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Potentials of lung injury after single electron beam postmastectomy radiotherapy

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Breast cancer patients are treated by a variety of options. Electron beams are utilized in the irradiation of the chest wall post mastectomy due to its dose distribution in the irradiated body, which does not penetrate deep into the body. Our objectives were to determine the possibility of inducing lung injuries during postmastectomy radiotherapy (PMRT) using single-field electron beams. Electron beams with different energies, and gantry angles were simulated using EGSnrc and checked for consistency with the measured beams. The simulated beams were then used for irradiating the chest wall in PMRT. XSTING software tool was used to superimpose the beam distribution on the CT data and generate dose volume histograms. The normal-tissue-complications-probability of the lung was evaluated. The dose response of the lung and potentials for developing lung fibrosis and pneumonitis were evaluated using DORES, a home built tool at the medical physics department in the University Hospital in Larisa NTCP increases with energy and with gantry angle. Below 15 MeV (which had given very high and unacceptable NTCP values) the largest value of NTCP of fibrosis was 0.036, for 12 MeV, gantry angle 60. The largest value of NTCP of radiation induced pneumonitis was 0.044, for 12 MeV, gantry angle 60. These values indicate low potentials of lung induced injuries, but were at the expense of appropriate target coverage

Biography

Hiba Omer has done her PhD in medical Physics from University of Thessaly, Greece. She is an Assistant Professor of Medical University of Dammam, KSA and Member of several scientific and women societies. Her research areas are Education, Medical Physics, radiobiology, simulation; public education. She has done several research publications as well.

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