KJCO Korean Journal of Clinical Oncology
Korean Journal of Clinical Oncology 2024;20:41-45
https://doi.org/10.14216/kjco.24007
pISSN 1738-8082 · eISSN 2288-4084
Case Report

Rectal metastasis arising from breast cancer: a case report

Kyeong Eui Kim[1], Hye Won Lee[2], Sung Uk Bae[1]

[1]Department of Surgery, Keimyung University Dongsan Medical Center, Keimyung University School of Medicine, Daegu, Korea
[2]Department of Pathology, Keimyung University Dongsan Medical Center, Keimyung University School of Medicine, Daegu, Korea

Breast cancer is the most common cancer among women worldwide. Breast cancer often metastasizes to the regional lymph nodes, bone, brain, liver, and lungs, whereas gastrointestinal tract metastases are rare. Herein, we present a rare case of rectal metastasis from breast cancer that occurred during palliative chemotherapy. A 69-year-old female with a history of invasive ductal carcinoma, negative for hormonal receptors and positive for human epidermal growth factor receptor 2 (HER2) receptor, underwent various treatments, including neoadjuvant chemotherapy, breast-conserving surgery, and adjuvant therapy. Eight months postoperatively, the patient experienced axillary lymph node recurrence, requiring palliative chemotherapy. Despite ongoing treatment, metastatic lesions were confirmed in the lungs and pleura. During palliative chemotherapy, the patient developed anal pain, and subsequent examination revealed an infiltrating rectal lesion. Despite histological confirmation of metastatic breast carcinoma and tubular adenoma, a multidisciplinary decision was made regarding palliative chemotherapy over surgical intervention. Eribulin was administered, but due to the patient's inability to tolerate the treatment, she passed away 3 months after rectal lesion diagnosis. Although breast cancer metastasis to the rectum is rare, clinicians should consider the possibility of rectal involvement and perform a digital rectal examination if anal symptoms are present.

Keywords: Breast neoplasm, Neoplasm metastasis, Rectum, Diagnosis, Case reports

INTRODUCTION

Female breast cancer is the second most common type of cancer globally, the most frequently diagnosed among women, and the leading cause of cancer deaths worldwide [1]. Metastasis from breast cancer to the regional lymph nodes, bone, brain, liver, and lungs is common. However, metastasis to the gastrointestinal tract (GIT) is less common, with autopsy series reporting an incidence rate varying between 8% and 35% [2]. The stomach is the most commonly affected organ in the GIT and rectal metastasis is extremely rare [2].

As the disease progresses in the palliative setting, patients exhibit symptoms that depend on the site of metastasis. Differentiating these conditions is important from primary colorectal cancer, as their prognoses and treatments are entirely dissimilar [3]. Here, we report a rare case of rectal metastasis from breast cancer that occurred during palliative chemotherapy. Written informed consent for the publication of their details was obtained in advance from the patient.

CASE REPORT

A 69-year-old female patient was referred to our department with symptoms of dull anal pain and hematochezia, initially suspected to be hemorrhoids. Upon evaluation, she was diagnosed with invasive ductal carcinoma characterized by negative hormone receptors and positive human epidermal growth factor receptor 2 (HER2) receptors. Following four cycles of neoadjuvant chemotherapy with cyclophosphamide, paclitaxel, and epirubicin, the patient underwent breast-conserving surgery, radiotherapy, and trastuzumab as an adjuvant. Eight months after surgery, axillary lymph node recurrence occurred, and the patient underwent further axillary lymph node dissection. Surprisingly, contrary to the initial prognosis, which indicated negative hormonal receptors and a

Received: Jan 29, 2024 **Revised:** May 3, 2024 **Accepted:** May 25, 2024
Correspondence to: Sung Uk Bae
Department of Surgery, Keimyung University Dongsan Medical Center, Keimyung University School of Medicine, 1035 Dalgubeol-daero, Dalseo-gu, Daegu 42601, Korea
Tel: +82-53-250-7322, **Fax:** +82-53-250-7322
E-mail: sabiston0000@hanmail.net

positive HER2 receptor, recurrence revealed triple-negative breast cancer. However, in response to cancer progression, in addition to axillary lymph node dissection, the patient received palliative radiotherapy and chemotherapy with capecitabine and lapatinib, following the administration of docetaxel, trastuzumab, and pertuzumab. Despite ongoing chemotherapy, metastases to the pleura and lungs were observed.

Three years after initial diagnosis, the patient developed anal pain during palliative chemotherapy. A digital rectal examination revealed a rectal mass 5 cm from the anal verge. Subsequent colonoscopy revealed a rectal lesion that had infiltrated the entire circumference of the rectum (Fig. 1). Computed tomography (CT) of the abdomen revealed rectal thickening, but no abnormal regional lymph nodes (Fig. 2). Lung metastases were suspected based on the scant pleural effusion and numerous irregularly shaped nodules detected on chest CT. However, no bone metastases were detected on bone scan. A sigmoidoscopic biopsy was performed to validate the diagnosis of the rectal mass. In the rectal mucosa, the crypts were relatively bland-looking. However, infiltrating atypical cell nests were observed in the lamina propria. The pathological

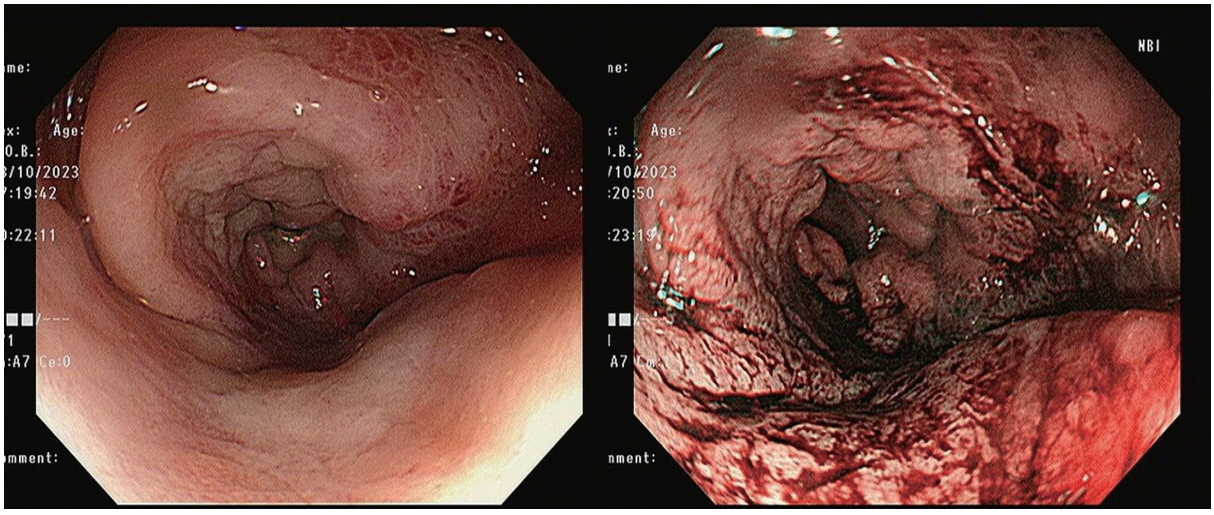

Fig. 1. The endoscopic image of the rectum showed 5 cm from the anal verge; there is a complex infiltrating ulcerative lesion occupying half of the circumference.

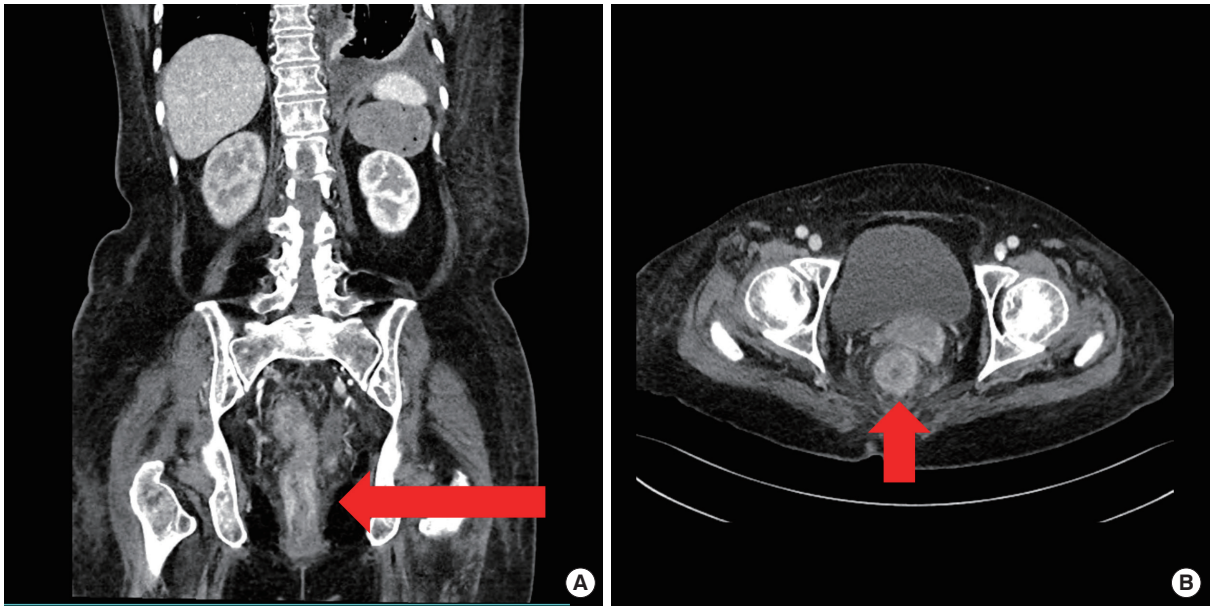

Fig. 2. Contrast-enhanced computed tomography scan shows long segmental and concentric rectal wall thickening, suggestive as linitis plastica, with perirectal infiltration (red arrow). (A) Coronal view. (B) Axial view.

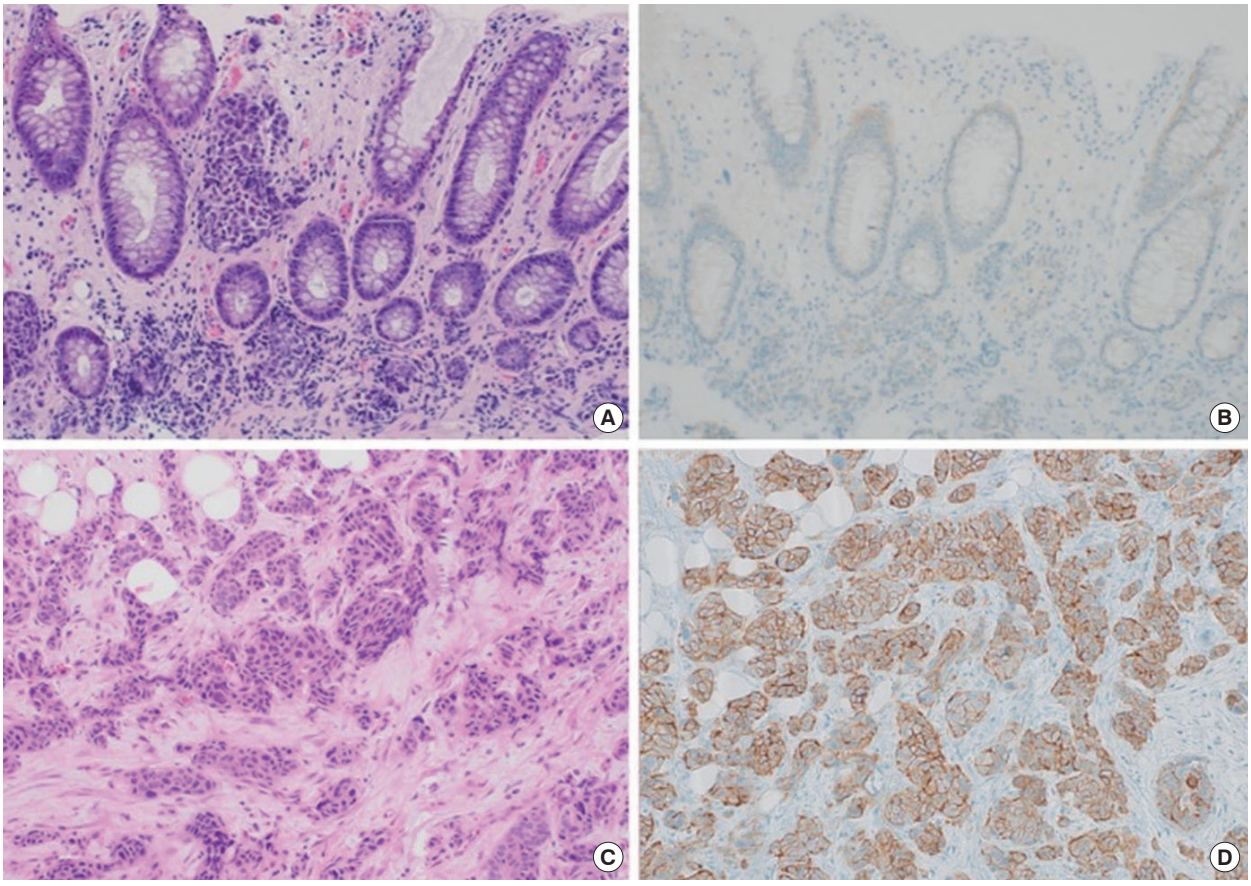

Fig. 3. Pathologic findings of the rectal metastasis originating from breast. (A) Infiltrating atypical cell nests were identified in the rectal mucosa. The gross tumor was an irregularly nodular, tan-to-gray color, solid mass. Diffuse punctate necrosis and focal degeneration are observed. (B) Immunohistochemically, HER2/neu stained faintly in the tumor cytoplasm, which was considered negative. (C) The primary breast cancer is consistent with invasive ductal carcinoma, with minimal tubule formation and marked nuclear pleomorphism. (D) Same slide of tumor cells revealed strong membranous staining for HER2/neu. (A, C) Hematoxylin and eosin staining, ×200; (B, D) immunohistochemistry, ×200.

findings were morphologically similar to those of the previous primary breast cancers (invasive ductal carcinoma). Immunohistochemistry confirmed triple-negative breast cancer, consistent with the diagnostic findings of relapse (Fig. 3). The multidisciplinary team decided to continue palliative chemotherapy instead of surgery for the rectal lesions. Unfortunately, the patient could not tolerate chemotherapy and died 3 months after the diagnosis of rectal metastasis.

DISCUSSION

Metastases to the GIT are rare occurrences in breast cancer, accounting for only less than 1% of all breast cancer cases [2]. The upper GIT is more commonly affected than the lower GIT. Ambroggi et al. [4] reported that only 7% of patients diagnosed with breast cancer developed metastases in the rectum. Interestingly, metastases to the GIT from breast cancer are predominantly associated with the lobular carcinoma subtype rather than the invasive ductal carcinoma [2]. Bolzacchini et al. [5] showed that of 967 patients with breast cancer with GIT metastases, only 17 had invasive ductal carcinomas. Similarly, McLemore et al. [6] reported invasive ductal carcinoma in 36% of all patients with metastatic breast cancer in the GIT. The precise mechanism of this phenomenon remains unclear; however, it could be attributed to varied invasion methods in infiltrating lobular carcinoma, characterized by the loss of E-cadherin and the distinct shape of lobular cells, which may predispose them to being trapped in the GIT [7]. Genomic instability induces considerable intercellular genetic heterogeneity in cancer cells, correlating with therapeutic resistance in breast cancer treatment. Niikura et al. [8] reported that the overall discordance rate for HER2-positive primary tumors was 24%, and that patients with HER2 discordance had poorer overall survival than those with HER2 concordance. However, whether the loss of HER2 amplification reflects the response to therapy or resistance

mechanisms and whether chemotherapy can promote clonal selection of HER2-amplified tumors is unclear [9]. In our case, the patient was initially diagnosed with primary HER2-positive tumors and treated with trastuzumab. However, metastatic tumor biopsies revealed HER2-negative tumors. Despite multiple chemotherapy treatments, the patient showed poor prognosis in response to the treatment. Therefore, cancer treatment should be tailored not only at the time of diagnosis but also considering the changing biology of cancer as it progresses. Imaging modalities, in conjunction with molecular diagnosis and characterization, play a crucial role in this approach.

Breast cancer metastasis to the rectum can present with symptoms such as anal pain, hematochezia, and anal discharge, which may be mistaken for conditions like hemorrhoids or anal fistulas. A multitude of mechanisms increase the risk of developing benign anorectal conditions, including hemorrhoids and anal fissures, during cancer chemotherapy [10]. Constipation is a common but often overlooked clinical issue in patients receiving chemotherapy, often resulting from defecatory disorders related to dysfunction of the pelvic floor or anal sphincter. Defecatory disorders may result from prolonged avoidance of pain associated with the passing large, hard stool, or from conditions like anal fissure, or hemorrhoids. Additionally, complications of constipation, including rectal tearing and fissures caused by passing hard, dry stools, are also frequent [11]. Similarly, diarrhea is another frequently underestimated problem in patients receiving chemotherapy. Persistent chemotherapy-associated diarrhea may lead to the development of hemorrhoids and perianal skin breakdown [12]. Although cancers that metastasize to the rectum are rare and there are currently no specific reports on their incidence rates [13], treating anorectal benign disease based solely on patient complaints without conducting a physical examination could lead to incorrect diagnosis and treatment. Regardless of the type of cancer, routine digital rectal examination should be performed for an initial clinical assessment not only in breast cancer but also in all types of cancer if a patient presents with anorectal symptoms.

If an anorectal mass is detected during digital rectal examination, prioritizing a colonoscopy is necessary to obtain tissue biopsy for accurate diagnosis of malignant lesions. Following histopathological diagnosis, imaging studies, such as abdominopelvic CT or magnetic resonance imaging (MRI) are necessary to evaluate lesion extent and differentiate diagnoses. Colonoscopic findings can vary significantly, ranging from ulcers, mucosal thickening, frailty, stenosis, polyps, and even obstructing masses; however, it usually presents as linitis plastica, a diffuse colonic wall thickening [14,15]. MRI of rectal metastases from breast cancer showed diffuse concentric rectal wall thickening involving the submucosa and muscularis propria, sparing the mucosa and presenting as low signal on T2-weighted imaging. However, primary rectal cancer often exhibits enteric wall thickening with mucosal disruption and intermediate to high signal intensity on T2-weighted imaging [14]. In our case, abdominopelvic CT provided limited information about the rectal lesion. Thus, patients with primary rectal lesions based on endoscopic findings should undergo pelvic MRI and should be carefully diagnosed before initiating treatment.

Although breast cancer metastasis to the rectum is rare, clinicians should consider the possibility of rectal involvement, and perform digital rectal examinations and imaging evaluations when anal symptoms are present.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

FUNDING

None.

ORCID

Kyeong Eui Kim https://orcid.org/0000-0001-9984-9976
Hye Won Lee https://orcid.org/0000-0001-8540-524X
Sung Uk Bae https://orcid.org/0000-0002-7876-4196

REFERENCES

1. Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin 2024;74:229-63.
2. Di Micco R, Santurro L, Gasparri ML, Zuber V, Fiacco E, Gazzetta G, et al. Rare sites of breast cancer metastasis: a review. Transl Cancer Res 2019;8(Suppl 5):S518-52.
3. Hoang DA, Nguyen AQ, Nguyen KT, Pham MD. Rectal metastasis originating from breast cancer: a rare case report. Ann Med Surg (Lond) 2022;78:103841.
4. Ambroggi M, Stroppa EM, Mordenti P, Biasini C, Zangrandi A, Michieletti E, et al. Metastatic breast cancer to the gastrointestinal tract: report of five cases and review of the literature. Int J Breast Cancer 2012;2012:439023.
5. Bolzacchini E, Nigro O, Inversini D, Giordano M, Maconi G. Intestinal metastasis from breast cancer: presentation, treatment and survival from a systematic literature review. World J Clin Oncol

2021;12:382-92.
6. McLemore EC, Pockaj BA, Reynolds C, Gray RJ, Hernandez JL, Grant CS, et al. Breast cancer: presentation and intervention in women with gastrointestinal metastasis and carcinomatosis. Ann Surg Oncol 2005;12:886-94.
7. Lehr HA, Folpe A, Yaziji H, Kommoss F, Gown AM. Cytokeratin 8 immunostaining pattern and E-cadherin expression distinguish lobular from ductal breast carcinoma. Am J Clin Pathol 2000;114:190-6.
8. Niikura N, Liu J, Hayashi N, Mittendorf EA, Gong Y, Palla SL, et al. Loss of human epidermal growth factor receptor 2 (HER2) expression in metastatic sites of HER2-overexpressing primary breast tumors. J Clin Oncol 2012;30:593-9.
9. Niikura N, Tomotaki A, Miyata H, Iwamoto T, Kawai M, Anan K, et al. Changes in tumor expression of HER2 and hormone receptors status after neoadjuvant chemotherapy in 21,755 patients from the Japanese breast cancer registry. Ann Oncol 2016;27:480-7.
10. McQuade RM, Stojanovska V, Abalo R, Bornstein JC, Nurgali K. Chemotherapy-induced constipation and diarrhea: pathophysiology, current and emerging treatments. Front Pharmacol 2016;7:414.
11. Leung L, Riutta T, Kotecha J, Rosser W. Chronic constipation: an evidence-based review. J Am Board Fam Med 2011;24:436-51.
12. Shafi MA, Bresalier RS. The gastrointestinal complications of oncologic therapy. Gastroenterol Clin North Am 2010;39:629-47.
13. Janjic O, Labgaa I, Hubner M, Demartines N, Joliat GR. Metastasis to the rectum: a systematic review of the literature. Eur J Surg Oncol 2022;48:822-33.
14. Lau LC, Wee B, Wang S, Thian YL. Metastatic breast cancer to the rectum: a case report with emphasis on MRI features. Medicine (Baltimore) 2017;96:e6739.
15. Zhang B, Copur-Dahi N, Kalmaz D, Boland BS. Gastrointestinal manifestations of breast cancer metastasis. Dig Dis Sci 2014;59:2344-6.