CLINICAL CASE

 Locally advanced clear cell renal cell carcinoma with associated renal tuberculosis

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**Abstract** The association of renal cell carcinoma (RCC) and renal tuberculosis (TB) is uncommon. Whereas the incidental discovery of RCC in tuberculous kidneys is well described, the discovery of tuberculous lesions after radical nephrectomy for cancer is exceptional. The aim of this article was to report a case of locally advanced clear cell RCC whose histologic study revealed associated TB. There are very few published cases of kidney cancer and TB. A case of squamous cell carcinoma of the renal pelvis in a kidney with TB and a case of renal adenocarcinoma and TB have been reported. The present case describes locally advanced RCC with high tumor burden and retroperitoneal adenopathy that, before surgery, suggested metastatic disease to the lymph nodes. However, only histopathologic changes due to TB were found. No clinical or pathologic correlation has been found between these 2 entities, but clinical studies on the subject are lacking.

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Introduction

Tuberculosis (TB) and cancer are 2 processes that can be clinically related, but there can also be an intimate association between TB and cancer. TB can precede a cancer, can appear synchronously, or occur after the diagnosis and treatment of neoplasia. The association of TB and lung cancer has been well known for years.1 The synchronous appearance is infrequent and represents 1-3% of the lung neoplasias.2 Although less frequent, the association of cancer of another location with TB is also known.3 The coexistence of neoplasia and TB has been seen in other locations such as colon neoplasia and colonic TB,3 laryngeal neoplasia and laryngeal TB,5 or renal neoplasia and renal TB.6 However, the association of renal cell carcinoma and TB is unusual. Whereas the incidental discovery of renal cell carcinoma in tuberculous kidneys is well described, the finding of tuberculous lesions after radical nephrectomy due to cancer is exceptional.7

Case presentation

A 40-year-old woman from Chiapas, Mexico, lives in overcrowded conditions with 5 people in a room, a dirt floor, has been exposed to wood smoke since her infancy, and exposed to persons that are TB positive. Disease onset manifested with unintentional weight loss of 18 kg in 9 months, fatigue, nocturnal diaphoresis, and oppressive abdominal pain in the hypochondrium and left flank irradiating to the back with a 6/10 intensity with no attenuating or exacerbating factors. Physical examination revealed a thin patient with a body mass index of 18 kg/m2 and normal vital signs. She had generalized weakness, well-ventilated pulmonary fields, and no pleuropulmonary syndrome. There was a palpable abdominal mass in the left hypochondrium and flank, painful upon palpation, and no signs of peritoneal irritation. Figure 1 shows the imaging studies that were carried out.

The patient underwent a left radical nephrectomy plus colectomy of the transverse and descending colon, total gastrectomy, partial esophagectomy, splenectomy, Roux-en-Y distal pancreatectomy plus end-to-end esophageal jejunal anastomosis and end-to-end colon-to-colon anastomosis (fig. 1).

The histopathologic study result was a 9 x 7 x 9.5 cm Fuhrman 4, multifocal, clear cell renal cell carcinoma with lymphovascular invasion. It had a rhabdoid component of 80%, no sarcomatoid component, and there was invasion of the renal sinus, Gerota’s fascia, the adrenal gland, colon serosa, pancreas, and muscularis propria of the stomach. Surgical margins were negative. Lymph nodes: 0/26 positive. TB was found in the renal parenchyma, lymph nodes, and spleen. Histochemistry and immunohistochemistry studies were negative and the polymerase chain reaction was positive for TB (fig. 2). Antituberculosis treatment was begun, but suspended when the patient presented with hepatic encephalopathy and toxic hepatitis with an increase in transaminases. Treatment was reinitiated 14 days later, once the patient’s liver function tests were normal. Her progression was good and she was released from the hospital 42 days after surgery.

Discussion

The incidence of renal TB varies according to the prevalence of pulmonary TB in a given geographic location. Approximately 8-10% of the patients with pulmonary TB location develop renal TB. Renal location is the most frequent, following disease in the lung.8 Renal TB is a serious pathology of chronic progression that can compromise both kidneys, resulting in kidney failure and the possible death of the patient.8 The main causal agent is Mycobacterium tuberculosis, which reaches the kidneys via the bloodstream, and exceptionally, via the lymphatic system. The bacilli are housed in the cortical medullar zone in the form of granulomas and do not produce kidney
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Figure 1  A, B: CT-urography revealed an enhanced, lobulated and homogeneous 13 x 13.6 x 11 cm lesion dependent on the middle and upper third of the left kidney, boxing in the splenic vein and artery, invading the left renal vein, and infiltrating the spleen, stomach, left adrenal gland, and the body and tail of the pancreas. The vena cava was confluent and permeable. Parahilar lymph nodes, the largest measuring 1.5 cm. C: Pulmonary parenchyma with multiple bilateral calcified granulomas. D: 99mTc ABP scintigram was negative for bone metastases. E: Microscopic specimen. F: Polymerase chain reaction positive for tuberculosis.

Figure 2  A: Clear cell renal cell carcinoma. Neoplastic cells with abundant clear cytoplasm and pleomorphic nuclei with prominent nucleolus alternating with a delicate vascular marking. B: Clear cell renal cell carcinoma with rhabdoid areas. The cells present with marked pleomorphism and abundant eosinophilic cytoplasm with rhabdoid characteristics. C: Pancreatic invasion by the rhabdoid component. D: Lymph node with chronic granulomatous reaction and Langhans giant cells.

From the anatomopathologic viewpoint, the lesion begins as a granuloma that later becomes caseous and then ulcerates.\textsuperscript{12} Microscopic detection (Ziehl-Neelsen stain) of alcohol acid-resistant bacilli has very good specificity (above 90\%), but a low sensitivity (22\%), due to the small quantity of bacilli found in chronic lesions. Amplification techniques such as polymerase chain reaction are currently the most sensitive and specific diagnostic method.\textsuperscript{11} The histopathologic study of resected lymph nodes and remnant of the renal parenchyma of our patient showed the presence of granulomas with central caseous necrosis and giant Langerhans cells. The Ziehl-Neelsen stain was negative, but the polymerase chain reaction tests were positive for Mycobacterium tuberculosis.

There are very few published cases of renal cancer and TB. Al-Assiri et al.\textsuperscript{13} described one case of squamous cell carcinoma of the renal pelvis in a kidney with tuberculosis and Fernández-Arjona et al.\textsuperscript{9} reported a case of renal adenocarcinoma and TB. Our case was one of locally advanced clear cell renal cell carcinoma with a large tumor burden and multiple adenopathies in the retroperitoneum that before surgery were suggestive of metastatic disease to the lymph nodes, but only histopathologic changes due to TB were found.

No clinical or pathologic correlation has been found between these 2 entities. A future prospective study searching for TB in renal cancer could provide important information with respect to the biologic behavior of the concomitant form of these 2 diseases.

**Ethical responsibilities**

Protection of persons and animals. The authors declare that the procedures followed conformed to the ethical standards of the responsible committee on human experimentation and were in accordance with the World Medical Association and the Declaration of Helsinki.

Data confidentiality. The authors declare that they have followed the protocols of their work center in relation to the publication of patient data.

Right to privacy and informed consent. The authors have obtained the informed consent of the patients and/or subjects referred to in the article. This document is in the possession of the corresponding author.

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**Conflict of interest**

The authors declare that there is no conflict of interest.

**References**