

Introduction

Thoracic and lumbar epidurals are pivotal in managing perioperative pain, particularly in patients with significant traumatic injuries and those undergoing major surgeries (1). Thoracic epidurals are often preferred for surgeries involving the thorax and upper abdomen, as they provide superior pain control in these regions by targeting the sympathetic nerve fibers. The administration of thoracic epidurals requires precise dosing to avoid severe complications due to systemic absorption or misplacement, such as cardiovascular instability, which are less commonly seen with lumbar epidurals. This case report highlights a patient who underwent the administration of a 5ml bolus through a thoracic epidural after a negative test dose, who quickly experienced hemodynamic instability.

Case Presentation

A 61-year-old male with a history of end stage renal disease, coronary artery disease s/p CABG and valve replacement, hypertension (HTN), atrial fibrillation, and pulmonary HTN sustained multiple injuries after a 10 foot fall, including bilateral rib fractures, flail chest, and an acute T1 spinous process fracture. Following needle decompression on scene, initial management included chest tube placement and resuscitation. Despite bilateral erector spinae blocks (60ml of 0.2% ropivacaine) and intravenous analgesics, the patient reported persistently severe pain, prompting the placement of a thoracic epidural. Following a negative test dose, a 5 ml bolus of 1% lidocaine was administered. Within minutes, the patient experienced a code blue event, becoming acutely altered and profoundly hypotensive to the 20s systolics without loss of pulses. Immediate resuscitative efforts, including the administration of phenylephrine, atropine, epinephrine, and narcan, were successful, and the patient returned to baseline mental and hemodynamic status. IV analgesics and the epidural were subsequently held.

Materials and Methods

Written consent was obtained from the patient for this case report. This case report is devoid of patient-identifiable information and is therefore exempt from IRB review requirements as per University of Texas Health Science Center at San Antonio's policy.

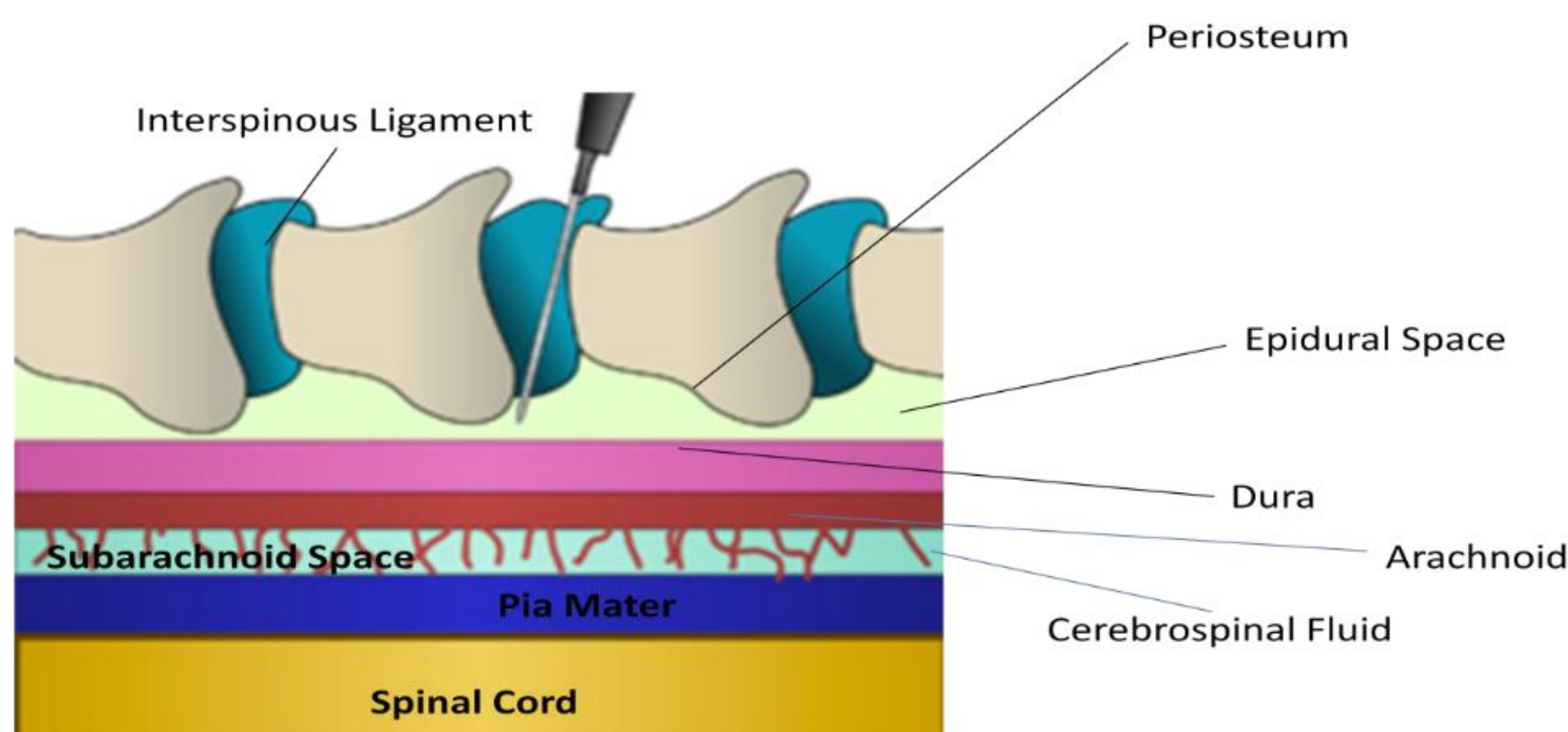
Discussion

The epidural test dose of 15 mcg of epinephrine and 45 mg lidocaine was characterized based on testing of lumbar epidurals (2). It is commonplace to use this dose for thoracic epidurals. However, differences in patient age, critical condition, anatomy, and the techniques used to access the epidural space may warrant more conservative doses when confirming thoracic placement due to potential cardiovascular instability.

Bolus dosing is common practice to achieve rapid pain relief and further confirmation of epidural placement. However, understanding what is an effective initial bolus dose for thoracic epidurals that does not elicit hemodynamic instability remains a subject of ongoing debate (4). Studies have shown that thoracic epidural anesthesia can be initiated with doses as low as 15 mg of lidocaine, and as high as 100 mg (3,5).

Due to limited investigation, we propose future focus on increased frequency of hemodynamic monitoring following placement, administration of lower doses of local anesthetics than the standard 45 mg of lidocaine to test initial placement, and more attention should be paid to factors that can affect distribution of neural blockade including patient age, critical condition, and anatomy when dosing medication and monitoring hemodynamics.

Additionally, prophylactic administration of vascular pressors, such as ephedrine intravenously may support and maintain hemodynamic stability.



Epidural Kit

References

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