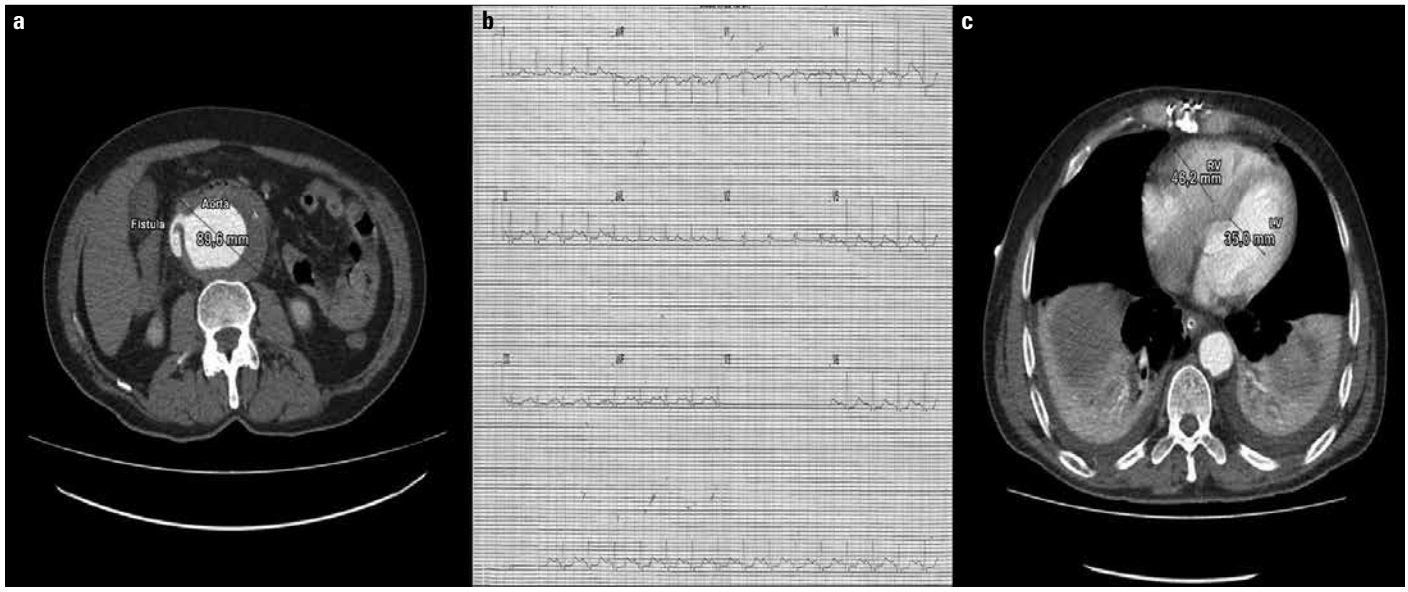

Figure 3. a-c. Fistula tract (a). ECG after intervention (b). RV-to-LV ratio regression on CT (c)

Hypotension, tachycardia, and tachypnea in a patient with coronary artery disease

P. 430

Answer: D. Abdominal aortic fistula

In this case, RV strain pattern was detected by imaging modalities. Pulmonary embolism (PE) is the most frequent cause of acute right heart failure. In our patient ECG and echocardiographic findings as well as troponin and D-dimer increment all together were compatible with RV failure and most susceptible diagnosis was assumed to be PE. However, the thoracal CT angiography excluded the presence of PE that is placed as option (B).

Because of increased troponin I level and the occurrence of ST-segment depression, the diagnosis of acute coronary syndrome (ACS) that is placed as option (A) is considered highly likely. However, the absence of echocardiographic evidence of left ventricular dysfunction could not explain the cause of hypotension.

CT evaluation that was conducted with a suspicion of AAA, revealed that aneurysm with a 9-cm diameter was fistualized from the ulcerated and irregular middle region of the aorta to the IVC (Fig. 3a). Opacification of vena cava near the area of aneurysm at the arterial phase of abdominal CT demonstrated the aorta-caval fistulae (ACF) that is placed as option (D). Option (C) is eliminated because his hemoglobin followup was normal and abdominal CT showed no evidence of free intraperitoneal or retroperitoneal blood.

Because of the rapidly progressing hemodynamic disturbance, endovascular therapy was planned. After the abdominal aortography, a uni-iliac graft stent was deployed in the aneurysm. Because proximal blood leakage to the aneurysm was observed, second uni-iliac aortic graft stent was implanted. After repeated balloon angioplasties and the deployment of occluder device in the right main iliac artery, the aneurysmatic inflow was completely stopped (Video 1, 2). During the follow-up, right cardiac volume loading signs on ECG, echocardiography and CT were decreased (RV-to-LV dimension ratio=1.3) (Figure 3b, c).

High-pressure gradient between aorta and IVC may increase the venous flow proportional to the diameter of the fistula, and may cause high-output cardiac failure. Reponses in the resistance arteries due to sympathetic activation increase the flow into the high-capacitance venous circulation. Increased venous pressure and venous return may be presented by an enlargement in the right cardiac chamber. This clinical picture mimics the ECG and echocardiographic findings of PE that cause acute right heart failure. Fistualization of AAA to the IVC is a rare but fatal complication. In general, AAAs are ruptured at the retroperitoneal region; however, approximately 5% of them may fistualize at the IVC (1). Timely differential diagnosis is important for the accurate treatment and prognosis of the ACF patients.

Tolga Çimen, Hasan Ali Durmaz*, Ahmet Akyel, Ekrem Yeter, Kasım Karapınar, Mehmet Ali Felekoğlu**
Clinics of Cardiology, *Radiology, **Cardiovascular Surgery, Dışkapı Yıldırım Beyazıt Education and Research Hospital; Ankara-*Turkey*

Video 1. A. 13 cm long aneurysmatic dilatation in abdominal aorta that was started below the renal artery and extended to iliac bifurcation
Video 2. B. After endovascular treatment aneurysmatic flow was completely stopped

Reference

1. Cinara IS, Davidovic LB, Kostic DM, Cvetkovic SD, Jakovljevic NS, Koncar IB. Aorto-caval fistulas: a review of eighteen years experience. Acta Chir Belg 2005; 105: 616-20.