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Case report

Palpable multifocal and multicentric invasive lobular breast carcinoma in a young female

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ABSTRACT

Breast cancer is the most common carcinoma plaguing women in the United States. Invasive lobular carcinoma is the second most prevalent type of breast carcinoma with an incidence rate of 5% and 15% with high propensity for multifocal manifestation of disease. Multifocal disease is defined by two or more malignant foci within a single quadrant. Invasive lobular carcinoma is strongly associated with early menarche, late menopause, late age at first birth, and is typically seen in women ages 50 and older. Invasive lobular carcinoma can be difficult to detect clinically because lesions typically fail to form palpable masses, and it can be challenging to diagnose mammographically due to subtle imaging features of the lesions. Here we present a rare case of a palpable, unilateral, multifocal and multicentric lobular breast carcinoma in a young, previously healthy 41-year-old woman with no family history of breast cancer.

Case Report

An asymptomatic, previously healthy 41-year-old female presented with incidental breast mass findings on screening mammography. The patient reported no palpable abnormalities at the time of her screening study. She had no family history of breast cancer. Patient was 30 years old at the time of her first delivery and menarche occurred at age 12. Due to abnormal findings on initial screening mammography, the patient returned for diagnostic mammography and ultrasonography. During ultrasound, several dominant masses were palpated in separate quadrants of the right breast. The skin, nipples, and areolas at the time appeared normal and were without nipple retraction or nipple discharge. Focused ultrasound revealed up to five breast lesions on the right. Ultrasound-guided breast biopsies of three of the palpable right breast masses from separate quadrants revealed invasive lobular carcinoma (ILC), estrogen receptor positive, progesterone receptor positive, HER-2 neu negative. There was associated background lobular carcinoma in situ (LCIS) with lobular neoplasia and background

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ductal carcinoma in situ (DCIS) with comedonecrosis. Breast MRI performed for evaluation of ipsilateral and contralateral disease demonstrated findings consistent with multifocal and multicentric malignancy in the right breast. The patient is now status post bilateral mastectomy with axillary dissection and taking hormone therapy.

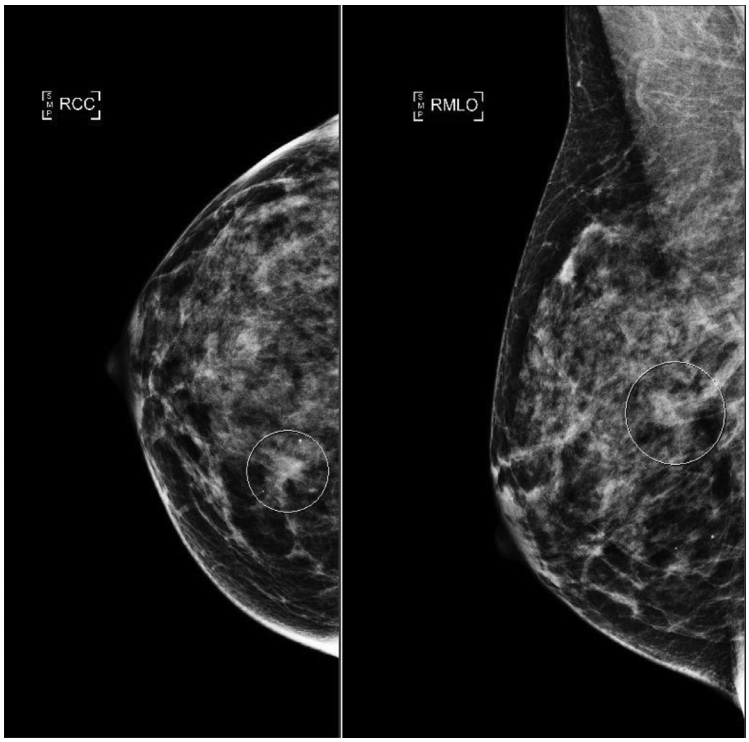

Fig. 1 – Screening mammogram demonstrating a spiculated mass.

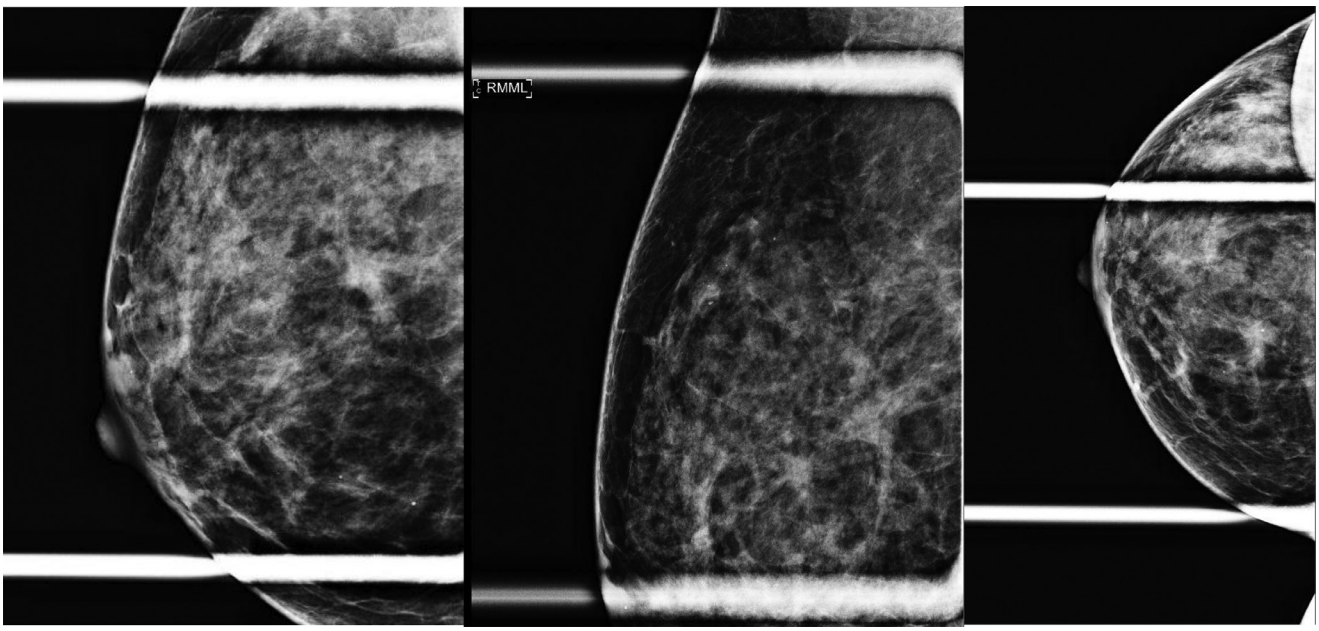

Fig. 2 – Diagnostic mammography showing a poorly defined spiculated mass in the upper inner quadrant of the right breast with additional architectural distortion posterior to the mass.

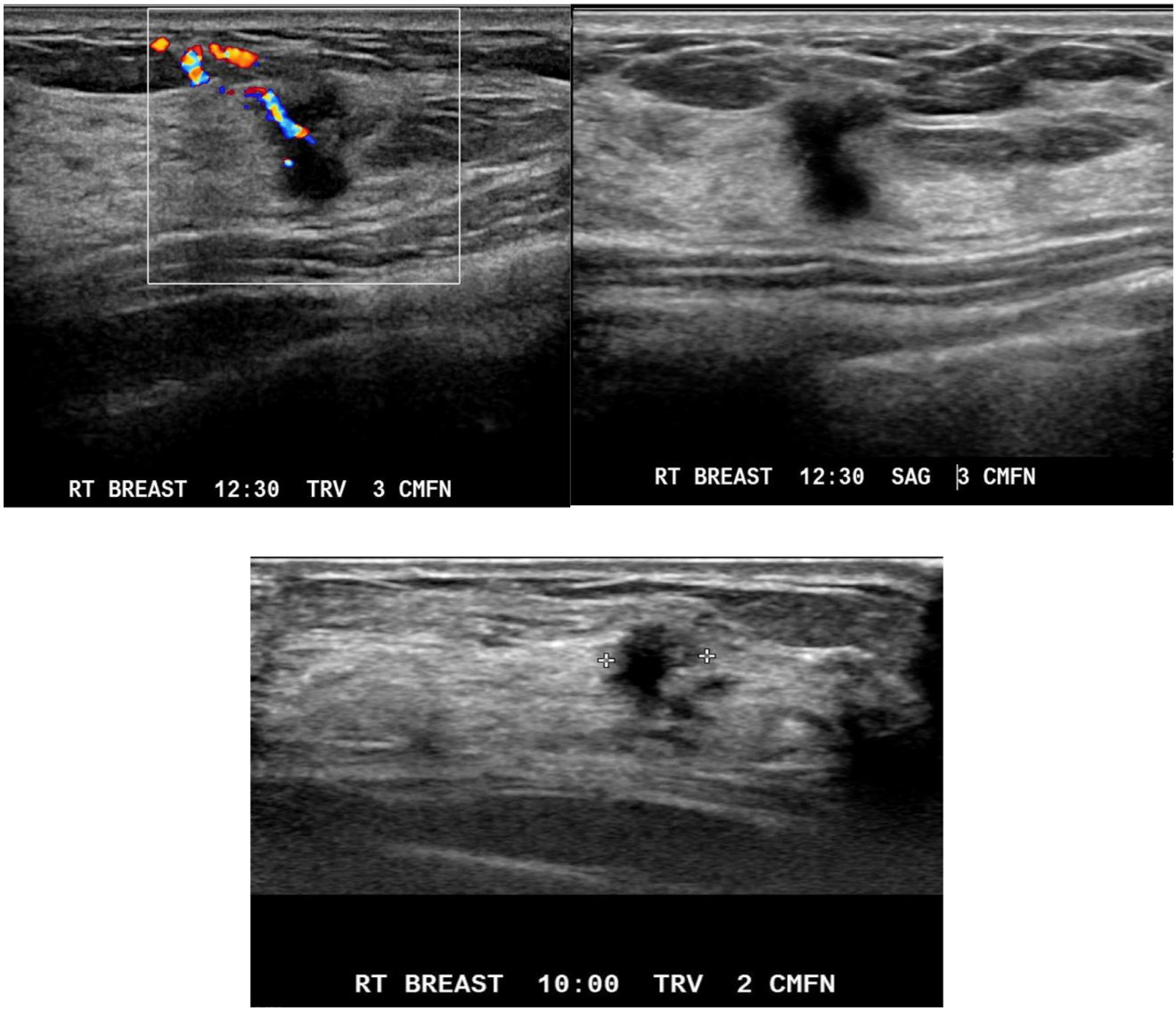

Fig. 3 – Ultrasound revealing multiple irregularly marginated, spiculated, hypoechoic masses with associated vascularity highly suspicious for malignancy.

Diagnosis: Right multifocal lobular carcinoma of the breast, ER/PR positive, HER-2 negative. cT1b(m)N0M0/pT2(m)N1aM0 ILC, G1, ER+, PR+, HER2-, 2/8 nodes positive, Oncotype 11.

Discussion

Breast cancer is the most common cancer among women in the United States [1]. It is the leading cause of cancer mortality for women aged 20-59 years old [2]. Although most invasive breast cancers consist of ductal carcinomas, up to 15% represent ILCs [3]. While invasive lobular carcinomas are known to have a higher propensity for multifocal disease, its subtle imaging features render it difficult to detect and diagnose despite presenting with multiple lesions. On mammography, ILC is challenging to detect due to the lack of contrast difference between the tumor lesions and the surrounding normal fibroglandular breast tissue [4]. On physical exam, ILCs are typically not palpable lesions, rendering this pathology difficult to detect clinically [4]. Due to the elusive nature of ILC on clinical and mammography examinations, diagnosis of ILC is often delayed. ILCs most commonly present as nonpalpable breast masses in women aged 50 and older [5]. Its occurrence in a young patient with palpable breast masses, as reported here, is nonetheless a rare entity. Given the challenges presented in timely and accurate diagnosis of ILC, careful review and analysis of the subtle imaging features of ILC can prevent delay in diagnosis.

The diagnosis of ILC is assessed with mammography, ultrasonography (US), and magnetic resonance imaging (MRI). While mammography is the gold standard screening modality

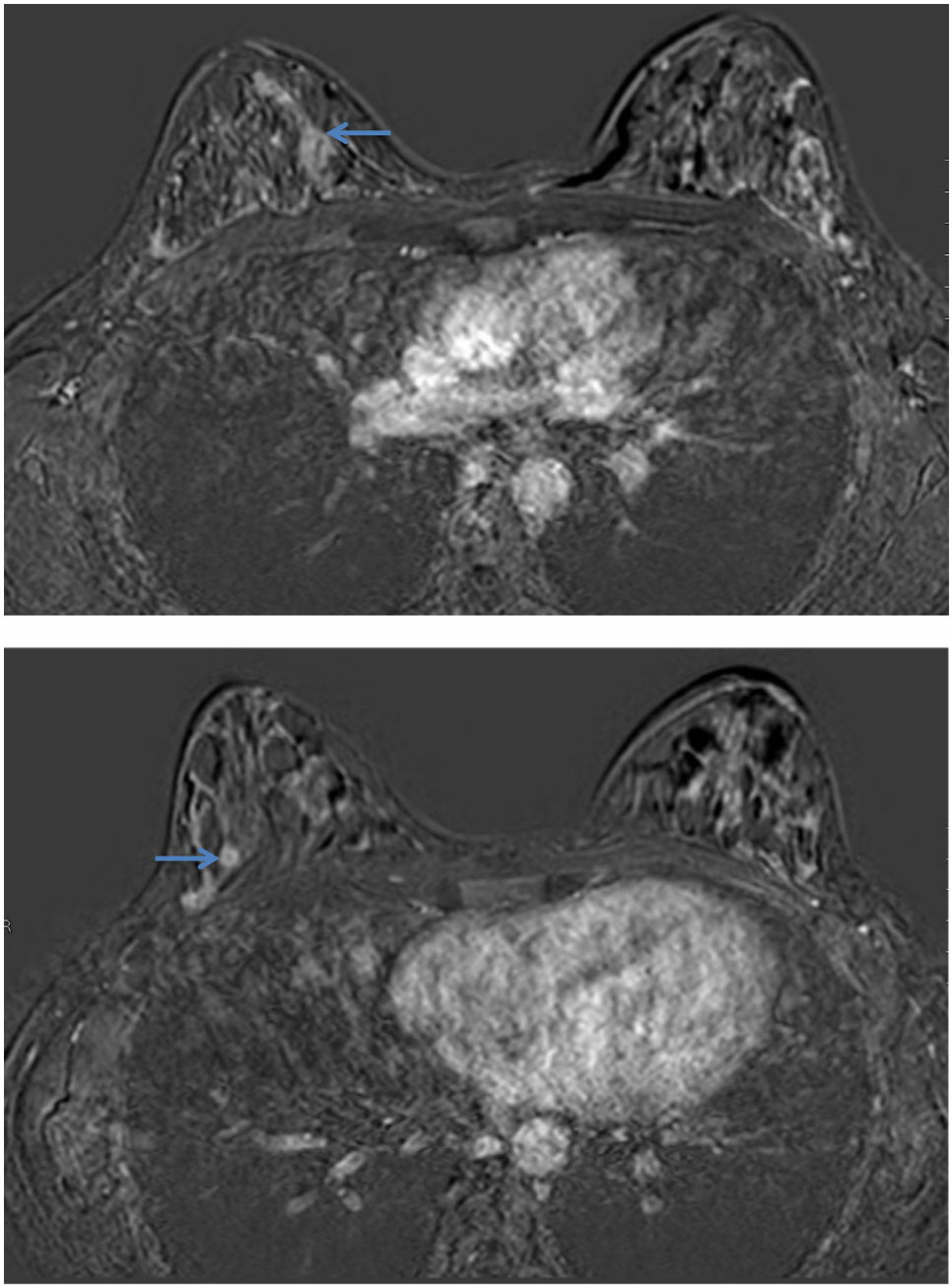

Fig. 4 – Subtraction images from patient's breast MRI revealing mass-like and non-mass-like areas of abnormal enhancement in the right breast consistent with patient's known multifocal and multicentric malignancy. No abnormal areas of enhancement that would be suspicious for malignancy were noted in the left breast.

of the breast, US and MRI have proven to be valuable adjuncts to mammography as the coordination of all three imaging modalities increases the overall sensitivity for detection of ILC [4]. Together, they play significant roles in providing essential information for further management and treatment planning.

Mammography allows for initial detection of ILC, which commonly presents as a mass frequently associated with architectural distortion. Masses can exhibit an opacity equal to or less than that of the surrounding breast parenchyma. In combination with the subtle presentation of architectural distortions, ILC can pose a challenge for detection on mammography. Ultrasound becomes a useful adjunct to mammography in helping localize hard-to-discern lesions on mammography, especially those that camouflage into the background of the normal fibroglandular breast tissue. US is superior to mammogram at localizing multifocality of ILC and allows for accurate evaluation of size of the lesions [4]. On US, ILC commonly manifests as an irregular hypoechoic mass with ill-defined or spiculated margins, and posterior acoustic shadowing [6]. Breast MRI is not only useful for detection of small lesions in high

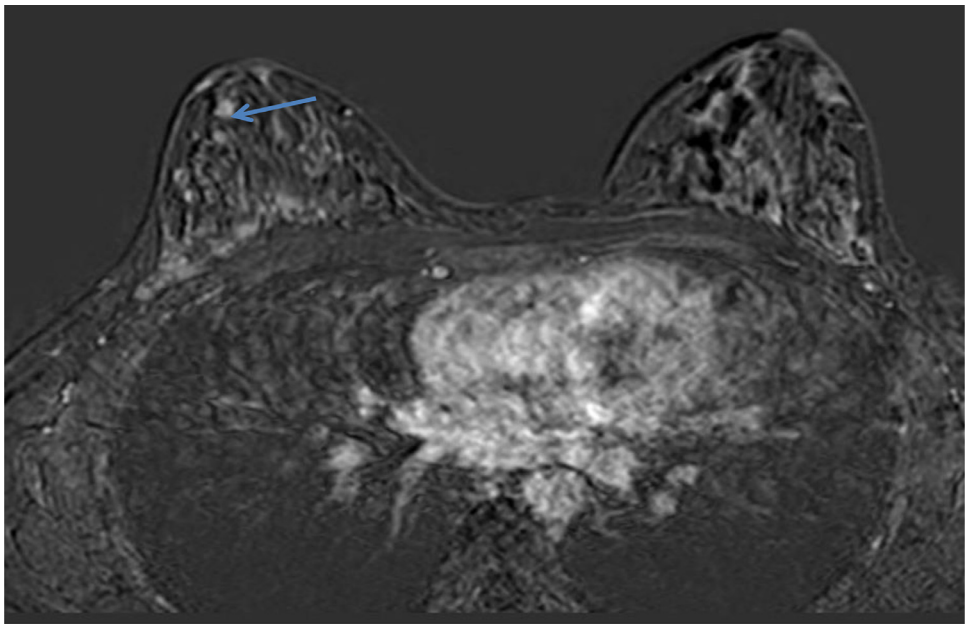

Fig. 4 – Continued

risk patients, but it is also useful for identifying the extent of disease. On breast MRI, ILC typically demonstrates type 3 kinetics and morphologically manifest as a heterogeneously enhancing mass with spiculated or ill-defined margins, often surrounded by non-mass-like areas of enhancement [7]. Multifocal disease is commonly seen on MRI along with interconnecting strands of tumor and architectural distortions. Integration of all three imaging modalities empower radiologists and clinicians to accurately diagnose and treat multifocal lobular disease.

In the present case, a 41-year-old female was found to have a poorly defined spiculated mass in the upper inner quadrant of the right breast with additional architectural distortion posterior to the mass (Fig. 1). Further diagnostic mammography of the right breast revealed a persistent spiculated mass measuring 1.4 cm, an additional spiculated mass immediately posterior measuring up to 1.5 cm, and a smaller spiculated mass in the lower outer quadrant (Fig. 2). Ultrasound revealed multiple irregularly marginated, spiculated hypoechoic masses with associated vascularity (Fig. 3). Three lesions from separate quadrants in the breast were biopsied under ultrasound guidance. Since mammography and ultrasound definitively detected multiple spiculated masses and pathology of the biopsies confirmed multifocal and multicentric invasive lobular carcinoma of the breast, MR imaging was mainly utilized to evaluate for contralateral disease. Breast MRI revealed mass-like and non-mass-like abnormal enhancement broadly distributed in the right breast with no evidence of malignancy in the left breast (Fig. 4).

Despite negative family history for breast cancer and no history of associated ovarian pathology, testing for 20 gene mutations, including *BRCA1* and *BRCA2*, was indicated due to the early age of onset. Genetic testing was negative for all 20 genes.

Conclusion

Multifocal and multicentric invasive lobular carcinoma of the breast can pose challenges in clinical and radiographic detection. We describe a rare case of unilateral multifocal and multicentric invasive lobular breast carcinoma in a young patient with clinically palpable masses. Early detection of this disease is important for increasing the number of treatment options, prolonged survival, and improved quality of life. A high level of clinical suspicion and a keen awareness of atypical and subtle mammographic patterns of ILC is imperative for early disease detection and avoiding delay in diagnosis.

Patient consent

Informed consent for publication of this case was obtained from the patient.

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