



Diminutive Colon Metastasis From Breast Cancer: An Unexpected Finding in a Patient Undergoing Ulcerative Colitis Surveillance

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ABSTRACT

Metastatic lesions to the colon are far less common than primary tumors. Breast cancer metastasis to the colon is rarely reported, and it is often atypical in presentation and difficult to diagnose. We present a case of a diminutive asymptomatic breast cancer metastasis to the colon found during surveillance colonoscopy in a patient with long-lasting ulcerative colitis, which was initially regarded as a colitis-associated dysplastic lesion. Because early detection of metastatic disease plays a key role in the treatment of patients with breast cancer, a high index of suspicion must be maintained for atypical metastatic presentations to the gastrointestinal tract.

KEYWORDS: breast cancer; colon metastasis; ulcerative colitis

INTRODUCTION

Breast cancer is the most common malignancy and the main cause of cancer-related deaths in women.¹ Breast cancer typically metastasizes to the liver, lungs, bones, lymph nodes, and brain. The gastrointestinal (GI) tract is rarely affected, and colonic metastases from this type of malignancy are rare and often pose a diagnostic dilemma because of their nonspecific presentation and resemblance to other malignant or benign lesions.²⁻⁴ Patients with ulcerative colitis (UC) are at increased risk of developing colorectal cancer and require regular surveillance colonoscopies because early identification of dysplasia is crucial for its prevention.⁵

We present the case of a woman with long-lasting UC and history of breast cancer in whom, during a surveillance colonoscopy, an unexpected microscopic breast cancer metastasis resembling a colitis-associated lesion was identified.

CASE REPORT

A 48-year-old woman with left-sided UC diagnosed 15 years ago underwent a surveillance colonoscopy in our department. Four years ago, she was diagnosed with breast cancer and underwent a partial left mastectomy. Histopathology revealed a moderately differentiated invasive ductal breast carcinoma with positive surgical margins. The tumor was positive for estrogen and progesterone receptors and negative for Her2/neu. Six months after adjuvant chemotherapy was completed, an adjunctive resection and lymph node dissection was performed, revealing metastases in 5 axillary lymph nodes. She received radiotherapy and was started on an aromatase inhibitor and luteinizing hormone-releasing hormone agonist. Given the absence of distant metastases at initial staging, she had a favorable prognosis and was under surveillance with history assessment, physical examination and blood tests every 4–6 months, and annual mammograms. A computed tomography scan of the chest, abdomen, and pelvis 2 years after her diagnosis did not reveal evidence of recurrence or metastatic disease.

Regarding her UC, she had been previously treated with 5-aminosalicylates (5-ASAs) and azathioprine because of frequent flare-ups requiring corticosteroids. Azathioprine was discontinued after the diagnosis of breast cancer, and she remained only on 5-ASAs. Three years ago, she presented with a flare-up and was treated with budesonide-MMX achieving clinical and endoscopic remission.



Figure 1. A 7 mm slightly elevated lesion with a central depression (Paris IIa + c) in the rectosigmoid flexure seen with high-definition endoscopy.

However, owing to a new relapse, within 6 months, she was given a course of classical corticosteroids and the 5-ASAs were increased to the maximum dose per os and per rectum with clinical response. Biological treatment was under consideration.

A surveillance colonoscopy was performed while the patient was asymptomatic. She was still on hormonal therapy. At colonoscopy, a mildly friable mucosa with no ulcerations (endoscopic Mayo score I) was noted in the left colon, and chromoendoscopy with methylene blue was performed. A small 7 mm slightly elevated lesion with a central depression (Paris IIa + c) and abnormal microvascular pattern was identified in the rectosigmoid flexure, which was considered suspicious for dysplasia and was removed en bloc by endoscopic mucosal resection (Figures 1–3).

Pathological examination revealed colonic mucosa diffuse infiltration by adenocarcinoma which stained positive for CK7

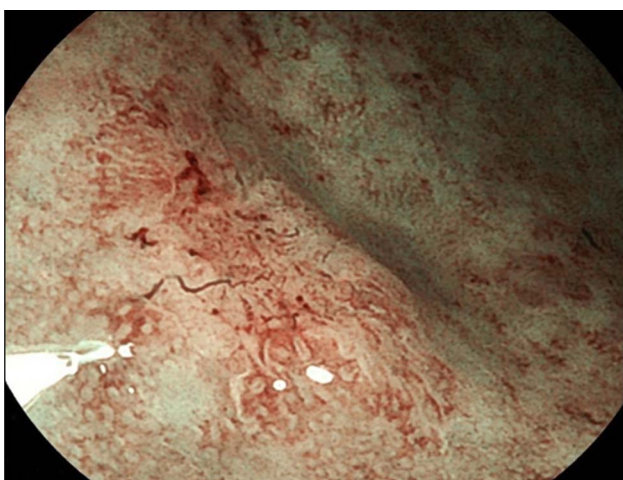


Figure 2. Abnormal microvascular pattern observed in the center of the lesion with BLI and electronic magnification ($\times 1.5$). BLI, blue light imaging.



Figure 3. Site of the lesion after EMR was performed. EMR, endoscopic mucosal resection.

and GATA3, without activity for CDX2 and CK20 on immunohistochemistry (Figures 4–6). The diagnosis of colon infiltration by breast carcinoma was hence established, and the patient was referred to her oncologist for further management. A subsequent positron emission tomography and computed tomography scan revealed a 10 mm lesion in the right lung but no other metastases.

DISCUSSION

Female breast cancer has surpassed lung cancer as the leading cause of global cancer incidence in 2020. Among women, breast cancer accounts for a quarter of all new cases and is the main cause of cancer-related mortality.¹

Breast cancer typically metastasizes to the lungs, bones, liver, and brain. The GI tract is an uncommon site of metastasis, with clinical studies reporting GI metastases occurring in <1% of

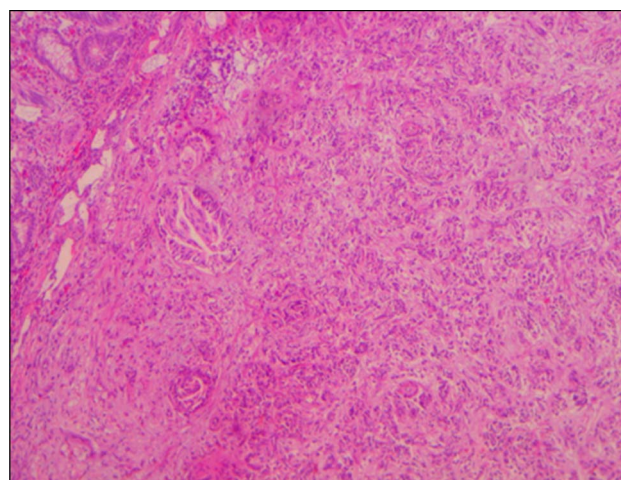


Figure 4. Colon mucosa infiltration by breast carcinoma cells (hematoxylin and eosin stain, $\times 100$).

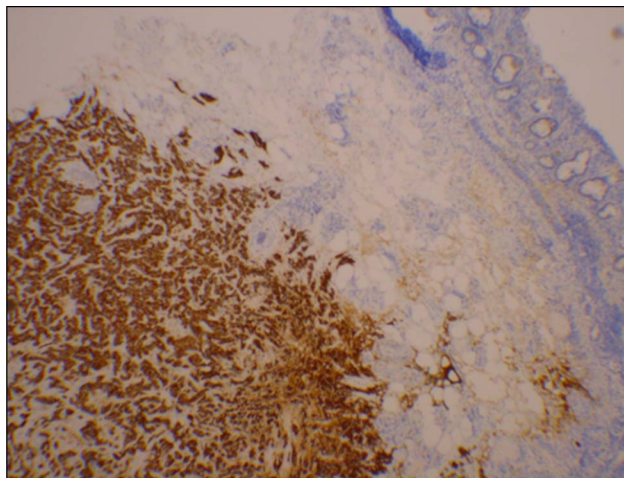


Figure 5. Immunohistochemistry demonstrating breast cancer cells positive for CK7 (negative colon glands) ($\times 40$).

patients with breast cancer, although autopsy series demonstrate significantly higher rates up to 16%.^{6–8} In most cases, these metastases tend to develop in the stomach while colon metastases are relatively rare, with a large study reporting only 24 cases among 12,001 patients diagnosed with breast cancer between 1985 and 2000 with subsequent metastasis to the colon.^{6,7}

The histological type of breast cancer seems to play a role regarding the tendency to metastasize to the GI tract. Invasive lobular breast carcinoma tends to give metastasis more often to the GI tract than invasive ductal breast carcinoma, which is the most common subtype of breast cancer. An extensive study of 2,605 patients showed that invasive lobular breast carcinoma had a significantly higher rate of GI metastases than ductal carcinoma (4.5% vs 0.2%).⁹ In our case, however, the histological type of primary breast malignancy was invasive ductal breast carcinoma.

Colon metastases from breast cancer may resemble other malignant or even benign lesions, and colonoscopy with biopsies is a valuable tool for making a correct diagnosis. Their endoscopic appearance varies, and they can present as large masses, irregular wall thickening, benign looking lesions resembling polyps or small nonspecific mucosal lesions, as in our case.^{3,10–12}

Immunohistochemical analysis plays a key role in differentiating breast cancer colon metastases from primary colorectal neoplasms and metastases originating from other malignancies. Most metastatic breast carcinomas stain positive for CK7 as in our case, contrary to GI malignancies that are negative for CK7 and positive for CK20 and CDX2. GATA-3 staining has also been used, and it is noted to be positive in 100% of lobular and 96% of ductal metastatic breast cancers.^{11,13}

Although the development of metastasis in a region affected by UC in our patient may be coincidental, tissue injury from chronic inflammation in the area caused by the long-lasting colitis may have played a role. It has been postulated that injury

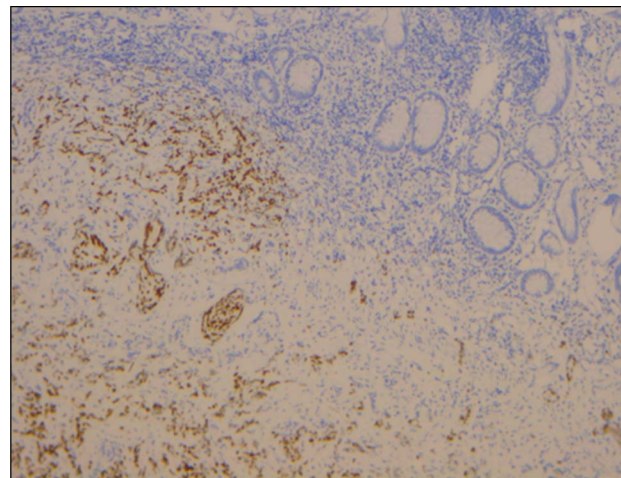


Figure 6. Immunohistochemistry demonstrating breast cancer cells positive for GATA3 (negative colon glands) ($\times 100$).

and inflammation to a specific site may predispose to the development of distant metastasis at that site, although further research is necessary to investigate this hypothesis.^{14,15} To our knowledge, this is the only case in the literature of breast cancer metastasis to the colon in a patient with UC.

Patients with breast cancer require close follow-up throughout their lifetime because distant metastatic lesions can occur even decades later. Early detection of metastatic disease plays a key role in the treatment of these patients, and a high index of suspicion must be maintained for atypical metastatic presentations of this type of malignancy.

DISCLOSURES

Author contributions: E. Telakis, C. Zlatinoudis, and E. Tsironi: conception. A. Stefanopoulos, A. Filippakou, and A. Theodoulou: data collection and literature review. A. Stefanopoulos and E. Telakis: drafting of the article. O. Tzaida: pathological examination and provision of pathology images. Critical revision of the article for intellectual content: All authors. E. Telakis is the article guarantor.

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Informed consent was obtained for this case report.

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