

عنوان مقاله:

Evaluation of the Lung Dose in Three-dimensional Conformal Radiation Therapy of Left-Sided Breast Cancer: A Phantom Study

محل انتشار:

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خلاصه مقاله:

Background: Three-dimensional 3D-CRT: conformal radiation therapy is a selective modality in many radiotherapy centers for the treatment of breast cancer. One of the most common side effects of this method is radiation lung injury. Considering such an injury, lung dose deserves to be studied in depth. Methods: Computed tomography scan of a node-positive left-sided breast cancer woman was used for generating a thorax phantom. Ten thermoluminescent dosimeters (TLDs) were distributed evenly in the left lung of the phantom, and the phantom was scanned. The optimal plan, including supraclavicular and tangential fields, was created by the treatment planning system (TPS). The results of TLD dose measurements at the selected points in the phantom were compared to TPS dose calculations. Results: Lung doses calculated by TPS are significantly different from those measured by the TLDs ($P = 0.007$). The minimum and maximum differences were -0.91% and 4.44% , respectively. TLDs that were on the inner margin of the lung and breast tissue showed higher dose differences than the TLDs in the lung. Conclusion: The results of this study showed that TPS generally overestimated doses compared to TLD measurements due to incorrect beam modeling caused by contaminated electrons in the lung.

کلمات کلیدی:

Left-sided breast cancer, lung dose, phantom, three-dimensional conformal radiation therapy

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