

## Novel Pulmonary Circulation Imaging Using Dynamic Chest Radiography for Acute Pulmonary Embolism

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**A** 71-year-old woman was admitted to our hospital for severe dyspnea. Chest contrast-enhanced computed tomography (CT) showed thrombotic obstruction of the right and left lower pulmonary arteries (**Figure A**). Anticoagulant therapy was administered.

Dynamic chest radiography (DCR) was performed on Day 4 using a dynamic flat-panel detector imaging system (Test Model; Konica Minolta, Tokyo, Japan). The DCR-generated pulmonary circulation image showed perfusion defects in the entire right lung and lower left lung lobe (**Figure B**; **Supplementary Movie 1**). Contrast-enhanced CT showed a significant reduction in thrombus size (**Figure C**). The DCR image of the pulmonary circulation on Day 12 showed still decreased, but clearly improved, lung perfusion in the entire right lung and slightly improved lung perfusion in the lower left lobe compared with Day 4 (**Figure D**; **Supplementary Movie 2**).

DCR is a type of cineradiography based on conventional X-ray technology. In DCR-generated pulmonary circulation images, color-coded changes in pixel values are visualized. We previously reported the results of this DCR method in an animal experiment showing the correlation between the magnitude of changes in pixel values and the degree of pulmonary blood circulation.<sup>1</sup>

This is the first report showing that DCR can evaluate decreases and improvements in pulmonary perfusion in acute pulmonary embolism.

### Disclosures

N.M. is an employee of Konica Minolta. The remaining authors have no conflicts of interest to declare.

### IRB Information

This study was approved by the Institutional Review Board of Shiga University of Medical Science (2019-150) and was performed in accordance with the Declaration of Helsinki.

### Data Availability

The deidentified participant data will not be shared.

### Reference

1. Miyatake H, Tabata T, Tsujita Y. Detection of pulmonary embolism using a novel dynamic flat-panel detector system in monkeys. *Circ J*, doi:10.1253/circj.CJ-20-0835.

### Supplementary Files

**Supplementary Movie 1.** Dynamic chest radiography image on day 4.

**Supplementary Movie 2.** Dynamic chest radiography image on day 12.

Please find supplementary file(s);  
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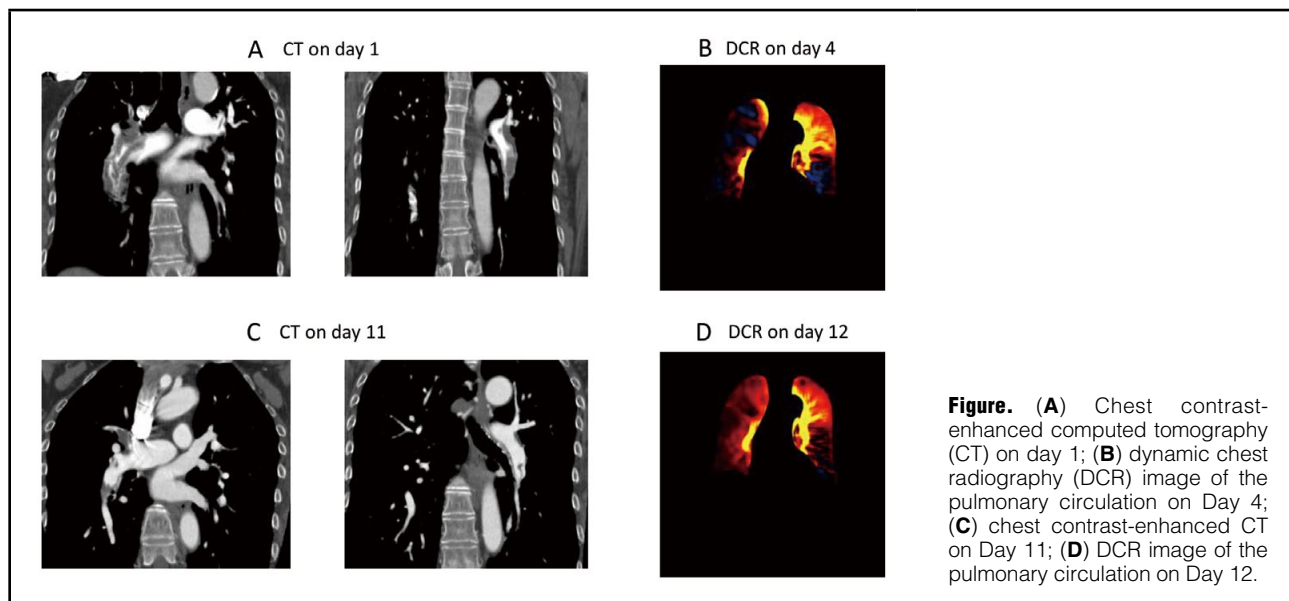
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**Figure.** (A) Chest contrast-enhanced computed tomography (CT) on day 1; (B) dynamic chest radiography (DCR) image of the pulmonary circulation on Day 4; (C) chest contrast-enhanced CT on Day 11; (D) DCR image of the pulmonary circulation on Day 12.