

Spontaneous spinal hemorrhage as the complication of low-molecular-weight heparin: A case report

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ABSTRACT

A 57-year-old woman with good past health presented with sudden-onset paraplegia after receiving aspirin, clopidogrel, and low-molecular-weight heparin (LMWH) for suspected acute coronary syndrome. She suffered from spontaneous spinal hemorrhage which was intradural in location. She remained paraplegic despite clot evacuation and 2 months of rehabilitation. Caution on uncommon sites of bleeding should be taken when prescribing anti-thrombotic drugs. Of note, spontaneous spinal hemorrhage is one of the black box warnings of LMWH.

Key words: Spontaneous spinal hemorrhage, Low-molecular-weight heparin, Paraplegia

Anti-thrombotic drugs such as aspirin, clopidogrel, and low-molecular-weight heparin (LMWH) are commonly prescribed medications for acute coronary syndrome [1]. The main adverse effect related to this class of drug is bleeding complications which include gastrointestinal hemorrhage [2]. The treating physician, however, needs to be aware of uncommon sites of bleeding such as the spine [3]. Spinal intradural extramedullary hemorrhage as the complication of anti-coagulant was rarely reported in the literature [4]. We, herein, presented a case of spontaneous spinal hemorrhage after anti-thrombotic use.

CASE REPORT

A 57-year-old woman with good past health was admitted to the medical ward through the emergency department for suspected acute coronary syndrome. She presented with dizziness, headache, and vomiting 3 times of undigested food while taking a long-haul flight.

Physical examination found a clear chest with no murmur and neurological deficit. Chest X-ray was normal.


Initial blood tests showed a normal complete blood count, liver function test, and kidney function test. Troponin I was elevated, increasing from 11.9 ng/L to 91.3 ng/L. There was no ischemic change on electrocardiography. The patient developed chest pain after admission, so she was treated for acute coronary syndrome with aspirin, clopidogrel, subcutaneous LMWH, and

atorvastatin. Echocardiography was normal. Chest pain subsided after a few hours.

After receiving 2 days of anti-thrombotic treatment, the patient developed a sudden onset of severe central chest pain. Physical examination did not reveal a cardiac murmur or blood pressure difference between arms. Blood pressure was elevated to 160/90 mmHg. Contrast computed tomography (CT) was performed which was normal, particularly with no aortic dissection. After being sent back to the ward, the patient developed sudden-onset bilateral lower limb paraplegia, with bilateral lower limb power 0/5. The upper limbs were spared and there was no cranial nerve deficit. The per-rectal examination showed lax anal tone and there was bilateral sensory loss up to the T4 level. Plain CT brain identified diffuse subarachnoid hemorrhage and a small amount of intra-ventricular hemorrhage in the fourth ventricle (Fig. 1). Contrast magnetic resonance imaging (MRI) of the spine showed acute intraspinal intradural extramedullary hemorrhage from the posterior cranial fossa to the T9 level. Increased T2 cord signal was noted from the C4 to T9 level (Fig. 2). CT angiography of the neck showed no vascular abnormality.

Dexamethasone was started for spinal cord edema. Laminectomy and clot evacuation were performed. On dural opening, extensive spinal subarachnoid hemorrhage was found from C4 to T4. No vascular lesion was identified. The post-operative course was complicated by vasospasm which resolved with blood pressure augmentation.

Follow-up MRI 1 week after operation showed resolved cord edema and residual subacute hematoma. The patient underwent

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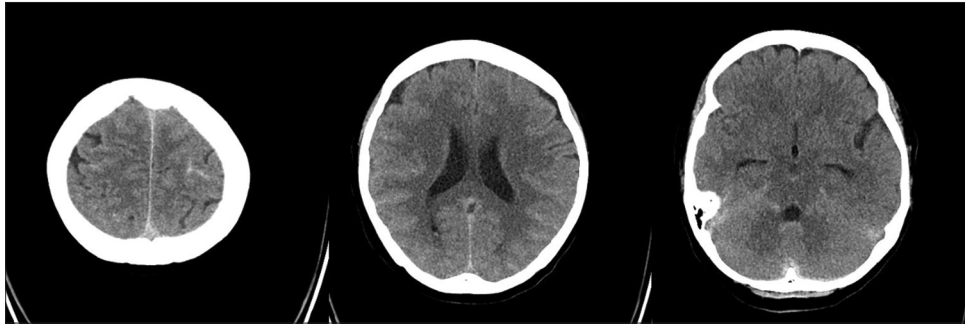


Figure 1: Computed tomography of brain showed the subtle subarachnoid hemorrhage and intra-ventricular hemorrhage extended from spinal hemorrhage



Figure 2: Magnetic resonance imaging showed acute intraspinal intradural extramedullary hemorrhage from posterior cranial fossa to T9 level

rehabilitation which was limited by orthostatic hypotension. She remained paraplegic after 2 months of rehabilitation.

DISCUSSION

The symptom-onset time remained undetermined in this case. Initially, the patient may suffered from acute spinal hemorrhage of the spine when she presented with dizziness, headache, and vomiting. It was undiagnosed and exacerbated by anti-thrombotic use. Second, the patient may also develop spontaneous spinal hemorrhage after admission when she develops chest pain or paraplegia. There was no vascular lesion identified after extensive workup. Spontaneous intradural extramedullary hemorrhage was rarely reported in the literature.

LMWH was the likely culprit of the spontaneous intradural extramedullary hemorrhage. This case highlighted an uncommon presentation of a common complication. Bleeding was a common complication of LMWH but intradural extramedullary spine was an uncommon site of bleeding. When used for non-ST elevated myocardial infarction, the major bleeding rate of LMWH was quoted at 1% [5]. Spinal hemorrhage was the black box warning of LMWH but it usually happened after spinal puncture [5]. Spontaneous intradural extramedullary hemorrhage after LMWH use was rare [6].

The literature review revealed that the most common presentation was inter-scapular pain with multiple levels of

thoracic spine involvement [7]. Potential risk factors included hypertension, diabetes mellitus, rheumatoid arthritis, and drug abuse [7]. There was no study on neurological outcomes after surgical decompression compared with conservative management in spontaneous subdural hemorrhage of the spine [7]. However, for spontaneous epidural hemorrhage of the spine, a study in Japan showed that early surgery within 12 hours achieved a more favorable neurological outcome compared with delayed surgery [8]. Another study in China also showed that extended paraplegia time was an independent adverse prognostic factor [9]. Prompt recognition of the complication with advanced use of anti-dote for anti-thrombotic and early operation should be encouraged, given the detrimental consequence of paraplegia. Moreover, the patient should be counseled on the side effects in detail before LMWH use [10].

CONCLUSION

Spontaneous spinal hemorrhage can be a complication of anti-thrombotic drugs such as LMWH. Physicians should pay attention to the potential complications and manage them promptly. Early imaging and operation may enhance neurological recovery.

AUTHOR'S CONTRIBUTION

Kwok Chin Tong contributes to the concept and design of study or acquisition of data or analysis and interpretation of data; drafting the article or revising it critically for important intellectual content; and final approval of the version to be published.

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