

Decreasing KV reduces radiation dose in lumbar spine CT without compromising quality

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An algorithm that takes the patient's size into consideration can cut radiation dose by 41% in lumbar spine CT without compromising the diagnostic quality of the images, a new study shows.

Researchers at Yeouido St. Mary's Hospital in Seoul, Korea examined 107 patients using semi-automated attenuation-based tube potential selection which optimized tube potential at 100 kilovoltage, rather than the standard 120 kilovoltage. Decreasing the kilovoltage decreased the [radiation dose](#) from a mean of 21.78 mGy to a mean of 12.77 mGy, but it can increase the image noise (graininess of the image), said Dr. Junghyun Lim, lead author of the study.

The images were reconstructed using either the standard filtered back projection or iterative reconstruction – a technique designed to reduce image noise. Two [musculoskeletal](#) radiologists reviewed the images and then scored them based on level of noise, visibility of structure and confidence of [diagnosis](#). They concluded that regardless of the reconstruction method, the lower kilovoltage images were of [diagnostic quality](#), said Dr. Lim. "We conducted objective measurements of [image noise](#) as well," noted Dr. Lim. The objective measurements favored the images that had undergone iterative reconstruction, he said.

Dr. Lim noted that his facility performs between 140-150 lumbar CT exams each month. Based on the results of this study, "the routine

lumbar spine CT exam is now conducted at 100 kilovoltage using filtered back projection, he said.

Dr. Lim's study is part of an electronic exhibit that will be available from April 13-April 19 at the ARRS Annual Meeting in Washington, DC.

Provided by American Roentgen Ray Society

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