A 61-year-old man was admitted to the hospital complaining of bilateral leg edema and dyspnea lasting for 1 month and resistant to diuretic therapy. His past medical history included hypertension, smoking, pneumonia, and chronic alcoholism. There was no history of abdominal trauma. The heart rate was 110 beats per minute (bpm), and blood pressure was normal (135/75 mm Hg). Physical examination also revealed clinical signs of right heart failure, including peripheral edema, hepatomegaly, jugular vein dilatation, ascites, and right pleural effusion. There were no signs of portal hypertension or hepato-cellular insufficiency. There was no pulsatile mass nor abdominal murmur. The liver tests revealed moderate cytolysis and cholestasis and an elevated brain natriuretic peptide value of 1322 pg/mL (normal value <500 pg/mL). Complete blood count, hemostasis, renal function, and thyroid function were normal. The ECG showed sinus tachycardia.

Transesophageal echocardiography demonstrated a dilatation of the right heart cavities (Figure 1A) with a severe tricuspid regurgitation and pulmonary hypertension (systolic pulmonary artery pressure = 60 mm Hg). Left ventricular systolic and diastolic functions were preserved. Cardiac output was greatly increased at 10 L/min, based on Doppler measurements (Figure 1B). Pulsed Doppler on the aortic isthmus showed a diastolic prolongation of the flow, suggesting an arteriovenous fistula (Figure 1C). Right catheterization confirmed the high output at 15 L/min with a cardiac index of 8.2 L/min/m² and a high pulmonary capillary wedge pressure. A contrast-enhanced arterial phase computed tomography of abdominal and pelvic vessels shows an infrarenal abdominal aortic aneurysm (maximum diameter, 49 mm) extending into the right common iliac artery complicated with an aortocaval fistula. Aneurysm was ruptured in the vena cava ≈4 cm after its take off (Figure 2). The patient underwent surgical treatment. During surgery, after opening the aneurysm and resection of the mural thrombus, a 2-cm aortocaval fistula was found on the postero-medial wall (Figure 3). The fistula was closed, and a Dacron bifurcated graft (18 cm × 9 cm) was anastomosed to the aorta proximally and to the iliac arteries on both sides. Postoperative transthoracic echocardiography showed a cardiac output at 4.6 L/min (cardiac index, 2.7 L/min/m²), systolic pulmonary artery pressure at 30 mm Hg with mild tricuspid regurgitation, and the absence of diastolic prolongation of the flow in the aortic isthmus. The patient had an uneventful postoperative recovery. He was discharged home 10 days later.

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Figure 1. Echocardiography. 
A, Apical 4-chamber view demonstrating a dilatation of the right heart cavities. 
B, Left ventricular outflow tract pulsed Doppler. 
C, Aortic isthmus pulsed Doppler.
Discussion

To our knowledge there is only one other reported case of aortocaval fistula revealed with the same presentation. The size of the aneurysm was unusual; the largest diameter was only 49 mm, whereas in most cases the diameter is >50 mm. Definitive diagnosis of aortocaval fistula is difficult because the classic signs (pulsatile abdominal mass with bruit, high-output heart failure, acute dyspnea, and low back pain) are only present in half of cases and especially the signs of heart failure. As a result, it is diagnosed in only 37% to 52% of cases before surgery. This complication worsened the mortality from 20% to 55%. The most important problem is to control the venous bleeding from the fistula and from the venous dilatation resulting from pressure overload. Preoperative diagnosis offers advantages in surgical management. We suggest that every patient undergoing surgery for an abdominal aortic aneurysm should have echocardiography with a pulsed Doppler of the aortic isthmus to stratify the operative risk and prepare surgery.

Disclosures

None.

References


Figure 2. Contrast-enhanced computed tomography. A, Volume rendering (VR). B, Oblique coronal multiplanar reconstruction (MPR). Visualization of the aneurysm and its rupture into the vena cava (arrow). Ao indicates aorta; and IVC, inferior vena cava.

Figure 3. Surgery photography. A, Abdominal aortic aneurysm. B, Open aneurysm and visualization of the 2-cm fistula (arrow).
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