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Spontaneous Cervical Epidural Hematoma Causing Brown-Sequard Syndrome: Case Report

Brown-Sequard Sendromuna Neden Olan Spontan Servikal Epidural Hematom: Olgu Sunumu

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ABSTRACT

OBJECTIVE: Spontaneously occurring epidural hematoma without any identified etiology is a rare phenomenon. These are often neurosurgical emergencies; therefore, prompt diagnosis and treatment are paramount. Because of the rarity of this condition, we illustrated its presentation, evaluation and management in this recent case.

CASE: A 63-year-old male presented to our emergency room with right-sided hemiparesis and contralateral hypoesthesia, consistent with a C5 Brown-Sequard syndrome. An initial evaluation for cerebral infarction was unremarkable, including a negative brain computerized tomography imaging. Cervical magnetic resonance imaging (MRI) revealed a cervical epidural hematoma. The patient underwent emergent laminectomy for decompression and evacuation of the hematoma within 24 hours of presentation to the emergency room. The patient's symptoms improved remarkably after surgery and a 4th-month follow-up MRI evaluation was normal.

CONCLUSION: This report highlights the various presentations, evaluation, and management options for this rare diagnosis. It emphasizes the necessity of prompt diagnosis for possible emergent intervention.

KEYWORDS: Cervical epidural hematoma, Brown-Sequard syndrome, Spinal cord, Acute hemiparesis, Surgical treatment, Acute neck pain

ÖZ

GİRİŞ: Tanımlanabilen bir etiyoloji olmaksızın spontan olarak meydana gelen servikal epidural hematom nadir görülen bir olgudur. Genellikle acil neroşirürjikal girişim gerektiren durumlardır ve bu nedenle acil tanı ve tedavi gerektirir. Bu yazıda, cerrahi olarak tedavi edilmiş, nadir görülen bir spontan servikal epidural hematom olgusu sunulmuştur.

METOD: 63 yaşındaki erkek hasta, C5 Brown-Sequard sendromu ile uyumlu, sağ hemiparezi ve karşı tarafta hipoestezi şikayeti ile acil kliniğimize başvurdu. Yapılan ilk muayenede serebral enfaktüs olabileceği şüphesi ile beyin tomografisi (BT) çektirildi ancak normaldi. Bunun üzerine servikal bir patoloji olabileceği düşünülerek çektirilen magnetic rezonans (MR) görüntülemesinde servikal epidural hematom tespit edildi. Hastaya hematom boşaltılması ve dekompresyon amacıyla laminektomi yapıldı. Hastanın semptomları operasyondan sonra belirgin olarak iyileşti. Dördüncü ay MR kontrolü normaldi.

TARTIŞMA: Bu olgu bildirisi, nadir görülen bu durumun belirtileri, değerlendirilmesi ve tedavisine dikkat çekmekte ve bu tip acil vakalarda erken teşhisin önemini vurgulamaktadır.

ANAHTAR SÖZCÜKLER: Servikal epidural hematom, Brown-Sequard Sendromu, Spinal kord, Akut hemiparezi, Cerrahi tedavi, Akut boyun ağrısı

INTRODUCTION

Spontaneous cervical epidural hematomas (SCEH) are well recognized but rare conditions. They were first described by Jackson in 1869 [14]. An etiology can't be identified in 40% of patients and these cases have been described as idiopathic spontaneous epidural hematomas [7]. The potential causes include coagulopathies, hypertension, conditions that increase venous pressure such as coughing, sneezing or vomiting, and vascular malformations [17]. The clinical presentation is characterized by acute radicular pain followed by a cord compression syndrome. The Brown-Sequard syndrome is an exceptional result of SCEH [10,6]. The standard therapy has been prompt evacuation of the hematoma. Cervicothoracic region is the most common region in which spontaneous epidural hematomas occur [9]. It occurs in the cervical region in 15% of SCEH cases [9]. We described a case of cervical spontaneous epidural hematoma presenting with a Brown-Sequard syndrome and treated by surgical evacuation.

CASE REPORT

The patient, a previously healthy 63-year-old man, presented at the emergency room complaining of acute neck pain and weakness of the right side which occurred during sleep. It was learned from the history that he had been evaluated in neurology emergency room within six hours of the onset. In the neurology emergency room, an initial suspicion of a cerebrovascular accident was negated by brain computerized tomography (CT). The patient was transferred to neurosurgery after a cervical epidural hematoma was diagnosed with cervical magnetic resonance imaging (MRI) study.

His medical history revealed that he had neither drug abuse nor cervical trauma and a chronic disease. On neurological examination; he was conscious, oriented and cooperative, pupils were isocoric and reactive bilaterally, cranial nerves were intact. He had right-sided hemiparesis (3/5), reduced sensation of vibration and position ipsilaterally, and of pain and temperature contralaterally below the C5 level. Deep tendon reflexes were hyperactive and plantar response was extensor on the right side. Cervical MRI revealed a cervical epidural hematoma extending from C4 to C6 (Figure 2). Immediate spinal angiography was performed in order to diagnose an underlying pathology. The patient had a normal spinal angiogram and underwent C5 and C6 laminectomy with removal of hematoma (Figure 1). There was a significant improvement of the weakness on the right side when he was discharged from the hospital at the sixth day of the operation. He had almost complete functional recovery at the 2-month follow-up (Figure 3).

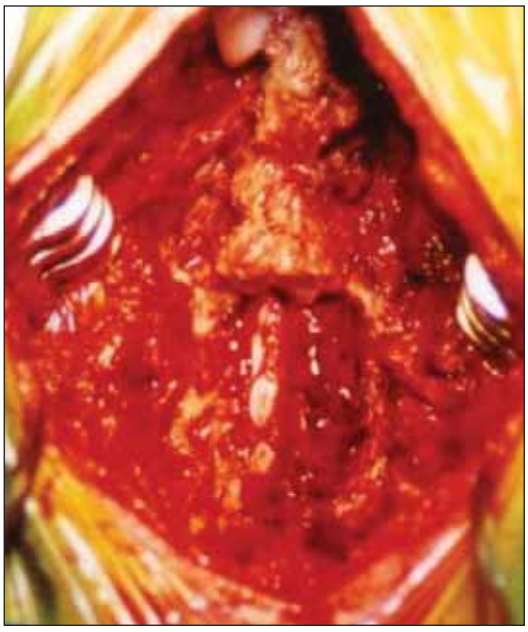

Figure 1. *T2-weighted sagittal magnetic resonance image of spontaneous cervical epidural hematoma: Hyperintense mass compressing the posterior aspect of the spinal canal from approximately C5 to C7.*

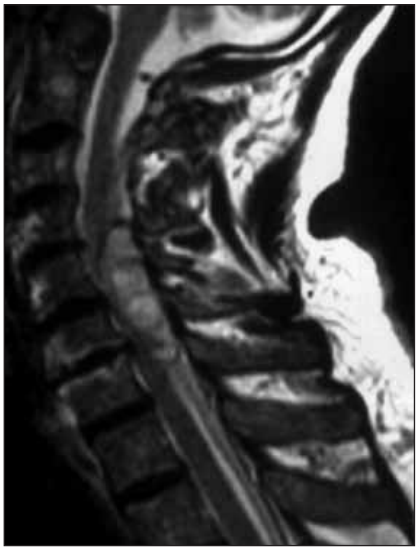

Figure 2. *C5, C6 laminectomy performed, right paramedian localized hematoma clot*

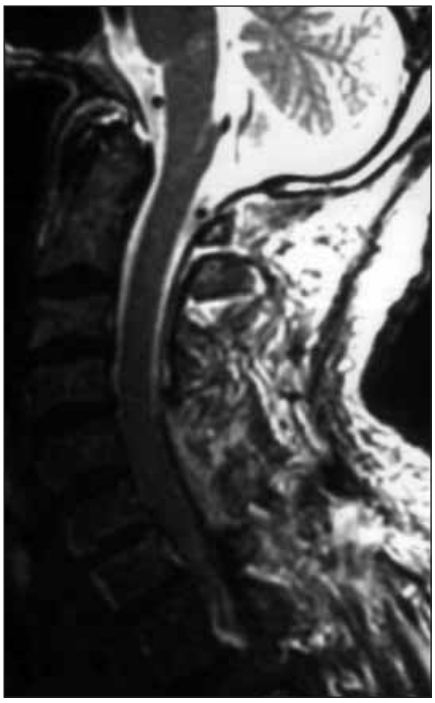

Figure 3. *Postoperative T2-weighted magnetic resonance image after evacuation of hematoma and decompression of cervical spinal cord.*

DISCUSSION

Spontaneous cervical epidural hematoma was first described in 1869 by Jackson [14] and the first surgical approach was performed in 1946 by Ver Bruggen [19] Vascular malformation [2], anticoagulant therapy [7], neoplasm or systemic disease [11] are well known causes. However, the cause of the bleeding remains unknown in 40% of the cases and are called idiopathic spontaneous cervical epidural hematoma [7].

It is still debated whether the etiology of spontaneous epidural hematoma is arterial or venous. Those who support the theory of venous origin claim that epidural veins have thin walls and no valves. As a result of a sudden increase of intrathoracic and intraabdominal pressure after valsalva manoeuvres like coughing, sneezing, straining, swimming, defecation, micturition, vomiting and coitus, lacerations may occur in the venous plexus causing epidural hemorrhage [5,16,20]. Considering the fact that epidural venous pressure is lower than the intrathecal pressure; it is not possible that a venous bleeding could produce a mass effect [3]. Beatty and Winston had analyzed the arterial circulation of the cervical region and considered the hypothesis that the arterial structures located posteriorly and posterolaterally in the epidural space were responsible for the hemorrhage [3]. They have explained that the C6 and C7 segments, the most common region of cervical epidural hematomas, were the most mobile cervical segments and extreme compelling movements could therefore cause tearing of these arteries. The factors supporting the hypothesis are high arterial pressure that may compress the dural sac and the hemorrhage localizing more posteriorly and posterolaterally. Lowrey has defined an active bleeding arterial structure under the hematoma in one of the operated cases [15].

Spontaneous cervical epidural hematomas generally present with a sudden onset of neck pain. Pain radiation alters according to the localisation of the hematoma on the spinal cord and the nerve roots. The second most common symptom is weakness of the limbs, seen below the compressed spinal cord. Paresis can increase within minutes or days, or rarely recover [4]. Cervical segment epidural hematoma presenting with Brown-Sequard syndrome has been reported in the literature, although a very rare condition [18].

MRI is the diagnostic tool of choice for the detection of spontaneous cervical hematomas [13]. On T1-weighted images; the signal intensity of the acute hematoma before 48 hours is isointense but also may be hyperintense. Subacute and chronic hematomas are hyperintense. On T2-weighted images, heterogeneous hyperintensity to the cord with focal hypointensity should suggest the diagnosis of acute spinal epidural hematoma. On T1-weighted post-contrast images, peripheral contrast enhancement due to adjacent dural hyperaemia may be seen. CT or CT myelography should be preferred in cases MRI could not be done. Although it is not needed in all cases, spinal angiography is informative in planning the surgical strategy for cases with suspicion of a vascular anomaly.

Acute cervical disc herniation, epidural neoplasia, transverse myelitis, dissection of aortic aneurysm, congenital cystic lesion, spondilitis, and epidural abscess should be considered in the differential diagnosis. A patient presenting with hemiparesis as in our case can be confused with a cerebrovascular accident [1].

Spontaneous cervical epidural hematomas need emergent surgical decompression especially in cases

with neurological deterioration although some cases with spontaneous remission without any surgical treatment have been reported [12,8]. Total laminectomy is the best choice as a surgical approach but hemilaminectomy can be preferred according to the localization of the hematoma [2].

In our case, the patient with right-sided hemiparesis presented to the neurology emergency room six hours after the event. It was initially evaluated as a cerebrovascular accident. It was diagnosed by cervical spinal magnetic resonance imaging considered as a cervical pathology. After obtaining a negative result of cranial CT scan, the cervical epidural hematoma was diagnosed with a cervical MRI. The patient was operated within 10 hours of his presentation and has nearly intact motor neurological examination in the second month of the operation.

CONCLUSION

Spontaneous spinal epidural hematomas are seen rarely in neurosurgery emergency rooms, but it has a fatal progressive behaviour in cases when the diagnosis is delayed. It must be kept in mind that the clinical presentation of the cervical epidural hematomas can be hemiparesis and it can be misdiagnosed as a cerebrovascular accident in neurology emergency rooms. The patients must therefore be evaluated from this perspective. Surgical decompression must be preferred in patients presenting with neurological deterioration.

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