Acute Cervical Spinal Epidural Hematoma with Spontaneous Resolution

—Case Report—

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Abstract

A 54-year-old male presented with spontaneous acute epidural hematoma in the ventral cervical spine. The neurological deficits gradually improved spontaneously before surgery commenced. Serial magnetic resonance imaging demonstrated disappearance of the hematoma. He was managed conservatively and was discharged without deficits about 1 month after onset. Immediate surgical decompression may not be necessary if neuroimaging and clinical examinations suggest that spinal epidural hematoma will resolve spontaneously.

Key words: spinal epidural hematoma, spontaneous recovery, ventral hematoma, cervical hematoma, magnetic resonance imaging

Introduction

Spontaneous spinal epidural hematoma is rare, although magnetic resonance (MR) imaging is detecting more cases.11 The classical clinical presentation is acute onset of severe irradiating back pain, followed by the signs and symptoms of a rapidly evolving spinal cord compression.22 The majority of hematomas occur in the dorsal thoracic area.16,17,19 Prompt management by decompressive surgery achieves a good prognosis.6,13

We describe a patient who developed a spontaneous cervical ventral epidural hematoma, with clinical signs and symptoms which spontaneously remitted.

Case Report

A 54-year-old male presented with sudden onset of severe occipitalgia, neck pain, and slight numbness of the bilateral upper and lower extremities. He walked to his bedroom, and laid down for about 3 hours. On attempting to stand, he could not support his weight because of leg weakness. He complained of anterior chest and upper abdominal dysesthetic pain, and sharp pain radiating into bilateral upper extremities. Five hours after onset, he was transported to our emergency room.

There was no previous history of anticoagulant therapy, trauma, or hematological coagulopathy. He had been in good health except for mild hypertension, which was not treated medically. Physical examination revealed that he was alert and his cranial nerves were normal. Sensory testing demonstrated loss of touch, pin-prick, and vibration sensation below the C4 level bilaterally. His respiration was regular and adequately deep. Motor examination revealed bilateral flaccid paralyses below the C4 level. The deep tendon reflexes in his upper and lower extremities were symmetrically hypoactive, and the abdominal and bulbocavernous reflexes were absent. Priapism was present. These findings indicated a complete block at the C4 level.

Cervical plain x-ray films showed no abnormality. Immediate MR images of the cervical spine showed an extradural well-defined biconvex mass in the
ventral aspect of the spinal canal, extending from the C2 to the C7 levels. The T1-weighted images showed the mass as a homogeneous isointensity lesion, and the T2-weighted images as a mixed high-intensity lesion. There was no signal void area, suggesting no abnormal vessels in the mass (Fig. 1). Based on these findings, an acute spinal epidural hematoma at the ventral C2–7 levels was diagnosed.

He was prepared for decompressive surgery, but the neurological deficits began to resolve in the preparation room. The return of voluntary hand grasp and response to pin-prick sensation throughout the lower and upper peripheral extremities occurred about 3 hours after onset of tetraplegia. The operation was suspended. Steroids were administered, and the clinical course observed. The motor and sensory disturbances recovered steadily. By next morning he was complaining of only dysesthetic pain in the bilateral hands and forearms.

MR images on the 2nd hospital day revealed that a thinner hematoma still compressed the spinal cord at the C2–4 levels (Fig. 2A). The sensory disturbances gradually improved and complete recovery was confirmed in about 10 days. T1-weighted MR images demonstrated only a very thin high-intensity mass at the hematoma site (Fig. 2B). One month later, the mass had almost disappeared (Fig. 2C). After the clinical symptoms resolved, spinal angiograms and gadolinium-enhanced MR images were used to clarify the etiology of bleeding, but there were no abnormal findings. He was discharged without neurological deficit about 1 month after onset. Follow-up MR images 2 months after discharge revealed complete disappearance of the hematoma (Fig. 2D).

Discussion

Spontaneous spinal epidural hematomas are rarely seen in clinical practice, and mostly occur in the thoracic region because of its length and specific vascular architecture. The majority are located dorsally, with only a few cases reported in the ventral side. The onset is typically sudden with localized spinal pain followed by segmental radiating pain or sensory symptoms and subsequent rapid development of paraplegia or tetraplegia associated with a specific sensory level and urinary retention. Sensory or motor deficits usually develop within minutes or hours, and may progress to complete paralysis.

Precise radiographic localization of spinal cord compression is essential for rapid and appropriate therapeutic steps. Myelography, computed tomography (CT), and CT myelography can demonstrate...
the size and the character of the mass, as well as the location of the spinal cord.\(^{19}\) However, MR imaging is the only method which allows noninvasive evaluation of the exact location, extent, size, nature, and probable etiology of spinal lesions.\(^{4,5,12}\)

The MR imaging appearance of hematoma is well known: an isointensity signal on the T1-weighted image, and a high-intensity or inhomogeneous signal on the T2-weighted image.\(^{29}\) Moreover, MR imaging allows staging of the hematoma through the well-known time-related changes in the signal pattern.

McQuarrie\(^{14}\) recently re-emphasized the importance of early diagnosis and operation in spinal epidural hematoma.\(^{11,21}\) His series revealed that less than 50% of patients regain the ability to walk if operation is delayed more than 36 hours after the onset of symptoms. Spontaneous recovery from neurological deficits without surgical decompression was described before diagnostic imaging was developed.\(^{2,9,20}\) Recently, spontaneous remission has been confirmed by CT and MR imaging\(^{1,3,7,23,24}\) (Table 1).

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Age/ Sex</th>
<th>Location of hematoma</th>
<th>Diagnostic procedure</th>
<th>Duration until clinical improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priest and Lond (1935)(^{20})</td>
<td>27/M</td>
<td>lower cervical</td>
<td>neurological findings, CSF study myelography</td>
<td>no deficit</td>
</tr>
<tr>
<td>Harik et al. (1971)(^{19})</td>
<td>40/M</td>
<td>Th12</td>
<td>myelography</td>
<td>24 hrs</td>
</tr>
<tr>
<td>Brawn et al. (1986)(^{20})</td>
<td>68/F</td>
<td>Th3-5</td>
<td>myelography</td>
<td>3 days</td>
</tr>
<tr>
<td>Anderson (1989)(^{1})</td>
<td>63/M</td>
<td>C3-7</td>
<td>CT</td>
<td>24 hrs</td>
</tr>
<tr>
<td>Yoneyama et al. (1988)(^{21})</td>
<td>80/F</td>
<td>C7-Th10*</td>
<td>CT, MR imaging</td>
<td>several hrs</td>
</tr>
<tr>
<td>Yoshida et al. (1989)(^{20})</td>
<td>76/M</td>
<td>Th4-12</td>
<td>CT, MR imaging</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Futawatari et al. (1991)(^{1})</td>
<td>56/F</td>
<td>C2-3</td>
<td>CT, MR imaging</td>
<td>15 hrs</td>
</tr>
<tr>
<td>Clarke et al. (1992)(^{1})</td>
<td>76/M</td>
<td>C5-Th3</td>
<td>CT, MR imaging</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Present case</td>
<td>56/M</td>
<td>C2-7*</td>
<td>CT, MR imaging</td>
<td>8 hrs</td>
</tr>
</tbody>
</table>

*Ventral side hematoma. CSF: cerebrospinal fluid.

always valid. Rapid neurological deterioration followed by early and sustained neurological recovery, confirmed by radiological resolution of the lesion, indicates nonoperative therapy. The more general availability of MR imaging equipment in hospitals is of great benefit in such emergency care. Previously, immediate decompressive surgery was recommended even for patients who had developed beyond the acute spinal epidural hematoma stage.\(^{6,13}\) However, detailed serial examinations which can demonstrate the degree of the spinal compression will indicate when decompressive surgery is absolutely essential for such patients.

References

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