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Case Report

Radiologic images of an aggressive implant-associated fibromatosis of the breast and chest wall: case report and review of the literature

Lourdes Alanis MD, MPH^{a,*}, Robyn Roth MD^a, Nati Lerman MD^b, Julieta E. Barroeta MD^c, Pauline Germaine DO^a

^a Department of Radiology, Cooper University Hospital, 1 Cooper Plaza, Suite B23, Camden, NJ 08103, USA

^b Department of Hematology and Medical Oncology, MD Anderson Cancer Center at Cooper, Camden, NJ, USA

^c Department of Pathology, Cooper University Hospital, Camden, NJ, USA

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ABSTRACT

Fibromatosis of the breast is a rare benign disease compromising <0.2% of all primary breast tumors. Although the chest wall is a common location, occurrences of implant-associated fibromatosis of the breast are extremely rare; only 33 cases have been reported. We present a case of a 42-year-old female who underwent breast augmentation with silicone breast implants, and 2 years later developed an aggressive implant-associated fibromatosis of the breast and chest wall. On imaging studies, the tumor mimicked breast carcinoma, and despite chemotherapy, the fibromatosis rapidly enlarged and was locally invasive requiring wide surgical excision. Unlike previously reported imaging findings, magnetic resonance imaging revealed an oval circumscribed mass with fringe-like internal architecture. We provide a review of the literature and discuss the imaging features of implant-associated fibromatosis of the breast.

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Introduction

Extra-abdominal desmoid tumor of the breast, mammary fibromatosis, or fibromatosis of the breast is a type of extremely rare breast tumor [1]. Unlike fibromatosis in the

abdominal wall which is frequently reported, fibromatosis of the breast constitutes <0.2% of all primary breast tumors [1–4]. Fibromatosis of the breast is a benign, nonmetastasizing stromal tumor that can grow aggressively and invade locally in an infiltrating pattern and can mimic malignant

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* Corresponding author.

E-mail address: alanis-lourdes@cooperhealth.edu (L. Alanis).

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types of breast cancer on both clinical and imaging findings [1,3,5–8]. Fibromatosis of the breast is more common in young and fertile women, but occurrences in men have been reported [1,6]. Patients range in age from 13 to 83 years old, with a reported mean age at diagnosis between 37 and 50.3 years [6,9].

Case report

A 42-year-old woman with breast implants presented to our institution with the chief complaint of a palpable lump in her left breast for 5 months, with more dramatic growth 1 month before her visit. She denied any skin changes, nipple retraction, or discharge. On clinical examination, the left breast was noted to be asymmetrically enlarged with a palpable firm mass in the left upper inner breast adjacent to the left sternal border. The patient reported minimal tenderness, and no nipple or skin changes were noted. Two years before her presentation, she had undergone bilateral breast augmentation with silicone implants. A month before her presentation, mammography at an outside institution revealed the left breast to be extremely dense, limiting sensitivity of mammography, without any obvious mass, though, accompanying ultrasound of the left breast revealed a 6.6-cm hypoechoic heterogeneous solid vascular mass anterior to the implant capsule at the 11-o'clock position. Repeat ultrasound at our institution confirmed presence of a suspicious hypoechoic mass with posterior acoustic shadowing (Figs 1A and B). A left breast ultrasound-guided 14-gauge core biopsy was performed; pathology revealed spindle cell proliferation compatible with fibromatosis of the breast. Immunohistochemical stains revealed the spindle cells were positive for vimentin, beta-catenin, and with foci of positivity for smooth muscle actin. The lesion had predominantly negative results for CD34, CD54, S100, estrogen receptor antibody, CK 903, and pan-cytokeratin; the findings further supported the diagnosis of fibromatosis [10–13]. A week following the core biopsy, a contrast-enhanced computed tomography (CT) of the chest was performed demonstrating a hypoattenuating

circumscribed mass in the left breast compatible with known fibromatosis causing anterolateral displacement of the breast implant (Figs 2A and B). Surgical resection was considered, though given the size and local extension of the tumor, chemotherapy was initiated in an attempt to decrease tumor size before resection as this treatment has been shown to have the highest response rate. The patient underwent weekly methotrexate and vinorelbine (Navelbine; Pierre Fabre Medicament Production, France) for 3 months; however, the mass significantly grew in size despite chemotherapy. A 3-month follow-up contrast-enhanced CT of the chest showed an interval increase in size of the fibromatosis of the left breast despite chemotherapy (Figs 3A and B). Five days following the CT of the chest, a bilateral contrast-enhanced breast magnetic resonance imaging (MRI) demonstrated an 11.2-cm mass in the left breast with marked distortion of the left breast implant (Figs 4A and B). Four weeks later, the patient underwent surgical excision of the left breast tumor and removal of the bilateral breast implants. Gross examination revealed a 12 × 9 × 4.5 cm pink-tan soft-tissue mass with a glistening smooth surface. On sectioning, scattered areas of hemorrhage were noted without gross evidence of necrosis or calcifications. Microscopic examination demonstrated a proliferation of bland-appearing spindle and stellate cells in intersecting fascicles morphologically compatible with desmoid-type fibromatosis (Fig. 5). The lesion had an infiltrative edge, involving the fascia and extending to the inked specimen margin (Fig. 6). Immunohistochemical stains performed on this resection specimen showed a similar immunoprofile to the previous core biopsy, with strong nuclear positivity for beta-catenin (Fig. 7), positivity for smooth muscle actin, focal weak positivity for desmin, and negative expression of panCK, CAM 5.2, CD34, S100, and CD117. The Ki-67 revealed a proliferation index of ~1%. The patient resumed chemotherapy postoperatively. A follow-up bilateral contrast-enhanced breast MRI revealed no residual tumor mass within the left chest wall or breast (Figs 8A and B). The patient was referred to radiation oncology to discuss the option of future radiation to the chest wall given the positive surgical margins at the time of surgery.

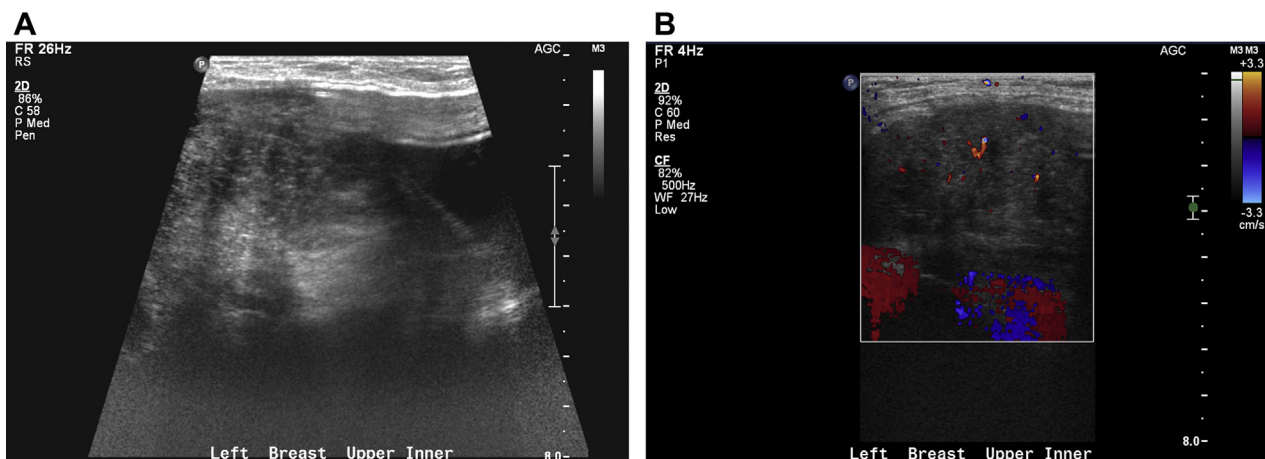


Fig. 1 – (A) Ultrasound images of the left upper inner quadrant shows a 7.6-cm hypoechoic mass with irregular margins and posterior acoustic shadowing. (B) Color Doppler ultrasound image shows increased vascularity within and around the lesion.

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