Case Study

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Leiomyosarcoma of the inferior vena cava

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Abstract

Inferior vena cava leiomyosarcoma is a rare tumor with a variety of symptoms. A 41-year-old woman was admitted with nonspecific epigastric pain. Computed tomography revealed a dense mass between the inferior vena cava and the liver. The patient underwent successful resection of the mass. The pathologic study confirmed leiomyosarcoma. Adjuvant radiation therapy was completed, and after 12 months of follow-up, the patient had no problems.

Keywords

Leiomyosarcoma, Vascular neoplasms, Vena cava, inferior

Introduction

Leiomyosarcomas of vascular origin are the most common primary tumors of the inferior vena cava (IVC).[1] Slightly more than 400 cases have been repoted.[2] This low number emphasizes the importance of the need to report individual cases. They may present with various symptoms. Several techniques are used for diagnosis, including computed tomography, magnetic resonance imaging, ultrasound, and echocardiography.[3] According to their relationship to the hepatic and renal vessels, IVC leiomyosarcomas are classified anatomically: segment I (below the renal vessels); segment II (renal vessels to retrohepatic IVC), and segment III (suprahepatic IVC). The most effective treatment for cases of IVC leiomyosarcoma is radical en-bloc surgical excision.[4]

Case report

Our patient was a 41-year-old woman with a 2-year history of nonspecific epigastric pain. Physical examination was normal. Computed tomography showed a dense mass between the liver and the IVC without metastases to other organs (Figure 1). A computed tomography-guided core biopsy was not performed because of the high risk of severe post-biopsy hemorrhage. We decided to carry out a laparotomy and resection of the mass. Intraoperatively, we mobilized the right hepatic lobe and the hepatic flexure of the colon. The tumor was extraluminal and originated from the anterior aspect of the IVC 1 cm above the right renal veins, measuring approximately 5×2.5 cm. We obtained proximal control of the renal vein, above and below the mass on the IVC. The tumor was mobilized off the IVC using sharp dissection. We used a Satinsky clamp on the IVC tangentially to separate the mass. The tumor was easily teased off the IVC with well-demarcated gross total resection. Intraoperative assessment of the surgical margins by frozen section confirmed that a complete R0 resection had been achieved. The IVC was reconstructed primarily with a running suture under Satinsky clamping, using 4/0 polypropylene, and the Satinsky clamp was removed. The pathologic study confirmed leiomyosarcoma. The patient's postoperative convalescence was uneventful without any complications (Figure 2). She did not require anticoagulant treatment because she had undergone primary repair. Postoperatively, she received a course of targeted radiotherapy with total dose of 60 Gy to the tumor bed. Subsequent clinical examinations every 6 months and imaging with computed tomography confirmed that she remained disease-free one year after treatment.

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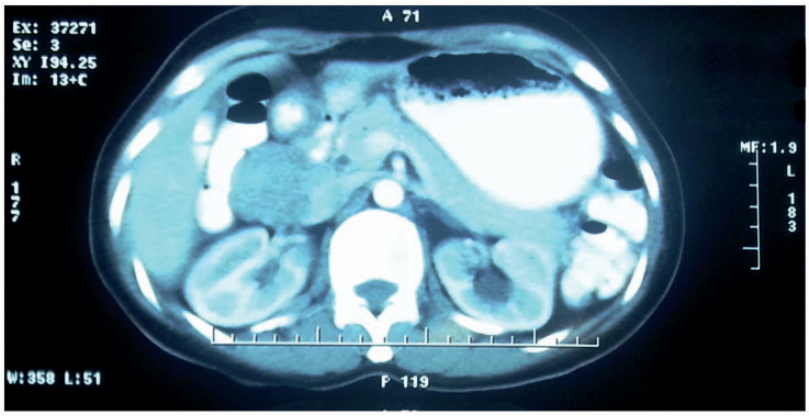

Figure 1. Computed tomography one week postoperatively.

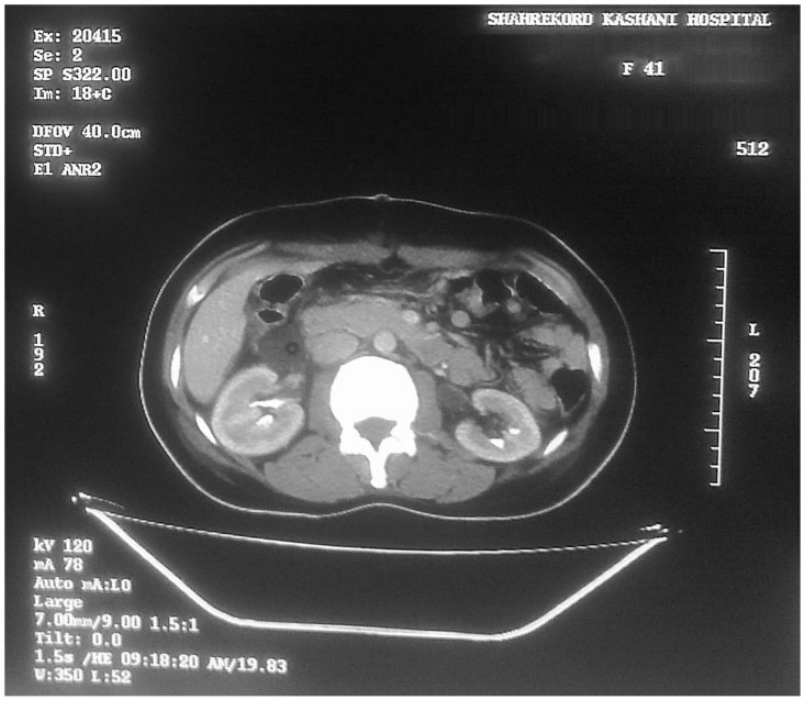

Figure 2. Computed tomography before the operation.

Discussion

While there is no strong evidence base for the management of IVC leiomyosarcoma, the treatment of choice according to the available literature is radical en-bloc surgical excision with a view to obtaining negative resection margins. In a study by Kim and colleagues,[5] patients with negative margins had a median survival of 86 months. The aims of surgical management of these tumors include maintenance of caval flow, achievement of local tumor control, and prevention of recurrence.

A number of techniques have been reported for dealing with the IVC following excision, including ligation, primary repair, patching (cavoplasty), and prosthetic graft replacement.[6] Renal or hepatic vein involvement by the tumor determines the strategy for vascular reconstruction. Simple ligation is possible after complete or subtotal resection of segment I and/or II. Gradual occlusion of the IVC allows the development of venous collaterals, so reconstruction of the IVC is not always required; but after radical curative resection with disruption of collaterals, or if only few collaterals have developed before surgery, ligation of the IVC may lead to lower limb edema with significant functional impairment. In segment II tumors, ligation of the IVC is precarious because impairment of renal venous outflow, arterial hypotension, or proximal venous hypertension might occur. Partial resection of the

IVC followed by primary repair or prosthetic patch angioplasty is rarely sufficient to be curable. In this case, we experienced a new procedure: resection of the tumor was achieved with primary repair after applying a Satinsky clamp tangentially on the IVC. Cavoplasty with a synthetic patch in low-flow venous segments predisposes to thrombosis and embolization. Several cases of postoperative graft obstruction have been reported with cavoplasty.[7] Making an arteriovenous fistula is strongly recommended to ensure patency and eliminate the need for long-term anticoagulation therapy. Prosthetic graft replacement gives the best results, given the length of the missing segment and the need for strength due to intraabdominal pressure. However, this procedure may increase the risk of pulmonary embolism as well as further graft-related major complications such as graft occlusion, graft-enteric fistulas, and sepsis.[7]

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Conflict of interest statement

None declared.

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