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Case Report

A rare case of breast invasive cribriform carcinoma [☆]

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ABSTRACT

Although invasive ductal carcinoma accounts for 75% of all primary breast cancers diagnosed, there are other, more uncommon kinds, including invasive cribriform carcinoma (ICC). Invasive cribriform carcinoma has 2 subtypes: pure and mixed. Ultrasonography and magnetic resonance imaging are the best imaging methods for assessing the characteristics of breast ICC (MRI). Our goal in this article was to report a rare instance of breast ICC in a 38-year-old Vietnamese woman. During a clinical examination, a spherical mass in the left breast without ipsilateral axillary lymph nodes was seen. On ultrasonography, the lesion was classified as BI-RADS 4C. The lesion was with an apparent diffusion coefficient value of $0.46 \times 10^{-3} \text{ mm}^2/\text{s}$. Lesion showed a quick initial increase on dynamic T1-weighted imaging with contrast enhancement, followed by a wash-out in the delayed phase. The final histopathological findings confirmed the presence of ICC.

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Introduction

Invasive cribriform carcinoma (ICC) is an uncommon kind of invasive breast cancer that makes up around 0.4% of all primary breast cancers [1–5]. ICC of the breast is a different his-

tological kind of invasive carcinoma that was initially identified by Page et al. in 1983 [3]. The prognosis for breast ICC is good, with a low probability of axillary nodal metastases [2]. The goal of this study was to provide a strikingly unusual case of Invasive cribriform carcinoma of the breast.

[☆] Competing Interests: None.

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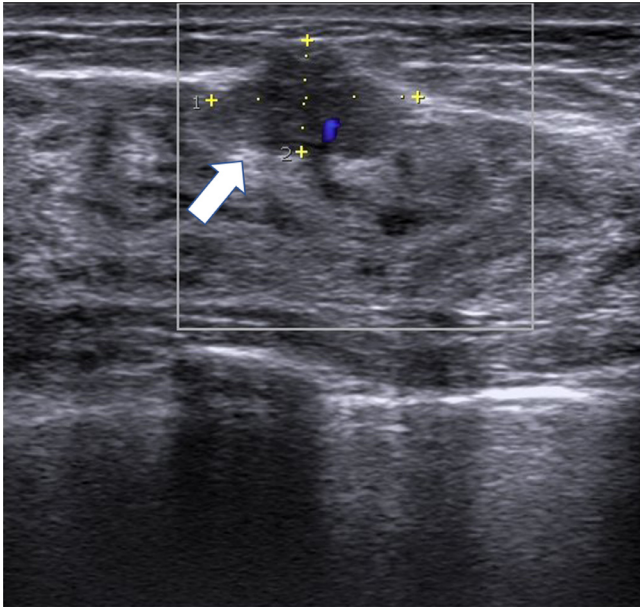


Fig. 1 – An irregularly shaped hypoechoic mass (arrow) in the left breast was detected using color-Doppler mode ultrasound.

Case description

A 38-year-old Vietnamese woman with an unremarkable personal medical history and family history visits the hospital complaining of a palpable tumor in her left breast. An irregular mass in the left breast without ipsilateral axillary lymph nodes was discovered during a clinical examination. A 16×9 mm hypoechoic lesion with an irregular form and angular margin was visible on ultrasound at the 4 o'clock position and 1 cm from the left nipple. Lesion appears to have invaded superficial fascia. Color Doppler scan revealed no vascularity. subsequently categorized the lesions as BI-RADS 4C (Fig. 1). A small lesion of 12×11 mm was seen on magnetic resonance imaging (MRI) at the location of 2 o'clock, 2.5 cm from the nipple, in the central region of the breast. The le-

sion was hypointense on fat-suppressed T2W imaging (Fig. 2). The lesion was hyperintense on diffusion-weighted imaging and hypointense on apparent diffusion coefficient (ADC) map with ADC value of $0.46 \times 10^{-3} \text{ mm}^2/\text{s}$ (Fig. 3). On dynamic T1-weighted imaging with contrast enhancement, lesion exhibited a rapid initial rise, followed by a wash-out in the delayed phase (Fig. 4). Following that, a core biopsy of the left breast mass was performed in our hospital, and invasive cribriform carcinoma was confirmed by the histopathology. Finally, the patient had a left breast mastectomy.

Discussion

Epithelial cells in the breast are the source of ICC, a rare form of breast cancer. Unlike the lobules that make up the alveoli in the mammary glands of the breasts, it comes from a lactiferous duct. The breast ICC was initially characterized by Page et al. in 1983 [3] as a tumor with a cribriform pattern, a tissue pattern made up of multiple “Swiss cheese”-like open gaps and/or sieve-like tiny holes. The average age of breast ICC was 61-years-old for females and 65.4-years-old for the males [1].

These lesions are referred to as “invasive cribriform carcinomas” in the most recent version of the World Health Organization (2019), which means that by definition they must have a component that invades outside of their ducts of origin into surrounding tissues. Ductal carcinoma in situ tumors are understood to be in situ ductal malignancies with a cribriform histology.

Breast ICC has several positive clinical and pathological characteristics, including a low rate of metastasizing to distant tissues and a great prognosis, despite the fact that it is undoubtedly a malignant tumor that primarily affects older females and, in rare instances, males. Breast ICC was formerly classified by the World Health Organization into 2 categories: “pure” breast ICC (defined as having $>90\%$ cribriform regions) and “mixed” breast ICC (defined as having $>50\%$ cribriform areas with the remainder areas having a tubular histological pattern). Hematoxylin and eosin staining of breast ICC at the microscopic level reveals cribriform regions spanning more than 50% of the tumor and tubular and/or other histopathological features in the remaining tu-

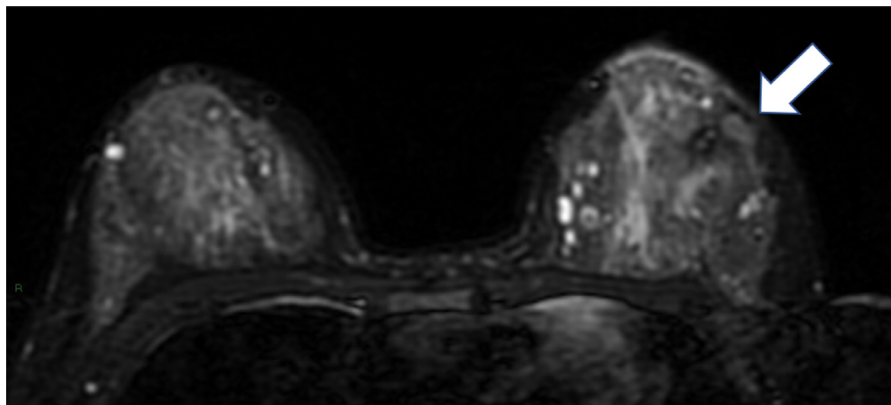


Fig. 2 – A hyperintense mass was seen on fat-suppressed T2-weighted imaging of the left breast (arrow).

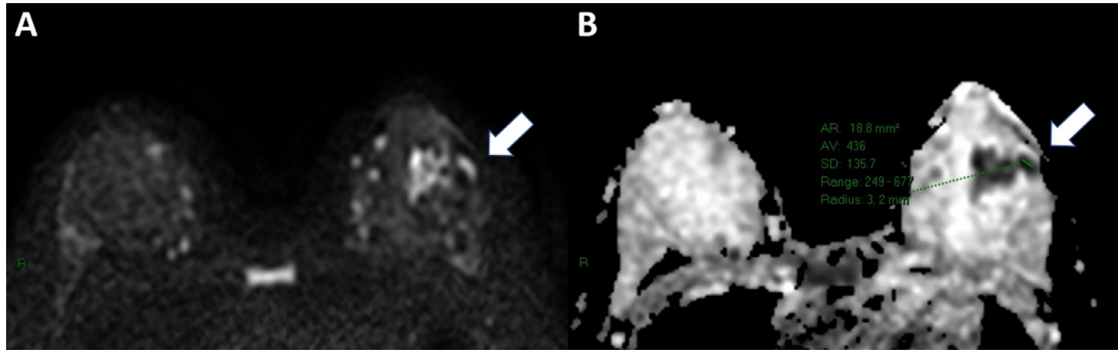


Fig. 3 – Restricted diffusion lesion with ADC value $0.46 \times 10^{-3} \text{ mm}^2/\text{s}$ is seen in diffusion-weighted Imaging (A) and ADC map (B).

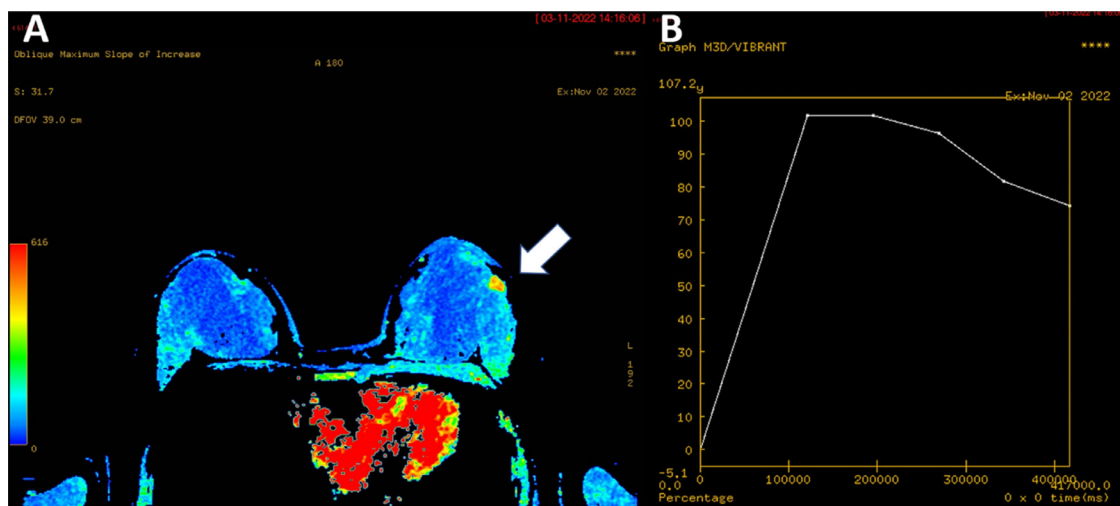


Fig. 4 – Lesion (arrow) showed a quick initial increase on dynamic T1-weighted imaging with contrast enhancement (A), followed by a wash-out in the delayed phase (B).

mor areas. Small to medium-sized cells with amphophilic cytoplasm, fuzzy cell borders, and nuclei that are enclosed by a crisp nuclear membrane and have chromatin with fine stippling make up the cribriform zones [4,6]. These cells are separated from one another by a great deal of open spaces and/or tiny holes that resemble sieves, giving the lesions a Swiss cheese-like look. The voids and holes could have mucins or microscopic calcifications. Breast ICC cells are all often slow-growing, as seen by the absence of cellular Ki-67 protein or a low mitotic index [1,6]. Microscopic examination of immunostained breast ICC cells has revealed that they express estrogen receptors in approximately 95.4% of cases, progesterone receptors in approximately 89.5% of cases, and the HER2/neu protein in approximately 3% of cases [6,7]. With addition, cells in breast ICC frequently lack myoepithelial marker proteins including tumor protein 63, smooth muscle actin, calponin, or CD10 and instead express cytokeratin proteins [1,6–8].

Breast-conserving surgery or modified radical mastectomies have traditionally been used as the first-line surgical treatments. Additionally, patients may have chemotherapy or adjuvant radiation [1]. Breast ICC has been treated with chemotherapy regimens including as triple therapy us-

ing cyclophosphamide, epirubicin, and fluorouracil; and double therapy using docetaxel and epirubicin [1]. In recent trials, patients adopted adjuvant hormonal treatment medications such as letrozole, anastrozole, or tamoxifen [1].

Conclusions

Imaging characteristics of breast ICC are highly indicative of malignancy and cannot be separated from those of other breast malignancies, such as infiltrating ductal carcinoma. Further study should be performed to enhance the diagnostic accuracy and optimal treatment for breast ICC.

Patient consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Authors' contribution

Ho Xuan Tuan and Nguyen Minh Duc contributed to write original draft. Cao Minh Tri, Nguyen Anh Huy, and Nguyen Minh Duc contributed to undergo diagnostic procedure, collect, and interpret the imaging. Cao Minh Tri, Nguyen Anh Huy, Au Nguyet Dieu, and Nguyen Minh Duc made substantial contributions to collect patient data and clinical data analysis. All authors have read, revised, and approved the final published version of the manuscript. All authors were responsible for submission of our study for publication.

Statement of ethics

Ethical approval was not necessary for the preparation of this article.

Data availability statement

All data generated or analyzed during this study are included in this article and/or its online supplementary material files. Further enquiries can be directed to the corresponding author.

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