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LETTER TO THE EDITOR

Thoracic vertebral metastasis and spinal cord injury secondary to multiple myeloma: a case report

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Dear Editor,

Multiple myeloma (MM) is a multisystemic B-cell malignancy characterized by clonal proliferation of plasma cells in the bone marrow [1]. The disease often leads to extensive skeletal involvement, resulting in severe pain, pathological fractures, and spinal cord compression2. Osteolytic bone lesions are among the most characteristic manifestations of MM and are present in nearly 80% of patients at the time of diagnosis. The axial skeleton—particularly the vertebrae—and the proximal regions of long bones are most commonly affected, although any bone may be involved [2,3]. The average life expectancy of MM patients remains approximately 2.5 years despite advances in therapy, and up to 75% of patients with spinal involvement die within the first year after diagnosis1. The presence of vertebral metastasis or compression fracture not only worsens the prognosis but also significantly impairs quality of life. Herein, we present the clinical course of a 61 year-old woman diagnosed with MM following thoracic vertebral metastasis, who developed spinal cord injury after surgery and underwent a comprehensive rehabilitation program.

A 61 year-old female patient presented to the Department of Physical Medicine and Rehabilitation with complaints of sudden-onset, progressively worsening, diffuse back pain. Her neurological examination revealed paravertebral muscle spasm. Thoracic magnetic resonance imaging (MRI) demonstrated a compression fracture at the ninth thoracic vertebra (T9) and metastatic lesions involving the T9 vertebral body (Figure 1) and the left sacroiliac joint. Based on these findings, she was referred to the Department of Orthopedics and Traumatology, where she underwent T9 corpectomy, T6–T12 plate and screw stabilization, and tumor resection. Histopathological examination revealed plasmacytoma. These results met the diagnostic criteria for MM. Postoperatively, the patient received both radiotherapy and chemotherapy. However, she subsequently developed paraplegia secondary to metastatic compression fracture and was re-admitted to our rehabilitation service.

On her detailed neurological examination, the patient had no motor loss in the upper extremities, while motor strength in all key muscles of the lower extremities was assessed as 1/5. Sensory testing revealed hypoesthesia and anesthesia below the T5 dermatome. Anal examination showed preserved deep and superficial anal sensation, although voluntary anal contraction was absent. Based on these findings, the patient's spinal cord injury was classified as T5, ASIA Impairment Scale B. A multidisciplinary rehabilitation program was initiated, including range of motion exercises, balance and coordination training, postural and transfer exercises, as well as strengthening of both upper and lower extremities. Urodynamic evaluation was performed, and clean intermittent

catheterization was initiated. In order to increase bladder capacity, the anticholinergic agent trospium chloride was prescribed, and baclofen was started for lower limb spasticity. The patient gradually achieved unsupported sitting balance and partial independence in transfers. Verticalization training for therapeutic purposes was implemented, and after meeting the main rehabilitation goals, she was discharged with partial recovery at the wheelchair level.

Bone disease remains the most important factor reducing quality of life in MM patients. The underlying mechanisms involve a disruption of the balance between osteoclastic bone resorption and osteoblastic bone formation, resulting in excessive bone destruction and poor healing1-3. Vertebral metastases represent the majority of cases leading to epidural spinal cord compression and spinal cord injury [4]. Surgical management should therefore aim to restore spinal stability and decompress neural structures. However, even after optimal surgical, chemotherapeutic, and radiotherapeutic interventions, residual neurological impairment is unfortunately common. For this reason, early and individualized rehabilitation is essential to minimize complications, prevent secondary musculoskeletal problems, and optimize residual function.

In the presented case, the patient developed paraplegia following surgical treatment for thoracic vertebral metastasis secondary to MM. The rehabilitation process was focused on achieving functional independence in daily activities and maintaining the highest possible quality of life within the limitations of her condition [5]. Despite the low one-year survival rate reported in MM patients with spinal involvement, this case highlights that a tailored rehabilitation program can substantially improve comfort, autonomy, and psychological well-being. Rehabilitation interventions addressing muscle strength, joint mobility, sitting balance, and neurogenic bladder and neurogenic bowel managements are particularly crucial in such patients. Moreover, careful coordination between oncologists, orthopedic surgeons, and rehabilitation specialists is vital to ensure continuity of care and to address the complex needs arising from both the malignancy and its complications [5,6].

In conclusion, MM-related pathological vertebral fractures and subsequent spinal cord injuries can severely impair patients' quality of life and render them bedridden if not properly managed [1,7]. Following surgical treatment, chemotherapy, and radiotherapy, evaluation and management by a Physical Medicine and Rehabilitation specialist are indispensable. Individualized rehabilitation programs should aim to enhance patients' independence, prevent secondary complications, and improve functional outcomes, even in the presence of limited life expectancy. Although survival in MM patients with spinal involvement remains poor, maintaining and improving quality of life through multidisciplinary rehabilitation must be a primary therapeutic goal [5,8].

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Conflict of interest

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