CLINICAL CASE

Renal tumor associated with left-sided inferior vena cava


a Urology Speciality Residency, Escuela Militar de Graduados de Sanidad, Hospital Central Militar, Mexico City, Mexico
b Urology Service Management, Hospital Central Militar, Mexico City, Mexico
c Urology Service, Hospital Central Militar, Mexico City, Mexico
d Vascular Surgery Speciality Residency, Escuela Militar de Graduados de Sanidad, Mexico City, Mexico
e Pregraduate Internship, Hospital Central Militar, Mexico City, Mexico

Abstract Malformation of the infrarenal segment of the vena cava is an uncommon abnormality with an incidence of approximately 0.005-1% in the general population. It is usually asymptomatic. The presentation of this condition with symptoms secondary to thrombosis or collateral vessel hypertrophy is a rare clinical form and its association with a renal tumor is even rarer.

We present herein the case of a 64-year-old man with a 12 cm left renal tumor identified as renal clear cell carcinoma with locoregional extension, lymph node and ipsilateral adrenal gland involvement, a thrombus in the proximal vena cava, and pulmonary metastases (T4N1M1, clinical stage IV). The patient underwent radical nephrectomy, intraoperatively confirming the left-sided inferior vena cava containing a tumor thrombus previously seen in a tomography scan; the proximal segment of the inferior vena cava was also observed to be inside the tumor. Nephrectomy with vascular control and proximal thrombectomy of the vena cava was performed. The tumor thrombus was obtained through the Valsalva maneuver and the stump of the inferior vena cava was closed with two lines of 6-0 Prolene® double-armed sutures. A control angiotomography scan to evaluate the collateral venous blood flow was carried out and revealed recanalization through the lumbar vessels. In the postoperative period, the patient was asymptomatic in relation to venous hypertension and swelling of the lower extremities.
Renal tumor associated with left-sided inferior vena cava

Introduction

Renal cell carcinoma makes up approximately 2%-3% of all neoplasias, and the mean patient age is 65 years at the time of diagnosis. Approximately 90% of renal tumors are renal cell carcinoma and of these, 85% are clear cell. Obesity and exposure to tobacco are related to the development of this type of cancer. 1-3

The most important prognostic factors for determining 5-year survival are tumor grade, local tumor extension, local lymph node chain activity, and signs of metastasis at the time of diagnosis. Renal cell carcinoma extends through metastasis to the lung, bone, brain, liver, and adrenal gland.3

Patients in stage IV disease may benefit from surgery.4,5 Cytoreductive nephrectomy before systemic therapy is generally recommended in patients with a potentially resectable primary tumor, as well as multiple resectable metastases.6

Malformation of the infrarenal segment of the vena cava is an uncommon abnormality and is usually asymptomatic. Its incidence is approximately 0.005%-1% in the general population.1 The presentation of this condition with symptoms secondary to thrombosis or collateral vessel hypertrophy is a rare clinical form2 and its association with a renal tumor is even rarer.

Case presentation

A 64-year-old man had an unremarkable past medical history, with no chronic degenerative diseases or exposure to risk factors. His illness began 9 months earlier with hyporexia and weight loss. Six months prior he presented with painless total gross hematuria with amorphous clots to which persistent cough was later added.

He was evaluated at a different level healthcare center at which a 12 cm left renal tumor was documented through ultrasound. He was then referred to our hospital. Upon admission, the patient was pale and cachexic, with a Karnofsky performance status of 80%. A computed tomography urogram reaching the thorax (figs. 1 and 2) identified a 12 x 8 x 9 cm left renal tumor involving the ipsilateral adrenal gland, a conglomerate of lymph nodes in the renal hilum, as well as an image suggestive of a thrombus in the vena cava and multiple pulmonary metastases. The tumor was classified as T4N1M1, clinical stage IV.

The patient underwent radical nephrectomy. Left-sided inferior vena cava with a tumor thrombus in its interior, as had been observed in the tomography scan, was confirmed intraoperatively; the proximal segment of the inferior vena cava was also observed inside the tumor. A nephrectomy with vascular control (fig. 4) and a proximal vena cava thrombectomy were performed; the tumor thrombus was obtained through the Valsalva maneuver and the stump of the inferior vena cava was closed with a double line of double-armed 6-0 Prolene sutures.

Figure 1 Computerized axial tomography scan, axial view. The left renal tumor is clearly identified (arrows).
The patient’s general condition was regular to good in the postoperative period with no complications and he was released 4 days after surgery. The final classification was T4N1M1 and the histopathologic study demonstrated Fuhrman grade 4 renal cell carcinoma extended into the perirenal adipose tissue, invasion of Gerota’s fascia, perineural invasion, thrombus in the renal vein and vena cava, and adrenal gland metastasis. A control angiotomography scan was done to evaluate collateral vein blood flow and recanalization through the lumbar veins was observed. After the surgery, the patient was asymptomatic in relation to venous hypertension or swelling of the lower extremities. He is receiving permanent anticoagulation treatment and is frequently evaluated by vascular surgeons. The patient is presently awaiting his Medical Oncology evaluation to begin target therapy with sunitinib.

Discussion

For the majority of patients with metastatic renal tumors, nephrectomy is generally palliative treatment and systemic treatments are also needed. Upon comparing nephrectomy alone with nephrectomy combined with immunotherapy, the latter had greater long-term survival. Nephrectomy is indicated in patients with metastatic disease that are candidates for surgery and that present with adequate functional status.

Anatomic abnormalities of the infrarenal vena cava are usually asymptomatic and their association with renal tumors has not been documented due to their low incidence. Renal tumor presenting with intracaval thrombus can be managed through surgical resection and thrombectomy with closure of the vena cava without complications thanks to the abundant collateral circulation and venous pressure release pathways of the lower limbs related to the anatomy of the patient.

Aggressive surgical treatment as the best initial management is supported in the literature, even though the majority of these patients require immunotherapy, especially those with advanced stage disease or lymph node or metastatic activity. Permanent anticoagulation therapy is indicated in patients undergoing vena cava ligature as prophylaxis for preventing deep vein thrombosis of the lower limbs secondary to the closure of the vena cava.

We treated our patient in clinical stage IV because his functional status was adequate (Karnofsky performance
status 80%) and because the anatomic variant and vena cava involvement were not an impediment for surgical tumor resection. Collateral circulation in the absence of the vena cava has been described and was confirmed in our patient through an angiotomography scan that showed the circulation being performed by the lumbar veins. Given that our patient had adequate postoperative progression and did not present with complications, we believe he will benefit from increased survival once he receives immunotherapy.

Conflict of interest

The authors declare that there is no conflict of interest.

Financial disclosure

No financial support was received in relation to this article.

References