

## A Renal Cell Carcinoma Case Presented with Spinal Cord Compression

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### Abstract

*Renal cell cancer constitutes about 3% of all cancers and is usually seen at advanced age. Approximately 18% of cases are metastatic at the time of diagnosis. Bone metastases have an average incidence of 30%, of which 15% occur in spinal column. Spinal metastases may cause pain, bone fractures, neurological deficits due to nerve compression, and hypercalcemia. The treatment of spinal metastases currently involves surgery, radiotherapy, interventional radiological methods, and systemic therapies. Here, we report a patient examined for low back pain and neurological deficit due to spinal metastases, who was detected to have a renal cell cancer as the primary tumor. Renal cell cancer should be remembered in the differential diagnosis of spinal metastases when a primary tumor is sought.*

**Keywords:** Renal cell cancer, spinal cord compression, neurological deficit.

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## Introduction

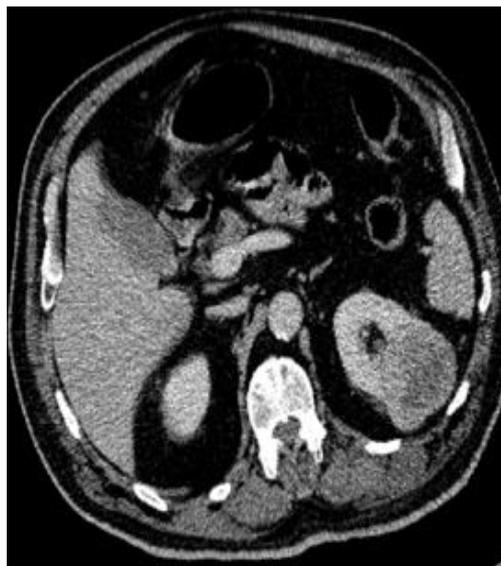
Renal cell cancer (RCC) constitutes about 3% of all cancers and is usually seen at advanced age (1). It has the main histological subtypes of clear cell (70%), papillary (10-15%), and chromophobe cell (5%) cancers (2). The classical triad of RCC, i.e. hematuria, pain, and palpable mass is only seen in 6-10% of cases (3). Most RCC cases are incidentally detected at imaging studies performed for other indications. As RCC does not produce symptoms early in the course, and its symptoms may be confused with those of other conditions, about 18% of cases are already metastatic at the time of diagnosis (4). Lungs are the most common site for metastases, followed by bone, lymph node, liver, adrenal gland, and brain (5). Bone metastases have an incidence of about 30%, of which 15% occur in the form of spinal involvement (6,7). Among central nervous system metastases of RCC, 4-8.5% are seen as intramedullary metastasis (8). Spinal metastases may produce signs and symptoms like pain, bone fractures, neurological deficits due to nerve compression, and hypercalcemia (9). Sometimes, metastasis-related signs and symptoms may be the first presenting symptoms before the diagnosis of RCC is made. Here, we report a patient examined for low back pain and neurological deficit due to spinal metastases, who was detected to have a renal cell cancer as the primary tumor.

**Case Report:** A 60-year-old man presented with low back pain and progressive weakness in legs for about 1 month. On physical examination, he had loss of strength in the lower extremities. A spinal magnetic resonance imaging (MRI) revealed a metastatic lytic lesion at the level of L1 vertebra; a malignant fracture with an expansile appearance and without marked contrast uptake at T3 vertebral body, which compressed the spinal cord by narrowing the spinal canal; a lesion with a slightly expanding appearance at T5 vertebral body, which showed contrast uptake after IVC administration and exerted minimal spinal cord compression by narrowing spinal canal, and an appearance consistent with a fracture line at the vertebral body (Figure 1). Considered to have metastatic lesion, the patient underwent thoracic and abdominal tomography, which showed a mass lesion with a size of 57x51 mm, and consistent with RCC (Figure 2). The corrected calcium level was calculated to be 9.7 mg/dL (normal range 8.4-10.2 mg/dL). As there was spinal involvement, dexamethasone, 16 mg was administered as IV push, followed by 4x4 mg/day maintenance therapy. As the patient had neurological deficit, he was consulted with the neurosurgery department to determine the need for spinal surgery. That department did not consider performing any surgical operation, and the patient was put on palliative spinal radiotherapy. Zoledronic acid 4 mg

intravenous dose was given against bone metastases. The renal biopsy was reported as clear cell carcinoma. Interferon therapy was started after radiotherapy. As he showed progression under interferon therapy, thymosine kinase inhibitor sunitinib was administered. Unfortunately, the patient died two months later.



**Figure 1.** Mass lesions in T3 and T5 vertebrae, consistent with metastases with spinal extensions, causing vertebral destruction



**Figure 2.** A mass lesion measuring 57x51 mm in the left kidney, consistent with a renal cell cancer

## Discussion

RCC constitutes 80-90% of renal cancers. The classical triad of RCC, which consists of hematuria, pain, and palpable mass, is seen in a minority of patients. As the tumor does not produce specific symptoms, the initial symptom may be a metastasis-related one. Bone metastases occur at an incidence of 35-40%, with a third of patients having bone metastasis at the time of presentation (10,11). Bone metastases are usually seen as multiple involvement. Spinal compression occurs in 5-14% of patients (12). In about 30% of cases, the primary presentation of the disorder is in the form of a pathological fracture (6). Our patient also had mass lesions that caused fractures of T3 and T5 vertebrae, along with neurological deficit by narrowing spinal canal. Swanson et al. reported a skeletal metastasis incidence of 26.7% in 947 patients with RCC; they were most commonly detected to have metastases in spinal column, pelvis, and proximal femur (13). Intramedullary spinal cord metastases of RCC are rare, affecting 0.1-0.4% of all cancer cases (8). Patients receiving targeted therapy and immunotherapy experience bone metastases more commonly as a result of lengthened survival. A retrospective study reported that skeletal events are encountered in 85% of patients. Signs and symptoms like pain, fracture, neurological deficit, and hypercalcemia may exist. Pain and fractures are usually the first symptoms and seen in about 90-95% of cases. Sometimes, these symptoms may predate diagnosis by days or months (14). Neurological deficit also impairs a patient's quality of life. Moreover, sensory loss in urinary bladder and intestines, bone fractures, and hypercalcemia may be seen. Our patient had low back pain 1 month prior to the diagnosis, and neurological deficit was added to the clinical picture thereafter. Management of bone metastases is difficult and requires a multidisciplinary approach as it is resistant to chemotherapy and radiotherapy. Today, spinal metastases are treated with surgery, radiotherapy, interventional radiological techniques, and systemic therapies. Determining an appropriate treatment modality depends on a patient's clinical and neurological status. In solitary involvement, surgery is the best option. Hence, surgery may be taken into consideration to slow down the progression of the disease. RCC metastases are highly vascularized, and any surgical procedure involving these lesions should be performed with utmost care. Even though they are resected en bloc, local recurrence may still occur. They are less sensitive to radiotherapy, and disease may progress without systemic therapy backup. As our patient could not be operated, he received palliative radiotherapy. In patients receiving systemic therapy, skeletal metastasis affects adversely both progression-free survival and overall survival. Patients with bone metastasis have a mean life expectancy of 12-28 months (15).

Mortality is about 50% in the first year of life, and the 5-year survival is around 10% (16). Patients with spinal metastasis have a worse prognosis than patients with extremity metastasis (17). Our patient also presented with spinal metastasis and died 2 months after the diagnosis was made.

## Conclusion

As RCC lacks disease-specific symptoms, the first mode of presentation may occur with signs and symptoms related to bony involvement and particularly spinal cord compression. Therefore, it should be remembered that RCC may present to the first time with spinal metastases; as the case for our patient, RCC should be definitely remembered in the differential diagnosis of spinal metastases, in search of the primary tumor.

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