

Breast Fibromatosis Showing Unusual Sonographic Features

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Fibromatosis of the breast is extremely uncommon, accounting for less than 0.2% of all breast tumors. It mimics features typical of breast cancer because it often presents with a movable firm painless mass and mammographically appears as an irregular high-density spiculated mass. On sonography it most frequently appears as an irregular hypoechoic spiculated mass with posterior acoustic shadowing. We report a particularly unusual case of fibromatosis of the breast.

Case Report

A 46-year-old woman presented to our institution with a palpable mass in her right breast for 1 month. Clinically, the mass was not movable and firm without overlying skin dimpling or retraction. There was no specific clinical history such as familial adenomatous polyposis, antecedent injury, or surgical trauma. Mediolateral oblique mammography revealed a well-defined round uncalcified hyperdense nodule measuring approximately 2.5 cm located in the subcutaneous fat layer of the right upper outer quadrant (Figure 1). The mass was not visible on the craniocaudal mammographic view because it was located in the far upper outer quadrant of the breast. Sonography revealed a 2.3-cm heterogeneously hyperechoic mass with an indistinct margin and posterior acoustic shadowing confined to the subcutaneous fat layer of the right upper outer quadrant of the breast (Figure 2). Intralesional vascularity was almost absent on power Doppler sonography. Final assessment according to the Breast Imaging Reporting and Data system¹ was category 4, suggestive of malignancy, which requires biopsy.

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Sonographically guided core biopsy using a 14-gauge needle was performed, which histologically showed proliferation of spindle cells, suggesting fibromatosis. The patient underwent surgical wide excision of the lesion. The histopathologic findings were consistent with fibromatosis, showing short fascicular proliferation of spindle cells with an infiltrative border invading adjacent fatty tissues without involvement of the chest wall or breast parenchyma (Figure 3). There were no mitoses and no evidence of combined fat necrosis. No local recurrence was evident during clinical and sonographic follow-up for 1 year after surgery.

Discussion

Fibromatosis, also termed a desmoid tumor, is a group of soft tissue tumors that may arise from musculoaponeurosis in many anatomic locations of the body.² Although it is relatively benign, it is locally aggressive and has a tendency to recur.^{2,3}

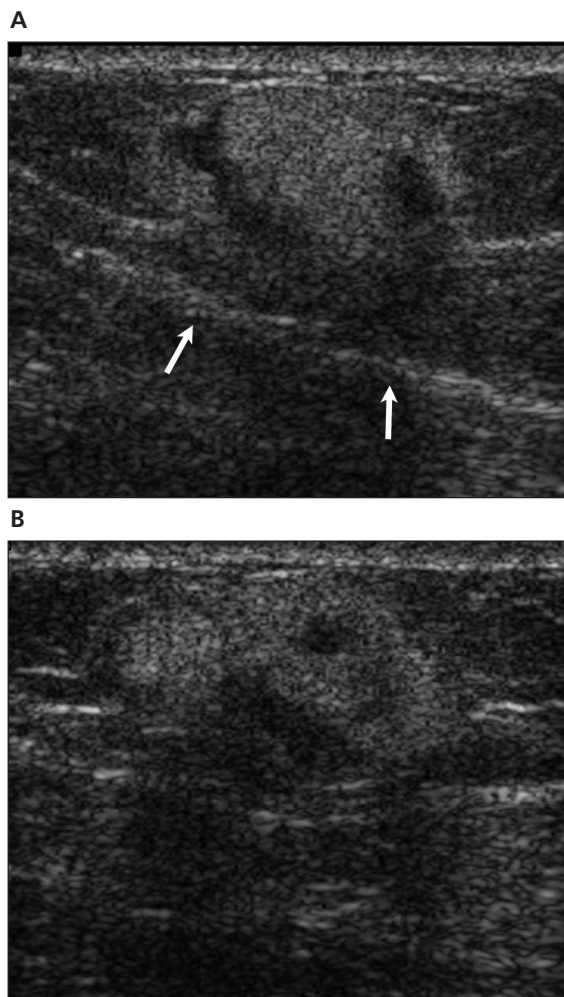
Figure 1. Right mediolateral oblique mammogram showing a well-defined round hyperdense nodule (arrow) measuring approximately 2.5 cm in the subcutaneous fat layer.



Fibromatosis of the breast, as an extra-abdominal desmoid tumor, is extremely rare and originates from the pectoralis major muscle or rarely from the breast parenchyma.^{2,3} Previous literature reported that a subset of fibromatosis of the breast may be entirely or almost entirely limited to the subcutaneous fat of the breast, with little or no parenchymal involvement.²

The etiology of breast fibromatosis remains unclear; however, there have been a few reported cases associated with genetic disorders such as Gardner syndrome, familial adenomatous polyposis, silicone breast implants, and trauma.^{4,5} Most cases are reported in women, with rare cases

Figure 2. Sonograms showing a 2.3-cm heterogeneously hyperechoic mass with an indistinct margin and posterior acoustic shadowing confined to the subcutaneous fat layer of the right upper outer quadrant of the breast and separated from the retromammary and pectoral major fascia (arrows). **A**, Transverse image. **B**, Longitudinal image.



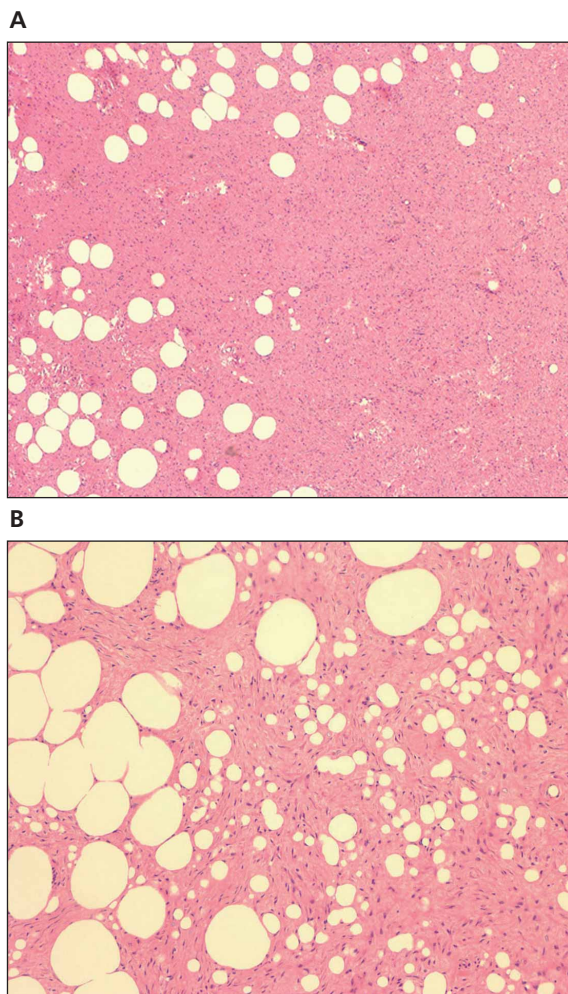
reported in men.³ These lesions affect patients of many ages, from 18 to 70 years, presenting clinically as firm mobile palpable masses without tenderness and occasionally with skin retraction or dimpling.^{2,3} The lesions are most commonly unilateral.³

Breast fibromatosis frequently shows typical mammographic and sonographic features that may be indistinguishable from those of breast cancer.⁶⁻⁸ Mammographically, breast fibromatosis appears as irregular uncalcified hyperdense masses,⁵ and its sonographic appearance is of spiculated irregular hypoechoic masses with posterior shadowing, although unusual benign-

like sonographic findings of well-defined hypoechoic breast nodules have also been reported.⁶⁻⁹ This case was revealed as a partially indistinct heterogeneous hyperechoic nodule with posterior acoustic shadowing mimicking fat necrosis or a mucinous neoplasm on sonography and as a well-defined hyperdense nodule on mammography. It was located in the subcutaneous fat layer in the right upper outer quadrant of the breast and was separated from the chest wall and breast parenchyma. The sonographic features of fibromatosis are generally dependent on the collagen and spindle cell content and intralesional vascularity.¹⁰ The key histologic features of breast fibromatosis, identical to those of these lesions in other anatomic sites, are proliferation of spindled fibroblasts forming sweeping and interlacing fascicles.^{2,11} Histologically, this case showed short fascicular proliferation of spindle cells composed of low fibroblast cellularity and abundant collagen invading the adjacent fat tissue without parenchymal involvement. There was no evidence of mitotic activity or combined fat necrosis. Intralesional vascularity was not visible on power Doppler sonography. To our knowledge, a case of breast fibromatosis with unusual imaging findings suggestive of fat necrosis or a mucinous neoplasm on sonography has not been reported previously. Preoperative core biopsy indicated the possibility of fibromatosis in this case and was useful for planning the subsequent surgery. Fibromatosis should be treated with wide surgical excision, and lesions with positive surgical margins tend to recur.^{2,3}

In conclusion, although in most cases breast fibromatosis arises from the chest wall or rarely the breast parenchyma and typically shows sonographic findings mimicking breast cancer, it may also occur with atypical sonographic features of an echogenic mass and may arise solely from the subcutaneous fat.

Figure 3. Photomicrographs showing short fascicular proliferation of spindle cells composed of low fibroblast cellularity and abundant collagen invading the adjacent fat tissue without parenchymal involvement. **A**, Hematoxylin-eosin, original magnification $\times 40$. **B**, Hematoxylin-eosin, original magnification $\times 100$.



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