

Evaluation of cardiac structures among patients receiving radiation for thoracic malignancies.

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PLEASE NOTE: This would require significant amount of work in Jacksonville.

During radiation treatment of thoracic malignancies, unintentional radiation to the heart and the cardiac structures (coronary vessels, valves, chambers) can cause long term toxicity, such as heart attack, cardiomyopathy, and valvular disease. Radiation treatment planning requires knowledge of the radiation dose that the cardiac structures, which can be calculated after they are contoured. However, the cardiac structures may not line up day-to-day basis throughout 3-8 week treatment course.

The present study would investigate how much the cardiac structures move throughout a patient's treatment course and evaluate the impact on the radiation dose to these structures.

Method: The cardiac structures will be contoured on the initial treatment CT scan and then every CT scan done throughout their treatment (between 1-7 per patient). We would calculate the 3D shifts in the x, y, and z direction to determine an appropriate margin to add in order to best calculate the dose to the heart and its subunits. Furthermore, the radiation dose to the sub-units will be re-calculated using all of the scans available for each patient.

Medical Student Role: 1) Write proposal for study with help from the PI. 2) After being trained by the PI, contouring cardiac structures for all CT scans on approximately 50-100 patients. 3) Work with physicist to calculate the 3D shifts and radiation dose to the cardiac structures. 5) Write the abstract and present it as an oral presentation at the annual UF Radiation Oncology research seminar AND submit and present the data at a major radiation oncology meeting.

