Case report - Aortic and aneurysmal
Inferior vena cava occlusion secondary to an inflammatory abdominal aortic aneurysm

Tomoya Yoshiizaki*, Noriyuki Tabuchi, Satoru Makita

Department of Cardiovascular Surgery, Yokohama City Minato Red Cross Hospital, 3-12-1 Shinyamashita, Naka-ku, Yokohama, 231-8682, Japan

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Abstract

Inflammatory abdominal aortic aneurysms (IAAs) represent 3% to 10% of all AAAs. However, inferior vena cava occlusion secondary to an IAA is rarely reported. We report a case of inferior vena cava occlusion secondary to an IAAA presenting deep venous thrombosis. As it is crucial to avoid pulmonary embolism and excessive blood loss during an operation, we pre-operatively implanted a venous filter and minimized intra-operative dissection that allowed successful operative repair.

Keywords: Inflammatory abdominal aortic aneurysm; Inferior vena cava; Deep venous thrombosis

1. Introduction

Inflammatory abdominal aortic aneurysms (IAAs) are recognized to be a variant of AAAs. The usual symptoms of an IAA are abdominal, flank, or back pains. However, our patient presents sudden lower extremity swelling as an initial symptom. The adhesions to adjacent structures, including the inferior vena cava (IVC), are well documented in IAAAs, but an IVC occlusion secondary to an IAAA is rarely reported. Here, we report our successful strategy to operate on IAAAs complicated with deep venous thrombosis (DVT).

2. Case report

A 72-year-old man presented with a one-day history of bilateral lower extremity swelling. There was no history of trauma or recent travel, and the patient denied any prior history of lower extremity claudication, venous disease or edema. However, he had a history of hypertension and was receiving medical treatment; also, he had smoked two packs of cigarettes per day for 50 years before admission. Abdominal examination revealed a prominent pulsatile, epigastric mass. Femoral, popliteal, and dorsal pulses were intact, though he presented distension of the infrainguinal superficial veins. An abdominal computed tomography (CT) scan confirmed an infrarenal aortic aneurysm (9 cm) involving both common iliac arteries. It was also noted that the IVC was not detected due to compression of the AAA below the renal veins, and a thrombus in the IVC extended just above the common iliac veins (Fig. 1). Because the IVC was compressed by AAA below the renal veins, a temporary inferior vena cava filter was placed above the renal veins to prevent perioperative pulmonary embolism. An aortic endoaneurysmorraphy was then undertaken via a transabdominal approach. A glistening white aneurysm sac was exposed in the retroperitoneum (Fig. 2). The IVC was not detected because of strong adhesion. The adherent duodenum was mobilized, and the neck of the aneurysm and the iliac arteries were clamped. The aneurysm was opened and repaired with a bifurcated 20×10-mm knitted Dacron tube graft to the common iliac arteries. Postoperatively, anticoagulation was suspended because of bleeding and a decrease of platelet count. On the seventh postoperative day, an abdominal CT scan was performed and demonstrated that the IVC remained to be occluded below the renal veins. The temporary inferior vena cava filter was replaced with a permanent one. Anticoagulation with heparin was started and maintained with warfarin for six months to achieve an INR 2.0. The patient’s recovery was unremarkable, but he still had swelling in his lower extremities. The patient was discharged on the twenty-first postoperative day with elastic compression stockings. For a few months postoperatively, ascites was seen to need a diuretic, but it disappeared six month later. The patient was doing well at eight months’ postoperative follow-up, with diminished lower extremities edema.

3. Discussion

Inflammatory abdominal aortic aneurysms represent 3% to 10% of all AAAs and have a distinct tendency to occur in men [1]. Recently, IAAAs are recognized not as a distinct clinical and pathologic entity but as an inflammatory variant of the well-known atherosclerotic AAA [1]. Operative findings associated with IAAAs are characterized by a shiny-white porcelain appearance with thickened anterior and lateral walls and fibrous retroperitoneal extension [1],...
which were also seen in this case. Adhesion with adjacent structures is common, with duodenal involvement expected in all cases and adhesions to the IVC and the left renal vein frequently found [2]. However, IVC occlusion or DVT as a presenting sign secondary to an IAAA has rarely been reported. Kashyap and colleagues reported one patient presenting with DVT due to IVC compression and acute renal failure due to obstructive uropathy secondary to an IAAA [3].

In surgery of an AAA associated with IVC thrombosis, it is crucial to avoid a pulmonary embolism and excessive intra-operative blood loss due to the increased venous collaterals. Palmer reported the use of a vena caval clip applied just below the renal veins intra-operatively to avoid pulmonary embolism [4]. However, this technique does not seem feasible in the inflammatory AAA, because the adhesion with adjacent structures was too strong to expose the IVC. Alternatively, we used an IVC filter via a jugular approach pre-operatively. In this way, we could minimize intra-operative dissection, resulting in the minimum blood loss during the operation. To set the IVC filter infrarenally would be difficult because of clots that generally approach the renal veins. In such a situation, suprarenal placement of the IVC filter would be available [5], like in this case.

To summarize, a rare case of inferior vena cava occlusion secondary to an inflammatory abdominal aortic aneurysm is reported. The patient manifested sudden lower extremity swelling, by the inferior vena cava occlusion caused by an inflammatory abdominal aneurysm. The pre-operative implantation of an IVC filter via a jugular approach successfully avoided perioperative pulmonary embolism and excessive intra-operative blood loss during the operative repair of an aortic aneurysm.

References