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Triple negative invasive lobular carcinoma of the breast presents as small bowel obstruction

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ABSTRACT

Metastasis from breast carcinoma to the gastrointestinal tract (GIT) is very uncommon. To date, only a few cases have been described worldwide. Of those which do metastasize to the GIT, only estrogen receptor (ER), progesterone receptor (PR) and HER2-neu receptor positive cancers have been reported and none have been mentioned in the U.S. We report a case of a 70-year-old white female with history of triple negative lobular carcinoma eight years earlier who presented with solitary jejunal mass causing obstruction.

1. Introduction

Breast cancer is the most common cancer affecting women in the US and the second-leading cause of cancer death according to the Centers for Disease Control and Prevention. One in eight U.S. women (about 12%) will develop invasive breast cancer over the course of her lifetime. Invasive lobular carcinoma (ILC) compromises 10% of breast cancers and is the second most common subtype after invasive ductal carcinoma (IDC) [1]. While metastatic pattern of IDC is associated with liver, lung, bone and brain, ILC is more likely to metastasize to the intra-abdominal viscera, uterus, ovaries, peritoneum or retro-peritoneal surfaces [3]. Small bowel metastasis from breast cancer is uncommon [4] and only 9% have been found in autopsy studies. Among cases spreading to the GIT, the histopathology is usually positive for ER, PR or HER2 receptors [5], especially in the invasive lobular type [6]. We describe a case of a triple negative ILC presenting 8 years later with small bowel metastasis causing obstruction.

The following case report is compliant with SCARE guidelines as per Agha et al.

2. Case report

A 70-year-old Caucasian female presented to Southampton Hospital Emergency Department complaining of intermittent abdominal pain, vomiting and diarrhea for the past two weeks. The patient had extensive past medical history including asthma, COPD, HTN, myocardial infarction x3, DM, ovarian cancer, uterine cancer, breast cancer and the following surgical history: hysterectomy, cholecystectomy, hernia repair and right total mastectomy with sentinel lymph node biopsy (SLNB) eight years earlier. Physical exam revealed a tender abdomen with involuntary guarding and hyperactive bowel sounds. A CAT scan of the abdomen and

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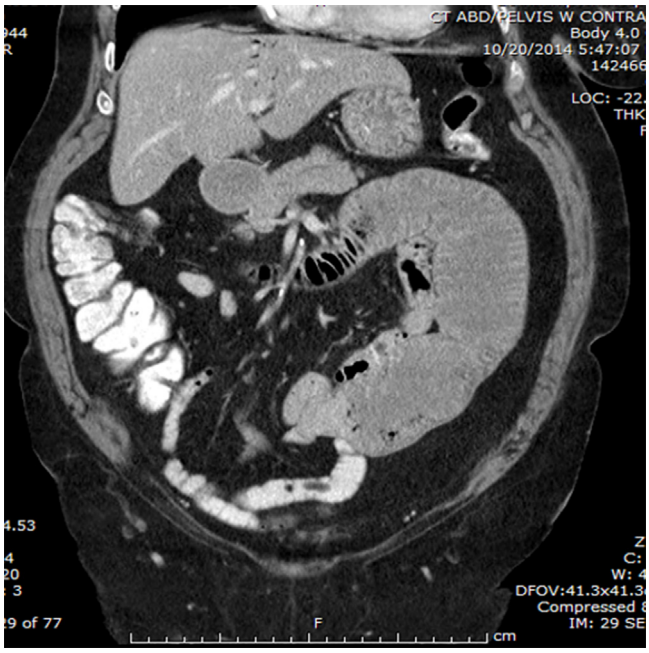


Fig. 1. CT scan showing small bowel obstruction.

pelvis was suspicious for small bowel obstruction and ischemia (Fig. 1). Laparoscopy and subsequent laparotomy revealed a mass-like lesion at the proximal jejunum about 30 cm from the ligament of Treitz with no adhesions around the tumor. While the distal small bowel was collapsed, the proximal bowel was severely thickened and edematous but there was no evidence of gangrene. Frozen section showed malignant tumor and an extended radical small-bowel-resection and an end-to-end anastomosis were performed. The immunohistopathologic profile of the tumor revealed cells positive for mammaglobin, supporting the diagnosis of metastatic carcinoma of the breast origin. Tumor cells presented as diffusely infiltrating cells or small clusters of cells positive AE1/AE2 but negative e-cadherin, favoring metastatic lobular carcinoma (Figs. 4 and 5

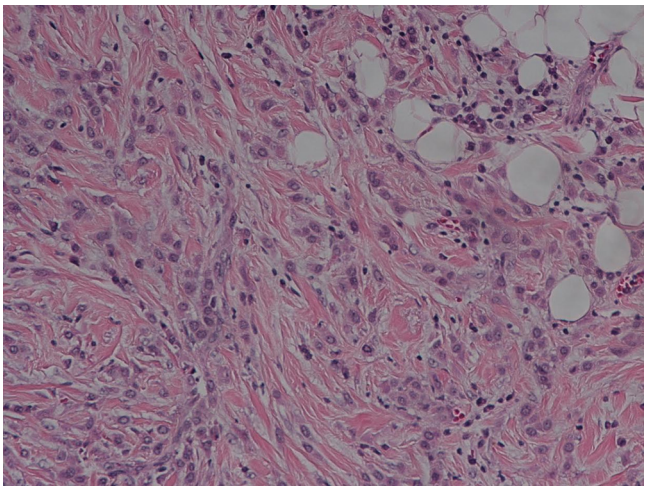


Fig. 3. Histology of original breast mass.

). In addition, immunostains were positive for GATA3 but negative for CDX2, ER, PR and the HER2-receptor. On further investigation of her original breast cancer history in 2005, mammography from 12/22/05 had revealed a 15 mm mass in the upper outer quadrant of the right breast as well as a focal asymmetric density in the medial aspect of the right breast. (Fig. 2). An ultrasound guided biopsy of the two masses revealed triple negative invasive lobular carcinoma. The patient had undergone a right total mastectomy and SLNB with two of the three sentinel nodes revealing isolated tumor cells by IHC. The patient was referred to a medical oncologist for possible chemotherapy but declined both times (at the time of the original breast cancer and at the time of metastasis to the jejunum) (Fig. 3).

3. Discussion

Invasive lobular carcinoma may be clinically difficult to diagnose due to being poorly defined. It is associated with an insidious growth and subtle mammographic features with architectural distortion being more common and microcalcifications less common

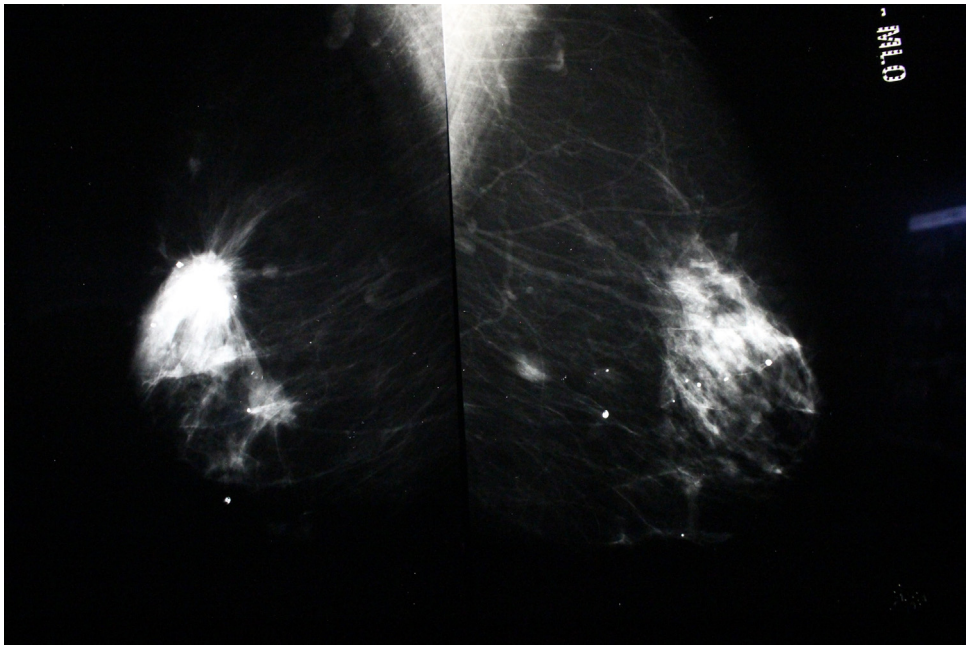
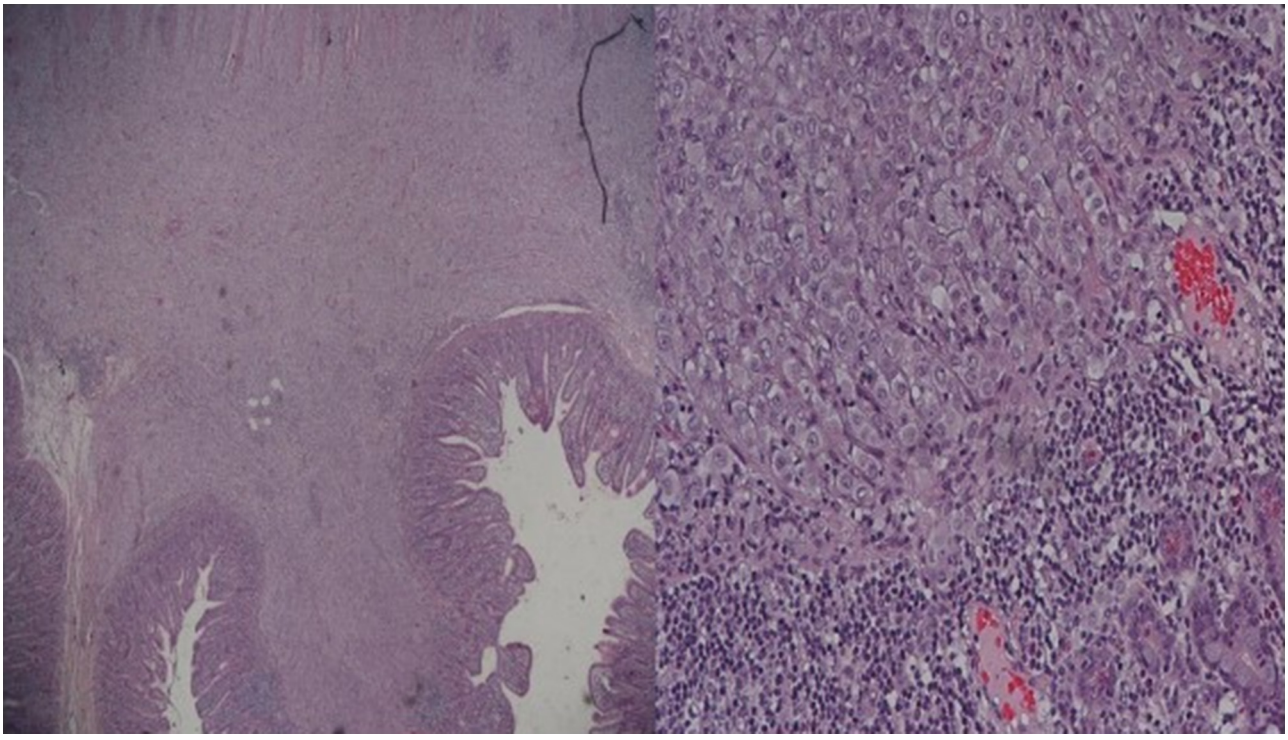


Fig. 2. Mammogram showing breast mass.



Figs. 4 and 5. H&E of metastatic LCIS in small bowel: 20X and 400X.

[7]. It is frequently multifocal and multicentric and up to 30–50% are bilateral [8]. Virtually all invasive lobular carcinomas lack the cell-cell adhesion molecule E-cadherin [9] and over 90% express estrogen receptor [10]. The HER2 protein is overexpressed in ~20% of invasive breast cancers. Up to 15% of U.S. invasive breast cancers are classified as lobular but it is rare for lobular breast cancer to be HER2 positive [11]. There have been several subtypes of breast cancer identified [12,13] as HER2 positive, ER positive (luminal A and B) and basal-like or "triple-negative" [14,15]. Triple negative carcinoma compromises about 15% of breast cancers, named so because it is negative for the ER, PR and HER2 receptors. Triple-negative cancers are generally high-grade, poorly differentiated tumors with poor prognosis. They are more common in younger women, women of African descent and carriers of BRCA1 germline mutations [16]. Only 5% to 15% of breast cancer patients have distant metastases at diagnosis and only a few cases of GIT involvement have been reported [17]. According to Uygun et al. [17] metastases to the intestinal tract from breast carcinoma are rarely recognized in the clinical setting and its true incidence is not known. The average survival of patients with GIT metastasis from the breast is about 6 years, hence there is probably a greater number of patients with metastasis to the GIT from breast that are not diagnosed. Per a 1993 study by Borst et al., only 17 patients had GI metastasis from breast cancer in a series of more than 2500 patients over an 18-year period; this shows an incidence of less than 1%[3]. According to Asch et al. autopsy series reported 52 cases of GIT metastasis secondary to breast cancer with the following distribution: 25% to the esophagus, 25% to the stomach, 28% to the small intestine, 19% to the colon and 4% to the rectum [8]. A more recent autopsy study by Cifuentes and Pickren reported 112 cases out of 707 autopsies (16%) were GI metastases of primary breast cancer out of which only 64 cases (9%) spread to the small bowel, 69 cases (10%) to the stomach and 57 cases (8%) to the large bowel [18].

4. Conclusion

Based on our extensive literature search, reported cases of breast cancer metastasizing to the small bowel are very limited. Of those cases, the original breast cancer is usually lobular with receptor positive histology that effects the terminal ileum rather than the rest of the small bowel [4]. Our case is one of few instances where invasive lobular carcinoma metastasizes to the proximal small bowel [19] and the first case reported in the US of triple negative invasive lobular carcinoma metastasizing to the jejunum [20].

Conflict of interest

No conflicts of interest.

Source of funding

No sponsorship.

Ethical approval

Granted

(All research was conducted under jurisdiction of the residency program in surgery and medicine at Stony Brook Medicine at Southampton Hospital and the pathology faculty at Stony Brook University Hospital, including ethics committee/approval).

Consent

Patient consent was obtained for publication.

Author contributions

1) Dr. Edna Kapenhas: contributed to writing and review of paper.
2) Dr. Bradley Gluck: contributed to imaging interpretation.

3) Dr. Kester Haye: contributed to pathology interpretation.
4) Dr. Jingxuan Liu: contributed to pathology interpretation.
5) Dr. Sang Pak: contributed with surgery performance and data.
6) Dr. Heidi Roppelt: reviewer of paper.

Registration of research studies

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Guarantor

Dr. Mariya Khokhlova and Dr. Edna Kapenhas.

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