

A SPIROMETRIC STUDY OF PULMONARY FUNCTION IN CARCINOMA BREAST PATIENTS TREATED WITH TANGENTIAL BEAM TECHNIQUE OF EBRT

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Abstract:

A study was conducted at National Institute of Cancer Research and Hospital, Mohakhali, Dhaka among the cancer Breast patients receiving radiotherapy from July 2007 to June 2008. The objective of this study was to assess the short term pulmonary side effects following adjuvant radiotherapy by doing pulmonary function test. We included 50 patients with the mean age of 45 years. The base line pulmonary function was measured on the day of starting Radiotherapy and 6 weeks and 12 weeks of Post Radiotherapy. The measuring indicators were FEV1, FVC, VC, ERV, IRV, Chest X-rays of all patients were taken periodically all the patients under went chest wall irradiated by tangential fields and irradiation to axilla and supraclavicular region by single interior field. The usual dose was 5000 CGY in 25 fractions, 5 functions per week using cob60 teletherapy.

Introduction:

Post operative radiotherapy to breast refers to irradiation of the chest wall and draining Lymph node regions following definite surgery. About 80% of Local recurrence occurs by 5 years after Mastectomy and nearly all occur by 10 years 2-8. However local recurrence occurring 15 to 50 years after initial surgery has been reported^{9,10} of Auxiliary nodes are involved, local recurrence is seen in about 25% of patients, where as if auxiliary nodes are uninvolved, local recurrence is seen in only 5% if patients 1, 12. There are three possible reasons for post operative radiotherapy in cancer breast patients 13

The first is to reduce the rate of tumor recurrence on the chest wall or in the auxiliary, internal mammary or supraclavicular Lymph nodes by treating residual microscopic disease that has spread beyond the margin of surgical resection. Second potential rationale for post operative radiotherapy is to improve

survival by eradicating residual local disease which is the site of persistent cancer after surgery and a source of subsequent distant metastasis. The third potential rationale for post operative radiotherapy after systemic treatment to improve survival by eradication residual local disease that is the only site of persistent cancer after mastectomy & also a source of subsequent distant metastasis.

Post operative radiotherapy has been shown to decrease the risk of local recurrence about two kinds. 14 15 16 The 10 year disease free survival rate was impressed by addition of radiotherapy.

Two Danish trials indicates that adjuvant systemic therapy alone is considerably less effective at preventing local recurrence following mastectomy. Then the combination of adjuvant systemic therapy and radiotherapy. In addition the study suggests that the addition of radiotherapy to adjuvant chemotherapy increases the survival rate in premenopausal patients 1. For node positive patient, the use of post operative radiotherapy not only decrease in local recurrence but also decrease in distant metastasis. The 15 years survival rate was 31% for node positive patient treated with mastectomy alone compared with 40% node positive patients treated with mastectomy and post operative radiotherapy. Hence, radiotherapy given for primary carcinoma of breast to reduce risk of loco regional recurrence and it has also been shown to improve survival in patients after mastectomy.

Discussion and Results:

We know the average volume of lung irradiated during radiation treatment of chest wall & clavicular region is 2.5 cm with 5% decreased pulmonary function at post radiotherapy status, which is acceptable. The early side effect of RT is radiation pneumonitis and late side effect is pulmonary fibrosis.

Most of the pulmonary function tests showed decrease in the value post RT as compared to pre RT values. FEV1, FVC, FEV1/FVC showed decrease of 5%, 4% 3% respectively. The probability and severity if radiation induced lung damage mainly depends on radiation dose, amount of lung irradiated and fraction schedule used.

Out of 50, 43 (86%) patient did not show any pulmonary side effects like pnemmoritis and fibrosis 5 (10%) patient developed radiation pnemmoritis which was treated with supportive drugs and cured.

Another 2 (4%) patients developed fibrosis. The mean age groups of patients were 39 to 49 years. Simple mastectomy with auxiliary dissection was done in 90% of cases. Breast

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conserving surgery was done in 5 patients. The pneumonitis was observed in mastectomized patients in the age groups between 49-59 years old. It is also evident that the histopathology report of patients were infiltrating duct cell carcinoma, (80%). Ductal carcinoma (16%), Lobular Carcinoma (4%).

Conclusion:

Our study indicates that loco regional radiotherapy in carcinoma breast is associated with decrease in pulmonary function. But with 50 Gy/25 fraction by conventional fractionation and 2.55 cm of average lung irradiated, the pulmonary function loss is acceptable is 95% of confidence interval.

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