

## CASE REPORT

### Myofibroblastoma of the breast

Vithya Visalatchi SANMUGASIVA<sup>1</sup>, Marlina Tanty RAMLI<sup>1,3</sup>, Farhana FADZLI<sup>1</sup>, Shaleen KAUR<sup>1</sup>, Nazarina ABD RAHMAN<sup>2</sup>, Kartini RAHMAT<sup>1</sup>

<sup>1</sup>Department of Biomedical Imaging, University Malaya Research Imaging Centre, Kuala Lumpur, Malaysia, <sup>2</sup>Department of Pathology, Faculty of Medicine, University Malaya, Kuala Lumpur, Malaysia and <sup>3</sup>Medical Imaging Unit, University Teknologi MARA, Sungai Buloh Campus, Selangor, Malaysia.

#### Abstract

**Introduction:** Myofibroblastoma is a rare benign mesenchymal tumour arising from the stromal elements of the breast tissue. Histopathological variants such as classic, cellular, collagenous / fibrous, lipomatous, infiltrative, myxoid and epithelioid have been identified. Most myofibroblastomas are immunoreactive for CD34, actin, CD10 and desmin, usually express oestrogen receptor (ER), progesterone receptor (PR) and variably express androgen receptor (AR). **Case report:** We report a case of myofibroblastoma in an octogenarian male presenting with painless solitary breast lump. Mammography (digital tomosynthesis) and ultrasound showed a well-circumscribed hyperdense mass and hypoechoic, solid, oval mass with peripheral vascularity respectively. Patient underwent wide local excision. **Discussion:** Diverse characteristics of myofibroblastoma on imaging necessitates histopathological analysis for an accurate diagnosis. Myofibroblastoma are often confused with fibroadenomas due to the benign imaging characteristics and with malignant neoplasia due to their wide morphological spectrum. Surgical excision is considered curative.

**Keywords:** Myofibroblastoma, breast, mammography, ultrasound, spindle cell tumour

#### INTRODUCTION

Myofibroblastoma is a rare benign mesenchymal tumour of the breast. This tumour has been previously described in the pathological and surgical literatures, but there are limited reports on the radiological appearance. It tends to be more prevalent in the male breast.<sup>1</sup> However, there have been cases reported in women in the past. As spindle cell lesions of the breasts are rare, when encountered on core biopsy, it can be challenging to differentiate between benign and malignant lesions. Therefore, surgical excision may be necessary.<sup>1</sup> We present a case of myofibroblastoma in the male breast and described its appearance in digital breast tomosynthesis and ultrasonography.

#### CASE REPORT

An 80-year-old man with underlying chronic hepatitis B infection was referred to the breast clinic complaining of a two-month history of right breast enlargement. Patient was seen in the breast clinic a week later. Upon clinical

examination, there was a painless solitary lump in the right breast measuring approximately 4 x 4 cm. There was no associated nipple discharge, skin or nipple changes or axillary lymphadenopathy. There was no family history of cancer. Mammogram and breast ultrasound were done on the same day.

A digital breast tomosynthesis with 2D full field digital mammogram (3D DBT with 2D FFDM) performed in craniocaudal (CC) and mediolateral oblique (MLO) views demonstrated a well circumscribed, oval, high density lesion in the right retroareolar region with a focus of round microcalcification within (Fig. 1). The left mammogram was normal. Corresponding ultrasound showed a well-defined, oval, hypoechoic mass in the right retroareolar region measuring 3.1 x 1.3 x 3.6 cm which demonstrated posterior acoustic enhancement and internal vascularity (Fig. 2). In view of the presence of breast mass in an elderly man with increased vascularity, the lesion was classified as suspicious for malignancy (BIRADS 4A as per the American College of Radiology Breast

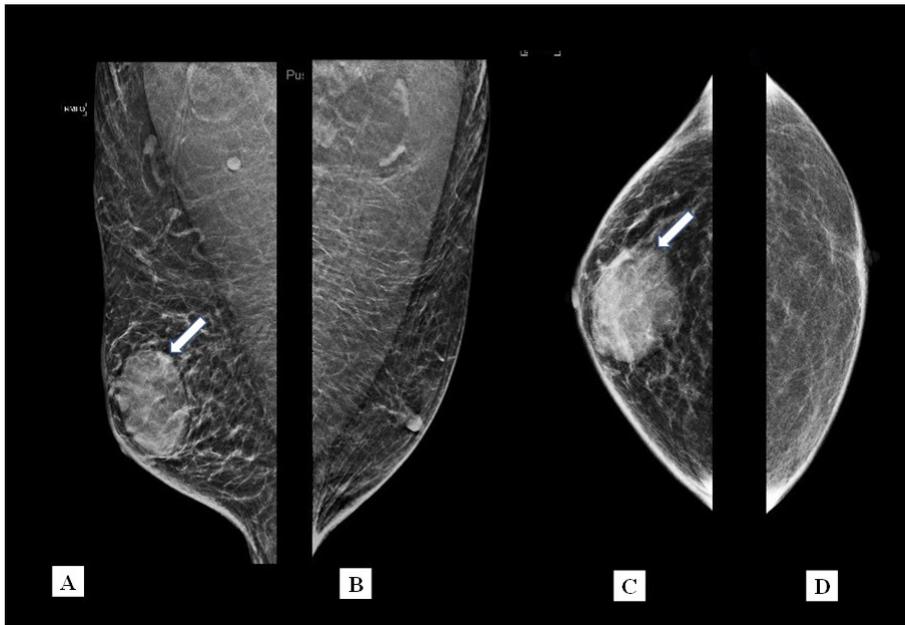


FIG. 1: Images of 3D tomosynthesis, in mediolateral oblique (A & B) and craniocaudal (C & D) views showed a well circumscribed, oval, high density lesion in the right retroareolar region (white arrow).

Imaging-Reporting and Data System (ACR BIRADS 2013)) and ultrasound guided core biopsy was recommended. Ultrasound guided core biopsy was performed and 3 good core

samples were taken and sent for histopathological assessment.

Histopathology of the surgical specimen showed proliferating spindle to ovoid shaped

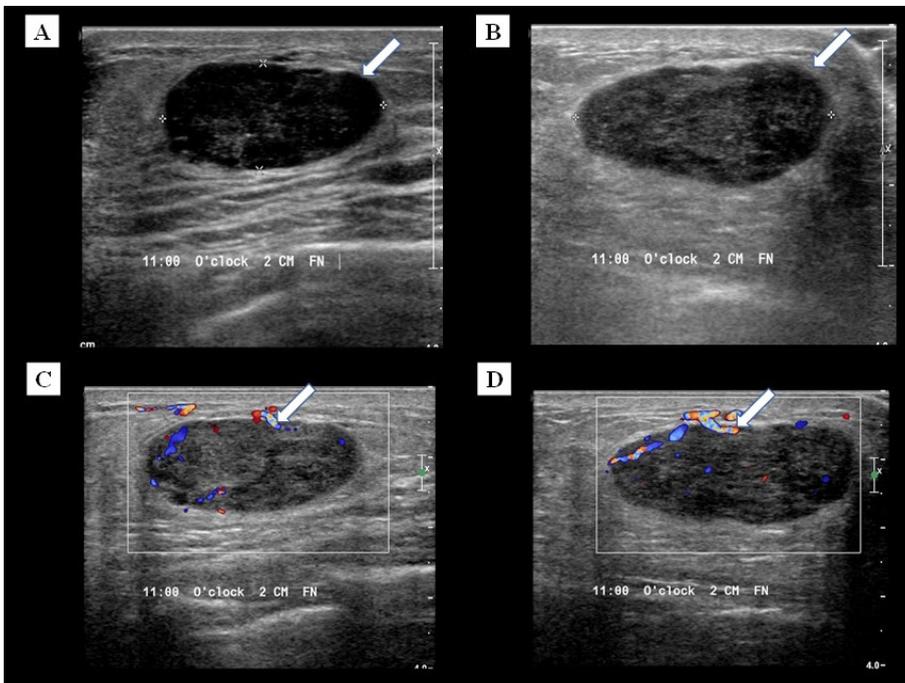


FIG. 2: Ultrasound of the right breast lesion in B-mode (A & B) showing a well-circumscribed, oval, hypoechoic, solid lesion with posterior acoustic enhancement (white arrow) and colour Doppler (C & D) demonstrating internal and peripheral vascularity (white arrow).

cells in storiform and fascicles which exhibited mild nuclear pleomorphism with micronucleoli (Fig. 3A & B). The surrounding stroma was fibrotic and vascularised, with scattered chronic inflammatory cells. The adjacent tissue showed minimal fibrofatty tissue with occasional ducts. On immunohistochemical study, the tumour cells were immunoreactive for CD34 (Fig. 3C), B-cell lymphoma 2 (BCL2) (Fig. 3D), and oestrogen receptor. The tumour cells were negative for S100 (which is typically positive in schwannoma and spindle cell lipoma), alpha-smooth muscle actin (SMA), desmin, CD31, cytokeratin antibody (MNf116) and progesterone receptor. Ki67 proliferative index is 0-1%. There was no evidence of malignancy. The final pathological diagnosis was myofibroblastoma.

The findings were discussed with the patient and his family members by the surgical team and they were agreeable for surgical excision of tumour. The lesion was removed via a wide local excision. Patient remained asymptomatic upon follow-up in the breast clinic.

## DISCUSSION

Myofibroblastoma is a benign breast tumour which consists of collagen bundles, adipocytes and myofibroblastic stromal cells.<sup>1</sup> It was first formally described by Wargotz *et al.* in 1987 where the authors reviewed 16 cases of this stromal tumour, which they termed

myofibroblastoma. In this initial report, out of the 16 patients, 11 were men. Though this tumour is predominantly found in men, there have been reports in the past in women.<sup>2</sup> Myofibroblastomas have also been reported at extramammary sites such as the popliteal fossa, head, neck, vulva, buttocks, groin, and paratesticular region.

Microscopically, myofibroblastoma of the breast is well demarcated from the adjacent parenchyma, forming a pseudo-capsule.<sup>3</sup> There are variants of myofibroblastoma which have been identified histopathologically. These are classic, cellular, collagenous/fibrous, lipomatous, infiltrative, myxoid, epithelioid, and decidua-like variants which have been identified.<sup>4</sup> Some reports have been published regarding myofibroblastoma in patients with prior malignancies including renal and prostatic carcinoma.<sup>5</sup> There has been association with gynaecomastia which has been previously reported but it was not present in our patient.<sup>6</sup> Myofibroblastoma has also been reported at surgical scar sites following breast cancer excision. This may be due to the migration and transformation of fibroblasts to the surgical site.<sup>5</sup>

In the clinical setting, mammary myofibroblastoma tends to present as a unilateral, firm, mobile, painless mass that may demonstrate slow, steady growth over months to years.<sup>4</sup> Imaging features of myofibroblastoma are non-specific. On mammography, myofibroblastoma appears as a well circumscribed, round or oval,

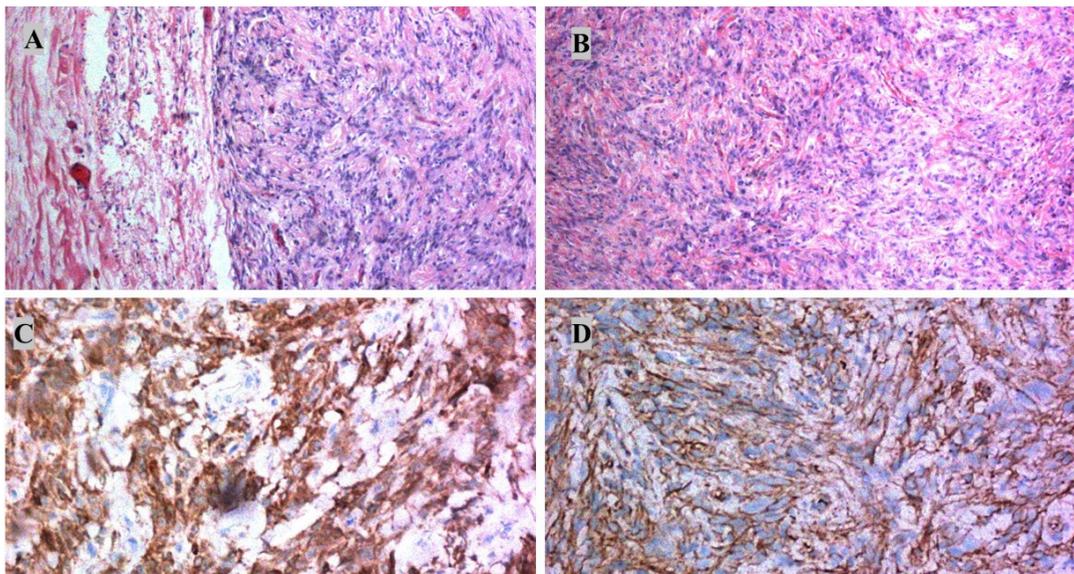


FIG. 3: (A) A circumscribed, unencapsulated tumour is seen on the right. (B) The tumour composed of haphazard proliferation of bland spindle cells with intervening collagen. (C) Tumour shows diffuse CD34 immunoreactivity. (D) Tumour shows diffuse and strong BCL2 immunoreactivity.

dense mass with rare coarse calcifications and without any associated distortion.<sup>3-5</sup> They may also demonstrate microlobulated margins.<sup>7</sup> Similar to previous literatures, our patient had also presented with a well circumscribed, oval, high density lesion. Although coarse calcification was noted in the previous cases reported, our patient had a round microcalcification within. The benign appearance of male myofibroblastoma must be contrasted to the appearance of breast cancer in men. Mammographic appearance of male breast cancer parallels that of breast cancer in women, showing an irregular high-density mass with spiculated margins and with or without associated suspicious calcifications.<sup>7</sup>

On ultrasonography, myofibroblastoma is seen to typically present as a well circumscribed, round to oval, hypoechoic heterogeneous mass with variable posterior attenuation.<sup>1,5</sup> Although these lesions typically have benign appearances, in rare cases, it exhibits hypervascularity and ill-defined borders on sonography.<sup>1</sup> The sonographic appearance of the lesion in our patient, conformed to the typical appearance as mentioned above. However, the lesion was noted to demonstrate internal vascularity which is not commonly seen. Even though mammographic and sonographic appearance of myofibroblastoma are not pathognomonic, they are significantly different from the typical appearance of malignant breast lesions and should be considered in the differential list of benign uncommon masses in the male breast. On CT scan this tumour typically appears as a well circumscribed mass, with 1 case report showing low-density attenuation within due to the presence of fat.<sup>7</sup>

MRI was not done for our case and likewise, there have been very few reports in the literature on the MRI appearance of myofibroblastoma. One case report described the lesion as isointense on T1- and T2-weighted sequences, with homogeneous contrast enhancement.<sup>8</sup> Another review on MRI appearance of breast tumours described myofibroblastoma as a lesion which displayed central areas of both hypointense and hyperintense signal surrounded by a hypointense capsule on T2-weighted sequences.<sup>3</sup> It was also suggested that the central signal hypointensity was related to the abundance of hyalinised collagen in tumour and the hyperintensity was attributed to fat and loose myxoid stroma.<sup>3</sup> Thus, non-specific imaging features necessitate tissue sampling for histopathologic diagnosis.

Morphologically, spindle cell lipoma and myofibroblastoma are both characterised by an

admixture of bland spindle cells that are arranged in short fascicles, with interspersed thin or thick bands of collagen. There are mast cells and fat cells present in myofibroblastoma, features which are also seen in spindle cell lipoma. Spindle cell lipoma and myofibroblastoma also share some overlapping immunohistochemical features. Pathologically, the classic type of mammary myofibroblastoma is composed of bundles of slender, uniform, spindle-shaped cells, arranged in clusters that are separated by broad bands of hyalinised collagen.<sup>5</sup> Most myofibroblastomas are immunoreactive for CD34, actin, CD10 and desmin, and also usually express oestrogen receptor (ER) and progesterone receptor (PR). They also have variably expressing androgen receptor (AR).<sup>5</sup> Variant forms of myofibroblastoma including collagenised, cellular, infiltrative, myxoid, lipomatous, epithelioid and decudoid variants have been reported.<sup>5</sup> Epithelioid-type myofibroblastoma can mimic invasive lobular carcinoma and the cellular-type myofibroblastoma can be mistaken for metastatic breast carcinoma. The negative staining for keratin helps in the differential diagnosis.<sup>4</sup> Our patient also had negative staining for keratin. Other spindle cell lesions that should be considered in the differential diagnosis include solitary fibrous tumours of the breast, benign spindle cell lipomas, low-grade myofibroblastic sarcomas and phyllodes tumours, leiomyomas, angiomyolipomas, nodular fasciitis, desmoid-type fibromatosis, benign and malignant myxoid lesions, and low-grade sarcomas.<sup>4</sup>

Due to their benign characteristics on mammography and sonography, myofibroblastoma are often confused with fibroadenomas and hamartomas and are often only diagnosed on histopathological examination. Differential diagnosis with malignant neoplasia of the breast is important because of their wide morphological spectrum. The long-term prognosis for myofibroblastoma is good as this is a benign neoplasm and surgical excision is considered curative. As this is a benign lesion, surgery need not be compulsory. However, all the previously reported cases have undergone surgical excision, therefore long-term stability of this lesion may not be properly understood yet. There has been no report in the literature regarding malignant transformation of myofibroblastoma.

## CONCLUSION

Non-specific characteristics of myofibroblastoma on imaging necessitate histopathological analysis for an accurate diagnosis. However, knowledge of their appearance on imaging can assist in the differential diagnosis and guide in appropriately managing these patients.

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