

A CLINICAL STUDY ON LOCALLY ADVANCED CARCINOMA OF BREAST

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Abstract

Background: We want to do a clinical study on locally advanced carcinoma breast. **Materials and Methods:** It was a prospective observational study conducted on 100 cases who admitted with carcinoma breast in Government General Hospital, Guntur, from February 2021 to October 2022. **Result:** With 38 (38%) patients in their sixth decade, the sixth decade had the highest incidence, followed by the 5th decade with 32 (32%) cases. The average age is 59.3 ± 8.25 years. The most common presentation is a breast lump, and the tumor is most frequently found in the upper outer quadrant 60 (sixty percent) of the breast. The most of patients (38%) had symptoms that had been present for 3 to 6 months with the average symptom duration being 8.41 ± 5.32 months. Among the 100 patients, 60% were premenopausal. Seventy-five percent of tumor sizes were in the range of 5-8 cm with a mean size of 6.6 cm. Skin and chest wall fixity was seen in 48% and 10% of cases 25% of cases were operable at presentation and 75% inoperable. 46% of cases were stage IIIA, 48% were stage IIIB, 4% were stage IIIC, and 2% were inflammatory breast cancer cases. NACT was given to all of these incurable cases, and it helped 93.3% of them reach operable phases. 10% of patients had a clinically full response, 50% had a clinically partial response, and 14% had stable disease. Patients took chemotherapy well, with baldness (alopecia) being the most frequent side effect. Immediate post-op surgical complications were seen in <30 (i.e. 26% of patients) Radiotherapy is widely tolerated and effective at preventing local recurrence. Hormone receptors are positive in sixty percent of patients. **Conclusion:** About 50 % of the cases presenting with carcinoma breast are in locally advanced stages. The most frequent symptom is breast lump, and it most frequently appears in the upper outer quadrant. The bulk of cases appeared in the sixth decade, followed by the fifth, indicating that Indian patients presented a decade earlier than patients in the West. Skin fixity was seen in about 48% of the cases which was the most frequent cause of inoperability. The most frequent histological variation observed is infiltrating ductal cancer. The occurrence of distant metastasis in 4 patients and local recurrence in 3 of these patients shows that care is challenging and that more improvements in therapies are needed to shorten the disease-free and overall survival period. LABC is successfully treated with multimodality therapy.

INTRODUCTION

Breast carcinoma is the second-leading cause of cancer death for women globally and the most common cancer in women (after lung cancer).^[1,2] Currently, 75,000 new cases affect Indian women annually. Most women seeking therapy have locally advanced breast cancer (LABC), which accounts for between 50 and 70 percent of cases.^[3] Other factors

that contribute to delayed diagnosis and high rates in poor countries include a paucity of active screening and early detection programs, low awareness of breast cancer, restricted access to healthcare due to poverty, and cultural issues. A big primary tumor (>5 cm), involvement of the skin or chest wall, fixed (matted) axillary lymph nodes, or disease distributed to the ipsilateral internal mammary or supraclavicular nodes with no evidence of distant metastases are just

a few examples of the various clinical presentations that define this condition (LABC).

These tumors are associated with breast cancer stages IIIA, IIIB, IIIC, and inflammatory phases. Even though the clinical parameters at presentation and outcome among women with LABC tend to differ, there are two common issues in the treatment. Achieving local control and lengthening survival by preventing or delaying distant metastases. Currently, LABC must be treated with a combination of local/regional systemic & medications. When treating LABC in developed countries, neoadjuvant chemotherapy with anthracyclines and taxanes is often followed by surgery and radiation therapy. Utilizing induction chemotherapy, the majority of cancer patients achieve successful clinical results in both the primary tumor and nearby lymph nodes. This study makes an effort to assess epidemiologic traits such as demographic breakdown, clinical course, phase of presentation, and possible treatment strategies.

Aims & objectives

1. Distribution of age in LABC patients.
2. To study the clinical presentation of locally advanced breast carcinoma.
3. Evaluating the various strategies of management
 - Surgery and immediate post-operative complications.
 - Neo-adjuvant chemotherapy
 - Commonly used chemotherapy regimens and immediate adverse effects. i.e. CMF (Cyclophosphamide, Methotrexate, and 5-fluorouracil) AC(Doxorubicin and Cyclophosphamide)
 - Other modalities like hormonal therapy & radiotherapy.

MATERIALS AND METHODS

Study Design: Prospective observational study.

Duration of the study: 18 months (2021 FEBRUARY TO 2022 OCTOBER)

Sample Size: Study of a minimum of 100 cases admitted with carcinoma breast in Government General Hospital, Guntur, from February 2021 to October 2022

Source of the data: Female patients admitted in general surgical wards of GGH Guntur during the period of 18 months.

Inclusion Criteria

- All breast cancer patients presenting at GGH, Guntur, of age 40-60 years female patients with locally advanced breast cancer.
- Females who have received chemotherapy and radiotherapy at, GGH, Guntur were included in the study.
- Patients who had given written informed consent.

Exclusion Criteria

- Male patients
- The patients who were not willing to participate in the study

Ethical Clearance: Prior approval from the institutional ethics committee has been obtained. All 100 breast cancer patients were informed about the nature of this study and valid informed written consent was obtained.

Diagnosis and investigations:

- FNAC made the diagnosis and used the investigative profile that was accessible and available at the hospital.
- Routine tests were performed, including CBC, urine analysis, RBS, serum creatinine, blood urea, and ECG.
- Ejection fraction was measured by echocardiography before patients were started on doxorubicin.
- Investigations were conducted to rule out metastasis. Chest X-rays, skeleton X-rays, USG abdomen and pelvis LFT, and more were performed.

Treatment Options

- NAC was typically the first component of the multimodality LABC treatment method, followed by MRM as local therapy (Auchincloss modification). Chemotherapy was continued for 6 rounds.
- After that, patients were administered with localized radiation. Following neoadjuvant chemotherapy, patients with inoperable tumors who showed no change in tumor size or tumor size reduction underwent local radiation and were then monitored.

Measure of neoadjuvant (induction) chemotherapeutic response:

- Having a clinical complete response (CR) means that the breast and axilla have no palpable tumors.
- Partial response was defined as a tumor size reduction of more than 50%. (cPR).
- Stable disease was defined as a 50% decrease in tumor size (SD).

Data entry and analysis:

Data was entered into a Microsoft Excel spreadsheet and examined with SPSS software. Frequency and percentages were used to represent qualitative data, whereas mean and standard deviation were used to explain quantitative data.

RESULTS

The age of the study patients is depicted in [Table 1]. The age group from 61 to 70 years had the most patients, with 38 (38%), followed by the group from 51 to 60 years, with 32 (32%). Study patients' mean age was 59.3 ± 8.25 .

The most frequent symptom, lump, is experienced by every patient. Nipple retraction was present in 28%. With (20%) of these individuals, the ulcer over the lump, (26%) of the patients had pain. 13 individuals (13%) reported having a bump in the ipsilateral axilla was depicted in above [Table 2].

The symptoms lasted from one to 28 months in the present study, where the majority of patients, 38%,

experienced symptoms for three to six months followed by 6-12 months i.e. 24% as depicted in table 2 above. The average time that symptoms lasted was 8.41 ± 5.32 (mean \pm SD) months. [Table 3]

In a total of (68%) of occurrences, the upper outside quadrant is the most frequently predominantly engaged quadrant, followed by the lower outer (16%) as depicted in [Table 4]. Most of the lumps were huge and covered more than one quadrant owing to this.

60%, and 40% of patients were postmenopausal and premenopausal respectively as shown in [Table 5]

From 4 cm to 12 cm in the highest dimension, the tumor's size fluctuated in the current study. The smallest and largest tumors were each 4×3 cm and 12×10 cm respectively in size. The majority of the tumors (75%) were between 5 and 8 cm in size. The tumors are 6.8 cm in size on average.

Of the 100 instances, forty-eight (48%) had fixity skin. The highest percentage, 24 (24%) exhibited peau d' orange, indicating skin fixity, while sixteen (16%) had an ulcer above the mass. In ten (10%) cases, fixity to the chest wall was observed.

In accordance with tab 8 and fig 8, 52% of study participants had N1, followed by (44%) N2 and N3 was present in 4% of participants.

Among 100 case studies, forty-six (46%) were in stage IIIA, forty-eight patients (or 48%) were in stage IIIB, 4 (4%) were in stage IIIC, and two (or 2%), inflammatory carcinoma.

75 patients in total (or 75%) were deemed to be inoperable. These comprise 22 cases of IIIA with fixed or matted nodes, 48 cases of IIIB, 4 cases of IIIC, and two inflammatory cancer.

25 (25%) of the T3N1 patients who presented at operable stages received MRM and adjuvant chemotherapy. Radiotherapy was later used in 15 cases. NACT was used in 75 (75%) of the patients that had reached an inoperable stage, and MRM was used in 70 (93.3%) of the instances that had reached an operable stage after completing chemotherapy and radiotherapy.

In the current study, standard procedures were applied. In 53 (53%) of the patients, CMF was most frequently used. 47(47%) people used the AC regimen.

The percentage decrease in tumor volume was used to gauge the response to neoadjuvant chemotherapy.

The above table 13 shows the answer, which would be categorized by stage. In the present study of the 74 patients who received neo-adjuvant chemotherapy, 10(10%) patients had a complete clinical response (cCR), and 50 (50%) patients had a clinical partial response (pCR). 14 (14%) had stable disease.

In 46 (46%) of the instances, both ER and PR were positive, while this was true in 40 (40% of the cases). Ten (10%) patients had ER-positive but negative PR results. In two (4%), ER negativity with PR positivity was seen. In sixty cases (about 60%), overall receptor positivity is seen. All patients with a hormone receptor-positive status were advised to take tamoxifen 20 mg once daily for five years.

The most common type of cancer was infiltrating intraductal carcinoma, which affected ninety two (92%) of the patients. Two (2%) of each of the following types: inflammatory, lobular, medullary, and colloid were also seen.

The following complications were seen in 94 patients who underwent modified radical mastectomy as shown in table 16 and figure 17. Seroma is present in eight individuals (8.5%), edema in the arm in 8 patients (8.5%), wound infection in 6 patients (6.3%), and wound dehiscence in 4 patients (4.2%).

It was noticed that the AC regimen generally has higher rates of toxicity, but difference found statistically not significant. Alopecia is the most often reported hazard, followed by emesis. Life-threatening side effects are uncommon, but neutropenia was observed in 2 patients who were taking AC. Other side effects recorded include nausea in 3.7% and 21.2% of CMF and AC patients, emesis in 18.8% and 25.5% of patients, and mucositis in 15.1% and 12.7% of patients on each drug, respectively. RADIOTHERAPY Only 2 patients (2%) out of 90 patients who received radiation experienced local recurrence. All patients tolerated radiotherapy well. Out of 90 patients, only 15 (15%) reported experiencing nausea. There was no other toxicity reported. OUTCOME Following up with the patients regularly, 72 (72%) of them were still doing well at the end of the trial. Eight (8%) of the patients experienced distant metastases, while six (6%) experienced local recurrence. 14 patients (about 14%) were lost to follow-up.

Table 1: Distribution of age

Age group	Frequency(n)	Percentage (%)
40 – 50 yrs	18	18%
51-60 yrs	32	32%
61-70 yrs	38	38%
>70 yrs	12	12%
Total	100	100%

Table 2: symptoms at the time of presentation

Symptom	Number of cases	Percentage%
Lump	98	98%
Ulcer with lump	20	20%
Pain	26	26%
Retraction of nipple	28	28%
Nipple discharge	13	13%
Swelling in axilla	13	13%

Table 3: duration of symptoms

Symptoms duration	No.of patients	Percentage%
<3 months	16	16%
3-6 months	38	38%
6-12 months	24	24%
12-24 months	16	16%
>24 months	6	6%

Table 4: Quadrants involved predominantly

M/C involved quadrant	No.of cases	Percentage%
Upper outer	60	60%
Upper inner	12	12%
Lower outer	16	16%
Lower inner	6	6%
Central	6	6%

Table 5: menstrual status

Menstrual status	No.of patients	Percentage%
Pre-menopausal	60	60%
Post-menopausal	40	40%

Table 6: Tumorsize

Tumor size	No. of patients	Percentage %
>5cm	14	14%
5-8cm	75	75%
8-10cm	9	9%
>10cm	2	2%

Table 7: skin and chestwall fixity

Fixity	Feature	No.of patients	Percentage%
Skin	Peaudorange	24	24%
	Ulcer	16	16%
	Sat nodule	8	8%
Chest wall		10	10%

Table 8: Lymph Node Status

Lymph node status	No. of patients	Percentage %
N1	52	52%
N2	44	44%
N3	4	4%

Table 9: Staging of Disease

Group staging	TNM staging	No. of patients	No of patients	Percentage%
111A	T3N1M0	24	46	46%
	T3N2M0	20		
	T2N2	2		
111B	T4aN1M0	2	48	48%
	T4aT2M0	8		
	T4BN1M0	26		
	T4bN2M0	12		
111C	T3N3M0	4	4	4%
Inflammatory carcinoma	T4d	2	2	2%

Table 10: tumor operability

Operability	No of patients	Percentage%
Operable	25	25%
Inoperable	75	75%

Table 11: sequencing of treatment

Sequencing	No of cases	Percentage
NC+S+C+R	67	67%
NC+S+C	3	3%
NC+R	6	6%
S+C+R	15	15%
S+C	10	10%

Table 12: chemotherapy regimen

Regimen	No of patients	Percentage
CMF	53	53%
AC	47	47%

Table 13: response to neoadjuvant chemotherapy

Clinical response		IIIA	IIIB	IIIC
Complete (cCR)	100%	6	4	-
Partial cPR	91-99%	4	2	-
	81-90%	2	10	2
	71-80%	6	16	-
	61-70%	-	4	2
	51-60%	-	2	-
Stable disease SD	1-50%	4	4	-
	0%	-	6	-

Table 14: receptor status

Receptor status	No of patients	Percentage %
Both ER/PR positive	46	46%
ER-positive PR negative	10	10%
ER-negative PR positive	4	4%
Both ER/PR negative	40	40%
Overall receptor-positive	60	60%

Table 15: histopathology

Histopathology type	No of patients	Percentage%
Infiltrating intraductal	92	92%
Medullary	2	2%
Colloid	2	2%
Lobular	2	2%
Inflammatory	2	2%

Table 16: complications of surgery

Complication	No of patients	Percentage%
Seroma	8	8.5%
Oedema of the arm	8	8.5%
Wound infection	6	6.3%
Wound dehiscence	4	4.2%

Table 17: chemotherapy toxicity

Toxicity	CMF		AC	
	Number	Percentage %	Number	Percentage%
Alopecia	20	37.6%	40	85.1%
Anemia	10	18.8%	12	25.5%
Mucositis	8	15.1%	6	12.7%
Nausea	2	3.7%	10	21.2%
Emesis	6	11.3%	18	38.2%
Fatigue	4	7.5%	8	17.02%
Neutropenia	0	0%	2	4.25%

Chi-Square = 8.113; P-value 0.229

Table 18: outcome of the study patients

Outcome	Percentage of patients
Doing well	72
Subsequent progress to distant metastasis	8
Local recurrence	6
Lost to follow-up	14

DISCUSSION

The present study was a prospective observational study done on 100 patients with breast carcinoma admitted to general surgical wards of GGH, Guntur to study the clinical outcome of breast carcinoma.

Age Distribution: The table below compares the age occurrences. In all research, including our own, The age group from 61 to 70 years had the most patients,

with 38 (38%), followed by the group from 51 to 60 years, with 32 (32%). The study patient's mean age was 59.3 ± 8.25. In contrast to the current study, Amit Goel et al⁵, where the peak is shown in the 31 to 40-year age group. Breast cancer is generally said to strike Indian women ten years earlier than it does in Western people. While postmenopausal women in their 60s and 70s make up the majority of breast cancer patients in Western nations, the situation is

very different in India, where premenopausal women make up almost fifty percent of all patients 76 The average age is forty-six and half years, and 47.39 years in Amit Aggarwal et al⁷⁴ and Sandhu DS et al⁶ series respectively. The mean age in our study i.e. 59.3±8.25 years differs from the studies mentioned earlier.

Symptoms at the time of presentation: The %'s of exhibiting features in a few related Indian series are used to compare the presenting features. The most frequent symptom, a lump, was observed in every case in our analysis and 87.9%, 74%, and 96.5% of the cases in the studies by Sandhu DS et al, Gang et al, and Raina et al, respectively.^[6-9]

Symptoms Duration: The symptoms lasted from one to 28 months in this study, where the majority of patients, 38%, experienced symptoms for three to six months followed by 6-12 months i.e. 24% as depicted in [Table 2] above. The average time that symptoms lasted was 8.41± 5.32 (mean ± SD) months. In the current study and the Sandhu DS et al series,^[6] the proportion of patients in this range was 38% and 32.9%, respectively. In the Sandhu DS series compared to our investigation, there were more cases with a duration of less than three months.

Predominant Quadrants Involved: The percentage of location in the upper outer quadrant is significantly higher in all of the series than the percentage of position in other quadrants. The percentages of lump in the top outer quadrants in the present, Sen and Dasgupta et al,^[4] Sandhu DS et al,^[6] and Fields et al,^[10] series are 60%, 49%, 47%, and 48%, respectively.

Menstrual Status: The Present study shows premenopausal individuals made up 60% more patients than postmenopausal women (40%). Similar profiles can be seen in the work of Amit Aggarwal,^[4] and others. In the DS Sandhu et al study,^[6] 55.76% and 44.27% of the patients, respectively, were premenopausal. 41% of women were premenopausal, and 59% were postmenopausal, according to Karlsson YA et al.^[11] In India, there are more premenopausal patients than in the West.

Tumorsize: Our study's tumor sizes are contrasted with those found in research by Chintamani et al,^[12] and Aggarwal Himanshu et al.^[7] Maximum tumor sizes are between 5-8 cm. In our analysis, the proportion of N1 stages was reported to be 93% and N2 stages to be 7% by Jaiganesh LK et al. Our patients demonstrated a higher incidence of N2 illness in comparison to this study. The table above displays the percentages. tumors in that range are noticeably greater.

Staging of Disease: In the current study, Out of the 100 case studies, forty-six (46%) were in stage IIIA, forty-eight patients (or 48%) were in stage IIIB, 4 (4%) in stage IIIC, and two (or 2%), inflammatory carcinoma. In their patient population, Jaiganesh LK et al,^[13] reported seventy percent IIIA and thirty percent IIIB phases. IIIA prevalence rates were 24%, 55%, and 27.2% in Yadav et al,^[14] William G et al,^[15] and Brian et al,^[16] respectively. The percentage of

stage IIIB cases recorded by BS Yadav et al,^[14] William G et al,^[15] and Brian Nolen et al,^[16] was 33%, 27%, and 36.4%, respectively. The percentage of stage IIIC cases reported by Yadav et al and William G. et al,^[15] was 25% and 2%, respectively.

FIXITY TO CHEST WALL & SKIN- In the current study, of the 100 instances, forty-eight (48%) had fixity skin. The highest percentage, 24 (24%) exhibited peau d' orange, indicating skin fixity, while sixteen (16%) had an ulcer above the mass. In ten (10%) cases, chest wall fixity was observed.

Therapy Sequence: In the current study, the tumors that were difficult to operate were treated with neoadjuvant chemotherapy. The majority of these cases required neoadjuvant chemotherapy, surgery, and any additional chemotherapy rounds that were required. The consolidation phase of radiation therapy followed. In comparison to trials conducted by various authors who treated the patients in the same order, this is in line with the most recent recommendations and compares favorably. Similar to the Loprinzi et al study,^[17] the operable cases in our investigation had surgery, adjuvant chemotherapy, and radiotherapy. NAC is used in cases where the tumor has reached an operable stage to help allow surgery for the local control of the illness. After surgery, the patients are advised to start radiation to stop local recurrence.

Response To Neoadjuvant Chemotherapy: In the current study, standard procedures were applied. In 53 (53%) of the patients, CMF was most frequently used. 47(47%) people used the AC regimen. Neoadjuvant chemotherapy was given to 38 (74%) of the patients who presented in operable states. It was used with an anthracycline-based regimen called AC. Neoadjuvant chemotherapy's main goals are to reduce the size of tumors and, in the case of inoperable tumors, to make them operative. The highest number of patients in all the trials fall into the category of clinical partial response, as can be shown in the table below. In our study, 25 out of 38 instances, or 65.8% of the total, exhibited a partial response. According to Brian Nolen et al,^[16] BS Yadav et al,^[14] Jaiganesh LK et al,^[13] and Amit Aggarwal et al,^[5] the rates of partial response were 45.45%, 65%, 73%, and 56.3%, respectively. In our experience, 13.2% of patients experienced a complete response, compared to 22.7%, 22%, 13%, 16.3%, and 5% in Nolen et al,^[16] Yadav BS et al,^[14] and Jaiganesh et al,^[13] Amit Aggarwal et al,^[5] and Karlsson et al.^[11]

Receptor Status: Our study's receptor status closely resembles the findings of a study on receptor status conducted at Tata Memorial Hospital in Mumbai from 1999 to 2006 by Tanuja et al.^[18] In our population, the receptor positivity is 60%, compared to 55.8% in the Tanuja Shet et al,^[18] study. It is consistent with the incidence in the population of India, which is about 10% smaller than that of the West. Tamoxifen 20 mg O.D. was prescribed for five years to all patients with hormone receptor-positive

status. Additionally, it was observed that younger patients' receptor status tended to be negative.

Histopathology: In every one of the studies listed below, intraductal carcinoma accounts for more than ninety percent of cases.

Therapy Complications Surgical Complications: The following complications were seen in 94 patients who underwent MRM as shown in table 16 and figure 17. Seroma is present in eight individuals (8.5%), edema in the arm in 8 patients (8.5%), wound infection in 6 patients (6.3%), and wound dehiscence in 4 patients (4.2%).

Chemotherapy Toxicity We compared the chemotherapeutic toxicities found in our study with those found in research done by Sambasivaiah Kurapathy et al.^[19] In both investigations, anthracycline-based regimens like AC have greater overall toxicity rates than CMF. Alopecia is the most often reported adverse effect, followed by emesis and anemia in the AC regimen and anemia & mucositis in the CMF regimen. Only one patient on an AC regimen had neutropenia. The rates of toxicity are similar to the study discussed above.

Radiotherapy Effects: Only 2 patients (2%) out of 90 patients who received radiation experienced local recurrence. All patients tolerated radiotherapy well. Out of 90 patients, only 15 (15%) reported experiencing nausea. There was no other toxicity reported.

Outcome: Following up with the patients regularly, 72 (72%) of them were still doing well at the end of the trial. Eight (8%) of the patients experienced distant metastases, while six (6%) experienced local recurrence. 14 patients (about 14%) were lost to follow-up.

CONCLUSION

About 50 % of the cases presenting with carcinoma breast are in locally advanced stages. The most frequent symptom is breast lump, and it most frequently appears in the upper outer quadrant. The bulk of cases appeared in the sixth decade, followed by the fifth, indicating that Indian patients presented a decade earlier than patients in the West. Skin fixity was seen in about 48% of the cases which was the most frequent cause of inoperability. Only a quarter of the cases were operable rest were inoperable. Patients who had received NACT demonstrated positive outcomes, with clinically complete & partial responses occurring in 13.2% and 65.8% of patients, respectively. Tumors difficult for surgery were successfully downstaged with NACT in ninety-two percent of cases, demonstrating its efficacy. The majority of patients survived chemotherapy well, with alopecia becoming the most frequent side effect, followed by anemia and emesis. Surgery-related problems were observed in fewer than 30% of cases. Tamoxifen was recommended for patients who had

hormone receptor positivity, which was detected in sixty percent of the patients. The most frequent histological variation observed is infiltrating ductal cancer. The occurrence of distant metastasis in 4 patients and local recurrence in 3 of these patients shows that care is challenging and that more improvements in therapies are needed to shorten the disease-free and overall survival period. LABC is successfully treated with multimodality therapy.

REFERENCES

1. Dumitrescu RG, Cotarla I. Understanding breast cancer risk-where do we stand in 2005?. *J Cell Mol Med* 2005;9: 208-21.
2. Chandra AB. Problems and prospects of cancer of the breast in India. *J Indian Med Assoc* 1979;72: 43-5.
3. Chopra The Indian Scene. *Journal of Clinical Oncology* 2001;19: S106-11.
4. Sen AK and Das Gupta TK. Cancer of the breast and its treatment, *Ind.J.Sur* 1962; Nov; 833-847,
5. Amit Agarwal et al. *Proc Am Soc Clin Oncol* 21: 2002
6. Sandhu DS, Sandhu S, Karwasra RK, Marwah S. Profile of breast cancer patients at a tertiary care hospital in north India. *Indian J Cancer* 2010;47:16-22
7. Aggarwal Himanshu, Lubana Parvinder S, Jain DK, Mathur RK. Estimation of BCL-2 protein in carcinoma of the breast and its clinical correlation in locally advanced breast cancer. *Journal of Cancer Research and Therapeutics* 2007;3:207-210
8. Gang RK, Bothra VC, Pande k, *Cancer of the breast: Ind.J.Sur* 1982; June; 347-350
9. Raina V, Bhutani M, Bedi R et al: Clinical features and prognostic factors of early breast cancer at a major cancer in North India. *Ind J Cancer.* 2005; 42: 40-45.
10. Fields KK, Goldstein SC, Clark RA, Sullivan DM, Djulbegovic B. *Decision making in oncology.* Churchill livingstone, New York 1997;253-265
11. Karlsson YA, Malmstrom PO, Thomas Hatschek et al. Multimodality treatment of 128 patients with LABC in the era of mammography screening using standard polychemotherapy with 5-FU, epirubicin and cyclophosphamide- Prognostic and therapeutic implications. *Cancer* 1998; 83:936-47.
12. Chintamani et al. Role of p-glycoprotein expression in predicting response to neoadjuvant chemotherapy in breast cancer-a prospective clinical study. *World Journal of Surgical Oncology* 2005; 3:61.
13. Jaiganesh Viswambharan L, Kadambari D, Iyengar KR, Srinivasan K. Feasibility of breast conservation surgery in locally advanced breast cancer downstaged by neoadjuvant chemotherapy: A study in mastectomy specimens using simulation lumpectomy. *Indian J Cancer* 2005;42:30-4
14. Yadav BS, Sharma SC, Singh R, Singh G. Patterns of relapse in locally advanced breast cancer treated with neoadjuvant chemotherapy followed by surgery and radiotherapy. *J Can Res Ther* 2007;3:75-80
15. William G et al. Long-Term Outcome of Neoadjuvant Therapy for Locally Advanced Breast Carcinoma. *Ann Surg.* 2002 September; 236(3): 295– 303.
16. Brian M Nolen et al. Serum biomarker profiles and response to neoadjuvant chemotherapy for locally advanced breast cancer. *Breast Cancer Res.* 2008; 10(3): R45
17. Loprinzi CL, Carbone PP, Tormey DC et al. Aggressive combined modality therapy for advanced locoregional breast carcinoma. *J. clin oncol* 1984;2:157.
18. Shet T, Agrawal A, Nadkarni M, Palkar M, Havaldar R, Parmar V, Badwe R, Chinoy RF. Hormone receptors over the last 8 years in a cancer referral center in India: What was and what is?. *Indian J Pathol Microbiol* 2009;52:171-
19. Sambasivaiah Kurapathy et al. Epidemiology and patterns of care for invasive breast carcinoma at a community hospital in Southern India. *World J Surg Oncol.* 2007; 5: 56.