

# Relapse Free Survival Time of Breast Cancer Patients Treated With Adjuvant Radiotherapy and Hormone Therapy

Breast Cancer  
With  
Radiotherapy  
and Hormone  
Therapy

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## ABSTRACT

**Objective:** To assess the survival time in breast cancer patient who undergo adjuvant radiotherapy and adjuvant hormonal therapy.

**Study Design:** Cross sectional observation al study.

**Place and Duration of Study:** This study was conducted at the Al-Tibri Medical College with collaboration of Liaquat National Hospital Karachi from May 2018 to September 2022.

**Materials and Methods:** The study includes 174 breast cancer female patients having tumor grade II and III from different tumor grades. The patient's physical examination hematological and biochemical evaluations were performed and were treated on the basis of tumor grade size, node involvement and hormone receptor status. The patients were subjected to surgery and chemotherapy with adjuvant therapy (Radiotherapy or Hormonal Therapy). The patients were followed up to five years. The disease-free survival time was noted from the date of diagnosis and initial treatment to the date of re-appearance of cancer at some other site.

**Results:** The relapse free survival time of the patients taking adjuvant hormonal therapy is higher than the patients having adjuvant radiotherapy.

**Conclusion:** The adjuvant hormonal therapy is the better option of treatment in tumor grade II and grade III patients.

**Key Words:** Breast cancer, Adjuvant radiotherapy and chemotherapy, Relapse free survival time.

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## INTRODUCTION

Breast cancer is a major problem of health and is a common cause of death in females.<sup>1</sup> The treatment of patients is usually based on the characteristic of tumor. The basic treatment is surgery it maybe before or after chemotherapy or radiotherapy which may increase the disease-free survival.<sup>2</sup>

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The hormone receptor positive patients were treated with chemotherapy along with hormone therapy for five years showed mortality reduction and increased disease-free survival time<sup>3</sup>. The treatment includes doses of few regimes of chemo-therapeutic drugs. The radiotherapy depends on the distribution of radiation doses according patients need.

Breast cancer survivors' ship has become a major issue, as early detection and more effective adjuvant chemotherapy provides a significant survival benefit with the risk of recurrences. <sup>4</sup>In the disease management proper treatment strategy is most important. Less toxic and most effective therapy is employed to get patients with increased disease-free survival and low mortality. For this purpose, we compared the patients on the basis of treatment i-e the patients treated with the surgery + Chemotherapy + Hormonal therapy to the patients treated with surgery + Chemotherapy + Radiotherapy. In this study, the patients treated with hormone are compared to patients treated with Radiotherapy for disease free survival time.

## MATERIALS AND METHODS

The study was conducted on 174 invasive breast carcinoma from 2018 to 2022, female patients having

carcinoma in one breast, Fifty patients were lymph node negative, 103 patients with one to three positive lymph nodes whereas the rest of patients (21) were having more than four lymph node metastases at the time of diagnosis. The patients less than 16 years or more than 75 years were excluded from the study.

The ethical approval was taken from the ethical committee of Al-Tibri Medical College. The patients physical, examination, hematological and biochemical evaluation were performed. The patient's treatment was based on tumor grade, size, node environment, hormone receptor status and tumor histopathology. The surgery was conducted either before or after chemotherapy.

The treatment of cancer is managed by comprehensive treatment which includes surgery, chemotherapy, hormonal therapy and radiotherapy<sup>5</sup>. The drugs used for chemotherapy were 5 – Fluorouracil (F), Adriamycin (A), Cyclophosphamide (C), Taxol (T), Methotrexate (M), which were used in different combination for chemotherapy as CM, AC, ACT, FAC etc. Six cycles of FAC and CMF were given whereas four cycles of AC and ACT. (Four cycle of AC followed by paclitaxel T). On the basis of adjuvant therapy two groups were formed.

**Group 1:** Patients treated with surgery, Chemotherapy and hormonal therapy.

**Group 2:** Patients treated with surgery, Chemotherapy and radiotherapy.

The relapse free survival time was calculated from the date of initial treatment including surgery, Chemotherapy and radiotherapy, and hormonal treatment (Tamoxifen or aromatase inhibitors), upto 5 years. The failure for treatment was considered as the first evidence of new manifestation of disease in

locoregional areas on distant sites so the survivals time is noted from the date of diagnosis and initial treatment to the date of new manifestation of disease at distant site. The patients with Tumor Grade I and IV disease were exclude. The data was analyzed with statistical package for social science version II. The value of  $P < 0.05$  was considered significant.

## RESULTS

Table No. 01 shows the disease-free survival time (months) of lymph node negative patient on the basis of tumor grade. The patients treated with primary (Surgery + Chemotherapy) and adjuvant hormonal therapy of tumor Grade II and Grade III patients had shown longer disease-free survival time as compared to the patients treated with primary and adjuvant radiotherapy. Table No. 2 shows the relapse free survival time and percentage of distant recurrence in patients having one to three positive lymph node metastasis. Tumor Grade II & Grade III patients had greater relapse free survival time in primary (Surgery + Chemotherapy) and hormonal therapy patient as compared to patients treated with primary (Surgery + Chemotherapy) and adjuvant radiotherapy. Table No. 3 shows the breast cancer patients suffering with four and above positive lymph nodes. Tumor Grade II and III patients treated with hormonal Therapy shown more longer disease-free survival time as compared to radiotherapy treated patients.

Out of total 174 patients 101 (58%) had shown metastasis. In lymph node negative patient's 40% percent patients showed metastasis whereas among lymph node positive patients 57% percent patients had shown metastasis at distant sites within five years.

**Table No. 1: The relapse free survival (months) and percentage of distant recurrence after treatment in patients having lymph node negative patients.**

Treatment	Tumor Grade II		Tumor Grade III	
	Relapse free survival (months)	Distant Recurrence (percentage)	Relapse free survival (months)	Distant Recurrence (percentage)
surg + chemo + HT	37.99 + 0.57 ★ (27)	37.02 (10)	45.0 + 1.92 ★ (5)	40.0 (2)
surg + chemo + RT	33.13 + 1.08 (8)	37.5 (3)	32.8 + 1.12 (10)	50.0 (5)

Treatment included Surg = Surgery, Chemo = Chemotherapy, HT = Hormonal Therapy, RT = Radiotherapy

\*  $P < 0.05$  as compared to radio therapy.

**Table No. 2: The relapse free survival (months) and percentage of distant recurrence after treatment in three positive lymph node patients.**

Treatment	Tumor Grade II		Tumor Grade III	
	Relapse free survival (months)	Distant Recurrence (percentage)	Relapse free survival (months)	Distant Recurrence (percentage)
surg + chemo + HT	36.52 + 1.05 ★ (37)	48.64 (18)	36.50 + 1.84 ★ (9)	66.66 (6)
surg + chemo + RT	30.56 + 0.96 (20)	65.0 (13)	30.25 + 0.74 (37)	83.78 (31)

Treatment include Surgery (Surg), Chemotherapy (Chemo), Hormonal Therapy (HT), and RT Radiotherapy (RT).

\* $p < .05$  as compared radio therapy.

**Table No. 3: The relapse free survival (months) and percentage of distant recurrence after treatment in patients having four and above positive lymph node on the basis of Tumor Grades.**

Treatment	Tumor Grade II		Tumor Grade III	
	Relapse free survival (months)	Distant Recurrence (percentage)	Relapse free survival (months)	Distant Recurrence (percentage)
Surg + chemo + HT	30.40 + 0.63 ★ (9)	44.44 (4)	43.25 + 2.54 ★ (4)	50 (2)
Surg + chemo + RT	18.0 + 1.15 (3)	100 (3)	29.40 + 0.98 (5)	80 (4)

The Treatment include Surgery (Surg), Chemotherapy (Chemo), Hormonal Therapy (HT) and Radiotherapy (RT).

\*p < 0.005 as compared to Radio Therapy

## DISCUSSION

Breast cancer is the most common in females. Despite the high morbidity of the disease, the breast cancer patients have better prognosis as compared to other aggressive cancers. The survival time reported in literature was 66.8% to 75% in Malaysia, 96.8% in Korea, 79% in Singapore<sup>6,7</sup>. The metastasis decreases the survival time in breast cancer patients.

The development of multiple Chemotherapeutic agents has increased breast cancer overall survival but unfortunately these antineoplastic compounds are cardiotoxic and liver toxic<sup>7</sup>. The mode of treatment is also a risk factor for mortality after the diagnosis of tumor. The present study assessed the association between breast cancer adjuvant treatment method with the survival time of different grades of tumor. Breast cancer patients can suffer relapse and death due to the disease at distant site even decades after diagnosis. In the present study the relapse survival was determined from the date of diagnosis to the date of disease recurrence at source distant site as locoregional metastasis. The patients were followed up to five years. The recent decades cancer treatment is Surgery, Chemotherapy, radiotherapy and hormonal Therapy. However, many of these treatments can cause myocardial, ischemia/infarction, hypertension and arrhythmias,<sup>8,9</sup> and heart disease whereas tamoxifen reduces the risk of heart disease<sup>10</sup> and thus increase the overall survival rate. In the present study the relapse free survival time was statically higher in the patients having hormonal therapy as compared to patients who were treated with radiotherapy but Li et al (2016) had found no statistical difference between hormonal and radio therapy<sup>11</sup>. The endocrine therapy, surgery and chemotherapy reduced recurrence rate but radiotherapy did not improve the distant metastasis and survival status.<sup>12</sup> It was found in the present study that hormonal therapy is the best treatment for the HR-positive early breast cancer which reduces recurrence and mortality and increase the survival time. The hormonal treatment may be extended from 5 to 10 years as an adjuvant therapy in some high-risk patients<sup>13</sup>. The survival rate in the present study is greater in Tumor Grade II and III patients, who were treated with primary (surg + chemo) treatment with adjuvant hormonal treatment as

compared to the adjuvant radiotherapy. So, it seems that the patients with HR+ve patients treated with adjuvant hormonal therapy have more chances to survive without distant metastasis as compared to HR negative patients treated with radiotherapy.

## CONCLUSION

It is concluded that adjuvant hormonal therapy in HR positive patients increase the disease-free survival time.

### Author's Contribution:

Concept & Design of Study: Uzma Raza  
 Drafting: Aziza Khanam, Ali Iftikhar  
 Data Analysis: Sidra Rizwan, Tooba Mahmud Gauhar, Amel Hanan Zehra  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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