

SINGLE-CENTRE IMPLEMENTATION OF RADIOTHERAPY-DEDICATED BRA FOR LARGE AND PENDULOUS BREAST

Sara Trivellato, Sara Terrevazzi, Elena Ierman, Tiziana Brandolese, Paolo Caricato, Valerio Pisoni, Martina Camilla Daniotti, Valeria Faccenda, Gianluca Montanari, Denis Panizza, Sofia Meregalli, Rita Marina Niespolo, Elisa Bonetto, Stefano Arcangeli, Elena De Ponti

Medical Physics Department and Department of Radiation Oncology, ASST Monza, Italy

AIM

Dose conformality and homogeneity is commonly obtained in breast 3D-CRT field-in-field radiotherapy but large and pendulous breast can be challenging due to large inframammary fold and lateral displacement. This affects the risk of skin toxicity and organs at risk (OARs) doses. This study aims to evaluate the geometric and dosimetric effects of bra application during radiotherapy for large and pendulous breast.

MATERIALS AND METHODS

Six patients underwent breast radiotherapy with a radiation bra between October 2021 and May 2022, 4 of them with a FAST-forward (FFW) schedule and 2 with the conventional hypo-fractionated scheme. According to the patient's chest and cup size, a suitable bra was selected and 2 CTs (without (NB) and with bra (WB)) were acquired to evaluate the bra impact.

Measured parameters included the nipple-to-pectoral muscle distance (NPD), the maximum mediolateral thickness (MLT) along tangential fields, the CTV volume and its conformity (CI) and homogeneity indexes (HI). The OARs were the ipsilateral lung and the heart.

RESULTS

The bra sizes ranged from 4 to 9 with optimal patients compliance.

While the MLT resulted constant, the use of the bra provided a decrease in the median NPD (NB 8.2 cm; WB 7.0 cm) and the median CTV (NB 1019.5 cm³; WB 890.5 cm³).

While the target coverage was maintained (V95%: NB 98.9%; WB 99.3%), the median volume of the 105% and 107% isodoses without and with the bra was 13.0 cm³ and 1.2 cm³, and 0.5 cm³ and 0.0 cm³, respectively. This led to a 0.6 median CI value for both NB and WB but to an improvement in the HI (NB 0.09; WB 0.07). Any clinically relevant variations in lung and heart doses were not registered.

The WB plan was always chosen over the NB plan and all treatments were successfully delivered with a daily pre-treatment CBCT correction without affecting the department's daily routine. No toxicities have been registered.

CONCLUSIONS

The bra implementation was associated with improved geometric and dosimetric planning parameters: higher and properly positioned breast guaranteed a smaller CTV and reduced hot spots.

In particular, it allowed offering the FFW schedule to patients whose breast volume would have not permitted a sufficient dose homogeneity.

A higher number of patients will allow defining the best cut-off parameters in the choice to use the bra and to confirm its dosimetric impact. The clinical follow-up will give fundamental feedback on eventually reduced toxicities thanks to a more homogeneous dose distribution.

