Cervical spontaneous spinal epidural hematoma with internal jugular vein thrombosis

Case report

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Spontaneous spinal epidural hematoma (SSEH) is a rare condition, and its etiology remains unclear. Spinal venous wall instability due to intravenous pressure changes and the resultant venous rupture seem to be the underlying pathophysiological mechanisms. Here, the authors report a case of posterior SSEH at the C3–5 level causing mild left hemiparesis in a previously healthy 56-year-old woman. Angiography performed at the time of admission showed left internal jugular vein (IJV) thrombotic occlusion and dilation of the surrounding venous plexus, strongly suggesting that these pathologies caused the SSEH. Furthermore, immediate MR imaging suggested severely impaired blood flow in the left IJV. The hematoma soon resolved after spontaneous IJV thrombolysis. The authors’ radiological observations imply that idiopathic IJV thrombosis may cause cervical SSEH. (DOI: 10.3171/2011.3.SPINE10673)

Key Words • cervical spontaneous spinal epidural hematoma • internal jugular vein thrombosis • epidural venous plexus • thrombolysis

SponTaneous spinal epidural hematoma is a rare condition that usually requires immediate surgical therapy.4 The condition’s reported incidence is 0.1 per 100,000 individuals per year. In several patients, its symptoms occur during rest.13 Patients usually complain of sudden neck pain and numbness. The scientific literature includes several reports of SSEH, but its cause is still unclear.16 The main causes include vascular malformation,3 anticoagulation therapy,3 and neoplasms.16 However, the cause of bleeding is unknown in 40% of the cases.4 Impaired platelet function caused by aspirin or excessive garlic ingestion17 resulting in SSEH has been described.

Early studies suggested spinal venous instability and the resultant venous rupture as possible etiological factors.8,9 The fragile spinal veins, especially the valveless epidural venous plexus, are considered sites of structural weakness. The congestion preceding the rupture of these veins is a potential pathophysiological mechanism.9,16 Reportedly, the posterior IVVP plays an important causative role in SSEH.5,7 The valveless, thin-walled venous plexus seems at risk for rupture from venous pressure changes. The fact that most SSEHs develop dorsal to the spinal cord also supports the theory that the posterior IVVP is the main bleeding source of these hematomas. On the contrary, some authors have suggested that epidural arterial rupture is the etiology of SSEH.1,11

Here, we describe a case of SSEH at the C3–5 level causing mild left hemiparesis that resolved after spontaneous thrombolysis in the left IJV, and we present radiological findings suggesting that idiopathic IJV thrombosis may cause cervical SSEH.

Case Report

History and Examination. This previously healthy 56-year-old woman experienced sudden severe pain in the back of her head and neck when she stood from a seated position. Subsequently, she experienced weakness in the left upper extremity. She visited a chiropractor and was referred to our hospital. She was clearly conscious

Abbreviations used in this paper: IJV = internal jugular vein; IVVP = internal vertebral venous plexus; SSEH = spontaneous spinal epidural hematoma.
at the time of admission. Her neurological examination revealed mild paresis of the left upper extremity and normal superficial body sensation. Her bladder and bowel functions were normal, and the results of blood examinations were normal, including those for the coagulation and fibrinolytic systems.

The MR image obtained at admission showed an acute epidural hematoma at the left dorsal aspect of the spine between the levels of C-3 and C-5 (Fig. 1). The hematoma diameter was largest at the C-4 level. Cerebral angiography in the left vertebral arterial phase showed no abnormal findings (Fig. 2A and B); however, the venous phase demonstrated thrombotic occlusion of the left IJV and dilatation of the surrounding venous plexus (Fig. 2C).

Discussion

The patient in this report suffered from sudden severe occipital and nuchal pain followed by mild left hemiparesis. Immediate MR imaging showed posterior SSEH at the C3–5 level and, interestingly, high-intensity signals in the left IJV. Subsequent angiography showed left IJV thrombotic occlusion and dilatation of the surrounding venous plexus. These findings led us to speculate that idiopathic IJV thrombosis caused rupture of the surrounding venous plexus and eventually SSEH.

Internal jugular vein thrombosis is thought to be associated with intravenous drug abuse, long-term venous catheterization, local infection, antiphospholipid syndrome, reduction in venous flow on specific occasions such as when one is in a state of general anesthesia, or spontaneous occlusion.2,14 Gbaguidi et al.5 have well summarized IJV thrombosis. In their study, about 20% of the cases of IJV thrombosis were idiopathic. Our patient was previously healthy, and her blood examinations showed no coagulation system abnormalities; furthermore, she was not receiving any medication. Therefore, we could not elucidate the cause of her left IJV thrombosis. Gbaguidi et al.5 also reported the follow-up results after 3 months. About 70% of their surviving patients had an echographically persistent thrombus, and the rest had no IJV thrombus sequelae. There is no report showing the standard course of IJV thrombosis over a short time period. However, in our case, the cervical B-mode ultrasound showed that the IJV flow returned to almost normal within 5 days and the follow-up MR imaging showed gradual disappearance of the high-intensity signal. We therefore assumed that spontaneous IJV thrombolysis occurred in a short period of time.

There are case reports of SSEH, and in most cases surgery was performed.12 The patient in our case was treated conservatively. Wagner and colleagues18 reported that the spinal epidural hematoma in their patient completely disappeared within 3 days. In our case, the hematoma disappeared within 5 days, and spontaneous IJV thrombolysis seemed to precede this event. We treated our patient conservatively because her symptoms were mild and nonprogressive.

Thrombotic occlusion of the IJV with cervical SSEH may be transient and could be easily overlooked clinically. Such occlusion might cause an increase in intravenous pressure in the surrounding venous plexus and bleeding in the epidural space. We therefore suggest IJV thrombosis as one of the etiological factors of cervical SSEH. Our results suggest that in patients with SSEH, immediate angiography should be performed to check for any venous abnormality. Immediate MR imaging is also useful. In our case, we recognized the ipsilateral IJV occlusion because of the angiography. This case teaches us to focus on not only the main lesion but also check for other abnormalities.
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Fig. 3. Axial T2-weighted MR images of the cervical spine obtained immediately after the onset of left hemiparesis (A), 8 days later (B), and 3 months later (C). The epidural hematoma is almost invisible at 8 days. The arrows indicate that spontaneous thrombolysis gradually occurred, and almost no high-intensity signal is detectable in the left IJV at 3 months.

Disclosure

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

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