CASE REPORT

RARE CASE REPORT: SPINDLE CELL CARCINOMA WITH UNUSUAL METASTASIS TO THE BREAST

Shumaila Seemi Malik[1], Syed Muhammad Hadi Ali Shah[1], Maheen Nasir[2], Safdar Ali Malik[1], Fahad Malik[3]

[1]Al Noor Diagnostic Center Lahore-Pakistan, [2]CMH Lahore Medical and Dental College, Lahore-Pakistan, [3]CMH Lahore Medical and Dental College, Lahore-Pakistan

Background: Primary breast cancer is the most common malignancy in women, with metastatic involvement of the breast being quite an anomaly. Metastasis in the breast refers to cancer cells from elsewhere in the body, which infiltrate into the breast tissue. Spindle cell carcinoma is an aggressive subtype of sarcoma and is so named because of the characteristic spindle-shaped cells. Spindle cell carcinoma is a very rare type of cancer and accounts for only a few cancer cases as compared to adenocarcinoma or squamous cell carcinoma. However, due to its aggressive nature, it can rapidly spread to adjacent tissues and may even metastasize to distant organs including the lungs, gastrointestinal tract and as highlighted here; the breast. **Case:** We present the case of an 81-year-old female with the complaint of a painless nontender lump in the right breast for the last month. After proper investigations, a diagnosis of spindle cell carcinoma was confirmed. On CT chest, abdomen and pelvis for a proper workup for metastasis, an incidental note was made of a mass in the anterior right thigh. On further inquiry from the patient, it was found that the mass had been present for the last year but appropriate investigations had not been done. Fine needle aspiration (FNAC) and biopsy confirmed a diagnosis of spindle cell carcinoma of the right thigh, which had been missed in initial investigations. Conclusion: This case report highlights that in every patient who presents with a breast mass, proper clinical evaluation and diagnostic investigations are necessary to rule out the possibility of metastasis.

Keywords: Breast; Breast neoplasm; Carcinoma; Neoplasm metastasis

Citation: Malik SS, Shah SMHA, Nasir M, Malik SA, Malik F. Rare case report: spindle cell carcinoma with unusual metastasis to the breast. J Ayub Med Coll Abbottabad 2024;36(4 Suppl 1):1014–7.

DOI: 10.55519/JAMC-S4-12535

INTRODUCTION

Breast cancer is a highly prevalent type of cancer and more than two million new cases are diagnosed all over the world every year. It originates in the breast tissue and oftentimes presents as a lump or a mass. Breast cancer is a diverse group of disorders and classification can be described using discrete molecular methods.[1–5] The molecular subtypes of breast cancer include HER2-positive breast cancer, Triple-negative breast cancer, hormone receptor-positive (HR+); Luminal A, Luminal B and other subtypes. These molecular subtypes have important implications for the treatment and prognosis of the patient. Triple-negative breast cancers do not express oestrogen receptor (ER), progesterone receptor (PR) and HER2 and, at molecular and morphologic levels, are a diverse group of tumours which are exceptionally difficult to treat.[6–9] Although the most common malignancy in women is primary breast cancer, the metastatic involvement of the breast is a relatively rare occurrence. It occurs when cancerous cells arise from another tissue or organ and then invade the breast tissue. The most common metastasis to the breast is from the contralateral breast. Certain solid tumours have a strong tendency to metastasize to the breast. These include malignant melanoma, lymphoma, lung cancer, ovarian carcinoma, soft tissue sarcoma, and gastrointestinal and genitourinary tumours in decreasing order of frequency. In literature, however, metastasis from thyroid tumours, osteosarcoma, and cervical, vaginal and endometrial cancer metastasis to the breast have also been reported.[10] Spindle cell carcinoma is a very rare primary breast malignancy.[11,12] It usually does not involve the lymph nodes.[13] Metastasis from spindle cell carcinoma to the breast is an exceptionally uncommon occurrence as spindle cell carcinoma itself is an uncommon type of cancer. Such metastasis presents a complex diagnostic challenge.

THE CASE

An 81-year-old diabetic and hypertensive female presented with a right breast lump for the last month. On physical examination, the breast mass was hard, and non-tender. The skin overlying the lump was intact and there was no dimpling of the skin. In addition, there was no nipple discharge. The patient had no history of any breast surgery or any recent trauma to the breast. History was negative for any constitutional symptoms including fever, anorexia and malaise. Mammography of the breast was then performed which revealed a large lobulated relatively well-defined high-density mass in the upper outer quadrant (UOQ) of the right breast with a rounded focus of macro-calcification (Figure-1).

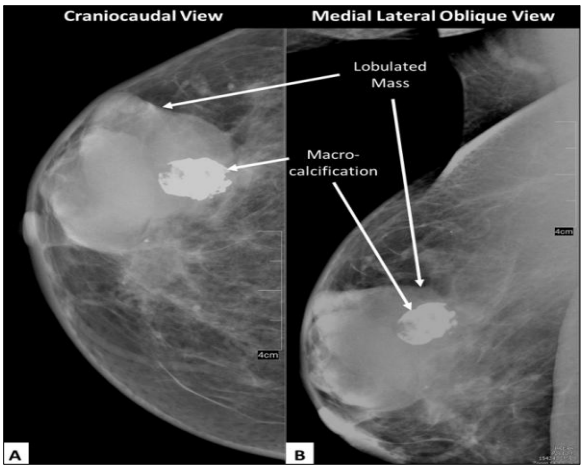

Figure-1: Mammogram Right Breast.

Craniocaudal (A) and medial-lateral oblique (B) views of the right breast show a lobulated mass with relatively well-defined borders in the upper outer quadrant (UOQ) of the breast.

A rounded focus of macro-calcification can be seen within the mass. A breast ultrasound was performed as shown in Figure-2. The sonographic examination of the breast revealed a lobulated hypoechoic mass with slightly irregular margins with calcifications in the retro-areolar region having blood flow. Based on sonomammography, this breast lesion was classified as BIRADS IVb, having moderate suspicion of malignancy. Every BIRAD IV lesion must undergo tissue diagnosis. A core biopsy of the right breast mass was performed under ultrasound guidance and the biopsy report confirmed the diagnosis of spindle cell carcinoma of the breast.

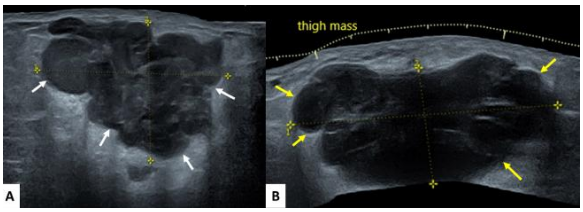

Figure-2: Ultrasound Images.

A. Panoramic grayscale sonogram of the right breast reveals a hypoechoic mass in the retro-areolar region. This mass has lobulated irregular margins (white arrows). B. Panoramic grayscale sonogram of the right thigh reveals a hypoechoic mass anteriorly in the right thigh with an irregular lobulated border (yellow arrows).

CECT chest, abdomen and pelvis were performed for metastatic workup (Figure-3). CECT findings of the breast mass correlated with that of Sono mammography. Both lung fields showed multiple variable-sized intra-parenchymal and sub-pleural lung nodules. An incidental note was also made of a soft tissue density mass in the anterior subcutaneous plane of the right thigh. The CT features of this thigh mass appeared similar to that of the right breast mass. On inquiry about thigh mass from the patient, it turned out to be present in the thigh for last year. However, no diagnostic workup had been done for this lesion as it was painless and not bothersome.

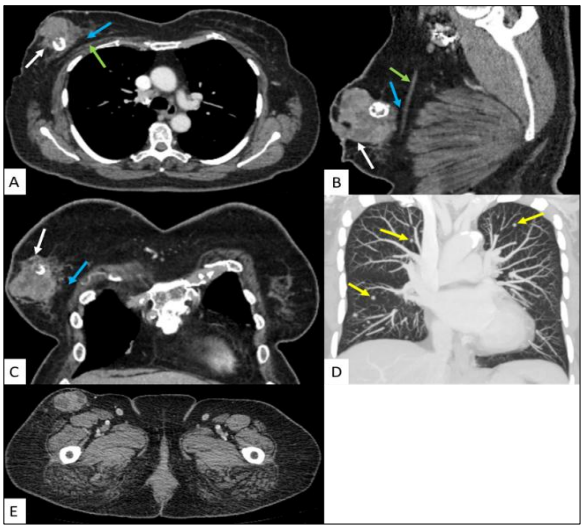

Figure-3: Contrast-Enhanced CT Images.

CT axial (A), right parasagittal (B), and coronal (C) view through the right breast in soft tissue window redemonstrate the breast mass (white arrows) with an internal calcific focus. Coronal Maximum Intensity Projection (MIP) in lung windows (D) reveals multiple intra-parenchymal nodules of varying sizes (yellow arrows). CT axial image through the upper thigh (E) in a soft tissue window reveals an incidentally detected soft tissue density mass in the anterior subcutaneous plane of the right thigh.

This mass exhibits CT features resembling those of the right breast mass, specifically, heterogeneous contrast enhancement with underlying intact fat and muscle planes. On ultrasound of the right thigh, as shown in Figure 1, a heterogeneous hypoechoic complex lobulated mass was visualized with blood flow on colour Doppler. Magnetic resonance imaging (MRI) of the right thigh was then performed which revealed a thigh mass as shown in Figure 4. Fine needle aspiration cytology (FNAC) and core biopsy confirmed the diagnosis of spindle cell carcinoma of the right thigh.

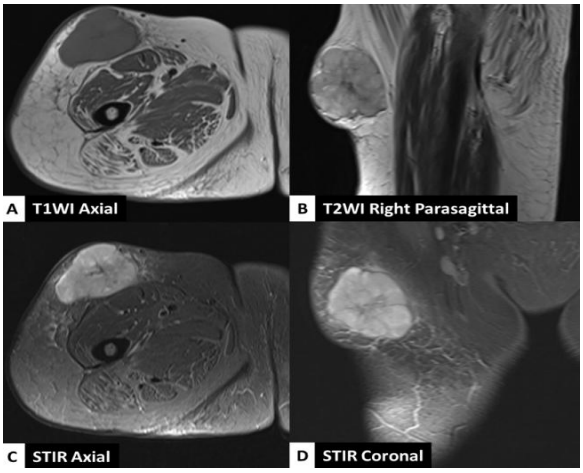

Figure-4: MRI of Right Thigh.

MRI right though shows lobulated margin right thigh mass that appears hypointense on T1WI (A) and heterogeneously hyperintense on T2WI (B) and STIR images (C and D). The deeper fat and muscle planes appear to be intact.

^{18}F-FDG positron emission-computed tomography (FDG PET-CT) revealed metabolically active masses in the right breast and right thigh that appeared to be malignant. Bilateral pulmonary nodules were also noted (Figure 5).

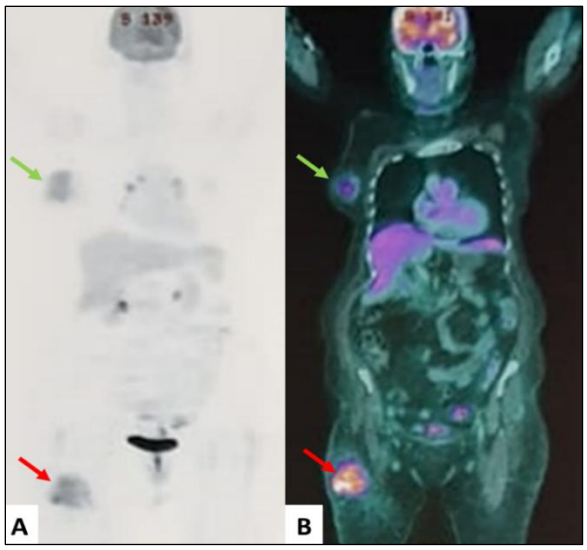

Figure-5: PET CT Imaging.

PET image frontal view (A) and coronal fused PET-CT image (B) show metabolically active masses in the right breast (green arrows) and right thigh (red arrows).

DISCUSSION

This case report highlights an atypical presentation of a metastatic spindle cell carcinoma and the need for proper clinical evaluation. Metastatic spindle cell carcinoma of the breast is considered a complex diagnostic challenge in oncology. There is very limited information in literature regarding metastatic spindle cell carcinoma of the breast and research on this type of breast cancer is very scarce. This fact can be attributed to the rarity and variability with which metastatic spindle cell carcinoma occurs.

Spindle cell carcinoma as a primary lesion of the breast is an uncommon subtype and is characterised by specific elongated spindle-shaped cells and can be differentiated from the typical epithelial and glandular cells of the breast. As reported in an elaborate histopathological review of cases of spindle cell carcinoma of the breast, spindle cell carcinomas of the breast can be classified as pseudosarcomatous metaplasia, carcinosarcoma and metaplastic carcinoma based on certain characteristics.[14] The metaplastic subtype of spindle cell carcinoma shows both spindle-shaped cells, highly characteristic of spindle cell carcinoma, and other cell types including either squamous cells or chondroid cells. Thus, the various patterns in histopathology further make the diagnosis more difficult. According to another article on spindle cell carcinoma, the age range for breast spindle cell tumours (BSCTs) ranged from thirty-seven to sixty-nine years of age and the median age of occurrence was fifty years of age.[15] In this study, fine needle aspiration cytology (FNAC) was employed to look for spindle cells without the presence of ductal epithelial cells.[15] In the case presented here, the age of the patient was eighty-one and spindle cell carcinoma of the breast was a metastatic lesion and not a primary. Cytology in our case was definitive and it revealed a predominantly monomorphic population of spindle cells with areas of fibrosis. Neither epithelial component nor atypical mitosis or heterogeneous elements were seen.

Diagnosis of metastatic spindle cell carcinoma of the breast can prove to be quite tough due to the fact that it closely mimics primary lesions of the breast. This can be quite confusing both on clinical evaluation and also on diagnostic imaging. Diagnosis requires biopsy and detailed histopathological analysis for a definitive diagnosis. The prognosis of metastatic spindle cell carcinoma of the breast is variable and depends on various factors. This includes the extent of metastasis, involvement of lymph nodes and the response to therapy. Metastatic cancers are always considerably more serious and prognosis is less clear. In such cases, it is imperative to first treat the underlying tumour of origin. The management of metastatic spindle cell carcinoma requires a multidisciplinary approach and a team from various disciplines including oncology, pathology, radiology and surgery. This approach is necessary to form an individualized management plan tailored particularly according to the needs of the patient. Management may include radiation, chemotherapy or surgical excision based on the extent of spread and the primary tumour itself.

Another issue highlighted by this case report is that every breast lesion is not necessarily a primary lesion. Whenever a patient presents with a breast mass, it is imperative to inquire about any other swelling or lump elsewhere in the body. Spindle cell carcinoma should be kept in mind as the differential of breast lesions. The importance of patient education, seeking early medical attention and early detection of any lump in the body can never be underestimated.

CONCLUSION

In conclusion, although metastasis to the breast is considered to be a rare occurrence, this case demonstrates the need for proper attentiveness and vigilance whenever a patient presents with a breast lesion. It should always be kept in mind that the lesion may not be primary and may instead be metastasis from elsewhere in the body. It is essential to

differentiate between primary cancer and metastasis, which may in some cases prove to be difficult. The prognosis generally depends on the tumour of origin.

REFERENCES

1. Tsang JYS, Tse GM. Molecular Classification of Breast Cancer. 2020;27(1):27–35.
2. Murtaza G, Shuib L, Abdul Wahab AW, Mujtaba G, Mujtaba G, Nweke HF, *et al*. Deep learning-based breast cancer classification through medical imaging modalities: state of the art and research challenges. Artif Intell Rev 2020;53(3):1655–720.
3. Li Z, Wei H, Li S, Wu P, Mao X. The Role of Progesterone Receptors in Breast Cancer. Drug Dis Devel Ther 2022;16:305–14.
4. Smolarz B, Zadrożna Nowak A, Romanowicz H. Breast Cancer—Epidemiology, Classification, Pathogenesis and Treatment (Review of Literature). Cancers (Basel) 2022;14(10):2569.
5. Curtis C, Shah SP, Chin SF, Turashvili G, Rueda OM, Dunning MJ, *et al*. The genomic and transcriptomic architecture of 2,000 breast tumours reveals novel subgroups. Nature 2012;486(7403):346–52.
6. Metzger-Filho O, Tutt A, De Azambuja E, Saini KS, Viale G, Loi S, *et al*. Dissecting the heterogeneity of triple-negative breast cancer. J Clin Oncol 2012;30(15):1879–87.
7. Mayer IA, Abramson VG, Lehmann BD, Pietenpol JA. New strategies for triple-negative breast cancer-deciphering the heterogeneity. Clin Cancer Res 2014;20(4):782–90.
8. Yin L, Duan JJ, Bian XW, Yu SC. Triple-negative breast cancer molecular subtyping and treatment progress. Breast Cancer Res 2020;22(1):61.
9. Lu B, Natarajan E, Balaji Raghavendran HR, Markandan UD. Molecular Classification, Treatment, and Genetic Biomarkers in Triple-Negative Breast Cancer: A Review. Technol Cancer Res Treat 2023;2023:15330338221145246.
10. Espinoza JLH, Ramírez FNM, Miller HG, Santos JLH, Guelfguat M. A Spectrum of Metastases to the Breast: Radiologic-Pathologic Correlation. J Breast Imaging 2023;(2):209–29.
11. Nozoe E, Nozoe T, Tanaka J, Ohga T, Fujita A, Sueishi K. Spindle cell carcinoma of the breast – a case report. J Med Invest 2020;67(3.4):365–7.
12. Ishizuka Y, Horimoto Y, Yanagisawa N, Arakawa A, Nakai K, Saito M. Clinicopathological Examination of Metaplastic Spindle Cell Carcinoma of the Breast: Case Series. Breast Cancer (Auckl) 2021;15:11782234211039433.
13. Alexander JS, Hashmi H, Reynolds SB. Debilitating Metastatic Spindle Cell Carcinoma of the Breast. Cureus 2019;11(1):e3864.
14. Gersell DJ, Katzenstein ALA. Spindle cell carcinoma of the breast. A clinocopathologic and ultrastructural study. Hum Pathol 1981;12(6):550–61.
15. El All HSA. Breast spindle cell tumours: About eight cases. Diagn Pathol 2006;1(1):13.

Submitted: October 2,2023	*Revised: March 23, 2024*	*Accepted: November 27, 2024*

Address for Correspondence:

Maheen Nasir, CMH Lahore Medical and Dental College, Lahore-Pakistan
Cell: +92 302 860 0225
Email: maheennasir_@hotmail.com