

Radiation dose level affects size of lesions seen on chest CT images

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The estimated size of chest lymph nodes and lung nodules seen on CT images varies significantly when the same nodes or nodules are examined using lower versus higher doses of radiation, a new study shows. The size of lymph nodes and lung nodules is an important determinant of treatment and treatment success.

The study, conducted at Massachusetts General Hospital in Boston, used a 3D image processing tool to quantitatively measure the volume of the lymph nodes and [lung nodules](#). "We found that lymph node volumes were estimated at 30% lower in five cases and 10% higher in 15 cases of low dose compared to higher dose images," said Dr. Beth Vetteyil, a lead author of the study. The study found that the calculated volume of lung nodules was 46% lower in nine cases and 34% higher in 10 cases on lower dose as compared to high dose images.

"We were surprised that in both the lymph nodes and lung nodules there were cases in which the lower dose picked up lower lesion volumes as well as higher lesion volumes when compared to the higher dose scans," said Dr. Vetteyil. "We think that increased [image noise](#) (graininess of the image) on the lower dose scans may have caused the lesion volumes to vary so significantly," she said.

The goal of the study was to explore the possibility of using image processing tools to better delineate lesions at low [radiation doses](#) without missing any clinical information, noted Dr. Vetteyil. "The study indicates that radiologists can use these types of quantitative tools to supplement

them in their measurements, but the use of such software measurements without the radiologist's clinical correlation might not be advisable at this stage," said Dr. Vettiyil.

The study will be presented April 17 during the ARRS Annual Meeting in Washington, DC.

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