

CASE REPORT

SPONTANEOUS CERVICO-THORACIC SPINAL EPIDURAL HEMATOMA IN AN ELDERLY PATIENT: A RARE PRESENTATION

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ABSTRACT

Spontaneous spinal epidural hematoma (SSEH) is a rare entity. SSEH is an accumulation of blood in the vertebral epidural space in the absence of trauma or iatrogenic procedure like lumbar puncture. The incidence of SSEH has been estimated at 0.1 patients per 100,000 individuals and represents less than 1% of spinal space-occupying lesions. Here we are presenting case of a 65-year-old female hypertensive on treatment with controlled blood pressure, who presented with sudden onset paraplegia and weakness of muscles of hand, associated with urinary and bowel incontinence that started 6 hours before presenting to Emergency Room. Patient was subjected to MRI spine that revealed a collection in spinal epidural space, hypointense in T1W images and hyperintense in T2W images, extending from C6-C7 to T1-T2 suggestive of acute / subacute epidural hematoma. In our case all possible causes of an epidural haematoma were ruled out by relevant investigations. Patient was subjected to surgical evacuation of hematoma after 48 hours of presentation. Perioperative and Postoperative period was uneventful. Sensations over involved areas improved. Motor weakness also improved from Grade III to Grade IV+ in bilateral lower limbs and from Grade II to Grade IV in small muscles of hand and triceps, however Patient persisted with urinary incontinence.

Conclusion: When a patient receiving anticoagulant therapy complains of sudden and unexplained neck or back pain, we should suspect the possibility of SSEH. For early diagnosis, immediate MRI is essential. In addition, we should consider SSEH as one of the important differential diagnoses in elderly patients who have developed acute myelopathy.

Keywords: Spinal Epidural Hematoma, Mri, Surgical Evacuation

INTRODUCTION

The incidence of Spontaneous Spinal epidural hematoma (SSEH) has been estimated at 0.1 patients per 100,000 individuals and represents less than 1% of spinal space-occupying lesions¹. SSEH usually presents with sudden onset of neck or back pain followed by symptoms and signs of rapidly evolving nerve root and spinal cord compression. The early diagnosis and prompt management correlate with good outcome but still remain a challenge. Here, we report a case of idiopathic SSEH involving cervico-thoracic spinal segments (C6-T2) and review the relevant literature.

CASE PRESENTATION

Our patient is a 65-year-old female hypertensive on treatment with controlled blood pressure, nondiabetic with no significant past history presented with sudden onset pain along neck followed by weakness of bilateral lower limbs and muscles of hand, associated with urinary and bowel incontinence that started 6 hours

before presenting to Emergency Room, on examination patient was conscious oriented to time place and person, pulse was 84 beats per minute regular, good volume, blood pressure was 130/80 mmHg, respiratory rate was 22 per minute and she was afebrile. On Systemic examination, Respiratory system examination revealed abdominothoracic respiration with decreased chest expansion and Neurological examination revealed grade III power in bilateral lower limbs, in upper limbs biceps has grade V power bilaterally, but distal muscles of hand as well as triceps had grade II power, sensations were decreased below the level of C8 dermatome, among superficial reflexes abdominal, anal & planters were bilaterally absent. Among deep tendon reflexes biceps jerk (2+), supinator jerk (2+), triceps (1+), all deep tendon reflexes in lower limbs were absent. No external deformity along spine was noted.

On investigations complete blood count, kidney function tests, liver function tests, coagulogram, serum electrolytes were within normal limits. Serum biochemistry, electrocardiography chest roentgenogram were normal.



Fig 1: T1 weighted MR image of cervical and upper dorsal spine revealing a hypointense collection s/o epidural haematoma extending from C6 to T2 Vertebrae)



Fig 2: T2 weighted MR image of cervical and upper dorsal spine revealing a hyperintense collection s/o epidural haematoma extending from C6 to T2 Vertebrae

Patient was subjected to MRI spine that revealed a collection in spinal epidural space, hypointense in T1W images (fig 1) and hyperintense in T2W images (fig. 2) extending from C6-C7 to T1-T2 suggestive of acute / subacute epidural hematoma .MR angiography of spine was done that failed to show any vascular abnormality of the cervico-dorsal spine. On the basis of these findings a diagnosis of spontaneous cervico-dorsal spinal epidural hematoma (SSEH) was made.

Patient was subjected to surgical evacuation of hematoma after 48 hours of presentation. Perioperative and Postoperative period was uneventful . Sensations over involved areas improved. Motor weakness also improved from Grade III to Grade IV+ in bilateral lower limbs and from Grade II to Grade IV in small muscles of hand and triceps, however Patient persisted with urinary incontinence.

DISCUSSION

Spontaneous spinal epidural hematoma (SSEH) is a rare entity. SSEH is an accumulation of blood in the vertebral epidural space in the absence of trauma or iatrogenic procedure like lumbar puncture. Some authors include hematomas secondary to coagulopathy, vascular malformations and hemorrhagic tumors in SSEH. The other authors claim, however, that hematoma can be labeled spontaneous only when it is of idiopathic origin². Its rate of incidence is unknown. In previous studies, idiopathic cases accounts for approximate 40% to 61%^{1,3}.

The location and onset age of SSEH have a bimodal distribution with the location peaks at C6 and T12 and onset age peaks at 15-20 years and 65-70 years respectively^{4,5}. The gender ratio (male:female) is 1.4:1⁶. Predisposing conditions include pre-existing coagulopathies, anticoagulant therapies, vascular malformations, arteritis, eclampsia or iatrogenic causes such as spinal and epidural injections. SSEH occurs with a sudden onset of cervical or back pain and is followed by radicular symptoms and paralysis^{7,9}.

In our case all possible causes of an epidural haematoma were ruled out by relevant investigations . The progression of the clinical deterioration begun with localized radicular pain in the neck and arms that progressed to motor weakness in the limbs and sensory deficit. The location of the epidural haematoma was confirmed by MRI of cervical-thoracic cord extending from C2 to T6. The early MR images of acute SEH reveal isointense or hypointense on T1-weighted images and hyperintense on T2-weighted images. In addition to specific signal changes, contrast enhancement pattern and morphological findings on MR images can differentiate acute SEH from spinal epidural neoplastic mass or abscess¹⁰.

Acute disc herniation, spinal tumor, spinal tuberculosis, intradural or extradural tumors, pyogenic spondylitis and extradural abscess are considered in the differential diagnosis, and most of these conditions can be

differentiated from SSEH on the basis of their MRI features (see table no.1). The MR images of the epidural hematoma in the present patient revealed a collection in spinal epidural space, hypointense in T1W images and hyperintense in T2W images, extending from C₆-C₇ to T₁-T₂ suggestive of acute epidural hematoma these findings were consistent with those of SSEH.

The pathogenesis of SSEH is not clear. The literature till date, supports the source of hematoma to be of both

venous and arterial origins. The venous etiology hypothesis argues genesis of hematoma to be due to lacks of venous valves in epidural venous plexus with sudden increasing pressure from the thoracic or abdominal cavity leading to vessel rupture and hemorrhage¹¹. The arterial hypothesis supports the genesis to be related to the rupture of spinal epidural artery because the pressure in venous plexus is lower than that in epidural space¹.

Table 1: Differential Diagnosis

Acute Disc Herniation	MRI exquisitely delineates herniated nucleus pulposus (HNP) and its relationship with adjacent soft tissues. On MRI, HNPs appear as focal, asymmetric protrusions of disk material beyond the confines of the anulus. HNPs themselves are usually hypointense. However, because disk herniations are often associated with a radial anular tear, high signal intensity in the posterior anulus is often seen on sagittal T2-weighted images. On sagittal MRIs, the relationship of HNPs and degenerated facets to exiting nerve roots within the neural foramina is well delineated. In addition, free fragments of the disk are easily detected on MRI.
Spinal Tumor	Depending on the location of tumor MRI findings are variable.
Spinal Tuberculosis	MRI findings in Pott disease include thin and smooth enhancement of the abscess wall and a well-defined paraspinal abnormal signal.
Pyogenic Spondylitis	Thick and irregular enhancement of the abscess wall and an ill-defined paraspinal abnormal signal suggest pyogenic spondylitis.

The primary treatment for SSEH is surgical evacuation at an early stage. Surgical treatments within 36 hours after the onset of paralysis in patients with complete dysfunction of the spinal cord are expected to show improved outcomes¹².

The prognosis of SSEH correlates with the *size* and *level* of hematoma, *time interval* between symptom onset and surgery and severity of pre-operative neurological deficits. The common levels of SSEH ranges between 2 and 10 spinal segments⁽¹³⁾ The hematomas longer than it predicts worse outcome. The surgical outcome of SSEH is inversely related to the time interval between symptoms onset and surgery^{12,14,15}. The likelihood of recovery improved significantly when operations were performed within 36 and 48 hrs in SSEH patients with complete and incomplete deficits respectively¹¹.

For patients with incomplete dysfunction of the spinal cord, favorable outcomes are highly correlated with surgical treatments within 48 hours (12). Severe neurologic symptoms, high levels of spinal cord dysfunction, and old age are the factors responsible for adverse outcomes¹⁶.

Spontaneous improvements are reported in patients with a lower magnitude of paralysis and neurological recovery occurring at an early stage (less than 24 hours) after hemorrhage^{5,21}

In our patient Paraplegia with weakness of muscles of hand was present and the spinal cord was affected from the cervical to dorsal level (C₆ to T₂) level. Early diagnosis plays an important role in the prognosis of SSEH, and surgical evacuation of the hematoma should

be considered even in elderly patients over 80 years old. In this case, the patient had no episodes of trauma, and PT-INR levels were controlled within the therapeutic range. Many of the elderly use anticoagulant agents and have spondylitis and episodes of hypertension, which means elderly patients have more factors predisposing to SSEH¹⁷.

CONCLUSION

When a patient receiving anticoagulant therapy complains of sudden and unexplained neck or back pain, we should suspect the possibility of SSEH. For early diagnosis, immediate MRI is essential⁸. In addition, we should consider SSEH as one of the important differential diagnoses in elderly patients who have developed acute myelopathy.

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