Paradoxical pulmonary embolism

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A 79-year-old man presented to the emergency department with a 2-day history of progressive shortness of breath, anuria, and abdominal pain. Prior to admission, he had experienced increasing oedema, cyanosis, and bluish-mottled lower extremities. Laboratory data showed impaired renal function (creatinine 4.2 mg/mL) and 65% arterial oxygen saturation in ambient air. The patient became markedly hypotensive, hypoxaemic, and developed respiratory arrest requiring intubation.

Immediate multidetector row contrast-enhanced computed tomography (CT) evaluation revealed multiple thrombi in the pulmonary arteries, the largest occluding the superior left pulmonary artery (Panel A). An 8.0 cm abdominal aortic aneurysm (AAA), largely thrombosed and ruptured in inferior vena cava (IVC), was also diagnosed: early and synchronous contrast enhancement of the aorta and the IVC and a large (3 cm) aortocaval contrast passage just above the iliac bifurcation were visible (Panels B and C, arrow shows fistula). An aortic aneurysm thrombus was the most likely source of paradoxical emboli through the aortocaval communication (Panel D: pathophysiology).

The patient was immediately transferred to the operating room and underwent caval filter placement (OPTEASE, Cordis, Johnson & Johnson, The Netherlands) and emergency repair of the ruptured aneurysm with an aortic bifurcated stent graft (Excluder, Gore, Flagstaff, AZ, USA). Completion angiography showed successful exclusion of AAA, fistula coverage, and the presence of a small type II endoleak.

The patient had a full and uneventful recovery and was discharged after 22 days with IVC filter in place. His oedema had resolved and there was no evidence of congestive heart failure. He remained in good health during the next 6 months when follow-up CT showed resolution of pulmonary thrombi, decreased AAA diameter (6.1 cm), and marked decrease in type II endoleak (Panel E: black arrow, IVC filter; white arrow, stent graft).