

Spontaneous Spinal Epidural Hematoma

Omurilik Kanalında Kendiliğinden Gelişen Epidural Hematom

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Abstract: We report a case of a spontaneous spinal epidural hematoma extending from T2 to T4 in a 21-year-old woman diagnosed by magnetic resonance imaging, and with complete recovery after immediate surgical treatment. Prognosis of spontaneous spinal epidural hematoma depends on two factors; severity of the neurologic deficit on admission, and interval from onset of initial symptom to surgery. Early diagnosis and prompt surgery are crucial to achieve the best neurological outcome and delay in the diagnosis and treatment causes permanent neurologic deficit.

Key Words: Laminectomy, magnetic resonance imaging, spinal epidural hematoma, spontaneous hematoma

Özet: 21 yaşında kadın hastada T2-T4 arasında yerleşen ve manyetik rezonans görüntüleme ile tanısı konularak acil cerrahi girişim yapılan ve tamamen düzelen omurilik kanalında kendiliğinden gelişmiş epidural hematom sunulmuştur. Omurilik kanalında kendiliğinden gelişen epidural hematom olgularında prognoz iki etkene bağlıdır; başvuru sırasındaki nörolojik durum ve başlangıç semptomları ile cerrahi arasındaki süre. Erken tanı ve zamanında cerrahi girişim en iyi sonucun alınmasında çok önemlidir, tanı ve tedavide gecikme kalıcı nörolojik kayıplara yol açar.

Anahtar Sözcükler: Laminektomi, manyetik rezonans görüntüleme, kendiliğinden gelişen hematom, omurilik kanalında epidural hematom

INTRODUCTION

Spontaneous spinal epidural hematoma (SSEH) is an uncommon cause of spinal cord compression usually producing severe neurological deficit. Complete neurological recovery is possible with early diagnosis and prompt surgery while delay in the treatment of this condition causes permanent neurological deficit. Our purpose is to report a case of SSEH in 21-year-old woman with complete neurological recovery after immediate surgical intervention, and to discuss the diagnosis and management of SSEH.

CASE REPORT

A previously healthy 21-year-old woman was admitted with a 3-day history of back pain, urinary retention and weakness of both lower limbs. The

patient noted rapid increase of her symptoms in the last two hours. There was no history of spinal trauma, systemic disease, anticoagulant usage or coagulopathy. Neurological examination revealed bilateral sensory disturbance of all modalities below the level of Th3 and severe paraparesis. T1- and T2-weighted magnetic resonance (MR) images revealed a mass lesion suggesting an epidural hematoma, extending from Th2 to Th4, localized in the dorsal spinal epidural space (Figure 1). The patient was operated on soon after the diagnosis had been confirmed by MR examination. Laminectomy was performed and epidural clot was totally removed. During surgery no vascular abnormality was observed and dural pulsation was evident at the end of the procedure. Rapid motor and sensory improvement was achieved postoperatively and the patient was able to walk by herself 48 hours after the operation. General physical and laboratory

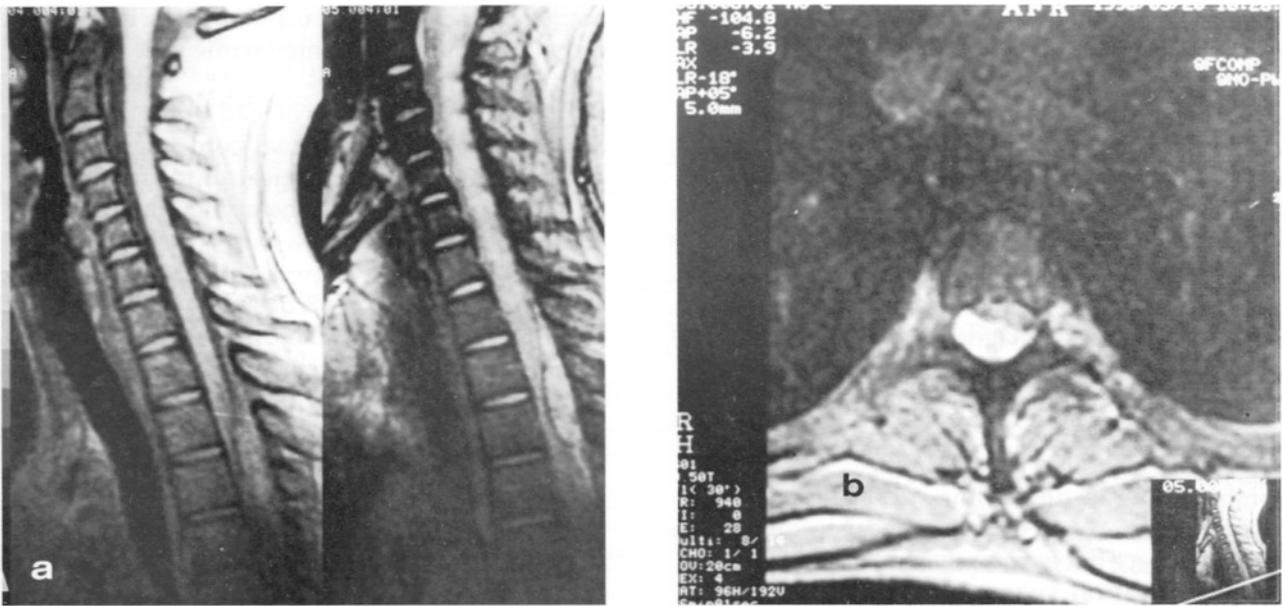


Figure 1, a) T1-and T2-weighted sagittal MR images demonstrate a clearly outlined hematoma located in posterior epidural space at Th2-Th4. Tapering of superior and inferior margins of the hematoma is evident, b) T2-weighted axial image shows the displacement of the spinal cord anteriorly.

examinations revealed no predisposing medical conditions. An MR scan of the spine was performed 8 days after the operation which was reported as normal (Figure 2). The patient was discharged without any neurological deficit at the tenth postoperative day.

DISCUSSION

Tumors, disc herniations, infections, degenerative diseases, trauma and congenital lesions are the most common causes of spinal cord compression. Spinal epidural hematoma (SEH) is a

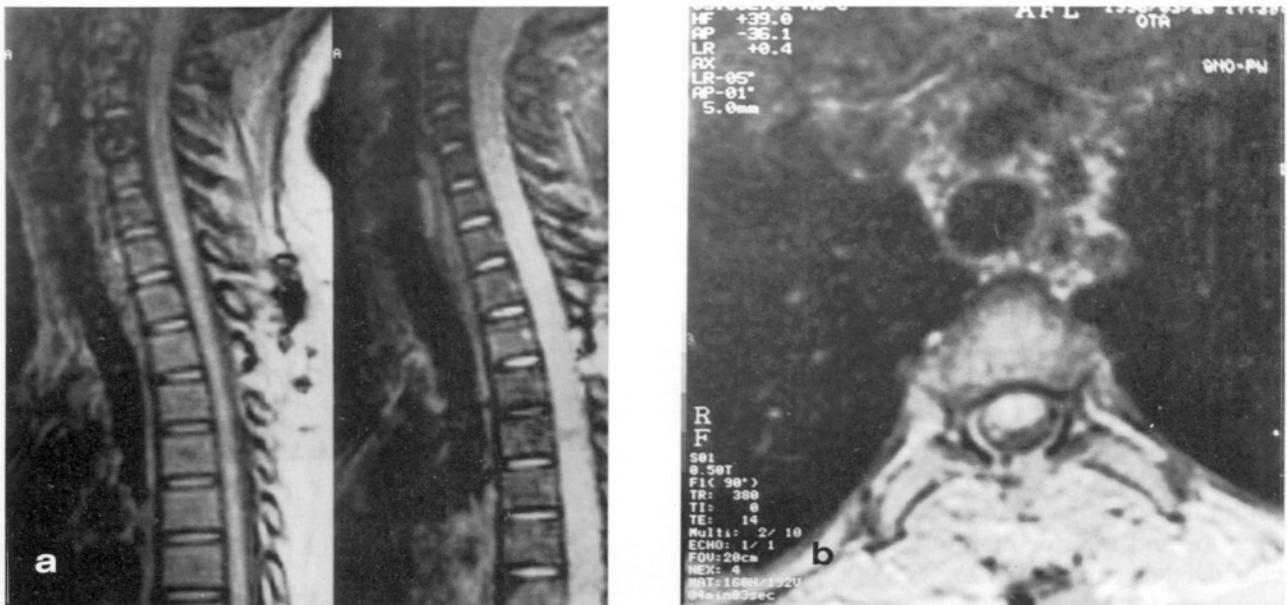


Figure 2, a) Postoperative T1-and T2-weighted sagittal, and b) T1-weighted axial scans showing disappearance of spinal cord compression.

rare neurosurgical disorder (19). Several factors that can cause SEH were listed in Table I (8,9,12,15). Spontaneous spinal epidural hematoma as a cause of spinal cord compression is much rarer, and is a completely treatable entity. Over 200 cases ranging in age from 2 to 85 years have been reported in the literature (3,10,11,16). The mechanism of the bleeding is unknown. Venous bleeding within the valveless epidural venous plexus or arterial bleeding are speculative explanations (4). SSEH is a serious condition since early diagnosis and prompt surgical decompression allows complete recovery while prognosis is poor if there is a delay in diagnosis (13).

SSEH is located in the thoracic, cervical and lumbar spine in decreasing order of frequency. Hematomas most frequently appear in the dorsal epidural space but may rarely be located in the ventral epidural space. Most common clinical presentation is sudden back or neck pain followed by motor and sensory dysfunction with or without urinary retention. Signs of progressive spinal cord compression usually occur in hours. The neurologic deficits are dependent to the localization of hematoma, Horner or Brown-Sequard syndromes may be noted.

Table I. Etiological factors in spinal epidural hematoma.

Trauma
Surgery
Placement of epidural catheter for anaesthesia
Tumours
Anticoagulant use
Coagulopathy
Hypertension
Spinal Arteriovenous malformation

Previously myelography and computerized tomography (CT) were the diagnostic methods for SSEH. Myelography demonstrates classical extradural block image. CT findings are similar to intracranial epidural hematoma showing hyperdense lenticular collection (18). MR imaging is the best examination for diagnosis and follow-up (1,2). Sagittal sections disclose a mass located in posterior epidural space. It is clearly outlined with tapering superior and inferior margins. The dura mater is visualized as curvilinear low signal, separating the hematoma from the cord. The hematoma is isointense or slightly hyperintense on T1-weighted images and heterogeneous on T2-weighted images within 24

hours of onset. Later, hematoma gives high signal on both T1- and T2-weighted sequences.

After early diagnosis of SSEH, prompt surgical decompression of the spinal cord is essential to achieve the best neurological outcome (9,10,13-15,17,19,20). Usually rapid neurologic improvement occurs after surgery.

There are some cases of spontaneous recovery of SSEH. The authors of these manuscripts conclude that conservative management may be appropriate in those instances in which there is early and sustained neurological recovery confirmed by radiological resolution of the lesion. They also suggest that selected patients with mild and non-progressing deficit do not require urgent surgical decompression (5,6,7).

Prognosis of the patient with SSEH depends on two factors; severity of the neurologic deficit on admission, interval from onset of initial symptom to surgery.

In conclusion, SSEH is a rare neurosurgical entity. Early diagnosis and prompt surgery are crucial to achieve the best neurological outcome and delay in the diagnosis and treatment may cause permanent neurologic deficit.

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REFERENCES

1. Avrahami E, Tadmor R, Ram Z, Feibel M, Itzhak Y : MR demonstration of acute epidural hematoma of the thoracic spine. *Neuroradiology* 31: 89-92, 1989
2. Boukobza M, Guichard JP, Boissonet M, George B, Merland JJ: Spinal epidural hematoma: report of 11 cases and review of the literature. *Neuroradiology* 36: 456-459, 1994
3. Caldarelli M, Di Rocco C, La Marca F: Spontaneous spinal epidural hematoma in toddlers. *Surg Neurol* 41: 325-329, 1994

4. Calliauw L, Dhara M, Martens F, Vannerem L: Spinal epidural hematoma without lesion of the spine. *Clin Neurol Neurosurg* 90: 131-136, 1988
5. Clarke CE, Hall DJ, Zagnoon A, Loizou LA: Successful conservative management of spontaneous spinal extradural hematoma. *Br J Neurosurg* 7: 209-211, 1993
6. Clarke DB, Bertrand G, Tampieri D: Spontaneous spinal epidural hematoma causing paraplegia: resolution and recovery without surgical decompression *Neurosurgery* 30: 108-111, 1992
7. Kingery WS, Seibel M, Date ES, Marks MP: The natural resolution of a spontaneous epidural hematoma and associated radiculopathy. *Spine* 19:67-69, 1994
8. Laursen J, Fode K, Dahlerup B: Spinal epidural hematomas. *Clin Neurol Neurosurg* 89: 247-253, 1987
9. Lawton MT, Porter RW, Heiserman JE, Jacobowitz R, Sonntag VK, Dickman CA: Surgical management of spinal epidural hematoma. *J Neurosurg* 83: 1-7, 1995
10. Lobitz B, Grate I: Acute epidural hematoma of the cervical spine: an unusual cause of neck pain. *South Med J* 88: 580-582, 1995
11. Lord GM, Mendoza N: Spontaneous spinal epidural hematoma: a cautionary tale. *Arch Emerg Med* 10: 339-343, 1993
12. Maingi M, Glynn MF, Scully HE, Graham AF, Floras JS: Spontaneous spinal epidural hematoma in a patient with a mechanical aortic valve taking warfarin. *Can J Cardiol* 11: 429-432, 1995
13. Major O, Sipos L, Czirjak S, Benoist G, Horvarth M, Pasztor E: Spontaneous spinal epidural hematomas. *Acta Neurochir (Wien)* 111: 40-44, 1991
14. Penar PL, Fischer DK, Goodrich I, Bloomgarden GM, Robinson F: Spontaneous spinal epidural hematoma. *Int Surg* 72: 218-221, 1987
15. Rainov NG, Heidecke V, Burkert WL: Spinal epidural hematoma: Report of a case and review of the literature. *Neurosurg Rev* 18: 53-60, 1995
16. Tekkök IH, Çataltepe K, Tahta K, Bertan V: Extradural hematoma after continuous extradural anesthesia. *Br J Anaesth* 67: 112-115, 1991
17. Tewari MK, Tripathi LN, Mathuriya SN, Khndelwal N, Kak VK: Spontaneous spinal extradural hematoma in children. Report of three cases and a review of the literature. *Childs Nerv Syst* 8:53-55, 1992
18. Urculo BE, Arrazola MS: L'hematome epidural cervical spontane. A propos d'un cas. *Neurochirurgie* 33: 66-70, 1987
19. Yettou H, Vinikoff L, Marchal JC, Auque J: L'hematom epidural rachidien spontane. A propos de 2 nouvelles observations. *Neurochirurgie* 41: 58-61, 1995
20. Zupruk GM, Mehta Z: Brown-Sequard syndrome associated with posttraumatic cervical epidural hematoma: case report and review of the literature. *Neurosurgery* 25: 278-280, 1989