

Case Report

Large Cystic Infiltrating Ductal Carcinoma in Male Breast

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ABSTRACT: Cystic infiltrating ductal carcinoma is a very rare entity that, to the best of our knowledge, has not yet been reported in males. We report the sonographic and CT findings of a large cystic infiltrating ductal carcinoma in a 51-year-old man. © 2007 Wiley Periodicals, Inc. *J Clin Ultrasound* 35:102–104, 2007; Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/jcu.20272

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Male breast cancer is an uncommon disease with an incidence of approximately 1% of all breast cancers.¹ It usually presents as a solid subareolar or upper outer quadrant mass.² Cyst-related breast cancers are unusual both in males and in females, with an incidence of approximately 0.5%.^{3,4} Cystic infiltrating ductal carcinoma is a very rare entity that, to the best of our knowledge, has not yet been reported in males. We describe the sonographic and CT findings of a large cystic infiltrating ductal carcinoma in a 51-year-old man.

CASE REPORT

The patient presented with a right upper outer quadrant breast mass that had enlarged during the past year. Physical examination revealed a palpable, large ($\approx 3.5 \times 4$ cm), ill-defined mass that filled the entire upper outer quadrant. The patient had no gynecomastia. Nipple discharge

and skin ulceration were not detected. The overlying skin showed bluish color change. Bilateral axillary lymph nodes were not palpable. The patient was admitted to the radiology department for sonographic examination.

Gray-scale and color Doppler sonographic examination was performed with an HDI 5000 scanner (Philips Medical Systems, Bothell, WA) connected to a 7–12-MHz linear-array transducer. Sonographic examination revealed a mass measuring 6.5×4.2 cm that was predominantly cystic with multiple papillary soft tissue mass projections toward the lumen of the cyst (Figure 1A). Debris was noted in the fluid component of the mass. Significant vascularization was detected in these papillary soft tissues on color Doppler sonography (Figure 1B). No lymphadenopathy was observed in the bilateral axillary or supraclavicular areas. Fifteen milliliters of fluid with a hemorrhagic appearance was collected via sonographically guided fine needle aspiration biopsy. The cytologic feature was suspicious of malignancy, and core needle biopsy of the lesion's soft tissue component was performed. Histopathologic examination of the biopsy material revealed infiltrating ductal carcinoma. Contrast-enhanced CT examination was performed to evaluate the relationship of the mass with the soft tissues of the thoracic wall and to rule out lung metastases (Figures 1C and 1D). A well-defined and predominantly cystic mass with enhanced soft tissue components in the upper and lower poles was detected (Figure 1C). The medial component of the mass infiltrated the soft tissues of the thoracic wall. No metastasis was detected in the lungs. Wide local excision and axillary lymph node dissection were performed. Histopathologic examination revealed

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DUCTAL CARCINOMA IN MALE BREAST

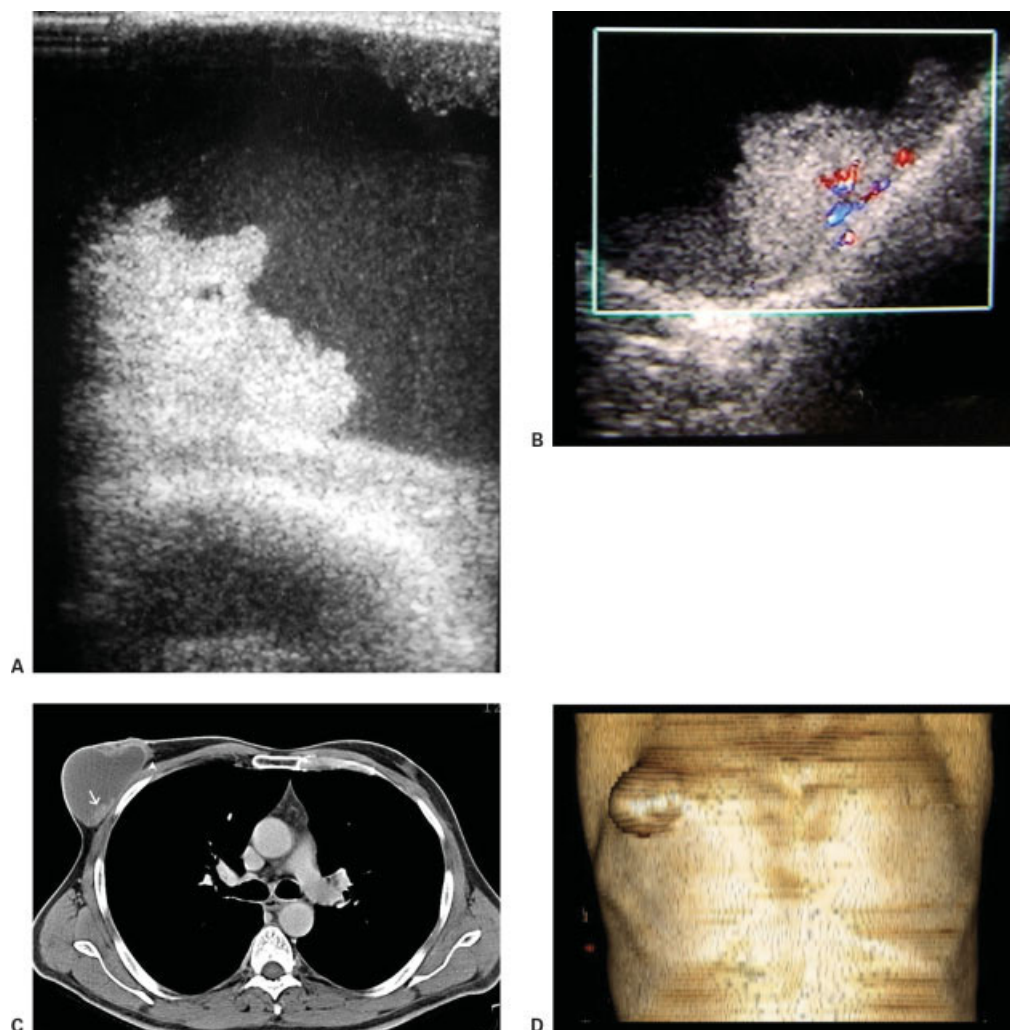


FIGURE 1. A 51-year-old man with biopsy-proven infiltrating ductal carcinoma. **(A)** Sonogram shows a predominantly cystic mass with solid mural projections in the anterior and posterior of the cyst wall and intraluminal debris. **(B)** Color Doppler sonogram shows significant blood flow in the intraluminal solid component. **(C)** CT scan shows the mass with multiple, enhancing intraluminal mural nodules (arrow), some of which infiltrate the subcutaneous fat of the anterior thoracic wall (arrowhead). **(D)** Volume rendering CT image shows the mass in the right upper outer quadrant.

infiltrating ductal carcinoma with prominent tubular differentiation (modified Bloom-Richardson's histological grade I [tubule formation, 1; nuclear pleomorphism, 1; mitosis, 2]). No axillary lymph node metastasis was detected. Hormonal receptor status was negative. The patient received postoperative radiation therapy.

DISCUSSION

Breast cancer in males is a rare neoplasm accounting for approximately 0.7% of all cancers in men.⁵ The mean age of incidence is between 60 and 66 years.⁶ The most common sign of male breast cancer is a hard, fixed, and painless mass. These masses are frequently localized in the subareolar region and may be fixed to overlying skin or pectoral muscle. Bloody nipple discharge and nipple

ulceration have been reported in 25% of cases. Other frequent symptoms of male breast cancer are nipple retraction, edema, erythema, ulceration, skin retraction, and ipsilateral axillary lymphadenopathy.⁷ The risk factors for male breast cancer include hyperestrogenemic states, liver dysfunction, suppression of testicular function, and advanced age. Exposure to ionizing radiation and electromagnetic fields for more than 30 years and gynecomastia are additional risk factors.⁶

Approximately 85% of all male breast cancers are moderately or poorly differentiated infiltrating ductal cancers. Ductal carcinoma in situ is found in 35–50% of all male breast cancers, and 75% of these are of the papillary subtype.⁸ Infiltrating ductal cancer is commonly seen as a solid mass² that less frequently presents as a thick-walled, thick-septated, or mixed cystic mass. Predominantly cystic infiltrating ductal cancer is very rare both in

males and in females. Berg et al⁹ reported only one intracystic infiltrating ductal cancer out of 150 biopsy-proven cystic breast masses in female patients. Markopoulos et al¹⁰ reported only 7 (0.46%) cystic degenerated ductal cancers in their series of 1,510 female patients with newly diagnosed breast cancer. In a study of 8 male breast cancer cases, Yang et al¹¹ detected 5 intracystic infiltrating ductal carcinomas, 4 of which were solid and 1 of which had a complex cystic appearance. These authors also reported 2 predominantly cystic masses and 1 complex cystic mass in 3 cases of papillary ductal carcinoma. In our case, sonographic and CT examination revealed an infiltrating ductal carcinoma containing papillary soft tissues projecting into the lumen.

Cystic breast carcinomas may occur in various histologic types—most frequently the papillary type—both in invasive and noninvasive forms. The rate of intracystic papillary carcinoma is 0.5–2.0% in all female breast cancers and 5–7.5% in all male breast cancers.^{3–8} Less frequent cystic carcinomas of the breast include adenoid cystic carcinoma, mucinous cystadenocarcinoma, and cystic hypersecretory duct carcinoma.^{12–14} It has been reported that these cystic neoplasms originate from the cyst wall and invade the cyst, show a complex cystic development, and represent the cystic degeneration of the tumor.⁴ The combination of mammography, pneumocystography, and sonography is recommended in the diagnosis of cystic breast tumors.¹⁵ Male breast cancers may be well demarcated, poorly demarcated or speculated, round, ovoid, or lobulated in mammography. Calcification is infrequent.^{9,11}

Since the advent of high-resolution ultrasound scanners, pneumocystography has not been widely used for the diagnosis of complicated cysts in the breast.¹⁶ On sonographic examination, cystic breast cancers may present as predominantly cystic, thick-septated, or multicystic masses that have soft tissue components projecting into the lumen. Sonography may reveal fluid–debris levels within the complicated cysts. Demonstration of blood flow in intracystic soft tissue projections or in complicated cysts is possible.^{9,17} Sonographically guided aspiration biopsy can be performed safely; however, it is difficult to obtain a definite diagnosis of malignancy from aspiration cytology specimens.¹⁸ Sonographically guided core needle biopsy can be performed from the remaining solid component after aspiration.^{9,11} Contrast-enhanced MRI and CT may reveal marked enhancement of the cyst wall, septations, and mural nodules; these characteristics correspond to the vascularized stroma.¹⁶

In conclusion, in addition to intracystic papillary carcinoma, an infiltrating ductal carcinoma

should also be part of a differential diagnosis of a cystic breast mass with a solid component in a male. Furthermore, because men do not have fibrocystic changes, even simple cysts should be considered suspicious for malignancy.

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