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Breast cancer epidemiological prospects in South Sindh, Pakistan

Abstract

Objectives: The main purpose of this epidemiological research was to determine and to establish the presentation of carcinoma of breast with laterality, quadrant and receptor status reported at Nuclear Institute of Medicine And Radiotherapy (NIMRA), Jamshoro Pakistan.

Background: Breast cancer is credited to highest mortality rate across the world and nearly more than 50 thousand women die every year due to carcinoma of the breast in Pakistan. This study was initiated to chalk out the presentation of the breast cancer in the visited masses.

Methodology: This study was set up to assess the patient of breast cancer reported at Nuclear Institute of Medicine And Radiotherapy (NIMRA), Jamshoro Pakistan during last 02 years (2017-2018) with breast laterality and the location of carcinoma arose in the quadrants. Total 281 females were included in this study and the data was analyzed with SPSS-17 software.

Results: The mean age of cases reported was 43.33±9.92. In 281 females, 145 (51.60%) females presented with left sided whereas 136 (48.30%) reported with right sided carcinoma of breast. The proportion of left breast cancer to right breast cancer among patients was slightly higher (1.066:1.000). In both breasts, the most affected site was upper outer quadrant whereas upper inner quadrant was least affected site.

Conclusion: The right sided carcinoma of breast has a little bit lower incidence than left sided breast carcinoma but had an early appearance and a violent behavior.

Keywords: breast quadrant, Pakistani women, laterality, receptor negativity

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Abbreviations: NIMRA, nuclear institute of medicine & radiotherapy; BC, breast carcinoma; ER, estrogen receptor; PR, progesterone receptor

Introduction

Universally among females, the breast carcinoma is the most commonly diagnosed cancer.[1] During 1975-1990, a hasty increasing trend has been seen in annual occurrence rate of breast cancer (BC) in Asian and African than North American and European women.[2] Among Pakistani women the incidence of BC has been reported as 17% between 2006 and 2009[3] and is the top most among cancers in females as reported by the researchers from Sindh Pakistan.[4] Anatomically and physiologically, the paired organs in human body may exhibit asymmetry which may lead the laterality of cancer in paired organs.[5] Many researchers[6–8] have explored the higher incidence of BC on left side without giving any clarification and valid reason.[7] The study[5] done on incidence of cancer on either side in paired organs reveals that at younger age, the occurrence of right sided BC is more dominant than left sided, however there is no considerable evidence have been seen that for left sided BC in Japanese residents due to diverse sleeping habits.[9] The purpose of this study is to find out the laterality of carcinoma of breast and status of receptor for primary tumor in local population.

Materials and methods

This was a retrospective study included the cases of BC from January 2017 to December 2018 referred to Nuclear Institute of Medicine And Radiotherapy (NIMRA), Jamshoro Pakistan. A number of 281 female patients having either side BC were included in our study. Detailed history of masses including age, laterality, quadrant of affected breast, family history for BC in first degree relatives, menarche, menstrual history, menopause, lactation and status of receptors (estrogen receptor (ER), progesterone receptor (PR) and HER-2-Neu) were acquired. The consent was obtained from each female which was under study and the ethical committees of NIMRA Jamshoro approved the current study. The studied cases were divided into two groups based on laterality, 145 (51.6%) subjects with left BC and remaining 136 (48.4%) were with right BC.

Statistical analysis

Data was analyzed by using the statistical software for social sciences (SPSS version 17). Comparisons between two groups (Left vs right sided BC) were carry out using Student's t test. Continuous variables were described by mean±standard deviation (SD).

Results

The demographic distribution of subjects is illustrated in Table 1 and their graphically represented age-wise and laterality in Figures 1&2. The proportion of left to right sided BC is minutely higher (51.60%:48.40%). The females with right sided carcinoma of breast were higher in younger age group than the left sided BC (Table 1). ER, PR, HER-2-Neu status of subjects has been summarized in Table 2 and their graphically demonstration has been shown in Figure 3. The location wise distribution of tumor has been illustrated in Figure 4&5.

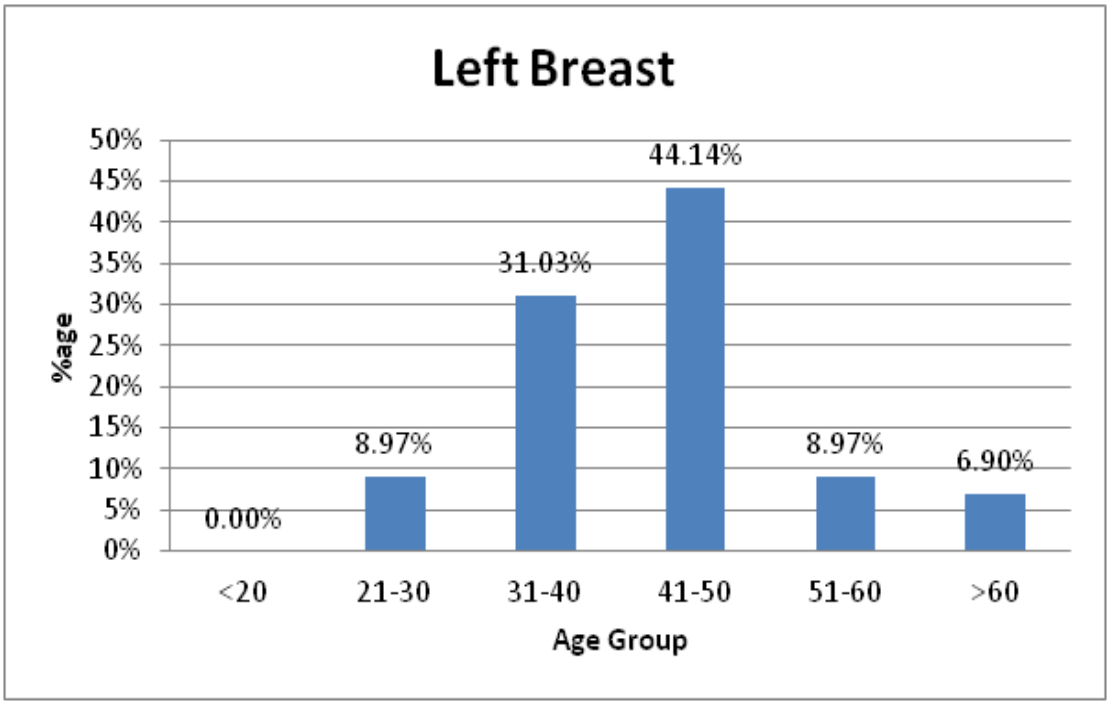

Figure 1 Age-wise Distribution of Incidence of BC (Left) in Study Population.

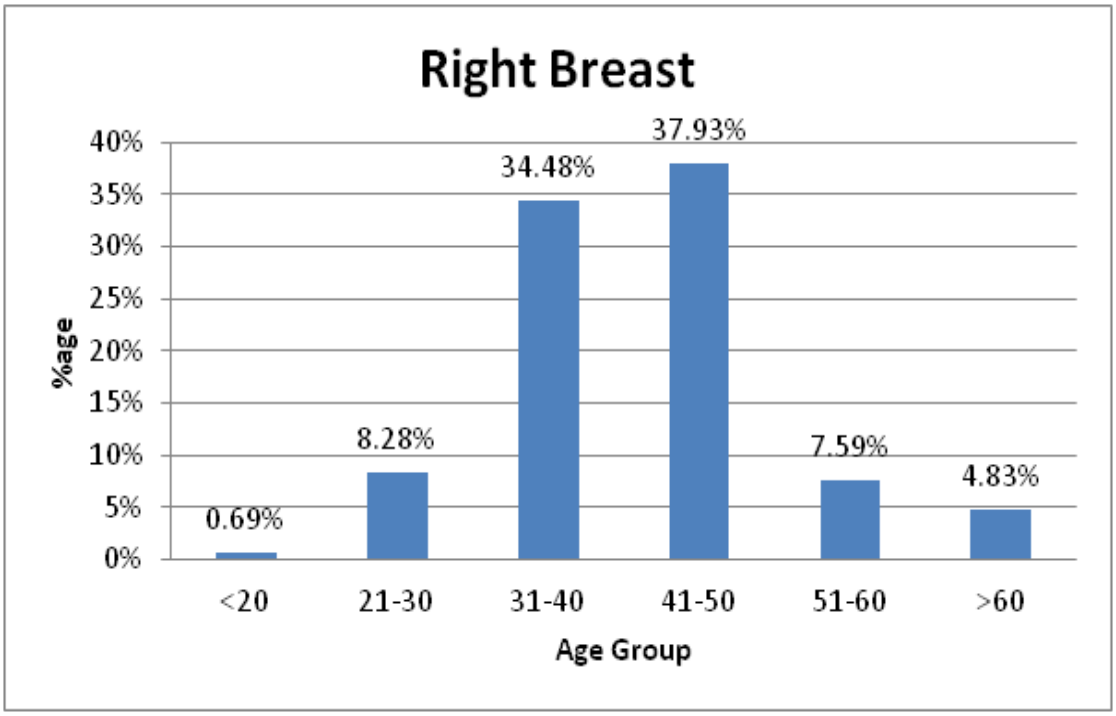

Figure 2 Age-wise Distribution of Incidence of BC (Right) in Study Population.

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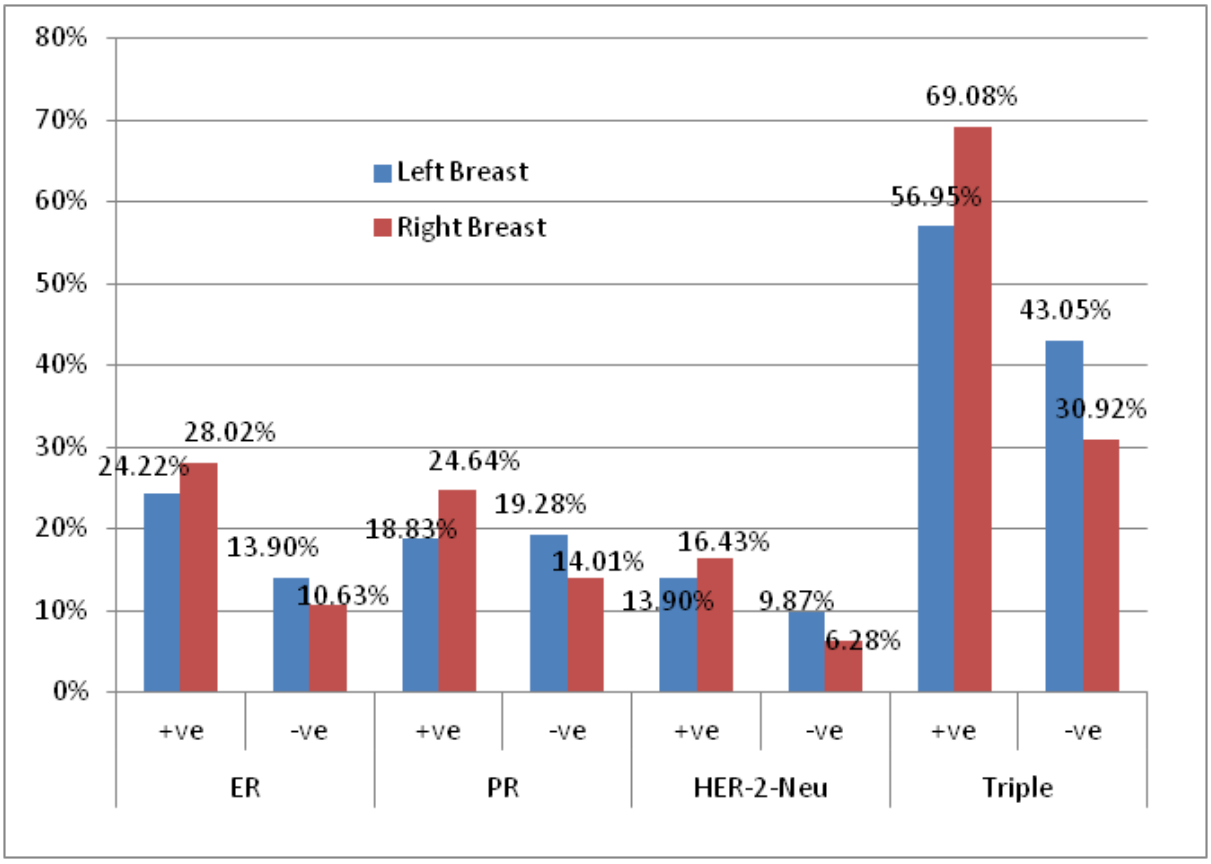

Figure 3 Graphical presentation of ER, PR, HER-2-Neu Status of patients.

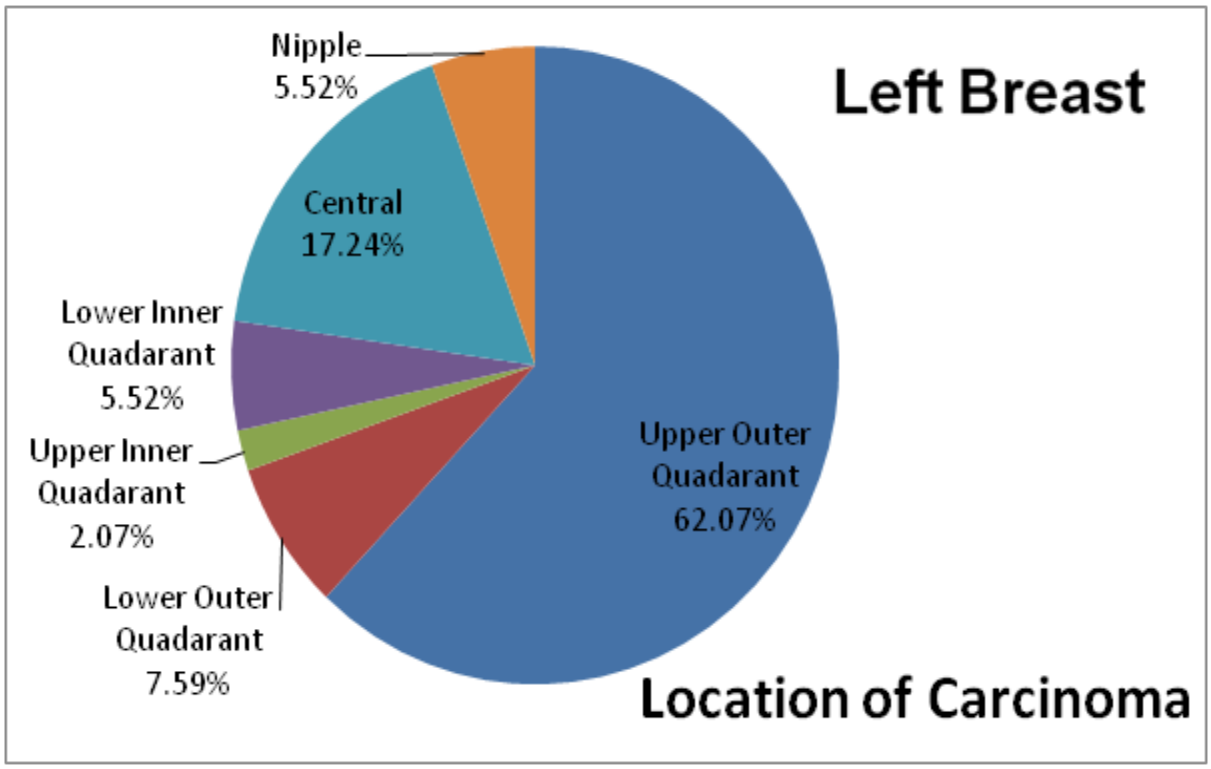

Figure 4 Graphical presentation of percentage-wise distribution of location of BC in Left Breast.

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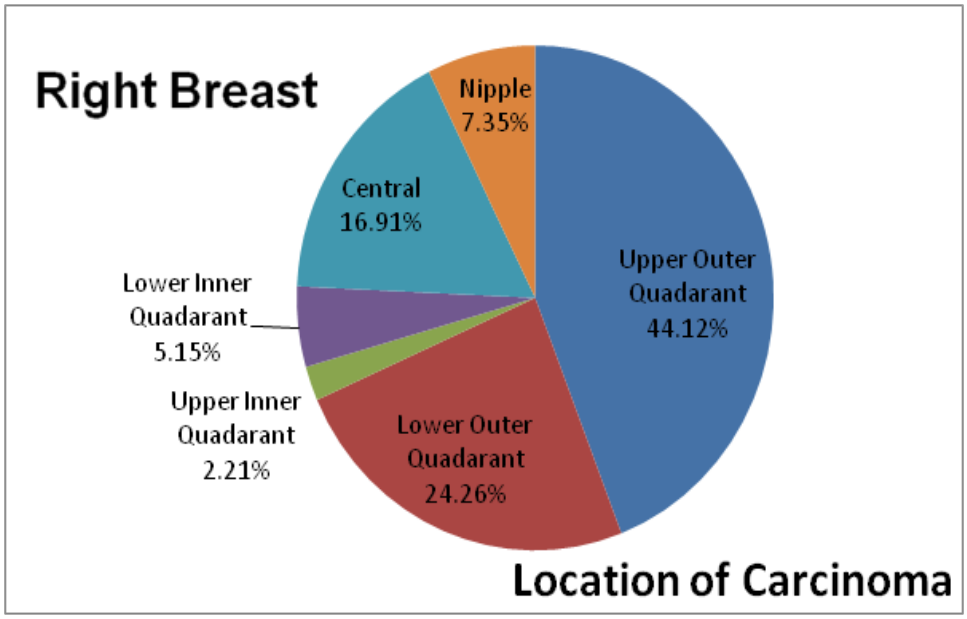

Figure 5 Graphical presentation of percentage-wise distribution of location of BC in Right Breast.

Table 1 Demographic distribution of studied population

	Variable	Total Ca breast	Ca left breast	Ca right breast
	Age (Mean±SD)	43.33±9.92	43.95±10.07	42.68±9.76
Site/ Quadrant	Upper Outer	151 (53.74%)	90 (62.07%)	60 (44.12%)
	Lower Outer	42 (14.95%)	11 (7.59%)	33 (24.27%)
	Upper Inner	06 (2.14%)	03 (2.07%)	03 (2.21%)
	Lower Inner	15 (5.34%)	08 (5.52%)	07 (5.15%)
	Central	49 (17.43%)	25 (17.24%)	23 (16.91%)
	Nipple	18 (6.41%)	08 (5.52%)	10 (7.35%)
	SD=Standard Deviation			

Table 2 ER, PR, HER2-Neu status of patients

	Left		Right	
	+ve	-ve	+ve	-ve
ER	54	31	58	22
PR	42	43	51	29
HER-2-Neu	31	22	34	13

Discussion

The incidence of BC in Pakistani females was highest among other Asian countries[10] which were supported by another research.[4] The maximum incidence of BC in studied females was found between 30-50 years which is relatively a younger age as compared to the developed countries.[11] Some studies have shown that the incidence of early BC was more common in African-American females than white American females[12] and this was because of possible role of genetic factor associated with early BC in black and probably Pakistani females as well. In this study the panorama of left sided breast carcinoma is somewhat higher than the right and is in accordance with reputable and well documented facts point out by various researchers.[13–15] The reason behind of amplified risk of cancer of left breast is unclear[7] but few studies have correlated it with comparatively large sized left breast as well as unilateral lactation[16] or denser left breast.[17] The current study also uncovered that females having BC of right side were younger than those females having left sided carcinoma and this is harmonized with a range of published studies showing left laterality was more evident at higher ages.[18,19]

Interestingly in our study, the BC of left side is dominant and there is more tendency to have triple negative as well as ER, PR and Her-2-Neu negativity independently, but the previous study[15] showed totally disagreement with our data and amazingly verified the BC right side was common at younger age as in our study did. The appearance of disease in landmark of breast also plays an important role as most of disease appeared in upper outer quadrant (50%) followed by central area (20%), upper inner (15%), lower outer (10%) and lower inner (5%) quadrants.[20] Our study shows that in left breast upper outer quadrant (62.07%) is the most affected site followed by central (17.24%), then lower outer (7.59%), lower inner (5.52%), nipple (5.52) and upper inner (2.07%) respectively whereas in right breast, the upper outer quadrant (44.12%) is also most affected site as in left breast followed by lower outer (24.26%), then central (16.91%), nipple (7.35%), lower inner (5.15%) and upper inner (2.21%) respectively. This may be because of insufficient/ biased collected data.

Conclusion

We conclude that right sided BC has a little bit lower incidence than left sided disease but has an aggressive behavior and earlier appearance in younger age.

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Conflict of interest

Authors declared that there is no conflict of interests for current study.

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