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Rupture of an Abdominal Aortic Aneurysm into the Vena Cava

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ABSTRACT

Aortic abdominal aneurysm combined with aorto-caval fistula is a rare condition with a high mortality. We discuss here the symptomatology and treatment of one such patient.

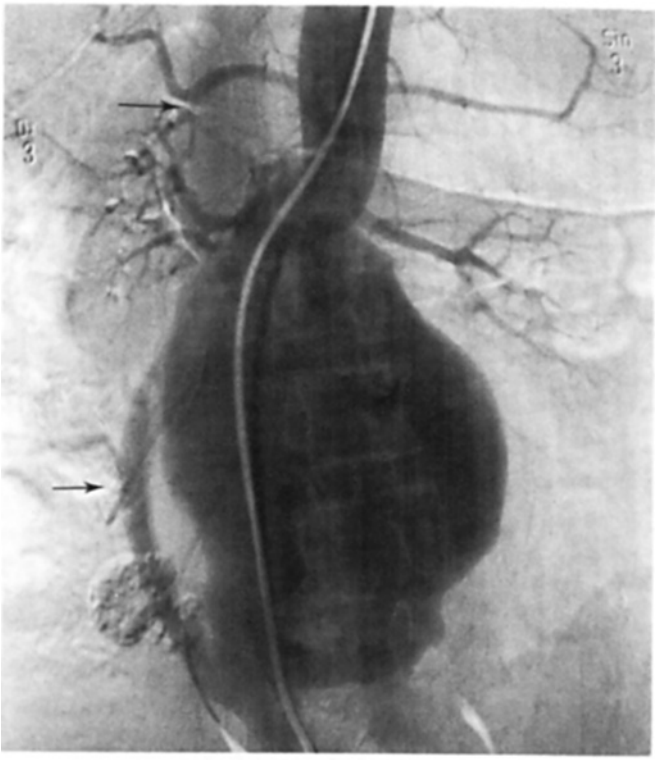
INTRODUCTION

An aorto-caval fistula may occur either spontaneously from a ruptured atherosclerotic aortic aneurysm, or traumatically. Spontaneous aorto-caval fistulae may be expected in 1-4 % of surgically treated aortic aneurysms (7), leading to severe haemodynamic changes. The diagnosis is often overlooked preoperatively and the mortality rate is high even for patients who reach the operating table (5).

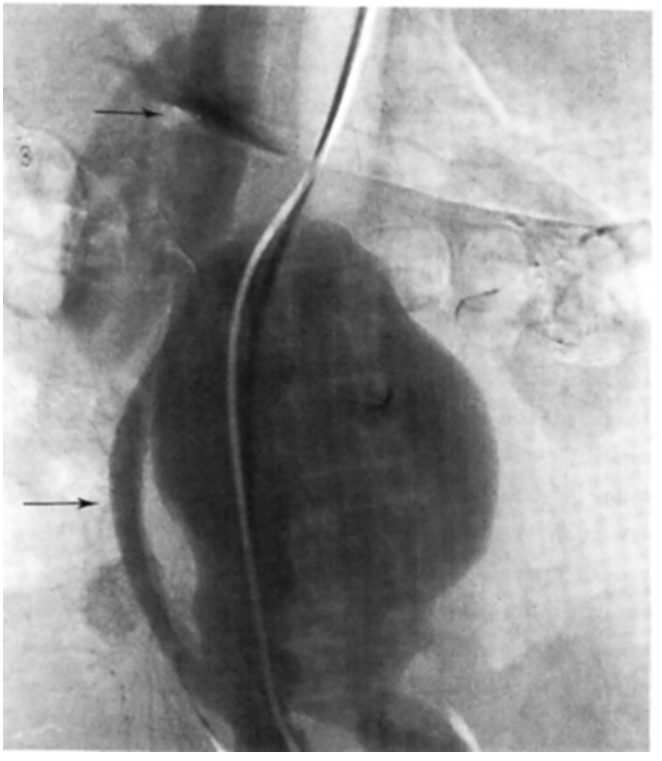
The first case was described by Syme in Edinburgh in 1831 and a recent review of the literature revealed 94 cases (5). We will relate our experience of one case.

CASE REPORT

A previously healthy 68-year-old man was admitted to the Department of Surgery on April 29, 1978 because of sudden abdominal and low back pain, general weakness and frequent vomiting. He had been treated with analgesics for three days for his back. Physical examination revealed a well-nourished, slightly pale man with tachycardia, but with no overt signs of cardiac failure. The blood pressure was 140/80 mm Hg. A slightly tender abdominal mass was palpable and epigastric pulsations were seen. There were no signs of gastrointestinal bleeding but urinalysis disclosed numerous red blood cells. On the clinical suspicion of a dissecting aortic aneurysm, abdominal aortography was performed. This revealed a large aortic aneurysm just below the renal arteries and extending to the external iliac arteries. Contrast medium could be seen outside tne aneurysm along the right border, indicating an aorto-caval fistula (Fig.).



a



b

Fig. 1. Early (a) and late (b) arterial phase of aortography. Arrows point to leakage of contrast medium from the aneurysm to the inferior vena cava.

An emergency laparotomy was immediately performed. Early during the operation the patient went into severe heart failure with difficulty in oxygenation. The aorta was clamped just below the renal arteries. When the aneurysm was opened, heavy venous bleeding occurred from a 5-mm wide aorto-caval fistula. Because of necrosis of the aneurysmal wall, the fistula was excised and the defect in the caval vein was repaired with a saphenous patch graft. The aneurysm was replaced with a dacron bifurcation graft.

After closure of the fistula a sudden improvement in the central circulation was noted.

Postoperatively the patient improved rapidly. There was no haematuria and the chest X-ray showed no stasis. At follow-up three months later, the patient was in good condition.

COMMENTS

The symptoms of a large arterio-venous fistula are well known and the diagnosis of an aorto-caval fistula should in fact present no difficulty. In spite of this, most of these fistulas are not detected before operation (4). This may be due to a lack of awareness of this uncommon condition on the part of the physician, or to the absence of some characteristic symptoms (1). In a patient who appears with an abdominal pulsatile mass, venous hypertension of both lower extremities, low back pain, an abdominal bruit, and gross or microscopic haematuria, an aorto-caval fistula should be suspected (1, 6).

A typical continuous murmur may be absent owing to vena cava obstruction produced by the aneurysm (2). In the early stage, when the fistula is small, there are no signs of peripheral oedema or venous distension (3). The fistula enlarges with time, due to degenerative changes of the aneurysmal wall, and typical signs of high output cardiac failure will occur. The oedema of the lower abdomen and legs is of the pitting type and does not respond to digitalis or diuretics (3). Some patients show varying degrees of haematuria and renal failure. This is probably related both to decreased arterial perfusion and to renal vein congestion (3). Some patients have intensive vomiting, which may be due to congestion of the liver or gastric mucosa (3).

During the operation the haemodynamics must be carefully observed to maintain balance in fluid therapy. For this purpose the Swan-Ganz thermistor catheter is preferable, since it allows monitoring of pulmonary arterial pressure and pulmonary capillary wedge pressure, as well as cardiac output with the thermodilution technique. During surgery the risk of bleeding from congested pelvic veins - the cause of death in some cases (1) - must be kept in mind.

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