Multiple organ resection in renal cancer

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ABSTRACT

Invasion beyond Gerota’s fascia into adjacent organs, without concomitant metastatic disease, is unusual. A 5 to 15% incidence of stage pT4 renal cell carcinoma (RCC) has been reported. Despite the lack of evidence of metastatic disease, patients suspected of having RCC are often labeled “unresectable” and “incurable” and are given palliative treatment.

The case is presented of a 58-year-old man with a left renal tumor that invaded the spleen. Left radical nephrectomy was performed with multiorgan resection (splenectomy and hemipancreatectomy).

The case is also presented of a 63-year-old man with left lumbar pain. Abdominopelvic computed axial tomography scan showed an 8.3 cm left renal tumor with multiple retroperitoneal adenopathies. Extension studies were negative for metastatic disease. The patient presented with bleeding of the lower digestive tract and synchronous second primary cancer of the colon was determined. Surgery revealed a renal tumor that involved the Gerota’s capsule and

RESUMEN

La invasión más allá de la fascia de Gerota dentro de órganos adyacentes, sin enfermedad metastásica concomitante es inusual. Se reporta una incidencia del 5% al 15% de carcinoma de células renales (CCR), estadio pT4. A pesar de no evidenciarse enfermedad metastásica, los pacientes con sospecha de CCR a menudo son etiquetados como “irresecables” e “incurables”, y se les ofrece tratamiento paliativo.

Se presenta el caso de un paciente masculino de 58 años, con tumor renal izquierdo que infiltra a bazo. Se realizó nefrectomía radical izquierda con resección multigénica (esplenectomía y hemipancreatectomía).

También se expone el caso de un paciente masculino de 63 años, con dolor lumbar izquierdo. Se realizó tomografía axial computada (TAC) abdominopélvica encontrando tumor renal izquierdo de 8.3 cm, con múltiples adenopatías retroperitoneales. Los estudios de extensión fueron negativos para enfermedad metastásica. El paciente presentó sangrado de tubo digestivo bajo, y se determinó segundo primario sincrónico de colon. Se realizó cirugía encontrando tumor renal que involucraba la cápsula de Gerota.
INTRODUCTION

Renal cancer is the third most commonly diagnosed urinary neoplasia and represents 3% of all cancer cases.\(^1\)

Historically, almost 80% of renal tumors have presented with pain and/or hematuria, and 30-40% of patients have presented with locally advanced or metastatic disease.\(^2\)

Since the introduction of noninvasive abdominal imaging studies such as computed axial tomography (CAT) in 1980, the majority of renal tumors have been incidentally diagnosed. These incidental tumors are asymptomatic, small, and early-stage at diagnosis.\(^3\)

Tumor invasion beyond the Gerota’s fascia into adjacent organs, with no concomitant metastatic disease, is relatively unusual. Retrospective series report a 5-15% incidence of pT4 renal cell carcinoma (RCC).\(^4\)

Despite no evidence of metastatic disease, patients suspected of having RCC are often labeled “unresectable” and “incurable” and are offered palliative treatment.\(^5\)

It is well-established that surgical resection of the primary tumor continues to be the cornerstone of localized and locally advanced RCC treatment and a fundamental part of integral multimodal treatment for patients with metastatic RCC.\(^6\)-\(^8\)

In addition, clinical staging of renal lesions is imprecise and understaging is frequently observed in the definitive pathologic result.\(^9\)

CASE PRESENTATIONS

CASE ONE

A 58-year-old man had a past medical history of 20 years of smoking 4 cigarettes a month, which he suspended in the last two years. His present illness began 1 month before seeking medical attention when he presented with intermittent total gross hematuria. Computed axial tomography scan identified a contrast-enhanced 12 x 7 cm left renal tumor adhered to the spleen. Physical examination revealed a functional status with a Karnofsky score of 100 and an Eastern Cooperative Oncology Group (ECOG) score of 0. A palpable mass was found in the hypochondrium and left flank. Extension studies showed no metastasis. Left radical nephrectomy was performed that revealed a 15 cm left renal tumor with multiple neoformation vessels and infiltration into the splenic hilum, as well as into the body and tail of the pancreas. Due to these intraoperative findings, multiorgan resection (splenectomy and hemipancreatectomy) was also carried out, along with packing for controlling bleeding. Packing was removed after 72 hours with no evidence of residual bleeding or pancreatic...
leakage. The histopathologic study reported conventional clear cell renal carcinoma, Fuhrman grade 4, with invasion of the renal sinus, perirenal fat, splenic capsule, and pancreatic stroma (Figure 1). Tumor size was 15.3 cm and was located in the mid and upper pole. The surgical margin (ureter, renal vein and artery) was negative and the pancreatic surgical margin had neoplastic cells at the edge. The spleen and left adrenal gland showed no histologic alterations.

CASE TWO
A 63-year-old man had a past medical history of 40 years of smoking 10 cigarettes a day that is currently suspended. He had an acute myocardial infarction in April of 2009, high blood pressure, and has had a left hip and knee prosthesis for 18 months. His illness began 2 months ago with left lumbar pain that was treated with nonsteroidal anti-inflammatory drugs with partial remission of symptoms. Abdominopelvic CAT scan revealed a 8.3 x 7 x 8.3 cm tumor dependent on the mid-portion of the upper pole of the left kidney with extensive central necrosis reaching beyond the Gerota’s fascia with multiple retroperitoneal adenopathies of intercaval-aortic, paracaval, and para-aortic location, as well as adjacent to the base of the celiac trunk (Figure 2). Physical examination revealed a deeply fixed, thick, palpable mass in the left flank. Extension studies were negative for distant metastasis. Lymphoma was considered due to lymph node growth and CAT-guided biopsy was taken that reported conventional (clear cell) renal carcinoma and an indefinable Fuhrman grade. The patient was admitted to the emergency room three weeks later with signs and symptoms of anemia with a hemoglobin value of 6.7 g/dL and bleeding in the digestive tract. Panendoscopy was done that found nonerosive gastropathy and type 1 hiatal hernia. Colonoscopy revealed telangiectasias and a 5 cm long hemicircumferential exophytic lesion 30 cm from the edge of the anus. A biopsy was taken from which poorly differentiated signet ring cell adenocarcinoma was diagnosed. It was evaluated by the gastroenterology department and considered to be a T3NXM0 synchronous second primary cancer of the colon. Left nephrectomy and sigmoidectomy were performed that identified a 30 x 30 cm kidney tumor involving the Gerota’s capsule and infiltrating the mesentery of the left colon, along with a tumor of the left colon measuring 2 x 2 cm at the splenic angle, a 4 x 4 cm tumor of the sigmoid colon, and a 7 x 7 cm retroperitoneal nodal conglomerate.

Oncologic en bloc resection (left hemicolectomy with terminal colostomy and Hartmann closure of the distal stump, together with left radical nephrectomy) was carried out. The histopathologic report stated clear cell carcinoma in the left kidney and Fuhrman grade 4 with rhabdomyoblastic differentiation that measured 10 cm at its greatest diameter. There was panmural invasion of the colon (Figure 3), invasion of the renal sinus and perirenal soft tissues, as well as perineural, lymph node, and extensive venous infiltration. Metastasis was found in 25 of 49 pericolonic lymph nodes and resection margins were free from neoplasia. Final stage was pT4, pN1, pM1 R2. A PET-CT scan revealed measurable disease in the neck, mediastinum, surgical site of the left kidney, retroperitoneum, and liver. Treatment was
begun with 50 mg/day of sunitinib for four weeks followed by a two-week rest period.

**DISCUSSION**

Renal cell carcinoma (RCC) involvement of adjacent organs with no clinical evidence of systemic metastases is rare (1%). Patients frequently present with large, poorly differentiated tumors and have a high probability of lymph node metastasis, tumor thrombus, and adrenal gland involvement. The majority present with local and/or systemic symptoms, but with an ECOG functional status of 0 to 1. The tendency of RCC to initially grow at the local level and to parasitize the blood vessels can explain the case of patients with large primary tumors that invade adjacent viscera. 9,10.

Theoretically, due to the central retroperitoneal location and the natural protective barrier of the Gerota’s fascia, it is much more common for renal masses to compress adjacent organs, rather than to directly infiltrate them.11

In addition, large renal tumors frequently induce a significant quantity of reactive desmoplasia, obliterating surgical layer tissue and imitating pT4 disease.12

It has been confirmed that the majority of patients (60%) thought, from a clinical perspective, to have invasion of adjacent organs have been understaged in the definitive pathologic evaluation. 5

Radical nephrectomy with adjacent organ resection for locally advanced renal cell carcinoma is a rare intervention (1.5% of all radical nephrectomies). Many of these patients have a very poor survival rate.

The decision to operate on a large, locally advanced tumor is often difficult and controversial, given the poor long-term prognosis. Some physicians feel that the risk of radical nephrectomy with a complex resection of adjacent organs is not justified due to the small potential benefit.13

Nevertheless, morbidity is acceptable and the disease-free survival period is considerably longer in a significant proportion of patients after radical nephrectomy with en bloc resection of involved adjacent organs.5

En bloc resection of the tumor with the involved adjacent organs was the procedure of choice in the management of RCC with adjacent organ involvement in the series of De Kemion. Twelve percent of the patients that underwent incomplete resection for locally advanced disease had poorer outcome than even those patients with distant metastasis and good local control.14

Surgery should not be excluded in patients with locally advanced RCC, especially in the presence of symptoms. Many patients experience significant and lasting improvement of symptoms after surgical treatment. Surgery is the only treatment that offers the possibility of long-term survival, even though the proportion of patients with long-term survival is small.15

**CONCLUSIONS**

Surgical treatment continues to be the cornerstone of renal cancer management. Locally advanced disease with no metastasis is rare, and therefore radical nephrectomy with en bloc resection of involved organs is a therapy that should be offered to those patients. This procedure is a technical challenge for the surgeon, but morbidity is acceptable and lasting disease-free survival is expected in a proportion of the patients that undergo it. This procedure should be offered to patients presenting with a good functional status.

**REFERENCES**