



COMPARISON OF TWO FRACTIONATION SCHEDULES IN TERMS OF LOCO REGIONAL CONTROL AND TOXICITY PROFILE IN POSTMASTECTOMY RADIOTHERAPY

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ABSTRACT

In a general radiation oncology practice, breast cancer typically constitutes approximately 25% of total patient caseload. Radiation therapy (RT) plays an essential and critical role in the management of breast cancer. Locally advanced breast cancer is not clearly defined, though it commonly refers to stage III disease, which includes advanced primary or nodal disease without evidence of systemic metastases. Patients who present with locally advanced breast cancer require care from a multidisciplinary team. The purpose of this study was to compare two fractionation schedules (50Gy in 25 fractions vs 40Gy in 15 fractions) used in post mastectomy chest wall irradiation in Carcinoma Breast regarding loco-regional control and toxicity profile. Several studies have shown that two fractionation schedules are equivalent in loco-regional control and cosmetic outcome. The composition of this study is well matched regarding age, surgery and other histopathological findings.

KEYWORDS : Breast Cancer, Hypo Fractionation, Toxicity, Survival.

INTRODUCTION

It is the most common cancer both in developed and developing regions with around 690 000 new cases estimated in each region. The range of mortality rates is much less (approximately 6-19 per 100,000) because of the more favorable survival of breast cancer in developed regions. As a result, breast cancer ranks as the fifth cause of death from cancer overall (458 000 deaths), but it is still the most frequent cause of cancer death in women in both developing (269 000 deaths, 12.7% of total) and developed regions.¹ Breast cancer has been known since days of ancient Egyptians, first recorded description being in Egyptian papyrus written about 1500 BC. In about 500 BC Greek and Roman physicians accurately described lethal tumors of breast as hard lumps with roots in surrounding tissue.

Since that era many treatment modalities have been used and management has undergone significant modifications in proportion to the knowledge of the disease.

Radiobiological models suggest that a larger daily dose (hypofractionation) given over a shorter time might be equally effective. This regimen may also be more convenient for patients and less resource intensive than the standard schedule. Low rates of local recurrence and limited radiation-induced morbidity have been reported with such approaches. Hypofractionated schedules in carcinoma breast use a dose of more than 2Gy per fraction with decrease in total number of fractions.

MATERIALS AND METHODS:

This is a retrospective study comparing two fractionation schedule in post mastectomy chest wall irradiation of patients at our center totally sixty five in which 32 patients taken who had received conventional fractionation and rest had received hypofractionation schedule.

INCLUSION CRITERIA:

Histopathological proven Breast Cancer.
Post Mastectomy and Axillary dissection.
Early stage disease with lymph node positivity.
All T3, T4 cases.
Resected margin positivity/close.

EXCLUSION CRITERIA:

Patients who were not willing for the study.
Age \geq 70 yrs.
Patients with Karnofsky Performance (KPS) status less than 70%.
Those who underwent Breast conservation surgery.
Metastatic Carcinoma Breast.

METHODOLOGY

All the data pertaining to age, parity, menstrual status, tumour size, nodal disease, grade, tumour type, resected margin and receptor

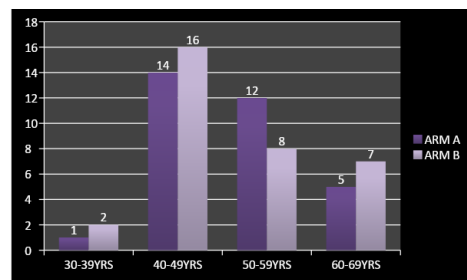
status were analysed and compared. Any scar recurrence, chest wall recurrence, cutaneous nodules or any lymph nodes in axilla, internal mammary area or supraclavicular fossa findings were recorded.

Toxicity profile was assessed with RTOG toxicity grading. Data was entered in Microsoft Excel & analysis was done using the Statistical package for social service (SPSS) version 20.0 software. The test applied to the data was Chi square test to find out the association between variables

RESULTS

Regarding age group, 30 out of 65 patients were between 40 and 49 years of age. Of the remaining 20 belonged to 50 and 59 year group, 12 between 60 and 69 years and 3 between 30 and 39 years of age.

FIGURE 1. COMPARISON BETWEEN AGE



LOCOREGIONAL CONTROL

No patients developed recurrence in chest wall, axilla or supraclavicular fossa. 2 patients developed chest wall nodule, Both were proven negative for malignancy with fine needle aspiration cytology.

TABLE 1. LOCOREGIONAL RECURRENCE

ARM	LOCOREGIONAL RECURRENCE
ARM A	NIL
ARM B	NIL

TOXICITY PROFILE:

The symptoms (cough and dyspnea) got relieved on treatment with antibiotics and bronchodilators. The chest x ray findings were not typical of radiation pneumonitis.

TABLE 2. TOXICITY BETWEEN ARMS

	Radiation fractionation	Immediately after RT	3 months	6 months
Symptoms	ARM A	2	3	4
	ARM B	1	1	2

P value		1.000	0.722	0.820
Chest x ray	ARM A	0	2	2
	ARM B	0	0	0

DISCUSSION :

The purpose of this study was to compare two fractionation schedules (50Gy in 25 fractions vs 40Gy in 15 fractions) used in post mastectomy chest wall irradiation in Carcinoma Breast regarding loco-regional control and toxicity profile. Several studies have shown that two fractionation schedules are equivalent in loco-regional control and cosmetic outcome. The acute toxicities which occurred during RT, recorded in this study were skin toxicity, lung toxicity and odynophagia.

Grade 1 skin toxicity occurred in both arms, mainly during third and fourth week of RT which subsided by itself. No other grades of toxicity occurred. The occurrence of grade 1 skin toxicity was found to be equal in both arms. Grade 1 lung toxicity also occurred during RT. The difference in two arms was statistically not significant. This subsided without any intervention.

Lingos et al reported radiation pneumonitis in 1% of patients after surgery and radiation. Plataniotis GA et al evaluated radiation pneumonitis in hypofractionation setting (42.5 Gy / 16 Fr) by HRCT in early breast cancer patients, and reported minimal and minor effects on the underlying lung parenchyma. In our study CT scan was not a requirement of the study. No contralateral Breast cancer, secondary malignancy or rib fracture occurred. The development of contralateral breast cancer and secondary malignancy has a long latent period.

CONCLUSION:

The data reported in the present study confirm the feasibility of the hypofractionated RT with 2.66 Gy per fraction to a total dose of 40 Gy in patients with invasive breast cancer in daily practice. Patients tolerated the treatment well with excellent compliance and nobody stopped the radiotherapy course that lasted 10 days less than that of conventional fractionation.

This is particularly important in a developing country like India where there is scarcity of resources and financial constraints.

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