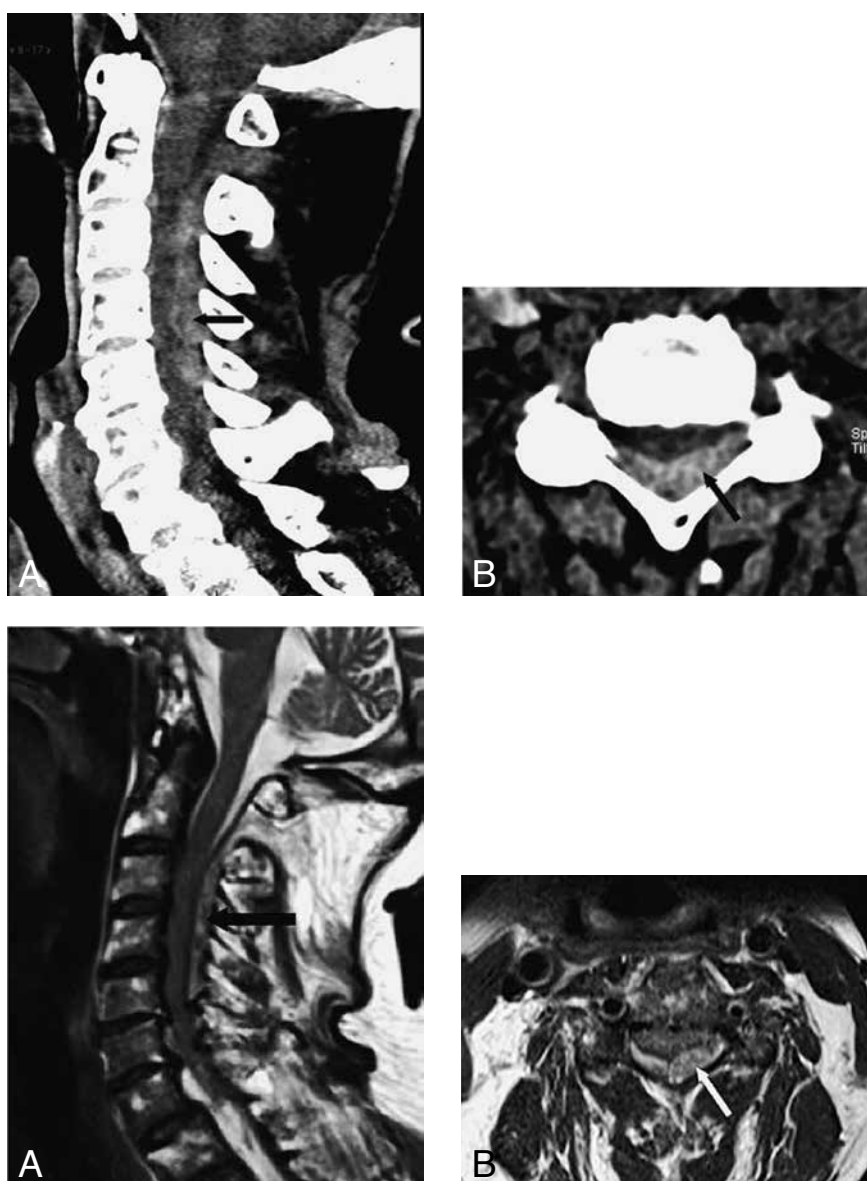


SPONTANEOUS CERVICAL EPIDURAL HEMATOMA

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Key-word: Spinal cord, hemorrhage

Background: A 65-year-old woman was admitted to the emergency department for sudden onset of neck pain and dysesthesia of both upper limbs. The pain occurred spontaneously, without any history of recent trauma. Rapidly after her admission, she developed tetraparesia. The patient had a past medical history of long standing hypertension correctly controlled as confirmed at admission. Neurological examination confirmed the tetraparetic status with a sensory level at Th3. Moreover, a saddle anesthesia with impaired bladder control was observed. Cranial nerve examination and consciousness of the patient remained normal. Laboratory coagulation tests and platelets count were all within normal limits.



Work-up

On CT scan of the cervical spine (Fig. 1, A: Multi-Planar Reconstruction (MPR) image in the sagittal plane, B: axial section at C4-C5 level), a spontaneously hyperdense structure is seen posteriorly in the spinal canal, extending from C3 to C5 (black arrow), causing compression and anterior displacement of the spinal cord.

MRI of the spine (Fig. 2) shows on A (sagittal T2-weighted image) a hyperintense structure extending from C3 to C5 (black arrow). The relationship with the spinal medulla and compression and displacement of it, are better demonstrated on this MRI image than by CT scan. On axial T2-weighted view (B), a compressive left postero-lateral hyperintense structure (white arrow) is seen. Note the anterior displacement of the spinal cord.

Radiological diagnosis

Based on CT scan and MRI, the diagnosis of *spontaneous cervical epidural hematoma* with compression of the spinal cord was made. No subsequent arteriovenous malformation was detected. The patient underwent surgical decompression revealing a bleeding on the left epidural plexus without vessel abnormalities. Likewise, pathological examination confirmed the absence of vascular malformation. Patient's condition improved so that she was discharged with full recovery ten days later.

Discussion

Spontaneous spinal epidural hematoma (SSEH) is a rare cause of spinal cord compression accounting for less than 1% of spinal lesions with incidence of 0,1 per 100000 patients per year. Clinical presentation includes acute neck or back pain with radicular radiation, followed by rapid or progressive neurological deficits. Because of delayed neurological impairment and absence of spinal trauma, SSEH represents a diagnostic challenge in emergency departments as back pain is a frequent complaint.

SSEH is most commonly situated in the cervico-thoracic and thoracolumbar regions and frequently extends to several vertebral levels.

Its exact pathophysiology remains still uncertain. Two possible mechanisms are suggested:

Posterior epidural venous plexus is believed to be the cause of bleeding. As it is composed of valve-less thin-wall veins, venous pressure modifications are more likely to provoke congestion and subsequent rupture. However, since the intrathecal pressure is higher than the epidural venous pressure, several authors assume arterial rupture to be the source of bleeding rather than veins.

Noteworthy, venous epidural hemorrhage was perioperatively evidenced and sufficient to induce a compressive hematoma in our case.

Risk factors such as vascular malformation, coagulation disorders or pregnancy have been advanced. Although untreated arterial hypertension can play a role in the occurrence of SSEH, a correlation between both entities has not been reported. SSEH predominantly occurs in the posterior and posterolateral regions where vertebral venous plexus are encountered. Hence, abrupt change of the venous thoracic pressure has been proposed to cause venous rupture.

Although some authors have reported good outcomes with conservative approach in selected paucisymptomatic patients, SSEH remains a neurosurgical emergency in most cases. A high recovery rate is reported with rapid diagnosis and surgical decompression.

MRI is considered the most reliable diagnostic tool to promptly visualize the location of the hematoma and the degree of spinal cord compression. MRI is also useful to exclude other causes of spinal cord or root compression like disc herniation, epidural tumor or abscesses.

This case illustrates the typical presentation of SSEH and emphasizes the need for a multidisciplinary approach including mandatorily a rapid imaging diagnosis with MRI.

Although rare, SSEH should be considered in the evaluation of acute neck or back pain in the emergency department since a delayed diagnosis can cause permanent neurological defects.

Bibliography

1. Groen R.J., van Alphen H.A.: Operative treatment of spontaneous spinal epidural hematomas: a study of the factors determining postoperative outcome. *Neurosurgery*, 1996, 39: 494-508.
2. Kreppel D., Antoniadis G., Seeling W.: Spinal hematoma: a literature survey with meta-analysis of 613 patients. *Neurosurg Rev*, 2003, 26: 1-49.
3. Groen R.J., van Alphen H.A.: Operative treatment of spontaneous spinal epidural hematomas: a study of the factors determining postoperative outcome. *Neurosurgery*, 1996, 39: 494-508.
4. Kreppel D., Antoniadis G., Seeling W.: Spinal hematoma: a literature survey with meta-analysis of 613 patients. *Neurosurg Rev*, 2003, 26: 1-49.
5. Zhong W., Chen H., You C., et al.: Spontaneous spinal epidural hematoma. *J Clin Neurosci*, 2011, 18: 1490-1494.
6. Spengos K., Tsivgoulis G., Zakopoulos N.: Could high blood pressure be the cause of acute spontaneous spinal epidural hematoma? *Eur J Emerg Med*, 2007, 14: 59.