

The Clinical Status of Ocular Manifestations in Breast Cancer Patients

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Abstract

Background: Breast cancer presents a complex clinical scenario requiring multifaceted approaches for effective management. **Objective:** The primary objective is to analyze the Clinical status of Ocular Manifestations in Breast Cancer Patients. **Method:** A cross-sectional study was conducted involving 45 breast cancer patients. Data on age distribution, educational qualifications, socio-economic status, disease staging, primary treatment methods, and ocular manifestations were collected and analyzed to determine demographic trends and disease characteristics. **Results:** The study revealed a diverse demographic representation across age groups, with a notable concentration between 41 and 60 years. Educational qualifications and socio-economic statuses exhibited varied distributions. Disease staging indicated a significant prevalence of advanced stages (II and III), while diverse treatment modalities, primarily mastectomy and segmental resection, were employed. Ocular manifestations, although relatively infrequent at 11.10%, underscored the importance of vigilant monitoring. **Conclusion:** The findings highlight the multifaceted nature of breast cancer patient profiles and disease characteristics. Tailored approaches are warranted considering diverse patient demographics and disease stages. Enhanced early detection strategies and personalized treatment plans are imperative to optimize breast cancer care. The recognition and surveillance of ocular manifestations emphasize the need for comprehensive patient monitoring. Altogether, this study underscores the significance of personalized, comprehensive care strategies in breast cancer management to improve patient outcomes and well-being.

Keywords: Breast cancer, demographic distribution, disease characteristics, ocular manifestations.

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INTRODUCTION

The clinical status of ocular manifestations in breast cancer patients represents an intricate facet of oncological care, adding a layer of complexity beyond the primary focus on cancer treatment. Breast cancer management often involves multi-modal therapeutic approaches, including hormonal therapies like Tamoxifen, known for their efficacy in targeting hormone-sensitive tumors. However, amid the positive strides in cancer treatment, ocular manifestations linked to these therapies have emerged as significant concerns, presenting a spectrum of challenges in patient care [1-4].

The ocular implications associated with breast cancer treatments, particularly hormonal interventions, have garnered attention due to their potential impact on visual health and quality of life. These manifestations encompass a diverse range of conditions, such as retinopathy, cataract formation, optic neuritis, corneal deposits, among others. Understanding the clinical landscape of these ocular complications is pivotal for oncologists, ophthalmologists, and healthcare providers involved in comprehensive patient care [4, 5].

Tamoxifen, a cornerstone in the hormonal therapy for estrogen receptor-positive breast carcinomas, has been linked to ocular complications, notably

retinopathy and cataract induction. Despite its effectiveness in cancer treatment, the emergence of ocular side effects raises critical questions regarding their prevalence, underlying mechanisms, clinical implications, and optimal management strategies [6].

Beyond Tamoxifen, various other therapeutic agents and modalities employed in breast cancer management have been associated with ocular manifestations, potentially impacting visual health and necessitating close monitoring during the course of treatment [7].

Objective: To assess the Clinical status of Ocular Manifestations in Breast Cancer Patients.

METHODOLOGY

Study Design: Longitudinal, single center follow-up study.

Place of Study: Department of Radiotherapy and Department of Ophthalmology, Dhaka Medical College Hospital, Dhaka.

Study Population

Patients with Breast Carcinoma taking low dose of Tamoxifen who are taking treatment for a duration of more than 2 (two) years by the department of Radiotherapy, Dhaka Medical College Hospital, Dhaka were included in this study.

Period of Study: October-2019 to July-2020.

Sampling Method: Purposive type of non-probability sampling technique was applied to enroll the patients.

Sample Size (n):

The sample size was determined by the following formula.

$$n = z^2 \frac{pq}{e^2}$$

Here, - n- Sample size

$$P = \text{expected proportion of event } 6.3\% \\ = 0.063$$

(Prevalence of ocular manifestations in BC patient in tamoxifen is 1.5% - 11.8%)

$$q = 1 - p = 1 - 0.063 = 0.937$$

Z = value of standard normal distribution = 1.96 (at 5% level of significance of 95% confidence level)

e = Acceptable error = 5% = 0.05 (1% is not taken for large sample size for the place of study).

Putting the values in the equation the sample size n was estimated 90.7

As the period of study is too short so the sample size was taken 45

Selection Criteria

Inclusion Criteria

1. Patients with Breast Carcinoma treated with low dose of Tamoxifen for a duration of more than 2(two) years post-surgically.
2. Clear refractive media without any opacity such as corneal opacity, lenticular opacity, vitreous opacity.
3. Patients with normal retinal findings in funduscopy examination.

Exclusion Criteria

1. Patients with Breast Carcinoma taking Tamoxifen for a duration of less than 2 (two) years.
2. Patients with advanced stage of Breast Carcinoma.
3. Patients of Breast Carcinoma with any refractive media opacity.
4. Patients of Breast Carcinoma with previously diagnosed case of keratopathy, retinopathy, optic neuritis, or cataracts.

Study Procedure

Sixty patients were selected who present with Breast Carcinoma after surgery taking low dose of Tamoxifen for a duration of more than 2 (two) years in department of Radiotherapy, Dhaka Medical College Hospital, Dhaka. Detailed history of each patients were taken, including age, sex, chief complaints with duration, any history of keratopathy, retinopathy, optic neuritis, and history of cataract surgery were recorded. All patients with Breast Carcinoma underwent ophthalmic examination, including uncorrected and best spectacle corrected visual acuity by Snellen chart and near vision chart, slit lamp bio-microscopy to see eye lids, eyelashes, cornea, conjunctiva, pupil and lens, dilated fundus examination, CFP and OCT. A data sheet were filled up by interviewer by face to face interview. Laboratory data were recorded too. Collected data were checked for errors and were analyzed using the statistical software SPSS 22.

Statistical Analysis

Data were cleaned and edited regularly. All data were processed by using SPSS program version 22. Descriptive analysis was presented by frequencies or percentages for qualitative values and mean (\pm SD) for quantitative values with normal distribution. After analysis, the findings were presented graphically in tables and charts.

RESULTS

Among the study subjects, 4 (8.90%) were in the \leq 40 years age group, 16 (35.60%) were in the 41-50 age group, 18 (40%) were in the 51-60 age group, and 7 (15.60%) were over 60 years old.

Table 1: Age group of the patients

Age Group	Number of Patients	Percentage (%)
≤ 40 years	4	8.90
41 - 50 years	16	35.60
51 - 60 years	18	40.00
> 60 years	7	15.60

Among the study subjects 10 (22.20%) were illiterate, 08 (17.80%) were primarily educated, 12 (26.70%) were SSC passed, 10 (22.20%) were HSC

passed and rest 05 (11.10%) had graduation or above degree.

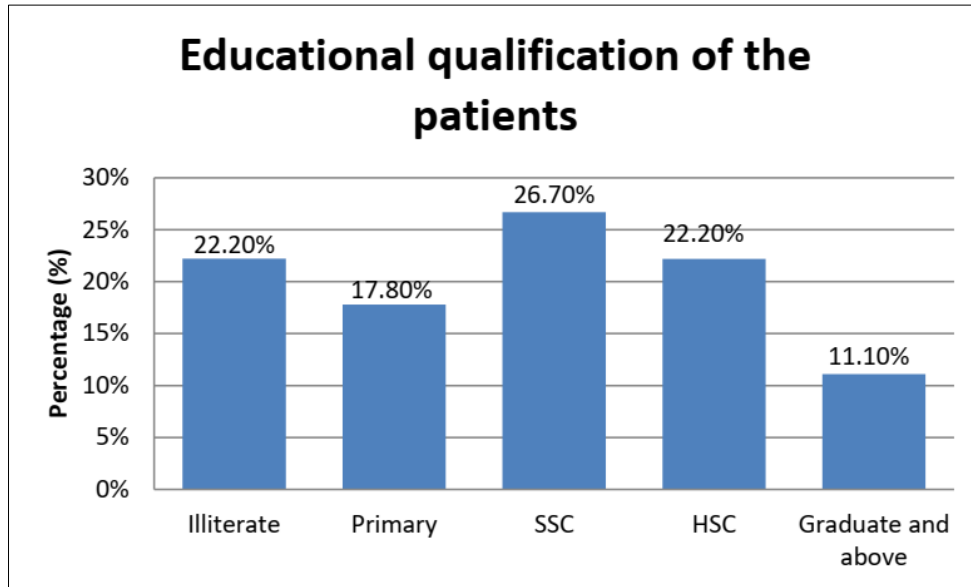


Figure 01: Educational qualification of the patients (n=45).

Among the study subjects 13 (28.90%) were in lower socio-economic group, 24 (53.30%) were in

middle socio-economic group and 08 (17.80%) were in higher socio-economic group.

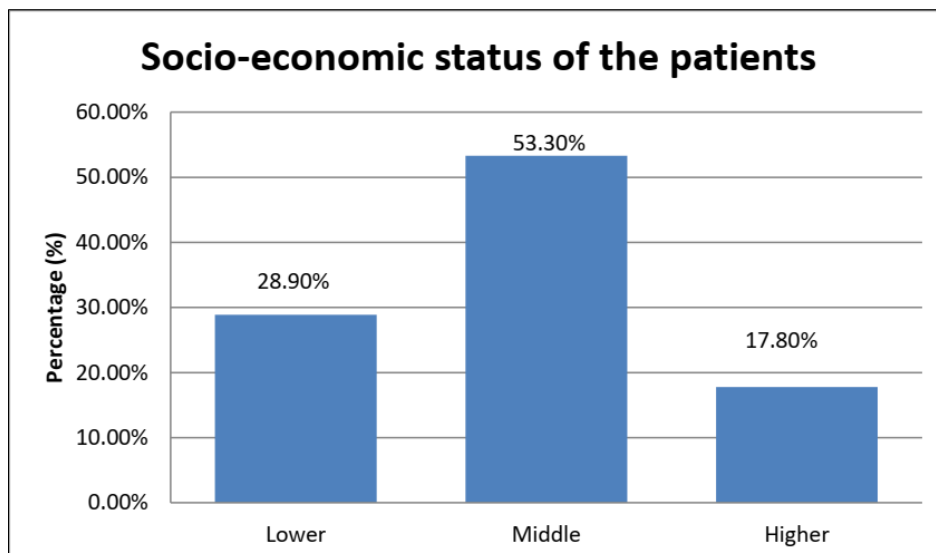


Figure 02: Socio-economic status of the patients (n=45).

Among the study subjects 10 (22.20%) had stage I tumour, 21 (46.70%) had stage II tumour, 13

(28.90%) had stage III tumour and 01 (2.20%) had stage IV tumour.

Table II. Stage of the breast cancer (n=45).

Stage of the breast cancer	Number	Percentage
Stage I	10	22.20
Stage II	21	46.70
Stage III	13	28.90
Stage IV	01	2.20

Among the study subjects 24 (53.30%) underwent mastectomy and 21 (46.70%) underwent segmental resection.

Table III: Primary treatment of the patients (n=45).

Primary treatment	Frequency (n)	Percentage (%)
Mastectomy	24	53.30
Segmental resection	21	46.70

Table IV: Prevalence of Ocular manifestation

Ocular Manifestation	Number of Cases	Percentage (%)
Present	5	11.10
Absent	40	88.0

DISCUSSION

The distribution of breast cancer patients across age groups demonstrates a notable representation across the spectrum. Study results reveal a considerable concentration within the 41-60 age range, with a collective percentage of 91.20% (41-50 years: 35.60%, 51-60 years: 40%). Patients below the age of 40 and those above 60 contribute significantly less, comprising 8.90% and 15.60%, respectively. These findings align with previous research indicating a higher incidence of breast cancer in women aged 40 and older, with a peak between 50 and 69 years [8].

The educational background of the patients displays a diversified distribution, with substantial proportions in the middle educational strata. The majority possess educational qualifications up to high school (SSC: 26.70%, HSC: 22.20%), while 22.20% hold degrees beyond graduation. Lower educational attainment, represented by illiterate individuals (22.20%), and those with primary education (17.80%) form smaller segments. Such findings underscore the need for tailored health education programs targeting diverse educational levels to enhance breast cancer awareness and early detection.

The socio-economic status distribution among the patients reflects a predominant representation in the middle socio-economic group (53.30%), followed by lower (28.90%) and higher (17.80%) groups, which was quite similar to other study. These findings are indicative of a diverse patient population, emphasizing the importance of considering socio-economic factors in addressing healthcare disparities and ensuring equitable access to breast cancer treatment and management strategies [9].

The staging distribution illustrates a significant percentage across stage II (46.70%) and stage III (28.90%), reflecting the prevalence of advanced disease stages among the study cohort and quite similar to other

report [10]. This emphasizes the need for enhanced early detection programs to diagnose breast cancer at earlier, more treatable stages, potentially improving patient outcomes and reducing disease severity.

The primary treatments undertaken by patients predominantly comprise mastectomy (53.30%) and segmental resection (46.70%). This distribution highlights the varied therapeutic approaches adopted for breast cancer management within the studied cohort.

The prevalence of ocular manifestations stands at 11.10%, indicating a notable occurrence among breast cancer patients. The data underscores the importance of monitoring ocular health in these individuals, particularly considering the potential impact of various treatments on ocular complications.

In summary, the study reveals a diverse breast cancer patient population in terms of age, educational background, socio-economic status, disease stage, and treatment modalities. These findings highlight the need for comprehensive, multifaceted approaches in breast cancer care, encompassing early detection strategies, tailored treatment plans, and vigilant monitoring for potential ocular manifestations, to optimize patient outcomes and well-being.

CONCLUSION

The study delves into the multifaceted landscape of breast cancer patients, unveiling a diverse demographic distribution across age, education, socio-economic status, and disease characteristics. Concentration within the 41-60 age range aligns with established trends, while varying educational backgrounds and socio-economic statuses underscore the need for tailored healthcare approaches. The prevalence of advanced disease stages highlights the necessity for improved early detection strategies. Diverse treatment modalities emphasize personalized care. Ocular manifestations, though relatively low in

prevalence, warrant vigilant monitoring. Altogether, these insights emphasize the imperative for comprehensive, personalized approaches in breast cancer care, calling for refined early detection methods, targeted interventions, and diligent ocular health surveillance to enhance patient outcomes.

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