metastasis. Breast cancer metastasis to the stomach is rare, but when it occurs, it frequently manifests as poorly differentiated adenocarcinoma with signet-ring cell feature. These tumor cells are often difficult to distinguish from those of a primary gastric carcinoma. Distinguishing a breast cancer metastasis to the stomach from a primary gastric cancer on the basis of clinical, radiological, and endoscopic findings is very difficult. Our case report suggests that a history of breast cancer and the results of an immunohistochemical analysis are critical for the diagnosis of gastric metastasis from breast cancer.

Key words: Breast cancer, Gastric metastatic tumor, Patient's history

Introduction

Breast cancer has become the most common malignancy in Japanese women and women of Western countries [1)]. The common metastatic lesions from breast cancer are the lymph nodes, bones, lungs, liver, and brain. However, gastrointestinal (GI) metastases are detected in 2%–18% of autopsy cases of known disseminated breast cancer [2-4)]. Breast cancer metastasis to the stomach is rare, and according to such a report [5)], a frequent histological characteristic of breast cancer metastasis to the stomach showed signet-ring cell. These metastatic cells are often difficult to differentiate from the signet-ring cells found in primary gastric cancer. Here, we report our experience with a case of gastric metastasis from breast cancer that resembled primary gastric cancer.

Case Report

A 72-year-old woman was referred to our hospital because of multiple gastric depressed lesions that were found by upper GI endoscopy screening. Five years ago, the patient underwent surgical and radiation treatment for breast cancer. A 1.5-cm mass was detected in the left breast (Fig. 1). The histopathological diagnosis was invasive ductal carcinoma with lymph node metastasis. The tumor cells were also positive for the estrogen receptor (ER) and progesterone receptor (PgR), and equivocal human epithelial growth factor receptor type 2 (Her 2) protein.

A radiological analysis of the stomach revealed multiple irregularly shaped barium flecks surrounded by coarse mucosal folds in the posterior wall of the middle portion of the gastric body (Fig. 2a). The compression film

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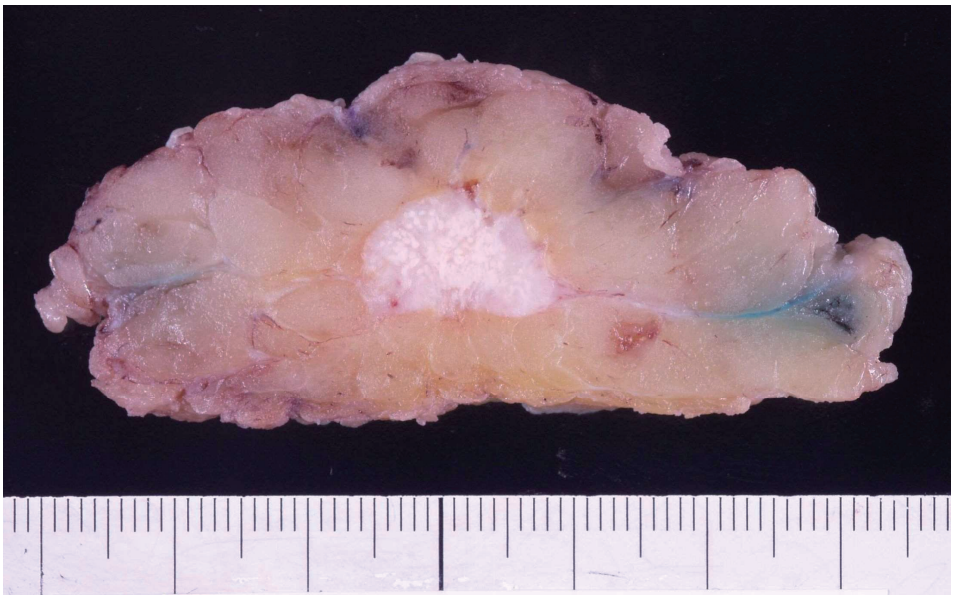

Fig. 1 Macroscopic photograph of cut-surface of the primary breast cancer. A well-defined gray tumor (15 mm in diameter) is recognized.

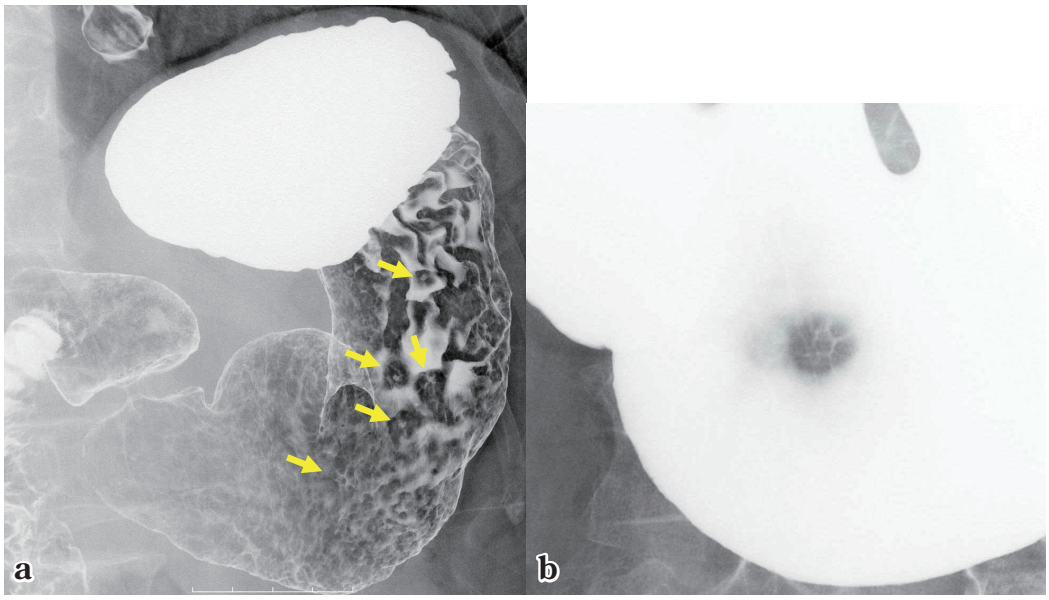

Fig. 2 The findings of a double contrast study of the stomach. (a) The double contrast film image of the stomach in a supine position shows multiple irregularly shaped barium flecks (*yellow arrows*) that are surrounded by coarse mucosal folds in the posterior wall of the gastric body. (b) The compression film image of the lower portion of the gastric body shows an irregularly shaped barium fleck and a small circular shadow.

image of the lower portion of the gastric body revealed an irregularly shaped barium fleck with a small and circular shadow (Fig. 2b). Upper GI endoscopy revealed multiple discolored and slightly depressed lesions with a small reddish elevated lesion in the anterior and posterior wall of the middle portion of the gastric body (Fig. 3a). Magnifying endoscopy with narrow band imaging revealed irregular microvessels and the disappearance of the white zone component with a demarcation line (Fig. 3b). The endoscopic findings resembled primary undifferentiated-type early gastric cancer. However, we suspected gastric metastatic tumor because of multiple lesion. We performed a gastric biopsy for five depressed lesions of the stomach. Biopsy specimens from the gastric depressed lesions showed the proliferation of atypical cells with circular-shaped nuclei of various sizes that

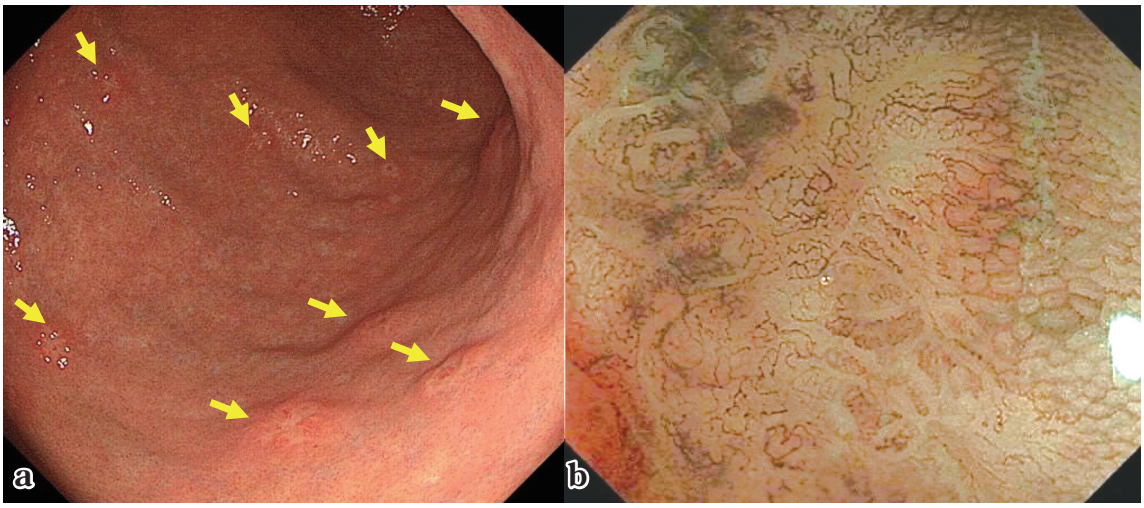

Fig. 3 The findings of upper gastrointestinal endoscopy. (a) The endoscopic film image of the middle portion of the gastric body shows multiple discolored and slightly depressed lesions (*yellow arrows*) with a small reddish islet and elevated margin. (b) Magnifying endoscopy with narrow band imaging shows irregular microvessels and the disappearance of the white zone component with a demarcation line.

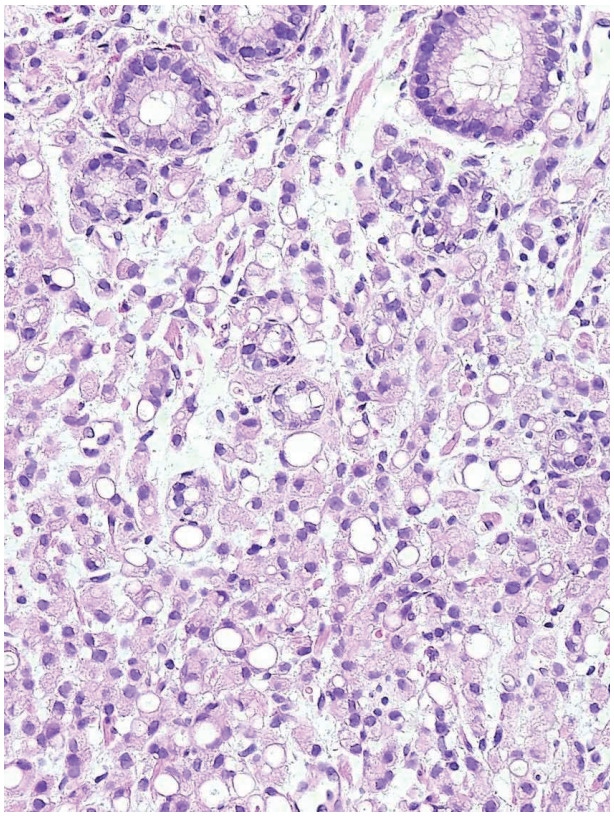

Fig. 4 The histological appearance of the forceps biopsy specimen from the gastric depressed lesion. The gastric biopsy specimen shows a poorly differentiated adenocarcinoma with signet-ring cell morphology. Trabecular growth is evident in part (hematoxylin-eosin stain, ×100).

resembled signet-ring cell carcinoma (Fig. 4).

Immunohistochemical analysis revealed that the tumor cells were positive for cytokeratin 7, ER, gross cystic disease fluid protein (GCDFP-15) and GATA binding protein 3 (GATA-3) (Figs. 5a–5c). These findings suggested a diagnosis of gastric metastasis from breast cancer and excluded a primary gastric carcinoma. The patient was treated with fulvestrant-based hormonal therapy. She has a stable disease and continues to be monitored for metastatic tumors, which has not shown a recurrence and other organic metastasis within the past 10 months.

Discussion

The most common metastatic sites of breast carcinoma are the local and distant lymph nodes, bone, lungs, liver, and brain. A landmark study by Borst and Ingold [6] found only 17 (<1%) of 2604 cases of metastasis to the GI tract from breast cancer. Common sites of GI metastasis are the colon and rectum (45%), stomach (28%), small intestine (19%), and esophagus (8%)[2]. Breast cancer metastasis to the GI tract as the first metastatic site is extremely rare [7].

In Japan, 49 clinical case reports of gastric metastasis from breast cancer have been published with detailed clinical information [8]. Clinicopathological characteristics of gastric metastasis from breast cancer including our case are summarized in Table 1. In our patient, the histological

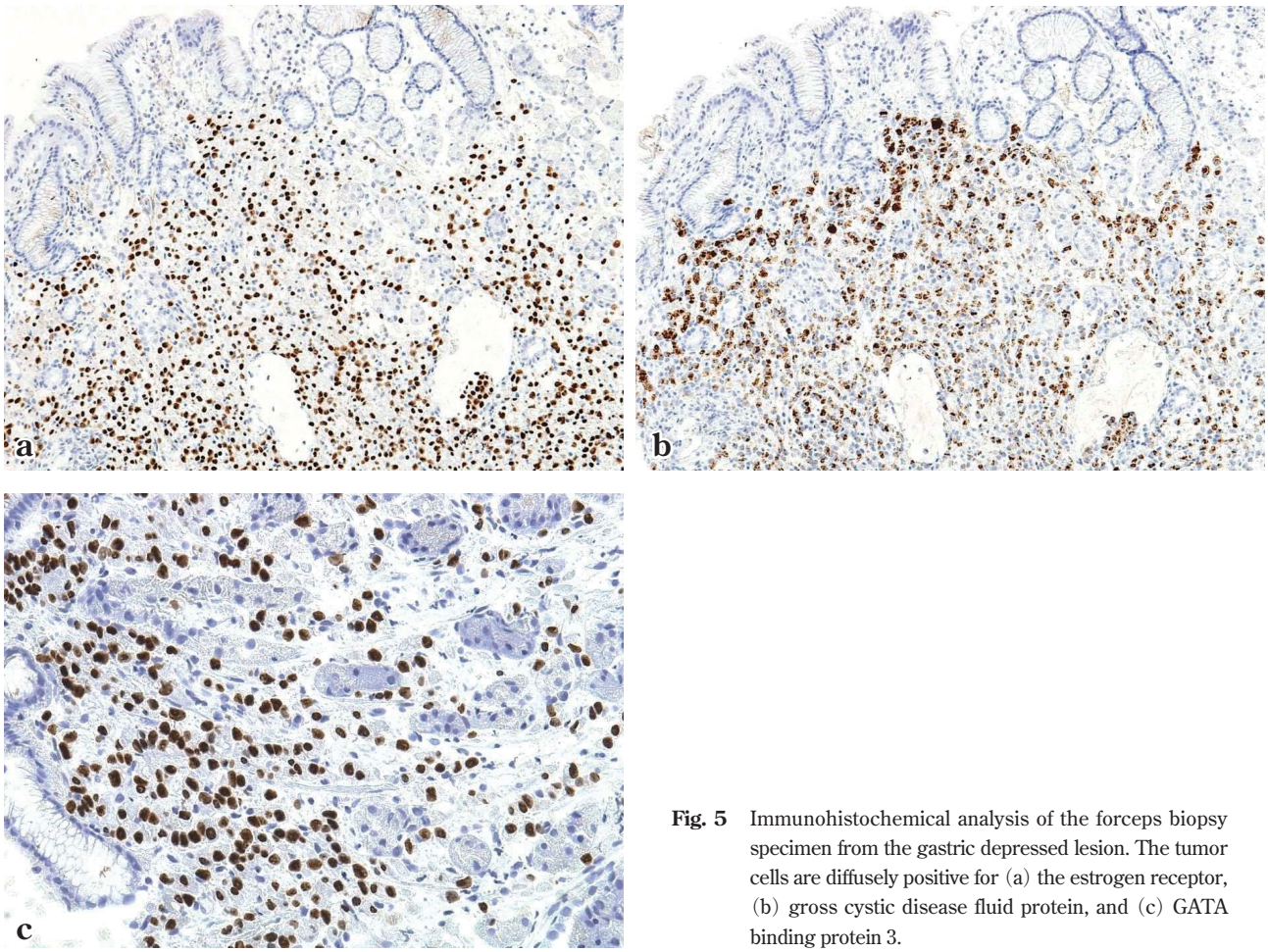

Fig. 5 Immunohistochemical analysis of the forceps biopsy specimen from the gastric depressed lesion. The tumor cells are diffusely positive for (a) the estrogen receptor, (b) gross cystic disease fluid protein, and (c) GATA binding protein 3.

Table 1. Clinicopathological characteristics of gastric metastasis from breast cancer including our case (n=50)

・Age yrs (range)	62 (41-86)	・Endoscopic findings	
・Gender, men: women	0:50	Erosion	(30%)
・Histological type		linitis plastica type	(24%)
Invasive lobular carcinoma	(46 %)	Primary early gastric cancer type	(22%)
Invasive ductal carcinoma	(46 %)	(depressed type)	
Medullary carcinoma	(2%)	Advanced gastric cancer type	(10%)
Malignant phyllodes tumor	(2%)	Submucosal tumor	(2%)
Unknown	(4%)	Unknown	(12%)
		・Median interval of diagnosis of gastric metastasis (range)	64.2 months (0-348)
		・Survival months from diagnosis of gastric metastasis (range)	16 months (1-114)

type of breast cancer was invasive ductal carcinoma (46%). The endoscopic findings were discolored slightly depressed lesions with a small reddish elevated margin. Magnifying endoscopy with narrow band imaging revealed irregular microvessels and the disappearance of the white zone component with a demarcation line. These endoscopic and magnifying endoscopic findings resemble primary undifferentiated-type early gastric cancer (22%). Differential diagnosis of primary gastric cancer and metastatic gastric lesion from breast cancer was difficult. The critical evidences for gastric metastasis from breast cancer were the presence of multiple gastric depressed

lesions and the patient's history of breast cancer.

Gastric metastasis from breast cancer may show a signet-ring feature, and thus can be confused with primary gastric signet-ring cell carcinoma. Therefore, detailed immunohistochemical staining is necessary for the diagnosis of gastric metastasis from breast cancer. Immunohistochemical staining for ER and PgR may be useful for diagnosing a metastasis from breast cancer; however, it is noteworthy that ER and PgR positivity have been reported in 32% and 12% of gastric cancers, respectively [5), 9), 10)]. Immunohistochemical staining for GCDFP-15 is useful to diagnose whether a tumor is a metastatic tumor from breast cancer or primary gastric cancer. The GCDFP-15 marker is both sensitive（45%–76%）and specific（91.8%–100%）[11), 12)]. The GATA-3 is currently considered a reliable, sensitive, and specific immunomarker for the diagnosis of breast cancer. The GATA-3 is both sensitive（76.8%）and specific（77.4%）[13), 14)]. In our patient, the metastatic tumor was positive for ER, GCDFP-15, and GATA-3. These findings suggest that immunohistochemical staining is necessary for diagnosing metastatic breast cancer.

GI metastasis from breast cancer is rare. However, gastroenterologists should be aware of the possibility of GI metastasis. If gastric metastasis from breast cancer is suspected, clinicians should not forget to take a detailed history and request a pathologist to perform an immunohistochemical diagnosis.

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（平成 28. 10. 8 受付，平成 28. 11. 14 受理）

「The authors declare no conflict of interest.」