

Case Report

Multiple myeloma presenting with acute bony spinal cord compression and mechanical instability successfully managed nonoperatively

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Abstract

BACKGROUND CONTEXT: Multiple myeloma (MM) with spinal involvement may present with spinal cord or cauda equina compression, with or without neurological impairment. This occurs when a soft-tissue myelomatous mass extends into the epidural space (Barron et al., 1959 [1]). The mainstay of management for such lesions in patients with normal neurology is chemotherapy and radiotherapy or radiotherapy alone, but those with neurological compromise require surgical decompression with adjuvant therapy (Patchell et al., 2005 [2]). Infrequently, patients with MM present with spinal cord compression and neurological impairment due to bony encroachment from vertebral translation and kyphosis where significant lytic bone disease has rendered the spine mechanically unstable. The standard management for these patients is surgical decompression and internal fixation.

PURPOSE: This study aimed to report a high-risk myeloma patient with a mechanically unstable spine, acute spinal cord compression, and neurologic deficit that was treated successfully using nonoperative means.

STUDY DESIGN: Case report.

METHODS: A 37-year-old male patient with MM was referred to our tertiary referral spinal unit with acute bony spinal cord compression and neurological impairment. Computer tomography revealed lytic lesions of T2 and T3 and anterolisthesis of T1 on T2 producing mechanical instability and magnetic resonance imaging confirmed extension of disease into the epidural space and cord compression. This was successfully managed with nonoperative treatment using a brace.

RESULTS: Management in a brace restored clinical and radiological stability and normal neurological function.

CONCLUSION: Certain high-risk myeloma patients with a mechanically unstable spine, acute spinal cord compression and neurologic deficit can be treated effectively in an appropriate brace when managed by a tertiary referral spinal unit. © 2016 Elsevier Inc. All rights reserved.

Introduction

A 37-year-old male with undiagnosed multiple myeloma (MM) presented with a 2-month history of upper thoracic back pain. He was subsequently diagnosed with light chain MM and commenced on appropriate chemotherapy and corticosteroid treatment for disease control and radiotherapy to his

spine for pain relief. Following an acute deterioration in lower limb motor and sensory function, he was referred to our tertiary referral spinal myeloma service. Neurological examination revealed sensory deficit (1 of 2) in the right T7–T11 dermatomes and motor weakness (grade 4 MRC) in both lower limbs, graded ASIA D. He had no bowel or bladder dysfunction and his Visual Analogue Score (VAS) for back pain was 7 of 10.

Computer tomography (CT) of the thoracic spine demonstrated multiple lytic lesions throughout but extensively in the T2 and T3 vertebral bodies resulting in significant loss of vertebral height and regional kyphosis (Fig. 1). There was significant anterolisthesis of T1 on T2 causing marked narrowing of the anterior to posterior canal dimension (Fig. 2). Subsequent magnetic resonance imaging (MRI)

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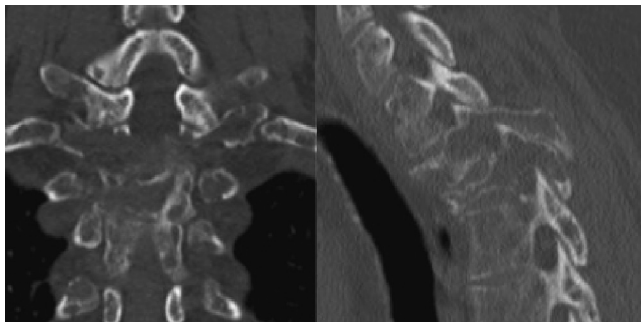


Fig. 1. Coronal and sagittal CT images through lesion demonstrating significant osteolysis and regional kyphosis.

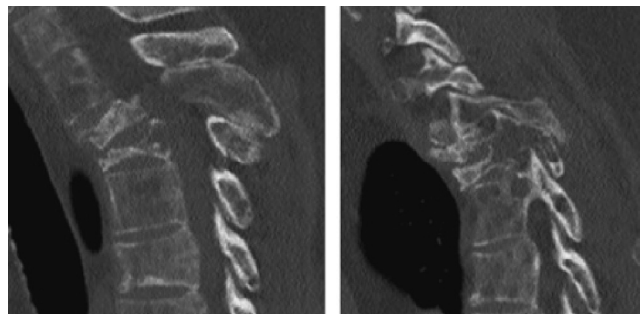


Fig. 4. Sagittal CT images demonstrating new bone formation at anterior column and elongated or expanded spinous processes.



Fig. 2. Sagittal image of CT demonstrating anterolisthesis of T1 on T2 and associated narrowing of the spinal canal (red line demonstrating disruption in posterior border of vertebral bodies).

demonstrated involvement of the posterior vertebral wall at T2 and T3 and extension of disease into the epidural space (Fig. 3). This patient had a Spinal Instability Neoplastic Score (SINS) of 18.

He was managed with a custom-made cervico-thoracolumbo-sacral (CTLSSO) brace for a planned 3-month period and continued on chemotherapy and radiotherapy treatment. He was monitored with regular clinical and radiographic assessment.

After 10 weeks in brace, an interval CT demonstrated significant anterior and posterior extra-osseous bone formation with reconstitution of the T2 and T3 vertebral bodies and posterior elements. Bridging bone between the diseased vertebral levels conferred mechanical stability to the upper thoracic spine (Figs. 4 and 5). At the 12-week follow-up appointment, the brace treatment was discontinued. VAS for back pain was 0 of 10 with complete resolution of neurologic deficit (ASIA E). There was no obvious clinical deformity in the sagittal plane (Fig. 6) and the patient had a pain-free functional range of movement of the spine.

Discussion

Patients with MM commonly present with back pain from pathologic vertebral compression fractures. Cement augmentation is a successful technique providing good analgesia in these cases [3,4]. A small cohort of patients with MM present

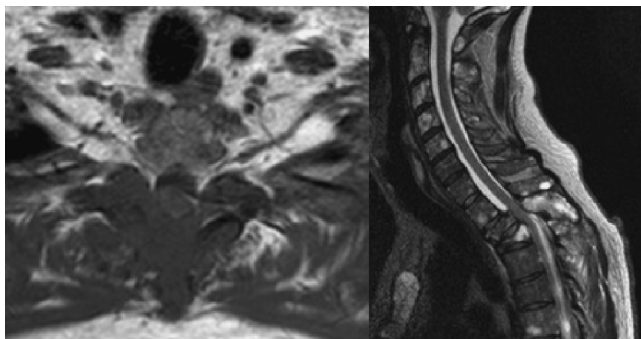


Fig. 3. MRI with axial image of lesion and sagittal cut demonstrating vertebral body collapse at T2 and T3, anterolisthesis of T1 on T2, infiltration of the posterior elements, and cord compression.

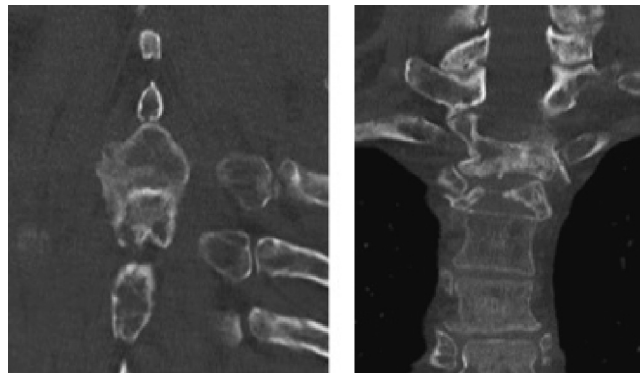


Fig. 5. Coronal CT images of thoracic spine demonstrating new bone formation between spinous processes and vertebral bodies.

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