

Case Report

Massive lumbar spine hematoma post-spinal tap

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Abstract

Background: Lumbar puncture is a well-known procedure. The indications for lumbar puncture vary among different medical and surgical disciplines, though obtaining a sample for cerebrospinal fluid analysis is the most common one. A normal coagulation profile is crucial prior to pursuing the procedure. Occasionally, an urgent sample is needed to guide an appropriate treatment while the patient's coagulation status is suboptimum. In those specific critical situations, some may accept suboptimal correction owing to the urgency of the case.

Case Description: We report a case for a patient with Burkitt lymphoma who presented with mild neuroaxial symptoms. An urgent cerebrospinal fluid sample was required which was taken after correcting his platelets count to $53.4 \times 10^9/L$. He developed a massive multi-compartmental thoracolumbar hematoma with acute cauda equine syndrome requiring surgical intervention. Despite aggressive management, he remained permanently paraplegic with functional status that negatively affected his overall outcome.

Conclusion: Lumbar puncture is a useful diagnostic and treatment tool. Although serious events are seldom, they can be detrimental. A precaution not to underestimate such events in practicing lumbar, especially in patients with suboptimum coagulation state. Image-guided procedure can be useful and should be considered in appropriately selected patients.

Key Words: Lumbar puncture, spinal tap, spinal hematoma

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INTRODUCTION

Spinal hematoma is an important radiological diagnosis requiring immediate clinical correlation. It commonly occurs because of trauma. Other etiologies include vascular anomaly, bleeding, diathesis, or anticoagulant therapy. Spinal hematomas are usually treated conservatively unless patients present with neurological compromise. One cause for spinal hematoma is lumbar puncture (LP), which often goes without close follow up unless the patient reports issues. LP is a commonly practiced procedure and usually done as a day procedure with low incidence of complications. However, certain cases should be handled with exceptional care such as

immunocompromised and coagulopathic patients. In this article, we discuss a serious lumbar spinal hematoma that occurred after a LP to illustrate its implication on the overall clinical outcome along with a brief literature review.

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CASE DESCRIPTION

A 45-year-old gentleman presented with a 6-week history of progressive decline in function and easy bruising. He had mild ataxia along with binocular horizontal diplopia. Acute lymphocytic leukemia was suspected due to high leukocytes count ($79.1 \times 10^9/L$) and abnormal cells ($53.4 \times 10^9/L$) on blood smear in favor of blast cells. Platelet count was low ($22 \times 10^9/L$). Sugar coating along the brainstem was ruled out using MRI brain with gadolinium. Thus, an urgent LP was planned to assess tumor seeding within the CSF after correcting platelets to $51 \times 10^9/L$. A diagnosis of Burkitt lymphoma was made thereafter. Nevertheless, within 6 hours of the LP, the patient experienced initial left leg pain which was treated empirically. As bilateral numbness developed, an MRI spine was ordered and a diagnosis of spinal hematoma was made [Figure 1]. By the time this was obtained the patient was experiencing severe paraparesis and transferred to our centre for urgent intervention. On arrival, the patient posed a challenge owing to his medical instability; however, due to the urgency of the neurosurgical situation and given the patient's age, we provided both medical and surgical treatment simultaneously. The surgical intervention was planned for T11–L3 decompression, which took place approximately 24 hours post LP. Intraoperatively, the conus medullaris and cauda equina were severely compressed from multi-compartmental hemorrhages with the largest one within the subdural space [Figure 1]. Despite aggressive surgical and medical management, the patient remained paraplegic and died 3 months after surgery.

DISCUSSION

LP is a commonly practiced procedure. It is usually performed at the bedside based on anatomical surface markings. Image-guided assisted procedure is occasionally used in technically challenging cases. The simplicity of the procedure as well as the low incidence of complication other than headache has perhaps given it greater popularity among different clinical disciplines. In fact, majority of LP cases are done on the same day of the surgery or in emergency rooms.

However, LP is still associated with serious complications that are often discounted due to low incidence.^[1] A good example is the development of spinal hematoma. In clinical practice, few carry out postprocedural investigation for spinal hematoma unless the patient reports sensory or motor changes after the procedure. In a recent meta-analysis, Kreppel *et al.* reported that approximately 85% of symptomatic spinal hematomas required surgical intervention.^[3] Hence, such risks should not be ignored and we may need to revisit our practice in performing LP through adequate control of certain confounding factors to minimize the risks associated with this procedure.

Although the accurate incidence of spinal hematoma is unknown, it is estimated that approximately 4% of symptomatic spinal hematomas are related to traumatic LP. They are commonly located inclusively with the epidural space in 75% of the cases, whereas subarachnoid hemorrhage and spinal subdural hematoma can be found in 15.7% and 4.1%, respectively. Multi-compartmental spinal hematomas are rare and thought to present in 0.33%.^[3]

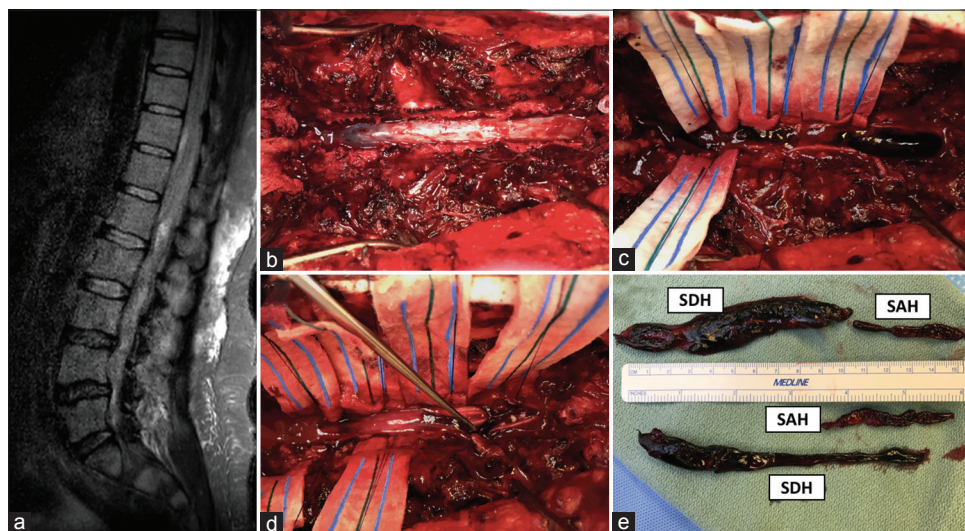


Figure 1: (a) Lumbar plain MRI depicts a large intraspinal hematoma which extends from T11 down to L5 with severe neural compromise. (b) Intraoperative exploration after T11–L3 laminectomy and evacuation of spinal epidural hematoma (not shown in this photo). (c) Giant spinal subdural hematoma was noticed post midline durotomy. (d) Incision of the arachnoid layer was done due to evidence of large subarachnoid clots which were retrieved successfully. (e) Multiple large and thick spinal hematomas from subdural and subarachnoid spaces

Surgery is indicated for symptomatic patients with reported complete neurological recovery in almost 40%. The timing of surgery is vital and associated with improved neurological outcome when done in less than 36 hours.^[2] Nevertheless, symptomatic spinal hematoma is a critical condition and we emphasize that surgical intervention should be considered at a low threshold for urgent decompression to optimize overall clinical outcome. Coagulopathy is an important risk factor that should not be underestimated in planning for LP. The presence of pre-existing coagulopathy was found to be a significant poor prognostic factor regardless of surgical intervention. Therefore, an early investigation with spinal MRI should be obtained to rule out an evolving spinal hematoma. Mortality was reported high in patients with compressive cervical spinal epidural hematomas and cardiovascular disease.^[4] We learned from our case that LP is beyond a needle stick and should be undertaken with great diligence. Patients at risk should be carefully monitored in hospital both prior and after the procedure with a proper informative discharge plan.

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Informed consent

For this type of study formal consent is not required.

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Conflicts of interest

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