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Spontaneous Thoracic Epidural Hematoma Linked to Heavy Weight Lifting in a 29-Year-Old Male: A Case Report

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ABSTRACT:
Background: Spontaneous spinal epidural hematoma (SSEH) is a rare and serious condition characterized by the accumulation of blood in the epidural space of the spine without any apparent cause. Although it is an uncommon clinical entity, SSEH can lead to acute neurological deficits and requires prompt intervention. This report explores the potential link between heavy lifting and the onset of SSEH in a young, otherwise healthy individual. **Case Presentation:** We present the case of a 29-year-old male who developed severe upper back pain following an episode of heavy lifting, which progressed to sudden paralysis. MRI revealed a thoracic epidural hematoma extending from T1 to T3, causing significant spinal cord compression. The patient underwent urgent posterior decompression surgery, which led to full neurological recovery within 24 hours. **Discussion:** This case underscores the potential for heavy lifting to trigger SSEH, a condition that can lead to rapid neurological decline. Early recognition, accurate diagnosis through MRI, and prompt surgical intervention are essential to prevent permanent damage and optimise patient outcomes. **Conclusion:** Physicians should consider SSEH in patients presenting with acute spinal cord symptoms following exertional activities like heavy lifting. Immediate intervention is crucial to ensure favourable outcomes in this rare but potentially devastating condition.

Keywords: Spinal epidural hematoma; Spontaneous; Heavy lifting; Neurological deficits; Case report

INTRODUCTION:

Spinal epidural hematoma is a rare but critical condition characterized by the accumulation of blood within the epidural space of the spine. While most cases are attributed to trauma or iatrogenic causes, spontaneous occurrences, defined as those without apparent precipitating factors, are exceedingly uncommon, comprising less than 1% of all spinal epidural space-occupying lesions. The precise incidence of spontaneous spinal epidural hematoma is estimated at approximately 0.1 per 100,000 individuals per year, highlighting its rarity in clinical practice (1).

The etiology of spontaneous spinal epidural

hematoma remains poorly understood, with few established risk factors identified in the literature (2-4). This case report highlights heavy lifting as a potential precipitating factor, underscoring the critical need for heightened awareness among healthcare providers regarding its association with this seemingly innocuous activity.

The clinical presentation of spontaneous spinal epidural hematoma often manifests with acute onset of neurological deficits, ranging from localized pain to severe motor and sensory impairment, necessitating prompt diagnostic evaluation and intervention to mitigate permanent neurological sequelae (5). Despite its rarity, the condition mandates urgent surgical decompression to alleviate spinal cord compression and optimize functional recovery (6).

This report aims to contribute to the existing literature by elucidating the clinical course, management strategies, and outcomes associated with spontaneous thoracic epidural hematoma following heavy lifting, thereby emphasizing the importance of early recognition and intervention in optimizing patient outcomes.

CASE PRESENTATION:

Patient History:

A 29-year-old male presented to Ibn Sina University Hospital/Avicenne with a one-month history of dull upper back pain as he started going for routine gym workout, the pain initially began insidiously and was tolerable. The pain exacerbated significantly three days before admission following an episode of heavy lifting during routine gym workouts. The patient did not report any history of trauma, recent infections, or coagulation disorders. He had no significant medical history and was not on any regular medications.

Clinical Examination

Upon initial evaluation as an outpatient, the patient appeared uncomfortable but was neurologically intact, with no motor deficits noted. He was prescribed analgesics and advised to rest. However, one day after undergoing MRI, the patient returned during the night with sudden onset of complete inability to walk, accompanied by intermittent muscle spasms involving the abdomen and lower limbs. The MRI was requested due to the absence of clear evidence of spine trauma to rule out discopathies and spine tumors.

Neurological Assessment:

On examination, the patient was found to have paraparesis, with motor power graded at 3/5 in the right lower limb and 2/5 in the left lower limb. Bilateral hyporeflexia and hypotonia were noted, along with a absent plantar reflex bilaterally. Additional findings included absent anal wink and absent bulbocavernous reflex. Local examination revealed tenderness over the upper thoracic vertebrae without evidence of spinal deformity.

Diagnostic Imaging

The MRI results of the thoracic spine performed was traced, revealing a large epidural hematoma extending from T1 to T3 levels, causing significant spinal cord compression, as inidcated **Figure 1** below.

Laboratory Investigation

Complete blood count, coagulation profile, and other routine laboratory investigations were within normal limits, ruling out underlying hematologic disorders or coagulopathies.

Management and Surgical Intervention

Given the acute onset of neurological deficits and the MRI findings confirming spinal cord compression, the patient underwent emergent spine angiography to rule out vascular malformations or bleeding sources, which was unremarkable. Subsequently, he was prepared for surgical intervention consisting of posterior decompression via laminectomy and evacuation of the epidural hematoma at T1-T3 levels.

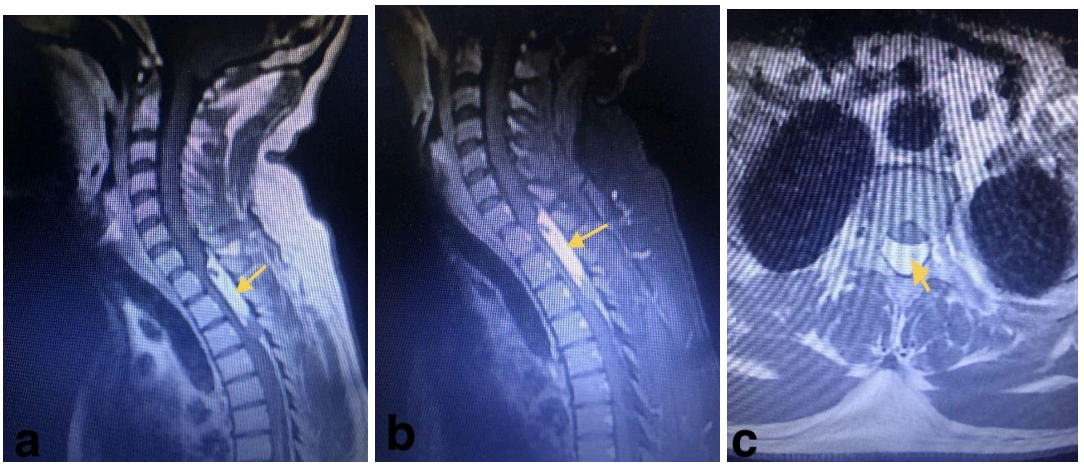
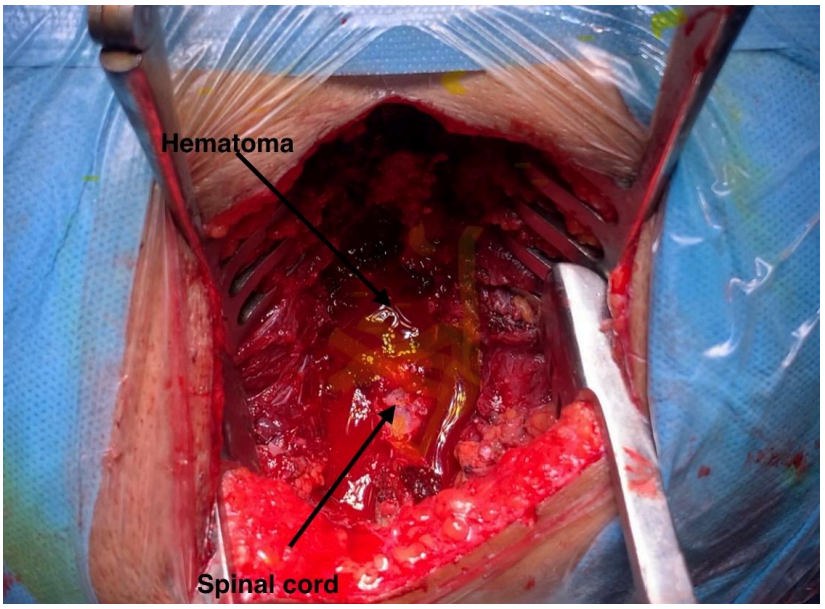


Figure 1: *Sagittal cut T1WI MRI without contrast (image a), sagittal and axial cut T1WI MRI with contrast (b and c images), all showing a hyperintense lesion in the extradural space between T1-T3 spinal cord level with evident mass effect on the spinal cord as indicated by the yellow arrows.*

Figure 2: *Intraoperative image showing spinal cord with surrounding hematoma*



Postoperative Course

Immediate postoperative neurological assessment revealed complete paraplegia with motor power graded at 0/5 bilaterally, accompanied by persistent hyporeflexia and hypotonia. However, within 24 hours post-surgery, the patient demonstrated gradual improvement in motor function, with physical rehabilitation and follow-up appointments to monitor long-term complete resolution of paraplegia and restoration of neurological function to baseline.

Outcome and Follow-up

The patient experienced a favourable recovery with complete neurological restoration. He was discharged home with neurological recovery and prevent recurrence.

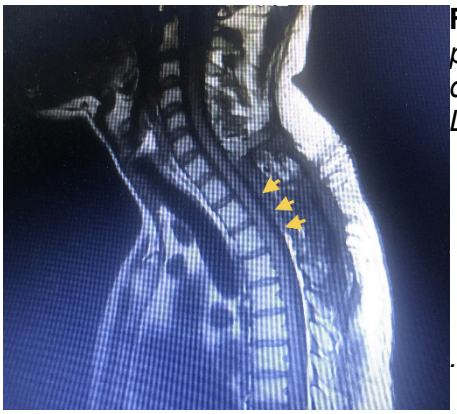


Figure 3: *A Sagittal cut T1WI MRI without contrast , performed 7 months post operation showing complete decompression of the spinal cord with evidence of Laminectomy T1-T3 as indicated by the yellow arrows*

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DISCUSSION

Spontaneous spinal epidural hematoma (SSEH) is a rare condition characterized by the accumulation of blood within the epidural space of the spine without an apparent traumatic or iatrogenic cause. Although its exact etiology remains unclear, several predisposing factors have been proposed, including vascular malformations, coagulopathies, and activities causing sudden increases in intra-abdominal or intra-thoracic pressure, such as heavy lifting (2,6).

SSEH accounts for less than 1% of all spinal epidural space-occupying lesions, with an estimated incidence of approximately 0.1 per 100,000 individuals per year (1). It predominantly affects adults in their third to fifth decades of life, with a slight male predominance (7). The rarity of SSEH poses challenges in understanding its true epidemiology and identifying definitive risk factors. While activities associated with sudden increases in intrathoracic or intra-abdominal pressure, such as coughing, sneezing, or heavy lifting, have been implicated, the precise mechanism by which these activities lead to epidural hematoma formation remains speculative (8).

The clinical presentation of SSEH varies widely depending on the extent and rapidity of spinal cord compression. Patients typically present with acute or subacute onset of severe back pain, often radiating to the extremities, followed by progressive neurological deficits. Motor weakness, sensory disturbances, and bladder or bowel dysfunction are common manifestations (3). In this case, the patient initially experienced insidious back pain that worsened acutely after heavy lifting, leading to paraparesis and neurogenic bladder symptoms prompting urgent medical evaluation.

Diagnostic confirmation of SSEH is achieved through advanced imaging, primarily MRI, which reveals the characteristic hyperintense epidural mass on T1-weighted images and hypointense signal on T2-weighted images. MRI is essential not only for diagnosis but also for determining the precise location, size, and degree of spinal cord compression, guiding therapeutic decision-making (5).

Early surgical decompression via laminectomy and hematoma evacuation is the cornerstone of management for SSEH. The timing of surgery is critical, as delayed intervention may result in irreversible spinal cord injury and permanent neurological deficits. In this case, emergent surgical intervention promptly relieved spinal cord compression, although transient postoperative paraplegia was observed, which fortunately resolved within 24 hours, leading to complete neurological recovery (6,7).

Adjunctive measures such as spine angiography may be employed to rule out underlying vascular anomalies or bleeding sources contributing to hematoma formation. Postoperatively, close monitoring in a neurocritical care setting is essential to assess neurological status, manage potential complications, and facilitate early rehabilitation to optimize functional recovery.

The prognosis for SSEH largely depends on

the timeliness of diagnosis and intervention, as well as the extent of spinal cord injury at presentation. Favorable outcomes, including complete neurological recovery, are achievable with prompt surgical decompression, as demonstrated in this case. However, long-term follow-up is crucial to monitor for potential complications, including recurrent hematoma formation, chronic pain syndromes, and residual neurological deficits.

Conclusion

This case report highlights the clinical complexities associated with spontaneous spinal epidural hematoma, emphasizing the importance of considering SSEH in the differential diagnosis of acute spinal cord compression, particularly in young, otherwise healthy individuals presenting with sudden-onset back pain following minor exertional activities. Enhanced awareness among healthcare providers is essential for timely recognition, appropriate diagnostic evaluation, and expedited surgical intervention, all of which are pivotal in optimizing patient outcomes and minimizing long-term morbidity associated with this rare but potentially devastating condition.

Patient's perspective

I was on treatment for a long time but relieved to feel normal now after a long period of time despite going to the hospital multiple times. However, it was a painful experience especially after surgery but am very thankful to the whole team especially the nurses who took a lot of care of me.

Ethical Approval:

Our institution requires no ethical approval for individual case report.

Declarations of Interest: None.
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