Asymptomatic Thrombosis as a Late Complication of a Retrohepatic Vena Caval Graft Performed for Primary Leiomyosarcoma of the Inferior Vena Cava: Report of a Case

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Abstract

A 63-year-old woman successfully underwent a graft replacement of the retrohepatic inferior vena cava with a ringed polytetrafluoroethylene graft for primary leiomyosarcoma of the inferior vena cava (IVC). Although anticoagulant had been administered, a thrombus was found in the IVC just cranial of the downstream anastomosis 67 months after the operation. The patient remained free of symptoms, and she had no evidence of any tumor recurrence. She underwent a complete resection with a prosthetic reconstruction for leiomyosarcoma of the IVC and has since been able to enjoy a reasonably long-term survival. The occurrence of thrombosis must be kept in mind in the long-term follow-up of such cases.

Key words Thrombosis · Vena caval graft · Leiomyosarcoma · Inferior vena cava · Complication

Introduction

Leiomyosarcoma of the inferior vena cava (IVC) is a rare but well-recognized clinical entity for which the optimal treatment is considered to be a complete surgical resection.1–6 Although case reports of graft replacement of the IVC for primary leiomyosarcoma have been published, few reports have focused on the long-term outcome. We herein report a patient with leiomyosarcoma of the retrohepatic IVC who was treated successfully by both a resection and graft replacement, but subsequently developed thrombosis of the IVC as a late complication.

Case Report

A 63-year-old woman underwent upper abdominal computed tomography (CT) for an investigation of right-sided back pain and was found to have a mass in the retrohepatic portion of the IVC (Fig. 1). Vena cavography showed both the stenosis of this portion of the IVC and the collateral pathway through the inferior right hepatic vein to the right hepatic vein (Fig. 2a). Arteriography showed the mass to be hypervascular, and it was supplied by the right inferior phrenic artery. An operation was performed on January 10, 1996. The liver was completely mobilized and separated from the tumor together with the IVC. The confluence of the IVC with the right renal vein was intact but its confluence with the left renal vein was involved with the caudal extent of the tumor. The infrahepatic portion of the IVC was divided between the left and right renal veins. The tumor was completely removed together with the IVC and the right adrenal gland. Under a venovenous bypass using a centrifugal pump, the retrohepatic portion of the IVC was replaced, an end-to-end anastomosis to the lower one-third of the graft (Fig. 3). The bypass flow rate was maintained at about 1000ml/min, and the total bypass time was 95min. Anticoagulant therapy was not administered during the operation. The length of operation was 9h 25min, and the total blood loss was 2400ml. A diagnosis of leiomyosarcoma was established histologically.
The postoperative course was uneventful. Neither adjuvant radiation nor chemotherapy was administered either pre- or postoperatively. The patient has been followed in our outpatient clinic with vena cavography, magnetic resonance imaging, ultrasonography, or CT every 6–12 months (Figs. 2b, 4). Warfarin potassium 3–4mg/day and ticlopidine hydrochloride 300mg/day have been administered to control the thrombo test to less than 20% (normal 70%–140%) or the international normalized ratio of prothrombin time to more than 1.5 (normal 1.0–1.2) to prevent thrombosis of the graft. Vena cavography showed the prosthetic graft to be patent without any stenosis of the anastomosis (Fig. 2b). Doppler ultrasonography in the infrahepatic portion of the IVC revealed a continuous waveform without a swirl wave 55 months following surgery, but the blood flow velocity was not measured. Although the patient has been free from symptoms for 69 months, CT demonstrated a thrombus in the IVC just cranial to the downstream anastomosis on July 23, 2001 (Fig. 4a). The patient’s performance status has remained good despite

**Fig. 1.** Computed tomography (CT) shows a mass compressing the inferior vena cava (IVC) (arrow) to the right ventral side in the retrohepatic portion of the IVC.

**Fig. 2a,b.** Vena cavography. **a** Stenosis in the IVC and collateral pathway through the inferior right hepatic vein to the right hepatic vein on admission. **b** Patency of a prosthetic graft without stenosis of anastomoses (arrows) 5 months after surgery.

**Fig. 3.** The retrohepatic portion of the IVC was replaced with a 16-mm ringed polytetrafluoroethylene (PTFE) graft after a complete resection of leiomyosarcoma of the IVC. The left renal vein was then reconstructed.