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Case Report

Simultaneous Presentation of Carcinoma Breast with Soft Tissue Sarcoma in A Different Site – A Rare Entity In 4 Cases

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Abstract

Breast cancer is the most common female cancer. Whereas Soft tissue sarcoma is a very rare cancer. Association of these two is extremely unusual entity. In the span of two years, from January 2016 to December 2017, we have encountered 4 unusual cases in Surgical Oncology Division, Department of Surgery, BSM Medical University. All of them presented with breast lumps with another lesion in limb or trunk of variable duration. Both the concurrent diseases were primary in nature. The age range of the patients was between 33 to 43 years. All the breast lesions were invasive ductal carcinoma. 3 out of 4 were triple negative breast cancer. 3 of the sarcomas were malignant fibrous histocytoma. All four of them underwent Mastectomy and wide excision of sarcoma in the single setting. They subsequently received adjuvant therapy. And all the patients are under regular follow-up.

Introduction

Carcinoma breast is the second most common cancer among Bangladeshis[1]. It is the most common cancer in females worldwide[2]. It is estimated that 1 in 8 women will have breast cancer[3]. In 2018 there was more than 2 million newly diagnosed cases[4]. And the incidence has been increasing over the decades. But carcinoma breast presenting simultaneously with cancer at other body sites is extremely rare. In fact, two primary malignancies presenting at the same time in the same patient is very uncommon.

On the other hand, sarcoma accounts for approximately 1% of all human cancers[5]. These are life-threatening mesenchymal neoplasm. These are of two principal types of bone sarcoma and soft tissue sarcoma. Soft tissue sarcoma (STS) is a rarer tumour. STS presenting simultaneously with breast cancer is extremely rare. However, Soft tissue sarcoma developing after treatment of breast cancer was reported because of radiotherapy and arm oedema[6].

Around 5% of breast cancer is hereditary, which tend to occur in younger women. The remaining 95% is of sporadic, and incidence increases with age. The causes behind sporadic breast cancer are believed to be environmental factors. Recognized risk factors include early menarche, late menopause, nulliparity, and long-term use of Hormone Replacement Therapy (HRT)[7].

Although soft-tissue sarcomas are ubiquitous, the majority occur in the limb or limb girdle or within the abdomen (retroperitoneal or visceral and intraperitoneal). Soft tissue in this context is defined as nonepithelial extra-skeletal tissue, including muscle, fat, and fibrous supporting structures, arising mainly from embryonic mesoderm, with some neuroectodermal contribution[8].

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Here we present 4 cases. They presented to Surgical Oncology Division, Department of Surgery within a span of 2 years from January 2016 to December 2017. The patients were treated by multi-disciplinary and multi-modal approach and are on regular follow-up.

Cases

Case 1

This is a patient, aged 41 years, multipara presented with a 4x4cm hard lump in left breast of 8 months duration (Fig2) and a hard, fixed lump (6x5cm) in flexor aspect of right arm of 1 year duration (fig 1). She also had a palpable mobile lymph node in left axilla.

The lesion in arm was non-tender, hard and fixed. There was no neurological deficit on right upper limb. Arm lump was operated 4 months back but recurred a month later. MRI of the arm showed the lesion extended from mid arm to just above the elbow and free from bones and muscles in most places.

FNAC from the arm lesion showed malignant soft tissue tumour and breast lesion showed duct cell carcinoma. There were no evident features of distant metastasis.

Wide local excision of the soft tissue sarcoma with preservation of neurovascular bundle and left sided mastectomy with axillary dissection were performed in same sitting.

Histopathology from the breast lesion showed poorly differentiated infiltrating ductal carcinoma. And 6 lymph nodes were positive for metastasis. ER, PR, Her2 negative (triple negative cancer). On the other hand, histopathology from arm lesion showed malignant fibrous histocytoma. She received chemotherapy and radiotherapy to arm and pectoral region.

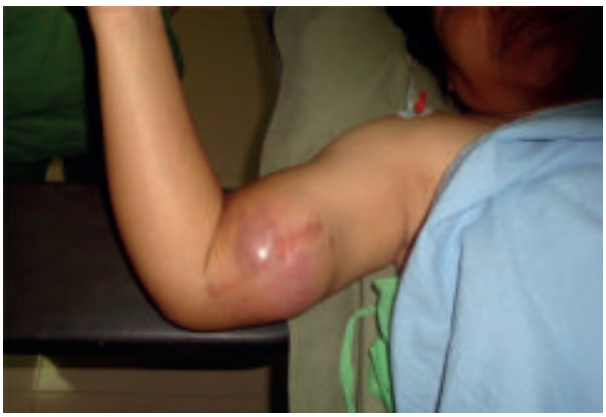

Fig. 1: *Soft tissue sarcoma in right arm*

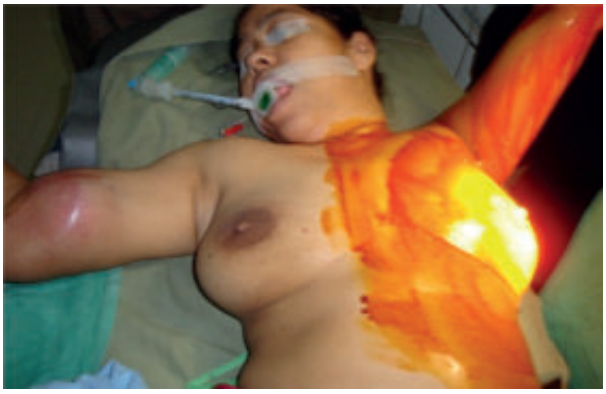

Fig. 2: *Patient prepared for mastectomy left side*

Case 2

A woman of 33 years, multipara, presented with a firm to hard lump (3x3cm) in right breast (fig 4) of 4 months duration and a hard fixed lump (4x6 cm) in antero-lateral aspect of right thigh (fig 3) for 6 months duration. She had no palpable lymph nodes in axilla or groin. There was no neurological deficit of right lower limb.

FNAC from both the lesions revealed malignant lesion. MRI right thigh showed the lesion is limited to anterolateral aspect of mid-thigh and free from bones and muscle. There was no features of metastasis.

In the same sitting right sided mastectomy with axillary dissection and wide local excision of thigh lesion was performed. Histopathology from breast lesion revealed moderately differentiated infiltrating ductal carcinoma. ER, PR, Her2 was positive. Histopathology from thigh lesion revealed malignant fibrous histocytoma. The patient then received chemotherapy and hormone therapy and radiotherapy to the local part.

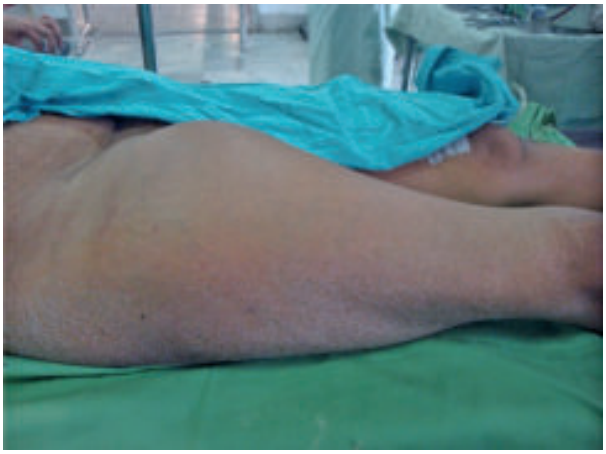

Fig. 3: *Soft tissue sarcoma right thigh*

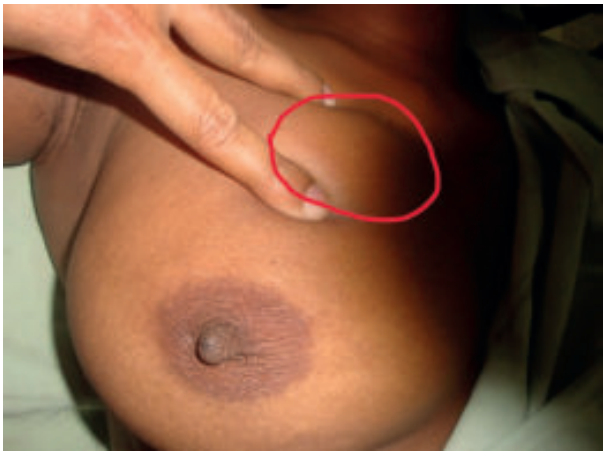

Fig. 4: *Lump in right breast*

Case 3

A-43-years, multipara woman presented with a 4x5 cm hard lump in left breast for six months duration. She also had a big (10x12 cm) hard fixed irregular recurrent mass on upper back, shoulder and neck for nine months duration with well healed scar of previous incision.(Fig 5). There were palpable mobile lymph nodes in axilla. FNAC from both lesions proved malignancy. There were no features of distant metastasis.

In the same sitting left sided mastectomy with axillary dissection and wide local excision of soft tissue lesion lesion was performed.

Histopatholgy from the breast lesion showed moderately differentiated infiltrating Duct Cell Carcinoma. Four lymph nodes were involved. ER , PR, Her2 negative. Histopathology neck lesion revealed fibrosarcoma. The patient received chemotherapy and local radiotherapy.

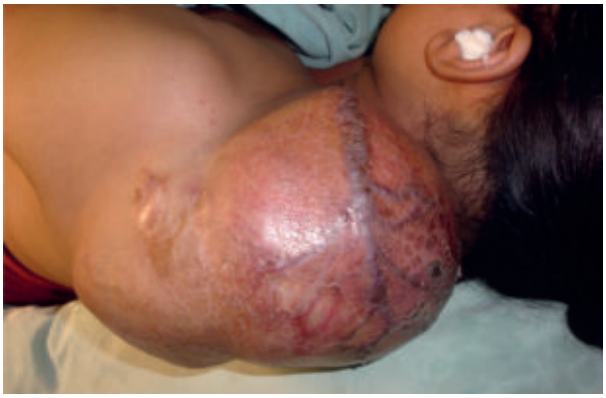

Fig. 5: *Recurrent soft tissue sarcoma on left side of neck and shoulder.*

Case 4

A woman of 38 years, multipara, presented with a firm to firm to hard lump (3x5cm) in right breast of 4 months duration and a hard fixed irregular lump (4x4cm) in left shoulder region for 6 months duration (fig 6). She had mobile palpable axillary lymph nodes.

FNAC from both the lumps revealed malignant lesion. MRI showed the shoulder lesion is free from bones but somewhat fixed with muscle. There were no features of metastasis.

Right sided mastectomy with axillary dissection was done for breast malignancy. Wide local excision of soft tissue lesion in neck was performed in the same sitting. Histopathology from breast lesion showed poorly differentiated infiltrating ductal carcinoma and IHC showed ER, PR, Her2 negative (Triple Negative Breast Cancer). Histopathology from scapular lesion showed malignant fibrous histocytoma. The patient received chemotherapy and radiotherapy to SCC site.

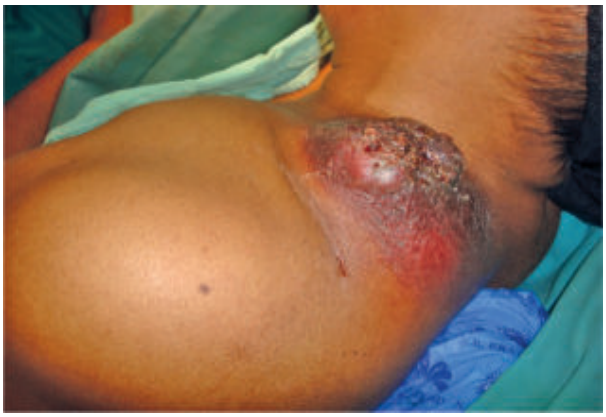

Fig 6: *Soft tissue sarcoma on left side of neck*

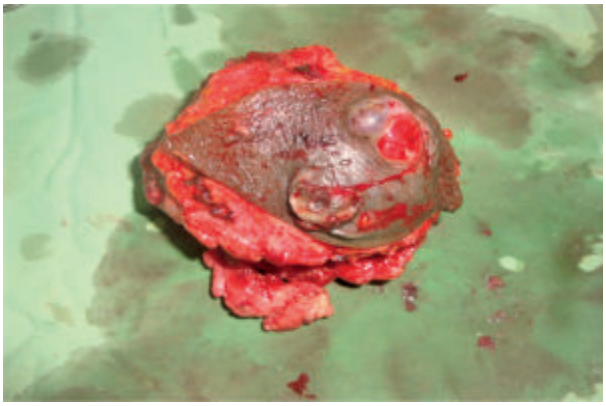

Fig. 7: *Neck sarcoma after excision*

Table I : *Location and size of Malignant Tumours*

Cases	Breast Malignancy	Breast Tumour size (in cm)	Soft tissue sarcoma (STS)	STS size (in cm)
1	Left breast	4x4	Right arm	6x5
2	Right breast	3x3	Right thigh	4x6
3	Left breast	4x5	Head and neck	10x12
4	Right breast	3x5	Head and Neck	4x4

Table II : *Histopathological Findings*

Cases	Breast Tumour	Soft tissue tumour
1	infiltrating ductal carcinoma, poorly differentiated ,TNBC*	malignant fibrous histocytoma
2	infiltrating ductal carcinoma, moderately differentiated, Triple positive	malignant fibrous histocytoma
3	infiltrating ductal carcinoma, moderately differentiated, TNBC*	fibrosarcoma
4	infiltrating ductal carcinoma, poorly differentiated ,TNBC*	malignant fibrous histocytoma

TNBC- Triple Negative Breast Cancer

Discussion

Breast cancer now being the most common female cancer globally, has been under much research and evaluation. There are only a few works on breast cancer association with other primary malignancy. Soft tissue sarcoma developing after treatment of breast cancer was reported as a complication of radiotherapy and subsequent arm oedema[6]. Simultaneously occurring primary breast cancer and soft tissue sarcoma was not found to be reported.

Over recent years, there have been much development of molecular analysis and better understanding of breast cancer[9].

Sarcomas pose significant diagnostic challenges because there are more than 70 histologic subtypes with unique molecular, pathologic, clinical, prognostic, and therapeutic features. The molecular genetic and cytogenic characterization of STS has improved classification and better understanding of nature[5].

Despite improved genetic and molecular studies of both the malignancies, no association between these two primary malignancies were found.

Breast cancer presents most commonly with a lump[9]. In our study all 4 patients had presented with suspicious lumps of short duration. Breast cancer should be treated by multi-disciplinary team[10]. The pathology and biology of the tumor play a pivotal role selecting the primary and adjuvant treatment, formulation of follow-up protocols, and prognosis[11].

Accurate pretreatment evaluation is critical for treating soft-tissue sarcomas. Surgery for localized disease is often curative, alone or in combination with radiotherapy and chemotherapy in selected patients. Function-preserving limb conservation is the goal of treatment for soft-tissue sarcomas of the limbs.[12]

Soft-tissue sarcomas are best treated in multidisciplinary centers that specialize in treating this disease[13,14], have experience with functional limb preservation, and have low rates of local recurrence and good rates of overall survival.[14] Specialists who preserve the function of a given site can work cooperatively with oncologists to enhance the likelihood of a good outcome.

The mean age of our study population was 38.75 years. It is less than earlier studies on breast cancer e.g. Tewari et al (47.8 years)[15,] Sickles (57 years), Basset et al (59 years). The age is much lower than the common age of STS, which is the 6th decade [16].

All our breast cancers were Invasive Ductal Carcinoma, which is the most common type[9]. Among 4 cases, 3 cases were triple negative breast cancer (TNBC). This was much higher than common incidence of TNBC among breast cancers[16]. Similarly, 3 of our patients had poorly differentiated cancers contrasting the fact that the most common grade is moderately differentiated type[19]. Among 4 cases, 3 cases had malignant fibrous histocytoma, which is the most common variety of the STSs[5].

In our cases, it was difficult to identify, through the investigations, which malignancy was earlier. There remained the dilemma of one being the secondary, which was excluded finally by histopathological examination revealing two separate malignancies.

Conclusion

Having another primary malignancy along with primary breast cancer is an unusual entity. Pairing it with soft tissue sarcomas is a rarity. We were privileged to work at a referral hospital, where rare cases from all over the country come, hence we encountered such uncommon cases. There should be extensive work on genetic and molecular factors to find out any association between breast cancer and sarcomas.

References

1. Akhter PS, Uddin MM, Sharma SK. Patterns of malignant neoplasm – A three years study. Bangladesh Medical J 1998; 7(2): 29-32.
2. Singer S, Torsten ON, Antonescu CR. Molecular Biology of Sarcomas. In DeVita, Hellman, and Rosenberg's Cancer Principle & Practice of Oncology., Devita VT, Lawrence TS, Rosenberg SA ed. Wolters Kluwer, Philadelphia: 10th ed, 2015; 1241-1252.
3. Karisson P, Holmberg E, Samuelsson A, Johansson KA, Wallgren A. Soft Tissue Sarcoma after Treatment for Breast Cancer – A Swedish Population-based Study. European J of Cancer 1998 Dec; 34(13): 2068-2075.
4. Robin A, Wilson M, Macmillan D, The Role of Imaging in Breast Diagnosis Including Screening and Excision of Impalpable Lesions. In Breast Surgery, Dixon JM ed. Saunders Elsevier: 4th ed, 2009; 1-18.
5. Clark AM, Fisher C, Judson I, Thomas M, Soft-Tissue Sarcomas in Adults. N Eng J Med 2005; 353: 701-711.
6. Sestak I, Cuzick J, and Evans G, Breast Cancer: Epidemiology, Risk Factors and Genetics. In ABC of Breast Diseases, Dixon MJ ed. Wiley- Blackwell: 4th ed, 2012,41-46.
7. Blanks RG, Moss SM, McGahan CE et al. Effects of NHS Breast Screening Programme on Mortality from Breast Cancer in England and Wales, 1990-8: Comparison of Observed with Predicted Mortality. Br Med J 2000; 321: 1724-31.
8. Rampaul RS, Rakha EA, Robertson JFR, Ellis IO, Pathology and Biology of Breast Cancer. In Breast Surgery, Dixon JM ed. Saunders Elsevier: 4th ed, 2009; 19-42.
9. Wietz J, Antonescu CR, Brennan MF. Localized extremity soft tissue sarcoma: improved knowledge with unchanged survival over time. J Clin Oncol 2003;21:2719-25
10. Mankin HJ, Mankin CJ, Simon MA. The hazards of the biopsy, revisited. J Bone Joint Surg Am 1996;78:656-663
11. Ray-Coquard I, Thiesse P, Ranchere-Vince D, et al. Conformity to clinical practice guidelines, multidisciplinary management and outcomes of treatment for soft tissue sarcomas. Ann Oncol 2004;15:307-315
12. Tewari M, Krishnamurty M, Shukla HS. Assessment of Predictive Markers of Response to Neoadjuvent Chemotherapy in Breast cancer. Asian J Surg 2010; 33(4); 157-67
13. Sickles EA, D'Orsi CJ, Bassett LW, et al.ACR BI-RADS Atlas, Breast Imaging Reporting and Data System. Reston, VA: American College of Radiology;2013. ACR BI-RADS Mammography
14. Bassett LW, Liu TH, Giuliano AE, Gold RH. The prevalence of Carcinoma in Palpable vs Impalpable, Mammographically Detected Lesions. AJR Am J Rotengenol 1991; 157 (1): 21-4
15. Gadgeel SM, Harlan LC, Zeruto CA, Osswald M, Schwartz AG. Patterns of care in a population-based Sample of Soft Tissue Sarcoma Patients in the United States. Cancer 2009;115:2744-2754.
16. Khan RI, Bui MM. A review of Triple-negative Breast Cancer. Cancer Control. 2010;17(3):173-176.