SHORT REPORT

Aortocaval Fistula Presenting with Hematuria and Renal Failure

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We present a case of a fistula involving the inferior vena cava and an abdominal aortic aneurysm, associated with hematuria and renal failure and which proved fatal. A clinical diagnosis is sometimes difficult because the classic diagnostic signs (pulsatile abdominal mass with bruit, high-output heart failure and low back pain) may be absent in many cases. Nowadays a contrast-enhanced spiral computed tomography scan is usually sufficient to diagnose this pathology.

Introduction

The development of a fistula between the inferior vena cava (IVC) and an abdominal aortic aneurysm is a rare complication. It is reported in only 3–6% of all ruptured aortic aneurysms.1,2 Classic signs of a fistula include high-output cardiac failure, audible ‘machinery-type’ bruit, a palpable abdominal mass and low back pain,1,3,4 but a definitive diagnosis can be difficult because the classic signs are present in only 20–50% of all such cases.1 We report a case of an aortocaval fistula (ACF) with gross hematuria and renal failure that was illustrated with Ultrasonography (US) and Computer tomography (CT).

Case Report

A 60-year-old man was admitted to our hospital with a 24-hour history of lumbar pain, oliguria, nausea, vomiting and gross hematuria. His medical history included coronary heart disease and smoking > 25 cigarettes daily. At admission the patient was haemodynamically stable. A pulsatile mass was found during the abdominal examination and a continuous murmur was heard during auscultation. Auscultation findings for the heart and lungs were normal. The lower extremities were cool and pale, and showed decreased pulses. An urgent Doppler US (Fig. 1) and an abdominal contrast-enhanced spiral CT scan (Fig. 2) were performed, revealing a large aortic aneurysm with a caval fistula without rupture into the retroperitoneal space. Renal function rapidly deteriorated and haemodialysis was initiated. The patient remained hypotensive despite administration of dopamine and unfortunately died five days later from multiple organ failure.

Discussion

The rupture of an abdominal aortic aneurysm into the IVC is a rare complication. The most common cause of an ACF is the spontaneous rupture of an abdominal aortic aneurysm into the adjacent venous system. However, the rupture of mycotic aneurysms, Marfan’s syndrome, Ehlers- Danlos syndrome, Takayasu’s arteritis and iatrogenic causes (abdominal surgery) may also cause ACF.1

The classic presentation of an ACF, although rare, is a pulsatile abdominal mass with an audible ‘machinery-type’ bruit, high-output cardiac failure and regional venous hypertension.5 Hematuria will be a presenting symptom in 17 to 23% of patients,6 as
Fig. 1. Ultrasonography (A, C, D) images identifying the ACF. Doppler study shows inverted artery pulses in vena cava compared with aorta. (B) The same detail as in A but with 2D axial CT image.

Fig. 2. 2D Coronal (A) and 3D (B) reconstructions showing the ACF. Intravascular Endoscopy (C, D) shows the ostium of the fistula (*) and aortic bifurcation in iliac arteries (arrow).
a result of a renal infarction or renal congestion due to perforation of the renal vein or IVC by an abdominal aortic aneurysm.

The most reliable and least invasive test for accurate diagnosis of ACF is contrast CT in those patients where Doppler US is inconclusive. Contrast CT scan findings are: a) disappearance of fatty tissue between the IVC and the aorta, b) rapid passage of the contrast agent into the IVC from the aorta and c) fistula indentation visible in the IVC.

An ACF is found in 1% of operations performed for an abdominal aortic aneurysm and in 4% of operations for ruptured aneurysms. When an ACF is present, the technical complexity of surgery is increased and precautions must be taken to prevent intraoperative bleeding and the passage of air, thrombi or atherosclerotic debris emboli into the IVC through the fistula. Operative mortality due to ACF is about 30% and appears to be no greater than that seen with ruptured abdominal aortic aneurysm in general.

In conclusion, we wish to alert physicians to the importance of early recognition and treatment of ACF, which is crucial in reducing the mortality and complications associated with this disorder. ACF must be included in the differential diagnosis in patients with abdominal pain and hematuria. Non-invasive imaging diagnosis can be performed using contrast CT and US.

References


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