

Metastatic triple negative ductal carcinoma presenting as an ileal mass

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Abstract

A 39-year-old African-American woman with a history of pT4bN2b triple negative ductal carcinoma of the left breast status-post left-sided modified radical mastectomy who did not receive adjuvant therapy presented to the emergency department 6 months after initial diagnosis with a 2-week history of worsening dyspnea on exertion. The patient's hemoglobin on admission was 4.9 g/dL and a stool guaiac test was positive. Subsequently, both upper endoscopy and colonoscopy were performed which revealed no evidence of upper gastrointestinal bleeding but did reveal bright red blood 20cm into the terminal ileum. A capsule endoscopy was then performed for further evaluation which discovered a polypoid smooth mass in the distal ileum. As the patient had frequent bloody bowel movements during the hospital course, a therapeutic laparotomy with subsequent removal of the ileal mass was performed. The histopathology of the mass was consistent with metastatic adenocarcinoma of the breast. While infrequent, extrahepatic gastrointestinal metastases are more common in lobular carcinoma, tend to arise on average 4-7 years after initial diagnosis and occur more frequently in hormone positive disease with the stomach being the most common site of metastasis. In this report, we describe the only reported case of metastatic triple negative ductal carcinoma arising in the ileum and the only case that reports extrahepatic metastases 6 months after initial diagnosis.

Keywords

breast cancer; triple negative breast cancer; metastatic breast cancer; gastrointestinal metastases

Abbreviations

Bca: Breast Cancer; EGM: Extrahepatic gastrointestinal metastases; BI-RADS: Breast Imaging Reporting and Data System; GCDPF: Gross Cystic Disease Fluid Protein

Introduction

Breast cancer (BCa) is the most common malignancy in women and the second main cause of cancer-related deaths [1]. About 75% of all BCa metastases will occur within the first 5 years after diagnosis. This is particularly true for hormone receptor-negative disease [2,3]. BCa typically metastasizes to bone, lungs, lymph nodes, brain and liver. While less frequent, extrahepatic gastrointestinal metastases (EGM) can also occur, albeit more frequently in lobular (58%) as compared to ductal carcinoma (38%) [4]. We report a case of a patient who presented with symptomatic anemia

6 months after the diagnosis of invasive triple negative ductal carcinoma. Further work-up revealed a distal ileal mass as the source of bleeding and biopsy of the mass confirmed metastatic Bca.

Case Presentation

A 39-year-old African-American woman presented to the emergency department of our university hospital in June 2016 with complaints of progressively worsening dyspnea on exertion for two weeks duration that was associated with fatigue and dizziness. She reported being able to walk only one block before experiencing shortness of breath. She had also noted black-colored stool for the past several months but attributed it to her oral iron-supplementation. She denied any nonsteroidal anti-inflammatory drug or alcohol use.

8 months prior, in October 2015, the patient had a mammography as she had noted a mass on her left breast that had been increasing in size over a 5 month span (since June 2015). Mammography revealed a lobulated 5.4cm mass in the inner quadrant of the left breast with extension to the superior and inferior quadrants that was classified as Breast Imaging Reporting and Data System (BI-RADS) 5. Subsequent ultrasound-guided biopsy of the mass revealed fibrocystic breast tissue with apocrine metaplasia. Given the high suspicion for malignancy, the patient underwent a modified radical mastectomy of the left breast with axillary dissection in December 2015. Of the 27 nodes removed, 5 had macro-metastases. Histopathology of the tumor was reported as invasive ductal carcinoma that stained negative for estrogen receptor, progesterone receptor and HER-2/neu. The tumor was staged as pT4bN2M0; stage IIIb. Following the modified radical mastectomy, the patient was scheduled for adjuvant therapy but was lost to follow-up until the current presentation in the emergency department. The patient reported that her grandmother had breast cancer. She stated that she did not present for adjuvant therapy because she was unable to miss work. Hemoglobin on admission was 4.9g/dL. Her baseline hemoglobin was around 8-9 g/dL. Iron was 24 ug/dL, ferritin was 87 ng/mL and TIBC was 220 ug/dL. Stool was guaiac positive and the patient was admitted to the hospital. Gastroenterology was consulted for work-up of suspected gastrointestinal bleeding.

Upper endoscopy was performed which revealed a normal esophagus, stomach and duodenum without evidence of bleeding. Colonoscopy was performed which revealed bright red blood seen 20cm into the terminal ileum without visualization of a mass or ulceration. It was then decided to perform a capsule endoscopy which revealed a polypoid smooth mass in the distal ileum occupying 50-70% of the small bowel lumen (Figure 1). A CT scan of the chest, abdomen and pelvis (Figure 2) revealed multiple enlarged left supraclavicular lymph nodes, an enlarged left sub-pectoral lymph node measuring 4.2cm, extensive necrotic superior mediastinal lymphadenopathy causing rightward deviation of the trachea and thyroid, narrowing of the small bowel which extended 4.4cm within the left pelvis and enlarged and rounded lymph nodes along the superior mesenteric vessels. The patient had a large bloody bowel movement one day after her colonoscopy was performed and surgery was subsequently consulted for evaluation. For palliative purposes, the patient was taken for a therapeutic laparoscopy to remove the small bowel mass. The procedure revealed multiple small bowel adhesions to the abdominal wall, a small bowel mass and multiple palpable mesenteric lymph nodes. 20cm of small bowel, including the mass, was resected and sent for histopathological examination. Histopathology of the small bowel mass (Figure 3A) was compared to the breast tumor obtained during mastectomy (Figure 3B) revealing similar cellular

architecture. Further evidence that the small bowel mass was a BCa metastases is shown by positive staining of the mass for mammoglobin (Figure 3C) and gross cystic disease fluid protein (GCDFP) (Figure 3D), both of which are breast specific stains. Figure 3E shows a low power image of the metastatic breast mass in relation to ileal tissue.

Oncology was consulted to discuss treatment options with the patient prior to discharge from the hospital. After explaining the risks, benefits and expectations of chemotherapy, the patient declined adjuvant chemotherapy as it would only be palliative and not curative in nature. She elected for home hospice and since discharge from the hospital in June 2016 has been lost to follow-up.

Discussion

Although infrequent, EGM from BCa are a clinically relevant and previously reported phenomenon. While the literature is comprised mostly of case reports, small case series or autopsy series, these studies have led to a better understanding of the characteristics of EGM. Lobular carcinoma has a disproportionately higher incidence of spread to the GI tract in comparison to other types of Bca [5-9]. Several published case series have reported that BCa EGM are estrogen receptor positive in 90% of cases, progesterone receptor positive in 63-76% of cases and HER2 positive in 5-10% of cases and the time from original breast cancer diagnosis to EGM ranged from 4-7 years [10,11]. Metastases as late as 30 years after initial Bca diagnoses have been reported [12]. The most common site of EGM was the stomach (60%) followed by esophagus (12%), colon (11%), small bowel (8%), and rectum (7%) [13]. Most of the signs and symptoms are non-specific, vary substantially and can include abdominal pain, bloating, melena, GI hemorrhage, bowel obstruction, nausea, vomiting, early satiety, dysphagia, weight loss, anemia and fatigue [11,14-18]. In a retrospective review of 73 patients, McLemore, et al. showed that the median overall survival after diagnosis of EGM was 28 months. Surgical intervention did not significantly extend overall survival and should be considered palliative. Favorable prognostic features regarding survival were the use of systemic chemotherapy or hormonal therapy. Poor prognostic features included advanced age and gastric metastatic disease [18].

In this case-report, we describe a 39-year-old African-American woman with stage IIIb triple negative invasive ductal carcinoma of the breast who was found to have a distal ileal metastases 6 months after diagnosis. This presentation is unique given that the majority of EGM occur in lobular carcinoma, the primary breast tumor tends to be estrogen and progesterone receptor positive, the small bowel is the least common site for metastases and the time from BCa diagnosis to EGM is between 4-7 years. Only two other case reports have been published on ductal carcinoma metastases to the small bowel [19, 20]. Cho et al. describe a case in which the primary tumor was estrogen and progesterone receptor positive, the metastasis was located in the ileum and was diagnosed 22 months after the initial diagnosis while Pavia et al. describe a case in which the primary tumor was triple negative, the metastasis was located in the jejunum and was diagnosed 12 years after the initial diagnosis. While our patient fits the clinical profile associated with triple negative disease including African-American race, younger age at diagnosis, more advanced disease stage, higher grade, and family history of Bca [21], the features of her metastatic disease are noteworthy. Owing to the increased survival of BCa patients, it is expected that more unusual presentations of metastatic disease, including involvement of the GI tract can be anticipated [22,23,24].

Figures



Figure 1: Capsule endoscopy image of distal ileal mass.

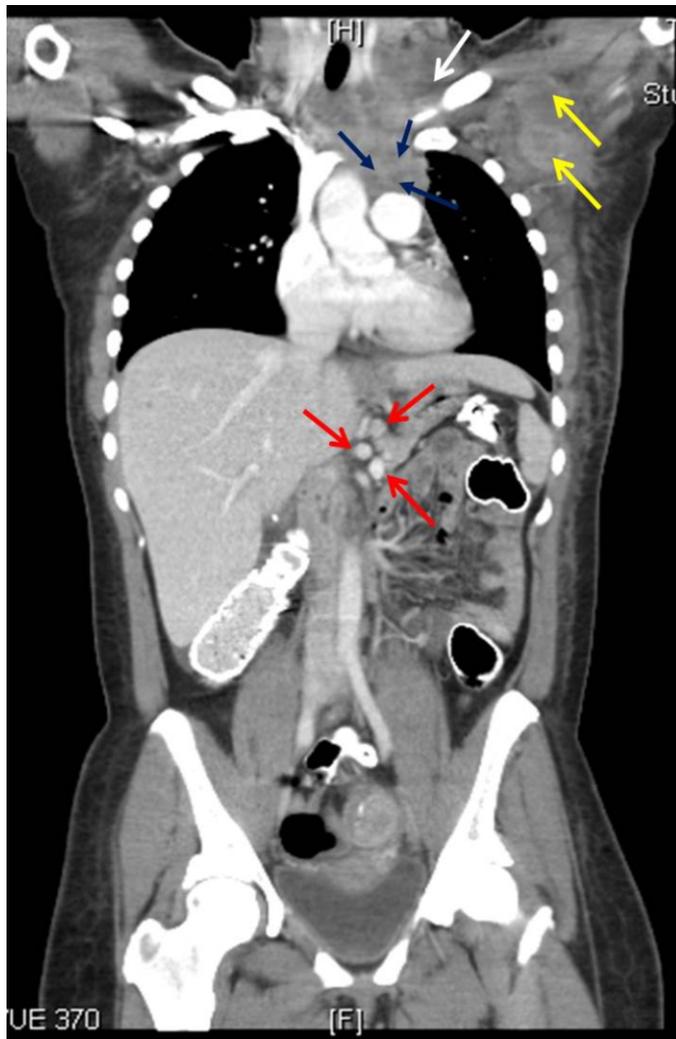


Figure 2: Lymphadenopathy seen on CAT Scan of chest, abdomen and pelvis. White arrow=supraclavicular lymph nodes. Yellow arrows=axillary lymph nodes. Blue arrows= mediastinal lymph nodes. Red arrows=mesenteric lymph nodes.

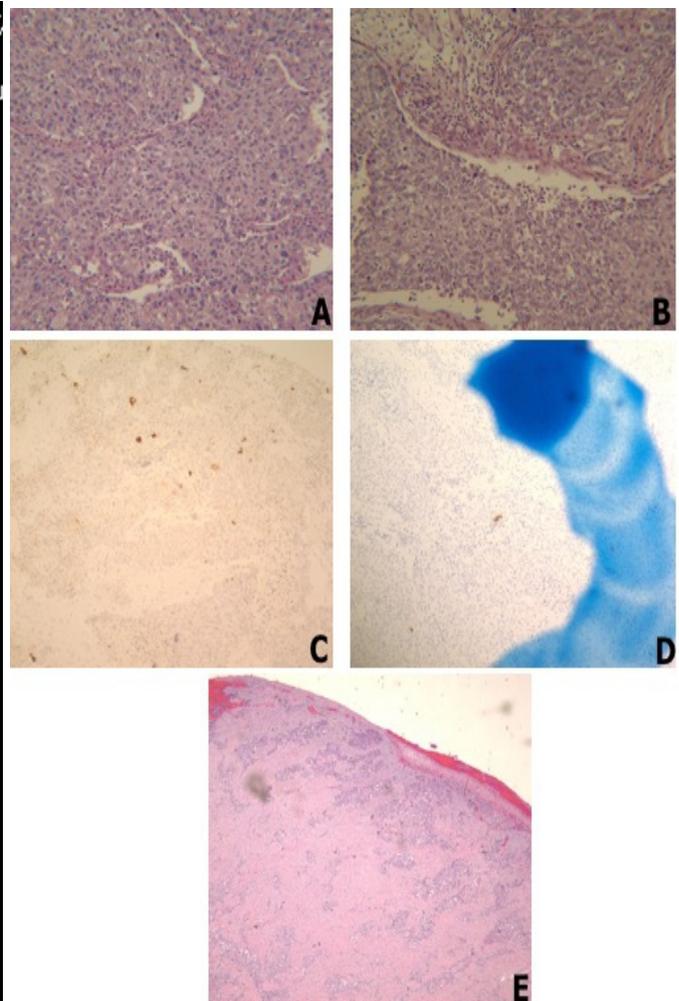


Figure 3: A. H & E stain of small bowel mass B. H&E stain of primary breast tumor. C. Mammoglobin stain of small bowel mass D. GCDFP stain of small bowel mass. E. Low power image of breast tumor in relation to outer wall of small intestine.

Conclusion

We describe the only reported case of an ileal metastases arising from triple negative ductal carcinoma. In addition, our case is the only reported case to describe an EGM metastases occurring 6 months after initial BCa diagnosis. Given the paucity of literature on the subject of EGM from BCa, particularly ductal carcinoma, further research is warranted on this topic including biomolecular features that lead to metastases, predictive and risk stratification models for likelihood of EGM, and response to treatment of EGM depending on hormone receptor status. The incidence of BCa is expected to rise in part due to an increasing African-American population and aging white population [25]. Clinicians need to be aware of the possibility of EGM in BCa patients presenting with new GI complaints and employ the appropriate diagnostic studies to allow for timely and adequate treatment.

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