

Original Article**Cutaneous complication after electron beam therapy in breast cancer***M. Jalilian MD*, F. Arbabi MD*****ABSTRACT**

Background: Breast cancer is the most common cancer in women and the second cause of death among them. There are several treatment methods for breast cancer, one of which is radiation therapy. There are two important methods of radiation therapy: tangential field and single oppositional field. Main goal of this study is evaluation of factors that have a role in producing acute side effects such as skin burning in breast cancer patients treated by electron beam, in order to decrease these side effects.

Methods: From 1/2003 through 7/2004, 200 consecutive patients were evaluated during 18 months in Seid-al-Shohad hospital, whose mean age was 49 years old. In this study a questionnaire was used including some questions about personal profile such as patient's name, address, registration number, age and some other factors. All patients who were candidates to enter in this investigation filled out the questionnaire at the end of radiation therapy. The patients were examined and their skin burning grades were evaluated by RTOG scale. Data were analyzed by chi-square test using SPSS 11 software.

Results: None of patients showed grades 0 or 4 of burning. 31.5 % of Patients showed grade 1, 64.5 % showed grade 2, 4 % showed grade 3 of burning. There was statistically significant correlation between posterior axillary field and skin burning and there was not any meaning between the other factors.

Conclusion: It is necessary to pay more attention to posterior axillary field planning including field size, location, photon energy, depth and dose of treatment.

Keywords: breast cancer, electron beam radiation therapy, skin burning

JRMS 2005; 10(6): 368-370

Breast cancer is the most common cancer in women and the second cause of death in them¹⁻². Paying attention to breast cancer treatment and its complication is necessary because of high incidence of this malignancy^{3, 4}. Treatment of this tumor is carried out by some modalities such as surgery, chemotherapy, radiation therapy and hormone therapy. Sequence of treatment modalities is very important⁵⁻⁸ and is chosen according to some extrinsic and intrinsic factors such as: patient's age, menstrual state, tumor size, nodal state, estrogen and progesterone receptors and tumor markers[9]. Surgery is the first treatment modality in most of patients except for patients with advanced disease¹⁰.

Surgery can be done as modified radical mastectomy (MRM) or breast conserving therapy (BCT).

After BCT all cases undergo radiation therapy by single tangential field, but after M.R.M, both methods of tangential field and single oppositional field are usable¹¹⁻¹².

The main goal of radiation therapy is local control improvement. Each type of treatment has some side effects which can lead to treatment benefits limitation¹³. Main goal of this study is evaluation of factors that have role in producing acute side effects such as skin burning in breast cancer patients treated by electron beam, in order to decrease these side effects. Because any delay or interruption in treatment

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process leads to a decline in treatment results, by manipulating these factors, decreasing in treatment interruption or delay in therapy will achieve.

Subjects and Methods

In this research we evaluated the correlation between some factors including age, underlying disease, drug usage, previous chemotherapy, field size, electron beam energy, depth of tumor and posterior field, with skin burning in breast cancer patients receiving radiation therapy by electron beam after MRM.

From 1/2003 through 7/2004, 200 patients were evaluated during 18 months in Seid-al-Shohad hospital, whose mean age was 49 years old.

All of these patients had breast cancer, had been treated by MRM and post operation radiation therapy was necessary for all of them. Patients were treated by "SATURN" linear accelerator from "CGI" company. Fraction size was 200 cGy and total dose of 5000 cGy was delivered. Posterior axillary field was planned in patients needed some additional dose of radiation dose to axillary area. The radiation therapy technique in them was single oppositional field with electron beam.

The evaluated factors included: age, underlying disease, drug usage, previous chemotherapy, field size, electron beam energy, depth of tumor and posterior axillary field. All patients were examined and their questionnaires were filled out before radiation therapy. They were asked about personal profile and factors.

At the end of radiation therapy the patients were examined again and the grade of skin burning was detected based on RTOG scale. In this scale the grading of skin burning is divided into 5 grades:

Grade 0: no change,

Grade 1: mild redness,

Grade 2: obvious redness, itching and dry desquamation,

Grade 3: moist desquamation, pitting edema and

Grade 4: necrosis and hemorrhage

Results

Data were analyzed by X²-test using in SPSS 11 software. Mean age of patients was 49 years old. None of patients showed grade 0 and 4 of burning. 31.5 % of patients showed grade 1, 64.5 % showed grade 2 and 4% of patients clarified grade 3 of burning.

Table 1. Distribution of factors based on grade of skin burning.

Factor	Grade	1	2	3
Age(yr)		48.87	48.85	51.52
Underlying disease +ve		84.1	73.6	62.5
Underlying disease - ve		15.9	26.4	37.5
Drug usage +ve		87.3	79.8	62.5
Drug usage -ve		12.7	20.2	37.5
Chemotherapy +ve		30.2	23.3	25
Chemotherapy -ve		69.8	76.7	75
Field size (small)		61.9	57.4	37.5
Filed size (large)		38.1	41.65	62.5
Posterior filed +ve		68.3	51.9	37.5
Posterior filed -ve		31.7	48.1	62.5
Energy beam MeV		10.01	9.95	9.62
Tumor depth (Cm)		2.75	2.9	2.85

There was no statistically meaningful and significant correlation between skin burning and evaluated factors, such as underlying diseases, drug usage, previous chemotherapy, field size, beam energy and tumor depth, except for posterior axillary field.

study must be done about selection of patients who need this method. Evaluation of posterior axillary field method in aspects of field size, location, dose of radiation, depth, and radiation beam energy is essential.

Conclusion

The results indicate that planning of posterior axillary field needs more attention and more

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