



RCSI

UNIVERSITY
OF MEDICINE
AND HEALTH
SCIENCES

Royal College of Surgeons in Ireland

repository@rcsi.com

Diagnostic dilemma: a rare cause of lower back pain

AUTHOR(S)

Luis Felipe Colón, Sebastian Flores, Jorge Isaza

CITATION

Colón, Luis Felipe; Flores, Sebastian; Isaza, Jorge (2023). Diagnostic dilemma: a rare cause of lower back pain. Royal College of Surgeons in Ireland. Journal contribution.
<https://hdl.handle.net/10779/rcsi.23905155.v1>

HANDLE

[10779/rcsi.23905155.v1](https://hdl.handle.net/10779/rcsi.23905155.v1)

LICENCE

In Copyright

This work is made available under the above open licence by RCSI and has been printed from <https://repository.rcsi.com>. For more information please contact repository@rcsi.com

URL

https://repository.rcsi.com/articles/journal_contribution/Diagnostic_dilemma_a_rare_cause_of_lower_back_pain/23905155/1

Diagnostic dilemma: a rare cause of lower back pain



Abstract

Low back pain is a common presentation with a wide differential diagnosis. One rare, but important, differential is malignant metastases to the spine. Primary breast cancers have a tendency to spread to bone. Male breast cancer is a rare phenomenon, accounting for less than 1% of all breast cancer cases. This report presents the case of a 54-year-old male who presented with signs and symptoms of low back pain that initially appeared to be due to radiculopathy after a work-related injury. After several interventions, visits and imaging studies, it was discovered that many of his symptoms were due to silent dissemination of male breast cancer. There is a lack of literature and guidelines on the work-up of male breast cancer. This case highlights the importance of keeping a high index of suspicion for all patients presenting with lower back pain, and the need for evidence and guidelines on the investigation and management of male breast cancer.

Luis Felipe Colón¹

Sebastian Flores²

Dr Jorge Isaza³

¹RCSI medical student

²Louisiana State University,

Louisiana, USA

³Department of Orthopaedics,

Tulane University, New Orleans,

Louisiana, USA

Introduction

Low back pain (LBP) is one of the most common adult disorders, with over 80% of adults experiencing it at some time in their lives.¹ It is the leading cause of disability in young adults and the second most common cause of work absence and activity limitation in most

of the world.^{1,2} One of the more serious and rare aetiologies of LBP is malignancy (1% of cases), including primary bone cancer such as multiple myeloma, or metastases to bone from primary breast or prostate adenocarcinoma.³

Table 1: Orthopaedic and spinal surgical procedures.

| Procedure | Description | Indications |
|-------------------|--|--|
| Arthroscopy (ATS) | A minimally invasive procedure in which small incisions are made to insert endoscopes, containing cameras and instruments, to visualise and operate inside a joint compartment. ⁷ | May be used as a diagnostic procedure, or for the surgical repair of damaged structures (e.g., menisci). ⁷ |
| Discectomy | Removal of a herniated nucleus pulposus (HNP). The surgical approach may be endoscopic or open. ⁸ | For a HNP compressing a nerve root or spinal cord, causing pain or neurologic deficits (e.g., foot drop). ⁸ |
| Vertebroplasty | An 11- to 13-gauge needle is advanced into the vertebral body with fluoroscopic guidance to inject pre-mixed bone cement made of PMMA* with barium. ⁸ | For stabilisation of painful osteoporotic or osteolytic vertebral compression fractures, or management of painful vertebral hemangioma. ⁸ |

*PMMA: polymethyl methacrylate.

Case timeline

Initial presentation

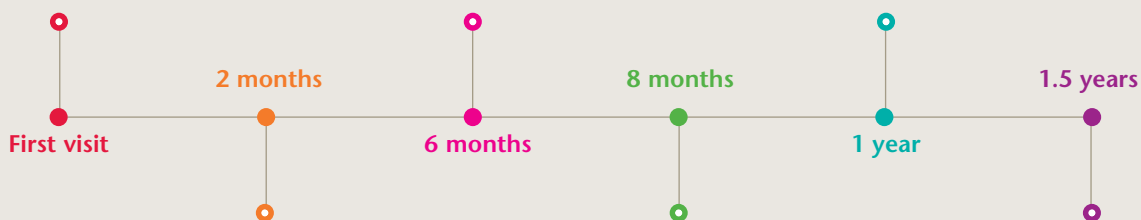
Patient presents with 6/10 LBP after a work-related injury. First MRI is obtained, showing HNP at L5/S1. He is treated with a corticosteroid injection.

3 months post op

Patient returns with 6/10 LBP and bilateral leg pain. He is treated with analgesics and physical therapy. A six-week follow-up is arranged.

Return to office

The patient has been receiving oncological care, but now complains of 10/10 pain in the thoracic region. The patient undergoes surgery (vertebroplasty) to alleviate his pain.



Return to office

Patient now has 7/10 LBP with radiculopathy. Examination reveals foot drop on the left, and zero degrees of spinal extension. The patient is treated with surgery (extrapedicular discectomy).

4.5 months post op

Patient returns with worsening LBP, now 9/10, which is not relieved by analgesics. A second MRI is ordered, which shows diffuse metastatic disease of the spine and pelvis. The patient is referred to oncology and subsequently diagnosed with metastatic breast cancer.

Present

The patient is receiving oncological care with improvement. He has not had new symptoms regarding LBP or radiculopathy.

FIGURE 1: Clinical timeline.

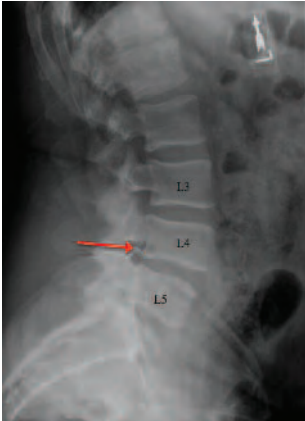


FIGURE 2: Lateral spinal x-ray taken during the patient's first visit. Imaging shows minimal displacement at L4/5 (red arrow), but overall looks benign.

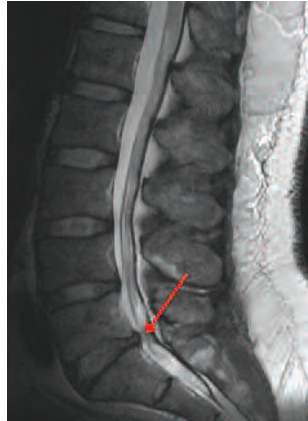


FIGURE 3: Sagittal T1-weighted MRI of the lumbar spine, without contrast, showing a posterolateral disc bulge at L5/S1.

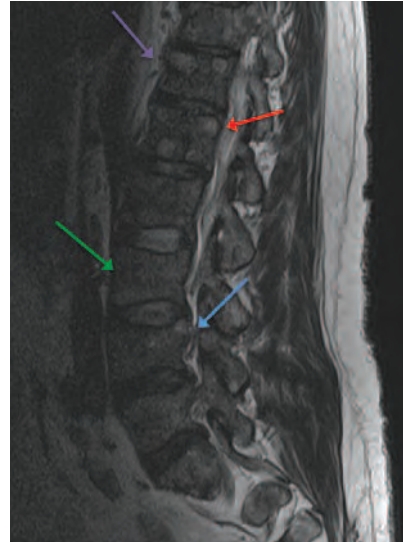


FIGURE 4: Sagittal T1-weighted MRI with contrast of the lumbar spine, showing diffuse metastatic disease of the lumbar and thoracic spine. The most marked fractures include: anterior wedge compression fracture at L1 (red arrow) with marrow oedema and visible metastases; compression fracture at L3 with marrow oedema (green arrow); and, acute-appearing compression fracture at L4 (blue arrow). Visible metastases enhancing with contrast can be seen at T12 (purple arrow).

Although metastases to the spine are a rare cause of LBP, many malignancies, particularly breast cancer, have a tendency to spread to bone and create lytic lesions.⁴ Male breast cancer (MBC) is an even rarer phenomenon, accounting for less than 1% of all breast cancer cases.⁵ Due to low suspicion and a lack of standardised guidelines for treatment and surveillance, most cases of MBC are only diagnosed once the disease has disseminated and the chances of a cure are diminished.^{4,6}

This case report presents a 54-year-old male treated with spinal surgery for radiculopathy (known colloquially as a 'pinched nerve'), while silently developing primary MBC with metastatic dissemination into bone and viscera. The case describes a rare and perplexing disease presentation that is largely absent from the medical literature and merits attention.

Case

A 54-year-old African American male presented to a spinal surgery clinic complaining of lower back and left knee pain that began after a work-related accident two months previously (**Figure 1**). The patient reported constant pain since this work-related injury, when a large pipe hit him in the lower back and left lower extremity. He described the pain as an aching, shooting sensation with radiation from his lower back down to his left leg. The pain was alleviated by rest and exacerbated by sitting, standing, and lying down. He rated the pain a 6/10. Associated symptoms included numbness and tingling in his left lower extremity. Since the injury, the patient had undergone an arthroscopy (ATS; see **Table 1**) as treatment for his left knee pain, which provided mild relief.

The patient's past medical history was negligible, with no other surgical history. The patient was not taking any medications, and

denied any known drug allergies. With regard to his social history, he had a 20 pack year smoking history, drank alcohol occasionally, and denied using any recreational drugs. The patient was employed offshore, in manual labour, but he had not been working since the accident. His family history was non-significant and negative for cancer. The patient denied weight loss, fever, or any other associated symptoms.

On examination, the patient was obese (BMI: 34.7), and was oriented to time, place, and person. On inspection, the patient had a small effusion in his left knee.

On palpation of the back, there was tenderness to the left of the midline in the area of L4 and down into the gluteal area. Lumbar spine flexion was 60 degrees, extension was 20 degrees, and left and right lateral flexion were both 20 degrees; all of these movements produced equal pain. While testing motor function, there was weakness in the left leg in all muscle groups. Reflexes in the lower extremities were decreased bilaterally. On sensory testing, there was dysaesthesia in the left leg involving the L4 and L5 dermatomes. Straight leg test of the left lower limb was positive, producing lower back pain. On gait testing, the patient ambulated with a slight limp on the left.

Anteroposterior, lateral (**Figure 2**) and flexion-extension x-rays showed only minimal displacement at L4/5. An MRI (**Figure 3**) taken the following week showed herniation of the nucleus pulposus (HNP) at L5/S1. The patient was then treated with a transforaminal steroid injection at L4/5, which provided only temporary relief. Two months later, the patient returned with worsening back pain, now rated 7/10, radiating down his left leg (**Figure 1**). Physical examination revealed that spinal extension was now 0 degrees, and on gait testing, the patient ambulated with a limp and left foot

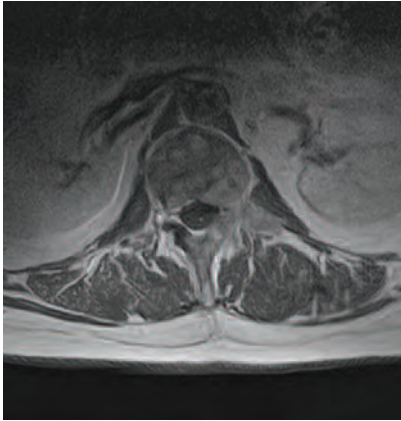


FIGURE 5: Transverse section of T1-weighted MRI with contrast showing a fractured L1 with multiple metastases.



FIGURE 6: Coronal section of a thorax/abdomen/pelvis (TAP) CT without contrast showing diffuse metastases from T12 to L5 and in the pelvic bones.

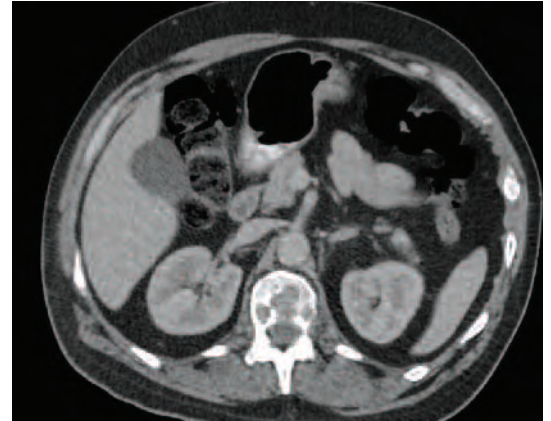


FIGURE 7: Transverse section of a thorax/abdomen/pelvis (TAP) CT without contrast at the level of L1, showing several metastatic lesions in the vertebral body.

drop. To address these worsening symptoms, the patient was scheduled for an extrapedicular discectomy at L4/5 (Table 1). The patient tolerated this surgery well, and reported postoperative symptomatic relief.

At four-and-a-half months postoperatively, the patient again complained of worsening pain (9/10), which was not relieved by analgesia. A second MRI was taken with contrast (Figures 4 and 5), one year after the first MRI, which showed diffuse metastatic disease in the spine and pelvis, with pathologic fractures on several thoracic and lumbar vertebrae. The patient was immediately referred to a haematology-oncology specialist for a malignancy workup and full-body CT (Figures 6 and 7) and PET scan (Figure 8).

The patient was formally diagnosed with primary malignancy of the breast, with metastases to the thoracic and lumbar spine, pelvic bones, lungs and liver. He commenced treatment with chemotherapy and adjuvant tamoxifen. At a return visit to the clinic, it was discovered that one year prior to his work accident, the patient had attended an urgent care clinic regarding a painful right breast lump. At the time, he was diagnosed with lymphadenitis and discharged with a ten-day course of antibiotics.

At this return clinic visit, four months after his cancer diagnosis, the patient complained of 10/10 pain around his T12 vertebra, and inquired about undergoing a surgical procedure to alleviate this pain. Following multidisciplinary discussion, it was decided that the patient was fit for a T12 vertebroplasty (Table 1). The patient tolerated the procedure well, and received significant relief of his j18 LBP and leg pain.

At the time of writing, the patient was continuing chemotherapy and hormonal therapy, with improvement in his malignant lesions in terms of size and spread, as seen on repeat imaging.

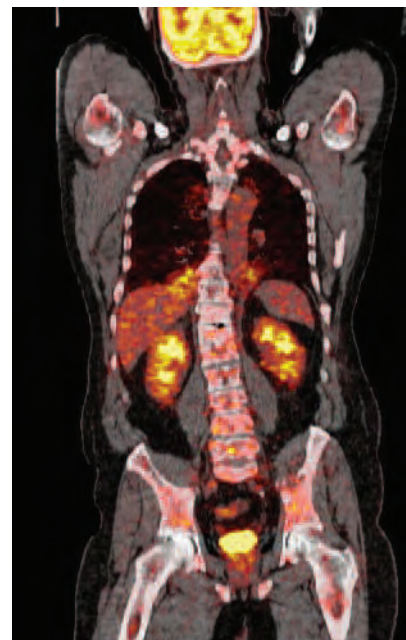


FIGURE 8: Full-body PET scan showing malignant activity throughout the axial skeleton, pelvic bones, lungs, and liver.

Discussion

Among the causes of LBP, malignancy is a rare but serious aetiology that must be ruled out with a thorough history and appropriate investigations.³ The 'red flags' for LBP secondary to malignancy include a history of cancer and/or unexplained weight loss, neither of which were present in this patient's history.¹ The first MRI did not show any signs of disseminated disease in the lumbar spine, although the cancer may have been spreading through the lymphatic system and other viscera. The history of a work-related accident and the specific findings of a HNP at L4/5, with no sign of metastatic disease on the first MRI, provided a straightforward cause for the patient's presenting

symptoms and did not trigger further investigations for malignancy. The team at the spinal surgery clinic was confounded at the difference between the two MRI studies taken one year apart (**Figure 3** vs **Figure 4**). Although breast cancer is commonly associated with skeletal dissemination, the speed or degree of dissemination is individualised for each patient.⁴ In just one year, this patient went from having a lack of visible secondary malignancies in the lumbar spine to having fully disseminated disease. No similar cases were found in the literature at the time of publication. Furthermore, neither the past medical history nor the systems review at his initial visit revealed the urgent care clinic visit where he had presented with a painful breast lump.

When the patient returned to the spinal surgeon's office following his cancer diagnosis, the focus of treatment became pain management rather than cure, and hence a vertebroplasty was performed. This procedure has been shown to provide rapid stabilisation and analgesia in metastatic cases of vertebral compression fracture, with significant improvements in quality of life.⁴

This patient's case is unique, as he presented with two uncommon problems: LBP secondary to malignancy (<1% of causes of LBP); and, MBC (<1% of breast cancers).^{1,3} Although the incidence of MBC has been increasing in the last 25 years, it is still a rare condition with few examples found in the literature.⁹ This case highlights the importance of keeping a high level of suspicion for malignancy in any patient (male or female) presenting with a breast lump, and points to the need for specific guidelines on the diagnosis, clinicopathology and treatment of

MBC, which are currently simply extrapolated from information on female breast cancer.¹⁰ This case might have been approached differently if the patient had been a postmenopausal (similar to our patient's age) female presenting with bony or back pain. In this scenario, metastatic breast cancer would have been an important, and statistically more likely, differential diagnosis to consider. Such a woman's case could have been further investigated clinically with a breast examination, which is not routinely performed on male patients presenting with back pain. It is important to note that such cases may present to a variety of medical and surgical specialties, such as a spinal surgeon for painful metastases to the axial skeleton, or a gastroenterologist for symptomatic metastases to the liver.⁵

This case may serve to alert physicians in any specialty to keep an open mind and broad differential diagnosis when evaluating each patient, and as a reminder of the importance of ruling out sinister conditions. A higher index of suspicion and a short panel of blood tests might have increased the chances of discovering this patient's malignant condition earlier, before its widespread dissemination.

Conclusion

This case highlights the importance of keeping a heightened vigilance for uncommon, serious conditions in patients presenting to any medical specialty. Future research in this area should focus on large-scale trials evaluating novel methods for early detection of MBC in the community. Such medical evidence will hopefully lead to the development of established guidelines for the diagnosis and management of MBC.

References

- Patrick N, Emanski E, Knaub MA. Acute and chronic low back pain. *Med Clin North Am.* 2016;100(1):169-81.
- Shaikh M, Ostor AJ. Evaluating the patient with low back pain. *Practitioner.* 2015;259(1788):21-4, 2-3.
- Deyo RA, Rainville J, Kent DL. What can the history and physical examination tell us about low back pain? *JAMA.* 1992;268(6):760-5.
- Lopez-O'Rourke VJ, Orient-Lopez F, Fontg-Manzano F, Fernandez-Mariscal E, Combalia A, Vilarrasa-Sauquet R *et al.* Pathological vertebral compression fracture of C3 due to a breast cancer metastasis in a male patient. *Spine (Phila Pa 1976).* 2009;34(16):E586-90.
- Zurrada S, Nole F, Bonanni B, Mastropasqua MG, Arnone P, Gentilini O *et al.* Male breast cancer. *Future Oncol.* 2010;6(6):985-91.
- Herkowitz HN. *Rothman-Simeone: The Spine (6th ed.).* Philadelphia; Saunders/Elsevier, 2011:1041-1050, 1596-1609, 1704-1719. (E-book.)
- Sedighi A, Hamed EA, Mohammadian K, Behnood S, Kalaghchi B. Clinicopathologic characteristics of male breast cancer: a report of 21 cases in radiotherapy center of Hamedan, Iran. *Asian Pac J Cancer Prev.* 2013;14(12):7381-3.
- Kiluk JV, Lee MC, Park CK, Meade T, Minton S, Harris E *et al.* Male breast cancer: management and follow-up recommendations. *Breast J.* 2011;17(5):503-9.
- Azar, FM. *Campbell's operative orthopaedics. (13th ed.).* Philadelphia; Elsevier, 2017:2486-2566. (E-book.)
- Reis LO, Dias FG, Castro MA, Ferreira U. Male breast cancer. *Aging Male.* 2011;14(2):99-109.