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A Rare Case of Invasive Cribriform Carcinoma in Male Breast

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Manuscript Preparation E
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Conflict of interest: None declared

Patient: Male, 58-year-old
Final Diagnosis: Invasive cribriform carcinoma
Symptoms: A painful and palpable enlarging breast mass
Clinical Procedure: Adjuvant chemotherapy • surgery
Specialty: Oncology

Objective: Rare disease
Background: Male breast cancer is a very rare disease that represents 0.6% of all breast carcinomas. Among breast carcinomas, invasive cribriform carcinoma (ICC) is a rare type of breast carcinoma and is more common in older women, with only a few cases in men reported. We present a case of male breast cancer with ICC.
Case Report: A 58-year-old man presented with a painful and palpable mass in the left breast, which was diagnosed as breast cancer of the ICC type. The patient underwent total mastectomy plus sentinel lymph node biopsy. On the microscope, the tumor was composed of more than 90% cribriform glands with comedo necrosis and dystrophic calcification. On immunohistochemical (IHC) staining, it appeared to be a luminal breast cancer. The IHC staining for c-erb B2 was equivocal (2 positive); hence fluorescence in situ hybridization was performed, and showed no amplification of the HER2/neu oncogene. The Ki-67 labeling index was 30%. The patient received radiotherapy and adjuvant systemic chemotherapy (4 cycles of docetaxel and cyclophosphamide), and has been on antiestrogen therapy (daily tamoxifen, 20 mg) for 30 months with no evidence of disease.
Conclusions: ICC is a rare type of invasive carcinoma of the breast, and ICC from the male breast is extremely rare. We report, in this case, the final pathologic results of a male patient diagnosed with ICC breast cancer and treated with surgery, chemotherapy, and radiotherapy.

Keywords: Breast Neoplasms, Male • Case Reports • Rare Diseases

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/938939

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Background

Male breast cancer is a very rare disease that represents 0.6% of all breast carcinoma and less than 1% of all malignancies in men [1,2]. However, recent trends show increased incidence [1]. Invasive cribriform carcinoma (ICC) is a rare type of breast carcinoma and is more common in older women, with only a few cases in men reported [3]. It shows similar histological structures to tubular carcinoma and is difficult to differentiate from it [4]. ICC can be classified into 3 types: pure, classical, and mixed form, according to histologic features [5,6]. ICC is usually low grade and grows slowly; therefore, it has a good prognosis with treatment [4,6].

Herein, we present a case of a male patient with ICC who exhibited extensive microcalcification.

Case Report

A 58-year-old Korean male patient presented a painful and palpable enlarging mass in the left breast for about 3 months, with no nipple discharge on presentation. He had no other specific past illness or familial history, and in particular, no history of hormonal treatment. On physical examination, a well-defined hard lump measuring 4.5×4.0 cm was palpated in the subareolar region of his left breast. Mammography demonstrated a well-defined round-shaped mass with internal fine pleomorphic microcalcifications in the left breast, and Breast Imaging Reporting and Data Systems (BI-RADS) category 5 was suspected (**Figure 1**). Breast ultrasound revealed a large complex cystic and solid mass with multiple calcifications within the solid portion, confirming classification as BI-RADS category 5 (**Figure 2**). The findings of the core needle biopsy showed invasive ductal carcinoma with confluent cribriform pattern and necrosis. The results of serum Carcinoma Antigen 15-3 and other laboratory tests were normal. Known BRCA1 and BRCA2 mutations were also not found.

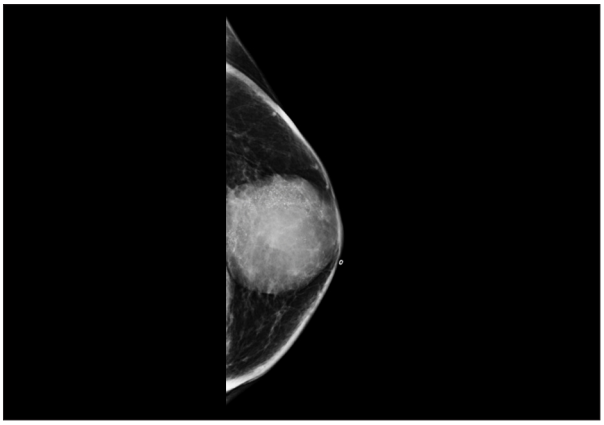

Figure 1. Invasive cribriform carcinoma on mammography. Craniocaudal view of the mammography shows a circumscribed, round, and hyperdense mass with internal fine pleomorphic microcalcifications in the left breast.

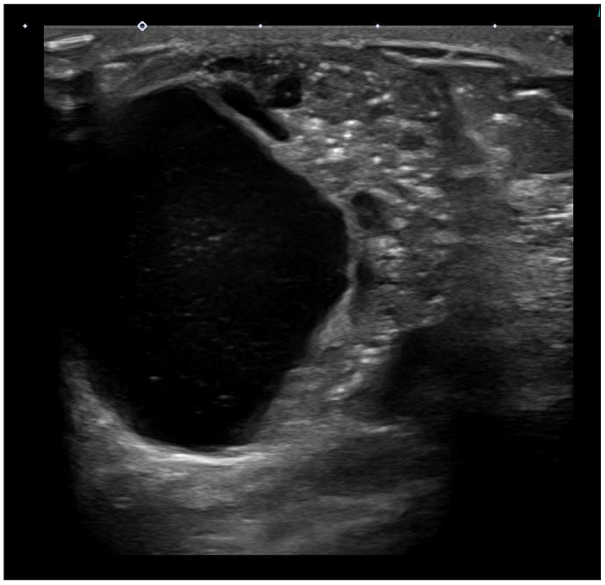

Figure 2. Invasive cribriform carcinoma on breast ultrasound. Breast ultrasound shows a large complex cystic and solid mass with multiple calcifications within the solid portion.

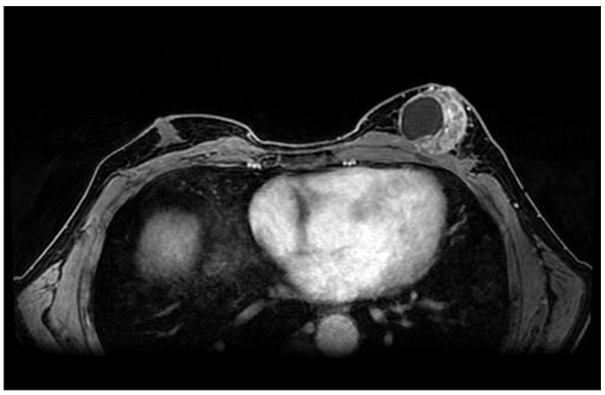

Figure 3. Invasive cribriform carcinoma on MRI. Contrast-enhanced T1-weighted MRI shows a circumscribed mass with a cystic area and heterogeneous enhancement of the solid portion. The mass is closely attached to the pectoralis muscle.

Magnetic resonance imaging (MRI) showed a well-circumscribed cystic and solid mass measuring about 4.2×3.9×4.6 cm with heterogeneous enhancement of the solid portion (**Figure 3**). The mass was closely attached to the pectoralis muscle. On positron emission tomography-computed tomography (PET-CT), there was no evidence of ipsilateral axillary lymph node metastasis or distant metastasis. Thus, the patient underwent

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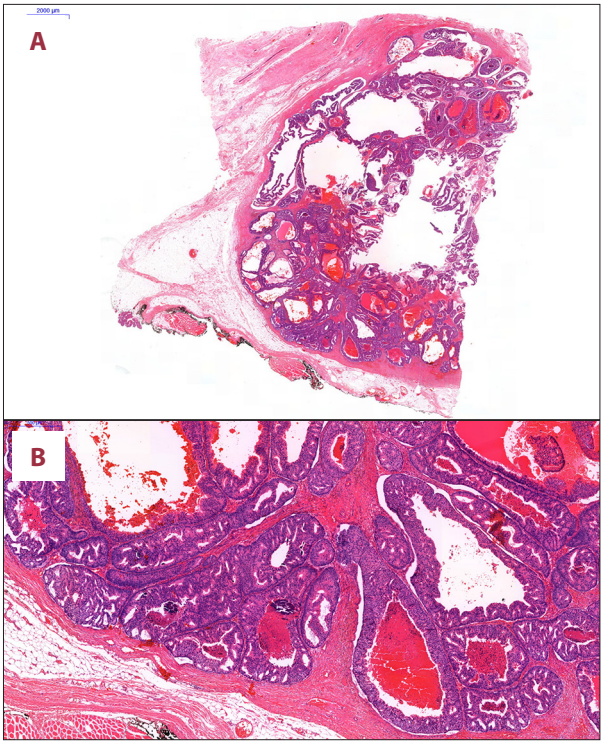

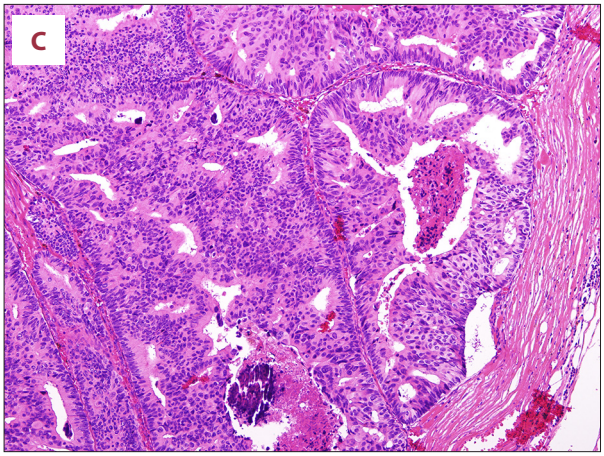

Figure 4. Microscopic appearance of the breast tumor. (**A**) Scan view of the breast lesion reveals a mass with pushing borders and hemorrhage. (**B**) The tumor is composed of more than 90% cribriform glands with comedo necrosis and dystrophic calcification, diagnostic for cribriform carcinoma of the breast (H&E stain, 4× objective). (**C**) On higher power, the carcinoma is composed of atypical cells with moderate pleomorphism, consistent with nuclear grade 2 (H&E stain, 10× objective). H&E – hematoxylin and eosin.

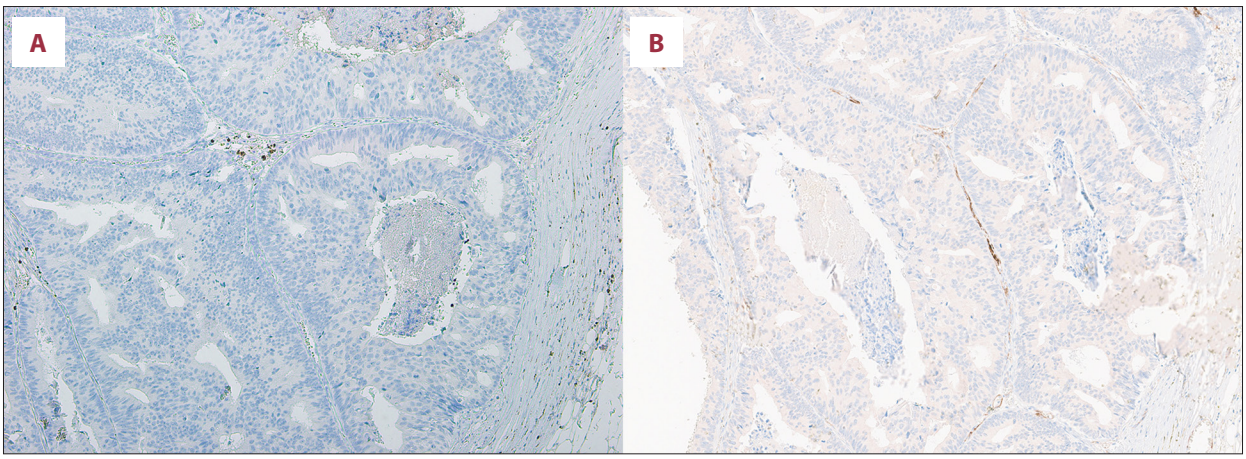

Figure 5. P63 and SMMHC staining of ICC. (**A**) P63 staining and (**B**) SMMHC staining confirm the lack of myoepithelial cells, consistent with invasive carcinoma (10× objective). SMMHC – smooth muscle-myosin heavy chain; ICC – invasive cribriform carcinoma.

a total mastectomy and sentinel lymph node biopsy. On frozen section biopsy, no tumor cells were found in the 2 sentinel lymph nodes.

The removed breast tumor had a maximum diameter of 3.5 cm without invasion of the skin or pectoralis muscle. Microscopically, a scan view of the breast lesion revealed a mass with pushing borders and hemorrhage (**Figure 4A**). On 40× magnification view, the tumor was composed of more than 90% cribriform glands with comedo necrosis and dystrophic calcification, diagnostic for cribriform carcinoma of the breast (**Figure 4B**). On higher power, the carcinoma was composed of atypical cells with moderate pleomorphism, consistent with nuclear grade 2 (**Figure 4C**). P63 staining and smooth muscle-myosin heavy chain (SMMHC) staining confirmed the lack of myoepithelial cells, consistent with invasive carcinoma (**Figure 5**).

Immunohistochemical (IHC) staining results of the breast carcinoma revealed a luminal phenotype. IHC staining showed strong positivity for estrogen receptor (ER), near negativity for progesterone receptor (PR), equivocal positivity for c-erb B2 (HER2), and a Ki-67 labeling index of about 30% (**Figure 6**). Fluorescence in situ hybridization (FISH) showed no amplification of the HER2/neu oncogene.

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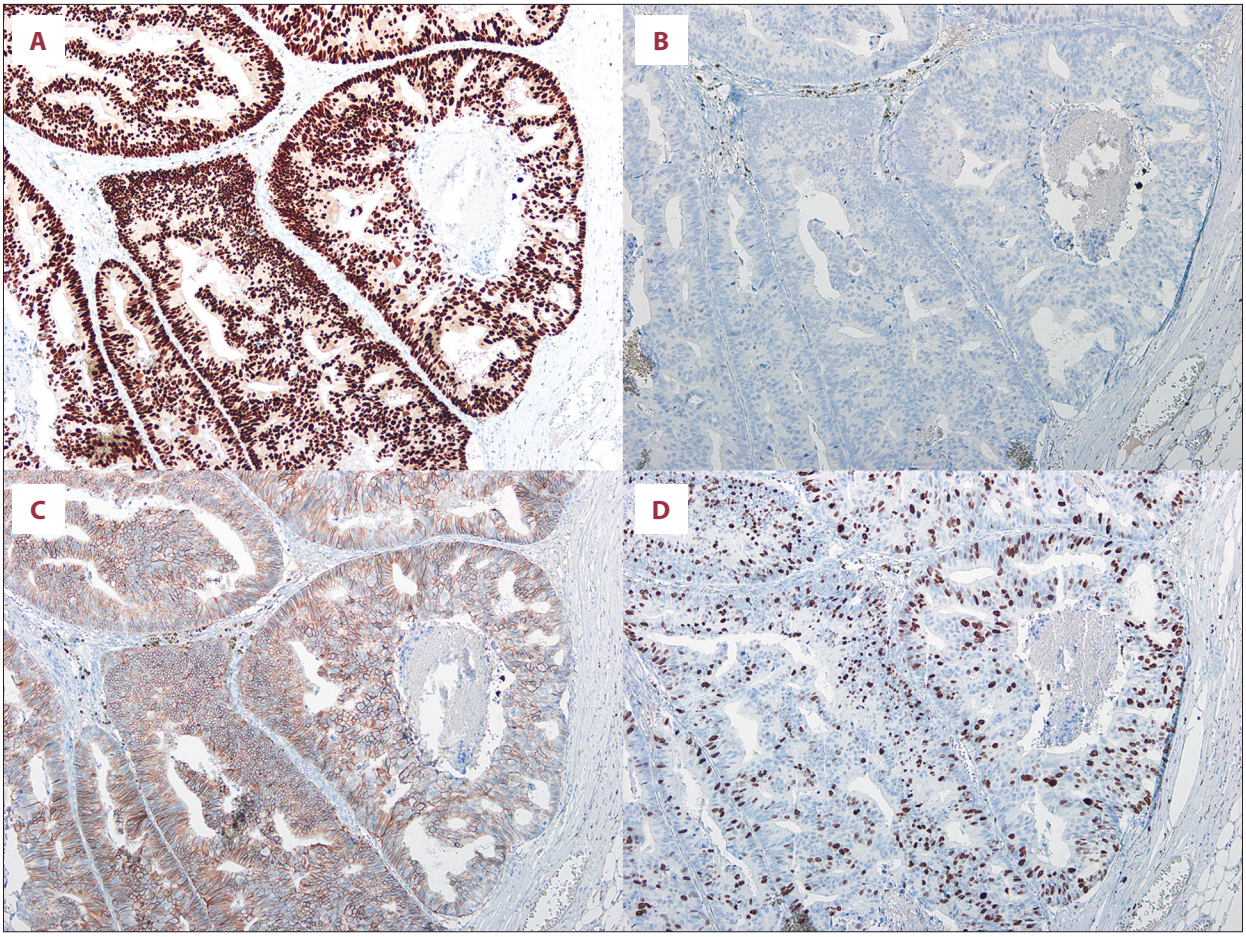

Figure 6. IHC staining of ICC. IHC results of the breast carcinoma reveal a luminal phenotype (all, 10× objective). (**A**) The carcinoma had diffusely strong ER positivity with (**B**) nearly negative PR positivity (<1 weakly PR+ cell/100 cells). (**C**) More than 10% of tumor cells showed moderately staining membranous c-erbB2 positivity (c-erbB2+ equivocal), and (**D**) a Ki-67 labeling index of about 30%. IHC – immunohistochemistry; ICC – invasive cribriform carcinoma; ER – estrogen receptor; PR – progesterone receptor.

The final diagnosis for the histologic type of the carcinoma was ICC and the tumor, node, metastases (TNM) stage was pT-2N0M0 according to the American Joint Committee on Cancer 8th TNM staging system. The patient received adjuvant systemic chemotherapy of 4 cycles of docetaxel and cyclophosphamide every 3 weeks. A total dose of 6100 cGy radiotherapy to the left chest wall and tumor bed was administered, since the deep resection margin was close to about 1 mm. The patient has been taking 20 mg of tamoxifen daily for adjuvant endocrine treatment. As of now, about 30 months after surgery, there is no evidence of disease.

Discussion

ICC is a rare type of invasive breast carcinoma, especially in men; in total, less than 10 cases have been reported in men [3,4]. ICC is a well-differentiated cancer that resembles some histologic features of tubular carcinoma [6]. Histopathologically, ICC is characterized by tumor cells that invade the stroma in a cribriform or fenestrated growth pattern similar to that seen in the cribriform pattern of ductal carcinoma in situ [6].

According to the diagnostic criteria of ICC by the WHO's breast tumor classification system [7], ICC is generally classified as pure, classical, or mixed type. If the invasive cribriform pattern is more than 90%, it is called pure ICC [7,8]. The classical variant of ICC is defined as a tumor composed of an exclusively invasive cribriform pattern or a tumor with more than 50% invasive cribriform features, in which the remainder of the tumor exhibits features of tubular carcinoma [8]. Tumors with any component of non-tubular carcinoma are described as a mixed type [8]. In this case, the tumor was composed of more than 90% cribriform glands; therefore, it could be classified as pure ICC.

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ICC is known as a malignancy with slow growth, low histologic grade, and good prognosis [4,8,9]. Most ICC tumors are luminal A or B subtypes and are ER positive and/or PR positive, and HER2 negative [9]. In this case, IHC staining showed a strong positivity for ER, near negativity for PR, equivocal positivity for HER2, and with a Ki-67 labeling index of about 30%. Therefore, the tumor was defined as luminal B subtype.

Female breast cancer is not easily detected by breast self-examination or screening mammography if it is not large enough to palpate. However, in men, even relatively small tumors can be palpated, as there is little breast tissue, compared with women. Therefore, in men, the most common complaint at diagnosis is a palpable breast mass, as seen in this case [10].

Conclusions

ICC is a rare type of invasive carcinoma of the breast, and ICC from the male breast is very rare. We report, in this case, the final pathologic results of a male patient diagnosed with ICC breast cancer and treated with surgery, chemotherapy, and radiotherapy.

Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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