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Unexpected epidural catheter migration: Avoiding the pitfalls

To the editor,

Catheter migration is a known complication of epidural insertion in the obese, the parturient, paediatric patients and catheter insertions in the sitting position [1–3]. Mean distance of catheter migration usually ranges from 0.67 to 1.04 cm with the maximum reported being 4.28 cm in an obese patient [2].

A 45 year old female patient, with BMI 25 Kg/m^2 was posted for vaginal hysterectomy. Combined spinal epidural Anaesthesia (CSEA) was administered using a CSE Set (Espocan®, B. braun, Melsungen, Germany) with the patient in the right lateral decubitus position. After Loss of Resistance (LOR) at 5 cm, subarachnoid block was given with 27 G whitacre needle with 2.5 ml 0.5% bupivacaine heavy. The epidural catheter was threaded smoothly and fixed at the 10 cm mark at the skin. On two segment regression of the block, resistance to injection of the local anaesthetic was encountered. We rechecked the connections and looked for any obvious kinking or occlusion. On partial removal of dressing, we observed that the epidural catheter was now at 15 cm mark on the skin from the original 10 cm mark. The catheter was gently withdrawn until 10 cm mark following which injection of the local anaesthetic could be easily accomplished.

Failure to inject drug through the epidural catheter can be either due to kinking or knotting of catheter, inward migration or sometimes due to incorrect assembly of connectors. The skin movement relative to the epidural space during patient movement, while changing from flexed sitting position to lateral decubitus position leads to catheter migration as the catheter is firmly grasped by the ligamentum flavum in situ [4]. Although our patient was neither obese nor parturient, and we had inserted the catheter in lateral decubitus position, we encountered an unexpected marked catheter migration of 5 cm. Inward catheter migration can result in intravascular, subdural, subarachnoid cannulation or lateral migration within the epidural space itself. However, resistance to injection occurs only in association with kinking of the catheter as observed in our case.

Various methods to prevent kinking and migration of epidural catheter at the site of emergence from skin have been described that include tunnelling of epidural catheter, use of epidural fixation devices, application of a shield, tying the catheter with stitch on the skin or by simply placing a rolled gauge bandage between the skin and catheter interface [5–7]. The patient's back should be in a deflexed position before fixing the catheter especially in obese patients to reduce the incidence of catheter migration. Due to considerable movement of the skin and soft tissues over the lumbar spine with change of position in an obese patient, Webster recommended application of fixative dressing of the epidural catheter only after patients position is changed from sitting to lateral [4]. Catheter tunnelling may be particularly useful in obese patients, where adhesive tape can peel off due to sweat and friction effects. There are some studies comparing modern dressing devices including tunnelling techniques with varying results. LockIt Plus® was associated with less catheter migration as compared to Epi-Fix™ and Tegaderm™ in a study conducted by Odor et al. [8]. Similarly, Chow et al. demonstrated Epi-Guard method of epidural catheter fixation to be superior to a standard Tegaderm™ occlusive dressing [9]. Tunnelling the catheter as compared to suturing the catheter provided similar protection in a study conducted by Chadwick et al. [10]. Likewise, Sharma et al. support the use of Lockit device as a safe and comfortable fixation device compared to subcutaneous tunnelling of catheters [11].

A lot of emphasis is placed on the technique of epidural insertion but however technique of catheter fixation is often neglected. Correct catheter fixation goes a long way in preventing catheter migration and infection at the site which ensures that safe epidural analgesia and anaesthesia can be provided without untoward sequel. Last but not the least, the importance of test dose before every epidural injection cannot be emphasised enough. To conclude, the anaesthesiologist should always check catheter patency at three steps – after inserting epidural catheter, following dressing application and even later when the final position is achieved.

Conflicts of interest

None.

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