High-pitch dual-source computed tomography pulmonary angiography in freely breathing patients

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PURPOSE
To investigate pulmonary arterial (PA) enhancement, image noise, and artifacts related to breathing and heart motion in patients with suspected pulmonary embolism.

MATERIALS AND METHODS
Seventy-six consecutive patients underwent computed tomographic pulmonary angiography (CTPA) in dual-source high-pitch mode (pitch 3.0, 100 kV, 180 mAs, 50 mL contrast material) without breathing commands. PA enhancement, image noise, signal to noise ratio, overall image quality, incidence of total or partial interruption of the contrast column in the PAs, and heart motion-related and breathing-related artifacts of the diaphragm and pulmonary structures were recorded.

RESULTS
Mean central and peripheral PA attenuation was 404 ± 104 and 453 ± 119 HU; mean image noise was 11 ± 2 HU; mean examination time was 0.67 ± 0.09 s; and mean dose-length product was 142 ± 31 mGy cm. There were no motion artifacts of the diaphragm or pulmonary vessels related to breathing or heart motion. There was no case of partial or total interruption of the contrast column in the PA tree. No examination was rated nondiagnostic.

CONCLUSIONS
High-pitch dual-source CTPA in freely breathing patients effectively produces images that are free of artifacts related to breathing and cardiac motion. Hence, Valsalva-related artifacts can be eliminated using this technique.