



ORIGINAL RESEARCH PAPER

Neurology

SPONTANEOUS SPINAL EPIDURAL HEMATOMA: CASE REPORT

KEY WORDS:

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ABSTRACT

Spontaneous epidural hematoma is an occasional neurosurgical emergency, but due to the compressive nature and the possibility of spinal cord infarction, its treatment must be installed early, making it a time-dependent emergency. Anticoagulation is increasingly recognized as a risk factor for this condition; herein we present the case of a patient anticoagulated with warfarin who, after a minimal effort, presented a thoracolumbar hematoma which was confirmed by magnetic resonance; anticoagulation was reversed and he was surgically intervened 40 hours after symptom onset; his evolution was satisfactory through a walking cane. Emphasis is placed on the symptomatology of acute compressive myelopathy in anticoagulated patients as an emergency that must be suspected according to the clinical presentation of these patients and treated promptly to maximize the chances of recovery.

Introduction

Spontaneous spinal cord hematoma as a reason for consultation in emergency departments is uncommon; in patients with no antithrombotic therapy, the most common causes are spinal tumors, arteriovenous malformations, and blood dyscrasias (1-2). However, since the initiation of anticoagulant therapies, these become the leading risk factor for bleeding into the medullary canal (2-3). The main symptom of these patients is back pain that will be accompanied by neurological manifestations, depending on the location of the hematoma; cervical, thoracic, lumbar, or the combination of these; when the hematoma compresses the spinal cord, there will be an association with sensory and/or motor symptoms ranging from pain to functional impotence such as tetra or paraplegia (3-4). We report the case of a spontaneous spinal hematoma with minimal effort in a patient with warfarin overanticoagulation.

Case report

A 49-year-old man with past medical history of arterial hypertension and pulmonary thromboembolism secondary to deep-vein thrombosis in treatment with warfarin, consulted a local emergency department for symptoms of 24 hours of sudden low back pain while defecating. The pain radiating to the anterior abdominal region was described as colic with urinary urgency, which led to acknowledge the possibility of urolithiasis, thus requesting a computerized tomography (CT) urography considering an absence of neurological signs in the initial medical evaluation. Three hours later, the patient presented paresthesias in both lower limbs, urinary retention, and exacerbation of low back pain. Urology did not find a pathology that explained the symptoms and suggested assessment by neurosurgery, reason why the patient was referred to our institution.

On admission, there was hyporeflexia in the lower limbs, dysesthesia in the inguinal, genital and anal regions with paraplegia (Frankel B), no bruising or obvious bleeding; his vital signs were reported as normal and the last dose of warfarin had been administered 48 hours earlier. The INR (International Normalized Ratio) value reported was 5.9; hence the referred symptoms, along with the INR value, a thoracolumbar epidural hematoma was suspected. Simple magnetic resonance imaging (MRI) of thoracic and lumbosacral region revealed an epidural hematoma from T11 to the sacrum, with compression of the medullary cone and lumbar roots (images: 1 and 2). Overcoagulation was reversed with fresh frozen plasma and vitamin K. Subsequently, neurosurgery performed spinal canal exploration, laminectomy, and drainage of the hematoma. Two weeks later, the patient was found with intermittent catheterization due to neurogenic bladder, constipation, and

paresthesias in L5-S1 dermatome (cauda equina), with an improvement of strength in lower limbs, achieving ambulation with double support, and one month later with a walking cane.



Images 1 and 2: Thoracolumbar epidural hematoma (red arrows). MRI T1 sequence.

Discussion

Anatomically, the spinal cord extends from the base of the brainstem to the medullary cone at the level of the first or second lumbar vertebrae; distal to this point, the medulla becomes a series of nerve roots called cauda equina (4); throughout its extension, spontaneous hemorrhages, mainly originated in the epidural venous plexus, may occur. (5).

These hemorrhages have an incidence of 0.001% (6), with the main risk factors being advanced age, anti-aggregation, anticoagulation, blood dyscrasias, pregnancy, vasculitis and arterial hypertension; they predominate in men, with a higher incidence between 15-20 and 47-75 years(7).

Anticoagulation is responsible for up to 25% of spontaneous epidural hematoma; bleeding has been reported from the second day of initiation of therapy, even without INR values in the anticoagulation range. Cases with antiplatelet and direct anticoagulant agents have been reported (8).

The cardinal symptom is acute and intense back pain, which corresponds to the location of the hematoma, the most frequent being cervicodorsal and thoracolumbar (9). In the first 96 hours of pain and as a consequence of marrow compression, there may be associated symptoms: paraplegia (76%), dysesthesias (10%), quadriplegia or cauda equina syndrome (2%).

In the context of a patient with symptoms of sudden myelopathy with risk factors, timely diagnosis is necessary to maximize the chances of an adequate recovery to avoid disabling sequelae (9). The gold standard for diagnosis is MRI without contrast; acute bleeding will be isointense in T1 and usually hyperintense with focal regions of hypointensity on T2. In the subacute phase, the hemorrhage will be hyperintense (after the third day) in T1, reflecting the presence of methemoglobin (10).

The treatment of choice is surgical decompression, previous reversal of anticoagulation; steroids do not yet have a clear role in the management of this condition (11).

Their prognosis is mainly given by the presurgical symptoms; especially the presence of motor symptoms, such as tetra or paraplegia, had a worse prognosis; there may be a motor improvement of 93% for those with incomplete injuries (Frankel B) and only 45% for those with complete injuries (Frankel A) (11). The possibility of diminishing sequelae depends on the moment of decompression and evacuation of the hematoma, accepting that the ideal moment is within the first 12 hours of onset of symptoms because success rates of 87% can be achieved with regard to autonomy in ambulation. Decompression within 13 and 24 hours has a success rate of approximately 36%, in surgeries performed in the first 36 hours 33%, partial recovery of 46% and paraplegia of 21%. In surgeries performed in the first week, only 10% have complete recovery; in these scenarios, one of every three patients will be left with paraplegia (12).

Conclusion

Spontaneous epidural hematoma, although infrequent, has a high rate of complications and long-term disability when a timely diagnosis is not performed for an evacuating surgical therapy, ideally in the first 12 to 24 hours. It is important that physicians in the emergency services consider the possibility of prompt diagnosis in patients presenting with acute myelopathy, especially antiaggregated or anticoagulated; In the case of warfarin consumption, there is no specific value of INR that implies a special risk; a higher value of INR implies more risk, yet this pathology can occur even without having it in anticoagulation values. It should be remembered that even with minimal efforts, as in our case, these bleedings can be triggered.

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Patient consent publication of his images.

REFERENCES

1. Raed I. et al. Spontaneous spinal epidural hematoma in a patient on rivaroxaban: case report and literature review. *The Journal of Emergency Medicine*, Vol. 53, No. 4, pp. 536-539, 2017
2. Vayá A. et al. Spontaneous Cervical Epidural Hematoma Associated With Oral Anticoagulant Therapy. *Cin Appl Thrombosis/Hemostasis*, 7(2):166-168, 2001.
3. Kirazli Y, Akkoc Y, Kanyilmaz S: Spinal epidural hematoma associated with oral anticoagulation therapy. *Am J Phys Med Rehabil* 2004;83:220-223
4. Sandvig and Jonsson. Spontaneous chronic epidural hematoma in the lumbar spine associated with Warfarin intake: a case report. *SpringerPlus* (2016) 5:1832
5. Dubbs S. Rapid Fire: Central Nervous System Emergencies. *Emerg Med Clin N Am* 36 (2018) 537-548.
6. Gold M. Magnetic Resonance Imaging of Spinal Emergencies. *Top Magn Reson Imaging* 2015;24:325-330
7. Badaoui R. Spontaneous spinal hemorrhage complicating anticoagulant therapy. *Can J Anesthesia*. 2003;50 (7) 750-751.
8. Wang L, Liu G, Subramaniam S, Wong TA, Kumar N. Spontaneous spinal epidural haematoma after antiplatelet treatment: a report of two cases. *J Orthop Surg (Hong Kong)*. 2012 Dec;20(3):386-90
9. Pawha P. Imaging of Spinal Manifestations of Hematological Disorders. *delivery. Hematol Oncol Clin N Am* 30 (2016) 921-944
10. Mukerji N. Spinal epidural haematoma; factors influencing outcome. *British Journal of Neurosurgery*, December 2013; 27(6): 712-717
11. Wilson JR et al. Early versus late surgery for traumatic spinal cord injury: the results of a prospective Canadian cohort study. *Spinal Cord* (2012) 50, 840-843.
12. Kunizawa A, Fujioka M, Suzuki S, et al. Spontaneous spinal epidural hematoma inducing acute anterior spinal cord syndrome. *J Neurosurg Spine*. 2009;10:574-577.