

Breast Carcinoma and Its Relation to Risk Factors - An Original Study

Faiz Hussain*, S.R.K. Prakash Rao**, Shazia Parveen**

*Department of General Surgery, Kamineni Institute of Medical Sciences

Abstract- Breast is the second commonest site involved by cancer in Indian women. It is the commonest cause of death in many developed countries in middle aged women and is becoming frequent in developing countries. Breast cancer is probably the most feared cancer in women because of its frequency and its psychological impact. Psychological trauma has lessened in recent years because of earlier diagnosis, more treatment options, the greater availability of reconstruction and rehabilitation programs including psychological counseling. The present study is the study of the risk factors (modifiable and non modifiable) in a rural population in south India

Index Terms- Breast cancer, risk factors and rural population.

INTRODUCTION

Breast is the second commonest site involved by cancer in Indian women. It is the commonest cause of death in many developed countries in middle aged women and is becoming frequent in developing countries. Breast cancer cause 3,76,000 deaths worldwide per year. About 9,00,000 women are diagnosed every year with the disease, more than half of it occurring in the industrialized countries.¹

Historical aspects of breast tumours were suggested by many authors in the literature. Of which, Ebers Papyrus Egypt in 1600 BC is the famous person who first diagnosed breast tumours. He suggested treatments that included heat cauterization with "fire drill," and excision by knife. Hippocrates (460-377 B.C.) made references to breast cancer, providing detailed descriptions of its effects. Leonides of Alexandria in 1st century, he used extensive cauterization, along with a knife, in amputating breast.²

International variation in both incidence and mortality is one of the striking features of breast cancer; rates are high in USA, Scotland, Australia, Canada and certain parts of Western Europe and very low in Japan, India and some areas of Africa.³

Breast cancer is probably the most feared cancer in women because of its frequency and its psychological impact. It affects the perception of sexuality and self image to a degree far greater than any other cancer. Psychological trauma has lessened in recent years because of earlier diagnosis, more treatment options, greater availability of reconstruction and rehabilitation programs including psychological counseling.¹

Numerous clinical studies have demonstrated statistical relationship with certain risk factors.

Hence, the present study focuses on the overall incidence of carcinoma breast in patients aged above 35 years reported with a

lump in the breast, risk factors involved and to analyze the native policy of the treatment.

MATERIAL AND METHODS

The present study was conducted at Kamineni Institute of Medical Sciences & Hospital, Narketpally.

(a) Type of study: Retrospective case control study

(b) Inclusion Criteria: All female patients above 35 yrs of age reporting with lump in the breast.

The study comprised of 50 patients with a lump in the breast and 50 controls. A detailed history, physical, general and local examination, routine hematological and cytohistopathological examination was done to all 50 patients with the complaint of lump in the breast. Patients above 35 years with no personal or family history of breast disease and from similar socio economic status were taken as controls after they were subjected to general, physical and local examination. Cases were compared with controls and results and observations were tabulated statistically using odds ratio.

RESULTS AND OBSERVATION

Following are the results that are observed under the following headings:

1. Incidence.
2. Age distribution.
3. Age at menarche.
4. Age at menopause.
5. Parity status.
6. Breast feeding.
7. Oral contraceptive pills.
8. Hormone replacement therapy.
9. Obesity.
10. Benign breast disease.
11. Family history
12. Staging.
13. Treatment.
14. Pathology.

INCIDENCE:

In the present study women above 35 yrs with lump in the breast were examined clinically & cytopathologically. As shown in TABLE- 1, of the 50 cases, 23 (46%) women were found to have benign lumps, 27 (54%) women had malignant lumps. The percentage of malignant lumps was observed to be higher than the benign lumps.

AGE DISTRIBUTION:

The age wise distribution of carcinoma breast as shown in TABLE -2 shows highest incidence of 29.62 % between the age group of 46-50yrs ,this followed by age group of less than 35yrs showing 22.22%,between the age group of 56-60 yrs 18.51% of cases were observed. Beyond 60 yrs the percentage has decreased. Age greater than 65 yrs showed 3.70 % of cases.

AGE AT MENARCHE:

As shown in TABLE – 3, early menarche at less than or equal to 11 yrs was observed in 70.37% of patients. Age between 12-14 yrs was seen in 18.51 % of patients. Late menarche was seen in 11.11 % of patients.

AGE AT MENOPAUSE:

Age at menopause as shown in TABLE -4 showed menopause beyond 55yrs in 60% of patients, followed by 25% in age group between 50 – 55 yrs. Women attaining menopause between 40- 44 yrs were 18.75 %. Women less than 40 yrs were only 1 (6.25%)

PARITY STATUS:

As shown in TABLE -5 of the 27 cases with malignant lump, 6 women were nulliparous , in this 4 women were married nulliparous and 2 were unmarried women. 21 women were multiparous.

AGE AT FIRST PREGNANCY:

In the present study as shown in TABLE -6 , 71.42 % of women had their first pregnancy below 20 yrs of age , 19.04 % had between 20-24yrs .Late age at first pregnancy at or beyond 30 yrs was observed in 9.54% of women .

BREAST FEEDING:

As shown in TABLE -7 in the present study of 27 cases 21(77.78 %) of women had breast fed their children for a duration of one and half to two years for each child. 6 women(22.22%) had not breast fed, all these 6 women were nulliparous females in this study group.

ORAL CONTRACEPTIVE PILLS:

As shown in TABLE -8 only 7.40% of women had used Oral contraceptive pills, the duration of use in these women was less than one year and irregularly used.92.60 % of women had never used Oral contraceptive pills.

HORMONE REPLACEMENT THERAPY:

In this study as shown in TABLE – 9 only one woman had used hormone replacement following Hystectomy, the

duration of use was for six months .The remaining 96.30 had no history of use of hormone replacement therapy

OBESITY:

In the present study as shown in TABLE – 10 Body mass index (BMI) greater than 25 Kg/cm2 was seen in 33.33% of women, BMI less than or equal to 25 kg/cm2 was seen in 66.67% of women .The obesity pattern was observed in relation to menopausal status as shown in TABLE –11, 77.77% women with BMI greater than 25 Kg/cm2 were postmenopausal and 22.23% of women were pre menopausal.

BENIGN BREAST DISEASE:

In the present study as shown in TABLE -12, 88.88% of women had no history of benign breast disease (BBD). 11.12% of women gave history of BBD suggestive of Fibroadenosis. The patients had no cytohistological report suggestive of this.

FAMILY HISTORY:

In the present study no women had family history of breast cancer, as shown in the TABLE -13, the percentage of women with no family history are 100%

STAGING:

The clinical stage of presentation as per TNM stage grouping is shown in TABLE -14 .44.44% of patients are in stage IIB of TNM staging at diagnosis, 25.92% are in stage IIIB. Stage IIA & III A is 14.81 % each. No cases were recorded with stage IIIC or stage IV of TNM staging

TREATMENT:

As shown in TABLE -15 all the patients with breast cancer underwent Modified radical mastectomy. All the 27 patients received tamoxifen post operatively irrespective of ER/PR status. Four patients with stage IIA disease did not receive radiation therapy. The remaining 23 patients received radiation therapy post operatively. Four patients were found to be ER/PR negative received chemotherapy in addition to hormonal and radiotherapy. The regimen used for chemotherapy was CMF regimen.

HISTOPATHOLOGY:

In the present study the histopathological examination of all breast carcinoma showed pathologically the tumour to be of Ductal cell type as shown in TABLE -16.

**TABLE 1
INCIDENCE OF BREAST LUMP IN WOMEN OVER
35YRS (N = 50)**

Type	Number of patient's n (%)
Benign	23 (46)

Malignant	27 (54)
Total	50

Parity status	Number of patient's n (%)
Nulliparous	6 (22.22)
Multiparous	21 (77.78)

TABLE 2
AGE WISE DISTRIBUTION OF CARCINOMA BREAST
(N = 27)

Age group	Number of patient's n (%)
< 45 yrs	6 (22.22)
46-50 yrs	8 (29.62)
51-55yrs	3 (11.11)
56-60 yrs	5 (18.51)
61-65yrs	4 (14.81)
>65yrs	1 (3.70)

TABLE 6
AGE AT FIRST PREGNANCY
(N = 21)

Age group	Number of patient's n (%)
<20yrs	15 (71.42)
20-24yrs	4 (19.04)
25-29yrs	0
≥30yrs	2 (9.54)

TABLE 3
AGE AT MENARCHE
(N = 27)

Age group	Number of patient's n (%)
≤ 11yrs	19 (70.37)
12-14yrs	5 (18.51)
≥ 15yrs	3 (11.11)

TABLE 7
PATTERN OF BREAST FEEDING
(N = 27)

Feeding pattern	Number of patient's n (%)
Not feed	6 (22.22)
feed	21 (77.78)

TABLE 4
AGE AT MENOPAUSE
(N = 16)

Age group	Number of patient's n (%)
<40 yrs	1 (6.25)
40-44 yrs	3 (18.75)
44-49 yrs	2 (12.50)
50-54 yrs	4 (25.00)
≥55 yrs	6 (60.00)

TABLE 8
USE OF ORAL CONTRACEPTIVE PILLS (OC)
(N = 27)

OC PILLS	Number of patient's n (%)
Used	2 (7.40)
Not used	25 (92.60)
Total	27

TABLE 5
PARITY STATUS
(N = 27)

TABLE 9
USE OF HARMONE REPLACEMENT THERAPY (HRT)
(N=27)

HRT	Number of patient's n (%)
Used	1 (3.70)
Not used	26 (96.30)
Total	27

TABLE 10

OBESITY
(N = 27)

BMI of patient	Number of patient's
BMI ≥25 Kg/cm2	9 (33.33)
BMI <25 Kg/cm2	18 (66.67)

TABLE 11
OBESITY PATTERN & MENOPAUSAL STATUS
(N = 9)

Status of patient	Number of patient's n (%)
Post menopausal obesity	7 (77.77)
Pre menopausal obesity	2 (22.23)

TABLE 12
HISTORY OF PRIOR BENIGN BREAST DISEASE (BBD)
(N=27)

BBD	Number of patient's n (%)
Without BBD	24 (88.88)
With BBD	3 (11.12)

TABLE 13
FAMILY HISTORY
(N = 27)

Family history	Number of patient's n (%)
Absent	27 (100.00)
Present	-
Total	27

TABLE 14
STAGE OF THE DISEASE AS PER AJCC STAGING¹⁰
(N = 27)

Stage of the disease	Number of patient's n (%)
Carcinoma in situ	0
I	0
IIA	4 (14.81)
IIB	12 (44.44)

IIIA	4 (14.81)
IIIB	7 (25.92)
IIIC	0
IV	0

TABLE 15
TREATMENT GIVEN
(N = 27)

Mode of treatment	Number of patient's
Neo Adjuvant Chemotherapy	0
Surgery + hormonal	27
Surgical+ hormonal + radiotherapy	23
Surgery + Hormonal +Radiotherapy +chemotherapy	4

TABLE 16
PATHOLOGICAL TYPE OF BREAST CANCER
(N = 27)

Histopathological type	Number of patient's n (%)
Ductal carcinoma	27 (100.00)
Lobular carcinoma	-

DISCUSSION

AGE GROUP:

In the present study as shown in TABLE – 17, maximum (29.62%) numbers of patients were in age group of 46-50 yrs, 22.22% of patients were in the age group less than 40 yrs, followed by 18.51% in age group of 56- 60 yrs. In a Study by A. Goel & North American Association by American cancer society showed similar age group with maximum number of cases. U.K breast cancer statistics showed 51-55yrs as the age group with maximum percentage of cases.^{4, 5, 6}

AGE AT MENARCHE:

The age at menarche was compared using statistical odds ratio, the present study (TABLE – 18) showed odds ratio of 5.4 at age less than or equal to 11 yrs, 12- 14yrs showed odds ratio 0.3. Age greater than 15 yrs showed odds ratio of 0.12. The present study showed five times the increased risk with early age at menarche. A Study by Mandana E & Chi –Ling Chen also showed similar results. However in comparison with other

studies the risk is higher in the present group probably because of other associated risk factors.^{7,8}

AGE AT MENOPAUSE:

Age at menopause was compared using statistical odds ratio ,as shown in TABLE – 19, age less than 40 yrs showed odds ratio of 0.8,40 – 44yrs showed odds ratio of 1.26,age greater than 55yrs showed odds ratio of 2.21.Increased age at menopause showed 2 times the increased risk. A study by Linda Titus also showed similar results.⁹

AGE AT FIRST PREGNANCY:

Age at first pregnancy was compared using statistics odds ratio. In the present study as shown in TABLE – 20, for age less than 20 yrs, an odds ratio of 1.52, 20-24 yrs showed odds ratio of 1.60, age at first pregnancy greater than 30 yrs showed odds ratio of 4.82. Late age at first pregnancy showed 4 times the increased risk. The observations in this study are comparable to study by Mandana E.⁷

PARITY:

Parity was compared using statistical odds ratio. As shown in TABLE- 21 nulliparous women showed four times the increased risk (OR 4.47) in comparison with parous women with odds ratio of 0.22. In comparison to studies by Chi –Ling Chen & Mandana E, the risk is comparatively greater, as these women have other associated risk factors.^{7,8}

BREAST FEEDING:

Breast feeding pattern was compared using statistical odds ratio. As shown in TABLE – 22 women who did not breast fed were at four times the increased risk (OR 4.47) in comparison to women who breast fed with odds ratio 0.22.This is in accordance with the study done by Linda Titus Ernstoff, however in this study the calculated risk is significantly higher as 6 out of 21 cases were nulliparous females who did not breast fed.⁹

OBESITY:

In the present study (TABLE -23) patient with BMI less than 21.5 Kg/cm2 had odds ratio of 0.3, BMI between 25.5-29.5 Kg/cm2 showed odds ratio of 1.3, BMI greater than 29.25 Kg/cm2 showed odds ratio of 1.4. , the above results show women with BMI greater than 29.25 have 1.4 times the risk to that women with BMI 21.5 Kg/cm2 . The study by Linda Titus Ernstoff , Chi-Ling Chen showed similar result.^{8,9}

FAMILY HISTORY OF BREAST CANCER:

In present study no patient had family history, as all the cases could be sporadic in the present population.

OC PILLS & HORMONE REPLACEMENT THERAPY:

In the present study patients were from rural background, with limited knowledge on use of OC pills & hormone replacement therapy, as only 3 cases recorded its use

for very short duration & its association as a risk factor cannot be commented.

Benign breast disease was excluded from this study after the confirming histopathologically where the aim of the present study was to compare between the malignancy and risk factors.

STAGING AND TREATMENT:

In the present study group, patients at the time of diagnosis showed II B (44.44%) of TNM and 25.92% of patients showed stage III B whereas II A and IIIA showed 14.81% respectively. All the patients were subjected to Modified Radical Mastectomy (MRM) with hormonal therapy. These patients were further referred for radiotherapy and chemotherapy to higher centers based on their pathological TNM staging. However, these patients could not be followed up.

**TABLE 17
COMPARISON OF AGE GROUP**

Age group	Present study	American cancer society	U.K breast cancer research	A.Goel
≤ 45 yrs	22.22%	3%	20%	10%
46-50 yrs	29.62%	30%	25%	40%
51-55yrs	11.11%	10%	32%	20%
56-60 yrs	18.51%	23%	16%	15%
61-65yrs	14.81%	20%	5%	10%
>65yrs	3.70%	14%	2%	5%

**TABLE 18
COMPARISON OF AGE AT MENARCHE IN
ODDS RATIO (OR)**

Age group	Present study		OR	Mandana E (OR)	Chi-ling Chen (OR)
	Cases N=27	Controls N=50			
≤11yrs	19	15	5.4	1.49	1.0
12-14yrs	5	22	0.3	1.27	0.82
≥ 15yrs	3	13	0.12	1.02	0.58

TABLE 19
COMPARISION OF AGE AT MENOPAUSE IN
ODDS RATIO (OR)

Age group	Present study			Linda Titus Ernstoff (OR)
	Cases N=16	Controls N= 26	OR	
<40 yrs	1	2	0.8	1.00
40-44 yrs	3	4	1.26	1.32
45-49 yrs	2	2	1.71	1.60
50-54 yrs	4	5	1.83	1.82
≥ 55 yrs	6	10	2.21	2.01

TABLE 20
COMPARISION OF AGE AT FIRST PREGNANCY IN
ODDS RATIO (OR)

Age group	Present study			Mandana E (OR)	Chi-ling Chen (OR)
	Cases N=21	Controls N=47	OR		
<20yrs	15	32	1.52	1.00	0.86
20-24yrs	4	6	1.60	1.02	0.75
25-29yrs	0	8	-	1.49	0.91
≥ 30yrs	2	1	4.82	2.47	0.99

TABLE 21
COMPARISION OF PARITY IN ODDS RATIO (OR)

Group	Present study			Chi-ling Chen (OR)	Mandana E (OR)
	Cases N=27	Controls N=50	OR		
Nulliparous	6	3	4.47	1.00	2.27
Parous	21	47	0.22	0.83	1.00

TABLE 22
COMPARISION OF BREAST FEEDING PATTERN IN
ODDS RATIO (OR)

Feeding pattern	Present study			Linda titus Ernstoff (OR)
	Cases N=27	Controls N=50	OR	
Breast fed	21	3	0.22	0.87
Not fed	6	47	4.47	1.00

TABLE 23
COMPARISION OF OBESITY IN ODDS RATIO (OR)

BMI kg/cm2	Present study			Linda Titus Ernstoff (OR)	Chi-Ling Chen (OR)
	Cases N=27	Contro ls N=50	OR		
< 21.5	7	10	0.3	1.00	1.00
21.5-25.4	12	19	1.02	1.07	1.16
25.5-29.25	6	11	1.3	1.14	1.18
>29.25	2	10	1.4	1.35	2.01

SUMMARY

In the present study of 50 cases of breast lump, 46% were benign lump, 54% were malignant lump. Age group showed 29.62 % women of 46-50 yrs. 70.37 % of cases showed early age at menarche as risk factor with an OR of 5.4, whereas 60% of cases showed late age at menopause as a risk factor (OR = 2.21).

22.22% of cases showed Nulliparity as risk factor (OR = 4.47) 9.54 % of cases showed late age at pregnancy as risk factor (OR = 4.82) whereas 22.22 % of cases showed absent breast feeding as risk factor (OR = 4.47).

33.37% of cases showed obesity increasing risk of carcinoma breast (OR = 1.35) and 44.44% of cases presented in stage IIB of TNM staging

All cases were treated with a combination of both surgical & hormonal therapy, additional radiotherapy for 23 cases & 4 cases received additional chemotherapy.

CONCLUSION

To conclude, the results of the present study focused on age group of 46- 50 yrs who showed increased risk for development of carcinoma breast. The risk factors that were evident from the present study were early menarche, delayed menopause, first pregnancy at later age. Apart from the above mentioned risk factors, Nulliparity & non breast feeding was also evident in the study. In addition, obesity also showed positive results as a risk factor. However, no conclusion could be drawn pertaining to

family history, use of oral contraceptive pills and hormone replacement therapy.

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AUTHORS

First Author – Faiz Hussain Mohd., M.B; B.S, M.S, faiz.doc@gmail.com

Second Author – S.R.K. Prakash Rao, M.S., F.A.I.S. Kamineni Institute of Medical Sciences.

Third Author – Shazia Parveen, (MDS) shazia.doc@gmail.com

Correspondence Author – Faiz Hussain Mohd, faiz.doc@gmail.com, shazia.doc@gmail.com.
Contact number: 9908765553, 9701177393