

Gastric metastasis of triple negative invasive lobular carcinoma

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Abstract

Invasive lobular carcinomas are the second most common type (5% to 15%) of invasive breast carcinomas. The most frequent sites of breast cancer metastasis are the local and distant lymph nodes, brain, lung, liver, and bones; metastasis to the gastrointestinal system, especially to the stomach, is rare. When a mass is detected in an unusual place in a patient with invasive lobular carcinoma, it should be kept in mind that such a mass may be either a second primary carcinoma or the metastasis of an invasive lobular carcinoma. In this report, we present a case of gastric metastasis from triple-negative invasive lobular breast cancer. It is important to make an accurate diagnosis by distinguishing gastric metastasis from breast cancer in order to select the best initial treatment for systemic diseases of breast cancer. Considering our case, healthcare professionals should take into account that cases with invasive lobular breast cancer may experience unusual metastases.

Introduction

Among the two most common histologic types of invasive breast cancer are invasive lobular carcinoma and invasive ductal carcinoma. Invasive lobular carcinoma is a subtype of invasive breast carcinoma and constitutes nearly 6.2% of invasive breast carcinoma.¹ It differs from invasive ductal carcinoma due to some factors, such as the increased frequency of multifocality and bilateralism, difficulty in defining the margins during clinical examinations, mammographic features, and even features at surgery. Gene profiling studies have contributed significantly to defining all types of cancers, and thus, breast cancer, the most commonly seen cancer among women, has been classified as luminal A, luminal B, HER2-overexpressing, and triple-negative carcinoma.

Triple-negative carcinoma is a condition in which the estrogen receptor (ER), the progesterone receptor (PR), and HER2 are negative. In several studies, the condition described as triple-negative carcinoma is also termed basal-like breast carcinoma. However, although triple-negative lobular carcinomas are rarely encountered in studies related to breast cancer, hormone receptor overexpression is seen at a higher rate.² In addition, triple-negative lobular carcinomas are less frequently seen compared with triple-negative carcinomas in invasive ductal carcinoma.² In a study, Somali *et al.* found that although invasive lobular histology was less frequent (8.2%), the proportion of medullary, tubular, and mucinous carcinomas was significantly higher (15.9%) in the triple-negative carcinoma group.³

The most frequent sites of breast cancer metastasis are the local and distant lymph nodes, brain, lung, liver, and bone, while metastasis to the stomach is rare. The most common sites of gastric metastasis in breast cancer are known to be fundus (43%), antrum (43%), or both (14%). In addition, the majority of gastric metastases are positive for hormonal receptors (79%).⁴ Diagnosis is established with histological and immunohistochemical analysis following gastroscopic biopsy; however, deciding between primary gastric cancer and gastric metastasis stemming from breast cancer is difficult in patients with breast cancer. Although the treatment regime is planned, it is important to differentiate between primary gastric cancer and breast cancer metastasis to the stomach due to the differences between the treatment modalities. In this report, we present a case of gastric metastasis that occurred in a woman with triple-negative invasive lobular carcinoma.

Case Report

A 47-year-old female patient was admitted to the General Surgery Department of Konya Training and Research Hospital with a palpable mass in the left breast. Her ultrasonographic breast examination showed a 31×31 mm hypoechoic mass in the upper outer quadrant of the left breast. In addition, breast mammography revealed a 35×26 mm Breast Imaging Reporting and Data System (BI-RADS) 4 mass in the upper outer quadrant of her left breast. The patient was diagnosed with invasive lobular carcinoma through Tru-Cut biopsy in November 2011. On immunohistochemical staining, ER, PR, and HER2 were negative. In whole-body bone scanning, bone metastasis was detected in the T10, T11, L1, L2, L3, and L4 vertebrae. Since the patient was diagnosed with stage IV breast cancer, 6 palliative

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tive cycles of 500 mg/m² fluorouracil, 50 mg/m² doxorubicin, and 500 mg/m² cyclophosphamide (FAC) were administered. The patient showed a complete response to the treatment and was followed-up without any medicine for 3 years after the chemotherapy. Positron emission tomography-computed tomography (PET-CT) was performed 3 years later due to an increase seen in the CEA and CA 15-3 values. PET-CT revealed bone metastasis as well as a small wall-thickening mass [standardized uptake value (SUV) maximum value of 5.7] in the corpus area of the stomach (Figure 1). Because a pathologist assessed the condition as primary stomach adenocarcinoma, and the mass was stained negatively with gross cystic disease fluid protein 15 (GCDFFP-15), subtotal stomach resection was surgically performed. In the pathological investigation of the specimen from the gastric resection, metastasis of invasive breast lobular carcinoma was reported (Figure 2). Immunohistochemical staining was performed and showed the tissues were cytokeratin 7 (CK7) positive, CK20 negative, GCDFFP-15 positive, and mammaglobin positive. ER, PR, and HER2 were also negative. The patient was administered 6 palliative cycles of

paclitaxel in combination with carboplatin chemotherapy. The patient was scored 1 in terms of The Eastern Cooperative Oncology Group (ECOG) performance and has been followed-up with administration of only zoledronic acid per month for the bone metastasis.

Discussion

The most common sites of breast cancer metastasis are the local and distant lymph nodes, brain, lung, liver, and bone, while metastasis to the gastrointestinal system and the stomach relatively rare.¹ Unlike invasive ductal carcinoma, invasive lobular carcinoma has a higher tendency to unusual metastasis to different parts of the body such as the skin, ovaries, duodenum, stomach, colon, pleura, peritoneum, and meninges. Taal *et al.* found that of 51 cases diagnosed as metastatic breast cancer with endoscopy in the stomach, 36 had invasive lobular carcinoma while 10 had invasive ductal carcinoma.⁵ Symptoms of gastric metastasis are often nonspecific and include

hematemesis, malena, epigastric pain, dysphagia, vomiting, and anorexia.⁵⁻⁹ Taal *et al.* determined that in cases of stomach metastasis breast cancer, 71% experienced loss of weight, 53% experienced abdominal pain, and 41% experienced vomiting.⁵ Although our case was determined to suffer from no pain or dyspeptic complaints, a small mass in the gastric area was detected on PET-CT performed due to an increase in CA 15-3, a tumoral marker related to breast cancer. Gastric metastases are usually recognized as a diffuse infiltration with endoscopy. Taal *et al.* also found that of breast cancers, 18% of stomach metastases were localized, and 57% were diffused infiltrative diseases.⁵ Similarly, we also obtained a biopsy specimen by performing gastroscopy in the gastric area where the small mass was localized. Immunohistochemical analyses are recommended for the accurate diagnosis of breast cancer metastasis to the gastrointestinal system and stomach. Not observed in gastric cancer, ER and PR expressions are beneficial in the diagnosis of breast cancer metastases to the gastrointestinal system and stomach.¹⁰ In most previous studies performed regarding the

topic, ER and PR were positive.⁶⁻¹¹ However, these markers are not useful for diagnosing breast cancer metastases to the gastrointestinal area and stomach when the primary lesion is negative for ER and PR.¹² In our case, because the primary breast cancer was detected as triple-negative, pathologists had difficulty diagnosing the specimen obtained from the stomach. Our case was surgically exposed to partial gastrectomy because as a result of the biopsy pathologists considered the case was gastric adenocarcinoma. While forming the diagnostic procedure of breast cancer metastasis to the stomach, immunostaining of CK20 and CK7 is a beneficial modality. CK7 and CK20 expression patterns are very useful in diagnosing metastatic carcinomas of uncertain origin. While approximately 30% of gastric adenocarcinomas are CK7+/CK20+, 20% are

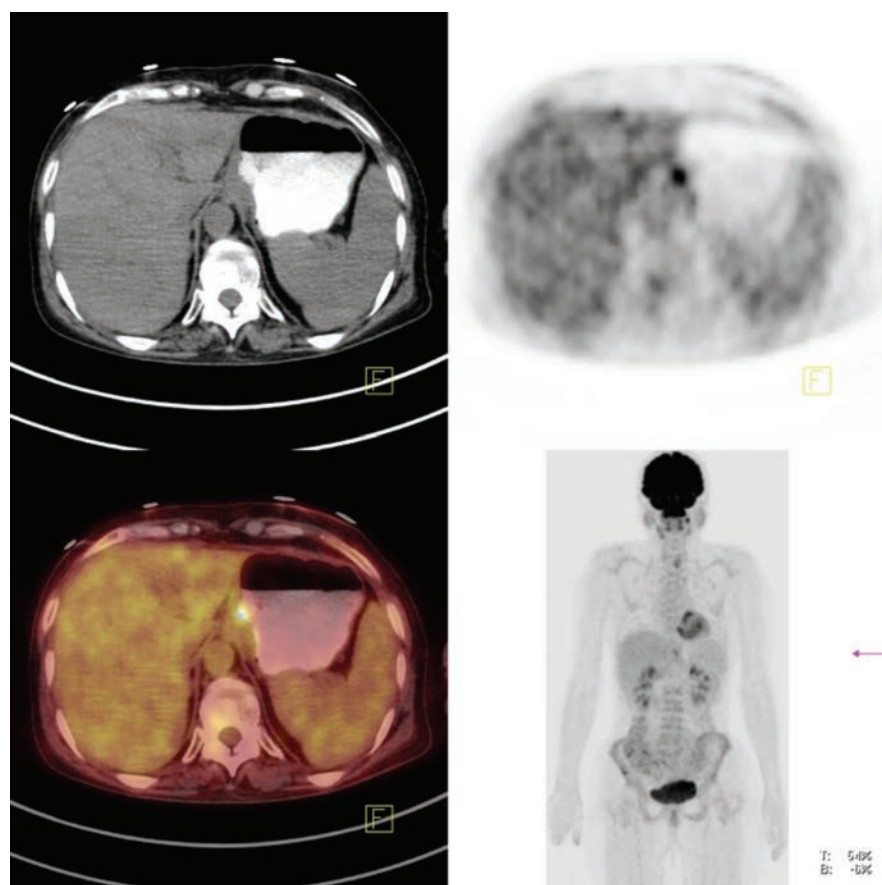


Figure 1. Gastric metastasis of invasive lobular carcinoma of the breast indicating 5.7 standardized uptake value max involvement seen as a thickening in gastric wall, image of positron emission-computed tomography.

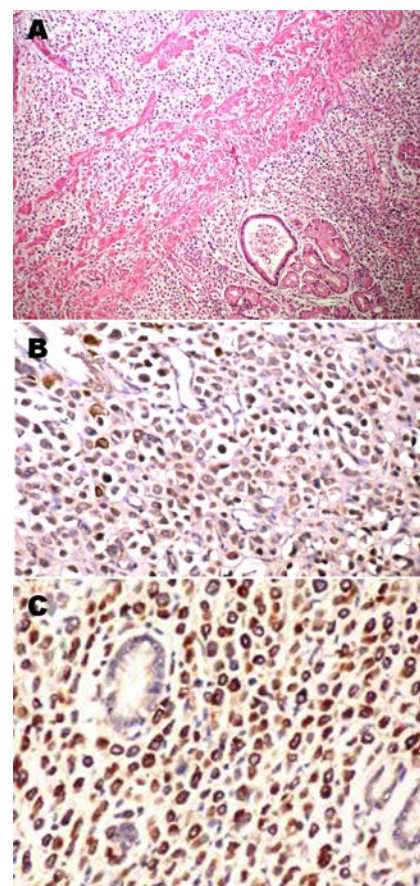


Figure 2. Tumor infiltration image of gastric metastasis of invasive lobular carcinoma of the breast seen in hematoxylin eosine staining in resected gastric specimen (A) and with positive finding with mammaglobin staining in resected gastric specimen (B). C) Infiltration image of gastric metastasis of invasive lobular carcinoma of the breast with positive finding, and image of gastric glands without staining, performed with GCDP-15.

CK7-/CK20⁺, 10% are CK7-/CK20⁻, and 20% are CK7+/CK20⁻.⁶⁻¹⁵ The immunoperoxidase technique shows GCDFP-15 is negatively found in malignant lesions of the gastric area.¹³ Chia *et al.* used GCDFP-15 to diagnose in ER negative tumors, and in recurrent or metastatic breast cancer cases, mammaglobin was superior to GCDFP-15 in diagnosing metastases that originate from breasts (mammaglobin positive in 47.8% of cases *vs.* GCDFP-15 positive in 11.3%).¹⁴

In our study, immunohistochemical staining was performed, and the tissues findings were as follows: CK7, positive; CK20, negative; GCDFP15, positive; ER, PR, and HER2, negative; and mammaglobin, positive. The fact that CK7 was positive, CK20 was negative, and mammaglobin, GCDFP-15 was positive despite the negativity of ER, PR, and HER2 in our case was commented by pathologists that the condition was related to breast cancer metastasis to the stomach.

The therapeutic recommendation for gastric metastasis from breast cancer is typically a systemic treatment. Surgical intervention should be reserved for palliation or certain cases of solitary resectable gastrointestinal tract metastases.⁴ Because of the concurrence of bone and gastric metastases, paclitaxel in combination with carboplatin chemotherapy was administered to our case as a systemic treatment.

Conclusions

In light of our report, we consider that when a mass is detected in an uncommon location in a patient with invasive lobular carcinoma, such a mass may be either a second primary carcinoma or the metastasis of an invasive lob-

ular carcinoma. Healthcare professionals should take into account that cases with invasive lobular breast cancer may experience unusual metastases.

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