An Elderly Patient who Developed Spontaneous Spinal Epidural Hematoma during Warfarin Therapy

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Abstract

Spontaneous spinal epidural hematoma (SSEH) is an uncommon but clinically important disease, and delayed diagnosis of this condition can have severe consequences. General physicians should consider the possibility of SSEH when they encounter a patient with a sudden onset of unexplained cervical or back pain or subsequent radicular symptoms during anticoagulant therapy. Immediate magnetic resonance imaging is essential for early diagnosis. In this article, we present a rare case of an 80-year-old man who developed cervical SSEH during warfarin therapy.

Key words: spontaneous spinal epidural hematoma, anticoagulant therapy, elderly, warfarin

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Introduction

Elderly patients often have cerebrovascular and/or cardiovascular diseases such as cerebral embolism and atrial fibrillation (AF). Therefore, general physicians have many opportunities of providing medical care to elderly patients taking anticoagulants. Spontaneous spinal epidural hematoma (SSEH) is a rare condition that usually requires surgical intervention. To date, the association between SSEH and anticoagulant therapy has been well-described (1-3). Recently, the indications for anticoagulants, including warfarin, have expanded and thus generalists should be aware of the increase in the occurrence of SSEH in elderly patients receiving anticoagulant therapy. We report the case of an elderly patient of SSEH that developed during warfarin therapy for AF.

Case Report

An 80-year-old man with an 11-year history of AF was treated with warfarin 1.5 mg/day. Although he had smoked 70 cigarettes/day from the age of 20 to 45 years, he was healthy and worked as a farmer. Six days before admission to our hospital, he had a sudden onset of posterior neck pain. Two days after onset, he felt muscle weakness in the lower extremities of both sides. The following day, he was unable to walk independently. Thus, he was admitted to a nearby hospital. He developed brachial paralysis on the following day. Because his quadriplegia did not improve, he was transferred to our hospital.

Initial physical examination at our hospital showed that the patient was healthy and his general appearance was good. His blood pressure was 103/64 mmHg; heart rate was 78 beats/min and irregular; body temperature was 36.5°C; respiratory rate was 17 breaths/min; and respiratory sound was normal. Systolic murmurs (Levine III/IV) were heard at the cardiac apex. The abdomen was slightly distended, and his bowel sounds were weak. A digital rectal examination revealed a weakened anal sphincter and perineal anesthesia was noted. He had both urine and fecal incontinence. His cognitive function and central nervous system were normal. He presented with spontaneous posterior neck pain. Manual muscle testing (MMT) revealed paresis at the level of C6 and paralysis below the C7 level. Myoclonus was observed in both lower limbs. Hypesthesia at the level of C8, and anesthesia below the Th1 level was observed. Brachioradialis reflex, triceps reflex, and patella tendon reflex were enhanced. Positive bilateral Babinski reflexes were observed (Fig. 1).
Laboratory tests indicated that the prothrombin time international normalized ratio (PT-INR) was 2.29, which is in the therapeutic range of warfarin. We confirmed with the previous doctor that PT-INR levels had been well controlled at least during the recent one year. The level of hemoglobin A1c (HgA1c) was as high as 6.4%, occasional plasma glucose level was 314 mg/dL, and the patient was positive for urinary glucose. Chest radiograph showed cardiomegaly, and the cardiothoracic ratio (CTR) was 55%. The costophrenic angle was sharp, and the lung field was clear. Electrocardiogram showed AF. Cervical computed tomography (CT) at the previous hospital showed changes of cervical spondylosis such as narrowed intervertebral space and deformity of the vertebral body from C4 to the C7 level. Magnetic resonance (MR) images on admission revealed a space-occupying lesion on the dorsal side of the spinal canal between C5 and C7 level, which was isointense on T1-weighted imaging and heterogeneous on T2-weighted imaging (Fig. 2A-C). The spinal cord was compressed forward at the same level (Fig. 2C).

We speculated the possibility of cervical SSEH and prescribed oral vitamin K to prevent expansion of the hematoma. We consulted an orthopedic specialist about the indication for surgical removal of the hematoma. However, surgical intervention would have a poor prognosis because of the old age of the patient, delayed diagnosis, and a long duration of paresis; therefore, he was treated conservatively. The gadolinium-enhanced MR image on the 2nd day revealed a lesion with peripheral enhancement on the dorsal side of the spinal canal, which was consistent with the appearance of hematoma (Fig. 2D). On the basis of physical examinations and radiological findings, his condition was finally diagnosed as SSEH. On the 3rd day, we initiated oral administration of 1.5 mg of betamethasone. On the 4th day, bilateral paresthesia of the ulnar side of upper limbs developed, which was reduced by oral codeine phosphate. During the clinical course, the patient wished to die because of his quadriplegia and a probable life-long bedridden state. The MRI on the 9th day showed a reduction in the size of the epidural hematoma, and the lesion appeared hyperintense on T1 and T2 images. On the same day, sensory disturbance below the Th1 level showed slight improvement. The patient was able to pinch using his right index finger and thumb from the 16th day, and subsequently, he was able to independently operate the electric wheelchair. On the 39th day, he was transferred to a rehabilitation hospital.

**Discussion**

SSEH is a rare disease, and its rate of incidence is unknown. Typically, SSEH occurs with a sudden onset of cervical or back pain and is followed by radicular symptoms and paralysis (3-5). Acute disc herniation, spinal tumor, spinal tuberculosis, intradural or extradural tumors, pyogenic spondylitis, and extradural abscess are considered in the differential diagnosis, and most of these conditions can be differentiated from SSEH on the basis of their MRI features. The MR images of the epidural hematoma in the present patient revealed an isointense lesion on T1-weighted images and a lesion with heterogeneous intensity on T2-weighted images; these findings were consistent with those of SSEH in the subacute phase reported to date (6).

The primary treatment for SSEH is surgical evacuation at an early stage. Surgical treatments within 36 hours after the onset of paralysis in patients with complete dysfunction of the spinal cord are expected to show improved out-
Figure 2. A: The axial T1-weighted magnetic resonance (MR) image shows an isointense space-occupying lesion of the spinal canal at the C6 level (arrow). B: The axial T2-weighted magnetic resonance (MR) image at the C6 level reveals a hyperintense area within a hypointense lesion on the left posterolateral side of the spinal canal (arrow). C: The sagittal T2-weighted magnetic resonance (MR) image shows a longitudinal posterolateral lesion of heterogeneous intensity on the dorsal side of the spinal canal between the C5 and C7 level. The spinal cord was compressed forward at the same level. D: The gadolinium-enhanced axial T1-weighted magnetic resonance (MR) image on the second day reveals a lesion with peripheral enhancement on the dorsal side of the spinal canal at the C6 level (arrow).

comes (7). For patients with incomplete dysfunction of the spinal cord, favorable outcomes are highly correlated with surgical treatments within 48 hours (7). Severe neurologic symptoms, high levels of spinal cord dysfunction, and old age are the factors responsible for adverse outcomes (6). Spontaneous improvements are reported in patients with a lower magnitude of paralysis (more than MMT 3) and neurological recovery occurring at an early stage (less than 24 hours) after hemorrhage (8, 9). In the present patient with delayed diagnosis and old age, 4 days had passed after the onset of paralysis; tetrapalsy was observed during 2 days before admission without spontaneous recovery, and the spinal cord was affected to the cervical level. Thus, the condition of the patient was severe and the possibility of improved prognosis by surgery was low and spontaneous recovery was also not expected. Because of the delay in the diagnosis, our patient was treated with conservative therapy and thus severe neurological deficits remained. Although our patient was old, he had lived a fulfilling life as a farmer. Since he had severe mental damage, the emotional support given by the clinician, medics, and his family played a very important role. On the other hand, an 87-year-old patient with cervical SSEH has been reported to recover from hemiparesis because of early diagnosis and surgery (10). Therefore, early diagnosis plays an important role in the prognosis of SSEH, and the possibility of surgical evacuation of the hematoma should be considered even in elderly patients over 80 years old.

Anticoagulants, including warfarin, are used in 25% to 70% of patients with SSEH and are indicated as an important risk factor (2, 3). However, coagulation variables are within the therapeutic range in many of the reported cases
of SSEH (2). In such cases, epidural bleeding may be initiated because of other factors. In addition to use of anticoagulant agents, the relationships with hypertension (11), some structural extradural anomalies (2), the rupture of fragile epidural veins by an adjacent herniated disc (12), trivial trauma (2, 13), and straining (13) are suggested. Omori et al. pointed out the possibility of the involvement of arterial problems and cervical spondylitis (14).

In the current case, the patient had no episodes of trauma, and PT-INR levels were controlled within the therapeutic range. The direct cause of SSEH is unknown, however, adding to the use of oral warfarin, temporary high blood pressure, cervical spondylitis, and cervical disc herniation may have influenced the epidural bleeding. Many of the elderly use anticoagulant agents and have spondylitis and episodes of hypertension, which means elderly patients have more factors predisposing to SSEH.

When a patient receiving anticoagulant therapy complains of sudden and unexplained neck or back pain, we should suspect the possibility of SSEH. For early diagnosis, immediate MRI is essential (4). In addition, we should consider SSEH as one of the important differential diagnoses in elderly patients who have developed acute myelopathy.

The authors state that they have no Conflict of Interest (COI).

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References