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Case Report

Male breast myofibroblastoma: Imaging features and ultrasound-guided core biopsy diagnosis ☆,☆☆

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ABSTRACT

Mammary myofibroblastoma is a rare mesenchymal neoplasm that typically presents in older men and women. Less commonly, these benign tumors may also occur in soft tissues located outside of the breast, in which case they are referred to as mammary-type myofibroblastomas. The histologic composition of this benign spindle cell tumor can be markedly varied. We present one such case of myofibroblastoma of the male breast, describing its sonographic appearance and its diagnosis using ultrasound-guided core biopsy.

Introduction

Mammary myofibroblastoma (MFB) is a rare benign tumor of myofibroblastic differentiation which has been described in different sites such as soft tissues, skin, lymph node, and breast [1]. There have been less than 90 case reports of mammary MFB reported till date after being first described as a distinct entity in 1987 [2]. They pose a diagnostic challenge in their preoperative diagnosis by fine-needle aspiration cytology (FNAC) or core biopsy as they have to be differentiated from other spindle-cell lesions and myoepithelial tumors of the breast. Moreover, some cases may show diverse morphology and should not be mistaken for malignancy [3]. The accurate diagnosis of an MFB is seldom made before histopathology examination and immunohistochemistry (IHC). The presence of spindle cells with collagen in the background, low mitotic activity, and CD34 positivity on IHC are the characteristic features of this tumor [4,5]. Although several reports in the literature document its pathologic appearance, few illustrate its imaging appearance. Throughout this case we review it ultra-

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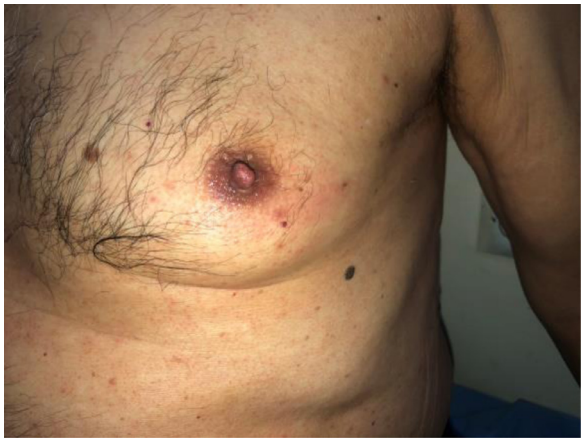

Fig. 1 – The clinical finding. Swelling mass in the adductor compartment of upper left thigh (arrow).

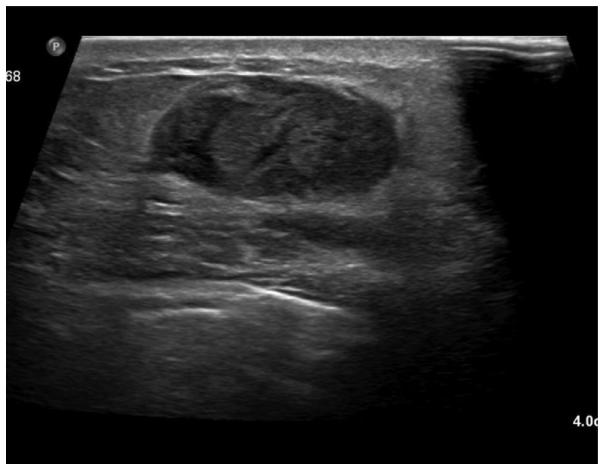

Fig. 2 – Ultrasound image of the mass demonstrated a heterogeneous, oval solid mass with circumscribed margins measuring 26 x 17 cm.

sound features and the importance of a guided core biopsy in the diagnosis process.

Case report

A 69-year-old man was referred to our institution for a mass in the left mammary region. He was an otherwise healthy man, although on medications for hypercholesterolemia and hypertension. There was no family history of breast cancer. The mass, which initially appeared as a small and asymptomatic swelling, had slowly enlarged for more than a year. On examination, the mass was located underneath the areola at 4o'clock position towards the lower external quadrant of the breast tissue, and measuring 25 cm of maximum diameter (Fig. 1). The lesion was well-defined, firm, nontender, and freely mobile with respect to the underlying muscular plane, nonadherent to the overlying skin. There was no skin erythema, nipple retraction, or nipple discharge. No axillary or supraclavicular adenopathy was palpated. The right breast was normal. Ultrasound scan examination demonstrated the symptomatic lesion of the left breast as a 26 × 17 cm oval parallel, solid mass with circumscribed margins. The echotexture of the mass was heterogeneous isoechoic without no associated posterior features were noted (Fig. 2). Internal vascularity was noted on color Doppler imaging, confirming the solid nature of the mass. A survey ultrasound of the axilla detected no abnormal axillary lymph nodes. Percutaneous biopsy under ultrasound guidance with a 14-gauge was recommended, and utilizing a lateral approach, a total of 3 biopsy specimens were collected and sent for pathologic analysis which demonstrated a bland oval to spindle cells with pale to eosinophilic cytoplasm, arranged in short intersecting fascicles with interspersed variably hyalinized collagen bundles (Fig. 3). No atypia or mitotic activity was seen. Immunohistochemistry showed a positive reaction with alpha-smooth muscle actin (SMA) (Fig. 4), desmin, and CD34 (Fig. 5). Neoplastic cells were also positive for estrogen receptor (ER) and Progesterone receptor (PR) (Fig. 6), but they were negative with MNF116, S100, and p63.Based on these morphological and immunohistochemical features, the diagnosis of "classic type myofibroblastoma of the breast was rendered."

The patient was subsequently referred to a breast surgeon for excision.

Discussion

Myofibroblastoma is a mesenchymal tumor derived from stromal fibroblasts most commonly found within the breast parenchyma [3,4]. Myofibroblastoma was first characterized by Wagortz et al. in 1987, reporting on 16 of such cases. It tends to affect middle-aged and elderly men, with a few cases also reported in postmenopausal women [5–8]. Characteristically, these lesions present as a solitary, painless, firm, and freely mobile mass which grows slowly for several months or years [8,9]. Typical masses measure 1-4 cm [1,8], with rare cases demonstrating much larger lesions up to 16 cm [9,10].

The appearances of myofibroblastoma on imaging are nonspecific. The mammographic findings usually consist of a well-circumscribed round or oval dense and noncalcified mass. On sonography, it demonstrates a well demarcated tumor, although a variable and mixed echo pattern can be expected, sometimes with more distal acoustic attenuation as a result of incorporation of fat tissue and other types of tissue in tumor. Doppler modality may show a slight peripheral hypervascularization of the tumor. Regarding the tumor size, most of the reported cases dealt with lesions measuring from 1 to 3.7 cm of maximum diameter. However, the tumor may attain very large dimensions. MRI findings (although not often done) show T1 hypointensity to isointensity with positive early enhancement and nonenhancing septations. The masses are typically T2 hyperintense [10].

Pathologically, the classic type of mammary myofibroblastoma is composed of bundles of slender, uniform, spindle-shaped cells, typically arranged in clusters that are separated by broad bands of hyalinized collagen, as seen in this case. The majority of the myofibroblastomas are immunoreactive

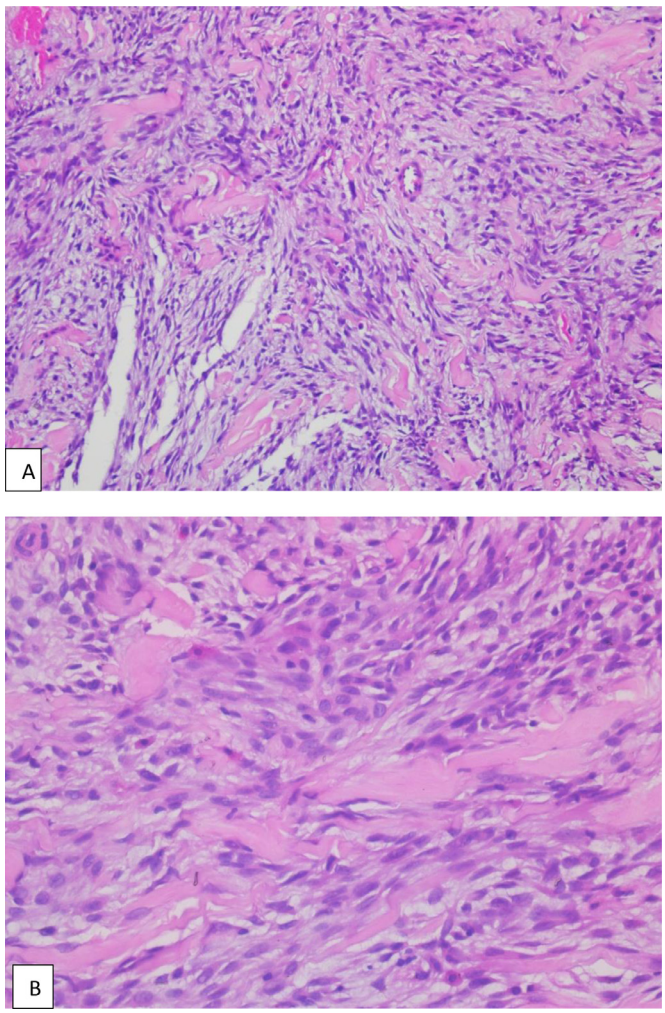

Fig. 3 – (A: HE, ×200; B: HE, ×400). Proliferation of bland, uniform, short to elongated spindle cells arranged as fascicles admixed with bands of hyalinized eosinophilic collagen.

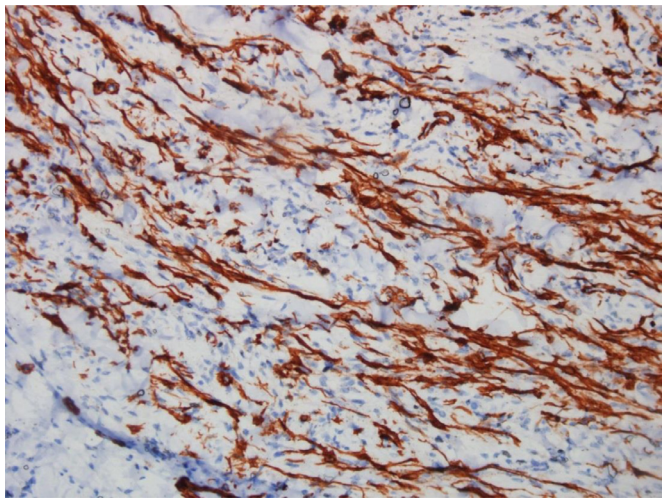

Fig. 4 – Immunohistochemistry: Smooth muscle actin, ×200. Tumor cells showing strong expression.

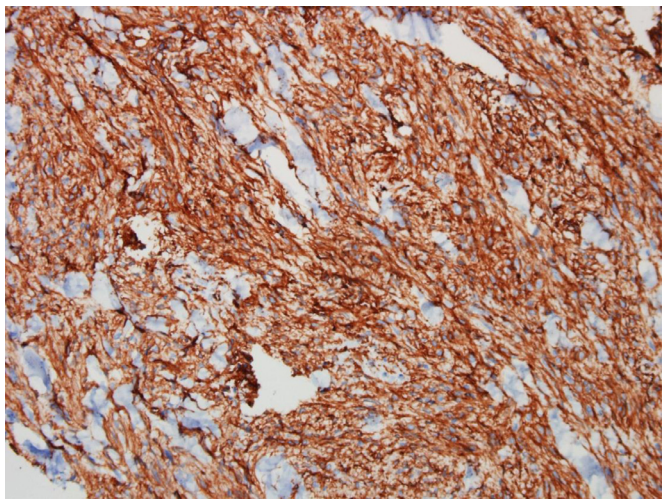

Fig. 5 – Immunohistochemistry: CD34, ×200. Tumor cells showing diffuse and strong expression.

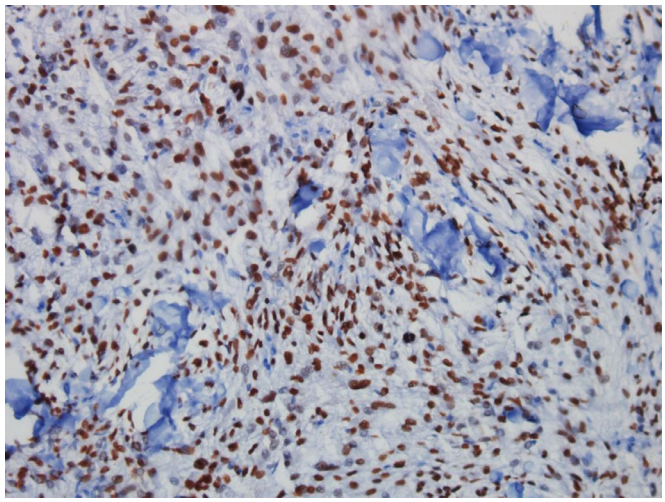

Fig. 6 – Immunohistochemistry: Estrogen receptor, ×200. Tumor cells showing strong nuclear expression.

for CD34, actin, CD10 and desmin. They also usually express estrogen receptor (ER) and progesterone receptor (PR), while variably expressing androgen receptor (AR). They are not immunoreactive for cytokeratins, EMA, S100, HMB-45, and CD117 [5]. In this report, pathologic analysis demonstrated expression of desmin, CD34, ER, and PR most consistent with myofibroblastoma. Variant forms of myofibroblastoma including collagenized, cellular, infiltrative, myxoid, lipomatous, epithelioid, and deciduoid variants have been noted [4].

Nonspecific imaging findings of myofibroblastoma necessitate biopsy and pathologic analysis for correct diagnosis, which is particularly critical in the patient with a history of multiple malignancies. Close communication between radiologists and pathologists is necessary to assess for concordance of radiologic and pathologic findings, with surgical consultation always advised as management consists of wide local excision [4].

Given the nonspecific radiological appearances, we concur that Tru-cut biopsy is a reliable procedure in order to obtain histological diagnosis before planning complete surgical excision of the lesion [3]. Myofibroblastoma can be treated with local excision mainly for symptomatic relief; local recurrence is not a recognized feature of myofibroblastoma [8,9].

The differential diagnosis of breast masses in males is broad. The most common diagnoses in cases which are further evaluated are gynecomastia and invasive ductal carcinoma. Other possibilities include metastasis, lymphoma, and a number of stromal lesions, many of which are benign, including granular cell tumor, fibroma, fibromatosis, necrotizing fibromatosis, and leiomyoma. Myofibroblastoma should be in the differential diagnosis as well [6].

The long term prognosis is excellent, as this is a benign neoplasm with surgical management considered curative [4], as long as the resection margins are free, relapse is unlikely.

Additionally, malignant transformation has not been reported yet. However, a minimum of 24 months' follow-up is desirable.

Conclusion

Myofibroblastoma is a rare breast tumor occurring in both postmenopausal women and elderly men. Triple assessment by clinical examination, ultrasound scanning, and Tru-cut biopsy will lead to an accurate diagnosis. We would like to draw the attention of clinicians to myofibroblastoma as a rare possibility in the differential diagnosis of a breast mass with well-circumscribed margins.

Author's contributions

All authors contributed to this work. All authors have read and approved the final version of the manuscript.

Patient consent

Written informed consent for publication was obtained from patient.

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