Renal Cell Carcinoma in a 44-Year-Old Man: An Etiology for Low Back Pain

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Abstract

Objective: The aim of this case study is to describe a patient with low back pain due to renal cell carcinoma (RCC). A brief review of RCC, including clinical presentation, diagnostic imaging, treatment, and outcomes, is discussed.
Clinical Features: A 44-year-old man presented to a chiropractic clinic with chronic low back pain. Lumbar spine radiographs and follow-up computed tomography scan revealed renal calcification, which was first thought to be calcified hematoma, but later, biopsy confirmed that it was RCC.
Intervention and Outcome: A nephrectomy was performed. At 7-year follow-up, the patient is healthy.
Conclusion: Renal cell carcinoma is not uncommon, and its varied clinical presentation may lead individuals to seek a variety of health care providers. Spine practitioners should be aware of the possibility of RCC in the clinical presentation of low back pain. (J Manipulative Physiol Ther 2009;32:597-600)
Key Indexing Terms: *Back Pain; Carcinoma, Renal Cell; X-rays; Chiropractic*

Renal cell carcinoma (RCC) is the third most common genitourinary tumor and is the most common primary malignancy of the kidney. Sometimes referred to as hypernephroma or Grawitz tumor, RCC has a male predominance of almost 2:1 over females and most commonly occurs in patients 50 to 70 years old. It is the seventh leading malignant condition in men and the twelfth in women, comprising 2.6% of all cancers.[1] The American Cancer Society estimated 38 890 new cases of RCC, which were diagnosed in 2006, with 12 840 deaths being attributed to this disease.[2] RCC is the most lethal of all genitourinary malignancies, with approximately 40% of patients dying from metastatic progression of the disease.[3] Those patients who have RCC with metastatic disease have a median survival rate of 13 months[1] and a 90% mortality rate within 3 years.[4]

The purpose of this case study is to describe a patient presenting with low back pain due to RCC and provide a brief review of RCC, including clinical presentation, diagnostic imaging, treatment, and outcomes.

Case Report

A 44-year-old man, ex-professional football player, presented to a chiropractor with chronic low back pain. After a routine physical and orthopedic examination, recumbent lumbar radiographs revealed a large area of calcification in the right mid quadrant of the retroperitoneal area (Fig 1). The location was thought to be renal, and a follow-up computed tomography (CT) scan showed a well-defined, multiloculated calcified mass within the right kidney (Fig 2).

The primary radiology report suggested an old posttraumatic hematoma, especially because of the patient's history of professional football. Additional opinion upon the appearance of this calcified mass in the kidney warranted biopsy to rule out malignancy. A biopsy revealed RCC and a nephrectomy was performed. At the time of this writing, which is 7 years after the initial workup, the patient is without metastasis and enjoying good health. The patient gave consent to have personal health information published without divulging personal identifiers.

Discussion

Clinical Presentation

The classic clinical triad associated with RCC consists of flank pain, hematuria, and palpable abdominal mass. It is interesting to note that few patients actually present with this

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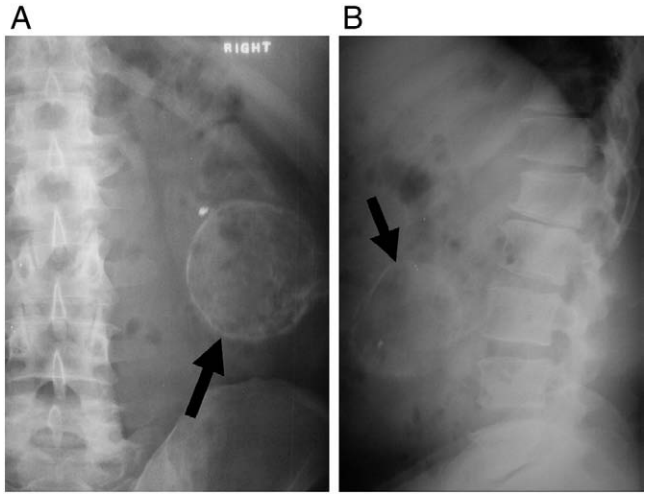

Fig 1. *Anterior-to-posterior (A) and lateral (B) recumbent radiographs show a large calcified mass (arrows) in the region of the right kidney. Degenerative changes are noted in the spine.*

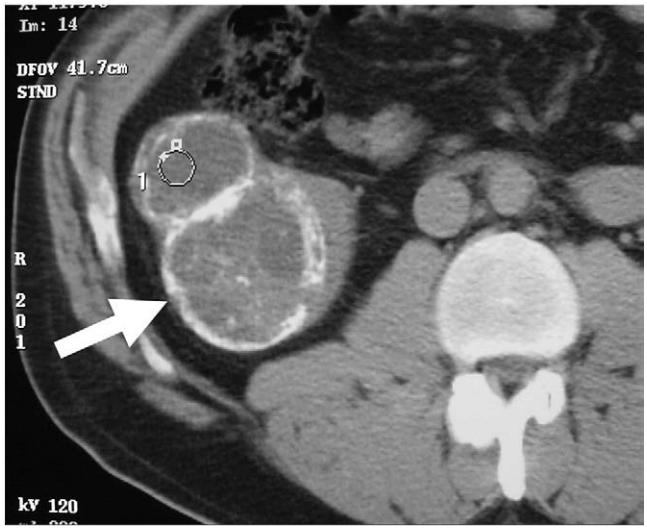

Fig 2. *Noncontrast axial CT shows the multiloculated calcified mass (arrow) in the right kidney.*

triad of clinical symptoms. Approximately half of RCC cases are detected incidentally on imaging such as ultrasound (US), CT, or magnetic resonance imaging (MRI)[1,5]; therefore, painless hematuria is perhaps a more commonly encountered clinical presentation.

Other associated findings of RCC may include fatigue, weight loss, and anemia. Hematuria may be a strong clinical indicator of RCC and should indicate follow-up with CT of the genitourinary tract[1]; however, many would suggest US as the usual choice of modality. In patients older than 40 years presenting with hematuria, cystoscopy may be performed to rule out the possibility of bladder cancer.[1]

Table 1. *Risk factors for developing RCC*[2]

Cigarette smoking
Obesity
Sedentary lifestyle
Occupational exposure
Asbestos, cadmium, some herbicides, benzene, organic solvents (particularly trichloroethylene)
Hereditary and genetic disorders
von Hippel-Lindau disease, Birt-Hogg-Dube syndrome, hereditary leiomyomatosis RCC syndrome, hereditary renal oncocytoma
Family history
Hypertension
Male sex
Race (blacks more common)

The American Cancer Society[2] lists numerous risk factors associated with RCC. Cigarette smoking tops the list of potential risk factors for developing RCC (Table 1). Smoking increases the chances of developing RCC by 40% when actively smoking. Upon smoking cessation, several years are needed for these risk levels to reach that of individuals who have never smoked. Other risk factors of RCC include obesity, sedentary lifestyle, occupational exposures, hereditary and genetic disorders, family history, hypertension, sex, and race.

There are 3 major subtypes of RCC. The most common is clear cell carcinoma, comprising 70% of all RCC. The papillary form represents 15% to 20%, and the chromophobe subtype comprises 6% to 11%. The overall 5-year survival rate is currently 55% to 60% for patients with clear cell carcinoma. After radical nephrectomy for T1 and T2 disease (tumors limited to the kidney, see Staging section), as was in the case of this report, 5-year survival rates range from 60% to 82%.[6] The papillary form has a 5-year survival of 80% to 90%. The chromophobe variety has the best overall 5-year survival at 90%.[7]

Early detection of renal malignancies is extremely important when considering patient survival rates. In recent years, incidental discovery of RCC on US, CT, and MRI has led to an overall increase in patient survival rates.[1,5]

Imaging of RCC

A variety of imaging methods are used to investigate patients with renal masses. The relative sequential order for imaging patients with a renal mass begins with plain films of the abdomen followed by intravenous urography (or intravenous pyelography) and US techniques. Calcification is visible on x-ray in 15% of cases.[8] Parenchymal calcification seen on plain radiographs or intravenous urography should be highly suspicious of a renal malignancy, especially when the calcification is centrally located within the kidney.

The plain-film radiologic differential diagnosis for general renal calcification most commonly includes calculi, dystrophic calcification, and medullary nephrocalcinosis.[9] Medullary or pyramidal nephrocalcinosis typically takes the