

Determination of the Scatter Dose Received by Thyroid Region during Chest Wall Irradiation among Breast Cancer Patients Who Received Adjuvant Two-Dimensional Conventional Radiotherapy

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Breast cancer is the most frequent cancer among women, and radiotherapy plays a major role in the treatment of breast cancer. The significant amount of scatter dose to the thyroid region during adjuvant radiotherapy for breast cancers has been reported in previous studies. The purpose of this study was to determine the scatter dose received by the thyroid region during chest wall irradiation among breast cancer patients who received adjuvant two-dimensional (2D) conventional radiotherapy. Data was collected from 41 patients who had adjuvant 2D conventional radiotherapy as a treatment for carcinoma of the breast. The scattered dose was measured per one fraction of 267 cGy by using Polimaster PM1610 in a *Theratron*TM 780E ⁶⁰Co teletherapy facility at Apeksha Hospital Maharagama, Sri Lanka. A statistical analysis was performed using IBM SPSS. The mean values for the total scatter dose from glancing beams and the supraclavicular fossa (SCF) beam were 112.33 ± 5.50 mSv and 421.79 ± 32.49 mSv respectively. The mean value of the total scatter dose was 534.10 ± 34.11 mSv. 78.97% of the scatter dose was given by the SCF beam while the medial glancing and the lateral glancing were respectively 11.36% and 9.66%. In addition, the risk of the scatter radiation to the thyroid region among breast cancer patients who received radiotherapy with supraclavicular fossa irradiation was higher than in patients without supraclavicular fossa irradiation. Further studies need to be performed to estimate the scatter dose to the thyroid region in order to reinforce the conclusion.

Keywords: scatter dose, chest wall irradiation, conventional radiotherapy, breast cancer