One-week Accelerated Hypo-Fractionation Adjuvant Radiotherapy in High-Risk Breast Cancer Patients

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ABSTRACT

Background: Radiation therapy is an important part of the multimodal management of breast cancer, including early stage, locally progressed, and metastatic cases.

Objectives: this work aims to compare a 2-year locoregional disease control between 1-week and 3-weeks course adjuvant radiotherapy in high-risk breast cancer patients, and to compare disease-free survival (DFS), overall survival, and radiation-related adverse events, both early and late events.

Methods: This study was carried out on 160 female patients 45 years of age or older, who had Oncoplastic Breast Surgery or total mastectomy with adequate axillary clearance and a negative margin, breast carcinomas that is invasive (TXN1-3M0, T0N2-3 M0, T1N2- 3M0, T2N2-3M0, T3N0-3M0, T4N0-3M0). Patients were divided in to two groups: patients were assigned to the 40 Gy over 3 weeks schedule and patients to the 26 Gy over 1 week schedule.

Results: There were significant differences between both groups regarding all postoperative data with P value < 0.05 except post operative pathology. one week radiation in advanced breast cancer patients were efficient in locoregional control and disease-free survival that was comparable with moderate hypofractionation. DFS for all studied population after 24 months were 91.91%. DFS in one week arm were 92.88% but in control arm DFS were 90.85%. There was a statistically significant difference regarding radiation dermatitis P value 0.0001.

Conclusions: One week radiation therapy (26 GY/5 fractions/1 week) can save time, effort, overload in radiotherapy machines, improve our patient compliance with efficient disease control.

Keywords: Prospective study, Adjuvant radiotherapy, Hypo-fractionation, High-risk, Breast cancer.

INTRODUCTION

Cancer ranks as a leading cause of death and it is an important barrier in increasing life expectancy in every country of the world ^[1]. According to the World Health Organization in 2019, cancer is the first or second leading cause of death before the age of 70 years in 112 of 183 countries^[1]. Worldwide, Breast cancer is the most common cancer in women and the 5th leading cause of cancer related deaths that comes after lung cancer, colorectal cancer, liver cancer and gastric cancer ^[2]. More than half of all breast cancer cases in the world occur in developing countries. Egypt has a high mortality rate from breast cancer, with a rate of 21.3 per 100,000 cases. Breast cancer is diagnosed at an advanced stage in 60 to 70% of cases in Egypt. Median age at diagnosis in Egypt is 48.5 years, which seems to be a decade younger than in Europe and North America ^[3]. About 49% occurred in the left and right breasts, respectively, with 2% occurring bilateral, 3% of the patients presented with Stage I, 11% with Stage IIA, 14% with Stage IIB, 32% with Stage IIIA, 36% with Stage IIIB, and 4% with distant metastases in Stage IV [4]

Nonmetastatic early invasive stages (I, IIa, IIb) and locally progressed stages (IIIa, IIIb, IIIc) have three types of therapies. When tumours express oestrogen, progesterone or ERBB2 receptors, systemic endocrine, chemotherapy or immunotherapies are used in the preoperative phase^[5].

Systemic treatment is initiated prior to localregional management in neo-adjuvant therapy. It is also known as preoperative chemotherapy or primary systemic therapy. While, previously reserved for patients with inoperable disease, today's breast cancer management includes a neoadjuvant approach for patients with inflammatory breast cancer, locally advanced breast cancer (ABC), metastatic breast cancer (MBC), and some patients with early-stage, operable breast cancer (TNBC, HER2\NEU positive)^[6]. Neoadjuvant chemotherapy has emerged as a powerful treatment modality with individualized prognostic significance based on response to therapy^[7].

Radiation therapy is an important part of the multimodal management of breast cancer, including early stage, locally progressed, and metastatic cases. Breast cancer radiation therapy has come a long way in the last 20 years ^[8]. The role of adjuvant radiotherapy as the standard of care for breast cancer after breastconserving surgery, the role of partial-breast irradiation and hypo fractionated whole-breast irradiation, and the evolving indications for postmastectomy radiation therapy and extent of nodal coverage ^[9]. The cornerstone of systemic adjuvant treatment for estrogenic receptor (ER) in positive breast cancer is hormonal therapy. Long-term adherence is required to get the full benefits of this medication. Adjuvant endocrine therapy substantially reduces tumour recurrence and mortality in pre- and post-menopausal women with hormone receptor-positive early breast cancer but is ineffective in women with hormone [10] receptor-negative tumours Immunotherapy emerged as a new treatment modality for breast cancer in early and advanced stages and its use is approved in combination with chemotherapy for in MBC^[11].

The aim of this work was to compare a 2-year locoregional disease control between 1-week and 3-

week course adjuvant radiotherapy in high-risk patients, and to compare disease-free survival (DFS), overall survival, and radiation-related adverse events.

PATIENTS AND METHODS

This prospective study was carried out on 160 female patients 45 years of age or older, who had Oncoplastic Breast Surgery (OBS) or total mastectomy with adequate axillary clearance and a negative margin, breast carcinomas that is invasive (TXN1-3M0, T0N2-3 M0, T1N2- 3M0, T2N2-3M0, T3N0-3M0, T4N0-3M0) whatever type of tumours biology, and with locally ABC who received neoadjuvant chemotherapy and underwent either OBS or modified radical mastectomy (MRM).

Exclusion criteria: MBC at the time of diagnosis proved clinically or radiologically, postoperative positive margin., carcinomas in situ, mesenchymal breast lesions, locoregional recurrent breast cancer, synchronous bilateral breast cancer, and very early breast cancer (T1-2N0M0, T1N1M0).

Patients were further divided into two groups: 75 patients were assigned to the 40 Gy schedule and 85 patients to the 26 Gy schedule. All patients were subjected to history taking, usual investigations, and clinical examinations.

Interventions: Control Arm: Patients received 40 GY in 15 fractions to the entire breast or chest wall over a three-week period. Patients undergoing OBS (OBS

received an additional boost to the tumour site if indicated and will receive sequential dose 12GY\4 fractions or SIB 8 GY 15 fractions. The supraclavicular fossa (SCF) and internal mammary were treated in patients with the node-positive disease or those receiving neoadjuvant chemotherapy. If indicated, the IMLN were irradiated. Experimental Arm: Patients received 26 GY in 5 fractions to the entire breast or chest wall over the course of one week. The volume of the treatment arm was the same as the volume of the control arm. Patients who had oncoplastic resection given a boost (if indicated). If a boost is given, SIB of 6 GY in 5 fractions will be used (or a sequential boost of 12GY\4 fractions) (Table 1).

Radiotherapy details: Within 12 weeks of the date of surgery or the final cycle of scheduled adjuvant chemotherapy therapy, radiotherapy began. All patients were treated in a linear accelerator (ranging from 6 to 15 MV). Radiotherapy preparation was carried out using volumetric planning CT scans using a pre-defined simulation protocol. A predefined simulation technique was used to plan radiotherapy using volumetric planning CT scans. While, our approach enables for Deep Inspiration Breath Hold (DIBH) treatment. The organs at risk were the ipsilateral and contralateral lungs, the heart, and the contralateral breast. All patients undergoing regional nodal radiotherapy had thyroid, and spinal cord defined. Unless IMN coverage was necessary, a field-based 3D planning technique based on pre-specified anatomical landmarks was used.

Arm A 40 Cy /15 fy/ 3 wooks		Arm B		
	$\frac{1000}{1000}$ (26 Gy) < 00 %	$V_{000} V_{000} V_{000} = 0.000$		
-	$\frac{1}{105\%} \frac{1}{100\%} \frac{1}{10\%} \frac{1}{10\%} \frac{1}{10\%} \frac$	PTV	$\frac{V105\% (23.4Gray) \le 50\%}{V105\% (27.3Gy) \ge 5\%}$	
PTV	V107% (42.8 Gy) \ge 3 %.		V107% (27.82Gy)≥2%	
	D98 %≥ 43.2 Gy		D98 %≥ 28.8 Gy	
	V16 less than 15 - 20%		V30% (7.8Gy) ≥ 15-30%	
Ipsilateral	V 8 less than 35%	Ipsilateral	V15% (4Gy) ≥ 30-35%	
lung	$V12(18\% \ 30\%)$	lung	V5 % (1.3Gy) ≥ 5-55%	
	V12(18%-30%)		V8 (18%-30%)	
Contra lateral	$V4 \ge 10 \%$.	Contra lateral	V5 % $(1.3Gy) \ge 5$ %.	
	Mean (2 GY-2.5 GY).	Heart	Mean (1.3Gy -1.6 Gy)	
Heart	V10 (3%-5%)		V7 (3%-5%)	
	V2 (20%-30%)		V1.2 (20%-30)	
Contra lateral breast	D mean≥ 5 Gy.	Contra lateral breast	V3 % (0.78Gy) less than 5 %.	
SCV	V90 (%36 G) \leq 90%.	SCV	V90 % (23.4 Gy) \leq 90 %.	
Thyroid	D-max Less than 2 % (0.8 Gy)	Thyroid		
Spinal cord	D max < 45 Gy.	Spinal cord	V23 Gy< 0.35CC orV14.5 Gy <1.2cc.	
Brachial plexus	D max <66 Gy (RTOG 0619)	Brachial plexus	D-max < 30.5 Gy	
Oesophagus	Mean dose < 30 Gy (D-max <50 GY	Oesophagus	D max < 30 Gy	

Table 1): Desimatry planning of 3 weaks versus one weak protocol of breast cancer redicthereny.

Ethical approval

Informed written consent was obtained from the patients or relatives of the patients. The study was done after approval from the Ethical Committee of Sohag University Hospitals. The Helsinki Declaration was followed throughout the course of the investigation.

Statistical analysis

Statistical analysis was done by SPSS V26 (IBM Inc., Armonk, NY, USA). Quantitative variables were presented as mean and standard deviation (SD) and it is compared between the two groups utilizing unpaired Student's t- test.

Qualitative variables were presented as frequency and percentage (%) and were analysed utilizing the Chisquare test or Fisher's exact test when appropriate. The Kaplan–Meier survival method with the log rank test was used to assess different categories on survival. Coxregression was used to calculate hazards ratio in different subgroup. Graphs were produced by using Excel or STATA program. A two tailed P value < 0.05 was considered statistically significant.

RESULTS

There was statistically significant difference regarding mean age, menopausal status, preoperative biology between both groups, and significant difference between both groups regarding NAC, target therapy, adjuvant target therapy, adjuvant hormonal, and internal mammary irradiation (P<0.05).

while, insignificant difference was observed regarding preoperative pathology, grade, clinical T, clinical N, clinical stage, laterality treatment, adjuvant chemotherapy treatment, boost, radiotherapy target Breast with regional radiation treatment, and Chest wall with regional radiation (Table 2).

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(Table 2): Comparison be	etween the two radiation	n groups as regards	age, and menopausa	l status, preoperative da	ta, and
treatment (n=160)					

AgeMean ± SD55.88:7.9052.96:7.490.02°MenopausalF0 (17.6%)62 (82.6%)0.10MenopausalPremeopausal18 (21.18%)30 (40.0%)0.01°statusPremeopausal18 (21.18%)30 (40.0%)0.01°Frequerative dataFrequerative dataFrequerative data50 (25.6%)PathologiIDC ILC2 (2.3%)2 (2.67%)0.05°Medullary Papillary11 (1.18%)00.05°IDC ILC1 (1.18%)00.19GradeGIII74 (87.06%)70 (93.3%)0.19GradeGIII14 (16.47%)24 (32.0%)45 (6.67%)Luminal A14 (16.47%)5 (6.67%)0.48%BiologiIntriple negative19 (22.35%)13 (17.33%)HER2 over expression17 (20.00%)6 (8.00%)44 (4.00%)Tiple negative19 (22.35%)13 (17.33%)-0.04%Clinical NN141 (48.24%)23 (30.67%)0.30NO3 (3.23%)2 (2.67%)13 (17.33%)-0.18Clinical NN141 (48.24%)23 (30.67%)0.054NACN141 (48.24%)23 (30.67%)0.18NACStage IIIA47 (55.25%)7 (0.33%)0.18Clinical NN141 (48.24%)23 (30.67%)0.18NACStage IIIB34 (40.00%)27 (55.00%)0.18NACSingle agent5 (5.85%)00.18NACSingle agent5 (5.85%)00.			Test arm (n=85)	Control arm (n=75)	P value		
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Image: Clinical T Image: T <thimage: t<="" th=""> <thimage: t<="" th=""> <thimage: t<="" th=""></thimage:></thimage:></thimage:>		T0	3 (3 53%)	2 (2.67%)			
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$\begin{tabular}{ c c c c c c } \hline 14 & 35 (41.18%) & 28 (37.33%) \\ \hline Tx & 0 & 2 (2.67\%) \\ \hline N0 & 3 (3.23\%) & 2 (2.67\%) \\ \hline N1 & 41 (48.24\%) & 23 (30.67\%) \\ \hline N2 & 39 (45.88\%) & 43 (57.33\%) \\ \hline N3 & 2 (2.35\%) & 7 (9.33\%) \\ \hline Stage IIB & 2 (2.35\%) & 0 \\ \hline Stage IIB & 2 (2.35\%) & 0 \\ \hline Stage IIB & 34 (40.00\%) & 27 (36.00\%) \\ \hline Stage IIIC & 2 (2.35\%) & 7 (9.33\%) \\ \hline Stage IIIC & 2 (2.35\%) & 7 (9.33\%) \\ \hline Target & Single agent & 29 (34.12\%) & 10 (13.33\%) \\ \hline NAC & Two agents & 34 (40.00\%) & 41 (54.67\%) \\ \hline Target & Single agent & 5 (5.88\%) & 0 & 0.02* \\ \hline therapy & Two agents & 19 (22.35\%) & 9 (12.00\%) \\ \hline Laterality & Left & 48 (56.47\%) & 42 (56.00\%) \\ \hline Adjuvant chemotherapy & Two agents & 18 (21.18\%) & 23 (30.67\%) \\ \hline Adjuvant target therapy & Two agents & 18 (21.18\%) & 23 (30.67\%) \\ \hline Adjuvant target therapy & Two agents & 18 (21.18\%) & 23 (30.67\%) \\ \hline Adjuvant target therapy & Two agents & 18 (21.18\%) & 23 (30.67\%) \\ \hline Adjuvant target therapy & S5 (100\%) & 7 (51.00\%) & 0.02* \\ \hline Radiotherapy & Two agents & 18 (21.18\%) & 23 (30.67\%) \\ \hline Radiotherapy & Se (100\%) & 75 (100\%) & - \\ \hline Omit & 17 (20.00\%) & 9 (12.00\%) & - \\ \hline Radiotherapy & St (100\%) & 75 (100\%) & - \\ \hline Stage III & 17 (20.00\%) & 11 (14.67\%) & 0.45 \\ \hline Radiotherapy target Breast with regional radiation & 34 (40.00\%) & 30 (40.00\%) & 1.00 \\ \hline Internal mamary irradiation & 19 (22.35\%) & 34 (45.33\%) & 0.002* \\ \hline target therapy & 85 (100\%) & 75 (100\%) & - \\ \hline Two agents & 13 (21.28\%) & 10 (13.33\%) & 0.45 \\ \hline \end{target therapy & Sequential & 8 (9.41\%) & 10 (13.33\%) & 0.45 \\ \hline \end{target therapy & Sequential & 8 (9.41\%) & 10 (13.33\%) & 0.45 \\ \hline \end{target therapy & agent adiation & 34 (40.00\%) & 30 (40.00\%) & 1.00 \\ \hline \end{target therapy & 10.59\% & 11 (14.67\%) & 0.045 \\ \hline \end{target therapy & Sequential & 8 (9.41\%) & 10 (13.33\%) & 0.45 \\ \hline \end{target therapy & Sequential & 8 (9.41\%) & 10 (13.33\%) & 0.45 \\ \hline \end{target therapy & agent adiation & 51 (60.00\%) & 45 (60.00\%) & 1.00 \\$	Clinical T	T3	32 (37 65%)	23 (30 67%)	0.30		
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		T3	35 (41 18%)	28 (37 33%)			
		Tx	0	20 (37:3370)			
Ni 3 (24.2%) 2 (2.0%) 0.054 NI 41 (48.24%) 23 (30.67%) 0.054 N3 2 (2.35%) 7 (9.33%) 0.054 Stage IIB 2 (2.35%) 0 0 Stage IIIA 47 (55.2%) 0 0 Stage IIIC 2 (2.35%) 0 0.18 Stage IIIC 2 (2.35%) 7 (9.33%) 0.18 MAC Stage IIIC 2 (2.35%) 7 (9.33%) 0.18 NAC Single agent 29 (34.12%) 10 (13.33%) 0.01* Target Single agent 5 (5.88%) 0 0.02* therapy Two agents 19 (22.35%) 9 (12.00%) 0.95 Adjuvant Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant Taxol 9 (10.59%) 2 (2.67%) 0.02* Adjuvant Taxol 9 (10.59%) 1 (1.33%) 0.02* Adjuvant bernonal 50 (58.82%) 57 (76.00%) 0.12 Matotherapy Two agents		NO	3 (3 23%)	2 (2 67%)	0.054		
Clinical N Nt If (45.88%) 2.05(3.3%) 0.054 N3 2 (2.35%) 7 (9.33%) 0.054 Stage IIB 2 (2.35%) 0 0 Clinical stage Stage IIB 2 (2.35%) 0 0.18 Clinical stage Stage IIB 34 (40.00%) 41 (54.67%) 0.18 Clinical stage Stage IIIB 34 (40.00%) 27 (36.00%) 0.18 Stage IIIB 34 (40.00%) 41 (54.67%) 0.18 MAC Single agent 29 (34.12%) 10 (13.33%) 0.01* Target Single agent 5 (5.88%) 0 0.02* therapy Two agents 19 (22.35%) 9 (12.00%) 0.95 Laterality Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant Left 48 (56.47%) 42 (56.00%) 0.12 Marget therapy Two agents 18 (21.18%) 23 (30.67%) 0 Marget therapy </th <th></th> <th>N1</th> <th>41 (48 24%)</th> <th>23 (30 67%)</th>		N1	41 (48 24%)	23 (30 67%)			
Na D (2,35%) T (9,33%) Clinical stage Stage IIB 2 (2,35%) 0 Stage IIIA 47 (55,2%) 41 (54,67%) 0.18 Stage IIIB 34 (40,00%) 27 (36,00%) 0.18 Stage IIIC 2 (2,35%) 7 (9,33%) 0.18 NAC Stage IIIC 2 (2,35%) 7 (9,33%) 0.18 NAC Single agent 29 (34,12%) 10 (13,33%) 0.01* Target Single agent 5 (5,88%) 0 0.02* therapy Two agents 19 (22,35%) 9 (12,00%) 0.02* Laterality Right 37 (43,53%) 33 (44,00%) 0.95 Adjuvant chemotherapy Two agents 18 (21,18%) 23 (30,67%) 0.12 Adjuvant target therapy Two agents 18 (21,18%) 0 0.02* Adjuvant target therapy Two agents 23 (2,70%) 11 (13,3%) 0.02* Madjuvant target therapy Two agents 23 (27,06%) 13 (17,33%) 0.02* Stage IIIA 0	Clinical N	N2	39 (45 88%)	43 (57 33%)			
Item D (2,35%) 0 Clinical stage Stage IIIA 47 (55.2%) 41 (54.67%) Stage IIIB 34 (40.00%) 27 (36.00%) 0.18 Stage IIIC 2 (2.35%) 7 (9.33%) 0.18 Treatment NAC Single agent 29 (34.12%) 10 (13.33%) 0.01* Target Single agent 5 (5.88%) 0 0.02* therapy Two agents 19 (22.35%) 9 (12.00%) 0.95 Adjuvant Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant Taxol 9 (10.59%) 2 (2.67%) 0.12 Adjuvant Taxol 9 (10.59%) 2 (3.06%) 0.12 Adjuvant Tow agents 18 (21.18%) 23 (30.67%) 0.12 Adjuvant Herceptin 7 (8.24%) 0 0 0.2* Adjuvant Gadiotherapy Two agents 23 (27.06%) 13 (17.33%) 0.02* Adjuvant Omit 17 (20.00%) 7 (5 (100%) -		N2 N3	2 (2 35%)	7 (9 33%)			
Other IIIA D (55.2%) 41 (54.67%) 0.18 Stage IIIB 34 (40.00%) 27 (36.00%) 0.18 Stage IIIC 2 (2.35%) 7 (9.33%) 0.18 Treatment NAC Single agent 29 (34.12%) 10 (13.33%) 0.01* Target Single agent 25 (5.88%) 0 0.02* therapy Two agents 19 (22.35%) 9 (12.00%) 0.02* Laterality Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant Left 48 (56.47%) 2 (2.67%) 0.12 Adjuvant Left 48 (56.47%) 2 (2.67%) 0.12 Adjuvant Taxol 9 (10.59%) 2 (2.67%) 0.12 Adjuvant Tow agents 18 (21.18%) 23 (30.67%) 0.12 Adjuvant Herceptin 7 (8.24%) 0 0 Model 9 (10.59%) 11 (1.33%) 0.02* Adjuvant ToM 2 (2.35%) 11 (1.33%) 0.02* BOOST		Stage IIB	2 (2.35%)	0			
Clinical stage Stage IIIB 34 (40.00%) 27 (35.00%) 0.18 Stage IIIC 2 (2.35%) 7 (9.33%) 0 Treatment NAC Single agent 29 (34.12%) 10 (13.33%) 0.01* Target Single agent 5 (5.88%) 0 0.02* therapy Two agents 19 (22.35%) 9 (12.00%) 0.95 Adjuvant Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant Left 37 (43.53%) 33 (44.00%) 0.12 Mage therapy Two agents 18 (21.18%) 23 (30.67%) 0.12 Adjuvant Herceptin 7 (8.24%) 0 0.02* Mage therapy Two agents 23 (27.05%) 13 (17.33%) 0.02* Mage therapy Sequential 8 (9.41%) 10 (13.33%) 0.45 Mage therapy Sequential 8 (9.41%) 10 (13.33%) 0.45 Mage therapy SiB 9 (10.59%) 11 (14.67%) 1.00 SiB 9 (10.59%) </th <th></th> <th>Stage IIIA</th> <th>47 (55 2%)</th> <th>41 (54 67%)</th> <th></th>		Stage IIIA	47 (55 2%)	41 (54 67%)			
Stage IIIC 2 (2.35%) 7 (9.33%) NAC Single agent 29 (34.12%) 10 (13.33%) 0.01* NAC Single agent 29 (34.12%) 10 (13.33%) 0.01* Target Single agent 5 (5.88%) 0 0.02* Itherapy Two agents 19 (22.35%) 9 (12.00%) 0.02* Laterality Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant Right 37 (43.53%) 33 (44.00%) 0.95 Adjuvant Taxol 9 (10.59%) 2 (2.67%) 0.12 Adjuvant Taxol 9 (10.59%) 2 (3.0.67%) 0.12 Adjuvant Herceptin 7 (8.24%) 0 0.02* Adjuvant Omoti 2 (2.35%) 1 (1.33%) 0.02* Maccord Stagents 2 (2.07%) 0.02* Adjuvant Genets 2 (2.35%) 1 (1.33%) 0.02* Merceptin 7 (8.24%) 0 0 0.2* Merceptin 7 (20.00%)	Clinical stage	Stage IIIB	34 (40 00%)	27 (36 00%)	0.18		
Treatment Treatment NAC Single agent 29 (34.12%) 10 (13.33%) 0.01* Target Single agent 5 (5.88%) 0 0.02* Iherapy Two agents 19 (22.35%) 9 (12.00%) 0.02* Laterality Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant Right 37 (43.53%) 33 (44.00%) 0.95 Adjuvant Taxol 9 (10.59%) 2 (2.67%) 0.12 Adjuvant Yeloda 4 (4.71%) 6 (8.00%) 0.12 Adjuvant Herceptin 7 (8.24%) 0 0 Adjuvant Herceptin 7 (8.24%) 0 0 Adjuvant Genets 23 (27.06%) 13 (17.33%) 0.02* Radiotherapy 85 (100%) 75 (100%) - - Momit 17 (20.00%) 9 (12.00%) - - BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 SIB 9 (10.59%) 11 (14.67%)		Stage IIIC	2 (2 35%)	7 (9 33%)			
NAC Single agent 29 (34.12%) 10 (13.33%) 0.01* Target therapy Single agent 5 (5.88%) 0 0.02* Laterality Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant chemotherapy Taxol 9 (10.59%) 2 (2.67%) 0.12 Adjuvant chemotherapy Two agents 18 (21.18%) 23 (30.67%) 0.12 Magents 18 (21.18%) 23 (30.67%) 0.02* 0.02* Adjuvant target therapy TbM 2 (2.35%) 1 (1.33%) 0.02* Magint target therapy S0 (58.82%) 57 (76.00%) 0.02* BOOST Radiotherapy 85 (100%) 75 (100%) - SIB 9 (10.59%) 11 (14.67%) 0.45 SIB 9 (10.59%) 11 (14.67%)		Treat	ment	().5570)			
NAC Differ tight Differ tight <thdiffer th="" tight<=""> Differ tight</thdiffer>		Single agent	29 (34 12%)	10 (13 33%)			
Target therapy Single agent St (10000) (10000) (10000) (0.02* Laterality Two agents 19 (22.35%) 9 (12.00%) (12.00%) </th <th>NAC</th> <th>Two agents</th> <th>34 (40.00%)</th> <th>41 (54.67%)</th> <th>0.01*</th>	NAC	Two agents	34 (40.00%)	41 (54.67%)	0.01*		
Import Displet up in Decision 0.02* therapy Two agents 19 (22.35%) 9 (12.00%) 0.02* Laterality Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant chemotherapy Taxol 9 (10.59%) 2 (2.67%) 0.95 Adjuvant chemotherapy Two agents 18 (21.18%) 23 (30.67%) 0.12 Adjuvant target therapy Herceptin 7 (8.24%) 0 0 Adjuvant target therapy Two agents 23 (27.06%) 13 (17.33%) 0.02* BOOST Radiotherapy 85 (100%) 75 (100%) - BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 Radiotherapy Iss (21.00%) 9 (10.59%) 11 (14.67%) 1.00 BOOST Sequential 3 (44.00%) 30 (40.00%) 1.00 Radiotherapy 10 (13.33%) 0.45 1.00 Internal mammary irradiation 51 (60.00%) 45 (60.00%) 1.00	Target	Single agent	5 (5.88%)	0			
Laterality Left 48 (56.47%) 42 (56.00%) 0.95 Adjuvant chemotherapy Taxol 9 (10.59%) 2 (2.67%) 0.12 Adjuvant chemotherapy Two agents 18 (21.18%) 23 (30.67%) 0.12 Adjuvant target therapy Herceptin 7 (8.24%) 0 0.02* Adjuvant target therapy Merceptin 50 (58.82%) 57 (76.00%) 0.02* BOOST Radiotherapy 85 (100%) 75 (100%) - SIB 9 (10.59%) 11 (14.67%) 0.45 Radiotherapy target Breast with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*	therapy	Two agents	19 (22.35%)	9 (12.00%)	0.02*		
Laterality Diric 10 (03.10) 11 (03.00) 0.95 Adjuvant chemotherapy Taxol 9 (10.59%) 2 (2.67%) 0.12 Adjuvant chemotherapy Two agents 18 (21.18%) 23 (30.67%) 0.12 Adjuvant target therapy Herceptin 7 (8.24%) 0 0.02* Adjuvant target therapy Herceptin 7 (8.24%) 0 0.02* Minor 2 (2.35%) 1 (1.33%) 0.02* Sequential 50 (58.82%) 57 (76.00%) 0.02* BOOST Radiotherapy 85 (100%) 75 (100%) - SIB 9 (10.59%) 11 (14.67%) 0.45 SIB 9 (10.59%) 11 (14.67%) 1.00 Chest wall with regional radiation 34 (40.00%) 30 (40.00%) 1.00	F J	Left	48 (56.47%)	42 (56.00%)			
Adjuvant chemotherapy Taxol 9 (10.59%) 2 (2.67%) 0.12 Adjuvant chemotherapy Xeloda 4 (4.71%) 6 (8.00%) 0.12 Adjuvant target therapy Herceptin 7 (8.24%) 0 0 Adjuvant target therapy Two agents 23 (27.06%) 13 (17.33%) 0.02* Adjuvant hormonal 50 (58.82%) 57 (76.00%) 0.02* Radiotherapy 85 (100%) 75 (100%) - BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 Radiotherapy target Breast with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Chest wall with regional radiation 51 (60.00%) 45 (60.00%) 1.002*	Laterality	Right	37 (43.53%)	33 (44.00%)	0.95		
Adjuvant chemotherapy Xeloda 4 (4.71%) 6 (8.00%) 0.12 Mdjuvant target therapy Two agents 18 (21.18%) 23 (30.67%) 0 Adjuvant target therapy Herceptin 7 (8.24%) 0 0.02* Adjuvant target therapy Two agents 23 (27.06%) 13 (17.33%) 0.02* Adjuvant hormonal 50 (58.82%) 57 (76.00%) 0.02* Radiotherapy 85 (100%) 75 (100%) - BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 Radiotherapy target Breast with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Radiotherapy target Breast with regional radiation 51 (60.00%) 45 (60.00%) 1.00 Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*		Taxol	9 (10.59%)	2 (2.67%)			
Chemotherapy Two agents 18 (21.18%) 23 (30.67%) 0.02* Adjuvant target therapy Herceptin 7 (8.24%) 0 0.02* Adjuvant target therapy Two agents 23 (27.06%) 11 (1.33%) 0.02* Adjuvant hormonal 50 (58.82%) 57 (76.00%) 0.02* Radiotherapy 85 (100%) 75 (100%) - BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 Radiotherapy target Breast with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Radiotherapy target Breast with regional radiation 51 (60.00%) 45 (60.00%) 1.00 Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*	Adjuvant	Xeloda	4 (4.71%)	6 (8.00%)	0.12		
Adjuvant target therapy Herceptin 7 (8.24%) 0 TDM 2 (2.35%) 1 (1.33%) 0.02* Main therapy Two agents 23 (27.06%) 13 (17.33%) 0.02* Adjuvant hormonal 50 (58.82%) 57 (76.00%) 0.02* Radiotherapy 85 (100%) 75 (100%) - BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 SIB 9 (10.59%) 11 (14.67%) 0.45 Radiotherapy target Breast with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Chest wall with regional radiation 51 (60.00%) 45 (60.00%) 1.00	chemotherapy	Two agents	18 (21.18%)	23 (30.67%)			
Adjuvant target therapy TDM 2 (2.35%) 1 (1.33%) 0.02* Two agents 23 (27.06%) 13 (17.33%) 0.02* Adjuvant hormonal 50 (58.82%) 57 (76.00%) 0.02* Radiotherapy 85 (100%) 75 (100%) - BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 SIB 9 (10.59%) 11 (14.67%) 0.45 Chest wall with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*		Herceptin	7 (8.24%)	0			
target therapy Two agents 23 (27.06%) 13 (17.33%) Adjuvant hormonal 50 (58.82%) 57 (76.00%) 0.02* Radiotherapy 85 (100%) 75 (100%) - BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 Radiotherapy target Breast with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*	Adjuvant	ТДМ	2 (2.35%)	1 (1.33%)	0.02*		
Adjuvant hormonal 50 (58.82%) 57 (76.00%) 0.02* Radiotherapy 85 (100%) 75 (100%) - Omit 17 (20.00%) 9 (12.00%) 0.45 BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 Radiotherapy target Breast with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*	target therapy	Two agents	23 (27.06%)	13 (17.33%)			
Radiotherapy 85 (100%) 75 (100%) - BOOST Omit 17 (20.00%) 9 (12.00%) 0.45 BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 SIB 9 (10.59%) 11 (14.67%) 1.00 Chest wall with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*	Adjuvant hormonal		50 (58.82%)	57 (76.00%)	0.02*		
BOOST Omit 17 (20.00%) 9 (12.00%) BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 SIB 9 (10.59%) 11 (14.67%) 1.00 Chest wall with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*		Radiotherapy	85 (100%)	75 (100%)	-		
BOOST Sequential 8 (9.41%) 10 (13.33%) 0.45 SIB 9 (10.59%) 11 (14.67%) 0.45 Radiotherapy target Breast with regional radiation 34 (40.00%) 30 (40.00%) 1.00 Chest wall with regional radiation 51 (60.00%) 45 (60.00%) 1.00 Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*		Omit	17 (20.00%)	9 (12.00%)			
SIB 9 (10.59%) 11 (14.67%) Radiotherapy target Breast with regional radiation 34 (40.00%) 30 (40.00%) Chest wall with regional radiation 51 (60.00%) 45 (60.00%) Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*	BOOST	Sequential	8 (9.41%)	10 (13.33%)	0.45		
Radiotherapy target Breast with regional radiation 34 (40.00%) 30 (40.00%) Chest wall with regional radiation 51 (60.00%) 45 (60.00%) Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*		SIB	9 (10.59%)	11 (14.67%)			
Chest wall with regional radiation 51 (60.00%) 45 (60.00%) 1.00 Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*	Radiotherapy target Breast with regional radiation		34 (40.00%)	30 (40.00%)	1.00		
Internal mammary irradiation 19 (22.35%) 34 (45.33%) 0.002*	Ches	t wall with regional radiation	51 (60.00%)	45 (60.00%)	1.00		
	Internal mammary irradiation		19 (22.35%)	34 (45.33%)	0.002*		

Data are presented as mean \pm SD or number (%). IDC: Invasive duct carcinoma, ILC: Invasive lobular carcinoma, HER2: human epidermal growth factor receptor 2, NAC: Neoadjuvant chemotherapy, PCR: Pathological complete response. *: significant as P value <0.05.

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(Table 3) shows that there were significant differences between both groups regarding all postoperative data (Grade, biology, clinical T, clinical N, and clinical stage) with P value < 0.05. Post-operative pathology shows insignificant difference regarding site of recurrence, death and all side effects of treatment except radiation dermatitis was significantly less in test arm with P value 0.0001.

(Table 3): Comparison	between the two radiation gr	roups as regards posto	operative data, and side et	ffects (n=160)
	0		1 /	

		Test arm (n=85)	Control arm (n=75)	P value
	Р	ostoperative		
	PCR	17 (20.00%)	6 (8.00%)	
Pathology	IDC	65 (76.47%)	66 (88.00%)	
	ILC	1 (1.18%)	2 (2.67%)	0.16
	IDC\ILC	1 (1.18%)	0	0.16
	Medullary	1 (1.18%)	0	_
	Papillary	0	1 (1.33%)	_
	PCR	17 (20.00%)	6 (8.00%)	
Grade	GII	62 (72.94%)	67 (89.33%)	0.03*
	GIII	6 (7.06%)	2 (2.67%)	-
	PCR	17 (20.00%)	6 (8.00%)	
	Luminal A	13 (15.29%)	24 (32.00%)	-
	Luminal B	21 (24.71%)	23 (30.67%)	
Biology	Luminal B Her2/ neu over expression	11 (12.94%)	6 (8.00%)	0.045*
	HER2 over expression	10 (11.76%)	5 (6.67%)	-
	Triple negative	13 (15.29%)	11 (14.67%)	-
	PCR	2 (2.35%)	0	
	TO	20 (23.53%)	12 (16.00%)	1
	 T1	22 (25.88%)	8 (10.67%)	
Clinical T	T2	25 (29.41%)	31 (41,33%)	0.02*
	T3	13 (15.29%)	15 (20.00%)	-
	T4	3 (3.53%)	9 (12,00%)	-
	PCR	2 (2 35%)	0	
	NO	43 (50 59%)	25 (33 33%)	-
Clinical N	N1	24(2824%)	16(21.33%)	0.02*
Chinear	N2	14 (16 47%)	22(29.33%)	
	N3	2 (2 35%)	12(16,00%)	-
	Stage 0	20 (23 53%)	8 (10 67%)	
	Stage IA	12 (14 12%)	4 (5 33%)	-
	Stage IIA	18 (21 18%)	15 (20,00%)	-
Clinical	Stage IIR	7 (8 24%)	8 (10 67%)	0.003*
stage	Stage IIIA	23 (27 06%)	19(25,33%)	
	Stage IIIR	3 (3 53%)	9 (12 00%)	-
	Stage IIIC	2(235%)	12 (16 00%)	-
	Stage me	Side effect	12 (10.0070)	
	CO	24 (28 24%)	5 (6 67%)	
Radiation	G1	58 (68 24%)	61 (81 33%)	-
dermatitis		2 (2 35%)	8 (10 67%)	0.0001*
uermutitis	<u> </u>	1 (1 18%)	1 (1 33%)	-
	GO	83 (97 65%)	71 (94 67%)	
Dysnhagia	<u> </u>	1 (1 18%)	3 (4 00%)	0.52
Dyspinagia		1 (1.10%)		0.52
		81 (95 29%)	68 (90 67%)	
Lompoitic	C1	0	1(133%)	0.52
Laryngius		<i>A</i> (<i>A</i> 71%)	6 (8 00%)	0.52
	Breast distortion	5 (5 88%)	3 (4 00%)	0.72
	Broost chrinkogo	6 (7 06%)	<u> </u>	0.72
	Broast induration	2 (2 35%)	н (<i>3.3370)</i> П	0.75
	Tolongioctosie	2(2.3370)		1.00
Condias		$\begin{array}{c} 2 (2.33\%) \\ 83 (07.65\%) \end{array}$	$\frac{1(1.33\%)}{74(09.670/)}$	1.00
tovioity		$\begin{array}{c} 0.0 (77.05\%) \\ 0.0 (7.05\%) \end{array}$	1 (1 2304)	1.00
Dulmonor		2(2.33%)	1(1.35%)	0.55
runnonary	GU	01 (93.29%)	/1 (94.0/%)	0.55

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		Test arm (n=85)	Control arm (n=75)	P value	
toxicity	G1	3 (3.53%)	4 (5.33%)		
	G2	1 (1.18%)	0		
	Site	of recurrence			
	Locoregional recurrence	2 (2.35%)	2 (2.67%)	1.00	
Distant recurrence		4 (4.71%)	3 (4.00%)	1.00	
Site of distant recurrence	Skin nodules	2 (33.33%)	2 (40.00%)		
	Bone metastasis	1 (16.67%)	1 (20.00%)	0.42	
	Lung metastasis	2 (33.33%)	0		
	Liver metastasis	1 (16.67%)	0		
	Brain metastasis	0	1 (20.00%)		
	Liver and bone metastasis	0	1 (20.00%)		
Death		1 (1.18%)	0	1.00	

Data are presented as frequency (%). IDC: Invasive duct carcinoma, ILC: Invasive lobular carcinoma, HER2: human epidermal growth factor receptor 2, NAC: Neoadjuvant chemotherapy, PCR: Pathological complete response. *: significant as P value <0.05.

(Table 4) presents survival outcomes (overall, disease-free, locoregional recurrence-free, and distant recurrence-free) over time among different groups, including one-week, three-week, MRM, and OBS. Across all outcomes, survival rate was consistently high, ranging from 92.26% to 100%, with the OBS group achieving perfect locoregional recurrence-free survival (100%). Statistical analysis shows no significant differences between groups for any outcome, (P = 0.22 for overall survival, P = 0.40 for disease-free survival, P = 0.10 for locoregional recurrence-free survival, and P = 0.84 for distant recurrence-free survival). These findings suggest that the interventions, including timing and surgical techniques, were not significantly impact survival or recurrence-free outcomes in the studied population (Table 4 and figures 1 & 2).

(Table 4): Overall, disease, locoregional recurrence, and distant recurrence free survival function over time in studied population

	12 months	At the end (rate %)	P value		
One week (n=85)	98.82%	98.82%)	0.35		
Three weeks (n=75)	100%	(100%)			
MRM (n=96)	100%	(100%)	0.22		
OBS (n=64)	98.44%	(99.44%)	0.22		
	Disease free s	urvival function			
One week (n=85)	95.27%	(92.88%)	0.80		
Three weeks (n=75)	97.33%	(90.85%)	0.89		
MRM (n=96)	95.83%	(91.42%)	0.40		
OBS (n=64)	96.88 %	(92.26%)	0.40		
	Locoregional recu	irrence free survival			
One week (n=85)	98.81%	(97.62%)	0.00		
Three weeks (n=75)	98.67%	(97.02%)	0.90		
MRM (n=96)	97.92%	(95.60%)	0.10		
OBS (n=64)	100%	100%	0.10		
Distant recurrence free					
One week (n=85)	96.46%	(95.27%)	0.91		
Three weeks (n=75)	98.67%	(93.86%)	0.81		
MRM (n=96)	97.92%	(95.83%)	0.84		
OBS (n=64)	96.88%	(92.26%)	0.84		

Data are presented as %. OBS: Oncoplastic breast surgery, MRM: modified radical mastectomy



Figure 1: Locoregional recurrence free survival rate in all patients



Figure 2: Disease free survival rate in all patients by (groups).

DISCUSSION

In our study, as regard radiation dermatitis in test arm, there were 24 (28.24%) cases were G0, 58 (68.24%) cases were G1, 2 (2.35%) cases were G2 and1 (1.18%) case was G3, but in control arm, there were 5 (6.67%) cases were G0, 61 (81.33%) cases were G1, 8 (10.67%) cases were G2 and1 (1.33%) case were G3 (pvalue 0.0001), So much less radiation toxicity in one week arm radiotherapy.

Patients aged 65 years were treated in 5 fractions with a total dose of 28.5 Gy/5 fractions to the breast or thoracic wall and, if indicated, 27 Gy/5.4 Gy to the lymph node regions and 32.5 Gy/6.5 Gy to 34.5 Gy/6.9 Gy to the tumour bed (52.6% of grade 1 dermatitis for whole breast irradiation and chest wall irradiation combined), shorter delivery time may have impacted toxicity. However, toxicity scales differed, with possibly an upward shift of faint erythema toward grade 1 with the CTCAE toxicity scale ^[12]. While, in our

study, late toxicity appeared through 24 months follow up breast distortion that occurs only in 8 (5.00%) cases, breast shrinkage appeared in 10 (6.23%) cases, breast induration appeared in 2 (1.25%) cases and telangiectasia occurred in 3 (1.88%) cases.

In test arm, breast distortion occurs only in 5 (5.88%) cases, breast shrinkage appears in 6 (7.06%) cases, breast inducation appeared in 2 (2.35%) cases and telangiectasia occurred in 2 (2.35%) cases. In control arm, breast distortion appeared only in 3 (4.00%) cases, breast shrinkage appeared in 4 (5.33%) cases, breast inducation appeared in 0 (0%) case and telangiectasia occurred in 1 (1.33%) case, which is statistically insignificant between two arms. The START-B study found that inducation rates were 11.8% in the 50 Gy group and 9.0% (95% confidence interval 7.2 e 11.1%) in the 40 Gy group ^[13].

In our study as regard acute dysphagia, 154 (96.25%) cases were G0, 4 (2.50%) cases were G1, 2

(1.25%) cases were G2 and no G3. But acute laryngitis occurs in 10 (6.25%) cases were G3, 1 (0.63%) were G1 and 149 (93.13%) cases were G0. In test arm, 83 (97.65%) cases were G0 acute dysphagia, 1 (1.18%) case were G1 and 1 (1.18%) case were G2. In control arm, 71 (94.67%) cases were G0, 3 (4.00%) cases were G1, and 1 (1.18%) case was G2, which were statistically insignificant.

Test arm acute laryngitis occurred in 81 (95.29%) cases were G0, 0 (0%) cases were G1 and 4 (4.71%) cases were G2. But, control arm, 68 (90.67%) cases were G0, 1 (1.33%) case was G1, and 6 (8.00%) cases were G2, which were statistically insignificant with slight increase in laryngitis G1 and G2 in control arm.

Despite the significant proportion of patients undergoing regional nodal irradiation in the HYPORT Adjuvant study (70% in each arm), no patients had grade 2 or higher dysphagia ^[14].

Our study, Cardiac toxicity appears only in 3 (1.88%) cases with G1 (decreased EF from 13-15%, which was reversible and did not disrupt continuation of systemic therapy). Cardiac toxicity appears only in 2 (2.35%) cases with G1 in test arm but it occurred in 1 (1.33%) case in control arm, which were statistically insignificant.

The heart often requires a very long follow-up to assess the full risk, although there is no specific reason to expect an increased cardiac sensitivity to hypofractionation. there is no safe dose to the heart and therefore the effort is to reduce or eliminate cardiac dose. At this early stage, after imaging and further investigation, excluding cases confirmed not to be radiotherapy-related. Left-sided breast cancer radiotherapy, there were six cases of ischemic heart disease in the 40 Gy group and three cases in the 26 Gy group ^[15].

Pulmonary toxicity occurred in 7 (4.38%) cases in form of G1pulmonary fibrosis and 1 (0.63%) case was G2. Pulmonary toxicity in test arm occurred in 3 (3.53%) cases in form of G1pulmonary fibrosis and 1 (1.18%) case was G2, but in control arm, it occurred in 4 (5.33%) cases in form of G1pulmonary fibrosis and 0 (0%) case was G2, which were statistically insignificant. Clinically significant radiation pneumonitis develops in <1% of patients, which received local RT with a mean central long distance <2 cm or a mean ipsilateral V20 of <7%. However, if loco-regional RT is administered with template techniques and without 3-D planning aimed at reducing dose to lung. Short-term pulmonary toxicity of grade 2 was detected in roughly 10% of patients and predominantly in cases where the ipsilateral V20 is ≥30% [16].

Locoregional recurrence occurred in 4 (2.50%) cases in form of skin nodules no regional lymph node recurrence. Locoregional recurrence occurred in 2 (2.35%) cases in form of skin nodules no regional lymph node recurrence in test arm. In control arm, it occurred also in 2 (2.67%) cases in form of skin nodules which were statistically insignificant. Distant

recurrence occurred in 7 (4.38%) cases, bone metastasis occurred in 2 (18.18%) cases, pulmonary metastasis occurred also in 2 (18.18%) cases, liver metastasis occurred in 1 (9.09%) case, brain metastasis occurred in 1 (9.09%) case and both liver and bone metastasis occurred in 1 (9.09%) case. One case died after 8 months due to cerebrovascular accidents.

In test arm, distant recurrence occurred in 4 (4.71%) cases and meanwhile bone metastasis occurred in 1 (16.67%) case, pulmonary metastasis occurred also in 2 (33.33%) cases and liver metastasis occurred in 1 (16.67%) case. but, control arm, it occurred in 3 (4.00%) cases, bone metastasis occurred in 1 (20.00%) case, brain metastasis occurred in 1 (20.00%) case and both liver and bone metastasis occurred in 1 (20.00%) case. one case died after 8 months due to cerebrovascular accidents in test arm which is statistically insignificant.

In advanced cases, all 103 patients in the group were assessed for locoregional recurrence. Our findings imply that NAC followed by surgery and RT for breast cancer is linked with low rates of LRR (about 10% at 5 years) and relatively good OS (more than 75% at 5 years). Distant recurrence (15 patients) was twice as common as LRR (9.7%,7 patients), which was consistent with previously published outcomes of RT after NAC and surgery ^[17].

The Ontario Clinical Oncology Group reported IBTR rates of 3.2%/6.7% and 2.8%/6.2% after 50 Gy in 25 fractions versus 42.5 Gy in 16 fractions respectively, with an absolute difference of 0.4% (95% confidence interval e1.5e2.4%) and 0.5% (95% confidence interval e2.5e3.5%) at 5- and 10-year time points ^[18].

According to retrospective studies, adjuvant RT helps individuals treated with NAC for ABC. comparing 542 patients who underwent NAC, surgery, and adjuvant radiation therapy against 134 patients who did not receive radiation therapy. The RT cohort had more advanced disease (73% were pre-treatment stage III and 10% were stage IV) than the control group (46% were stage III and 4% were stage IV). LRR was still significantly lower in RT patients (11% versus 22%; p = 0.0001), and RT increased specific survival in patients with stage IIIB or IV illness, clinical T4 tumours, and four or more positive lymph nodes ^[19].

Overall survival for all studied population after 24 months were 99.38%. Overall survival in one week arm patients were 98.82% but in control arm overall survival were 100%, which were statistically insignificant (p-value =0.35). Disease free survival for all studied population after 24 months were 91.91%. Disease free survival for test arm were 92.88%. In control arm disease free survival were 90.85%, which were statistically insignificant (p-value=0.89).

Disease free survival in patients with MRM were 91.42%. In OBS patients, disease free survival was 92.26% which were statistically insignificant (p-value =0.40).

Locoregional recurrence free survival for all studied population after 24 months were 97.35%.

Locoregional recurrence free survival for test arm were 97.62%, in control arm disease free survival were 97.02%, which were statistically insignificant (p-value =0.90). Distant recurrence free survival for all studied population after 24 months were 94.58%. Distant recurrence free survival for test arm were 95.27%. In control arm distant recurrence free survival were 93.86%, which were statistically insignificant (p-value =0.81).

Another study, the clinical and pathologic predictors of LRR after neoadjuvant chemotherapy, mastectomy, and radiation therapy. Although the overall rate of LRR was low (11% after 10 years), we were able to detect numerous risk variables for LRR, including skin/nipple involvement, SCV nodal involvement, no tamoxifen treatment, extracapsular extension, and ER-negative illness. According to recent research, achieving locoregional control is a major predictor of survival ^[20].

Limitations: Detecting acute toxicities one or two weeks after radiation is difficult in our setting because patients frequently travel long distances. Furthermore, the lack of planned assessments in the first six weeks after radiation due to the second wave COVID-19 pandemic. The acute toxicity of hypofractionated radiation is anticipated to peak within the first few weeks following treatment completion.

CONCLUSION

Ultra-hypo fractioned radiotherapy (26 Gy over five fractions in one week) approved its safety and efficacy in comparison with moderate hypofractionation (40 Gy /15 fractions over three weeks) in advanced high risk breast cancer patients with comparable acute and late toxicities and less radiation dermatitis through 24 month follow up. One week radiation in advanced breast cancer patients were efficient in locoregional control and disease-free survival that were comparable with standard moderate hypofractionation. It is suitable for all patient characteristics with better results for patients with age more than 60 years, clinically N2, Her2/neu overexpression, MRM and patients who receiving adjuvant hormonal therapy.

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