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Photon boost after lumpectomy in breast cancer and acute toxicities in NwGH & RC

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Introduction: One of the common methods in radiation therapy of Breast cancer is whole breast irradiation followed by tumor cavity boost (TCB) with electron therapy. The tumor cavity boost following Whole Breast Irradiation (WBI) is well-defined and there are numerous delivery methods of radiation therapy. In our institution we don't have the facility of electron, so our study comprised of experiencing the TCB with photons. Although photon boosts have been discouraged because of excess normal tissue toxicity. In our study we have analyzed acute skin reactions and lung doses for the level at 2Gy.

Methods: Patients (n=19) of post-lumpectomy breast cancer for both left and right sided node negative were scanned for this study. Mean age for the patients was 47 year. All women were planned for 50 Gy for the whole breast irradiation via tangents followed by TCB irradiation of 10 Gy with standard fractionation. Contouring of breast, cavity, lungs and heart were done in all the cases. Mean volume of breast and cavity were 1000 cm³ and 60 cm³ respectively. These patients were observed for skin toxicity during radiotherapy as per RTOG skin toxicity criteria.

Results: The mean lung volume receiving 2 Gy was 27cm³ and V20 for lung is 10% volume for 60 Gy plan. Out of total 19 patients, 75 % patients had grade-II skin reaction at treatment completion and 25 % patients had grade-I skin reaction. Mean heart dose for 60 Gy plans were 100 cGy. While dosimetric analysis it has been found that conformality, dose homogeneity index (DHI) and Tumor cavity coverage was significantly covering up to 95%.

Conclusion: Although electrons can be used for TCB but in our centre electron beam therapy is not available and TCB is done with photon beam following the tangential beams. In the adjuvant treatment of breast cancer therapy, whole breast radiation followed by conformal photon boost seems to be acceptable in focus of the skin toxicity, TCB dose distribution and OAR less excessive doses.

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