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Atypical Presentation of Spinal Plasmacytoma with Posterior Epidural Mass and Acute Neurological Deficit

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Abstract

Solitary plasmacytoma of bone most commonly involves the vertebral body, often resulting in structural collapse and anterior spinal cord compression. Presentation as a posterior epidural mass without associated vertebral body destruction is exceedingly rare and poses a significant diagnostic challenge. We report a case of thoracic posterior epidural plasmacytoma presenting with acute paraplegia in a 61-year-old man. Magnetic resonance imaging revealed a dorsal epidural mass causing severe spinal cord compression in the absence of osseous involvement. The patient underwent urgent surgical decompression and spinal stabilization, followed by oncologic evaluation. This case highlights an uncommon manifestation of plasma cell dyscrasia with involvement of the posterior elements.

Keywords: Plasmacytoma, Paraplegia, Spinal cord, Epidural, Decompression.

Introduction

Plasma cell neoplasms comprise a group of disorders characterized by monoclonal proliferation of plasma cells. Solitary plasmacytoma of bone (SPB) accounts for approximately 3–5% of all plasma cell neoplasms and predominantly involves the axial skeleton, particularly the vertebral bodies, due to their high hematopoietic marrow content [1, 2]. Unlike multiple myeloma (MM), SPB lacks systemic manifestations such as renal insufficiency, hypercalcemia, and anaemia.

Spinal plasmacytomas typically originate within the vertebral body and may lead to neurological compromise secondary to pathological fracture or vertebral collapse. In contrast, isolated cases of pure epidural involvement without associated vertebral destruction are exceedingly rare and have been sparsely reported in the literature [3–5]. Preoperative diagnosis in such atypical presentations is challenging, as they often mimic lymphoma, metastatic disease, or epidural abscess. Herein, we report a rare case of SPB involving the posterior elements of the dorsal spine, presenting with an acute neurological deficit.

Case Presentation

A 61-year-old man presented with a 15-day history of progressive mid-dorsal back pain, followed by rapidly worsening weakness of the lower limbs. There was no history of fever, trauma, or constitutional symptoms. Neurological examination revealed Upper Motor Neuron (UMN) paraplegia of ASIA grade B impairment, manifested with complete motor power loss of 0/5 in both lower limbs with incomplete sensory involvement, exaggerated deep tendon reflexes, and extensor plantar responses. Magnetic resonance imaging (MRI) of the dorsal spine demonstrated a well-defined posterior epidural soft-tissue mass extending from D6 to D8, causing severe spinal cord compression (Fig. 1). The lesion appeared isointense on T1-weighted images and heterogeneously hyperintense on T2-weighted images, with uniform post-contrast enhancement. Notably, there was no evidence of vertebral body collapse or osseous destruction, an uncommon finding in plasmacytoma.

Given the acute neurological deterioration, the patient underwent emergency posterior decompression with D6–D8 laminectomy and instrumented stabilization from D5 to D9. Intraoperatively, a soft, friable mass was identified within the epidural space, without involvement of the bilateral lamina, facets, and spinous process. Histopathological examination revealed sheets of atypical plasma cells with eccentric nuclei, coarse chromatin, and prominent perinuclear hof. Immunohistochemical analysis demonstrated strong positivity for CD138 and CD38, confirming the diagnosis of a plasma cell neoplasm. .

Discussion

Plasmacytomas involving the spine most commonly originate within the vertebral body due to its high marrow content, with secondary epidural extension occurring through a cortical breach [1, 6]. In contrast, pure epidural plasmacytoma without vertebral involvement, as demonstrated in the present case, is exceedingly rare and has been reported only sporadically in the literature [3, 7]. The thoracic spine is most frequently affected due to its relatively narrow spinal canal and abundance of red marrow, which increases the risk of neurological compromise even with small lesions [6]. In the absence of bony destruction, diagnosis may be delayed, as imaging findings can closely mimic lymphoma, epidural abscess, or metastatic disease. Magnetic resonance imaging (MRI) provides superior soft-tissue

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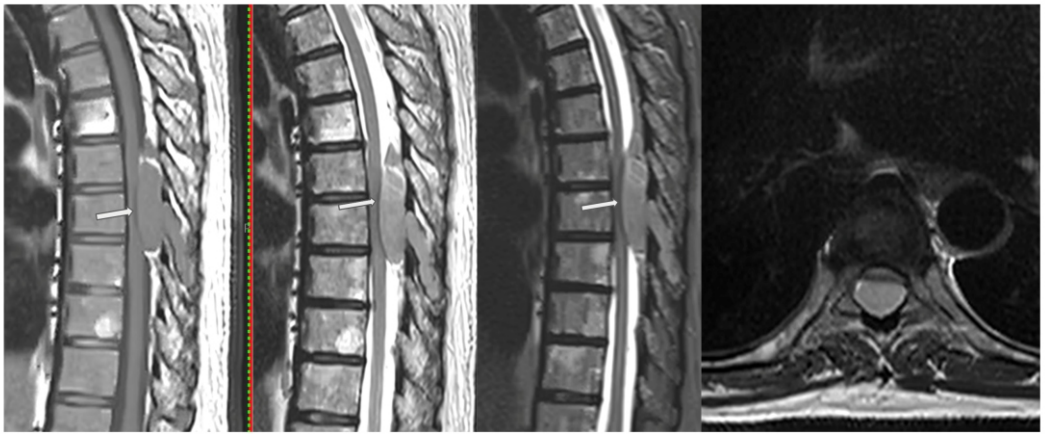

Figure 1: Magnetic Resonace image showing (white arrow) a well-defined posterior epidural soft-tissue mass extending from D6 to D8, causing severe spinal cord compression.

contrast and allows accurate assessment of neural compression in suspected spinal plasmacytomas. Nevertheless, definitive diagnosis requires histopathological and immunohistochemical confirmation [8].

Surgical decompression is indicated in patients presenting with acute or progressive neurological deficits. Several studies have demonstrated improved neurological outcomes with early surgical intervention, followed by adjuvant radiotherapy or chemotherapy depending on systemic disease burden [9–11]. Current evidence supports early decompressive surgery, ideally within 24 hours of injury, as a management guideline for acute spinal cord injury, particularly in cases of incomplete neurological deficit, to maximize the potential for neurological recovery [12].

Conclusion

This case highlights a sporadic presentation of spinal plasmacytoma manifesting as acute paraplegia due to a posterior epidural mass without vertebral involvement. Awareness of this unusual entity is crucial to prevent diagnostic delays. Prompt surgical decompression, followed by appropriate oncological management, remains critical for optimizing neurological recovery and achieving disease control.

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Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his/her consent for his/her images and other clinical information to be reported in the Journal. The patient understands that his/her name and initials will not be published, and due efforts will be made to conceal his/her identity, but anonymity cannot be guaranteed.

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