PAPER DETAILS

TITLE: KARDIYOVASKÜLER TEDAVI SIRASINDA GELISEN ÜÇ SPINAL HEMATOM OLGUSU

AUTHORS: Ali AKAY,Mete RÜKSEN

PAGES: 357-360

ORIGINAL PDF URL: http://journal.acibadem.edu.tr/en/download/article-file/1702002

ACU Sağlık Bil Derg 2020; 11(2):357-360
https://doi.org/10.31067/0.2020.274

OLGU SUNUMU / CASE REPORT

Three Cases of Spinal Hematoma Developing During Cardiovascular Treatment

Ali Akay, Mete Rükşen

Kent Hospital, Department of Neurosurgery, Izmir, Turkey

Ali Akay, Assoc. Prof
Mete Rükşen, M.D.

ABSTRACT

Spinal epidural and subdural hematomas are rare spinal pathologies. However, these pathologies must be remembered beside cranial pathologies in motor function disorders that develop in patients with coagulopathies or patients using anticoagulant and antiplatelet medications. In the current paper, three spinal hematoma cases that developed as the complications of a primary cardiovascular pathology have been presented. This article particularly indicates that the duration between the setting of the neurological status of the patient and the surgical treatment is the most important factor affecting the recovery of neurological functions.

Keywords: Acute spinal epidural hematoma, acute spinal subdural hematoma, cardiovascular disease, complication

KARDİYOVASKÜLER TEDAVİ SIRASINDA GELİŞEN ÜÇ SPİNAL HEMATOM OLGUSU

ÖZET

Spinal epidural ve subdural hematoma patolojileri ender görülen spinal patolojilerdir. Koagülopatisi olan veya antikoagülan, antiagregan ilaç kullanan hastalarda gelişen motor fonksiyon bozukluklarında, spinal hematomların akılda tutulmaları gereklidir. Bu yazıda; primer kardiyovasküler patolojisi nedeniyle tedavi gören üç hastada komplikasyon olarak gelişen spinal hematom olguları sunulmuştur. Bu hastaların cerrahi tedavisi ve sonrasındaki motor fonksiyonlarındaki düzelme takip sonuçlarına göre özetlenmiştir. Özellikle bu yazıda nörolojik tablo oturmadan, cerrahiye tedaviye alınana kadar geçen sürenin; nörolojik fonksiyonlardaki iyileşmede en önemli faktör olduğu vurgulanmaktadır.

Anahtar sözcükler: Akut spinal epidural hematom, akut subdural spinal hematom, kardiyovasküler hastalık, komplikasyon

Correspondence:
Assoc. Prof Ali Akay
Kent Hospital, Department of Neurosurgery, Izmir, Turkey
Phone: +90 232 386 70 70
E-mail: dr.aliakay@gmail.com

Received : June 07, 2018
Revised : November 01, 2018
Accepted : December 07, 2018
Available Online Date : March 04, 2020

Acute spinal epidural hematoma (ASEH) and acute spinal subdural hematoma (ASSH) have rarely been reported in the relevant literature. Spinal hematomas are spinal pathologies that require early diagnosis and treatment to improve neurological function. The incidence of spinal hematoma is estimated to be 0.1% for 100 000 individuals (1). It is associated with trauma, coagulopathy, arteriovenous malformation, Paget disease, tumor, infection, malignancy, disc herniation, and postoperative complications (2). Interventions such as lumbar and cervical cerebrospinal fluid (CSF) punctures, the insertion of continuous lumbar CSF draining catheters, and spinal surgery (tumor, instrumentation, etc.) have been reported as iatrogenic causes (3). Most of the spontaneous spinal hematoma cases developed in the setting of coagulopathy or the use of anticoagulant and antiplatelet medications (4). Cases with

spinal hematomas may manifest clinical findings characterized by motor and sensory deficits specific to the spinal cord or cauda equina level they are compressing on. Spinal hematomas are among neurosurgical emergencies. However, cases of spontaneous regression have also been reported in the literature (4–8).

Early diagnosis and treatment of spinal hematomas that are caused by anticoagulant and antiplatelet drugs used during cardiovascular treatment are especially important for the prevention of permanent deficits. In this article, three cases of spinal hematoma, which were operated as soon as the diagnosis was made, were presented and the timing of the surgical treatment was emphasized.

Case Reports

Case 1

The 56-year-old female patient was admitted to the intensive care unit after a percutaneous transluminal coronary angioplasty (PTCA) and stenting procedure. Having sudden-onset back pain and progressive weakness in the legs that developed seven hours after the procedure, the patient was required to be evaluated by a neurologist. The cranial and spinal MRI studies of the patient revealed a spinal epidural hematoma and medullary compression at the T4-T5-T6 levels (Figure 1. a, b) and a neurosurgery consultation was requested. Our evaluation of the patient revealed a sensory deficit at the T5 level and a motor deficit in the lower extremities. In this patient, the duration between the beginning of the motor deficit and the surgical treatment was 16 hours. The patient underwent emergency surgery and the epidural hematoma was drained by T4-T5-T6 total laminectomy. The patient was admitted to a rehabilitation program by the department of physical therapy and rehabilitation (DPT). Last follow-up, the patient hasn't got any neurological deficit.

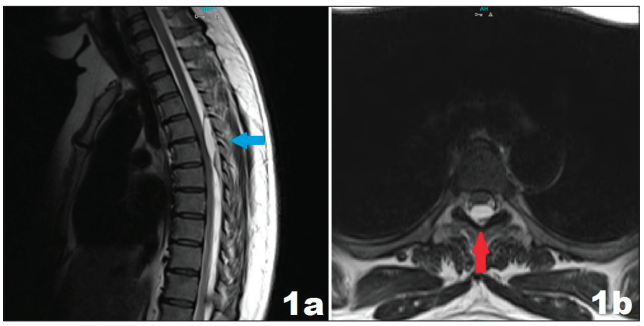

Figure 1. Sagittal **(a)** and axial **(b)** T2-weighted MR images demonstrate a posterior thoracic spinal epidural hematoma.

Case 2

A 53-year-old male patient with a thoracoabdominal aortic aneurysm underwent a tubular graft interposition surgery in the department of cardiovascular surgery. An intraoperative lumbar drain was placed to monitor the CSF pressure and the CSF was drained periodically to keep the CSF pressure under 10 mmHg. On post-operative day 1, the patient developed back pain, and shortly afterwards a transient monoparesis manifested; however, the monoparesis resolved the same day. On post-operative day 2, the clinical picture of progressive paraparesis sets in. Therefore, the cranial and spinal MRI was performed. As an anterior epidural hematoma was identified at the T12-L1-L2-L3 levels (Figure 2 a, b), the patient was immediately evaluated by our clinic at the request of the department of cardiovascular surgery. The patient underwent emergency surgery and an L1-L2 total laminectomy was performed, and the epidural hematoma was drained. In this patient, the duration between the onset of the motor deficit and surgical treatment was 24 hours. The patient was mobilized with ambulatory support in post-operative month 1; however, he lost his life due to a sudden-onset cardiac arrest in post-operative month 2.

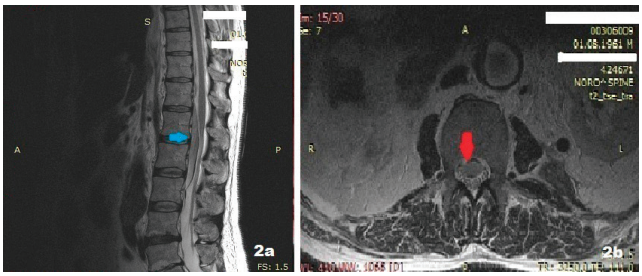

Figure 2. Sagittal (a) and axial (b) T2-weighted MR images demonstrate a anterior lumbar spinal epidural hematoma.

Case 3

During the follow-up period of a 67-year-old female patient after a PTCA and stenting procedure, weakness developed in both the upper and lower extremities of the patient. The patient was examined by the neurology department and cranial computer tomography (CT) was performed. No findings of ischemia or bleeding were detected on the cranial CT, and after being followed under intensive care for one day, the patient was referred to our intensive care unit. We performed a whole spinal magnetic resonance imaging (MRI) during our evaluation of the C6 quadriplegic patient. The spinal MRI revealed an acute subdural hematoma between C6-T3 and severe edema in the cord between C3-C7 (Figure 3 a, b). A T1-T2-T3 total laminectomy was performed immediately on the patient,

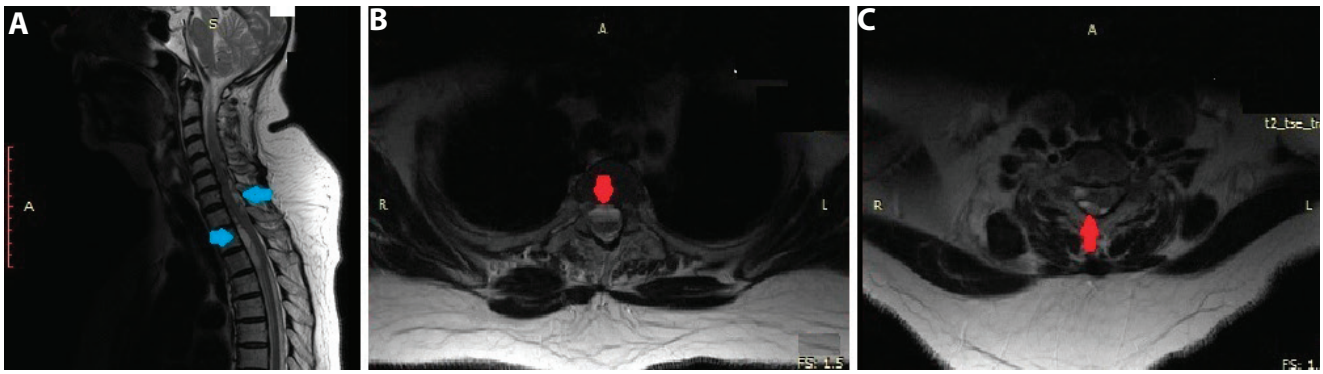

Figure 3. Sagittal (a) T2-weighted MR image shows cervico-thoracic anterior and posterior subdural hematoma. Axial (b) and axial (c) T2-weighted MR images show the anterior and posterior part of the subdural hematoma separately.

and the subdural hematoma was drained under microscopy (Figure. 4a). During the intraoperative observation, the cord was contused and edematous (Figure 4b). For this patient, the duration between the beginning of the clinical picture and the surgery was 25 hours. On post-operative day 1, minimal recovery of the paresis in the patients' upper extremity was observed; and on the same day, the patient was admitted to a rehabilitation program by the DPT. In post-operative month six, the patient was still T1 quadriplegic.

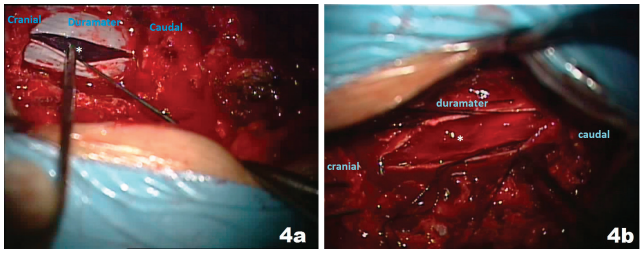

Figure 4. a: Intraoperative photograph shows (*) the cervikal spinal subdural hematoma. b: Intraoperative photograph shows (*) the spinal cord after removed the subdural hematoma.

Discussion

Spinal hematomas are one of the rare causes of spinal cord compression. As MRI has started to be used as a routine radiological procedure, the number of cases reported has increased. Spinal epidural hematomas were first described in 1869 and first treated surgically in 1897 (9). Spinal MRI is still the gold standard in the diagnosis of spinal hematomas. Spinal hematomas may be spontaneous, traumatic or iatrogenic. However, in most cases, there is usually an underlying hematological coagulopathy or a bleeding diathesis induced by an anticoagulant or antiplatelet agent. Spinal hematomas are most common at the levels of the thoracolumbar and lumbar regions (10). The clinical findings of the patients vary depending on the spinal level of hematomas. In addition to sudden-onset of severe back pain radiating to paraparesis and quadriparesis, varying degrees of motor and sensory deficits are particularly among the typical symptoms of spinal hematomas. The progressive motor deficit that develops following the pain may manifest itself as quadriplegia, quadriparesis, paraplegia, paraparesis, sensorial deficit, or cauda equina syndrome (4–6,8,11,12). The clinical findings may be hemiparesis or hemihypesthesia due to unilateral cord compression (5). The cause of bleeding in the literature is both venous and arterial origin. Since the spinal epidural and subdural veins do not contain sphincters and therefore do not provide protection against pressure changes, the hypothesis commonly accepted for the origin of the hematoma is venous bleeding.

In the literature, several cases that recovered spontaneously with palliative treatment have been reported to date. (4,6,7,10,13) The patient may be a candidate for conservative treatment if there is no neurological deficit or minimal neurological deficit. However, these patients should be followed up with close neurological examination and early control MRI (OR: early MRI scan). Any neurological deterioration or the onset of new symptoms requires surgical intervention in those patients. On the other hand, the current study is in favor of immediate operation (OR: surgical procedure) for the patients who develop motor deficits unless there is a serious contraindication for general anesthesia application. In two of our cases (Case 2 and 3), the time between the diagnosis and surgery exceeded 24 hours. These patients benefitted minimally from this surgery, and therefore, the motor deficits were irreversible. Despite the fact that the time lapse between the onset of motor deficit and the surgical treatment was 16 hours in the thoracic epidural hematoma case (Case 1), the motor deficit fully recovered.

Case1 and case 3 are cases of spinal hematoma due to anticoagulant use. Although neurological deterioration was noticed in case 3 of these patients, only cranial CT examination was inadequate. When quadriparesis develops in a conscious patient, research on cervical spinal pathologies should be performed. Case 2 is a case of iatrogenic spinal hematoma after lumbar drainage attempt on the patient under anticoagulant treatment. Three patients had bleeding time values above normal values. Patients were operated immediately after the diagnosis of spinal hematoma without waiting for bleeding time values to return to normal limits. Fresh frozen plasma was transfused to the patients before and during the surgery. There was no massive bleeding during the operation.

Spinal hematomas are neurosurgical emergencies if the patients have a deteriorated neurological state. The duration between the development of the motor deficit and surgical treatment is the most important factor affecting the recovery of neurological functions.

Acknowledgement

All the cases presented in the current study were operated by AA and MR. This paper was written by AA and approved by the authors.

References

1. Baek BS, Hur JW, Kwon KY, Lee HK. Spontaneous spinal epidural hematoma. J Korean Neurosurg Soc 2008;44:40–2. [CrossRef]
2. Fukui MB, Swarnkar AS, Williams RL. Acute spontaneous spinal epidural hematomas. AJNR Am J Neuroradiol 1999;20:1365–72. http://www.ajnr.org/content/20/7/1365.long
3. Russell NA, Benoit BG. Spinal subdural hematoma. A review. Surg Neurol 1983;20:133–37. [CrossRef]
4. Oh SH, Han IB, Koo YH, Kim OJ. Acute spinal subdural hematoma presenting with spontaneously resolving hemiplegia. J Korean Neurosurg Soc 2009;45:390–93. [CrossRef]
5. Bruce-Brand RA, Colleran GC, Broderick JM, Lui DF, Smith EM, Kavanagh EC, Poynton AR. Acute nontraumatic spinal intradural hematoma in a patient on warfarin. J Emerg Med 2013;45:695–97. [CrossRef]
6. Liao CH, Chang FC, Hsu SPC, Hung YC, Chen HH, Liang ML et al. Spinal subdural hematoma following posterior fossa surgery. Formosan J Surg 2013;46:52–5. [CrossRef]
7. Park YJ, Kim SW, Ju CI, Wang HS. Spontaneous resolution of nontraumatic cervical spinal subdural hematoma presenting acute hemiparesis: a case report. Korean J Spine 2012;9:257–60. [CrossRef]
8. Yang NR, Kim SJ, Cho YJ, Cho do S. Spontaneous resolution of nontraumatic acute spinal subdural hematoma. J Korean Neurosurg Soc 2011;50:268–70. [CrossRef]
9. Jackson R. Case of spinal apoplexy. Lancet 1869;94:5–6. [CrossRef]
10. Chung J, Park IS, Hwang SH, Han JW. Acute spontaneous spinal subdural hematoma with vague symptoms. J Korean Neurosurg Soc. 2014;56:269–71. [CrossRef]
11. Dampeer RA. Spontaneous spinal subdural hematoma: case study. Am J Crit Care 2010;19:191–93. [CrossRef]
12. Kim HY, Ju CI, Kim SW. Acute cervical spinal subdural hematoma not related to head injury. J Korean Neurosurg Soc 2010;47:467–69. [CrossRef]
13. Morandi X, Riffaud L, Chabert E, Brassier G. Acute nontraumatic spinal subdural hematomas in three patients. Spine (Phila Pa 1976) 2001;26:E547–51. [CrossRef]