CASE REPORT

Inferior Vena Cava Thrombosis, Aortocaval Fistula and Aortic Aneurysm: A Unique Combination

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Introduction

Thrombosis of the inferior vena cava is an uncommon complication of a large aneurysm of the abdominal aorta. The prevalence of symptomatic venous complications secondary to aneurysms of the aorta is not well documented. Combe et al. reported an incidence of less than 9%.1 Venous compression by an aortic aneurysm often heralds rupture especially into the cava itself causing an aortocaval fistula. The overall mortality rate of aortocaval fistula is about 21%.2 The mortality in combination with vena cava thrombosis is unknown. If the diagnosis is made before operation, the mortality may be reduced because proper precautions can be made.3

We describe a patient with gross oedema in the lower body and visible collateral veins on the abdominal wall, resembling an inferior vena cava syndrome. It appeared to be an abdominal aortic aneurysm complicated by total occlusion of the inferior vena cava, due to a thrombotic plug from the wall of the atherosclerotic aneurysm which expanded through an aortocaval fistula. As far as we are aware, a case like this has never been published before.

Case Report

A previously healthy 69-year-old man was transferred to our hospital with a 6 weeks history of considerable oedema of the scrotum and legs. Four weeks before admission he had experienced a sudden pain in the right flank. After the diagnosis of an aortic aneurysm with vena cava thrombosis was made he was transferred to our hospital.

On admission, the blood pressure was 105/75 mmHg with a heart rate of 100 per minute. The jugular venous pressure was not elevated. Pre-operative cardiac output was 4.4 l/min. Prominent veins over the lower abdomen were seen with considerable oedema of scrotum and legs. The abdomen revealed a pulsating mass, without abdominal distention or audible bruit. Ultrasound examination and computerised tomography (CT) of the abdomen (Fig. 1), revealed a large (7.5 cm) abdominal aortic aneurysm. Apart from this finding, an intraluminal thrombotic mass in the abdominal aorta and thrombosis of the inferior vena cava were observed.

At operation an abdominal aortic aneurysm was found with an aortocaval fistula. The inferior vena cava was totally occluded by a fibrin plate. No communication was found between the right atrium and the inferior vena cava. The aortic aneurysm was dissected from the vena cava and both were excised. A Dacron graft was used to bridge the aortocaval gap. The patient recovered well and was discharged home 3 weeks after the operation.

Fig. 1. Preoperative CT scan shows no connection between the inferior vena cava and the abdominal aortic aneurysm.
cava thrombosis appeared to be the result of occlusion due to a thrombotic plug from the aortic aneurysm passing through the aortocaval fistula. The aneurysm was resected and replaced with a bifurcated Dacron graft. The inferior vena cava as well as the aortocaval fistula were left undisturbed. No histological examination of the thrombus was made. The postoperative course was uneventful.

Discussion

The development of the inferior vena cava syndrome is characterised by the appearance of gross oedema in the lower body, ascites and visible collateral veins on the abdominal wall. Possible causes include an enlarged liver, compressing the vena cava on its passage through the liver, abdominal tumour, enlarged para-aortal lymph nodes, congenital malformations or a large abdominal aortic aneurysm.

Venous thrombosis due to venous compression by an aortic aneurysm was reported by Combe et al. in three out of 10 patients with venous compression. Rupture of the aortic aneurysm into the inferior vena cava occurred in four out of 25 patients with venous compression in the same study. Spontaneous perforation of an arteriosclerotic abdominal aortic aneurysm into the inferior vena cava is reported as occurring in 3–4% of all ruptures. An aortocaval fistula is the result of adhesion of the wall of the inferior caval vein and that of the aneurysm. This is due to a periaortic adventitial inflammatory reaction, which can lead to adherence to adjacent posterior veins. Aneurysmal wall shearing subsequently leads to the arteriovenous fistula.

Additional diagnostic methods used for the detection of an inferior vena cava thrombosis, aortocaval fistula and abdominal aortic aneurysm are ultrasonography, angiography or computerised tomography. The objectives of surgery is thrombectomy of a free-floating thrombus, because of the risk of pulmonary embolism, in contrast with a completely occluded inferior vena cava which can be left undisturbed.

The fistula is closed and aortic continuity restored. In this case CT-images showed no connection between the inferior vena cava and the abdominal aortic aneurysm. Thrombotic occlusion of the inferior vena cava was due to a thrombotic mass from the wall of the aneurysm which had expanded through the aortocaval fistula into the inferior vena cava. There was no free-floating thrombus in the vena cava and therefore no risk for pulmonary embolism. The thrombus was therefore left undisturbed.

References


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