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Multimodality images of myofibroblastoma in the male breast: A case report and a review of the literature☆

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ABSTRACT

We report a case of a 58-year-old male diagnosed with myofibroblastoma using mammography, ultrasound, computed tomography (CT) and magnetic resonance imaging (MRI), as well as present a review of the literature. The pathological diagnosis was myofibroblastoma with spindle cell neoplasm with immunoreactivity. Myofibroblastoma is a rare benign disease and there is a lack of reports of multimodality imaging of this disease. We review the imaging features of this rare disease across multiple imaging modalities with pathological correlation, and provide current treatment recommendations as well.

1. Introduction

Myofibroblastoma of the breast is a rare benign tumor of a mesenchymal origin that is derived from the mammary stromal fibro-/myofibroblasts. These tumors are most commonly described in the 6th to 7th decades of the male breast, with a few cases also reported in postmenopausal women [1–3]. The majority of cases present clinically as movable, nontender palpable masses of the breast. A few reports describe the radiological and -pathological features of myofibroblastoma. We report a case of a 58-year-old man through the use of mammography, ultrasonography, computed tomography (CT) and magnetic resonance imaging (MRI). We also provide a brief pathological review of this entity.

2. Case report

A 58-year-old male visited our hospital with a palpable mass of the left breast detected 4 months prior. He had no previous medical history although a paternal history of skin cancer was found. He had a history of sonography-guided core needle biopsy for a suspicious chest wall mass at an outside local hospital. A breast ultrasound performed in an outside hospital facility revealed an approximately 5 cm, circumscribed, oval, homogeneously isoechoic mass located in the retromammary fat tissue. No associated posterior features were noted (Fig. 1). Pathological results showed a mesenchymal tumor that was either benign or had a low potential to be malignant. He was referred to our hospital for operation. A work-up was performed to exclude malignant lesion.

Mammography revealed a circumscribed, oval, hyperdense mass of about 4 cm in the upper inner quadrant of the left breast (Fig. 2). A contrast-enhanced chest CT scan was performed to evaluate metastasis. The CT results showed a 5.6 × 1.4 cm-sized oval, well demarcated soft tissue density mass in the left upper central breast with heterogeneous enhancement (Fig. 3).

Dynamic contrast-enhanced breast MRI (DCE-MRI) revealed an oval mass with a circumscribed margin that was isointense on T1-weighted images (Fig. 4A) with bright hyperintensity on fat-suppressed T2-weighted images. Dark branch-like structures or septa were seen in the mass on fat-suppressed T2-weighted image (Fig. 4B). The mass showed high signal intensity on diffusion weighted images and high value on an apparent diffusion coefficient (ADC) map. The mean ADC value of the mass was 1.74^{-3} mm^2/s (Fig. 4C). Gadolinium enhanced fat-suppressed T1-weighted images showed heterogeneous and progressive enhancement of the mass. Dark branch-like structures or septa detected on the fat-suppressed T2-weighted image displayed a lack of enhancement on DCE-MRI (Fig. 4D). The kinetics of the enhancement were analyzed by a time-intensity-curve (TIC) using a computer-aided diagnosis (CAD) system (Merge Healthcare Inc., Chicago, IL) and the mass showed rapid enhancement and plateau enhancement (Fig. 4E). Surgical excision of the left breast mass was performed for the purpose of pathological diagnosis. The pathology results showed a benign mesenchymal tumor composed of short spindle cells and many dilated blood vessels in the

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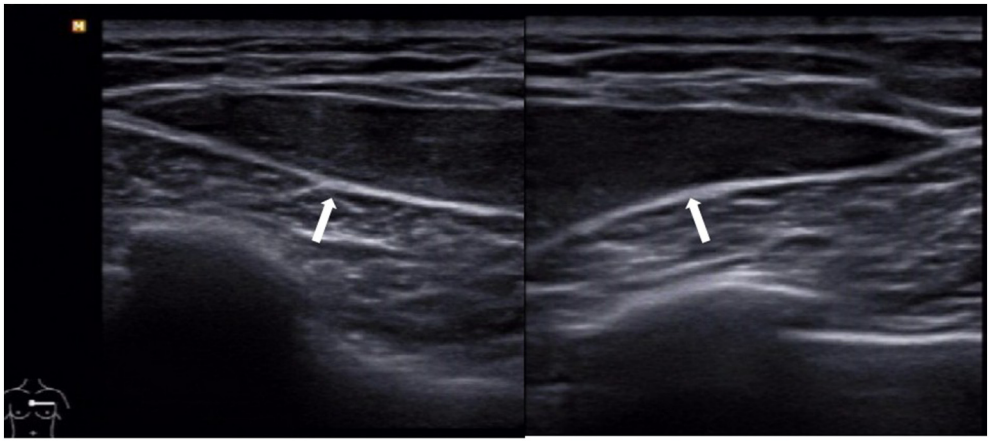

Fig. 1. Breast ultrasonography, performed at an outside hospital, shows a circumscribed, oval, and homogeneously hypoechoic mass in the subcutaneous fat (white arrows).

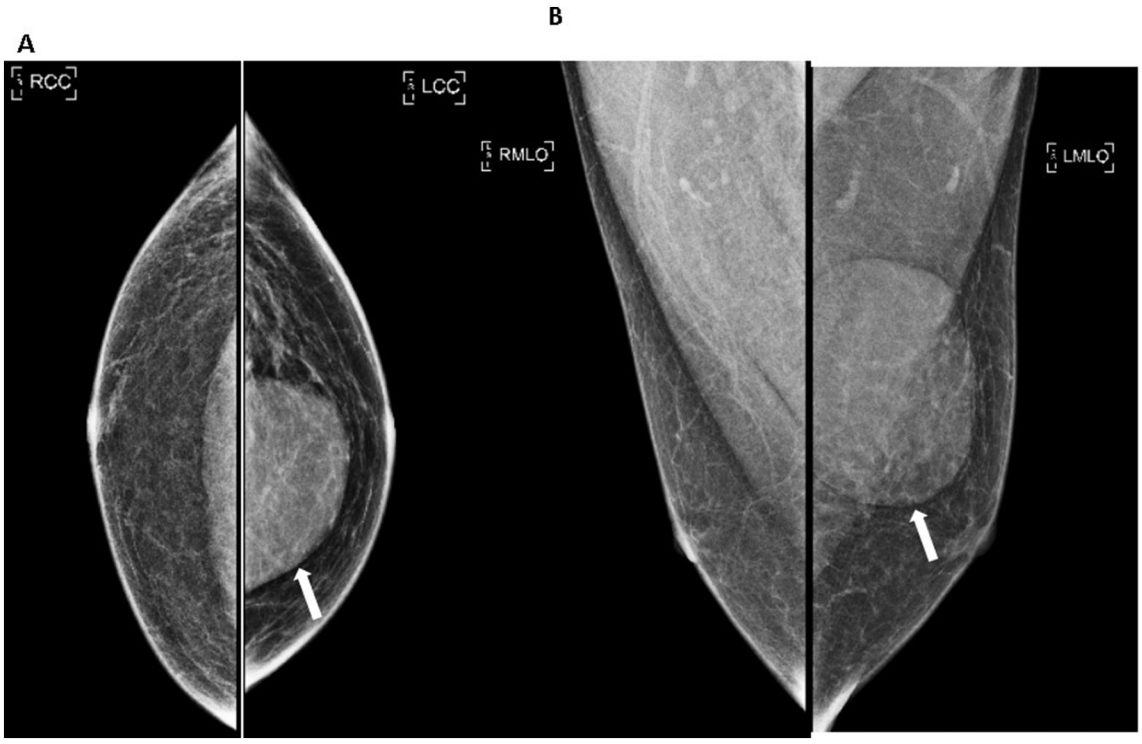

Fig. 2. Mammography craniocaudal (A) and mediolateral oblique (B) views show a circumscribed, oval, and hyperdense mass of approximately 4 cm in the upper inner quadrant of the left breast (white arrows).

myxofibrous stroma (Fig. 5A). Immunohistochemical analysis of the tumor cell revealed negative results for S100 protein and anti-smooth muscle actin (alpha-SMA) but positive results for desmin (focal positive), CD34 and CD10, suggesting myofibroblastoma (Fig. 5B, C).

3. Discussion

Myofibroblastoma is a rare tumor characterized by spindle-shaped mesenchymal cells derived from fibroblasts. Myofibroblastoma of the breast is an extremely rare benign tumor, which might be confused with malignancy, both clinically and radiologically [4–7]. Seventeen patients diagnosed with myofibroblastoma of the breast between 1997 and 2017 are listed in table (Table 1). The list includes 14 male patients and three female patients with a mean age of 64.5 years. The reported size of a myofibroblastoma is usually less than 4 cm; however, a mass larger than 16 cm has also been previously reported [8, 9]. The etiology