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Case Series

Male breast cancer: a case series and review of literature

M. Amir Choudhary*, Ameenuddin Ali Syed, Obaid Syed

Department of General Surgery, Indian Institute of Medical Science and Research, Jalna, Maharashtra, India

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***Correspondence:**
Dr. M. Amir Choudhary,
E-mail: dr.amirchoudhary@gmail.com

ABSTRACT

Male breast cancer (MBC) is a rare condition, representing about 0.5-1% of all breast cancer cases, while recent trends indicate a gradual increase in incidence. This study seeks to examine the clinical and pathological features of MBC patients. This study also sheds light on demographics factors and family history association with the disease. It also identifies various risk factors associated with disease and reviews its surgical management. We conducted a retrospective analysis of six MBC patients treated at the department of general surgery at Indian institute of medical science and research (IIMSR), Jalna, from May 2022 to September 2024. Data were collected on demographics, clinical history, local examination findings, family history, disease stage, histopathological findings and immunohistochemistry (IHC). The findings revealed a median age of 51.5 years at diagnosis. Four patients presented with right breast involvement, while two had left breast involvement. Diagnosis was confirmed with ultrasound (USG) and fine needle aspiration cytology. Four patients had skin involvement while five had clinically palpable axillary lymphadenopathy. Modified radical mastectomy (MRM) was the surgical procedure done in all six cases. Our study also emphasizes early diagnosis to improve outcomes by educational efforts focusing on promoting self-examinations and screening for high-risk populations.

Keywords: Carcinoma breast, MBC, Mastectomy, MRM, Early detection of cancer

INTRODUCTION

Breast cancer is often regarded as a predominantly female disease, leading to a significant gap in awareness and understanding of MBC. While it constitutes only about 1% of all breast cancer cases, MBC presents a critical health concern that affects thousands of men each year.[1] The perception of breast cancer as a women's disease often results in delayed diagnosis and treatment in males, which can adversely impact outcomes.[2] Despite its rarity, the implications of MBC are profound, as it can have significant emotional, psychological and physical effects on affected individuals and their families.[3] This study aims to shed light on the epidemiology, risk factors, clinical presentation, diagnosis, severity, treatment, and prognosis of MBC, emphasizing the importance of recognition and education to improve awareness and promote timely intervention. By addressing the unique aspects of MBC, we can foster a better understanding of this condition and support those impacted by it.[4]

CASE SERIES

Six MBC patients were admitted from outpatient department who came with complaints of lump in breast in department of general surgery, IIMSR, Jalna from May 2022 to September 2024. All male patients above eighteen years of age who were diagnosed with breast cancer clinically and subsequently confirmed on cytology (FNAC) were taken in this study. Patient who had distant metastasis were excluded from this study.

Patients' history was noted, local examination was done of lump, family history was noted. Routine lab

investigations were done. Chest X-ray and USG abdomen was done to look for the distant metastasis in the all patient.

Disease was graded on base of cTNM classification. Radiological diagnosis was done on base of USG of both breasts and bilateral axilla. Lymph node involvement was assessed clinically and confirmed radiologically. In all patient FNAC was done and showed malignancy. After doing pre-anesthesia fitness patient all six patients underwent MRM. Suction drain was kept in all patients and drain was removed mostly on day 8.

All specimen of patients was sent for HPE diagnosis. Post-operative complications were noted. IHC was done to check for hormonal receptor status. Patient who required chemotherapy and radiotherapy were referred for the same.

The variables studied in this research included the age of patient, family history tumor size, histological grade of the tumor, the stage of the tumor on base of cTNM classification, specific histological subtype of the tumor was identified through microscopic examination. Axillary lymph node status was noted. Hormonal receptors were studied with IHC. Any intra operative and post-operative complications were also noted.

Figure 1: Right cancer breast pre-operative.

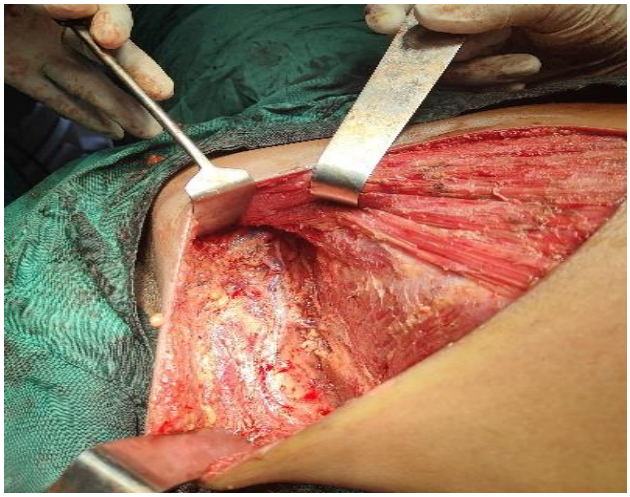

Figure 2: Intra-op after axillary dissection.

Figure 3: Post-operative specimen.

Table 1: Age of patient.

Cases	Age (in years)	Mean
Case 1	52	51.5
Case 2	65	
Case 3	50	
Case 4	61	
Case 5	46	
Case 6	35	

Table 2: Clinical finding.

Cases	Size of lump in CMS	Skin involvement	Nipple areola complex	Family history	Axillary lymph node
Case 1	5×4	Yes	Involved	No	+
Case 2	7×4	Yes	Involved	No	+
Case 3	3×2	No	Normal	No	Negative
Case 4	4×4	No	Involved	No	+
Case 5	6×5	Yes	Involved	Yes	+
Case 6	5×4	Yes	Involved	No	+

Table 3: Staging of tumor.

Cases	Clinical TNM stage	Pathological TNM stage
Case 1	T4bN1M0	pT4pN2aMx
Case 2	T4bN1M0	pT4pN1aMx
Case 3	T2N0M0	pT2pN1aMx
Case 4	T2N1M0	pT2pN1aMx
Case 5	T4bN1M0	pT4pN2aMx
Case 6	T4bN1M0	pT3pN0Mx

Table 4: Hormonal receptor based on IHC report.

Cases	ER	PR	HER 2 NEU
Case 1	Positive	Positive	Negative
Case 2	Negative	Negative	Negative
Case 3	Positive	Positive	Positive
Case 4	Positive	Positive	Negative
Case 5	Negative	Negative	Positive
Case 6	Positive	Positive	Negative

The diagnosis of MBC in this study involved a comprehensive triple assessment approach. Clinical examination, radiological imaging, and tissue biopsy, which played a crucial role in accurate detection, staging, and treatment planning. Mean age of our patients was 51.5 years, they all belong to low socioeconomic status. Clinically, all six patients presented with a palpable breast lump, which is a characteristic sign of breast cancer. The examination also revealed notable findings in most patients, including skin involvement in four cases and nipple-areolar retraction in five, both of which are significant indicators of malignancy. Additionally, a detailed family history was collected, with one patient reporting a positive family history of breast cancer, indicating a genetic predisposition.

Radiological evaluation was conducted using USG of both breasts and bilateral axillae. This imaging technique confirmed the presence of axillary lymph node involvement in five patients. No signs of distant metastasis were detected, emphasizing that all patients were in a potentially resectable stage at the time of diagnosis. The radiological findings provided essential information that helped to further classify the disease and assess its spread to the regional lymph nodes.

Tissue biopsy, specifically FNAC, was performed for all the patients, as well as it confirmed malignancy in each case. FNAC played a vital role in providing an initial diagnosis of breast cancer, which was crucial for the planning surgical intervention. After undergoing MRM, the excised specimens were subjected to histo-pathological examination (HPE). The HPE findings confirmed the FNAC results and provided further details about the tumor characteristics, including the histological grade and stage of the cancer, which are critical for the prognosis.

In addition, IHC was carried out to determine the hormonal receptor status of the tumors. The IHC results revealed that four of the six patients were estrogen receptor (ER) and progesterone receptor (PR) positive, suggesting hormone-responsive tumors. Three patients tested positive for HER2/neu, which has implications for targeted therapy.

All six patients underwent MRM as the standard surgical procedure, followed by the placement of suction drains to prevent fluid accumulation and reduce the risk of complications. Drain was removed mostly on post-operative day 8. Two patients experienced complications: one developed flap necrosis, which required additional wound care, and another developed seroma formation after drain removal which needed aspiration. These complications highlight the challenges of surgical management in breast cancer and the need for close monitoring during recovery.

DISCUSSION

The current study highlights the unique challenges associated with the diagnosis, management, and outcomes of MBC in a cohort of six patients treated at a tertiary care center in India. MBC remains a rare disease, constituting about 0.5-1% of all breast cancer cases globally, and similarly low incidence rates have been observed in India (American cancer society, 2023).[1] The rarity of MBC contributes significantly to delayed diagnosis, largely due to misconceptions about breast cancer being a predominantly female disease, and a lack of awareness among both the public and healthcare professionals.[5,6] This delay in diagnosis was also evident in this study, where most patients presented with advanced-stage tumors, reflecting the findings from other studies on MBC in India and worldwide.[2,7]

The median age of diagnosis in this study was 51 years, which is slightly younger compared to the median age of diagnosis for MBC reported in Western populations, typically around 64 years.[1] This discrepancy may reflect differences in genetic, environmental, or socioeconomic factors between populations. It is known that genetic predisposition plays a critical role in MBC, with mutations in the BRCA2 gene being particularly significant.[4,8] In this study, one patient reported a positive family history of breast cancer, underscoring the need for genetic counseling and testing in at-risk populations.[9,10]

Clinical examination and imaging are critical components of the triple diagnostic approach, which ensures a thorough evaluation of the disease. The use of USG for assessing the breast and axilla was effective in confirming lymph node involvement in five of the six patients. This finding aligns with studies that emphasize the role of imaging in accurately determining the extent of disease, which is crucial for staging and treatment planning.[3,11]Mammography is less commonly utilized in men due to limited breast tissue, yet it remains a useful modality in certain cases where more detailed imaging is required.[2]

Tissue biopsy using FNAC confirmed malignancy in all patients, which was later validated by HPE post-surgery. The correlation between FNAC and HPE findings demonstrates the reliability of FNAC as an initial diagnostic tool, consistent with other studies that have shown its high sensitivity and specificity in breast cancer diagnosis (American cancer society, 2023).[1] The MRM performed on all patients was appropriate given the tumor size and advanced disease stage, and aligns with standard surgical practices for MBC, which prioritize complete resection of the tumor and affected lymph nodes.[7,12]

Hormonal receptor analysis using IHC revealed that a majority of the patients were positive for ER and PR, suggesting hormone-responsive tumors. Hormone receptor positivity is a significant prognostic factor in MBC, as it allows for the use of endocrine therapies such as tamoxifen, which has been shown to improve survival outcomes in ER-positive MBC patients.[3,4] The presence of HER2/neu positivity in three patients also points to the potential benefit of targeted therapies, such as trastuzumab, although these options are less frequently utilized in male patients due to limited data from clinical trials.[13]

Postoperative complications, including flap necrosis and seroma formation, were observed in two patients. Such complications are not uncommon in breast surgery and require careful postoperative care to minimize morbidity. The observed complications highlight the importance of individualized postoperative management to ensure optimal outcomes.[2,6]

The triple diagnostic approach. Clinical, radiological, and pathological. proved essential for accurately diagnosing and staging MBC in this cohort. This approach aligns with best practices in breast cancer management, ensuring that patients receive a comprehensive evaluation leading to timely and appropriate intervention.[2,14] However, the delay in presentation and the predominance of advanced-stage disease at diagnosis underscore the critical need for greater awareness and education about MBC among the public and healthcare providers in India. Awareness campaigns should aim to educate men about the importance of recognizing breast changes and seeking medical evaluation without delay.

Overall, this study emphasizes the need for increased awareness, early diagnosis, and a multidisciplinary approach to improve outcomes in MBC. It also underscores the significance of hormone receptor testing and targeted therapies in personalizing treatment. Future efforts should focus on addressing the gaps in awareness and promoting early screening, especially for high-risk individuals, to facilitate earlier detection and improve prognosis. Further research is needed to establish standardized guidelines for the management of MBC, which is currently extrapolated from MBC data due to the paucity of dedicated studies on male patients.[1,3]

A study was done by Khattab and showed etiological factor on breast cancer. Genetic factors, like a family history of breast cancer and BRCA1 or BRCA2 mutations, increase the risk. Other genetic conditions, such as Klinefelter syndrome, also contribute. Hormonal imbalances, especially higher estrogen levels, as seen in obesity or conditions like orchitis, play a role. Environmental risks include radiation exposure and certain occupational hazards. Despite these known factors, many men with MBC have no clear cause.[15]

A meta-analysis by Fentiman et al found that increased estrogen exposure, seen in conditions like Klinefelter syndrome and obesity, is a significant risk factor for MBC. The study highlighted the importance of estrogen-to-androgen ratios, with higher estrogen levels promoting ductal proliferation in the male breast.[6]

A meta-analysis by Villeneuve et al found that men working in steel mills, rolling mills, or exposed to solvents like trichloroethylene are at higher risk of developing MBC, linking occupational chemical exposure to increased cancer incidence.[16]

A systematic review and meta-analysis by Anderson et al analyzed data from population-based studies and observed a rising incidence of MBC in recent decades, linked to factors like obesity, alcohol consumption, and increased estrogen exposure from environmental or lifestyle changes.[17]

CONCLUSION

This study underscores the importance of early detection, comprehensive diagnosis, and individualized treatment

strategies for managing MBC. Utilizing the triple diagnostic approach. Clinical examination, radiological imaging, and tissue biopsy proved essential in accurately staging the disease and guiding appropriate surgical interventions. Despite its rarity, MBC presents unique challenges, including delayed diagnosis and limited awareness. To improve outcomes, there is a critical need for enhanced awareness, genetic counseling for at-risk populations, and tailored therapeutic approaches based on hormone receptor status. Future research should focus on refining treatment guidelines specific to male patients to optimize care and survival.

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