Classical Variant of Myofibroblastoma - A Rare Case Report with Review of Literature

B Pavani[1], E Jaya Shanker[2], Ashwin Shah[3] M. Srinivas[4]

ABSTRACT

Introduction: Myofibroblastoma (MFB) is considered a rare type of benign stromal neoplasm which can potentially 'mimic' various benign to malignant neoplastic lesions of the breast.

Case Report: Myofibroblastoma often presents clinically as slow growing solitary 'painless lump' and can occasionally be detected as a non-palpable mass on a routine screening mammogram. Usually, they are less than 4 cm in diameter, with few exceptionally recorded cases growing upto 15cm dimensions. This article presents with the salient clinico-pathologic features of this unusual tumor with brief review of literature. This is one of the rare benign tumors of female breast reported at our hospital so far.

Conclusion: MFB may be interpreted as malignant, both clinically or by imaging methodologies. Therefore light microscopy and immunohistochemistry is a requisite for the final diagnosis. This case adds to the existing spectrum of myofibroblastoma lesions.

Key Words: Myofibroblastoma, Breast, Morphological variants, Immunohistochemistry

CASE REPORT

A 58-year-old post menopausal woman presented with a 5.6×4 cm right breast lump in the lower medial quadrant. She mentioned that the swelling was noticed two years ago and there were no other systemic symptoms associated with it.On examination, the lump was firm, with no fixation to the underlying structures. Skin over the swelling was unremarkable. No axillary lymphadenopathy seen. The contralateral breast and axilla was normal. Ultrasonographic findings revealed a homogenous well- circumscribed mixed density lesion within the lower inner quadrant with no microcalcifications and defective encapsulation posteriorly. Both clinically and radiologically, a diagnosis of malignancy versus giant fibroadenoma was rendered. Routine laboratory tests were normal. FNAC performed elsewhere, was suggestive of fibroadenosis. The lesion was excised for diagnostic purposes. The specimen consisted of a well circumscribed mass measuring 4.4 cm diameter [Figure 1]. Cut section was greyish white with interspersed fatty streaks. Neither necrosis nor hemorrhages identified [Figure 2]. The tissue was fixed in 10% formaIin and embedded in paraffin. Five-micrometer thickness sections were stained with hematoxyIin-eosin (HandE). Section of the mass showed a predominantly encapsulated tumor with a focally disrupted capsule [Figure 3]. Core of the lesion consists of haphazardly arranged short fascicles of spindle to epithelioid cells separated by thick eosinophilic collagen bands. The margin of the growth was pushing type and showed presence of few mature adipocytes at the periphery, and also within the lesion core. The predominant cell morphology was plump /spindly oval, with an occasional epithelioid type of morphology [Figure 4]. Mitotic figures were sparse (0-1/10 HPF). At places, few hyalinized vessels, collection of lymphocytes and sprinkling of mast cells were noted, especially around the adipocytes. No intratumoral duct lobular units were identified.

Immunohistochemically, the sections were stained with an antibody against a panel of markers such as vimentin, muscle-specific actin, bcl 2 proteins, CD34, S100, cyclinD1, CD99, Ki67 and EMA, as malignancy needed to be ruled out. The tumour cells were strongly immuno positive for vimentin, focally positive for smooth muscle actinand bcl 2 proteins and showed diffuse strong positivity for CD34. The tumour cells were negative for S-100 protein,cyclin D1,epithelial membrane antigen and CD99. Ki 67 was less than 1% [Table-1].

In light of the above results, a final diagnosis of classical variant of myofibroblastoma was rendered on light microscopy. Immunohistochemistry findings were complimentary.

DISCUSSION

Myofibroblastoma(Synonym:Myogenic stromal tumor) of the breast is an extremely rare lesion with less than eighty cases reported in literature.It was first described by Toker etal [1]with few morphologically similar tumors under the term "benign spindle cell breast tumors". Apart from breast stromal origin, myofibroblastomas have also been reported at extramammary sites such as the popliteal fossa, head, neck, vulva, buttocks, groin,paratesticular region, skin, lymph nodes and suprasellar regions of the brain.[2,3] Earlier, myofibroblastomas were considered to be more common in the male breast than in women.[4] Recent reports described an almost equal incidence amongst both sexes.[5] Most cases are older age groups. Aver-

[1]Associate Professor, Department of Pathology, Malla Reddy Medical College for Women, Hyderabad, [2]Professor, Department of Pathology, Kamineni Academy of Medical Sciences and Research Center, LB Nagar, Hyderabad, Telangana, [3]Consultant Radiation Oncologist, Kamineni Hospitals, LB Nagar Hyderabad, Telangana, [4]Consultant Medical Oncologist, Kamineni Hospitals, LB Nagar, Hyderabad, Telangana, India.

Corresponding author: Dr.V. Pavani, Associate Professor, Department of Pathology, Malla Reddy Medical College for Women, Hyderabad, India.

How to cite this article: B Pavani, E Jaya Shanker, Ashwin Shah M. Srinivas. Classical variant of myofibroblastoma - A rare case report with review of literature. International Journal of Contemporary Medical Research 2016;3(2):367-369.

Vimentin	Smooth Muscle Actin	CD34	BCL2	S100	Cyclin D1	EMA	CD99	KI67
+++	++	+++	++	Negative	Negative	Negative	Negative	<1 %

Table-1: Immunohistochemistry panel result

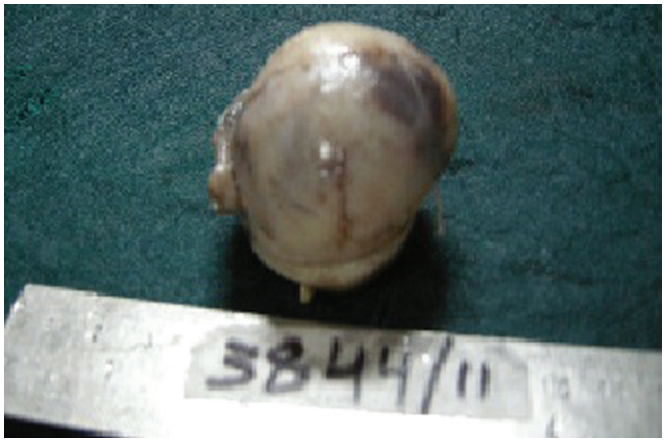

Figure-1: Gross pathology showed a well-circumscribed, round, tan, rubbery, 4.4x4x2 cm nodule.

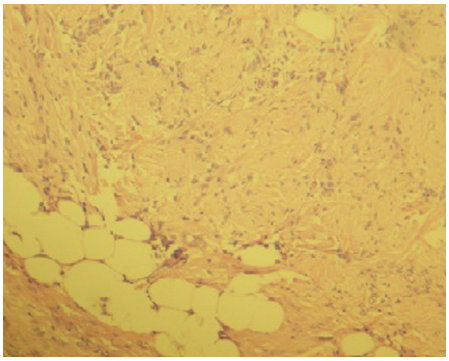

Figure-3: Mature adipose tissue comprises less than 75% of the entire tumor. In this area, the spindle cell component, containing interspersed thick, hylinized collagen bundles, shows a fingerlike pseudoinfiltration into the fatty component. Tumor has pushing margins HandE-10×.

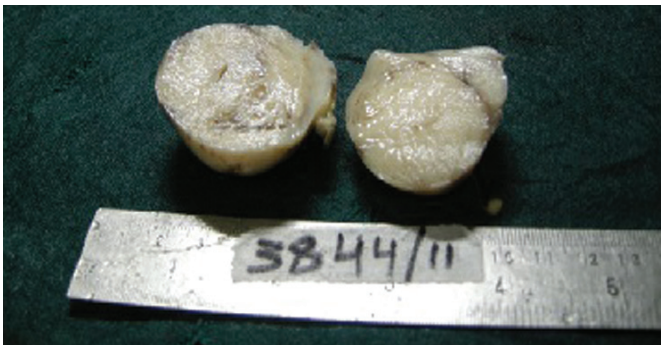

Figure-2: On cut section, a whitish solid tumour mass with scanty interspersed yellow fatty areas, neither necrosis nor hemorrhages are seen.

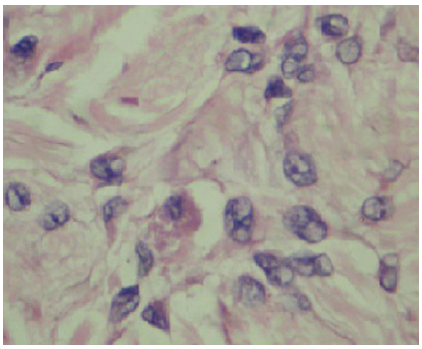

Figure-4: myofibroblastoma showing spindle cells with nuclear pleomorphism of mild to moderate degree. Neoplastic cells are arranged in nest surrounded by thick, eosinophilic collagen bundles HandE-10×.

age age incidence is from 50-60 years.

'Myofibroblast' was first described in granulation tissue by Gabbani et al.[6] The 'combination' term; 'Myofibroblast-oma', means that the lesion is formed out of the immature-undifferentiated cells which have characteristics of both smooth muscle cells and fibroblasts. The usual clinical presentation is unilateral painless lump, not adherent to the overlying or underlying structures. Bilaterality and multicentricity are considered rare. Radiologically, ultrasonographic findings cannot often differentiate it from a fibroadenoma. Lack of well defined margins around the lesion, might often project misleading differential diagnosis, including carcinoma, like in our case.

Fine needle aspiration may pose diagnostic difficulties. The reported cytological features include clusters and isolated cells which are intimately adherent to the extracellular stroma. The cells may be spindly, round or epitheloid. Nuclear grooves may or may not be found. Microscopically, five distinct subtypes have been described: classical, collagenized, epithelioid, cellular and infiltrative[7,8,3] with typically well-circumscribed margins. Mammary ducts and lobules are usually absent in a conventional histological subtype and the adjacent breast parenchyma may form a pseudocapsule. Occasionally, myxomatous change of the stroma with multinucleated giant cells, cartilaginous or osseous components and remarkable nuclear pleomorphism may be identified within the lesion.Presence of these components do not necessarily mean a malignancy. Variable other features include collaginous tissue abundance with fat lobules ranging from occasional to prominent andalso associated mast cell diffuse infiltrate,[9] as seen in our case. The lesion qualifies for lipomatous variant only, when the amount of lipomatous tissue exceeds 75%.[9]

Heterologous mature mesenchymal elements such as leiomyomatous, cartilaginous, and osseous tissues in the form of small foci, are regarded as the result of metaplastic changes or divergent differentiation from the common precursor mesenchymal cell.[15] Mitotic figures also vary, and in a typical case of mammary myofibroblastoma a mitotic activity varying from 0-6/ 10 HPF is usually described. The 'myofibroblasts' which comprise the majority of the tumor mass display a 'spindle-like cell' mor-

phology. Certain malignant breast cancer cells also have this 'spindle-cell' appearance, so they can be even be misdiagnosed. The make up of the tumor cells can be quite varied; they tend to mostly show spindly morphology, but can also contain round, polygonal, or 'epithelioid' cells. Since myofibroblastomas mostly show spindle cell morphology, the differential diagnosis encompasses a broad spectrum of spindle cell tumorous lesions. The tumor like lesions with myofibroblastic differentiation, posing as close differential diagnoses are fascitis, nodular fascitis, and myofibromatosis.The site of tumour, histomorphology and immunohistochemical findings are of immense help in making a final diagnosis. Myofibroblastomas share many features with other soft tissue neoplasms such as solitary fibrous tumor, fibromatosis, hemangiopericytoma, nodular fascitis, inflammatory myofibroblastic tumor, leiomyoma, myoepithelioma, pseudoangiomatous stromal hyperplasia.[10] Malignant neoplasms such as stromal sarcoma, malignant fibrous histiocytoma, and spindle-cell or metaplastic carcinoma should never be confused with a myofibroblastoma.[4] Mitotic activity of > 6/ 10 HPF, along with cellular pleomorphism and infiltrative margins should be analysed while considering malignancy. Fibromas, though a close morphological mimicker of myofibroblastoma, are rare in breast and show infiltrative margins.[11] Myofibroblastomas and its potential mimickers are studied in detail by Ying Huang etal[9]. 'Epithelioid-cell' variant of myofibroblastoma can mimic an invasive breast carcinoma, especially when the epithelioid cells are arranged in a single file, linear growth pattern.[12]

Majority of the myofibroblastomas are immunoreactive for CD34, desmin, smooth muscle actin and vimentin, and are negative for cytokeratin and S-100.[9,10] Variable nuclear positivity for estrogen, progesterone and androgen receptors has been described in the literature.[13,3] The epithelioid variant may show negativity or only focal positivity for CD 34. In our case, the predominant pattern was spindly with strong CD34 positivity, correlating well with the classical pattern of myofibroblastoma. A few studies demonstrated focal expression of h-caldesmone, suggesting the possibility, that only a minority of neoplastic cells undergo leiomyomatous differentiation.[5] Cyclin D1 is a cell cycle regulator/oncogene, having an aberrant expression in the breast and other human tumors.Since it is strongly expressed in case of intranodal palisaded myofibroblastomas,[14] we had extended our diagnostic approach to elucidate cyclin D1 expression in our present case.Nonetheless, no evidence of cyclin D1 expression noted. Further studies on breast myofibroblastomas may be needed,to substantiate the above fact on cyclin D1 expression.

CONCLUSION

Myofibroblastomas pose great diagnostic difficulties. Therefore the lesion should be correlated altogether with the clinical, radiological and biopsy findings, as there is ample scope for misdiagnosis. No recurrences or metastasis have been recorded so far. In our case follow up,the patient is disease free three years after lumpectomy with no recurrences. Molecular techniques should be applied to these lesions to throw more light on the exact etiopathogenesis.

REFERENCES

1. Toker C, Tang CK, Whitely JF, Berkheiser SW, Rachman R.Bengin Spindle cell breast tumor.Cancer. 1981:48:1615-22.
2. Giant Myofibroblastoma of the Male Breast: A Case Report and Literature Review.
3. Kamal Kataria, Anurag Srivastava, Lavleen Singh, Vaishali Suri, and Rajni Yadav Malays J Med Sci. 2012;19:74-6.
4. Hamele-Bena D, Crano ML, Scitto et al. Uncommon presentation of mammary myofibroblastoma. Hum Pathol. 1996;9:786-90.
5. Wargotz ES, Weiss SW, Norris HJ. Myofibroblastoma of breast: sixteen cases of a distinctive benign mesenchymal tumour. Am J Surg Pathol. 1987;11:493-502.
6. Prasenjit Das, Alok Sharma, Raman Arora And M. K. Singh: Myofibroblastoma of Breast. Indian Journal Of Medical and Paediatric Oncology. 2008;29:3.
7. Gabbani G, Ryan GB, Majno G. Presence of modified fibroblasts in granulation tissue and their possible role in wound contraction. Experentia. 1971;27:549-50.
8. Deligeorgi-Politi H, Kontozoglou T, Joseph, et al. Myofibroblastoma of the breast: Cytologic, histologic, immunohistochemical and ultrastructural findings in two cases with differential cellularity. Breast. 1997;3:365-71.
9. Magro,et al:Mammary Myofibroblastoma A Tumor With a Wide Morphologic Spectrum Gaetano Arch Pathol Lab Med. 2008;132:1813-20.
10. Ying Huang,,Frank Chen,:Review of Myofibroblastoma of Breast and Its Most Common Mimickers. NAJ Med Sci. 2012;5:38-42.
11. Deligeorgi-Politi H, Kontozoglou T, Joseph, et al. Myofibroblastoma of the breast: Cytologic, histologic, immunohistochemical and ultrastructural findings in two cases with differential cellularity. Breast. 1997;3:365-71.
12. Das P, Sharma Myofibroblastoma of breast n spindle cell breast tumor.. Indian J Med Paediatr Oncol 1981; 48:1615-22.
13. Magro G, Bisceglia M, Michal M, Eusebi V. Spindle cell lipoma-like tumor, solitary fibrous tumor and myofibroblastoma of the breast: a clinicopathological analysis of 13 cases in favor of a unifying histologic concept. Virchows Arch. 2002;440:249-60.
14. Margo G, Gurrera A, Bisceglia M. H-Caldesmon expression in myofibroblastoma of breast: evidence supporting the distinction from leiomyoma. Histopathology. 2003;42:233-8.
15. Kleist B, Poetsch M, Schmoll J: Intranodal palisaded myofibroblastoma with overexpression of cyclin D1. Arch Pathol Lab Med. 2003;127:1040-3.
16. Gaetano Magro (*2008*) Mammary Myofibroblastoma: A Tumor With a Wide Morphologic Spectrum. Archives of Pathology and Laboratory Medicine. 2008;132:1813-20.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 10-12-2015; **Published online:** 01-01-2016