

Abstract Submitted
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Impact of Radiation in Critical Organs in Radiotherapy Treatment of Breast and Lung Cancers ANIL PYAKURYAL, Northwestern Memorial Hospital / University of Illinois at Chicago, Chicago, IL, CHIU-HAO CHEN, University of Illinois at Chicago, Chicago, IL, SUDARSHAN DHUNGANA, Oakland University, Rochester, MI — Various 3D conformal radiotherapy (3DCRT) techniques are commonly used in the treatment of cancerous tumors at appropriate prescription doses (PDs). The purpose of this study was to analyze the impact of radiation in heart and lungs in left breast and left lung cancer patients treated using 3DCRT techniques. Treatment plans for the eight breast cancer patients (n=8), eight lung cancer patients at early stage (m=8), and eight lung cancer patients at stage II and III (k=8) were evaluated. Relative complication probabilities (RCPs) for the irradiated organs were computed from the plans using *HART* [Med. Phys. 36, p.2547 (2009)] program at PD. The RCPs were found to be (i) 2.3% (n=8, PD=56 Gy), 6.4% (m=8, PD=30.7 Gy), and 16.7% (k=8, PD=54.8 Gy) for the heart, (ii) 1% (n=6, PD=58.4 Gy) for the left lung, and (iii) 7% (m=6, PD=31 Gy) and 5.3% (k=8, PD=54.8 Gy) for the whole lung. Homogeneous target coverage and improved dose conformality were the major advantages in the treatment of breast cancer. Therefore, simple 3DCRT based whole-breast irradiation and partial lung treatment techniques can offer promising results while adequately sparing the organs in the treatment of breast and lung cancers.

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