Case Report

Spontaneous Spinal Epidural Hematoma Associated With the Use of Low-dose Aspirin in Elderly Patient

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Abstract

Spontaneous spinal epidural hematoma is a rare condition defined by bleeding in the epidural space of the spine with no identifiable causes such as trauma, vascular malformation, or bleeding disorders. This is a case of a 79-year-old woman with a medical history of diabetes mellitus, dyslipidemia, and hypertension presented with the sudden onset of severe thoracolumbar back pain associated with weakness and numbness in her bilateral lower limb. Examination of the lower limb showed bilateral lower limb motor and sensory deficits. Laboratory investigations showed normal results. MRI showed posterior extradural intraspinal hematoma from T11 to L3 vertebrae. Patient underwent right hemilaminectomy and posterior decompression of T12 and L1 vertebrae to evacuate the hematoma. Postoperatively, her neurologic complications improved gradually. Decision was made not to restart aspirin. On follow-up at 1 year, the patient had complete recovery of neurologic complications of both lower limb and had no recurrence of bleeding. In short, this is a case of spontaneous spinal epidural hematoma associated with long-term use of low-dose aspirin in an elderly patient requiring surgical evacuation of hematoma with good functional outcome after the surgery. Therefore, aspirin should be prescribed cautiously especially to elderly patients.

The use of salicylate compound dated back to 400 BC.[1] Until the 18th century, the drug aspirin was introduced. Aspirin was known for its antipyretic, analgesic, antiplatelet, and anti-inflammatory properties.[1] It is available over the counter in the pharmacy, is off patent, and therefore can be available in various generic forms.[1] Many people started using low-dose aspirin prophylactically to prevent thrombotic strokes and ischemic heart disease.[2] One of the adverse effects of long-term aspirin use is bleeding tendency, including intracranial and gastrointestinal bleeding.[1] Of late, a few reports on spontaneous spinal epidural

Table 1

Progression of Lower Limb Neurologic Status

	T = 1 9AM		T = 1 9PM		T = 2		T = 3		T = 5		T = 8		T = 30		T = 365	
Time Frame	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**	**Right**	**Left**
Myotome																
L2	3	3	2	3	2	3	2	2	3	4	3	4	4	5	5	5
L3	2	2	3	3	3	3	3	2	3	4	4	5	5	5	5	5
L4	5	5	4	4	4	4	4	4	4	5	5	5	5	5	5	5
L5	5	5	4	4	4	4	4	4	4	5	5	5	5	5	5	5
S1	5	5	4	4	4	4	4	4	4	5	5	5	5	5	5	5
Dermatome																
L1	2	2	1	2	1	2	1	1	1	2	1	2	2	2	2	2
L2	1	2	1	2	1	2	1	1	1	2	1	2	2	2	2	2
L3	1	1	1	2	1	2	1	2	1	2	1	2	2	2	2	2
L4	1	1	1	2	1	2	1	2	1	2	2	2	2	2	2	2
L5	1	1	1	2	1	2	1	2	1	2	2	2	2	2	2	2
S1	1	1	1	2	1	2	1	2	1	2	2	2	2	2	2	2

T = 1 indicates the first day of the clinical encounter.
T = 365 indicates 1 year post clinical encounter.

hematoma (SSEH) associated with the use of aspirin for various indications were described.[3,4] In general, SSEH is defined by bleeding in the epidural space of the spine with no identifiable cause, such as trauma, vascular malformation, or bleeding disorders.[5] This condition is very rare and can affect the cervical, thoracic, or lumbar spine.[5] This condition presents as a sudden onset of neck or back pain associated with motor and/or sensory deficits in the upper and/or lower limb, indicating spinal cord compression caused by the hematoma.[3] The association of SSEH with low-dose aspirin is not clearly indicated in the drug information leaflet for aspirin.

This is a case of SSEH in an elderly patient taking low-dose prophylactic aspirin (75 mg/day) with neurologic deficits not improving after close monitoring and requiring surgical decompression and evacuation of the hematoma.

Case Summary

A 79-year-old Chinese woman who had a medical history of diabetes mellitus, dyslipidemia, and hypertension presented with a sudden onset of severe constant pricking thoracolumbar back pain radiating to bilateral flank after waking up from sleep in the morning. She also had weakness and numbness in both lower limbs and was unable to ambulate. No bowel or bladder incontinence and no associated trauma to the spine were reported. Also, no symptoms pointing toward infection or malignancy were reported. Patient did not report any family history of bleeding disorders. The patient's home medications were aspirin 75 mg once daily, gliclazide 160 mg twice daily, metformin 1 g twice daily, perindopril 8 mg once daily, and simvastatin 20 mg on night. Aspirin was taken prophylactically to reduce thrombotic cardiac risk for about 10 years before this incident.

On the initial presentation (T = 1), vital signs were blood pressure 146/78, pulse rate 101 beats per minute, and temperature 37°C. Neurologic examination showed bilateral lower limb motor and sensory deficits. Power of bilateral lower limb was graded using Medical Research Council Motor Grading Scale; for L2 myotome, grade 3; L3 myotome, grade 2; and L4-S1 myotome, grade 5 bilaterally. Sensation from L2 to S1 dermatome was impaired bilaterally (Table 1). Laboratory investigations taken on the day of admission showed no evidence of coagulopathy or thrombocytopenia. MRI of the spine showed posterior extradural intraspinal mass from T11 to L3 vertebrae predominantly on the right side, causing spinal canal stenosis and spinal cord compression (Figure 1). Neurologic status of the lower limb of the patient monitored for 3 days had no improvement (Table 1). Decision for surgery was made on day 4 of admission (T = 4). The patient underwent right hemilaminectomy and posterior decompression of T12 and L1 vertebrae. Intraoperatively, there was extradural hematoma compressing on the spinal cord. The hematoma was evacuated. Tissue sample was also sent for histopathological analysis

and culture. Histopathological results showed no evidence of malignancy. Culture results confirmed no infection. The patient's neurologic status of lower limb improved gradually after the surgery (Table 1). Postoperatively, the patient was also referred to rehabilitation team to coordinate ambulation. Aspirin was withheld. Patient was discharged well 5 days after the surgery. She was able to ambulate using walking frame during discharge.

During orthopedic clinic follow-up 1 month after the incident, the patient was able to ambulate without assistance. She had almost complete recovery of neurologic function of both lower limbs (Table 1). She also had no back pain and no limitations in activities of daily living. The surgical scar healed well. There were no complications after the surgery. Aspirin was ceased and not restarted after the surgery. The patient was followed up for 1 year. There was no recurrence of bleeding after ceasing aspirin.

Discussion

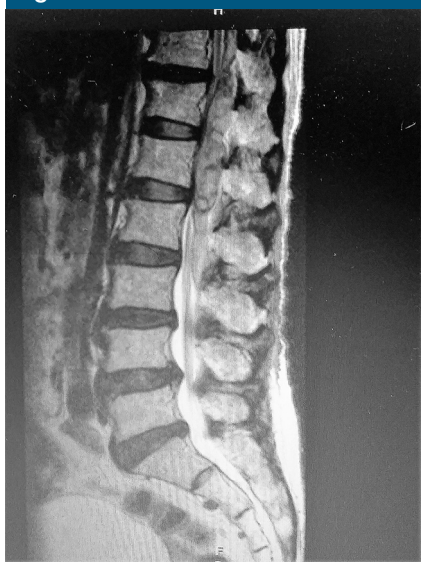
In general, SSEH is a rare but devastating clinical entity.[4] It affects 1 in 1,000,000 patients per year, with a male-to-female ratio of 1.4:1.[4] The exact pathophysiology of SSEH remains debatable.[4] Most researchers accept the hypothesis of ruptured epidural veins producing hematoma that causes compression to the spinal cord.[4] These epidural veins forming the Batson venous plexus are valveless and susceptible to rupture because they are not protected from undulating pressures from the abdomen and thorax.[4,5]

The cause of SSEH is controversial.[4] No definitive cause is identified in most cases of SSEH. Oh et al[4] reported that 17% of cases of SSEH is associated with the use of anticoagulants. Other precipitating factors identified include hemophilia, neoplasm, arteriovenous malformation, uncontrolled hypertension, and postoperative complications.[4]

Only a few studies exist that reported the association of SSEH with antiplatelet drugs.[3,5-8] Antiplatelet drugs described to be associated with SSEH in the literature were aspirin, clopidogrel and ticlopidine.[3,5-8] Wang et al[7] described two cases of SSEH related to antiplatelet drugs in which the first patient received dual antiplatelet therapy (aspirin and clopidogrel) and the second patient received ticlopidine. In the study of Wang et al,[7] both patients had no coagulopathy or thrombocytopenia; however, the laboratory investigations did not exclude platelet dysfunction. The link between antiplatelet therapy and SSEH was also described by Wang et al; the link may be the result of either higher dose of aspirin or ticlopidine or dual antiplatelet therapy, which might not reflect the impact of low-dose daily aspirin on causing SSEH.[3,7,8] Conversely, the study conducted by Mehta et al[2] proposed that there was no correlation between the bleeding risk and the dose of aspirin therapy in cardiac patients. Therefore, the actual impact of bleeding and dose of antiplatelet is unknown.

A thorough search of the literature has identified only a few rare case reports of association of SSEH and low-dose aspirin (75 to 150 mg daily).[6] Dimou et al[3] reported an 88-year-old woman, who was on aspirin for chronic atrial fibrillation, presenting with a sudden onset of lumbar pain with progressive paraplegia from T7 to L5 hematoma. The patient had similar profile as our index case, where patient was elderly, no previous trauma to the back, and the history of other risk factors was negative. After excluding other possible predisposing factors, aspirin was the most likely etiology of SSEH.

Figure 1



Sagittal view of MRI thoracolumbar spine.

Most of the cases of SSEH in the literature were managed by rapid surgical decompression and evacuation of the hematoma.[4] Delay in surgery had been associated with poorer outcome.[9] Nevertheless, there were isolated case reports of spontaneous and rapid recovery of neurologic complications after conservative treatment.[6] Therefore, the current management guideline is a short period of serial neurologic assessment initially.[9] When there is no improvement, the patient should undergo urgent decompression surgery.[9]

There are no proper guidelines regarding the safety to restart antiplatelet drug after decompression surgery for cases of SSEH. In our setting, we would start the antiplatelet therapy 2 months postoperatively if the benefits of antiplatelet drug in preventing thrombosis outweighs the risk of bleeding. Patients should be closely monitored for the recurrence of SSEH, and follow-ups with shorter interval is needed if there is a consideration to restart the antiplatelet therapy. For our index patient, we did not restart aspirin

because it was taken prophylactically, and the patient was elderly with high risk of bleeding. The patient was followed up for 1 year, and there was no recurrence of SSEH after ceasing aspirin.

Conclusion

It remains challenging to pinpoint the exact cause of SSEH. We report a case of SSEH associated with long-term use of low-dose aspirin in an elderly patient requiring surgical evacuation of hematoma with good functional outcome 1 year after the surgery. After excluding other risk factors, we propose that the long-term use of low-dose aspirin might be the etiology of spinal bleeding in this case. Therefore, we should exercise caution when prescribing aspirin especially to elderly patients.

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