

LETTER TO THE EDITOR

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# Be careful in choosing length of needle for local anesthetic infiltration during central neuraxial blockade

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Sir,

The loss of resistance (LOR) technique practiced by many anesthesiologists for epidural space identification is associated with many minor to major complications (Agarwal and Kishore 2009). Recently, with the advent of ultrasound (US), prepuncture sonographic assessment of neuraxial area has eased technical difficulties (Ultrasound-guided catheterisation of the epidural space n.d.). We report a case of a 20-year-old American Society of Anesthesiologists (ASA) grade 1, female weighing 40 kg with body mass index (BMI) of 18 kg/m<sup>2</sup> having an ovarian mass, who was scheduled for an exploratory laparotomy. Written informed consent was obtained before reporting this case.

Epidural catheter was placed in pre-anesthesia room under standard ASA monitoring at lumbar L1-L2 level using 18 Gz Tuohy needle in sitting position. After detecting LOR, epidural catheter was inserted and fixed at 8 cm. Even before test dose was administered, patient complained of numbness and heaviness in both the legs. Sensory and motor assessment showed partial weakness with modified Bromage score of 3/4, which became complete (1/4) in 5 min. Patient was conscious, oriented, and hemodynamically stable. Suspecting any inadvertent neurological damage, surgery was deferred and further evaluated for diagnosis. Magnetic resonance imaging (MRI) was done to rule out any epidural

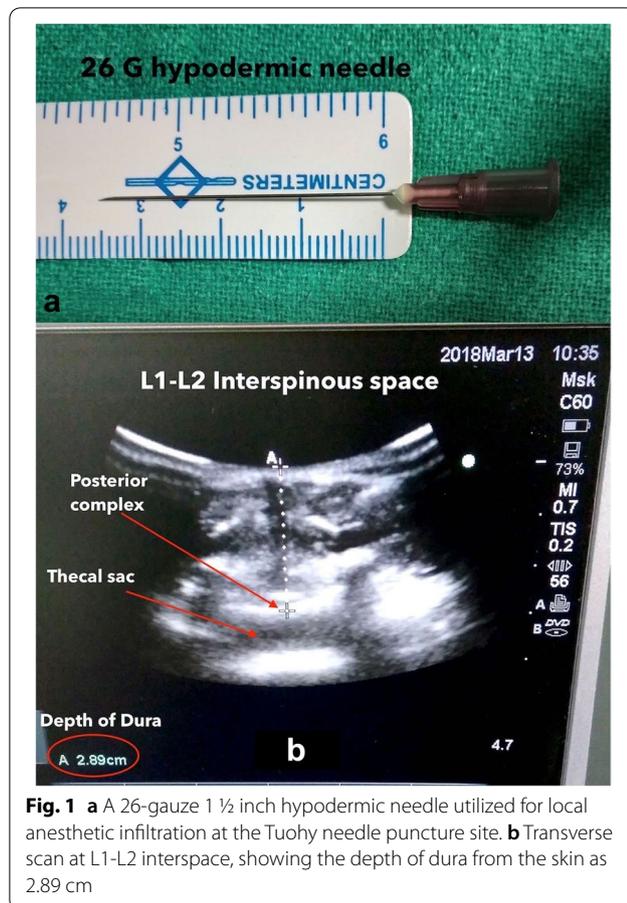
hematoma or cord injury. However, a normal finding placed us in a diagnostic dilemma. Patient was reassessed for any neurological deterioration in recovery area, and we observed improvement in Bromage scoring. Gradually, the patient regained full sensations of the lower limbs. On neuraxial scanning by US using a low frequency (2–5 MHz) probe, we identified the pulsating thecal sac with posterior dura at a depth of 2.89 cm. Retrospectively, it was found that a 1 ½ inch (3.81 cm) 26-G hypodermic needle was used for local infiltration. Thus, we assumed that inadvertent subarachnoid deposition of local anesthetic (LA) by skin infiltration needle might be the probable cause of this situation. Epidural catheter was removed, and patient was observed for 24 h.

Previously, a case of traumatic spinal cord injury by LA infiltrating needle has been reported, where the patient suddenly moved causing the damage (Absalom et al. 2001). There was immediate sign of injury which was confirmed by MRI scan. In our case, the catheter placement was totally uneventful, and there was no such alarming sign. Verily, the symptoms were quite similar to a subarachnoid block; however, we ruled that possibility out because we had not administered any drug through the catheter. With MRI findings being normal and US assessment of depth (2.89 cm) and length of hypodermic needle (3.81 cm) used for local infiltration, we inferred that the LA might have gone in the subarachnoid space (Fig. 1a and b).

The skin to epidural space distance increases with BMI and is least correlated with age, sex, and height (Hazari et al. 2016; Prakash et al. 2014). There are different formulae reported in literature to calculate the probable

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distance from skin to epidural space using BMI; however, none of them found to match the exact depth in our case. Thus, US still stands as the most accurate way of knowing the depth of epidural space and can be reemphasized by knowing the nature of occurrence of such complication.

#### Abbreviations

LOR: Loss of resistance; US: Ultrasound; ASA: American Society of Anesthesiologists; BMI: Body mass index; MRI: Magnetic resonance imaging; LA: Local anesthetic.

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None.

#### Authors' contributions

All the following authors have read and approved the manuscript "Be careful in choosing length of needle for local anesthetic infiltration during central neuraxial blockade" and ensured that this is the same case. DB, conceptualization, writing—review editing, and supervision. This author helped conceive the case report, acquire the ultrasound images, and reviewed the manuscript. TS, writing original draft. This author helped the draft of manuscript and revise the manuscript. RK, data curation. This author helped the literature search and revise the manuscript. LS, review and editing. This author helped the draft of manuscript and revise the manuscript.

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#### Availability of data and materials

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#### Declarations

#### Ethics approval and consent to participate

These are not applicable as it is an individual's reported case, and standard written informed consent for anesthesia and surgery had been obtained as per institute protocol.

#### Consent for publication

Written informed consent was obtained from the patient for publishing the case.

#### Competing interests

The authors declare that they have no competing interests.

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