Aorticaval fistula
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Section: Cardiovascular
Area of Interest: Abdomen
Procedure: Observer performance
Procedure: Contrast agent-intravenous
Imaging Technique: Ultrasound
Imaging Technique: CT-Angiography
Special Focus: Dilatation Fistula Case Type: Clinical Cases
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Patient: 80 years, male

Clinical History:

An 80-year-old male patient with history of chronic renal failure was admitted to the emergency department due to anuria, incessant lumbar pain, lower limb swelling, and paraesthesia.

At admission, the patient was haemodynamically stable. On physical examination, a pulsatile epigastric mass was palpable, suggestive of an abdominal aortic aneurysm.

Imaging Findings:

An abdominal ultrasound showed signs of severe chronic kidney disease but no urinary tract obstruction. Additionally, a huge infrarenal aortic aneurysm was visible.

In order to discard complication, an abdominal CT in arterial phase was performed, disclosing the presence of a partially thrombosed infrarenal aortic aneurysm (9 cm of maximum transverse diameter). Furthermore, similar opacification of the inferior vena cava (IVC) to that of the aorta was visible, suggesting fistulisation between this two structures. Direct communication between the two vascular lumens through an ulcer of a mural thrombus in the right wall of the aorta confirmed the suspicion.

Permeability of the deep venous system could not be fully assessed in the absence of a venous phase, however no indirect signs of mesenteric vein thrombosis (bowel mural thickening) were visible. Furthermore, an ultrasound confirmed permeability of the lower limb venous system.

No signs of aneurysm rupture into the retroperitoneum were visible.

Discussion:

Rupture of an abdominal aortic aneurysm into the inferior vena cava is an uncommon and devastating condition, involving less than 5% of cases of aneurysmatic aortic rupture.

A clinical diagnosis is sometimes difficult because the classic diagnostic signs (pulsatile abdominal mass with bruit, acute venous congestion and low back pain) may be absent in many cases [1, 2]. Additionally, aortocaval fistula can debut with or without rupture into the abdominal cavity. In some cases the clinical presentation can lead to
confusion, mimicking other cardiovascular conditions such as congestive heart failure, causing lower extremity oedema and paraesthesia [2]. Therefore, acknowledgement of this disease is essential for an early diagnosis and treatment.

Acute renal failure due to shock state or venous hypertension has been widely described. Interstitial renal oedema in venous hypertension may cause a rapid renal function decrease [3], often associated with haematuria. Other atypical forms of presentation may be paradoxical pulmonary embolism from an aortic thrombus, or angina due to increased myocardial oxygen demand, following the spontaneous rupture of the aneurysm [4].

Conventionally, treatment has been open surgical repair with its attendant complications, including a mortality rate of up to 30%. In our patient, endovascular aneurysm repair (EVAR) managed to exclude the fistula [5].

**Differential Diagnosis List:** Spontaneous aortocaval fistula (ACF), A wide spectrum of thoracic and abdominal acute conditions (pulmonary embolism, cardiac failure, aortic dissection etc.), Other nonvascular abdominal emergencies (acute pancreatitis, renal colic etc.)

**Final Diagnosis:** Spontaneous aortocaval fistula (ACF)

**References:**


T Wang, B Huang, J Zhao, Y Yang, D Yuan (2016) Aortocaval fistula resulting from rupture of the abdominal aortic dissecting aneurysm treated by delayed endovascular repair. A case report. Medicine (Baltimore) 95, 18 (PMID: 27149481)


Description: Incidentally, a huge abdominal aortic aneurysm with an intramural thrombus in the right posterior wall of the aorta is discovered by ultrasound study. Origin: Hospital Universitario de Bellvitge, Department of Radiology. L'Hospitalet de Llobregat, Barcelona, Spain.
**Figure 2**

**Description:** Infrarenal abdominal aortic aneurysm with a thrombotic ulcer in its wall is confirmed (A,B,C). There is arterialisation of the IVC and the iliac veins (C).

Oedema around the aorta (D) indicates periaortitis. **Origin:** Hospital Universitario de Bellvitge, Department of Radiology. L'Hospitalet de Llobregat, Barcelona, Spain.
Description: Coronal reconstruction image. Early enhancement of the inferior vena cava (IVC), synchronous and equivalent to that of the aortic lumen. In addition, it is showed the severe atherosclerosis of the aorta and great vessels. Origin: Hospital Universitario de Bellvitge, Department of Radiology. L'Hospitalet de Llobregat, Barcelona, Spain.
Description: Sagittal reconstruction image (rotated).

Directed communication between the two lumens through the aortic ulcer. Arterial opacification of the inferior vena cava indicates aortocaval fistula. Origin: Hospital Universitario de Bellvitge, Department of Radiology. L'Hospitalet de Llobregat, Barcelona, Spain.