

# IMAGES IN PULMONARY, CRITICAL CARE, SLEEP MEDICINE AND THE SCIENCES

## Pulmonary Air Embolism in a Patient with COVID-19 with Extracorporeal Membrane Oxygenation Support

Julia Tejero-Aranguren<sup>1</sup>, Jordi Riera<sup>2,3,4</sup>, María Martínez-Martínez<sup>2,3</sup>, Eduard Argudo<sup>2,3</sup>, Elisabet Papiol<sup>2,3</sup>, Clara Palmada<sup>2,3</sup>, Luis Chiscano-Camón<sup>2,3</sup>, Abrahán Mera<sup>2,3</sup>, Camilo Bonilla<sup>2,3</sup>, Elisabet Gallart<sup>2</sup>, Pilar Girón<sup>2</sup>, and Ricard Ferrer<sup>2,3,4</sup>

<sup>1</sup>Servicio de Medicina Intensiva, Hospital Universitario San Cecilio, Granada, Spain; <sup>2</sup>Servei de Medicina Intensiva, Hospital Universitari Vall d'Hebron, Barcelona, Spain; <sup>3</sup>SODIR, Vall d'Hebron Institut de Recerca, Barcelona, Spain; and <sup>4</sup>CIBERES, Instituto de Salud Carlos III, Madrid, Spain

ORCID IDs: 0000-0002-6303-852X (J.T.-A.); 0000-0002-1738-4448 (J.R.); 0000-0002-4859-4747 (R.F.).

A 53-year-old male with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection was admitted to the ICU for refractory hypoxemia requiring venovenous femorofemoral extracorporeal membrane oxygenation (ECMO), with a 25-F, 55-cm multiperforated cannula draining blood from the inferior vena cava and a 25-F, 55-cm non-multiperforated cannula returning blood to the right atrium. A computed tomography scan was performed on Day 35. Contrast was administered using a central venous catheter in the left internal jugular vein. The process was uneventful, with no significant variations in ECMO flow or pressures and no activation of the bubble sensor in the drainage line. The patient remained asymptomatic, without hemodynamic changes. A large amount of air in the pulmonary trunk was identified in the computed tomography imaging (Figure 1). In the echocardiographic evaluation, no signs of air presence were identified, and the right ventricular function was normal. No specific treatment was established, but ECMO weaning was stopped for 24 hours. The patient was successfully weaned 6 days later, after 41 days of ECMO.

The use of ECMO modifies normal physiology and may cause unexpected life-threatening complications: in this case a pulmonary air embolism in an *a priori* conventional clinical scenario. The negative pressures around the drainage cannula may have caused air to enter through the central venous catheter during contrast administration; it did not enter the circuit but reached the pulmonary circulation directly. Clinicians should be aware of the risk of pulmonary air embolism in this setting. ■

**Author disclosures** are available with the text of this article at [www.atsjournals.org](http://www.atsjournals.org).



**Figure 1.** Three-dimensional reconstruction of computed tomography (CT) angiography of pulmonary arteries showing an intravascular air level at the origin of the contrast-enhanced pulmonary artery trunk indicating air embolism, and same slide of the conventional CT image.

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