Scholars Journal of Applied Medical Sciences (SJAMS)
Abbreviated Key Title: Sch. J. App. Med. Sci.
ISSN 2320-6691 (Online)
ISSN 2347-954X (Print)

A Unit of Scholars Academic and Scientific Society, India
www.saspublishers.com

General Surgery

Demographic Profile of Breast Cancer at a Tertiary Care Centre Over a Three Year Period

Dr. Monalisa D'Souza[1*], Dr. Caren D'Souza[2], Dr. Leo Francis Tauro[3], Dr. Bhavya M Naik[4]
[1]Junior Resident in the Department of General Surgery, Father Muller Medical College Hospital, Mangalore, India
[2]Associate Professor in General Surgery, Father Muller Medical College Hospital, Mangalore, India
[3]Head of Department and Professor of General Surgery, Father Muller Medical College Hospital, Mangalore, India
[4]Intern in the Department of General Surgery, Father Muller Medical College Hospital, Mangalore, India

Original Research Article

***Corresponding author**
Dr. Monalisa D'Souza

Article History
Received: 01.11.2018
Accepted: 06.11.2018
Published: 30.11.2018

DOI:
10.36347/sjams.2018.v06i11.047

Abstract: Breast cancer is the leading cause of cancer in women worldwide hence it is important to understand its its demographic trends. This study has attempted to analyse the age at presentation, stage of the disease and hormone receptor status in patients with breast cancer which could help make strategies to hasten the process of diagnosis of the diasease at an early stage of the disease. This is an observational chart based study involving female patients aged above 18 years of age who were diagnosed with either invasive or in situ breast cancer. A sample size of 200 was calculated with mean age calculated as 51.74+_ 12.317 years. In our study the women with breast cancer had a maximum density in the age group of 40 to 55 years. In the age group of 25-40 years, of the 42 women diagnosed with breast cancer 25 of them belonged to stage 2 disease. In the ages between 40 to 55 years, 63 women had stage 2 diseases. Even in the age group of 55-70 and above 70 years maximum density of patients is again seen in stage 2 disease. The estrogen receptor(ER) status in women below forty years showed a ER negative trend as compared to women above 40 years which showed a ER positive trend. Progesterone receptor (PR) status in the women below forty years showed a PR positive status against women above forty years which showed a more PR negative status. The HER 2 NEU receptor study showed more HER 2 NEU negative status in both groups of women. It can be concluded that breast cancer is more aggressive in younger women. Hence the stage at presentation of the disease will help understand the disease etiology and plan management policies.
Keywords: Breast cancer, staging of breast cancer, estrogen receptor, progesterone receptor and HER2 receptor.

INTRODUCTION

Globally Breast Cancer is the leading cancer found among women. It is well known fact that cancer is an age-related disease which holds well even so in breast cancer. Breast cancer incidence has increased dramatically in many countries over the last two decades especially in developing countries, which can be attributed largely to the following factors like aging of the population, delaying the period of first pregnancy and increased intake of high-calorie Western diets [1]. The latest demographic trends show that breast cancer will become an even bigger public health issue in the coming future.

A study by Verdial F *et al.* emphasizes that there is an evident shift of the stage of the disease towards an earlier stage disease [2]. Shripan P *et al.* in his study emphasized how life style factors and the year of diagnosis impacted the incidence of breast cancer in women aged over 40 years but not in those aged less than 40 years [3]. A study by Hirko K *et al.* noted that their study results showed a steep increase in breast cancer cases from 2009 to 2015 especially among women aged 30–39 and among women aged 40–49 years. They noted that these results have an important implication for allocating limited resources of treatment available. It also mentioned that this would help plan prior interventions and make changes in the risk factors at the same stage of disease [4]. Permatasari A.Y *et al.* in their study stated that they found older women in Bali to having a higher tendency of developing a more advanced disease at the time of diagnosis [5]. Therefore this study intends to analyze the age at presentation, stage of the disease and hormone receptor status in patients with breast cancer which could help frame policies to help control and reduce the stage of this disease when diagnosed.

MATERIALS AND METHODS

This was an observational chart based study on female patients aged above 18 years of age who were diagnosed with either invasive or in situ breast cancer at Father Muller Medical College Hospital, Mangalore. The duration of study was from June 2015 to June 2018.

Data of women who were diagnosed with breast cancer during 2015-2018 were collected from the Father Muller hospital data base. Data of these patients were systematically collected and carefully verified. Database points were collected using a structured proforma with patient demographics, data of each patient with respect to the diagnosis included - age at diagnosis, stage, pathological report with immunohistochemistry marker status.

Stages of breast cancer were classified according to the extension of disease of cancer. Localized stage means tumors confined to the breast, regional stage means tumors involving axillary lymph nodes and distant stage means cancer spread to other parts of body. All women diagnosed with an invasive or in situ breast cancer in the duration of June 2015 to June 2018 were identified and noted.

Calculated sample size: Total of 200 subjects using formula $n=z^2p\ (1-p)/\ e^2$ where p=80% [3], z=1.96 at 95% C.I, e =14%. Ethical clearance was obtained from the Institutional Ethical Clearance Committee.

Inclusion criteria

Patients diagnosed with either invasive or in situ breast cancer were included in this study.

Exclusion criteria

Non-invasive breast cancer cases and recurrent breast cancer cases were excluded.

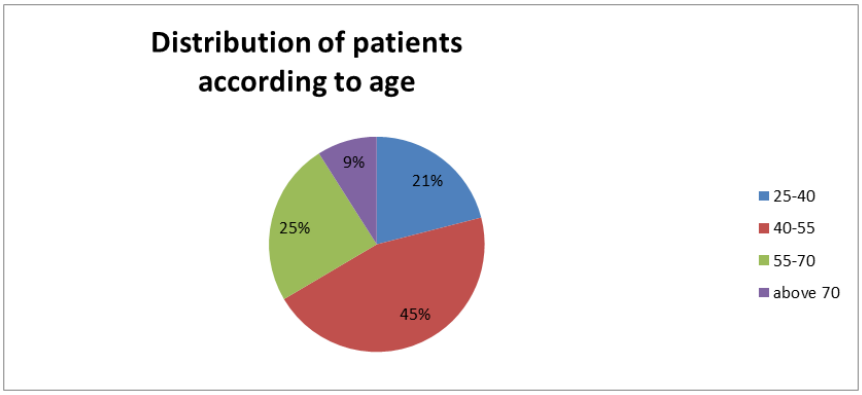
Statistical Analysis

All the parameters were assessed. Data was expressed as mean± SD, medians, frequencies, proportions or numbers (%) when appropriate. Comparison of independent numerical variables was done. All statistical analysis was done using Microsoft Excel 2016(Microsoft Corporation, NY, U.S.A) and Statistical Package for the Social Sciences (SPSS) v.23 (SPSS Inc., Chicago, IL, USA).

RESULTS AND DISCUSSION

Our study included 200 female breast cancer patients diagnosed from the year 2015 to 2018 with mean age of 51.74+_ 12.317 years. Youngest of them all is 27 years old and oldest is 86 years old. This study had more women in the age group of 40-55 years.

Age groups (years)	No of patients
25-40	42
40-55	91
55-70	49
>70	18
Total	200



The overall distribution of different stages of the breast cancer according to the age groups has been mentioned as below. Based on T, N and m criteria breast cancer has been divided into stages ranging from Stage 1 to Stage 4.

pT		pN		pTNM-Stage	
Tis	DCIS LCIS Paget nipple	pN_{1mi}	Micrometastasis > 0,2 mm to 2 mm	0	DCIS
T1 mic	≤ 0,1 cm	pN_{1a}	1-3 axillary nodes	IA	T1No
T_{1a}	≤ 0,5 cm	pN_{1b}	Internal mammary nodes with microscopic/macroscopic metastasis by sentinel node biopsy but not clinically detected	IB	To-1N1mi
T_{1b}	> 0,5 - 1 cm	pN_{1c}	1-3 axillary nodes and internal mammary nodes and internal mammary nodes with microscopic/ macroscopic metastasis by sentinel node biopsy but not clinically detected	IIA	To-1N1 T2No
T_{1c}	> 1 cm - 2 cm	pN_{2a}	4-9 axillary nodes	IIB	T2N1 T3No
T_2	> 2 cm - 5 cm	pN_{2b}	Internal mammary nodes, clinically detected, without axillary nodes	IIIA	To-2N2 T3N1-2
T_3	> 5 cm	pN_{3a}	≥ 10 axillary nodes or infraclavicular	IIIA	T4No-2 T3N1-2
T_{4a}	Extension to chest wall (does not include pectoralis muscle invasion only)	pN_{3b}	Internal mammary nodes, clinically detected, with axillary node(s) or > 3 axillary nodes and internal axillary mammary nodes with microscopic metastasis by sentinal node biopsy but not clinically detected	IIIC	anyT N3
T_{4b}	Ulceration, ipsilateral satellite skin nodules, or skin oedema - including peau d'orange.				
T_{4c}	a+b				
T_{4d}	Inflammatory ca	pN_{3c}	Supra-clavicular	IV	systemic

In our study in the age group of 25-40 years, of the 42 women diagnosed with breast cancer 25 of them belonged to stage 2 disease, with 8 each in stage 1 and 3 and only one in stage 4 disease. In the age between 40 to 55 years, 63 women had stage 2 disease and 16 had stage 3 disease. The remaining 9 and 3 belonged to stage 1 and stage 4 disease.

In the age group of 55-70 and above 70 years maximum density of patients is again seen in stage 2 disease.

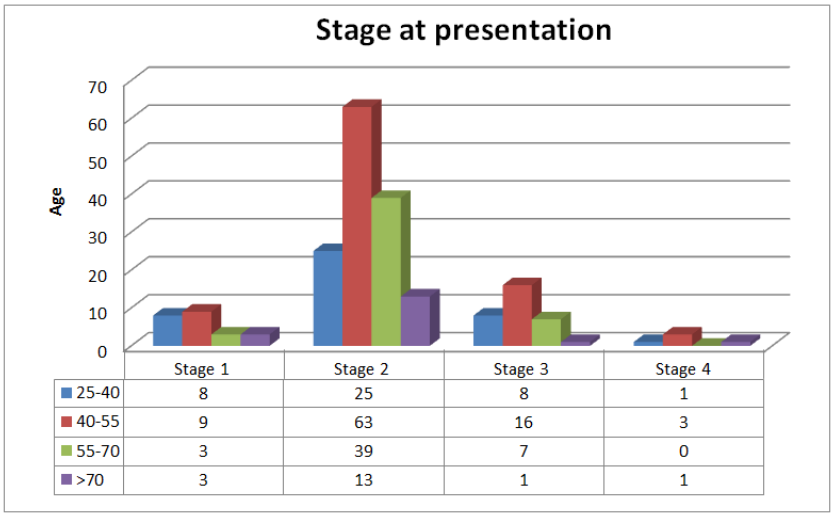


Fig-1

The estrogen receptor(ER) status in women below forty years showed a ER negative trend as compared to women above 40 years which showed a ER positive trend. The odds ratio calculated was 0.713.

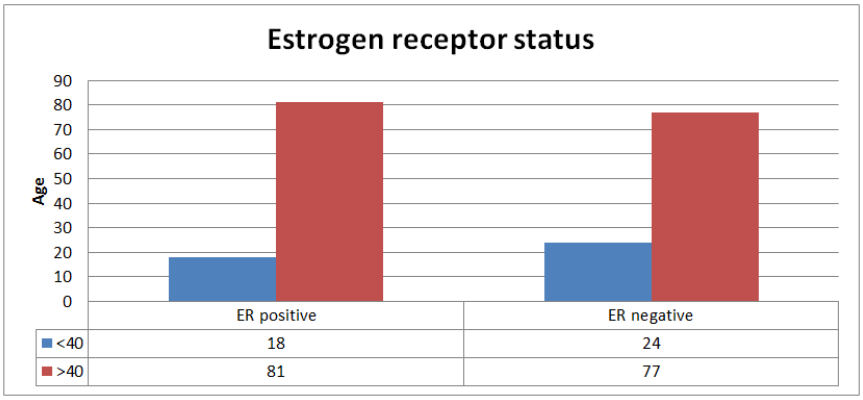


Fig-2

Progesterone receptor (PR) status in the women below forty years showed a PR positive status against women above forty years which showed a more PR negative status. Odds ratio calculated for this group was 1.1868.

The HER 2 NEU receptor study showed more HER 2 NEU negative status in both groups of women with odds ratio being 0.9683.

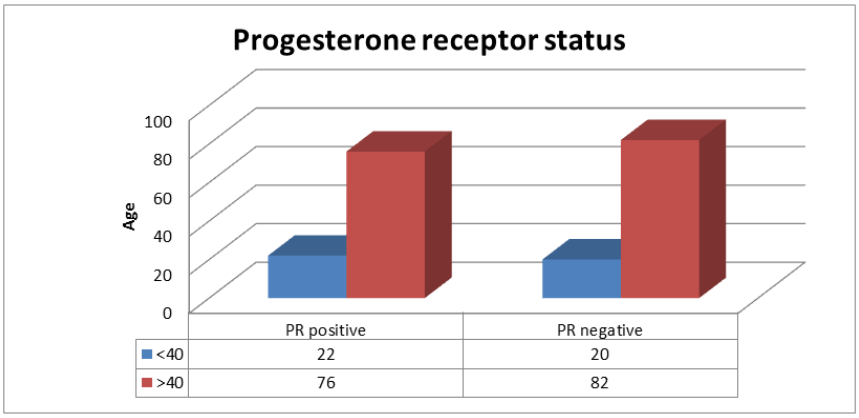


Fig-3

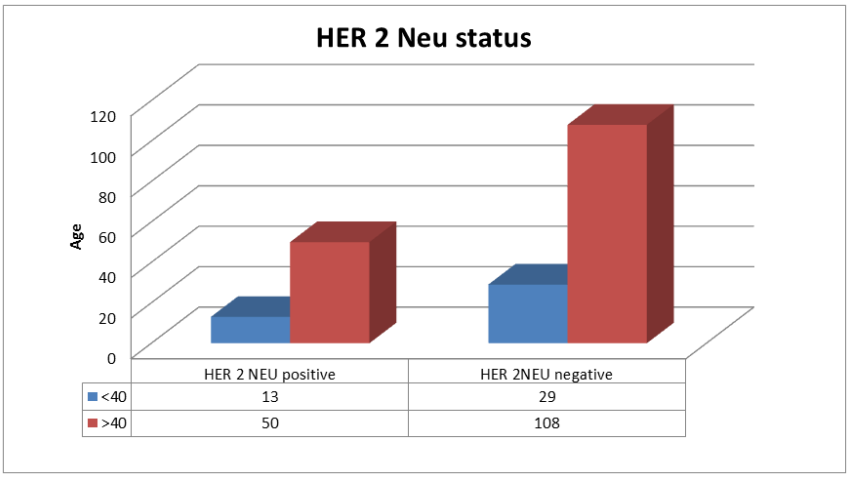


Fig-4

In our study the women with breast cancer had a maximum density in the age group of 40 to 55 years. This age group showed a predominance of stage 2 disease which is a stage of early breast cancer. This was also seen in a study by Sripan P et al. at Chiang Mai population in Thailand which showed that women in the middle aged group showed a higher rate of breast cancer disease [3]. Many studies have shown majority of their breast cancer patient group

belonging to the age group ranging from 40 to 60 years [6-9].

Stage of the breast cancer is a very important determinant for survival. Overall 50 % of cases of breast cancer in our country present at a late stage of the disease (stage III and IV)[10]. But in a developed country patients present at an early stage of the disease [11]. In our study stage 2 diseases (early breast carcinoma) was predominantly found in all age groups and the least common was stage 4 disease. In a study by Fernaandez J A *et al.* it was concluded that 39 % of the tumours detected were diagnosed in stage II disease [12]. Studies have stated that women are at a higher risk of stage II tumours which have an impact on the prognosis of the disease [13, 14]. A study by Sathwara J A *et al.* Have results showing 46% of the study population being diagnosed as an early stage of breast cancer as against the remaining 54% who were diagnosed as late stage disease. But the age at the time of diagnosis was found to be statistically insignificant with the stage of presentation in their study [15].

Sofi GN *et al.* in his study mentioned that of his study population 61 (60.4%) cases were both ER and PR positive. 31 (30.7%) cases were both ER and PR negative. Hence he concluded that ER and PR positivity was increasing with rising age unlike our study which shows varied results in women below and above the age of 40 years [16]. In another study by Saadatman S *et al* it was calculated that Estrogen receptor was negative in 17% and positive in 82% of their study population, progesterone was negative in 32% and positive in 64% and HER 2 status was negative in 81% and positive in 13%.[17]. In our study we compared the receptor positivity with age at diagnosis but got varied results. It was found that younger patients were less likely to be ER positive as compared to older patients which was in accordance to a study done by Dunnwald LK *et al* only with respect to ER status [18]. It can be concluded from our study that age is not strongly associated with ER/PR status which is in accordance to a study by McCormack VA *et al.* [19]. According to a study by Pourzand A *et al.* It was concluded that younger women below 40 years were to have progesterone receptor positive tumors which is in contrast to our study's finding that older women above 40 years were more likely ER PR positive and HER 2 negative followed by ER PR negative and HER 2 negative status [20].

CONCLUSION

Thus it can be concluded that breast cancer is more aggressive in younger women and that the stage at diagnosis of breast cancer is very important to help downstage the disease. Hence the stage at presentation of the disease will help reduce variations in the disease presentation and help understand the disease etiology. Optimization of health care work is an urgent need of the hour. This needs to be attended to in the future by increasing the knowledge and awareness among the women by organizing more health campaigns. In addition there is a need to know how awareness about the disease could help procure the existing treatment facilities at the earliest. Hence there is a need of a more rational cost effective public health research to plan better treatment protocols.

REFERENCES

1. Stewart BW, Wild CP. World Cancer Report. *IARC Press.* 2014.
2. Francys C. Verdial, Ruth Etzioni, Catherine Duggan and Benjamin O Anderson. Demographic changes in breast cancer incidence, stage at diagnosis and age associated with Population-based mammographic screening. *J Surg Oncol*. 2017; 115(5): 517–522.
3. Patumrat Sripan, Hutcha Sriplung, Donsuk Pongnikorn, Shama Virani. Trends in Female Breast Cancer by Age Group in the Chiang Mai Population. *Asian Pac J Cancer Prev.* 18 (5): 1411-1416.
4. Hirko KA, Soliman AS, Hablas A, Seifeldin IA, Ramadan M, Banerjee M, Harford JB, Chamberlain RM, Merajver SD. Trends in breast cancer incidence rates by age and stage at diagnosis in gharbiah, Egypt, over 10 years (1999–2008). Journal of cancer epidemiology. 2013;2013.
5. Permatasari AY, Prayudi PK, Adiputra PA. Trend in diagnosis and treatment of breast cancer in elderly of Balinese population: Analysis of the local cancer registry. Journal of geriatric oncology. 2014 Jul 1;5:S10.
6. Brandt J, Garne JP, Tengrup I, Manjer J. Age at diagnosis in relation to survival following breast cancer: a cohort study. World journal of surgical oncology. 2015 Dec;13(1):33.
7. Risendal B, Hines LM, Sweeney C, Slattery ML, Giuliano AR, Baumgartner KB, Curtin K, Byers TE. Family history and age at onset of breast cancer in Hispanic and non-Hispanic white women. Cancer Causes & Control. 2008 Dec 1;19(10):1349-55.
8. Dalton SO, Düring M, Ross L, Carlsen K, Mortensen PB, Lynch J, Johansen C. The relation between socioeconomic and demographic factors and tumour stage in women diagnosed with breast cancer in Denmark, 1983–1999. British journal of cancer. 2006 Sep;95(5):653.
9. Santos SD, Melo LR, Koifman RJ, Koifman S. Breast cancer incidence and mortality in women under 50 years of age in Brazil. Cadernos de saude publica. 2013;29:2230-40.
10. Chopra R. The Indian scene. Journal of clinical oncology: official journal of the American Society of Clinical Oncology. 2001 Sep;19(18 Suppl):106S-11S.

11. Agarwal G, Ramakant P. Breast Cancer Care in India: The Current Scenario and the Challenges for the Future. *Breast Care.* 2008;3(1):21-7.
12. Baeyens-Fernández JA, Molina-Portillo E, Pollán M, Rodríguez-Barranco M, Del Moral R, Arribas-Mir L, Ramírez ES, Sánchez MJ. Trends in incidence, mortality and survival in women with breast cancer from 1985 to 2012 in Granada, Spain: a population-based study. BMC cancer. 2018 Dec;18(1):781.
13. Abdoli G, Bottai M, Sandelin K, Moradi T. Breast cancer diagnosis and mortality by tumor stage and migration background in a nationwide cohort study in Sweden. The Breast. 2017 Feb 1;31:57-65.
14. Smith DR, Caughran J, Kreinbrink JL, Parish GK, Silver SM, Breslin TM, Pettinga JE, Mehringer AM, Wesen CA, Yin H, Share D. Clinical presentation of breast cancer: Age, stage, and treatment modalities in a contemporary cohort of Michigan women. Journal of Clinical Oncology. 2011 Sep 20;29(27_suppl):1-.
15. Jignasa Amrutlal Sathwara, Ganesh Balasubramaniam, Saurabh C Bobdey, Aanchal Jain, and Sushama Saoba. Sociodemographic Factors and Late-stage Diagnosis of Breast Cancer in India: A Hospital-based Study. *Indian J Med Paediatr Oncol*. 2017; 38(3): 277–281.
16. Sofi GN, Sofi JN, Nadeem R, Shiekh RY, Khan FA, Sofi AA, Bhat HA, Bhat RA. Estrogen receptor and progesterone receptor status in breast cancer in relation to age, histological grade, size of lesion and lymph node involvement. Asian pacific journal of cancer prevention. 2012;13(10):5047-52.
17. Saadatmand S, Bretveld R, Siesling S, Tilanus-Linthorst MM. Influence of tumour stage at breast cancer detection on survival in modern times: population based study in 173 797 patients. Bmj. 2015 Oct 6;351:h4901.
18. Dunnwald LK, Rossing MA, Li CI. Hormone receptor status, tumor characteristics, and prognosis: a prospective cohort of breast cancer patients. Breast cancer research. 2007 Feb;9(1):R6.
19. McCormack VA, Joffe M, van den Berg E, Broeze N, dos Santos Silva I, Romieu I, Jacobson JS, Neugut AI, Schüz J, Cubasch H. Breast cancer receptor status and stage at diagnosis in over 1,200 consecutive public hospital patients in Soweto, South Africa: a case series. Breast Cancer Research. 2013 Oct;15(5):R84.
20. Pourzand A, Fakhree MB, Hashemzadeh S, Halimi M, Daryani A. Hormone receptor status in breast cancer and its relation to age and other prognostic factors. Breast cancer: basic and clinical research. 2011 Jan;5:BCBCR-S7199.