Abdominal Aortic Aneurysm with a Double Acute Complication: Simultaneous Rupture in the Retroperitoneum and into the Inferior Vena Cava.

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Abdominal Aortic Aneurysm with a Double Acute Complication: Simultaneous Rupture in the Retroperitoneum and into the Inferior Vena Cava.

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Abstract

An unusual case of abdominal aortic aneurysm with simultaneous rupture in the retroperitoneum and in the inferior vena cava is reported. The patient presented with clinical signs of hemorrhagic shock, peripheral venous congestion and acute renal failure. An urgent contrast-enhanced computed tomography was performed, leading to an accurate diagnosis, and straight to surgery.

Introduction

Simultaneous rupture of an abdominal aortic aneurysm (AAA) in the retroperitoneum and into the inferior vena cava (IVC), with a subsequent aorto-caval fistula (ACF), is absolutely rare and it is not clearly reported in the Medical Literature. The clinical presentation is dramatic and demands urgent diagnostic and therapeutic interventions (1,2,3).

Case Report(s)

A 67 years old man, heavy cigarette smoker, with a history of controlled hypertension, not complicated by symptoms of peripheral vascular diseases, was admitted to the hospital for acute onset of abdominal pain, followed by hypovolemic shock, with arterial pression 85/50 mmHg. The physical examination showed cyanosis of patient’s inferior extremities and back, and diffuse tenderness in the lower abdominal quadrants and in the left flank; a systolo-diastolic murmur was audible in the periumbelical region. Among blood tests, we remark Ht: 33%; blood urea: 121 mg%; creatinine: 6 mg%, while bilirubin, GOT, GPT and coagulation tests were normal.

The abdomen ultrasound revealed an enlarged abdominal aorta with a periaortic hematoma. A subsequent multidetector row-angiocomputed tomography (CT) demonstrated a calcified fusiform infrarenal AAA, 8.7 cm in diameter, long 14 cm, starting just below the renal arteries, and ending at the iliac bifurcation. It appeared ruptured in the right retroperitoneum, with a large hematoma extending from the ilio-psoas muscle to the Gerota fascia (Illustration 1,2). During the same arterial phase, the IVC appeared dilated and opacified simultaneously to the aorta, through an abnormal communication, 3 cm in diameter, with the adjacent left wall of the AAA (Illustration 3). The same phase of CT study demonstrated other characteristic aspects of the ACF, interesting from a hemodynamic point of view. The IVC and the iliac veins were dilated, as well as the right renal vein, with absence of perfusion of both the kidneys (Illustration 4,5); the same congestion could be observed in the hepatic veins (Illustration 6). A prompt laparotomy confirmed the presence of an infrarenal AAA ruptured in the left retroperitoneum. Its sac was incised anteriorly, the inner thrombus carefully removed, and an ACF 3 cm in diameter was visualized. It was repaired with interrupted stitches from within the aorta. An aorto-bis-iliac prosthetic Dacron graft was inserted. The post-operative course was uneventful, with complete resolution of the acute renal failure, and without persisting signs of venous insufficiency or pelvic congestion.

Discussion

Our observation permits to outline the leading symptoms of this syndrome: acute abdomen and hemorrhagic shock, typical of rupture of an AAA, and peripheral venous congestion and hypertension in the IVC characteristic of an ACF. The systemic complications of this latter can express as heart failure (4,5,6), necrotic hepatitis (7), or more commonly as acute renal failure. Its sudden onset and rapid development can be referred to the circulatory shock and to hypertension in the IVC and both renal veins. Of course, the size of the ACF and the different volume of the shunt influence the severity of all the possible complication.

From a diagnostic point of view, we can remark that, although these signs can alert toward the recognition of this syndrome, a contrast enhanced CT is essential to make an accurate diagnosis, to plan an urgent surgical treatment and to avoid intraoperative complications, such as dislodgement of mural thrombi,
inadvertent laceration of the IVC, too vigorous fluid infusion with secondary worsening of cardiac failure(8,9,10,11).

Considering the etiology, an atherosclerotic AAA can simply ulcerate into the adherent IVC, or more rarely, it can also simultaneously rupture in the retroperitoneum. Our therapeutic approach consisted in an immediate open surgery. Nevertheless, in case of large size ACF, an endovascular venous technique can be considered, in order to obviate the hemodynamic consequences of the ACF before an open surgical treatment of the AAA (12). On the other hand, it must be observed that an endovascular aortic reconstruction, if complicating later with an endoleak, can reactivate and progressively worsen the pre-existing ACF (12).

Abbreviations(s)

AAA: Abdominal Aortic Aneurysm
IVC: Inferior Vena Cava
ACF: Aorto-Caval Fistula
CT: Computer Tomography

References

Illustrations

Illustration 1

CT axial section of the AAA: the thrombus appears fissurated, with contrast medium extravasating outside the inner channel; precocious enanchement of the IVC:

Illustration 2

CT axial section: the wall of the AAA appears ruptured (arrow) with subsequent leakage of contrast medium into a large hematoma in the right retroperitoneum.
Illustration 3

CT axial section: dense enhancement of the IVC, contemporary to the abdominal aorta, through a large ACF (arrow).

Illustration 4

Coronary reformatted CT image: the ACF is clearly demonstrated; the IVC and the left iliac vein appear dilated; the common hepatic artery is well enhanced.
Illustration 5

CT axial section in a precocious arterial phase: dense enhancement of the IVC and of the right renal vein, both dilated. Absence of renal perfusion.

Illustration 6

CT axial section in a precocious arterial phase: contemporary enhancement of aorta, IVC and hepatic veins, which appear enlarged.
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