

## Spontaneous Cervical Epidural Hematoma with Stroke Manifestations

### Abstract

Spontaneous cervical epidural hematoma (SCEH), which is a rare disease, is manifested as by a sudden quadriplegia or paraplegia and other neurological deficits. SCEH can compress the spinal cord resulting in its clinical manifestations. The reported etiological risk factors are anticoagulants, coagulopathies, vascular malformations, infections, and herniated discs. Here, we report a 77-year-old woman with a presenting chief complaint of left hemiparesis and a history of hypertension. The medical drugs in use were aspirin and antihypertensives. The initiating presentations were hemiparesis, in favor of ischemic stroke, so the patient admitted to neurology ward and received anticoagulant therapy with the initial diagnosis of stroke. Although clinical manifestations and examinations are important in these patients due to mimicking stroke picture, imaging evaluation is paramount for a definite diagnosis, which in our case showed a SCEH, who was suspected to have an ischemic stroke during the initial assessment because its initial demonstration mimicked ischemic stroke. This patient underwent laminectomy after 3 days and showed a clinical recovery the day after. Her muscle strength improved gradually, and neurological symptoms were diminished after physiotherapy.

**Keywords:** Laminectomy management, spontaneous cervical epidural hematoma, stroke symptoms

### Introduction

Spontaneous cervical epidural hematoma (SCEH) is a rare disease. Due to resultant spinal cord compression, sudden quadriplegia or paraplegia and other neurological deficits can occur in turn.<sup>[1]</sup> SCEH can frequently arise from usage of anticoagulants, coagulopathies, vascular malformations, infections, and herniated intervertebral discs.<sup>[2]</sup> Although various studies have suggested an emergency surgery for improving the neurological symptoms of the disease,<sup>[3]</sup> lack of appropriate and timely treatment can result in deterioration of spinal cord compression and permanent neural defects or even death.<sup>[4]</sup> Therefore, early diagnosis of SCEH can help in preventing the potential complications. Here, we present a case with hemiparesis and a primary diagnosis of stroke, who was later diagnosed with SCEH and operated accordingly.

### Case Report

A 77-year-old woman with a sudden onset of left hemiparesis was admitted to our hospital. She had a previous history of

hypertension and usage of aspirin and antihypertensive drugs and was suspected of acute stroke.

After admission to the neurology ward and initiation of anticoagulant therapy, she progressed a severe neck pain irradiating in both shoulders, particularly to the left side, urinary incontinence, and quadriparesis. There was no previous history of neck trauma. The patient was conscious on examination and showed normal cranial nerve functions. She experienced pain in neck with a movement limitation. The neurological examination revealed quadriparesis which was more severe at the left side (left upper extremity force of M3 proximally and M2 distally). Muscle strength of the left lower extremities both in distal and proximal was M1. Muscle strength in the right side was M3 in the upper and lower extremities. Deep tendon reflexes decreased in the left extremities, without evidence of sustained clonus, and the Babinski sign was positive in the left foot. The patient was treated by enoxaparin and aspirin due to initial suspicion of stroke with hemiparesis. However, quadriparesis and intensified neck pain were seen on the 2nd day. Thereafter, X-ray images of

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her neck showed apparent degenerative changes. Magnetic resonance imaging (MRI) scans showed a lesion in the posterior epidural space of the neck parallel to C3-T1 area in T1 and T2 sequences with mixed signals, as well as spinal cord edema due to cord compression [Figures 1 and 2]. The expansion of the cervical epidural hematoma was likely due to anticoagulant usage by the patient.

There was a hyperdense area in epidural space in the CT scan [Figure 3]. The patient underwent an emergent cervical decompressive laminectomy wherein a dark brownish epidural hematoma compressing the spinal cord was found and resected. Following the surgery, the patient showed an improvement in the muscle forces of four limbs the day after surgery and gained complete muscle strength after physiotherapy.

## Discussion

Symptoms of SCEH include both motor and sensory impairments along with sphincter disorders.<sup>[3]</sup> There has been an increasing trend in the prevalence of the disease probably due to an increase in administration of antiplatelet and anticoagulant medications for cardiovascular and cerebrovascular diseases. Modalities such as MRI facilitate the diagnosis of the neurologic diseases.<sup>[5]</sup> Blood coagulopathies, infection, pregnancy, tumors, herniated discs, Paget's disease, and vascular malformation are additional etiological risk factors.<sup>[6]</sup> The idiopathic causes of SCEH are more common and account for 40%–50% of the cases.

Clinical manifestations and neurologic examinations are important due to mimicking the cerebral stroke signs and

symptoms; however, imaging findings are often necessary for a definite diagnosis.<sup>[3]</sup> Symptoms commonly begin suddenly, and the patient develops neck pain, followed by motor or sensory impairment associated with the compression of hematoma on the spinal cord and nerve roots. Some patients may have only cervical pain with radiculopathy similar to disc herniation; and in most of the cases, the disease progresses toward a neurological deficit.<sup>[7]</sup>

MRI is the method of choice for selective examination of these patients, providing detailed information regarding the amount and exact location of hematoma and the amount of pressure on the spinal cord.<sup>[8]</sup>

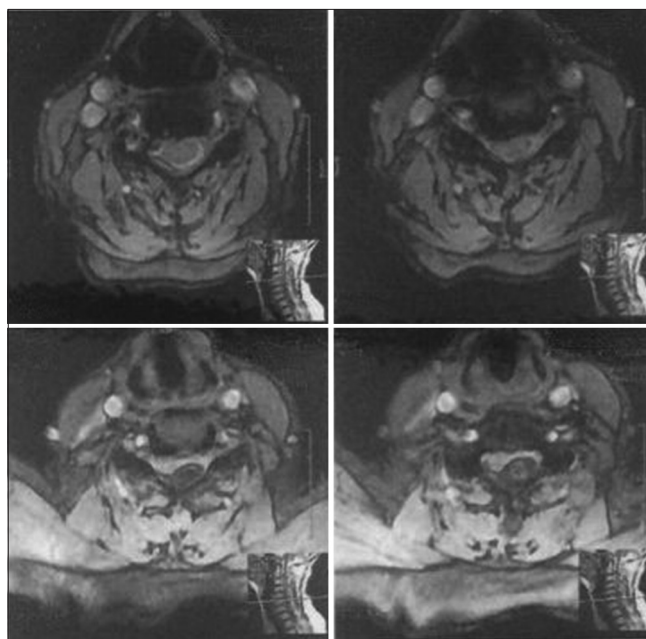
This is an uncommon case because the patient was hospitalized and treated for stroke; afterward, the signs and symptoms were exacerbated. In the initial suspicion of the disease, the cervical spine MRI should immediately be taken for earlier diagnosis and treatment of the disease. The diagnosis is initially difficult and may be delayed as it may appear with the signs and symptoms of the stroke or herniated disc.

Our patient has been receiving antiplatelet therapy since 5 years ago. Antiplatelet and anticoagulants are a known risk factors for intracerebral and intraspinal hemorrhage,<sup>[9]</sup> as 25%–70% of reported SCEH cases are treated with such medications.<sup>[10]</sup>

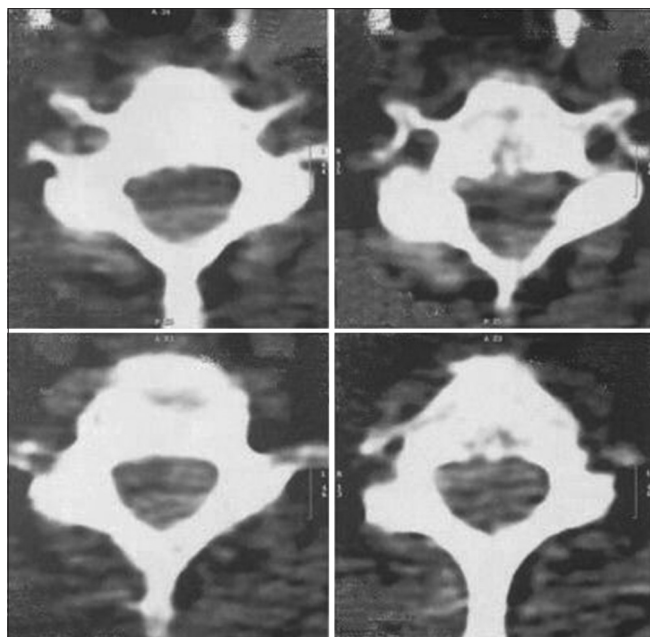
According to previous reports, emergency surgical treatment is indicated for better neurologic outcomes.<sup>[9]</sup> The neurological improvement depends on the severity of the symptoms before the surgery and the time between the onset of symptoms and the surgical intervention<sup>[11]</sup> as decompressive surgical treatment is effective if it is



**Figure 1:** T1-weighted sagittal magnetic resonance images showing a mixed intensity acute hematoma compressing the spinal cord in epidural space at the C3-T1 levels



**Figure 2:** T2-weighted axial magnetic resonance images showing a mixed intensity acute hematoma compressing the spinal cord in epidural space at the C3-T1 levels



**Figure 3: Axial computed tomography scan of cervical spine showing hyperdensity in epidural space**

performed during the first 36 h after the disease onset.<sup>[12]</sup> Furthermore, it has been shown that the best outcome can be achieved in patients with full-fledged neuropathy undergoing decompressive surgery during the first 36 h and those with incomplete neural impairment undergoing surgery within 48 h. Therefore, early diagnosis and decompressive surgery is a key to clinical improvement of these patients.<sup>[13]</sup> Nonsurgical and conservative treatment is also recommended for the patients with minimal neural defects or clinical evidence of the spontaneous recovery.<sup>[14]</sup> In the present report, the patient underwent surgery on the 3<sup>rd</sup> day after the onset of symptoms and showed clinical improvement within the first 24 h postoperatively. Her limbs' muscle strength gradually increased, and physical therapy and rehabilitation improved her neurological symptoms afterward.

Epidural hematoma is a serious complication after spine surgery. Low-molecular-weight heparin prophylaxis is associated with a low risk of hemorrhage started 24–36 h after spine surgery.<sup>[15]</sup>

SCEH is a rare disease with acute onset and can be misdiagnosed. In our case, the initial diagnosis was stroke, and the patient has been treated with anticoagulant therapy. Irreversible consequences and complications of this disease can be avoided by detailed clinical examination and early diagnosis and treatment.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not

be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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#### Conflicts of interest

There are no conflicts of interest.

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