

# **RESEARCH ARTICLE**

## MALE BREAST CANCER: AN INSTITUTIONAL EXPERIENCE

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## Manuscript Info

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#### Abstract

**Background** Breast cancer is less common in males than females and accounts for about 1% of all malignancies among males. The data on this patient population remains largely unexplored partially in India since the lifetime risk of developing this cancer is unusually low.

**Methods**This is a prospective observational study of male patients diagnosed with breast cancer during 2014 to 2021 at a tertiary care teaching hospital in India. Management consisted of surgery (Modified Radical Mastectomy) followed by adjuvant chemotherapy and radiotherapy with or without hormonal therapy. Descriptive statistics were used for analysis.

**Results**A total of 22 patients with a mean age of 59 (range 36-85) yearswere included. The primary presenting complaint was subareolar swelling in 15(68.1%)patients. The histology revealed invasive ductal carcinoma in 22(100%) cases. Breast cancer hormone receptor status (ER/PR-positive) was seen in 20(90.9%) patients. The median follow-up was 38 months. A total of 20(90.9%) patients received adjuvant chemotherapy, radiotherapy, and hormonal therapy. The local recurrence was noted in 6(27.3%) patients. The lung andbone metastaseswere seen in 2(9.1%)patients,liver metastases in 1(4.5%)patient, andbilateral breast cancer in 1(4.5%) patient. At the last available visit, 10(45.4%) patients were following up, 9(40.9%) lost to follow up and unfortunately, 3(13.7%) patients were deceased.

**Conclusions**The prognosis of patients with male breast cancer at our center was good. Although male breast cancer has similarities to those in women, there are distinct differences that need to be studied to improve treatment outcomes.

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#### Introduction:-

The global burden and incidence of cancer are increasing worldwide which is mainly attributed to improvement in cancer screening.<sup>1</sup>The incidence of male breast cancer is about 1% of all breast cancer cases.<sup>2</sup>Advanced stage of presentation and early invasion of surrounding structures may be due to the low amount of breast tissue in men and

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for lower incidence as compared to females.<sup>3</sup>The risk of developing this cancer increases progressively with increasing age and is usually seen in the sixth or seventh decade.Lack of awareness and education results in late presentation thereby delaying diagnosis.<sup>4</sup>In men cancer usually begins in the breast ducts.<sup>5</sup> Family historyis positively associated with the disease. About 20% of patients have a family history of the disease.<sup>5</sup>BRCA2 gene mutationshave been linked to an increased risk of developing breast cancer compared to BRCA1.<sup>6</sup> Certain conditions associated with an abnormal estrogen-to-androgen ratio are also related like klinefelter syndrome, exogenous estrogen, or testosterone use, obesity, orchitis/epididymitis, and use of finasteride.<sup>7</sup> Various lifestyle factors like lack of exercise can also contribute to the development of breast cancer. Other predisposing factors include radiation exposure, exposure to volatile organic compounds, and liver disease. If birth order is considered, the first child is athigh risk.Due to the presence of limited studies from this region, we aimed to study our institutional experience with the clinicopathological characteristics, treatment, and prognostic factors of patients treated over eight years.

### Methods:-

This is a prospective observational study of male patients diagnosed with breast cancer during 2014 to 2021 at a tertiary care teaching hospital in India. This study was conducted by following Good Clinical Practice and in a manner to conform to the Helsinki Declaration of 1975, as revised in 2013 concerning human rights. The study protocol and all procedures performed in this study were reviewed and ethically approved by the Institutional Ethics Committee. Written informed consent was obtained from each subject before enrollment. Inclusion criteria were male patients aged  $\geq 18$  years with either localized breast cancer, locally advanced, or metastatic cancer. The exclusion criteria wasthe refusal of consent. Diagnosis of breast cancer included pre-operative histological confirmation, and post-operative histopathology results if surgery was done. The TNM classification was usedfor staging cancer.<sup>8</sup> The tumor histological classification was performed using the Scarf-Bloom and Richardson(SBR) system histology.<sup>9</sup> Immuno-histochemical analysis was done to determine the Estrogen (ER), Progesterone receptor (PR), and HER-2/neu status was assessed using standard procedures.Management consisted of surgery (Modified Radical Mastectomy-MRM) followed by adjuvant chemotherapy and radiotherapy with or without hormonal therapy.<sup>10</sup>Adjuvant chemotherapy given was anthracycline and taxane-based. Adjuvant Radiotherapy to chest-wall (39Gy/13 fractions/2-3 weeks)  $\pm$  Axillary region  $\pm$  supraclavicular lymph node was given. Descriptive statistics were used for analysis.

#### **Results:-**

#### Patient Demographics

A total of 22 patients with a mean age of 59 (range 36-85) yearswere prospectively analyzed and evaluated in terms of general characteristics and survival. The primary presenting complaint was subareolar swelling in 15(68.1%)patients. Positive family history was observed in 1(4.5%) patient. 21(95.5%) patients had undergone MRM and only 1(4.5%) patient had a lumpectomy. According to the TNM classification, tumors were classified as T1: 2 cases (9.1%) T2: 6 (27.3%), T3: 9 (40.9%), T4: 5 (22.7%), N1: 6(27.3%), N2: 9 (40.9%), N3: 3(13.6%) and N4: 4(18.2%) (figure 1).No metastases were seen after MRMbefore initiating patients on adjuvant chemotherapy or radiotherapy. The histology revealed invasive ductal carcinoma in 22(100%) cases with ductal carcinoma in situ in 6(27.3%) patients. The median follow-up was 38 months.

#### Clinical characteristics

Breast cancer hormone receptor status (ER/PR-positive) was seen in 20(90.9%) patients, 5(22.7%) patients were HER-2/neu positive on IHC, and 5(22.7%) patients had triple-positive breast cancer (figure 2). None had triple-negative breast cancer. 2(9.1%) patients had not done receptor studies. A total of 20(90.9%) patients received adjuvant chemotherapy, radiotherapy, and hormonal therapy (figure 3). 2(9.1%) patients defaulted after surgery. Hormonal therapy in the form of Tamoxifen was given for 5 years to 100% of patients. The local recurrence was noted in 6(27.3%) patients. Bilateral breast cancer was seen in 1(4.5%) patient. At the last available visit, 10(45.4%) patients had 5 years follow-up, 9(40.9%) were lost to follow-up and unfortunately, 3(13.7%) patients were deceaseddue to metastases (figure 4). Among the deceased, two patients (9.1%) after one year of treatment developed lung and bone metastases for which they received palliative chemotherapy and radiotherapy and died within 6 months.

## **Discussion:-**

The present study showed thatmale breast cancer is rare but had modest survival and lower mortality. There is a need to screen early to improve prognosis. The most common symptom is a painless palpable subareolar mass which was commonly seen in 68% of our patients. Lesser-knowncommonfindings include gynecomastia, axillary lymphadenopathy, nipple involvement, with retraction or ulceration.<sup>11</sup>The most common surgical procedure is MRM with axillary node dissection. Postoperativeradiotherapy does get local control of the disease. The use of tamoxifen leads to increased survival rates but has its side effects. The chemotherapy regimens commonly used are FAC (fluorouracil, Adriamycin, cyclophosphamide), FEC(5-fluorouracil, epirubicin, and cyclophosphamide), and Taxanes.<sup>12</sup>Adjuvant trastuzumab has limited data in these patients, hence its use should be considered with caution based on tumor characteristics.<sup>13</sup> The survival rates among these patient population is 60% at 5 years and 40 % at 10 vears.<sup>14</sup>The study does have some limitations. This is a single-centered study with a small sample size and noncomparative design. Results from multicenter would be more beneficial and would add to the overall results. Nevertheless, the findings of the present study can act as a reference for future studies.

The disease-free survival (DFS) of 4(18.2%) patients was 2 years and the DFS of 10(45.4%) patients was 5 years. The prognosis for breast cancer in males depends on tumors size and spread. In general, a higher stage indicates the worst prognosis. Early diagnosis can improve outlook significantly. But as males do not get regular breast cancer screenings like women, it is difficult to diagnose in the early stages and cancer gets spread to the lymph nodes and other organs. The male breast has low breast parenchymal tissue, which is also a reason for the usual presentation of male breast cancer at an advanced stage, with an early invasion of surrounding structures, which is a poor prognostic condition. In order to improve disease control and DFS, one needs to be aggressive in the treatment approach with adequate chemotherapy cycles and doses with the inclusion of anti-HER2 therapy like injection trastuzumab in appropriate situation and for adequate duration. Also, the addition of injection leuprolide along with tab tamoxifen can be considered for adequate estrogen suppression, which can help in increased DFS.

## **Conclusions:-**

To summarize, invasive ductal carcinoma is common in male breast cancers with more than 90% ER/PRpositivestatus. The combination of chemoradiotherapy was found to be useful in this patient population. The outcomes could have been better if cases could have been diagnosed early. Further research should look at multicenter studies by comparing the final outcomes of various treatment modalities in this patient population.



Figure 1:- Distribution of cases as per staging (Tumor size and nodal status).

N1, N2, N3, N4: Refers to the number and location of lymph nodes that contain cancer

T1, T2, T3, T4: Refers to the size and/or extent of the main tumor



Figure 2:- Distribution of cases for types of Breast Cancerbased onHormone Receptor status.

ER/PRpositive: Breast cancers with positive estrogen and progesterone receptors



Figure 3:- Percentage of patients who received chemotherapy and radiotherapy.



Figure 4:- Graphical representation of patients showing follow up and death.

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