

# Non-traumatic Spontaneous Spinal Subdural Hematoma in a Patient with Acute Paraplegia

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## Abstract

Acute non-traumatic spinal subdural hematoma (SSDH) is a rare clinical condition in the emergency medicine practice and difficult to diagnose during the primary physical examination. It mostly occurs at thoracic vertebra levels due to trauma, use of anticoagulants, medical procedures such as acupuncture, arteriovenous malformations, hematological disorders or space-occupying lesions. Here, we discussed an elderly female patient who was not on anticoagulant and described sudden loss of muscle strength and sensation in both lower extremities. Initial laboratory and imaging including brain computerized tomography (CT) and magnetic resonance imaging (MRI) were in normal range. Patient's secondary examination revealed anesthesia under the T4 dermatome level. Cervical spine-MRI in Spin Eco (SE) T1, Fast Spin Eco (FSE) T2 in sagittal plane; SE T1 weighted in axial and sagittal planes revealed a subdural hematoma significantly compressing the spinal cord on the C7-T1 dermatome segments. Any emergency neurosurgical intervention was not considered and the patient was interned in the neurosurgical clinic for conservative treatment and further examination. Patient, with no progress seen in consecutive MRI scans, was discharged after offering an outpatient check-up. We recommend secondary physical examination in emergency department (ED). In the case of appearance of sensory deficits of certain dermatomes, spine-MRI may lead to put the diagnose early in ED.

**Keywords:** Non-traumatic, spinal subdural hematoma, spontaneous paraplegia

## Introduction

Acute spontaneous spinal subdural hematoma (SSDH) is a rare clinical condition in the emergency medicine practice. In most cases, it is very difficult to diagnose during the primary physical examination. Most of the time no pathology is identified to explain the current clinical condition, repeated physical examinations and suspicion may lead to further investigation and diagnosis. Spinal subdural hematomas (SSDHs) may develop post-traumatically as well as due to interventional procedures such as spinal anesthesia or puncture on the spinal region, acupuncture, use of anticoagulants, arteriovenous malformations, hematological disorders or space-occupying lesions<sup>1</sup>. While SSDHs account for about 4.1% of all spinal hematomas, their spontaneous development is more rarely seen and can lead to severe neurological loss<sup>2</sup>. Early clinical signs vary depending on the level and size of the hematoma. Complaints such as weakness and sensation loss in the extremities and pain can often develop, but also sudden death may occur as a result of cervical upper level compression<sup>3,4,5</sup>. Diagnosis is made by magnetic resonance imaging (MRI).

Here, we discussed the SSDH diagnosis process in an elderly female patient who was not on anticoagulant and described sudden loss of muscle strength and sensation in both lower extremities.

## Case Report

A 75-year-old female patient was brought to our emergency department due to neck pain and headache started about four hours ago followed by nausea-vomiting and change in consciousness. Patient had history of hypertension and diabetes, but patient's treatment compliance had been irregular. Patient's vital signs were arterial blood pressure (BP): 165/85 mmHg, temperature: 36.0°C, pulse rate: 85/min, electrocardiography in normal sinus rhythm, and fingertip SpO<sub>2</sub>: 96%. The neurological examination revealed confusion, partial cooperation, partial orientation, Glasgow Coma Scale (GCS):14 (E:3 V:5 M:6), isochoric pupils with normal light reflexes. She had sensory and motor deficit in both lower extremities. Deep tendon reflexes and plantar reflexes were absent. Complete blood count, prothrombin

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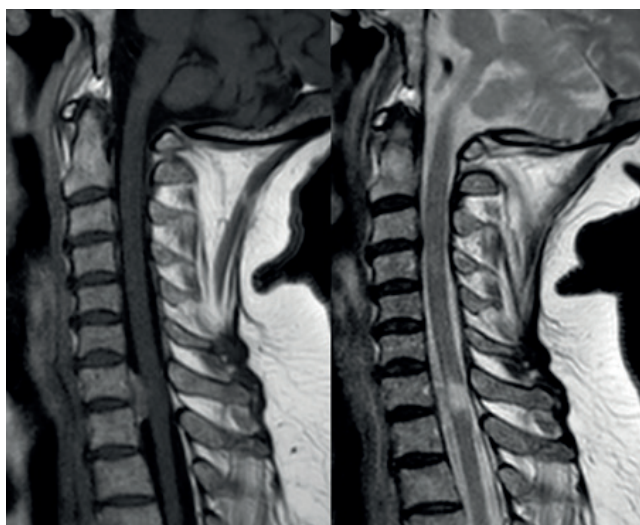
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time, activated partial thromboplastin time and International normalized ratio low (INR) as well as biochemical parameters were in normal range. Patient's non-contrast-enhanced and contrast-enhanced computerized tomography (CT) imaging and diffusion MRI results were considered normal. The secondary examination revealed anesthesia under the level from T4 vertebral segment. Further spinal canal examinations to explain the possible causes paraplegia revealed a subdural hematoma significantly compressing the spinal cord between the C7-T1 vertebral segments (Figure 1). The patient was then hospitalized for further investigation and treatment after neurosurgery consultation. A detailed consent statement report that has written by patient is present. 'In the neurological examination performed at the discharge, it was learned that the patient had paraplegia and hypoesthesia starting from the T4 level.'

## Discussion

Acute SSDH is a rare condition with unpredictable clinical presentation. Rapidly progressive symptoms due to spinal cord pressure such as sudden onset headache and back pain, sensory-motor change, and autonomous and cardiac dysfunction may develop<sup>6</sup>. Our patient had motor and sensory loss in both lower extremities accompanied by sudden confusion. Known causes usually include trauma, coagulopathy, vascular malformations, spinal inflammatory diseases, spinal space-occupying lesions, systemic comorbidities, psychosomatic disorders and iatrogenic injuries. However, we could not identify any additional pathology except for the history of hypertension and diabetes. The age of cases range between 45 and 60 years,



**Figure 1.** 60<sup>th</sup> day control cervical MRI sagittal plan T1 and T2 images; on the T1-weighted examination, it was noted that the subdural hematoma caused pressure on the medulla, and that T2 hyperintensity (myelomalacia) was present in the medulla.

and it was frequently observed in the thoracic part of the spinal canal<sup>2,7,8</sup>. Our 65-years-old patient had hemorrhage at the level of cervical spines. While its pathogenesis is uncertain, SSDH is the mostly recognized subarachnoid hemorrhage (SAH). The subarachnoid space has a dense plexus of capillaries, and rupture of these radiculomedullary vessels as a result of minor trauma caused by increased intra-abdominal and intra-thoracic pressure associated with events such as cough or yawning has been previously accused. Because of the continuation of cerebrospinal fluid (CSF) flow during the early phase of bleeding and dilution of clotting formation by CSF, thrombosis may not be sufficient leading to SDH<sup>6,8,9</sup>. Therefore in SSDH, the duration of initial clinical symptoms may range from several hours to as long as several months<sup>10</sup>. In our patient, the complaints had started about four hours before the admission.

The treatment options include conservative treatments such as intravenous methylprednisolone therapy and percutaneous drainage as well as surgical decompression. There is consensus on conservative treatment in patients with comorbidities and minimal neurological deficits. Our patient was referred to the Neurosurgery for further investigation to determine the etiology of the hematoma and treatment. Patient, with no progress seen in consecutive MRI scans, was discharged after offering an outpatient check-up.

SSDH is a condition which is very difficult to diagnose during the primary examination in cases accompanied by change in consciousness in the emergency medicine practice, and delayed diagnosis may lead to severe neurological loss. We recommend secondary physical examination in ED. In the case of appearance of sensory deficits of certain dermatomes, spine-MRI may lead to put the diagnose early in ED. Repeated MRI guides the way to determine the optimal treatment method for the patient by showing dynamic changes.

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