Case Report

A Rare Cause of Back Pain: Spontaneous Spinal Epidural Hematomas

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Abstract

Spontaneous spinal epidural hematoma (SSEH) is a very rare clinical condition, which requires urgent surgery. It may result, if diagnosis and treatment are delayed, in a permanent neurological deficit or even in death.

In this article, we present three cases with SSEH, a 27 year-old male patient with a severe back pain following heavy lifting, and an 18 year-old male patient with complaints of acute onset pain on cervico-thoracic region and acute neurologic deficits in lower extremities, and a 5 year-old hemophiliac boy who had some complaints such as back and neck pain and torticollis who were admitted to our clinic.

Physicians should consider diagnosis of SSEH, especially when a patient presents with sudden-onset back or neck pain with or without symptoms or signs of spinal cord compression and it should also be kept in mind that SSEH can manifest itself as an unusual presentation such as torticollis.

Keywords: Spontaneous spinal epidural hematoma, etiology, back pain, management

Sırt Ağrısının Nadir Bir Nedeni: Spontan Spinal Epidural Hematomlar

Özet

Spontan spinal epidural hematomlar (SSEH) acil cerrahi tedavi gerektiren nadir bir klinik durumdur. Tanı ve tedavisi geçikirse kalıcı nörolojik hasar hatta ölümle sonuçlanabilir.

Makalenizde, klinigimizde kabul edilen SSEH"lu üç olguyu; ağır kaldırmayı takiben çıkan şiddetli sırt ağrısi olan 27 yaşında erkek olgu, servikotorasik bölgede ani başlayan ağrı ve alt ekstremitede nörolojik defisiti olan 18 yaşındaki erkek olgu ve sırt ve boyun ağrısi ve tortikollisi olan hemofili hastası 5 yaşında erkek olguyu sunuyoruz.

Hekimler, özellikle aniden başlayan boyun ve sırt ağrısi olan olgularda spinal kord basısı semptom ve bulguları olsun veya olmasın, SSEH tanısını akla getirmeli, ayrıca SSEH'un tortikollis gibi alışılmadık bir tabloyla görülebileceği de akılda tutulmalıdır.

Anahtar Kelimeler: Spontan spinal epidural hematom, etiyoloji, sırt ağrısi, tedavi
INTRODUCTION

The term "spontaneous spinal epidural hematoma" (SSEH) includes those hematomas that occur in the spinal epidural space after minor trauma or physical exertion. The exact etiology is unknown. Predisposing factors that have been related to SSEH include pregnancy, ankylosing spondylarthitis, arterial hypertension, atherosclerosis, systemic disorders, disturbance of blood coagulation due either to the disease itself or to anticoagulant therapy, and vascular malformation\(^{(11,16,17)}\).

The majority of the cases typically present with acute onset of severe back or neck pain around the involved vertebrae with radiating pain around the corresponding dermatomes and rapidly develop signs of compression of the spinal cord or cauda equina such as sensory and/or motor deficit\(^{(5,14)}\).

SSEH usually occurs in the cervical and thoracic regions. Some authors have reported some patients who underwent conservative treatment. However, patients with this condition often require emergency attention because the hematomas can trigger acute neurological deficits\(^{(2,5,16)}\). MRI is the golden standard for diagnosis of SSEH. The signal characteristics of subacute and chronic SSEH have been described as hyperintense, isointense and hypointense on T1W images and as hyperintense on T2W images to the spinal cord\(^{(3,10)}\).

Three SSEH cases are presented and emergent approaches to these cases are discussed in this report.

CASE PRESENTATION

In the 18 and 27 year-old cases, all of the blood counts; the levels of urea, creatinine, and electrolytes; the activated partial thromboplastin time (aPTT); and the international normalized ratio (INR), were within normal limits, as was the clotting time. The cases had no history of systemic diseases such as hypertension, diabetes, or malignancy and had not taken any drugs up to that time. Their blood pressure was in normal range. Factor VIII level of the 5-year-old boy with severe hemophilia A was < 1%.

Case 1: A 27 year-old male patient was admitted to our emergency department (ED), complaining of severe back pain lasting more than 10 days. Analgesics were given to the patient due to a diagnosis of muscle pain by his own general practitioner. When he was admitted to our hospital, he had been taking analgesics for more than 10 days. On the fifth day of the hospitalization, his complaints of numbness in lower extremities started, too. The interval from the onset of the first symptoms to the development of numbness in lower extremities was about 15 days.

He had not taken any other drugs but analgesics given by his general practitioner before admittance. Thoracic MRI revealed both a solid lesion in epidural space compressing the T3-T5 region of the spinal cord dorsally and a solid lesion compressing the T1 region of the spinal cord ventrally. The lesion was iso/hyperintense on T1W and hypointense on T2W imaging (Figure 1), and did not exhibit contrast enhancement. T1W axial imaging showed that spinal cord compression was slightly pronounced on the right side. Spinal angiography in DSA technique was performed in our patient preoperatively to exclude a vascular malformation. The patient's complaints of severe pain did not respond to analgesics and immobilization.

The patient, who had an increase in complaints of numbness and pain, underwent hematoma evacuation on the 5th day of hospitalisation. Clinical symptoms improved immediately in early postoperative period. The patient stayed in hospital for 3 more days postoperatively and was then discharged with a follow-up plan. No abnormality was noted upon follow-up.
**Case 2:** An 18 year-old male patient complaining of sudden-onset severe back and neck pain, thereafter, weakness in the legs was admitted to our ED. There were no precipitating factors in his history. The condition progressed rapidly. Upon neurological examination, paraplegia was noted in the lower extremities.

MRI revealed a solid lesion in the posterior epidural space. T1W axial imaging showed that a hematoma was compressing the C7-T2 region of the spinal cord at mainly the left posterior level. The lesion was slightly hyperintense on T1W imaging to the cord (Figure 2), and did not exhibit contrast. Spinal angiography was not performed. The patient underwent urgent surgery and hematoma evacuation was performed. In the 6th month control, patient was totally normal.

**Case 3:** A 5-year-old boy with severe hemophilia A, whose Factor VIII (FVIII) level was < 1 %, was admitted with a 4-day history of neck and back pain and twisted neck. There was no history of systemic illness or trauma. On admission, the physical examination revealed left-sided torticollis, and his neurologic examination was normal. Neck movements were restricted and tender. Ultrasonography of sternocleidomastoid muscles and cranial MRI were both normal. Cervical MRI revealed a ventrally placed epidural hematoma in C2-T2 region with posterior displacement of the spinal cord (Figure 3). FVIII concentrate was infused intravenously. FVIII infusion was continued for 12 days. At the end of hospitalization, symptoms demonstrated almost complete recovery.

**Figure 1:** On thoracic MRG, a solid lesion in the posterior epidural space, compressing the T3-T5 region of the spinal cord dorsally and a solid lesion compressing the T1 region of the spinal cord ventrally. The lesion was iso/hyperintense on TIW sagittal imaging (arrows) (1a) and slightly hyperintense on TIW axial imaging (arrows) (1b).
DISCUSSION

Whereas the internal vertebral venous plexus is the most likely source of SSEH\(^{4,6,14}\), some researchers have considered an arterial source of bleeding that results from the disruption of a tortuous arterial plexus by traction on nerve roots\(^{6,8}\). Predisposing factors include coagulopathy, anticoagulation, vascular anomaly, disc herniation, Paget’s disease of bone, valsalva maneuver, neoplasm, pregnancy, hypertension, vasculitis and systemic lupus erythematosus\(^{3,5,9,12,17}\).

The annual incidence is estimated at 0.1 per 100,000 patients per year. It is mostly seen in the 4\(^{\text{th}}\) and 5\(^{\text{th}}\) decades and more common in men\(^{15,16}\). Our patients were men in 1\(^{\text{st}}\), 2\(^{\text{nd}}\) and 3\(^{\text{th}}\) decades.
SSEH is a very rare cause of neck and back pain. The clinical presentation usually features sudden-onset neck pain and neurological exam varying from mild paresthesia and weakness to paraplegia and myelopathy\(^\text{(5,7,14)}\). In some cases, the sphincter dysfunction or the Brown-Sequard syndrome may be noted\(^\text{(7,13)}\). Such clinical findings are not SSEH-specific; rather, they are associated with a number of different pathologies. Thus, SSEH cannot be diagnosed using clinical data alone.

MRI, myelography, and computerized tomography (CT) are used to diagnose spinal epidural hematomas. CT shows an epidural bleeding as a hyperdense mass, and is of limited utility in terms of differential diagnosis. Similarly, CT data cannot be used to determine when the bleeding commenced. Spinal angiography in DSA technique may be performed in the patient preoperatively to exclude a vascular malformation\(^\text{(7)}\).

MRI, affording a superior diagnostic capability, establishes the exact diagnosis and localization of SSEH in all cases. MRI also can provide useful information about the age of the hematoma\(^\text{(3,10)}\). Sagittal MRI clearly identifies the upper and lower borders of an epidural hematoma and determines whether the hematoma is located in the anterior or posterior region and whether cord compression is in play\(^\text{(2)}\). The signal characteristics of subacute and chronic SSEH have been described as hyperintense, isointense and hypointense on T1W images and as hyperintense on T2W image to the spinal cord\(^\text{(3,10)}\). Isointensity or hypointensity on T1W images is a feature that may confound the diagnosis of acute spinal EDH in patients of complicated clinical history such as the patients who have lymphoproliferative disorders, metastasis and lymphoma\(^\text{(3)}\).

Braun et al\(^\text{(1)}\), described the signal characteristics of SSEH on MRI as follows: The hyperacute hemorrhage is iso- to hypointense on T1W images and is hyperintense on T2W images and a peripheral rim of hypointensity might be seen. The acute hematoma is slightly hypo/isointense on T1W image and hypointense on T2W images. The early subacute hematoma is very hyperintense on T1W images and hypointense on T2W images. The late subacute hematoma is hyperintense on T1W and T2W images. The chronic hematoma is mainly hypointense on both T1W and T2W images. The optimal management of SSEH remains controversial because of potential for severe morbidity.

Although there is an increase in publications about conservative treatment\(^\text{(2,16)}\), reports from the literature suggest that surgical decompression and evacuation of the hematoma is still mainstay of the treatment\(^\text{(5)}\).

The fact that surgery should be performed even in patients with severe or complete deficits just as in our number 2 case is the general tendency in literature. As for conservative treatment, it should be reserved for patients who are neurologically stable and in good neurological condition. However, careful MRI surveillance is of vital importance\(^\text{(18)}\).

Because of the fact that SSEHs may have high morbidity ratio, detecting the source of SSEHs in planning the treatment modality is very important.

Some authors mentioned that immediate replacement therapy in patients with a coagulopathy allowed for spontaneous regression of the hematoma and complete neurologic recovery without the need for surgical decompression\(^\text{(5)}\). In support of this, symptoms of the 5 year-old-boy improved after FVIII concentrate infusion intravenously.

**CONCLUSION**

It is of vital importance for physicians to keep in mind the diagnosis of SSEH, especially when a patient has the presentation of sudden-onset back or neck pain with or without symptoms or signs of
spinal cord compression such as the first case and it should also be kept in mind that SSEH can manifest itself as an unusual presentation such as torticollis. Correct diagnosis of etiological disease will reduce mortality and morbidity due to SSEH.

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