

## Radiating Leg Pain as First Presentation of Renal Cell Carcinoma: A Case Report

Woo Yong Lee \*

Department of Anesthesiology, Sanggye Paik Hospital, Inje University College of Medicine, Seoul, South Korea

### \*Corresponding author

Woo Yong Lee

### Article History

Received: 24.01.2018

Accepted: 08.02.2018

Published: 30.03.2018

### DOI:

10.36347/sjmcr.2018.v06i03.004



**Abstract:** Radiating leg pain usually originates from the spine; thus, the evaluation of the spine is usually recommended as the first diagnostic method when patients with such symptom visit the clinic. Sometimes, the patients continue to complain of radiating leg pain despite undergoing a spine operation, and it was found that the pain did not originate from the spine. The Spine center referred a male patient with radiating leg pain for a transformational epidural block. His spine MRI revealed a moderate spinal stenosis at the L3/4, L4/5 space. Although the block was tried once, it failed to relieve the symptoms, which raised doubts regarding the focus of pain. Using other radiologic evaluation, a suspicious cancerous mass was found on the left femur. Histological examination revealed that the mass depicted renal cell carcinoma. Despite receiving treatment, including chemotherapy, the patient subsequently died. Thus, based on these findings, it was concluded that radiating leg pain can be caused by both spinal and extraspinal lesions.

**Keywords:** Radiating leg pain, spine, diagnostic, carcinoma, Histological examination.

### INTRODUCTION

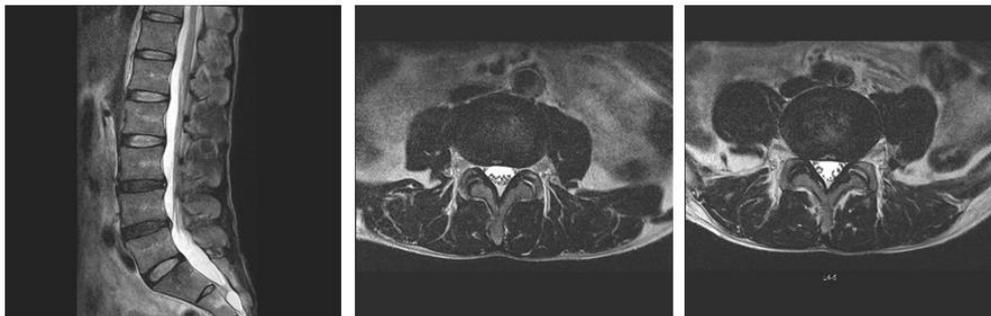
Radiating leg pain is a common presentation in the pain clinic, and often lumbar spinal stenosis is the main cause of this symptom.

Physicians tend to evaluate the spine mainly when they encounter such patients. Lumbar spinal stenosis has characteristic features, such as its peak symptomatic age is in patients who are >60 years, it occurs more frequently in women, and it is generally chronic in nature. It results in positional pain, including pain occurring due to either standing or walking, as well as while sitting, stooping, or lying relieves the pain. It also causes neurogenic intermittent claudication (NIC), which presents as painful cramping or weakness when walking over short distances [1]. Although as it progresses, the pain can be sustained while sitting or lying down, bowel and bladder functions are weakened. Central spinal stenosis usually provokes pain extending from the buttock to posterior thigh, while the lateral recess stenosis causes dermatomal pain, but it should be noted that sometimes the difference is not so distinct. Although the results of physical examinations performed when the patient is at rest, including the leg raising test are usually within normal parameters, these results yield abnormal values once the patients are forced to walk to the point of feeling pain. At this point the patients generally assume a stoop posture. However, radiating leg pain could be caused by other factors including vascular lesions. It can be embarrassing for

the physicians if the presentation of pain is not typical of spinal stenosis and subsequent spinal procedures fail to relieve the patient's pain, especially as it is not easy to find the exact focus of pain in the entire extra-spinal pathway. Previously some case reports [2, 3] have attributed rare extra-spinal factors to cause radiating leg pain. This study reported a case of a 47-year-old male patient, who had complained of atypical leg pain and demonstrated spinal stenosis in the MRI findings, but was subsequently diagnosed with metastatic renal cell cancer on his left thigh.

### CASE REPORT

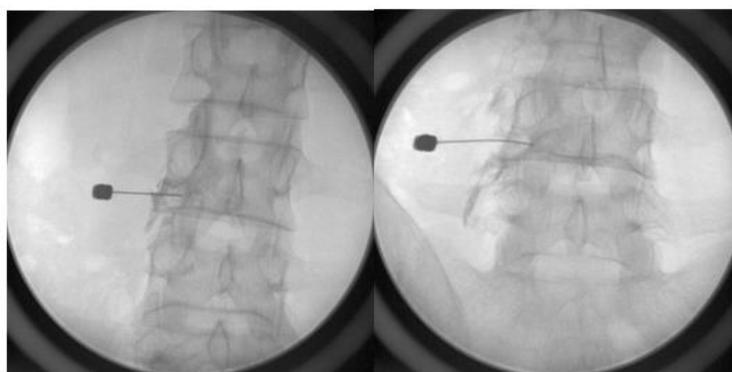
A 47-year-old male patient was referred from the Spine center for transformational epidural block. The patient appeared to be in good health. He complained of feeling pain from the left anterior thigh to the shin when lying down. He also complained of pain while driving. His pain had insidiously aggravated during the last 7 months. Leg raising test showed normal results and he did not complain of NIC. His motor, sensory, and reflex tests were all within normal parameters. The MRI depicted mild-to-moderate spinal stenosis at the L3/4 and L4/5 levels (Fig-1 a, b, c).



**Fig-1 a, b, c: Mild-to-moderate spinal stenosis at the L3/4, L4/5 levels of the spine**

The laboratory results were normal except for the elevated erythrocyte sedimentation rate (ESR) (105 mm/hour, normal  $\leq 9$  mm/hour) and C-reactive protein (CRP) (6.4 mg/dL, normal  $\leq 0.3$  mg/dL), which were significantly higher than their normal acceptable range.

Although some doubts remained regarding the spinal origin of the pain, a diagnostic block comprising 5 cc of 0.075% bupivacaine and 1 mg of dexamethasone were injected into the L3/4 and L4/5 epidural space via a transforaminal approach (Fig-2a, b).



**Fig-2: Transforaminal epidural block at the left (a) L3/4, and (b) L4/5 levels**

The patient did not report experiencing any relief from the pain. Subsequently, an X-ray image of the patient's left hip AP and lateral position was suggested in order to search for a bony focus (if any)

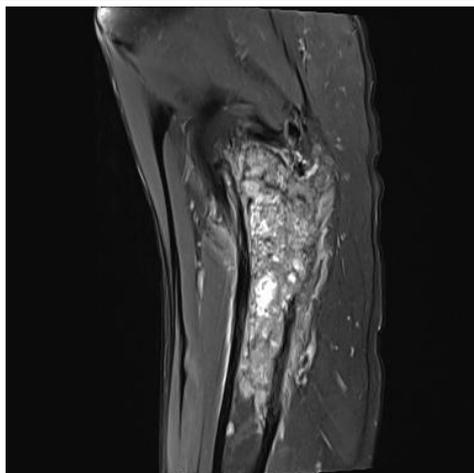
that resulted in the discovery of cortical thickening, osteolytic lesions, and sclerotic changes in the subtrochanteric portion of the left femur (Fig-3).



**Fig-3: Cortical thickening, osteolytic lesions, and sclerotic change in the subtrochanteric portion of the left femur**

A left thigh MRI with enhancement was then performed to diagnose the lesion more definitely, and

the lesion was later suggested to be an osteoblastic malignant bone tumor (Fig-4).



**Fig-4: A 15.6 × 5.0 × 5.2 cm sized osteoblastic lesion in the Lt. proximal femur with cortical hypertrophy and destruction, differential diagnostic disease, including malignant bone tumor, chondrosarcoma, osteosarcoma, pleomorphic sarcoma/malignant fibrous histiocytoma, fibrosarcoma**

The patient was immediately referred to the cancer center, which further referred him to another hospital for more accurate evaluation. The patient was finally diagnosed with renal cell carcinoma with bone metastasis. However the patient died 4 months later in spite of receiving multiple trials of chemotherapy.

#### DISCUSSION

Jo *et al.* previously reported a case study of a 54-year-old man who complained of persistent sciatica even after a successful spine operation [2]. Preoperative MRI had revealed mild disc protrusion at the L4/5. His pain became aggravated over time, irrespective of his position. A pelvic MRI with enhancement was performed and a well-enhanced mass invading the lumbar plexus was found. The patient's symptoms were relieved after the operation, and the authors concluded that the patient's leg pain should be suspected to originate from an extraspinal focus if the pain became progressively aggravated and could not be alleviated by changing position [2].

In this present study, the patient complained of atypical symptoms. The pain was aggravated insidiously and was enhanced while lying down and when driving. NIC was absent. His unusual symptoms raised the suspicion that the patient's pain was extraspinal in origin. Another unusual diagnostic test result was the abnormally elevated ESR and CRP levels even though he did not complain of weight loss.

Elevated CRP levels depict acute tissue injury [4]. Tissue injury can be caused by inflammation, malignancies etc. The correlation between elevated CRP and prognosis of various cancers has been well reported [5–12].

Some studies have reported that the high levels of CRP may be related to worse outcomes in the urologic cancer patients, including renal cell carcinoma.

Thus, CRP could be used as a good prognostic tool for such patients [5–8]. Pathak *et al.*, reported that even though CRP may prognosticate the colorectal cancer, the evidence is insufficient [9]. Shrotriya *et al.*, reported in his systematic review that the elevated CRP level was correlated with higher mortality in the solid tumors especially the gastrointestinal and urologic cancers besides lung, pancreas, and hepatocellular malignancies. They also reported that with CRP, the prognosis of treatment and recurrence could be expected [10]. Yi *et al.*, suggested that the enhanced CRP level could be used as a guide for prognostication of osteosarcoma but more prospective studies would be needed to confirm this finding [11]. McMillan *et al.*, reported that the Glasgow Prognostic score (GPS) or modified GPS (mGPS) could be used as a useful prognostic tool in various kinds of cancer studies [12]. Forrest *et al.*, had introduced the term GPS [13] and reported that if elevated levels of CRP (>10 mg/L) and hypoalbuminemia (<35 g/L) coexist, the score was 2. The score was 1 if only one of these factors were present, although elevated CRP level usually presents even in the absence of hypoalbuminemia, so elevated CRP level means a score of 1, which is modified GPS. The score was 0, if both parameters were normal.

In this present case, albumin was not measured initially. When a patient is referred to a pain clinic, basic laboratory tests are usually done including the complete blood count, prothrombin time, activated partial thromboplastin time, ESR, and CRP, in order to evaluate their hemostasis and inflammatory status alone. The GPS of this patient was at least a score of 1. Although McMillan *et al.*, previously mentioned GPS/mGPS ratio could help with the prognosis of an inoperable case, this patient's CRP level was very high (22.6 mg/dL) and his albumin level was very low (1.9 g/dL), and he died 4 months later.

Renal cell cancer frequently metastasizes to the bone [14]. Metastatic bone is osteolytic and causes much morbidity. Additionally, bone metastasis is often indicative of dismal prognosis. Sometimes, bony symptom is the first presentation of renal cell cancer [15, 16]. Ahmadnia *et al.*, and Kong *et al.*, reported a mandibular lesion and a clavicular fracture respectively, as the first symptom of renal cell cancer. Skeletal related event (SRE) is a kind of morbidity associated with bone metastasis including severe bone pain, fractures, spinal cord compression, and hypercalcemia which can lead to death due to acute renal failure and arrhythmia [17]. Kinnane *et al.*, claimed that the bisphosphonate plays a crucial role to delay SRE in bone metastasis [17]. Thus, we can say that this patient suffered from SRE, and not from spinal disease.

In conclusion when patients with atypical distal limb pain visit the out-patient clinic, physicians should bear in mind that the pain can originate from sources other than the spine. Meticulous interviewing about the patient's past history, current presentation, and thorough physical examination are very important. In addition, abnormal laboratory test results should not be ignored, and if needed, diagnostic blocks should be performed.

#### REFERENCES

1. Lee SY, Kim TH, Oh JK, Lee SJ, Park MS. Lumbar stenosis: a recent update by review of literature. *Asian spine journal*. 2015 Oct 1;9(5):818-28.
2. Jo SY, Im SB, Jeong JH, Cha JG. Lumbosacral Plexopathy Caused by Presacral Recurrence of Colon Cancer Mimicking Degenerative Spinal Disease: A Case Report. *Korean Journal of Spine*. 2015 Jun;12(2):103.
3. Lee JH, Cho SH, Kim SH, Chae WS, Jin HC. Quadriceps muscle rupture mimicking lumbar radiculopathy. *European Spine Journal*. 2012 Jun 1;21(4):545-8.
4. Morley JJ, Kushner I. Serum C-reactive protein levels in disease. *Annals of the New York Academy of Sciences*. 1982 Jun 1;389(1):406-18.
5. Dai J, Tang K, Xiao W, Yu G, Zeng J, Li W, et al. Prognostic significance of C-reactive protein in urological cancers: a systematic review and meta-analysis. *Asian Pac J Cancer Prev*. 2014;15(8):3369-75.
6. Hu Q, Gou Y, Sun C, Ding W, Xu K, Gu B. The prognostic value of C-reactive protein in renal cell carcinoma: A systematic review and meta-analysis. *Urol Oncol Semin Orig Invest*. 2014;32(1):1-8.
7. Saito K, Kihara K. Role of C-reactive protein in urological cancers: A useful biomarker for predicting outcomes. *Int J Urol*. 2013;20(2):161-71.
8. Huang J, Baum Y, Alemozaffar M, Ogan K, Harris W, Kucuk O, et al. C-reactive protein in urologic cancers. *Mol Aspects Med* [Internet]. Elsevier Ltd; 2015;45:28-36.
9. Pathak S, Nunes QM, Daniels IR, Smart NJ. Is C-reactive protein useful in prognostication for colorectal cancer? A systematic review. *Colorectal Dis*. 2014;16(10):769-76.
10. Shrotriya S, Walsh D, Bennani-Baiti N, Thomas S, Lorton C. C-reactive protein is an important biomarker for prognosis tumor recurrence and treatment response in adult solid tumors: A systematic review. *PLoS One*. 2015;10(12):1-41.
11. Yi JH, Wang D, Li Z-Y, Hu J, Niu XF, Liu XL. C-Reactive Protein as a Prognostic Factor for Human Osteosarcoma: A Meta-Analysis and Literature Review. *PLoS One*. 2014;9(5):e94632.
12. McMillan DC. The systemic inflammation-based Glasgow Prognostic Score: A decade of experience in patients with cancer. *Cancer Treat Rev*. Elsevier Ltd; 2013;39(5):534-40.
13. Forrest LM, McMillan DC, McArdle CS, Angerson WJ, Dunlop DJ. Evaluation of cumulative prognostic scores based on the systemic inflammatory response in patients with inoperable non-small-cell lung cancer. *Br J Cancer*. 2003;89(6):1028-30.
14. Chen SC, Kuo PL. Bone Metastasis from Renal Cell Carcinoma. *Int J Mol Sci*. 2016;17(6):987.
15. Ahmadnia H, Amirmajidi NM, Mansourian E. Renal Cell Carcinoma Presenting as Mandibular Metastasis. *Saudi J Kidney Dis Transpl*. 2013;24(4):789-92.
16. Kong Y, Wang J, Li H, Guo P, Xu JF, Feng HL. Pathological clavicular fracture as first presentation of renal cell carcinoma: a case report and literature review. *Cancer Biol Med*. 2015;12(4):409-12.
17. Kinnane N. Burden of bone disease. *Eur J Oncol Nurs*. 2007;11(SUPPL. 2):28-31.