Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com/journal/sjmcr/home

OPEN ACCESS

Multiple Myeloma Presenting as Recurrent Single Vertebral Compression Fractures in a Middle-Aged Female Patient

Byung Yong Kang, Seok Jun Hong, Hak Jong You, Sung Jun Hong*

Department of Anesthesiology and Pain Medicine, Kangdong Sacred Heart Hospital, Hallym University College of Medicine, 445 Gil-dong, Gangdong-gu Seoul, Korea 134-701

DOI: 10.36347/sjmcr.2019.v07i07.001 | **Received:** 18.06.2019 | **Accepted:** 25.06.2019 | **Published:** 15.07.2019

***Corresponding author:** Sung Jun Hong

Abstract **Case Report**

In this report, we describe a case of multiple myeloma presenting as recurrent single vertebral compression fractures in a 53-year-old female patient and suggest that multiple myeloma can be included in the differential diagnosis of recurrent single vertebral compression fractures.

Key words: Multiple Myeloma, Presenting, Compression Fractures in a Middle-Aged Female Patient.

INTRODUCTION

Vertebral fractures are a common problem seen by clinicians. Although trauma and osteoporosis are frequently the cause of vertebral fractures, pathological vertebral fracture should be considered when treating affected patients. Magnetic resonance imaging (MRI) is a sensitive diagnostic modality, but the diagnosis is nevertheless not always clear. If MRI diagnoses pathological fractures but follow-up studies show no evidence of infection or malignant metastases, plasma cell tumors should be suspected.

CASE REPORT

A 53-year-old woman was referred to our pain clinic with right buttock pain starting 2 days prior. She was hospitalized for 1 month for treatment of an L2 vertebral compression fracture caused by a fall on a bus 3 months prior. An MRI examination performed at that time showed a recent compression fracture at L2, and right L3–4 foraminal to extraforaminal disk protrusion (Fig. 1).

We rechecked the L-spine series, but no difference was seen from the previous series. A right L4 selective transforaminal epidural block was performed under the assumption of right L3–4 herniated nuclear pulposus. However, 12 hours after the epidural block, the patient's pain had worsened, so we decided to admit her. Rechecking the MRI of the L spine with contrast enhancement showed (1) an aggravated compression fracture at L2, with a further decrease in height and new-onset posterior bulging, and (2) prominent paravertebral soft tissue enhancement at the L1–2 level and enhancement along the bilateral psoas muscle (Fig. 2).

During additional studies to rule out malignancy and infectious etiology, tumor markers (CEA, PSA, CA 19-9, CA-125, and AFP) were within the normal range. Bone biopsy, sputum AFB (−), Gram stain (−), and Tb-PCR (−) were also negative. Furthermore, blood C-reactive protein (CRP) and procalcitonin levels were within the normal range. Therefore, we decided to observe the patient on bed rest.

One month later, the patient's symptoms had not improved, and the f/u MRI showed newly developed mass-like lesions involving the right psoas muscle at the L1–4 level (Fig. 3). Ultrasound-guided biopsy done at the right psoas muscle confirmed plasmacytoma. Serum protein electrophoresis revealed an M-spike in the gamma globulin fraction with a concentration of 3.50 g/dL. Serum protein electrophoresis and immunofixation electrophoresis revealed monoclonal gammopathy immunoglobulin G (lambda type). A bone marrow biopsy specimen was hypercellular with an increased number of plasma cells (18%). Follow-up MRI 1 month after initiating chemotherapy showed a marked decrease in the size of the mass involving the right psoas muscle. The patient was discharged after L2 vertebroplasty.

DISCUSSION

Multiple myeloma is a neoplastic proliferation of monoclonal plasma cells. Although it is usually restricted to the bone marrow, extraskeletal spread in the form of localized extramedullary collection of malignant plasma cells (plasmacytomas) occurs in up to 20% of cases [1, 2]. According to the World Health Organization 2016 classification of lymphoid neoplasms, plasma cell tumors are classified as plasma cell myeloma (multiple myeloma), solitary plasmacytoma of bone (SPB), or extraosseous plasmacytoma [3].

Plasmacytoma is a plasma cell dyscrasia in which a plasma cell tumor grows within soft tissue or the axial skeleton. Plasmacytoma can occur secondary to multiple myeloma and, in such patients; they can precede, accompany, or follow the onset of systemic disease [4]. The most common of these is SPB, accounting for 3–5% of all plasma cell malignancies [5-7]. Monoclonal gammopathy is present in 60% of SPB cases and less than 25% of extramedullary plasmacytoma cases [8]. The skeletal forms frequently progress to multiple myeloma over the course of 2–4 years.

Multiple myeloma is characterized by hypercalcemia, osteolytic lesions, and pathologic fracture. Lower back pain is one of the most common symptoms of multiple myeloma, and 60% of cases involve the spine. In the case of compression fractures without hot uptake on bone scan, further investigation can be performed if suspicions remain.

In this patient, because bone densitometry of the spine during previous hospital visits revealed osteopenia and a history of falls, a simple compression fracture initially appeared more likely. The MRI did not indicate any pathological fracture; likewise, other laboratory findings did not show any abnormalities. The patient improved and returned home but returned to the hospital after 2 months with right buttock pain.

An MRI was performed after admission to the hospital due to aggravation of pain following epidural block, and appeared to indicate pathologic fracture caused by infection or metastasis. However, histopathological examination did not show any evidence of tumor or infection. Until this time, a plasma cell tumor had not been suspected and additional tests, such as bone marrow examination and immunohistochemical staining, had not been performed. One month later, plasma cell tumor was suspected only after multiple masses invading the L1–4 level of the psoas muscle were observed on MRI. This was confirmed by immunohistochemical staining, and urine and serum protein electrophoresis. Serum CRP remained in the normal range in the early stage of hospitalization but increased to 94.2 mg/L only 5 days after the mass was confirmed on the third MRI.

On the second MRI, a pathologic fracture due to metastasis of a malignant tumor was suspected, but all tumor markers were within the normal range. If a compression fracture is not due to trauma or malignant metastasis, other causes should be considered.

Laboratory findings upon admission showed that serum protein initially increased to 8.9 g/dL (normal range: 6.4–8.3 g/dL), while the albumin level was 3.8 g/dL, which is at the lower limit of the normal range. This suggests an increase in other kinds of proteins. After 1 month of hospitalization, serum protein increased to 10.0 g/dL, but albumin remained near the lower limit, which may have been due to increases in other protein fractions. These results are indicative of fractures caused by plasma cell tumors.

The MRI findings of traumatic vertebral fracture showed differences in signal intensity changes in post-traumatic vertebral compression fractures according to age, making it very difficult to differentiate between traumatic and pathological spinal fracture [9]. Therefore, An *et al*. recommended correlating MRI findings of traumatic vertebral fracture with clinical and serial MRIs to rule out pathological etiology [10, 11].

CONCLUSION

In the present case, the initial MRI showed no pathologic etiology. Even after the second MRI showed prominent paravertebral soft tissue enhancement at the L1–2 level and enhancement along the bilateral psoas muscle, we could not determine the exact etiology. If histopathology does not reveal tumor tissue, the patient needs to be closely followed-up with regular neurological assessments and MRI to monitor disease progression [9]. Additionally, pathologic compression fractures with no evidence of malignancy or infection should raise suspicions of plasma cell tumor.

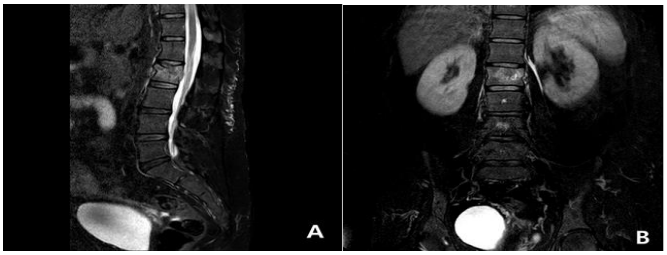
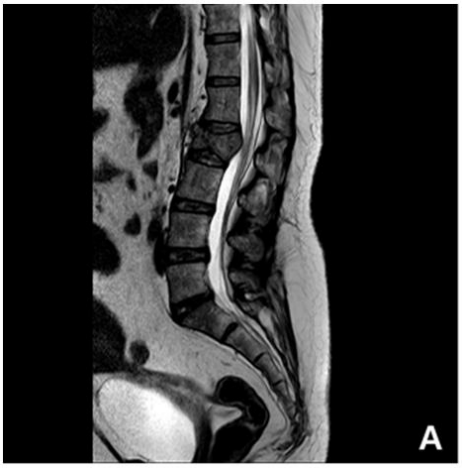
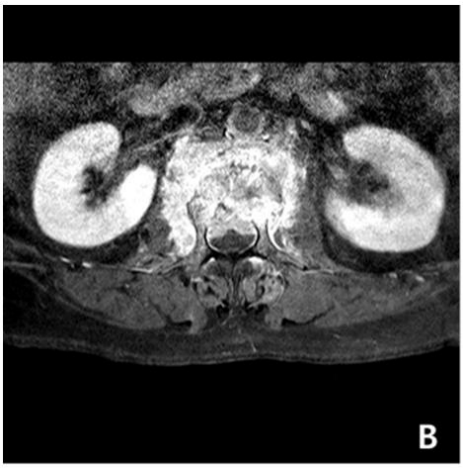


Fig-1: Sagittal (A) and coronal (B) magnetic resonance image showing a recent compression fracture atL2





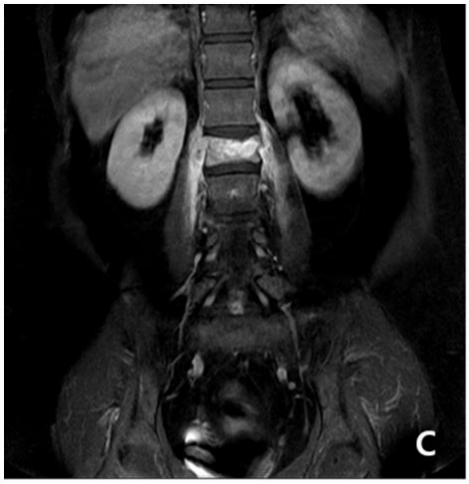
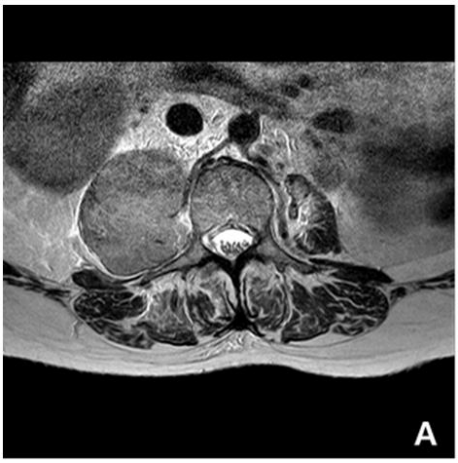


Fig-2: T1-weighted contrast-enhanced sagittal (A), axial (B) and coronal(C) view. Magnetic resonance image showing aggravated compression fracture at L2 with further decreased height and newly noted posterior bulging (A). Paravertebral soft tissue enhancement at L1-2 level and enhancement along bilateral psoas muscle (B), (C)



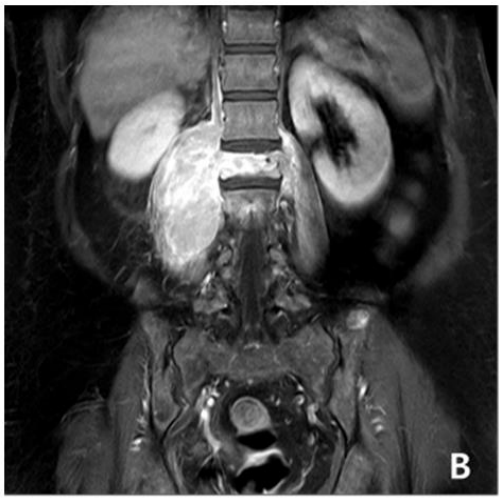


Fig-3: One month later after admission, magnetic resonance image shows newly developed mass-like lesions involving right psoas muscle at L1-4 level on T1-weighted contrast-enhanced sagittal (A) and coronal (B) view

REFERENCES

1. George SM, Aljufairi EA, Chandran N, Almahari S AI. Plasmacytoma as a Mimicker of Colonic Carci noma in an Elderly Man. Case Rep Pathol. 2017; 2 017: 4846018.
2. Telakis E, Tsironi E, Tavoularis G, Papatheodorou K, Tzaida O, Nikolaouy A. Gastrointestinal involve ment in a patient with multiple myeloma:a case rep ort. Annals of Gastroenterology. 2009; 22(4):287–2 90.
3. Swerdlow SH, Campo E, Pileri SA, Harris NL, Stei n H, Siebert R, Advani R, Ghielmini M, Salles GA, Zelenetz AD, Jaffe ES. The 2016 revision of the W orld Health Organization classification of lymphoid neoplasms. Blood. 2016; 127(20):2375–2390.
4. Talamo G, Cavallo F, Zangari M, Barlogie B, Lee CK, Pineda-Roman M, Kiwan E, Krishna S, Tricot G. Clinical and biological features of multiple myel oma involving the gastrointestinal system. Haemat ologica. 2006; 91(7):964–97.
5. Kyle RA. Monoclonal gammopathy of undetermine d significance and solitary plasmacytoma. Implicati

ons for progression to overt multiple myeloma. He matol Oncol Clin North Am. 1997 Feb;11(1):71-87 .
6. Dimopoulos MA, Moulopoulos A, Delaselle K, Ale xanian R. Solitary plasmacytoma of bone and asym tomatic multiple myeloma. Hematology/ Oncology Clinics of North America. 1992;6(2):359-369.
7. Frassica OA, Frassica FJ, Schray MF, Sim FH, Kyl e RA. Solilary plasmacytoma of bone. Mayo clinic experience. Int J Radiat Oncology Biol Phys. 1989; 16(1):43-48.
8. Soutar R, Lucraft H, Jackson G, Reece A, Bird J, L ow E, Samson D. Guidelines on the diagnosis and management of solitary plasmacytoma of bone and solitary extramedullary plasmacytoma. Br J Haema tol. 2001;124(6):717–26.
9. Kamat A, Velho V. Diagnostic dilemma in a case o f early spinal tumour fracture (Plasmacytoma). A c ase report. Neurol India. 2000;48(3):288-90.
10. An HS, Andreshak TG, Nguyen C, Williams A, Da niels D. Can we distinguish between benign versus malignant compression fractures of the spine by ma gnetic resonance imaging? Spine. 1995; 20(16):177 6-1782.
11. Sung MS, Park SH, Lee JM, Jung HJ, Yim JI, Kim YS, Shinn KS. Sequential changes of traumatic vert ebral compression fracture on MR imaging. J Kore an Med Sci. 1995;10(3):189-194.