



A case study of back pain and renal cell carcinoma

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Abstract

Objective: Renal cell carcinoma accounts for 3% of adult malignancy and 95% of neoplasms arising from the kidney. One third of the patients have metastatic disease at the time of presentation and are asymptomatic with the diagnosis being made incidentally from a radiologic study obtained for other reasons. Typically, skeletal metastases are purely lytic. It is common for cases of back pain to be managed in chiropractic clinics. The diagnosis of metastatic disease is to be considered as a differential, especially in an aging population.

Clinical Features: A 69-year-old man experienced back pain after a twisting movement while working. He presented for chiropractic care 2 weeks later. He had a 10-year history of low back pain and a 2-month history of weakness at the knee. Plain film radiography was assessed as negative for pathology by a medical radiologist and a chiropractic radiologist.

Interventions and Outcomes: After 6 visits of care using atlas orthogonal adjusting, the outcome assessment revealed improvement in the pain but a regression in strength of the right quadriceps and peroneus muscles. The patient was referred for a magnetic resonance imaging study, which revealed a mass on the kidney and a large erosive bone lesion of the L4 vertebrae. The diagnosis of renal cell carcinoma was later confirmed.

Conclusion: Progressive muscle weakness is one of the “red flag” signs in a back pain case. Advanced imaging is necessary to detect occult diseases processes such as renal cell carcinoma. The chiropractor’s role as primary care clinician includes the process of clinical reasoning and appropriate referral when the clinical picture becomes unclear and/or “red flag” signs appear.

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Renal cell carcinoma most often occurs in patients 50 to 70 years of age and rarely in children, although the age distribution is broad. One third of the patients demonstrate metastatic disease at the time of presentation for care. Approximately 35 710 new cases occurred in the United States in 2004, with about 12 480 deaths. Small RCCs are found at autopsy in as many as 22% of cases.

Prognosis is worse for those with concomitant metastatic disease at the time of presentation and best for patients with small masses confined entirely to the kidney. Unresectable RCCs have been associated with a 5-year survival rate of less than 20%. The tumor arises from the tubular epithelium and is normally based entirely in the renal cortex, spreading by means of direct or local invasion of adjacent structures, including the adrenal gland, liver, colon, or pancreas. Local regional lymphatic node metastases are also common. Renal cell carcinomas demonstrate a propensity to extend into the renal vein and subsequently into the inferior vena cava, with the lung manifesting as the most common site of distant metastases. Rarely, central nervous system metastasis may occur, such as to the cauda equina,³ with merely a record documented to date.⁴ In such extremely unusual circumstances, patients will have low back pain and L4 through L5 neurologic symptoms. Typically, skeletal metastases are purely lytic.² Factors contributing to the risk of developing RCC include hypertension and exposure to diesel exhaust fumes.⁵ Furthermore, the CYP1B1 gene has recently been investigated as a hypothesized risk factor in its role as metabolic activator enzyme.⁵ Garcia⁶ notes, “... a dramatic paradigm shift in the treatment of patients with metastatic disease,” coming about with the treatment aimed toward a vascular endothelial growth factor target and away from a nonspecific cytokine approach.

Cigarette smoking doubles the likelihood of having RCC. Obesity is a further risk factor (particularly in women) whereby a linear relation between increasing body weight and increased RCC risk has been found.⁷ The diagnosis of RCC is a challenging one, often remaining clinically occult for most of its course with clinically diverse symptoms. The simultaneous presence of the classic triad of flank pain, flank mass, and hematuria is uncommon (10%) but indicative of advanced disease. Approximately one third of patients with RCC remain asymptomatic, with the diagnosis made incidentally during an unrelated radiologic study.¹ Plain film radiographic findings often are unrevealing unless the RCC mass contains detectable levels of calcification or is large enough to distort the

Introduction

Renal cell carcinoma (RCC), also known as adenocarcinoma, accounts for 3% of adult malignancies and 95% of neoplasms arising from the kidney.¹ It is the sixth leading cause of cancer death in the United States and twice as common in men than women.²

normal renal contour. Renal cell carcinoma is characterized by a resistance to radiotherapy and chemotherapy, with a role for immunomodulation in the inhibition of tumor growth.⁷

Chiropractors ought to be aware of the similarity of presentation between vertebral subluxation complex-related complaints and RCC-related symptoms, such as include sciatica and extreme pain (especially at night), and also to include anorexia, weight loss, and night sweats. According to Hopkinson,⁸ “In patients with symptoms suggestive of polymyalgia rheumatica, underlying renal malignancy should always be considered.” He further advises suspicion in any case of new-onset back pain with an elderly patient.

This case study describes the presentation, management, and outcome for a patient presenting with back pain and the pathway to a final diagnosis of renal cell carcinoma; the case highlights the usefulness of patient surveys as outcome assessment and the necessity of advanced imaging.

Case report

The 69-year-old man automechanic presented to a private chiropractic clinic with low back pain that began after twisting his back while he was at work. After 2 weeks of persistent spinal pain, he sought chiropractic care. He reported that the pain was localized and constant. Pointing to T12 through L1 and C1 through C3 paraspinal areas, he described the pain as sharp, made slightly worse with most movements and slightly better with rest. The patient denied any increase of pain at night or any complications of sleep irregularity, bowel or bladder habits. Furthermore, he reported a 10-year history of recurrent lower back pain and a “weak knee” for the previous 2 months. He had seen a chiropractor for spinal complaints in the past with fair results.

Initial physical examination findings included painful and reduced active cervical and lumbar ranges of motion, intersegmental motion restriction, paraspinal muscle spasm, muscle weakness (+4) of the right quadriceps, peroneus longus and brevis, and functional leg-length inequality. Palpation elicited pain and tenderness at the spinous processes, facet joints, and the first and second cervical nerve roots. Plain film radiographs of the thoracic, lumbar, and cervical areas revealed moderate spondylosis with decreased intervertebral disk space, cervical kyphosis, and multiple misalignment factors. The Revised Oswestry Disability Index (RODI), Quadruple Numeric Pain Scale, and

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x-ray analysis were used as outcome assessments. The RODI initial score was 38% and was interpreted as moderate limitations on daily living activities.

With a working diagnosis of “paraspinal strain, degenerative joint disease, and vertebral subluxation complex,” management using the atlas orthogonal spinal adjusting technique was initiated. The patient began a care plan that included focused evaluation and cervical spine (C1) adjustments as needed over an 11-day period. He was seen for 7 visits and was adjusted 4 times.

Reassessment on the 7th visit revealed a 60% decrease in cervical misalignment; a decrease of T12 through L1 pain for 2 h duration postadjustment, a decrease of neck and low-back pain (Table 1), and an increase of quadriceps femoris and peroneus muscle weakness. Progression of muscle weakness is considered one of the “red flags” in a case with back pain, begging consideration of the possibility of an underlying condition with higher morbidity; and demonstrating to the practitioner that a favorable response to care simply regarding pain levels may not always be a reliable indicator of the bigger health picture. Therefore, at this point, the clinical decision was to discontinue the original care plan and explore further diagnostic testing, whereby referral was made for magnetic resonance imaging of both the thoracic and lumbar areas. There was no posttreatment RODI score for change comparison, as the patient did not return.

Magnetic resonance imaging showed a large erosive bone lesion at the level of the L4 vertebra (Fig 1) at the posterior cortex with extension into the spinal canal causing deformity of the thecal sac that strongly suggested metastatic disease correlating to the large mass found on the right kidney. Renal cell carcinoma with secondary metastasis to L4 seemed almost certain, later confirmed as a correct diagnosis for this patient. This case study was approved by the institutional



Fig 1. Magnetic resonance imaging evidence of lytic metastasis.

review board of the Life University (Marietta, Ga), and patient consent to publish was obtained.

Discussion

Although initial presentation and examination findings in this case were not strongly indicative of RCC, further investigation of the red flag illuminated the occult disease process of RCC. Metastatic disease remains a possible differential diagnosis as cause of back pain and neurologic deficit. The initial radiographs had been examined by a medical radiologist, a chiropractic radiologist, and a practicing doctor of chiropractic; and no pathology was determined to exist on the plain films. Although abdominal ultrasound is currently considered an important diagnostic modality, researchers state,⁸ “To our knowledge the ‘pick-up rate’ of renal cell carcinoma by abdominal ultrasound has not been established, but will depend on tumor size and position, operator skill and body habitus.” Hopkinson⁸ also admonishes the practitioner that a normal plain film radiograph cannot be considered to exclude metastatic disease to bone; advanced imaging is necessary to uncover RCC, showing that a chiropractor’s role as a primary care physician certainly does include the process of clinical reasoning and referral when the clinical picture proves equivocal.

Although the use of rating pain and assessing disability in activities of daily living with patient surveys is common in practice, this case demonstrates that patients with signs of neurologic deficit (eg, progressive muscle weakness) must be handled with

Table 1 Pain rating from 0 to 10 on 4 numeric scales

	Quadruple Numeric Pain Scale					
	Initial			Final		
	Mid Back Pain	Low Back Pain	Neck Pain	Mid Back Pain	Low Back Pain	Neck Pain
Current	8	5	4	4	2	1
Average	8	3	3	4	2	1
Best	6	1	1	3	1	1
Worst	8	8	8	5	3	2

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due diligence, and reliance on positive changes in pain alone is insufficient evidence of progress.

Conclusion

Progressive muscle weakness is one of the “red flag” signs in a back pain case. Advanced imaging is necessary to detect occult diseases processes such as renal cell carcinoma. The chiropractor’s role as primary care clinician includes the process of clinical reasoning and appropriate referral when the clinical picture becomes unclear and/or “red flag” signs appear.

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