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Case Report

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Isolated splenic metastasis from invasive lobular carcinoma breast

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ABSTRACT

Breast carcinoma is the most common malignancy of women worldwide. Distant metastases are seen most commonly in the skeletal system, lung and pleura, liver, ovary, adrenal gland, and central nervous system. Invasive lobular carcinoma of the breast is the second most common histologic type of invasive breast cancer after invasive ductal carcinoma. Spleen is a reticuloendothelial organ and its tumors present a diagnostic dilemma. The reticuloendothelial system may help to inhibit the initial phase of tumor cell seeding. Splenic metastasis is infrequent. Isolated splenic involvement is exceedingly rare as usually it is associated with multiorgan metastasis and is asymptomatic. Splenic involvement is usually detected through routine follow-up imaging and is an incidental finding. Computerized tomographic scan of the abdomen remains the gold standard to detect splenic metastasis. We present a case of isolated splenic cystic synchronous metastasis from infiltrating lobular carcinoma of breast in a 62 years old female.

Keywords: Breast carcinoma, Infiltrating lobular carcinoma, Isolated splenic metastasis

INTRODUCTION

Invasive lobular carcinoma (ILC) of the breast is the second most common histologic type of invasive breast cancer. Metastatic pattern of ILC differs from invasive ductal carcinoma (IDC) with higher frequency of tumor extension to bone and gastrointestinal tract and less to organs such as lung and liver [1]. Splenic metastasis is infrequent, arising in less than 1% of all metastatic incidences [2]. Isolated splenic involvement is exceedingly rare as usually it is associated with multiorgan metastasis and is asymptomatic. Here we present a case of isolated splenic metastasis which on workup proved to be from ILC of breast.

CASE REPORT

A 62 year old female presented with abdominal discomfort, tiredness and weight loss (6 Kg) of 2 months duration along with dragging pain in the left abdomen. On examination spleen was enlarged and computerized tomography (CT) scan of abdomen revealed large unilocular thick walled splenic cyst measuring 16.4 cm x 10.6 cm x 14.7 cm containing low density fluid. Trucut biopsy was done and sections showed infiltration of splenic parenchyma by solid masses and few glandular structures of malignant epithelial cells with moderate degree of anaplasia and moderate mitotic activity surrounded by desmoplastic stroma (Figure

1A, B). A diagnosis of metastatic adenocarcinoma most likely from breast in view of estrogen receptor (ER) positivity (Figure 1C) was reached. This was followed by multiplanar multisequential magnetic resonance imaging (MRI) of the chest and abdomen which revealed huge predominantly cystic lesion of the spleen with intramural nodules and focal capsular disruption (Figure 2A). It was associated with left breast mass and axillary lymph nodes (Figure 2B) highly suggestive of solitary cystic metastasis from breast carcinoma. It was followed by bilateral mammogram and ultrasonography (USG) of breast which revealed multifocal masses highly suggestive of malignancy and axillary lymph node metastasis, breast imaging-reporting and data system (BIRADS) V. US guided trucut biopsy was done and a diagnosis of infiltrating lobular carcinoma, E-cadherin negative, ER, progesterone receptor (PR) positive, Her2neu negative was made (Figure 3A,B). Chemotherapy comprising of anthracycline (doxorubicin) followed by Taxol was started and she is doing well.

DISCUSSION

Breast carcinoma is the most common malignancy of women worldwide. Distant metastases are seen most commonly in the skeletal system, lung and pleura, liver, ovary, adrenal gland, and central nervous system [3]. ILC of the breast is the second most common histologic type of invasive breast cancer after IDC accounting for 5 to 15% of breast carcinomas. A higher frequency of tumour extension to bone, gastro-intestinal tract, uterus, meninges, ovary and diffuse serosal involvement is observed in ILC [1]. ILC is characterized by the presence of small and relatively uniform tumor cells growing singly in Indian file and in a concentric ('pagetoid') fashion around lobules involved by in situ lobular neoplasia. Gland formation is not a feature of classic ILC. The stroma is usually abundant of dense fibrous type. Loss of E-cadherin expression is the hallmark of ILC [3].

The spleen is a relatively frequent site of metastasis in disseminated cancer. Berge showed the spleen to be involved by metastasis in 7.1 % of all cancers and as the 10th most common organ involved by metastasis. The most important primary sites for metastasis to spleen are skin melanoma (34%), breast carcinoma (12%), ovary (12%), lung (9%), and colon and rectum (10%) [4]. Isolated metastases to the spleen are exceedingly rare. In a study on a series of 54 patients the most

common primary neoplasms leading to isolated splenic metastasis were found to be gynecologic (61%) majority being ovarian, colorectal (15%), lung (9%) and stomach (4%) [5]. Synchronous splenic metastases are infrequent, with most studies describing metachronous lesions. Our patient presented with splenic involvement (pattern of IDC) and later workup proved it to be an isolated metastasis from breast carcinoma (ILC) which is extremely rare.

Several hypotheses have been proposed to explain the low incidence of metastatic spread to the spleen as it possesses an innately hostile environment for malignant invasion and residence. The reticuloendothelial system may help to inhibit the initial phase of tumor cell seeding. Anatomically the sharp angle of the splenic artery with the celiac axis and rhythmic contraction by the sinusoidal splenic architecture are limiting factors for metastases. Lack of afferent lymphatics also may provide some protection to the spleen [6] and may explain the typical lack of splenic hilar lymph node involvement seen in isolated metastatic lesions. It is also hypothesized that the spleen produces an antiangiogenesis factor (angiostatin) making it immune to metastasis compared with other organs [7].

Splenic involvement is usually detected through routine follow-up imaging and is an incidental finding. CT scan of the abdomen remains the gold standard to detect splenic metastasis. By CT imaging they can appear in 3 patterns: (1) as a solid lesion, (2) as a cystic lesion (as in our case), and (3) as a solid-cystic lesion [8]. At CT cystic metastases may appear as ill-defined, low-attenuation foci or as well-delineated, unilocular or septated lesions with the same attenuation as water. Enhancement may be present in the periphery and in viable internal septa. MR images of metastases typically show foci with low signal intensity on T1-weighted images these foci become hyperintense on T2-weighted images [9]. Cystic lesions may occur with metastases from ovary, breast, endometrium and melanoma. Metastases in the spleen are cystic secondary to rapid growth, resulting in autoinfarction, internal necrosis, or both [10]. 21% of patients present with symptoms of pain, splenomegaly or weight loss [5]. Our patient presented with pain and weight loss and later it turned out to be metastasis from breast carcinoma.

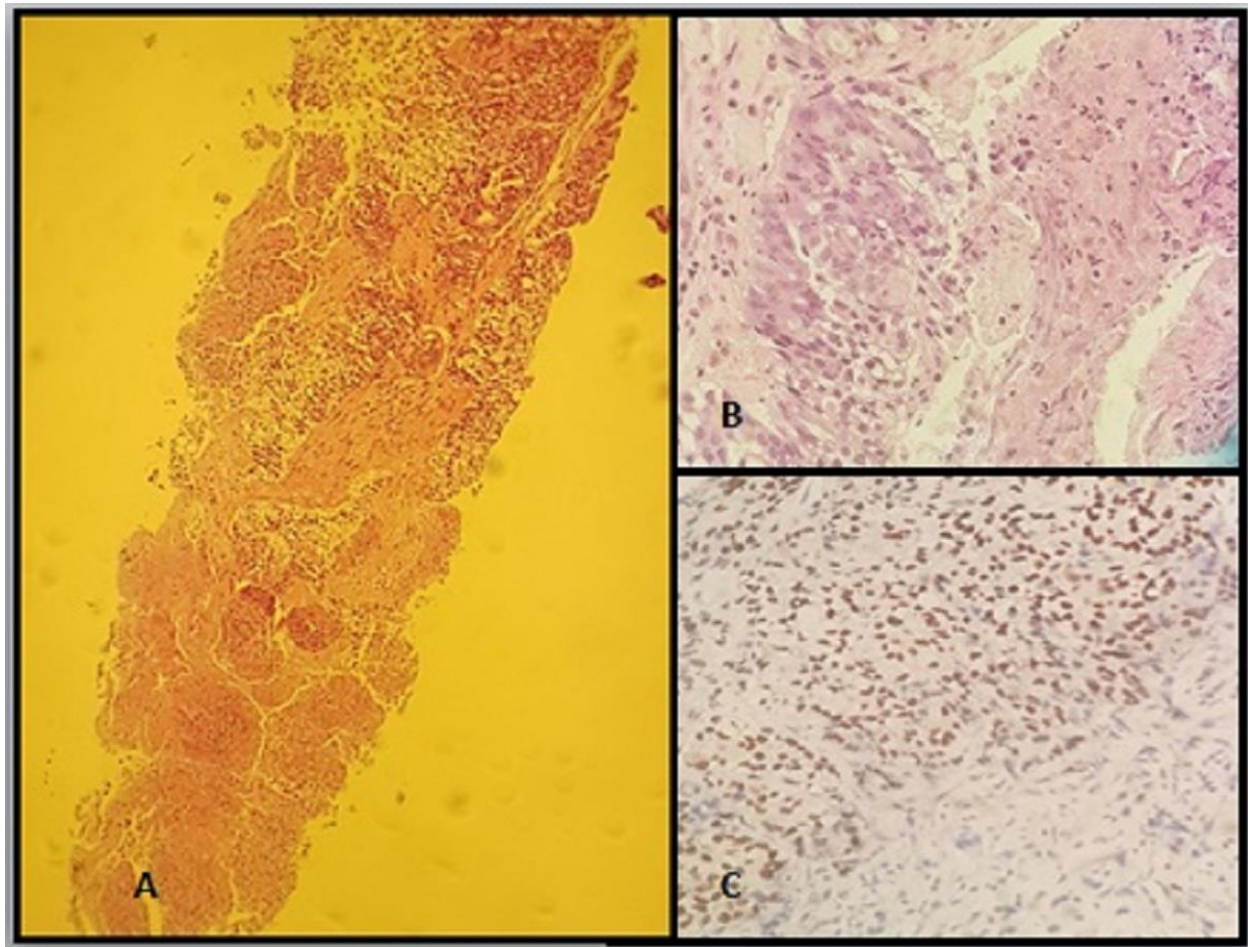
Paget examined 735 breast cancer patients at necropsy but only 17(2%) involved splenic

metastases [11]. They appear in 3 macroscopic patterns: macronodular, micronodular, and diffuse. Isolated splenic metastasis are exceedingly rare so more common primary splenic pathologies such as abscess, hemangioma, infarct, hamartoma, non-Hodgkin lymphoma, Hodgkin lymphoma, sarcoidosis, tuberculosis and histoplasmosis form important differentials. Among the population with breast cancer there have been few case reports of isolated splenic metastasis to breast [12, 13]. These all cases represented IDC but our patient presented with ILC and metastatic pattern represented IDC. Molecular event such as alterations of E-cadherin expression could be implicated in this rare

hematogenous metastasis [3]. Diffuse metastasis to spleen is very rare and can cause idiopathic thrombocytopenic purpura [14].

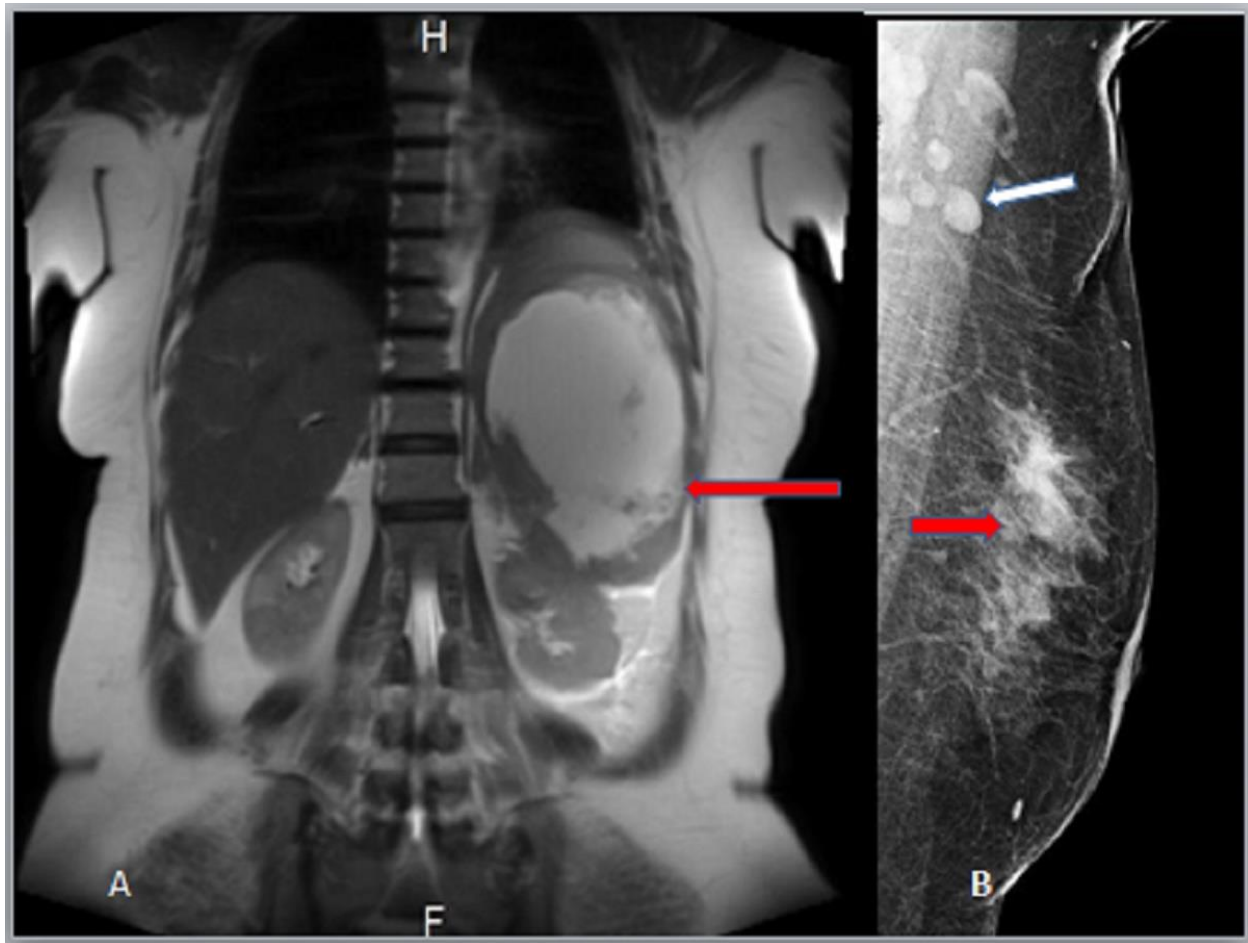
Treatment of metastatic breast cancer is generally nonsurgical with systemic chemotherapy and immunotherapy in patients with HER2-neu positivity or anti-estrogen targeted treatment. Surgery is used for diagnosis and palliation [15]. Our patient was also given chemotherapy and is doing well. When an isolated metastasis is confirmed most investigators agree that a splenectomy should be performed to prevent further metastatic seeding and to avoid possible splenic rupture [5].

FIGURE LEGENDS



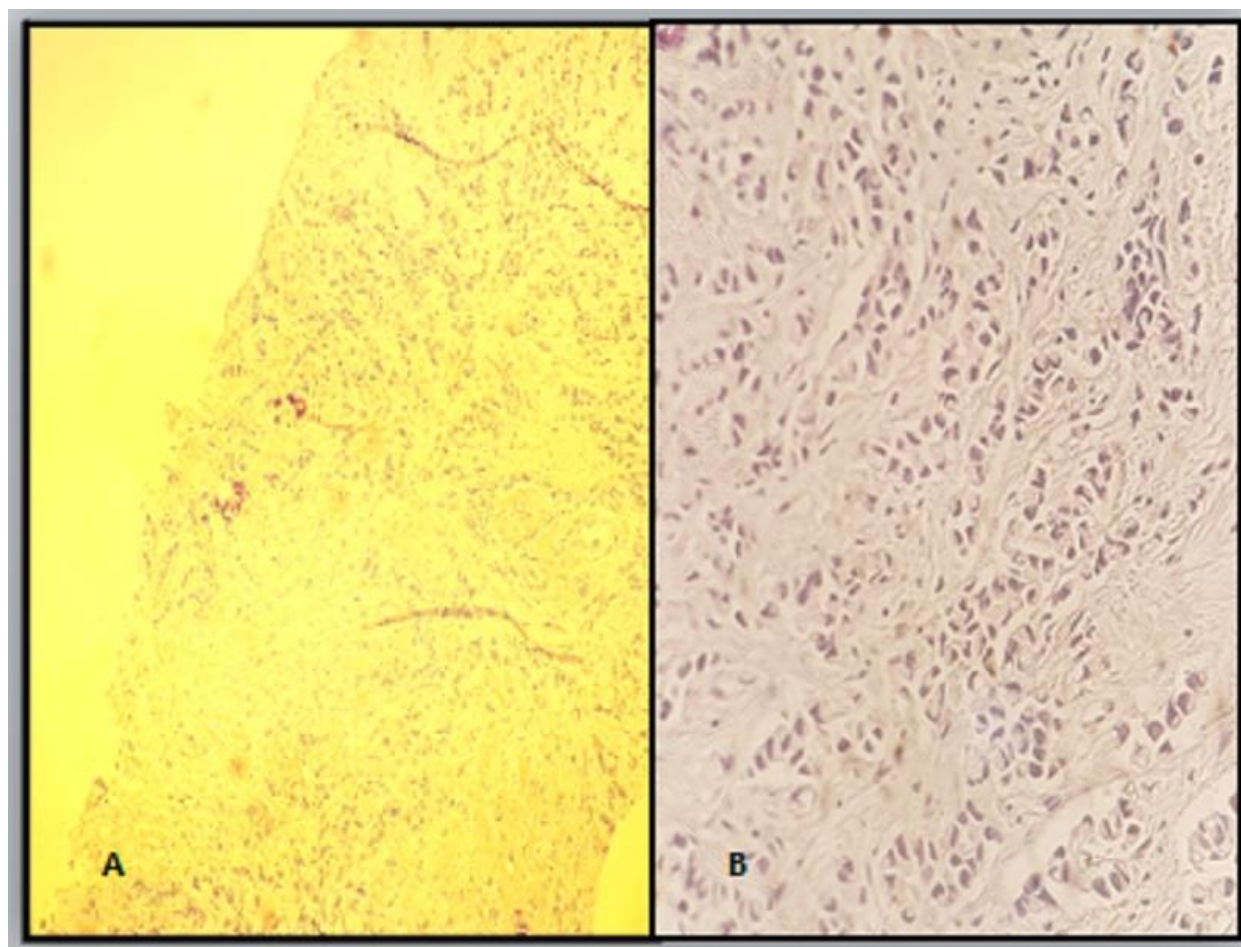
1A, B: Section showing infiltration of splenic parenchyma by solid masses and few glandular structures of malignant epithelial cells surrounded by desmoplastic stroma. (Hematoxylin and Eosin:

A- 10X, B-40X). C. Immunohistochemical study showing ER positivity in malignant cells. (ERx20X).



2A: MRI image showing a cystic mass (red arrow) arising from spleen causing marked distension with multiple intramural nodules at the periphery. Posterior aspect of spleen shows

disruption of capsule. B. Mammogram MLO left breast showing multifocal hyperdense masses in the upper outer quadrant (red arrow). Multiple axillary lymph node enlargement also seen (white arrow).



3A, B: Section showing malignant cells infiltrating breast stroma in cords and Indian file pattern (Hematoxylin and Eosin: A- 10X ,B-40X) .

unusual case of isolated splenic metastasis with IDC pattern arising from ILC breast. Metastasis to the spleen should be also included as a differential diagnosis for splenic masses.

CONCLUSION

Solitary splenic metastasis from breast are rare and synchronous involvement infrequent. This is an

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