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ROLE OF INTERNAL MAMMARY CHAIN IRRADIATION IN MANAGEMENT OF CARCINOMA BREAST

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ABSTRACT Two recently published randomized trials have demonstrated that regional nodal irradiation including internal mammary chain (IMC) along with whole breast or chest wall irradiation improved disease-free and distant disease-free survival in early stage breast cancer, however medial supraclavicular and axillary group of lymph nodes were also irradiated as part of regional nodal irradiation, so contribution of IMC in outcome could not be determined.

KEYWORDS : internal mammary chain, survival

LETTER TO EDITOR

Dear Sir,

Internal mammary group of lymph nodes lie mainly in first-three intercostal spaces; 3-4 cm away from midline.

The incidence of internal mammary lymph node involvement varies from 4% - 9% in patients with axillary node–negative breast cancer and from 16% - 65% in patients with axillary node–positive breast cancer [1,2,3]. However, despite this various studies have shown no improvement in survival with internal mammary chain (IMC) dissection during surgery for carcinoma breast [3,4].

The effect of IMC irradiation added to whole-breast or chest-wall irradiation after surgery on survival in patients of early-stage breast cancer has been controversial . The results of two recently published prospective randomized trials have shown improvement in disease-free survival and distant disease-free survival, however the studies need to be reviewed.

One study by Whelan et al randomized 1832 women (node-positive or high-risk node-negative breast cancer) treated with breast-conserving surgery and adjuvant systemic therapy to receive either whole-breast irradiation plus regional nodal irradiation (including internal mammary, supraclavicular and axillary lymph nodes) or whole-breast irradiation alone (control group) . The primary outcome was overall survival. Disease-free survival, isolated locoregional disease-free survival and distant disease-free survival were secondary end points. The study demonstrated that after 9.5 years of median follow-up, the overall survival was 82.8% in the nodal-irradiation group and 81.8% in the control group (the difference was not significant). The disease-free survival was 82.0% in the nodal-irradiation group and 77.0% in the control group and the difference was significant [5].

Similar type of study by Poortmans et al randomized 4004 patients of carcinoma breast having centrally or medially located primary tumor (irrespective of axillary involvement) or an externally located tumor with axillary involvement to receive either whole-breast or thoracic-wall irradiation alongwith regional nodal irradiation (nodal-irradiation group) or whole-breast irradiation or thoracic-wall irradiation alone (control group). The results of this study showed that after 10- years of follow-up, the overall survival was 82.3% in the
nodal-irradiation group and 80.7% in the control group (the difference was not significant). The rate of disease-free survival, distant disease-free survival and breast-cancer mortality in the nodal-irradiation group and in the control group were72.1% Vs 69.1%, 78.0% Vs 75.0% and 12.5% Vs 14.4% respectively. The difference was significant in all the above mentioned end points [6].

Though these studies have shown improvement in disease- free survival and distant disease-free survival, there was no improvement in overall survival which was the primary end point of the studies. Both of the studies have shown improvement in disease-free survival in favour of nodal irradiation group but since the nodal irradiation also comprised irradiation of supraclavicular and axillary group of lymph nodes along with IMC chain, so it could not be determined that IMC irradiation contributed to outcome or not.

A major concern of IMC irradiation is risk of cardiac toxicity especially in patients with left-sided breast cancer. Some studies even have suggested decreased long-term survival due to heart irradiation. Both the studies have reported there was no excessive cardiac morbidity and mortality after about 10 years of follow-up as compared to previously reported historical data, however more long-term follow-up is required to assess the late cardiac complications.

So, in conclusion, regional nodal irradiation added to whole breast or chest- wall irradiation in early stage breast cancer patients improve disease-free survival but whether IMC irradiation contributed in the outcome or not is still unknown. Precaution should be taken while IMC irradiation especially in left-sided breast cancer patients owing to risk of increased cardiac toxicity.

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