International Journal of Oncology Research

ISSN Print: 2664-665X
ISSN Online: 2664-6668
IJOR 2024; 4(1): 37-43
www.oncologyjournal.in
Received: 11-01-2024
Accepted: 17-02-2024

Dina Gamal Hammad
Department of Medicine, Faculty of Medicine, Clinical Oncology and Nuclear, Tanta University, Egypt

Mohamed Abdo El-Shebeiny
Department of Medicine, Faculty of Medicine, Clinical Oncology and Nuclear, Tanta University, Egypt

Nesreen Mohamed Sabry
Department of Medicine, Faculty of Medicine, Clinical Oncology and Nuclear, Tanta University, Egypt

Marwa Aboelsaoud Taha
Department of Medicine, Faculty of Medicine, Clinical Oncology and Nuclear, Tanta University, Egypt

Corresponding Author:
Dina Gamal Hammad
Department of Medicine, Faculty of Medicine, Clinical Oncology and Nuclear, Tanta University, Egypt

A comparative study of conventional and hypofractionated radiotherapy in postmastectomy breast cancer patients

Dina Gamal Hammad, Mohamed Abdo El-Shebeiny, Nesreen Mohamed Sabry and Marwa Aboelsaoud Taha

DOI: https://doi.org/10.33545/2664665X.2024.v4.i1a.17

Abstract

The aim of this work is: 1. Statistically comparative analysis between female BC patients treated with postmastectomy CR or HR as regard: Patients and tumor characteristics, Local recurrence and distant metastasis, Overall survival, Treatment toxicity. 2. Statistical analysis of the different prognostic factors affecting the overall survival (OS) and disease free survival (DFS) between the two treated groups.

Patients and Methods: This is a retrospective phase II single center study was carried out to compare five hundreds female BC patients presented and treated with postmastectomy CFRT or HFRT at Clinical Oncology Department Tanta University hospital during the period between January 2016 to December 2020 with a minimum follow up period of one year. The study was approved by the Ethical Standards of the Ethics Committee of Faculty of Medicine, Tanta University, Egypt.

Results: The mean age of the all patients was 47.64 ± 12.35 and the median age was 51 years. 62.4% of patients aged ≤55 years and 37.6% of patients aged > 55 years. About half (50.4%) of the patients presented with ECOG PS o. 40.6% of the patients were premenopausal and 59.4% were postmenopausal. The mean total RT dose in the CFRT and HFRT groups were 3987.39±1070.43 and 3764.88±758.38 respectively (p=0.001). The mean dose/fraction in the CFRT and HFRT groups were 199.17±4.00 and 265.03±0.25 respectively (p=0.001). The mean number of fractions in the CFRT and HFRT groups were 19.98±5.27 and 14.20±2.86 respectively (p=0.001). Acute dermatitis had occurred in 50.2% of patients in the group versus 52.1% in the HFRT group (p=0.651). Chronic dermatitis had occurred in 5.8% of patients in the CFRT group versus 6.2% in the HFRT group (p=0.862). Locoregional failure had occurred in 7% of patients in CFRT group and 5% of patients in HFRT group. Overall locoregional failure had occurred in 6% of all patients. Chest wall was the most common site of locoregional failure in all patients (2.2%) followed with axilla and chest wall (1.4%) and axilla alone (1%). Distant failure had occurred in 40.7% of patients in CFRT and in 34.7% of patients in HFRT. Overall distant failure had occurred in 37.6 of all patients. Bone metastases was the most common site of distant failure in all patients (17.8%).

Conclusion: Post-mastectomy radiotherapy remains a subject of ongoing extensive investigation; nonetheless, recent controlled trials provide a rationale for the systematic utilization of Hypofractionated Radiotherapy (HFRH) as an adjunct treatment for breast cancer in females. The advantages of hypofractionated radiation therapy include shorter completion time, leading to decreased interruptions unrelated to treatment, ultimately enhancing treatment efficacy and patient adherence. This approach can facilitate the treatment of a greater number of breast cancer patients within a calendar year, thereby reducing waiting lists, increasing turnover, and lowering treatment costs. Our research findings indicate that HFRH yields outcomes comparable to Conventional Fractionated Radiotherapy (CFRT) without demonstrating inferior Overall Survival (OS), Long-Term Complications (LTC), Disease Metastasis (DM) rates, or heightened adverse effects. Therefore, hypofractionated radiation therapy can be recommended as a secure and efficient substitute for CFRT in post-mastectomy radiotherapy targeting the chest wall and lymph nodes. However, these outcomes necessitate assessment through extensive prospective multicenter randomized trials with prolonged follow-up periods and larger sample sizes to establish Hypofractionation (HF) as a viable alternative to Conventional Fractionation (CF) in breast cancer management.

Keywords: Conventional radiotherapy, hypofractionated radiotherapy, postmastectomy breast cancer patients

Introduction

Breast cancer (BC) is the second most frequently diagnosed type of cancer globally, accounting for 11.6% of all cancer cases, and is also the second leading cause of death, responsible for 6.6% of all cancer-related mortality.

A majority of BC patients typically present with locally advanced disease, leading to a higher frequency of mastectomy procedures over breast conservative surgery (BCS).

The necessity for postmastectomy radiotherapy (PMRT) is common among these patients to reduce locoregional recurrence rates. In particular, PMRT is advised for individuals with 4 or more positive axillary lymph nodes (ALN), and it is strongly recommended for those with 1-3 positive ALN. Moreover, for patients with negative nodes, PMRT should be considered when dealing with tumors larger than 5 cm or positive/close pathological margins [1].

Five-year survival rates in Egypt range from 28% to 68%, far lower than those documented in other developed countries. A late diagnosis is one possible cause of the dismal survival statistics that plague the medical field.). According to research conducted by 2 percent of Egyptian women had a clinical screening (mammogram, ultrasound, or clinical breast examination [CBE]) in the year prior to the survey, and 6 percent had performed breast self-examination (BSE) in the previous year, according to the Egyptian Ministry of Health and the Demographic and Health Survey project [1].

Lack of knowledge about breast cancer and the need of screening for early diagnosis is a major factor discouraging Egyptian women from undergoing breast screening.

This might be the fault of the medical facility or the individual seeking treatment (i.e. social, cultural, financial, or disease-related anxiety) [1].

Previous research showed that the average period for an Egyptian woman to present with breast symptoms after they first appear was 4.46 months (131 days). Once patients do visit a doctor, there is even another delay before they may begin systemic therapy, surgical intervention, or radiation. Different health care providers (private vs. public) and medical practitioners have different waiting times (gynaecologist vs. surgeon vs. oncologist). When left untreated for more than six months after symptoms first appear, breast cancer may spread and become more advanced than first diagnosed [3].

The conventional fractionated chest wall radiotherapy, often employing 2 Gy daily fractions over 5-6 weeks, is the standard approach. However, interruptions in treatment, often due to financial constraints or other reasons, can significantly impact treatment outcomes. The extended treatment duration poses challenges in terms of patient compliance and departmental workload. Consequently, there is a growing interest in hypofractionated (HF) regimens, which deliver higher doses per fraction over a shorter treatment course while maintaining comparable toxicity and locoregional control rates [2].

While numerous randomized trials have validated the efficacy of hypofractionated RT (HF RT) in post-BCS patients, its suitability for postmastectomy BC patients remains to be definitively established. Implementing a condensed HF RT schedule, featuring 2.67 Gy daily fractions for 3-3.5 weeks, could enhance convenience for patients, particularly those traveling from remote areas to receive treatment, and streamline departmental operations without compromising treatment effectiveness [3].

The aim of this work is

1. Statistically comparative analysis between female BC patients treated with postmastectomy CR or HR as regard:
- Patients and tumor characteristics.
- Local recurrence and distant metastasis.
- Overall survival.
- Treatment toxicity.

2. Statistical analysis of the different prognostic factors affecting the overall survival (OS) and disease free survival (DFS) between the two treated groups.

Patients and Methods

This is a retrospective phase II single center study was carried out to compare five hundreds female BC patients presented and treated with postmastectomy CFRT or HFRT at Clinical Oncology Department Tanta University hospital during the period between January 2016 to December 2020 with a minimum follow up period of one year. The study was approved by the Ethical Standards of the Ethics Committee of Faculty of Medicine, Tanta University, Egypt.

The primary end point of the research include; statistically comparative analysis between female BC patients treated with postmastectomy CFRT or HFRT as regard patients and tumor characteristics, OS, local recurrence, distant metastasis and treatment toxicity. The secondary end point of the research include statistical analysis of the different prognostic factors affecting the OS and DFS between the two treated groups.

Patients

Inclusion criteria

Includes; female patients older than 18 years and had undergone surgery and received CFRT or HFRT at our department. Patients eligible for this study included individuals with confirmed histological diagnosis of unilateral invasive breast carcinoma, AJCC TNM disease stage II-III, absence of distant metastasis or secondary malignancies, normal cardiac, hepatic, renal, bone marrow, and pulmonary functions, as well as Eastern Cooperative Oncology Group (ECOG) performance status (PS) score ranging from 0 to 2.

Methods

Through review of patient's files; patient age, family history of BC, PS, history of other co-morbidities (such hypertension, diabetes mellitus), surgical pathology reports, tumor site, tumor size, lymph node status, TNM disease stage, histological type, tumor grade, hormonal receptors status, Ki 67 level and HER 2/neu expression, radiotherapy protocol received (number of fractions, dose per fraction and total dose), type and timing of chemotherapy, hormonal treatment or targeted therapy received (neo adjuvant or adjuvant) and its doses, acute and delayed adverse events of treatments and its grades, date of death or last follow up, date of distant metastases and local failure, were obtained for each patient.

The clinical staging process adhered to the guidelines outlined in the 7th edition of the American Joint Committee on Cancer (AJCC) TNM staging system [4].

Radiotherapy treatment protocol

All patients were randomly assigned to either the CFRT group, comprising 241 individuals (receiving 45-50 Gy/25 fractions, 180-2 Gy per fraction, one fraction daily, 5 fractions per week, for 5-6 weeks), or the HFRT group, consisting of 259 patients (receiving 42.72 Gy/16 fractions, 2.67 Gy per fraction, 1 fraction daily, 5 fractions per week, for 3-3.5 weeks).

Treatment for all patients was administered using a Varian linear accelerator machine, involving computed tomography-based simulation and 3D conformal planning with a tangential field-in-field technique as the standard practice. The treatment plan aimed for 100% coverage of the Planning Target Volume (PTV) by the 95% isodose line. Evaluation of data encompassed the volume of PTV receiving at least 95% of the prescribed dose based on dose-volume histograms. Acceptance criteria for the treatment plan included the heart volume receiving 25Gy being ≤10% (i.e., V25 heart ≤10%) and the ipsilateral lung volume receiving 20 Gy being ≤35% (i.e., V20 ipsilateral lung ≤35%).

Radiotherapy-related toxicities were evaluated and graded following the RTOG Acute and Late Radiation Morbidity Scoring Criteria. Assessment and grading of chemotherapy-related toxicities adhered to the (NCI-CTCAE) version 5.0 [5].

Follow-up

All patients underwent weekly evaluations during the course of radiation therapy (RT), followed by monthly assessments post-RT for 6 months, and subsequently every 3 months until the final follow-up appointment. At each clinical visit, patients were subjected to standard laboratory tests and monitored for the emergence and severity of acute or chronic side effects such as skin issues, pulmonary problems, dysphagia, and lymphedema.

To detect or confirm local tumor recurrence or distant metastasis by chest X-ray, CT chest with contrast and pelvi-abdominal CT and/or MRI scan, bone scan (if there is bone pain or elevated serum alkaline phosphatase), brain CT/MRI for patients with neurological symptoms or signs and others was done as indicated.

Statistical method of analysis

The duration of follow-up was determined as the period between the initial diagnosis and the final review date or mortality event.

The information was gathered, organized, and inputted into a computer for analysis utilizing (SPSS) version 21.0.

Qualitative data was depicted through frequency distribution along with percentages, whereas quantitative data was represented by median, means, and standard deviation to measure the dispersion of individual values around the mean.

Chi-square test used for detection of correlation between two quantitative variables in one group. Student's t-test was used to compare quantitative data. ANOVA was used to analyze the difference between the mean of more than two groups.

Overall survival was defined as the time from the date of diagnosis to the documented date of death or last follow-up. The disease free survival (DFS) was calculated from the date of treatment to the documentation of disease recurrence or the date of last follow-up.

Survival rates were estimated by the Kaplan-Meier method and compared using a log-rank test. Univariate time to event analysis was done using the Kaplan-Meier method. Multivariate analysis was calculated according to the cox proportional hazards regression model to determine the independent predictors of 3- year OS or DFS rates. P-values of <0.05 was considered the cut off point for the level of significance.

Results

ECOG PS: Performance status

The mean age of the all patients was 47.64 ± 12.35 and yhe median age was 51 years. 62.4% of patients aged ≤55 years and 37.6% of patients aged > 55 years. About half (50.4%) of the patients presented with ECOG PS o. 40.6% of the patients were premenopausal and 59.4% were postmenopausal.

Table 1: Summary of RT protocol received by 500 female BC patients in the two studied groups

		Range	Mean±S.D	t. test	p. value
Total RTh dose	Conventional	1800-5000	3987.39±1070.43	12.696	0.001*
	Hypofractionated	2120-4240	3764.88±758.38		
Dose/ fraction	Conventional	180-200	199.17±4.00	264.665	0.001*
	Hypofractionated	265-267	265.03±0.25		
No. of fractions	Conventional	10-25	19.98±5.27	15.377	0.001*
	Hypofractionated	8-16	14.20±2.86		

The mean total RT dose in the CFRT and HFRT groups were 3987.39±1070.43 and 3764.88±758.38 respectively (p=0.001). The mean dose/fraction in the CFRT and HFRT groups were 199.17±4.00 and 265.03±0.25 respectively (p=0.001). The mean number of fractions in the CFRT and HFRT groups were 19.98±5.27 and 14.20±2.86 respectively (p=0.001).

Table 2: Grade I-II toxicities of RT treatment in all grades of 500 female BC patients in the two studied groups

			CFRT (n=241)	HFRT (n=259)	Total	X^2	P-value
Toxicity	Acute dermatitis	N	121	135	256	9.293	0.651
		%	50.2%	52.1%	51.2%		
	Chronic dermatitis	N	14	16	30	0.032	0.862
		%	5.8%	6.2%	6.0%		
	Dysphagia	N	31	20	51	3.602	0.058
		%	12.9%	7.7%	10.2%		
	Radiation pneumonitis	N	25	19	44	1.440	0.231
		%	10.4%	7.3%	8.8%		
	Lymphedema (arm)	N	50	39	89	2.758	0.097
		%	20.7%	15.1%	17.8%		

Acute dermatitis had occurred in 50.2% of patients in the group versus 52.1% in the HFRT group (p=0.651).

Chronic dermatitis had occurred in 5.8% of patients in the CFRT group versus 6.2% in the HFRT group (p=0.862).

Table 3: Sites and incidence of locoregional failure in 500 female BC patients in the two studied groups

Site of local failure		CFRT (n=241)	HFRT (n = 259)	Total (n = 500)
Chest wall	N	6	5	11
	%	2.5	1.9	2.2
Axilla and chest wall	N	3	4	7
	%	1.2	1.5	1.4
Axilla	N	3	2	5
	%	1.2	0.8	1
Supraclavicular LN	N	3	1	4
	%	1.2	0.4	0.8
Axilla and supraclavicular LN	N	2	1	3
	%	0. 8	0.4	0.6
Total	N	17	13	30
	%	7.0	5.0	6

This table shows sites and incidence of locoregional failure in patients in the two studied groups. Locoregional failure had occurred in 7% of patients in CFRT group and 5% of patients in HFRT group.

Overall locoregional failure had occurred in 6% of all patients. Chest wall was the most common site of locoregional failure in all patients (2.2%) followed with axilla and chest wall (1.4%) and axilla alone (1%).

Table 4: Sites and incidence of distant failure in 500 female BC patients in the two studied groups

Site of distant failure		CFRT (n=241)	HFRT (n=259)	Total (n=500)
Bone	N	47	42	89
	%	19.5	16.2	17.8
Lung	N	20	24	44
	%	8.3	9.3	8.8
Liver	N	13	11	24
	%	5.4	4.3	4.8
Brain	N	11	8	19
	%	4.6	3.0	3.8
Pleura	N	7	5	12
	%	2.9	1.9	2.4
Total	N	98	90	188
	%	40.7	34.7	37.6
Number of distant failure				
1	N	40	33	73
	%	16.6	12.7	14.6
2 - 3	N	22	21	43
	%	9.1	8.1	8.6
> 3	N	4	1	5
	%	1.7	0.4	1

Distant failure had occurred in 40.7% of patients in CFRT and in 34.7% of patients in HFRT. Overall distant failure had occurred in 37.6 of all patients. Bone metastases was the most common site of distant failure in all patients (17.8%).

Multivariate analysis of prognostic factors reveled that in CFRT group, duration of symptoms (p=0.021) and receiving of chemotherapy ((Neo adj. / adjuv) (p=0.031) were significantly affected the OS of the patients.

And in HFRT group, pathological grade (p=0.001) and N stage (p=0.032) were significantly affected the OS of the patients.

However in all patients, pathological grade (p=0.001) and N stage (p=0.032) were significantly affected the OS of the patients.

Discussion

Advantages of hypofractionation (HF) encompass enhanced patient convenience and reduced out-of-pocket expenses due to minimized travels in comparison to a prolonged course of radiotherapy.

Conversely, hypofractionation, involving larger radiation doses per fraction, heightens the risk of delayed normal tissue damage. Nonetheless, the linear-quadratic model postulates that augmenting the fraction dose moderately while decreasing the total dose does not escalate normal tissue toxicity. Numerous trials have validated that hypofractionated radiotherapy regimens prove to be equally efficacious as the traditional radiation of 50 Gy in 25 fractions, irrespective of disease stage or type of breast surgery.

In the current investigation, concerning patient and tumor characteristics, the median age of the subjects hovered around 51 years. Azim *et al*. observed in a meta-analysis that the Egyptian breast cancer (BC) populace exhibited a notably younger age at diagnosis, with a mean age of 50.4 years, in contrast to Western counterparts. Conversely, in the US-based SEER data and the Japanese BC Society registry, the median ages at diagnosis were 63 years and 59.7 years, respectively. Conversely, a similar age distribution is observed in other developing nations like

China, where the mean age at presentation stands at 53 years. Notably, 20% of Egyptian BC patients were under 40 years old, a higher proportion compared to the SEER database. This variation in age distribution can be attributed to various factors, such as the reduced sensitivity of screening mammography in younger populations due to higher glandular breast density, potentially resulting in missed diagnoses among Egyptian BC patients.

In this study, 40.6% of the subjects were premenopausal, while 59.4% were postmenopausal upon presentation, with 68.4% of patients being premenopausal/postmenopausal. Conversely, Azim *et al*. reported that 57% of Egyptian women fell into the premenopausal/postmenopausal category. Globally, Heer *et al*. noted that postmenopausal invasive BC cases were diagnosed 53.9% more frequently than premenopausal BC cases.

The majority of our patients had tumors situated in the right breast (52.2%), predominantly in the upper quadrants (79.6%). Similarly, Rastogi *et al*. reported that 53% of tumors were right-sided, and Rummel *et al*. found a significantly higher prevalence of tumors in the upper outer quadrant (UOQ) compared to other locations. Internationally, tumor location tends to be most common in the UOQ (50-58%) across various populations, including Chinese, Danish, British, and US Department of Defense healthcare system cohorts [9-12].

In the present study invasive duct carcinoma was 83.2%, while invasive lobular carcinoma represented 9.4% of patients. Comparable with our results; the estimated proportion of invasive duct carcinoma was 87% among 15, 171 patients with BC in 12 Egyptian studies, while invasive lobular carcinoma represented 7% [16-18]. Henry *et al*. [19] found that about 50% to 80% of newly diagnosed BC cases are IDC and Akram *et al*. [20] found that ILC is the second largest biologically distinct carcinoma, representing about 5% to 15% of all newly diagnosed cases and generally affecting women of advanced age.

In the present study grade II was the most common tumor grade and represented in 84.0% of the patients. Nearly similar to our results Ali *et al*. [14] found that 81.82% of tumors were grade III, while unlike to our results Rastogi *et al*. [13] reported 50% of tumors were grade III while grade II represented in only 42% of the patients and this difference may be explained due difference of the number of patients included in this studies.

Our results revealed that; as regard the loco-regional control, overall incidence of recurrence/500 patients = 6%, with an incidence of recurrence / 241 patients in CFRT = 7% and the incidence of recurrence / 259 patients HFRT = 5%. The 3-year LRFS rate for patients in CFRT group vs. patients in HFRT group were 89.6% vs. 93.0% respectively and this difference was statistically non-significant (P=0.153). As regard the distant metastases, overall incidence of metastases / 500 patients = 37.6%, with an incidence of metastases / 241 patients in CFRT = 40.7% and the incidence of recurrence /259 patients HFRT = 34.7%. The 3-year DMES rate for patients in CFRT group vs. patients in HFRT group were 59.6% vs. 64.3% respectively and this difference was statistically non-significant (P=0.203). The 3-year DFS rate for patients in CFRT group vs. patients in HFRT group were 57.6% vs. 63.1% respectively and this difference was statistically non-significant (P=0.120). Our results was in agreement with Shaltout and Abd El Razek [15], Eldeeb *et al*. [21], Rastogi *et al*. [13] and Ali and Abd AlMageed [14] who reported that, the four-year OS rate for the both groups was 98% (100% for CFRT and 96% for HFRT group, P value= 0.37) and the 4 year DFS rate for both groups was 87% (81% and 92% for CFRT and HFRT respectively, p-value= 0.47). De Matteis *et al*. [22] found that the OS, DMFS and DFS rates at 3 years were 90%, 85.7%, 84.8%, respectively.

Radiation therapy plays a crucial role in the treatment protocol for all breast conservation surgeries (BCSs) and a significant proportion of post-mastectomy patients. Post-mastectomy radiation therapy (PMRT) is advisable for individuals with 4 or more positive axillary lymph nodes (ALN) and should be seriously contemplated for cases with 1-3 positive ALN. For patients with negative nodes, PMRT is warranted for tumors exceeding 5 cm or positive/close pathological margins [6].

A notable shift towards hypofractionation (HF) has been observed, entailing the delivery of a higher radiation dose per session over fewer sessions to achieve an equivalent biological dose while upholding consistent toxicity levels and locoregional control rates. This approach is anticipated to enhance departmental efficiency without compromising treatment outcomes. Despite numerous randomized trials affirming the non-inferiority of hypofractionated RT (HF RT) in post-BCS patients, its applicability for postmastectomy breast cancer patients remains undetermined [7].

This document discusses the use of hypofractionated radiotherapy in breast cancer treatment and compares it to conventional fractionated radiotherapy. It explores the advantages and disadvantages of hypofractionation and its impact on treatment outcomes. The study includes data on patient characteristics, tumor characteristics, and treatment toxicities. The document also presents the results of the study, including overall survival rates, disease-free survival rates, and locoregional control rates.

- Radiation therapy is a standard part of breast cancer treatment after surgery.
- Hypofractionated radiotherapy (HFRT) delivers a higher dose per fraction for a shorter number of fractions.
- HFRT can reduce treatment time and increase department efficiency.
- Many studies have shown that HFRT is as effective as conventional fractionated radiotherapy (CFRT).
- HFRT is recommended for breast conservation surgeries and post-mastectomy patients.
- The study included 500 breast cancer patients in Egypt.
- The median age of the patients was 51 years, with a higher proportion of premenopausal patients.
- Most tumors were located in the right breast and upper quadrants.
- The majority of patients had invasive duct carcinoma and grade II tumors.
- HFRT and CFRT had comparable overall survival rates, disease-free survival rates, and treatment toxicities.

Summery and Conclusion

Post-mastectomy radiotherapy remains a subject of ongoing extensive investigation; nevertheless, recent randomized studies support the regular application of hypofractionated radiation therapy for adjuvant radiotherapy in breast cancer patients.

Hypofractionated radiation offers numerous benefits, including a shorter treatment duration which reduces interruptions not related to treatment, ultimately bolstering treatment effectiveness, patient adherence, departmental capacity, and consequently decreasing waiting times, enhancing turnover, and lowering treatment costs.

Women over the age of 18 who had CFRT or HFRT at our Clinic prior to surgery were also evaluated for inclusion. Histologically confirmed cases of invasive carcinoma of the left breast in patients. Cases in which the AJCC TNM staging is between 2 and 3. People who haven't developed any secondary tumours or metastases. Individuals whose hearts, Livers, kidneys, bone marrow, and lungs are all functioning normally, According to the Eastern Cooperative Oncology Group, patients have a performance status (PS) between 0 and 2. (ECOG).

To look and confirm the spread of cancer beyond the original tumour site, diagnostic procedures such as chest X-rays, CT scans with contrast, and CCT and MRI of the pelvis and abdomen were carried out. Patients with bone pain or an increased blood alkaline phosphatase had bone scans, where as those with neurological symptoms or signs underwent brain CT/MRI scans.

Patient's inn stage II and III were 61.2% and 38.8% of the total. The majority of patients (68%), but not all (8.8%), presented with stage 2 tumours, Nodal stage N1 was present in 34.4% of patients, nodal stage N2 in 24.6% nodal stage N3 in 27.0%. and no stage in all in 14.0%. There was an ER rate of 72% and PR rate of 72% among the patients.

Only 19.2 percent of patients had detectable levels of HER2/neu expression. There were 26% and 44% of patients whose Ki-67 levels were 15% or below, respectively. Compared to individuals without either illness, those with lymphovascular invation (42.2%) and PNI (17.4%) were more prevalent (26.4 percent and 36.4 percent, respectively).

Our research indicated that HF RT is on par with conventional fractionated RT (CFRT) in terms of overall survival (OS), locoregional tumor control (LTC), and distant metastasis (DM) rates, with no higher incidence of adverse effects.

These results need to be evaluated with larger prospective multicenter randomized trials with longer follow-up and larger sample size in order to consider HF scheme in BC as a valid alternative to CF one.

However, further research into the efficacy or RT following a mastectomy is necessary, More study is needed although current randomized trials suggest HFRH use often for adjuvant radiotherapy in women with BC.

Wait times and costs may be minimized by switching to hypofractionated radiation for the treatment of breast cancer since it can be finished in a shorter length of time there fewer pauses during therapy, and this improves treatment efficacy and patient compliance.

Neither have we discovered any evidence that HFRH is more dangerous than CFRT, nor did we find any indicating it is effective in lowering the incidence of OS, LTC, or DM. Our investigation have not yet disproved any of these possibilities.

It is probable that chest wall and lymph node PMRT may prescribed with hypofractionated radiation treatment, a safe and effective alternative to conventional radiotherapy (CRT).

References

1. National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Breast Cancer. Version 3.2015. National Comprehensive Cancer Network; c2015. Available from: http://www.nccn.org/professionals/physician_gls/pdf/breast.pdf. Accessed September 28, 2015.
2. Rastogi K, Jain S, Rai Bhatnagar A, *et al*. A Comparative Study of Hypofractionated and Conventional Radiotherapy in Postmastectomy Breast Cancer Patients. Asia-Pacific Journal of Oncology Nursing, 2018, 5.
3. Bentzen SM, Agrawal RK, Aird EG, *et al*. The UK Standardisation of Breast Radiotherapy (START) Trial A of radiotherapy hypofractionation for treatment of early breast cancer: A randomised trial. Lancet Oncol. 2008;9(4):331-341.
4. Ali EM, Al Mageed MKA. Post-mastectomy hypofractionation radiotherapy in breast cancer patients. Cancer Oncol. Res. 2014;2:87-93.
5. Banu PA, Rukhsana N, Jabber MA, *et al*. Hypofractionated radiotherapy for post-operative breast cancer patients at delta hospital: An evaluation of clinical experience. Delta Med. Coll. J. 2015;3:04-08.
6. Abhilash GH, Dhull AK, Atri R, *et al*. Comparison of hypofractionated radiation therapy versus conventional radiation therapy in post mastectomy breast cancer. J Evid. Based Med. Healthc. 2020;3(26):1177-1181.
7. Gaspersz MP, Buettner S, van Vugt JL, *et al*. Evaluation of the new American joint committee on cancer staging manual 8th edition for perihilar cholangiocarcinoma. Journal of Gastrointestinal Surgery. 2020;24:1612-1618.
8. Freites-Martinez A, Santana N, Arias-Santiago S, *et al*. Using the Common Terminology Criteria for Adverse Events (CTCAE - Version 5.0) to Evaluate the Severity of Adverse Events of Anticancer Therapies. Actas Dermosifiliogr (Engl. Ed). 2021 Jan;112(1):90-92.
9. Kroman N, Wohlfahrt J, Mouridsen HT, *et al*. Influence of tumor location on breast cancer prognosis. Int. J Cancer. 2003;105(4):542-545.
10. Sohn VY, Arthurs ZM, Sebesta JA, *et al*. Primary tumor location impacts breast cancer survival. Am J Surg. 2008;195(5):641-644.
11. Wu S, Zhou J, Ren Y, *et al*. Tumor location is a prognostic factor for survival of Chinese women with T1-2N0M0 breast cancer. Int. J Surg. 2014;12(5):394-398.
12. Darbre PD. Recorded quadrant incidence of female breast cancer in Great Britain suggests a disproportionate increase in the upper outer quadrant of the breast. Anticancer Res. 2005;25(3c):2543-2550.
13. Jain N, Sharma R, Sachdeva K, *et al*. Conventional Versus Different Hypofractionated Radiotherapy Dosage Schedules in Postmastectomy Advanced Breast Cancer. J Med Phys. 2022 Apr-Jun;47(2):141-144.
14. Kim S, Pitson G, Koh TL, *et al*. Increasing use of post-mastectomy hypofractionated radiation therapy for breast cancer in Victoria. J Med Imaging Radiat. Oncol. 2022 Apr;66(3):428-435.
15. Shaltout EA, El Razek A. Adjuvant postmastectomy hypofractionated radiotherapy in Egyptian cancer patients: A 2 years follow-up. Annals Oncol. 2012;23:34-36.

16. Azim HA, Elghazawy H, Ghazy RM, *et al*. Clinicopathologic Features of Breast Cancer in Egypt - Contemporary Profile and Future Needs: A Systematic Review and Meta-Analysis. American Society of Clinical Oncology. Available from: https://ascopubs.org/go/authors/open-access. Accessed 2023.
17. Gado N, Mosalam N, Atef D, *et al*. Clinic oepidemiological study of breast cancer patients at Clinical Oncology Department Ain Shams University: Five years retrospective study. Eur. J Cancer, 2017, 72.
18. Yahiya Ibrahim N, Talima S, Makar WS. Clinico-epidemiological study of elderly breast cancer in a developing country: Egypt. J Cancer Treat Res. 2019;7:23-27.
19. Henry NL, Cannon-Albright L. Breast Cancer Histologic Subtypes Show Excess Familial Clustering. Wiley Cancer. 2019;125(18):3131-3138.
20. Akram M, Iqbal M, Daniyal M, *et al*. Awareness and current knowledge of breast cancer. Biol. Res. 2017;50(1):33.
21. Eldeep H, Awad I, Elhanafy O. Hypofractionation in post-mastectomy breast cancer patients: Seven-year follow-up. Med. Oncol. 2012;29(4):2570-2576.
22. De Siqueira GSM, Hanna SA, de Moura LF, *et al*. Moderately hypofractionated radiation therapy for breast cancer: A Brazilian cohort study; c2022. Available from: http://creativecommons.org/licenses/by-nc-nd/4.0/.

How to Cite This Article
Hammad DG, El-Shebeiny MA, Sabry NM, Taha MA. A comparative study of conventional and hypofractionated radiotherapy in postmastectomy breast cancer patients. International Journal of Oncology Research. 2024; 4(1): 37-43.