Effect of Retrospective Electrocardiography-gating on Quality of High-resolution Computed Tomography Images of the Lung

Z Pan, H Zhang, H Ling, B Ding, Q Song, K Chen, H Jiang
Department of Radiology, Ruijin Hospital, Shanghai Second Medical University, Shanghai, China

ABSTRACT
Objective: To investigate the effect of retrospective electrocardiography-gating on the quality of high-resolution computed tomography images of the lung.

Patients and Methods: Between October 2002 and August 2003, a total of 50 patients underwent high-resolution computed tomography of the lung in a multidetector scanner with and without the use of the retrospectively electrocardiography-gated cine scanner mode. On each image, the presence of cardiac artefact-related star-like features, ‘double tram’, and blurred cardiac borders was assessed independently by 3 radiologists who were blinded to the method of image acquisition.

Results: Retrospectively electrocardiography-gated high-resolution computed tomography of the lung significantly reduced all 3 types of artefacts studied when compared with conventional high-resolution computed tomography. Not only was the frequency of each artefact reduced in the 300 gated scans analysed (p < 0.05), but scores for the overall presence of artefacts also more often indicated the presence of only 1 type or the absence of all 3 types of artefact (p < 0.001).

Conclusion: Retrospective electrocardiography-gating improves image quality of high-resolution computed tomography scans of the lung by reducing cardiac motion artefacts that may mimic disease.

Key Words: Electrocardiography; Image processing, computer-assisted; Tomography, X-ray computed