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The Stomach: An Uncommon Site for Metastatic Breast Cancer

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1. Abstract

Invasive Lobular Carcinoma (ILC) is distinct from Invasive Ductal Carcinoma (IDC) in morphology and biology, with more advanced disease at presentation and a different pattern of metastatic spread. We present a case of metastatic ILC that presented with symptomatic anemia secondary to gastric metastasis. Metastasis of breast cancer to the gastrointestinal tract is uncommon but can present as distant recurrence years after the primary breast lesion is treated. A high index of suspicion should be present when a patient with invasive lobular breast cancer presents with unexplained anemia as this will guide subsequent investigations and treatment.

2. Introduction

Metastatic breast cancer to the gastrointestinal tract is uncommon with metastasis to the stomach being even more rare, with gastric metastases recognized in only 0.3-18% of patients with Stage 4breast cancer [1]. However it is important to recognize this subtle presentation as diagnosis alters prognosis and treatment approach [2]. Metastasis to the gastrointestinal tract is more commonly seen in ILC compared to IDC, which are biologically and morphologically distinct from each other, with the lack of E-cadherin in ILC postulated as the reason for this phenomenon [3].

3. Clinical Case

A 61-year old Chinese female presented with decreased effort tolerance and was found to have symptomatic anemia with a hemoglobin 6.3 g/dL, but no clinical evidence of active bleeding. She was admitted for blood transfusion and further workup of the anaemia. Both OesophagoGastroduoDenoscopy(OGD) and colonoscopy were performed. Her colonoscopy findings were unremarkable, while the OGD revealed inflammatory polypoidal mucosa along the bodyof the stomach and biopsies were taken (Figure 1). Histopathological examination showed a poorly differentiated adenocarcinoma which stained strongly positive for Estrogen Receptor (ER) and GATA-binding protein 3 (GATA-3), accompanied by a loss of E-cadherin expression.

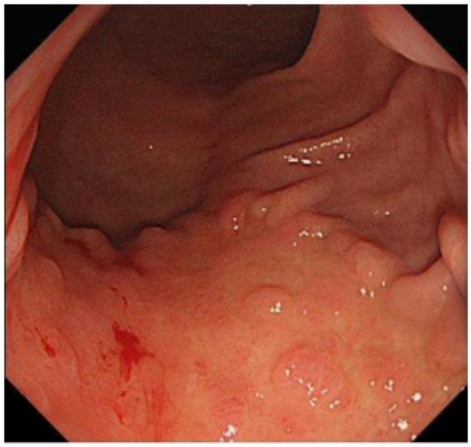

Figure 1: inflammatory polypoidal-looking mucosa

During the same admission, she also reported a right breast lump that had been present for 5 years. Inpatient mammogram and ultrasound of her breasts revealed bilateral breast lesions suspicious for malignancy (Figure 2). Biopsies of the right breast lesion was performed and histological analysis of the breast biopsy showed a grade 2 invasive lobular carcinoma, positive for estrogen and progesterone receptors and positive for CerbB2, and negative staining for E-cadherin, similar to that of the gastric biopsy specimens.

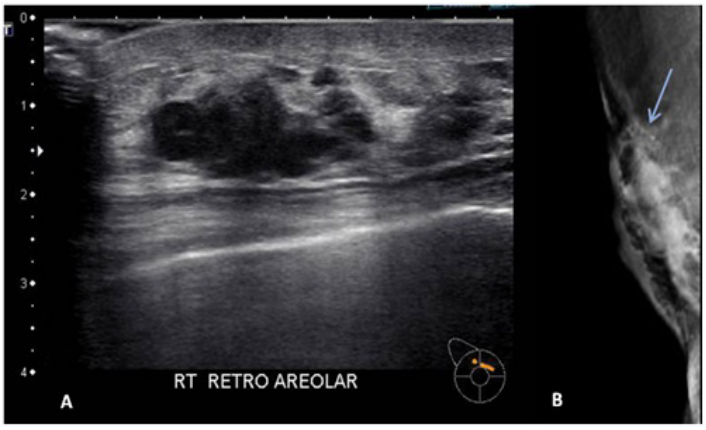

Figure 2: (A) Ultrasound: Large, ill-defined hypoechoic mass (47mm) in retroareolar region of right breast with thickened overlying skin. (B) Mammogram: Markedly reduced size of right breast with heterogenous cluster of calcifications (arrow) and diffusely thickened skin.

Staging scans performed revealed further metastases to the bony skeleton and peritoneum, with associated ascites. This patient was subsequently referred to medical oncology for palliative chemotherapy and hormonal therapy with aromatase inhibitors.

4. Discussion

Invasive Lobular Carcinoma (ILC) comprises about 10% of invasive breast cancers, second in incidence to Invasive Ductal Carcinoma (IDC). ILC has distinct molecular, morphological and biological features from IDC which is more prevalent of the two, which in turn have clinical and prognostic implications [4]. ILC is considered a more aggressive tumour, with patients presenting with a higher frequency of multifocal and bilateral tumours [4]. These patients also tend to be older and have larger tumours at presentation. However, there is no significant difference in overall survival between the two [5].

This case illustrates the increased propensity for ILC to metastasize to the peritoneum, gastrointestinal tract and ovaries compared to IDC, with metastatic spread to the GI tract being 8% in ILC compared to 0.6% in IDC [4]. A retrospective study performed by McLemore et al. has found metastasis to the stomach to be present in approximately 28% of gastrointestinal metastasis [6]. The most common pattern of breast cancer metastasis to the stomach is linitis plastica, while the pattern of discrete nodules or external compression is less common [10].

Comparing sites of metastatic spread, it has been noticed that ILC is three times more likely to metastasize to the peritoneum, gastrointestinal tract and ovaries as compared to IDC [4], which tends to metastasize towards the lungs, pleura and central nervous system. In a report by Taal et al., it was noted that 83% of patients with gastric metastasis from breast cancer had lobular breast cancer as a primary histological subtype [1].

Histologically, 90% of ILC show loss of E-cadherin, a cell surface molecule responsible for cell-cell adhesion, and have a higher level of estrogen receptor expression. It has previously been postulated that the down regulation of E-cadherin has been associated with gastric cancer and may explain the tendency for ILC to metastasis to the entire gastrointestinal tract [3], including the colon [7]. Additionally, spread to the ovaries may be related to endogenous hormone production of the ovaries, creating a favorable environment for metastatic spread [8].

Though our patient presented with metastatic ILC to the stomach on first presentation, there have been multiple reports describing metastatic breast cancer to the stomach manifesting years after the initially surgical treatment of breast cancer with disease-free intervals ranging from a few months to up to 30 years [9].

In summary, with its higher propensity for gastrointestinal spread, a high index of suspicion should be present in patients with ILC. On staging CT scan, gastrointestinal metastasis usually manifests as thickening of the bowel wall [7]. This should be followed by endoscopic evaluation of the GI tract especially when there is concurrent anemia, as the prognosis and treatment plans will be altered when a diagnosis of metastatic lobular breast cancer is made.

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