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Case Report

A rare case report of primary breast leiomyosarcoma presenting clinicoradiologically as phyllodes tumour

Madeeha Khan[1], Bushra Siddiqui[1], Mohd Rafey[1*], Mahboob Hassan[1], Shahbaz Faridi[2]

[1]Dept. of Pathology, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, Uttar Pradesh, India
[2]Dept. of Surgery, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, Uttar Pradesh, India

Abstract

One of the uncommon mesenchymal lesions of the breast is primary leiomyosarcoma. Only a few cases have been documented globally.
For a year, a 35 years old female patient had a lump in her right breast. A 14.0 x 12.5 x 5.0 cm mass in the right breast was discovered during the clinical examination; lymphadenopathy was absent. A breast imaging reporting and data system category 3 lesion was discovered by ultrasonography, with the differential diagnosis of Giant fibroadenoma and Phyllodes tumour. Following which, surgical excision was done. Histopathological and immunohistochemical analysis revealed the mass to be primary leiomyosarcoma of the breast. After stabilizing, the patient was sent to the Radiation Oncology Department for additional care.
It might be challenging to make a definitive diagnosis of breast mesenchymal tumours because they can resemble many entities both clinically and radiologically. In these uncommon situations, histopathological analysis supported by immunohistochemical research is crucial to making a final diagnosis.

Keywords: Breast sarcoma, Primary leiomyosarcoma, Immunohistochemistry analysis.

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1. Introduction

One of the uncommon condition that can clinically resemble the most frequently diagnosed ductal cancer is primary leiomyosarcoma of the breast. Less than 1% of breast tumours are breast sarcomas, and postmenopausal women are most frequently affected.[1] Compared to other breast sarcomas, leiomyosarcomas usually have a better prognosis.[2] Leiomyosarcoma can develop from either the precursor mesenchymal stem cells that develop into smooth muscle cells or the smooth muscle cells found in the vessel walls.[3] It was initially reported by Waterworth in 1968.[4]

2. Case Presentation

A 35-year-old woman complained of a right-sided breast lump that she had first seen, a year prior and that had been steadily growing in size when she arrived at the surgical outpatient department. Examining the right breast revealed a hard, freely moving lump that was well-circumscribed and measured 14.0 x 12.5 x 5.0 cm. It was present in all quadrants. Neither skin alterations nor lymphadenopathy were linked to it. A well-defined lobulated solid mass lesion with cystic regions affecting all quadrants was discovered by ultrasound. It indicated a BIRADS-III lesion with Giant fibroadenoma and Phyllodes tumour as differentials. A benign proliferative breast disease with a preference for fibroadenoma was suggested by fine needle aspiration cytology. The results of other standard tests, such as the ECG, chest x-ray, liver function test, renal function test, and total blood count, were within normal ranges. The breast lump was surgically removed and sent for histopathological analysis. Gross examination revealed a firm, tan-brown, well-circumscribed mass with a heterogeneous cut surface and large areas of necrosis.

Histopathological examination of the tumour resection specimen revealed intersecting fascicles of hyperchromatic and pleomorphic spindle cells having blunt-ended nuclei

*Corresponding author: Mohd Rafey
Email: dr.maddy098@gmail.com

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showing prominent nucleoli and anisonucleosis with moderate to abundant eosinophilic cytoplasm in fibrotic background along with numerous ectatic blood vessels (**Figure 1**). Large areas of necrosis were seen with a mitotic figure count of 17 mf/10 hpf (**Figure 3**, **Figure 4**). Immunohistochemical studies showed strong cytoplasmic positivity for vimentin (**Figure 5**) and smooth muscle actin (SMA) (**Figure 6**) in tumour cells. On the other hand, tumour cells were negative for ER (estrogen receptor), CD34, and p63 (**Figure 7**-**Figure 9**). Based on histomorphological features and immunohistochemistry results, the patient was diagnosed with primary leiomyosarcoma of the right breast. The postoperative course was uneventful and the patient was referred to the Department of Radiation Oncology for further treatment.

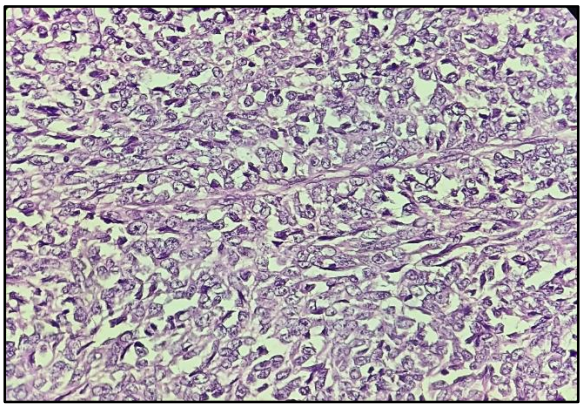

Figure 1: Leiomyosarcoma. Photomicrograph shows intersecting fascicles of atypical spindle cells showing pleomorphism, anisonucleosis and prominent nucleoli. H&E x 40X

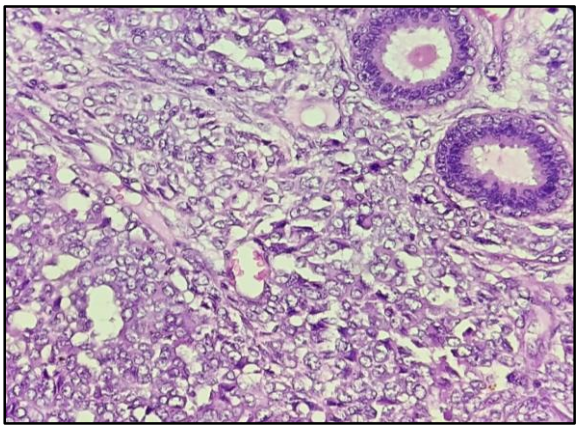

Figure 2: Photomicrograph shows tumour comprising of atypical spindle cells along with benign breast ducts lined by inner epithelial and outer myoepithelial cells and. H&E x 40X

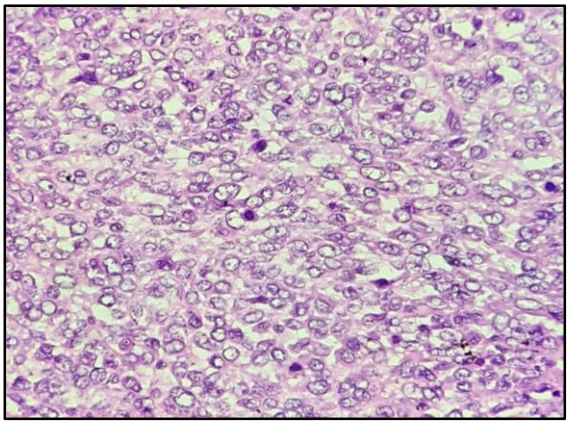

Figure 3: Leiomyosarcoma. Photomicrograph shows atypical mitotic figures. H&E x 40X

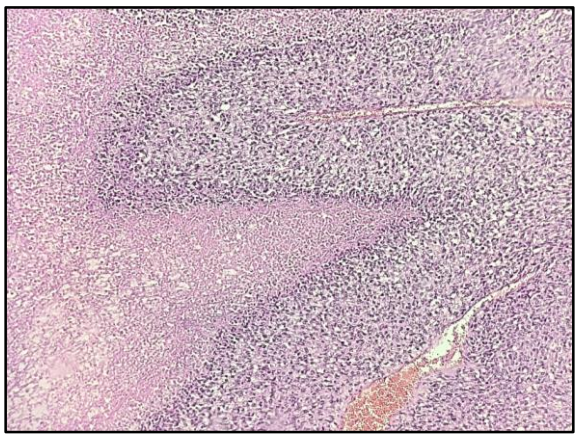

Figure 4: Tumour showing abundant necrosis. H&E x 10X

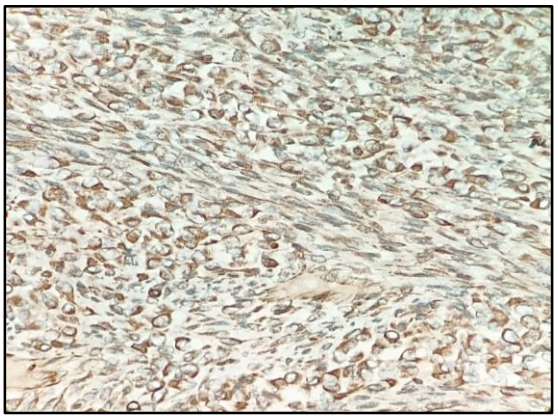

Figure 5: Vimentin shows strong cytoplasmic positivity in tumour cells. IHC x 40X

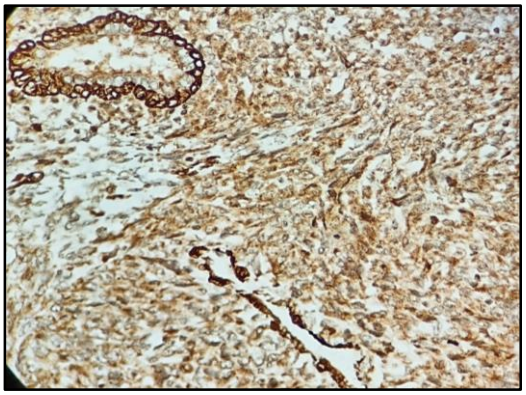

Figure 6: SMA (Smooth muscle actin) shows strong cytoplasmic positivity in tumour cells. IHC x 40X

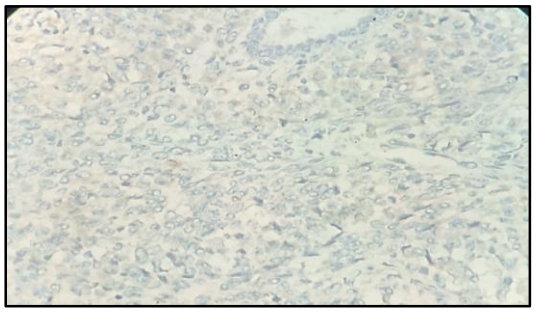

Figure 7: ER (Estrogen receptor)- Negative in tumour cells. IHC x 40X

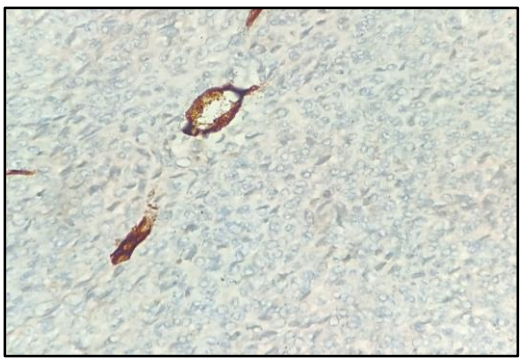

Figure 8: CD34 – Negaitve in tumor cells. IHC x 40X. (Endothelial cells of blood vessels show CD34 positivity)

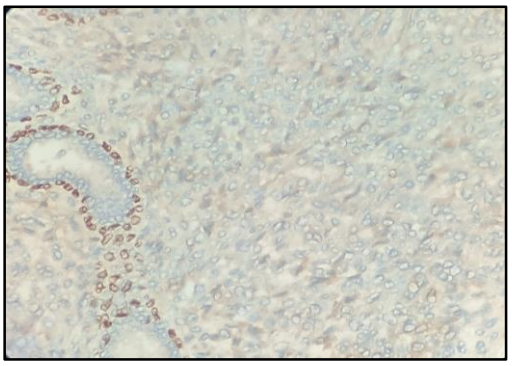

Figure 9: p63 – Negative in tumour cells. IHC x 40X (Myoepithelial cells show p63 positivity)

3. Discussion

This case illustrates the challenges that a pathologist can come across in distinguishing primary breast leiomyosarcoma from common breast tumours and other malignant spindle cell tumours, clinically and radiologically. In our case, we suspected the differential diagnosis of Malignant Phyllodes tumour which was ruled out by negative CD34 staining in tumour cells (**Figure 7**), Metaplastic carcinoma was ruled out by negative P63 in tumour cells (**Figure 8**) and primary angiosarcoma of breast which was ruled out by negative CD34 staining in tumour cells. Hence we suspected rare malignant smooth muscle tumour of breast based on histomorphology, which was backed by positive IHC (**Figure 5**, **Figure 6**). These groups are often confused with tumours such as phyllodes tumours and other mesenchymal tumours of breast. Therefore, excisional or core biopsy results are needed to confirm the diagnosis.[5,6] The age of onset ranged from 18 to 70 years (mean 51.24 years). Usually these tumours appearas large mass in patients, mostly in women. However, at least eight cases of leiomyosarcoma in the male breast have been documented.[7] Early cases are treated surgically by wide local excision or mastectomy.[5] lymphadenopathy is seen in less than 10% of patients and involvement of the nipple-areola complex is rare.[8] A study by Fong et al included 1772 patients with soft tissue sarcoma and found that tumour involvement in lymph node was only in 2.6% of cases.[9] Prognosis was not affected by tumour size or type of surgery (mastectomy or local excision).[10] Our patient was referred to Radiation Oncology Department for further management as radiotherapy after surgical resection is recommended for local control and may lead to better outcomes.[11]

Although the disease was localised and patient did not have any metastasis at the time of presentation. However, the overall prognosis of breast sarcomas is poorer than that of other breast cancers.[12]

Among sarcomas, the prognosis of leiomyosarcoma tends to be favorable.[5] Amberger et al. noted that the 5-year survival rates for local, regional, and distant disease were 64%, 36%, and 14%, respectively.[5]

Long-term followup of patients is important because recurrence and metastatic spread may occur even after long-term treatment (15–20 years).[1]

4. Conclusion

Primary sarcoma of breast is a rare entity which may appear benign clinically or radiologically. Our report emphasizes the importance of immunohistochemistry in assisting histopathological findings. While indicating its relevance to treatment and diagnosis, the differential diagnosis of primary leiomyosarcoma of the breast should be kept in mind.

5. Source of Funding

None.

6. Conflict of Interest

None.

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