

## COVID-19 induced pulmonary artery aneurysm

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### CASE

A 56-year-old man with a recent COVID 19 pneumonia presented to the emergency center with cough, hemoptysis, and increasing dyspnea. The patient deteriorated rapidly and was intubated for respiratory failure. Vital signs showed a temperature of 97.8°F, a heart rate of 113 beats/minute, and blood pressure of 107/85 mmHg while on mechanical ventilation. The endotracheal tube was filled with blood. A bedside bronchoscopy showed blood clots in and fresh blood oozing from the right mainstem bronchus. Based on the clinical feature of hemoptysis and a chest radiograph showing right lower and middle lobe consolidation with pleural effusion, the differential diagnosis includes necrotizing pneumonia and alveolar hemorrhage. His history of COVID 19 made pulmonary artery embolism a possibility.

Computed tomography with an angiogram showed the bilobed pseudoaneurysm in the right main pulmonary artery. A contrast angiogram confirmed the lesion and delineated the feeding vessel and allowed subsequent embolization of the vessel. A rupture of this pseudoaneurysm was causing the patient to bleed into his right mainstem bronchus.

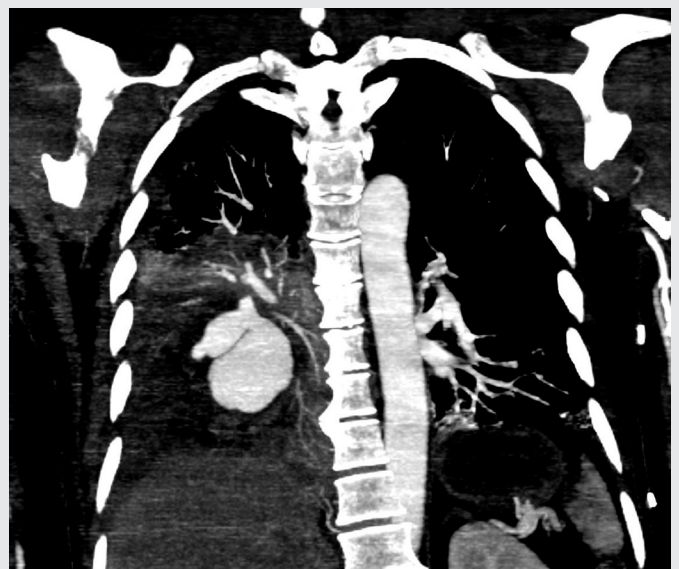
### DISCUSSION

The lungs have dual blood supply. The bronchial circulation accounts for most cases of hemoptysis. A pulmonary artery circulation abnormality is a rather uncommon cause and can be challenging to diagnose and manage. Infections are the leading cause of acquired pulmonary artery pseudoaneurysm (PAP).

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**Figure 1.** Portable chest radiograph reveals an infiltrate at the right base.



**Figure 2.** Computed tomography reveals a bilobed pulmonary artery aneurysm.

COVID-19 has been associated with an increasing incidence of PAP. The proposed pathogenesis includes pulmonary vasculitis and severe inflammation. The pulmonary artery lacks an adventitia which makes it more vulnerable to rupture.

Computed tomography (CT) angiography is the investigation of choice to confirm the diagnosis. It can be treated with endovascular embolization. Patients who are not candidates for embolization or who have failed in this approach may be offered surgical resection of the aneurysm and the lung segments. This has a much higher morbidity and mortality. Most reported cases of PAP had an association with COVID-induced fungal pulmonary infection. One case report describes a patient who developed PAP 2 months into the course of illness. Our patient had a CT pulmonary angiogram 2 weeks prior to hospitalization that showed normal pulmonary arteries. Therefore, his pseudoaneurysm developed over a course of less than 2 weeks. He was treated with endovascular embolization with an Amplatzer plug.

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