CASE REPORT

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Bladder Metastasis from Clear Cell Renal Cell Carcinoma: A Case Report

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ABSTRACT

Kidney cancer is one of the most common urologic cancers. Generally, kidney cancer metastases occur in the liver, lungs, and bones, but we can see rare metastases such as those in the urinary bladder. Our case report describes a 60-year-old male patient with a left renal mass that was incidentally detected. After diagnosis of renal mass, left radical nephrectomy was performed. During one of these routine follow-up visits, he was admitted to our hospital with macroscopic hematuria. After transuretral resection of a suspicious lesion, the pathological results indicated metastatic carcinoma of the kidney.

Keywords: Clear cell, renal cell carcinoma, bladder metastasis

INTRODUCTION

Kidney cancer is one of the most common urologic cancers. Clear cell renal cell carcinoma (RCC) is the most frequent subtype and is characterized by the loss of chromosome 3p and mutation of the *Von Hippel-Lindau* gene at chromosome 3p25 [1]. Renal metastasis frequently spreads to the liver, lungs,bones, lymph nodes, adrenal glands, brain, pancreas, pleura, and thyroid glands. However, metastatic spread from RCC to the urinary bladder is rare. The urinary bladder is one of the least common sites of RCC metastasis, accounting for <2% of patients with advanced disease. We present the case report of a 59-year-old man with urinary bladder metastasis due to clear cell RCC.

CASE PRESENTATION

The patient was incidentally detected to have a renal mass measuring 6.8 cm × 4.9 cm × 4.2 cm on contrast-enhanced abdominal-pelvic computed tomography (CT) (Figure 1). The chest CT scan revealed an asymmetric density measuring 40x32 mm in the paratracheal area of the cervical region, as well as multiple lymphadenopathies (LAP) in the mediastinum, the largest of which measured 25 mm. Additionally, there were multiple bilateral lung nodules suspected to be pulmonary metastases, with the largest nodule measuring 15 mm in size and a 10 mm hypodense nodule located in the left lobe of the liver. Fluorodeoxyglucose-positron emission tomography was positive for metastasis in the left supraclavicular area, bilateral lungs, and mediastinum. Biopsy of LAP in the left lower cervical area confirmed metastasis of RCC. The patient underwent left laparoscopic radical nephrectomy. The pathological results were classified as clear cell RCC, pT3 Nx Mx L1 V1 R0, nuclear grade: FURHMAN III, Ki-67: 80%. After surgery, the patient consulted the medical oncology department because of metastasis. Medical oncology initiated treatment with pembrolizumab (a PDCD1 receptor inhibitor) and lenvatinib a tyrosine kinase inhibitor. The patient's postoperative course was uneventful, and they were scheduled for regular follow-up every 3 months. During one of these follow-up visits, the patient was admitted to our hospital because of hematuria. A suspicious area was detected on urinary tract ultrasound. Transurethral resection of a suspicious area in the bladder was performed, and the pathological results indicated involvement of metastatic carcinoma from the kidney. Immunohistochemical staining of the tissue showed that GATA3 and NKX 3.1 were negative, but Pax-8 was positive in the pathology material (Figure 2).

DISCUSSION

RCC is one of the most common urological neoplasmses, accounting for approximately 5% of adult cancer cases in both sexes. Clear cell RCC is the most common subtype of RCC and

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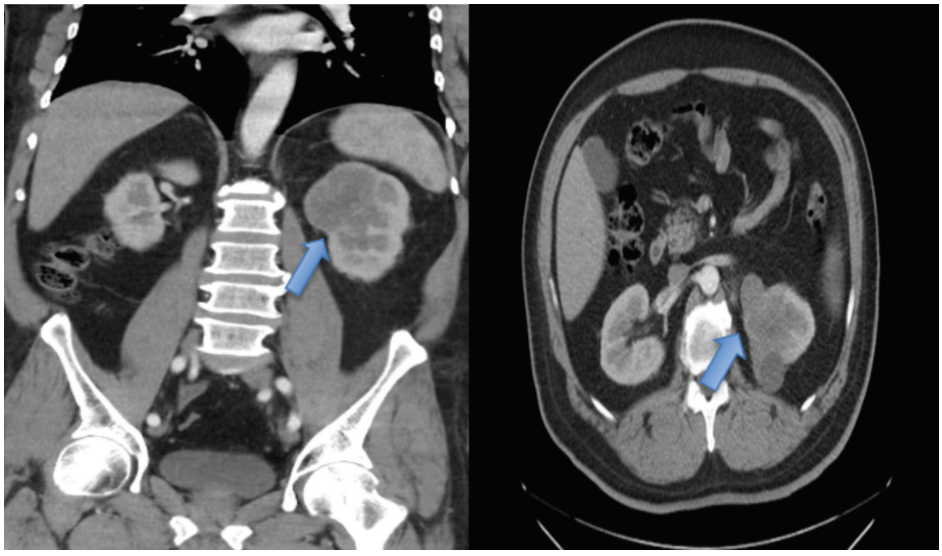

Figure 1. Coronal and axial CT demonstrating left renal mass
CT: Computed tomography

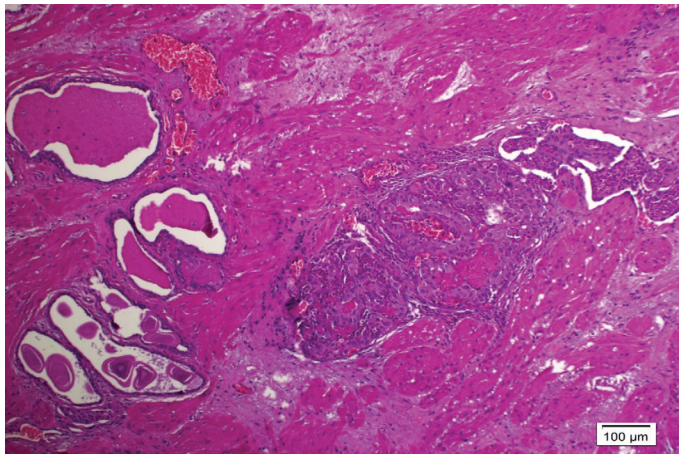

Figure 2. Histological section showing bladder metastasis from clear cell renal cell carcinoma

is associated with the highest risk of metastatic disease. RCC metastasis mostly occurs in the lungs, liver, lymph nodes, and bones. It is rare for RCC to metastasize to the urinary bladder, with less than 70 cases reported in the literature [2]. The first case of RCC metastasis to the bladder was reported by Hoffmain [3] in 1907. Advanced tumor stage is associated with poor prognosis and reduced survival rates [4]. The spread of RCC to the urinary bladder remains a topic of debate. Metastatic spread to the urinary bladder can occur via hematogenous, lymphatic, or urinary stream pathways. It is known that hematogenous pathways can cause systemic spread to the bladder. The spread of tumors through the lymphatic system can occur when there are connections between the lymphatic and vascular channels, allowing retrograde spread of the tumor. Another hypothesis-explaining the spread of renal tumors to the ureters and bladder is the dissemination of neoplastic cells through the urinary tract [5].

Metastases of RCC to the urinary bladder are typically classified into two types: synchronous and metachronous tumors, which present within 1 year and after 1 year of nephrectomy, and are associated with an unfavorable prognosis [6].

In the treatment of oligometastatic RCC, metastasectomy is generally preferred. In cases of solitary lung metastasis, metastasectomy can reduce the risk of death by twofold. Metastasis site is a crucial factor in determining survival rate. Patients with lung, bone, liver, and brain metastases exhibit significant differences in survival rates. A recent phase III study demonstrated that adjuvant pembrolizumab treatment following nephrectomy and metastasectomy improves disease-free survival in patients with oligometastatic RCC. Treatment guidelines for metastatic RCC in the urinary bladder are unclear because of its rarity [7].

The standard treatment for secondary lesions is typically total resection-based therapy (TUR-BT). In cases in which the bladder lesion is found to be pathologically muscle-invasive, radical cystectomy may be preferred. It is worth noting that the incidence of RCC metastasis to the urinary bladder is rare, ranging from 0.3% to 1.6%. According to Zachos et al. [1], the median time between diagnosis of renal cancer and bladder metastasis is 33 months.

Bladder cancer is typically associated with macroscopic hematuria, but it can also occur with isolated microscopic hematuria (urinalysis showing 3 red blood cells per high-power field). The presence of microscopic hematuria increases the risk

of bladder cancer by approximately 4%. Therefore, suspicious cases warrant further examination by cystoscopy. Routine examination for microscopic hematuria could facilitate early detection of RCC metastases to the bladder, thereby resulting in better outcomes. As such, radiological imaging, urine analysis, and serum biochemistry testing are recommended after RCC treatment [8].

Metastasis of RCC to the urinary bladder is a rare event. There are no definitive recommendations for treatment. After RCC diagnosis, careful monitoring for metastasis is necessary. If a mass is found in the urinary bladder, treatment options include TUR-BT and radical cystectomy. Additionally, urine analysis, cystoscopy, and CT Urography may be performed in suspicious cases.

Ethics

Informed Consent: The patient written informed consent was obtained.

Authorship Contributions

Surgical and Medical Practices: İ.H-Z., M.K., Ö.E., A.Y., Concept: İ.H-Z., M.K., Ö.E., A.Y., Design: İ.H-Z., M.K., Ö.E., A.Y., Literature Search: İ.H-Z., M.K., Writing: İ.H-Z., M.K.

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