

EVALUATION OF DOSE RECEIVED IN ADJACENT ORGANS IN THE DOSIMETRIC PLAN OF LUNG CANCER.

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Introduction: Lung cancer is the most common of all malignant tumors. In 90% of the diagnosed cases, lung cancer is associated with the consumption of tobacco products. According to the National Cancer Institute (INCA), the estimate for new cases for the year 2018 is of 31,270, being 18,740 men and 12,530 women [1]. Radiation therapy acts as a form of treatment which has two basic modalities for the treatment of cancer: teletherapy and brachytherapy. In teletherapy is used a linear accelerator with photon energy to make the application and before starting the treatment a planning that makes the acquisition of all anatomical information of the patient is carried out and then the classification of areas of interest in the patient. All planning prior to initiation undergoes quality control dosimetry, which ensures that the dose prescribed in the planning will be delivered accurately in the treatment of the patient. **Objective:** In radiotherapy the dosimetry is applied as an independent measurement and this work has the objective of comparing the dosimetric plan of lung cancer in adjacent organs - in this case the organ of risk to the heart - with dose values calculated in the planning system (TPS) using an anthropomorphic phantom.

Methodology: All dosimetry was performed with thermoluminescents dosimeters (Lif: Mg, Ti-TLD-100). Were selected 35 TLDs that underwent a calibration process with the following steps: thermal treatment, followed by irradiation and reading. In the heat treatment a furnace manufactured by Grion Industrial Furnaces was used. The dosimeters were irradiated using a Varian model 2100 photon energy / 6 MeV linear accelerator and the reading was done with the Thermo-Harshaw model 3500 reader. With the dosimeters already selected, the treatment plan was elaborated in the system using the Varian Eclipse software and then compared with the dosimetry performed with the TLDs allocated to the anthropomorphic phantom, for this same case. A linear accelerator with photon energy / 6 MeV, model 2100 from Varian was used to apply the dose of 200 cGy using the intensity-modulated radiotherapy (IMRT) technique. **Results:** The dose verified in the lungs showed that the planning is within the allowed values according to protocols - less than 5% (206 cGy) - no dose was measured in the heart, which allows concluding that there was a good planning of the treatment that spared the heart and adjacent healthy tissues.

Keywords: radiotherapy, lung cancer, dosimetry

[1] Estimates of new cases of lung cancer 2018. [viewed July 1 2018] Available from: <http://www2.inca.gov.br/wps/wcm/connect/tiposdecancer/site/home/pulmao/definicao+>