Identification and confirmation of the epidural space in infants and children

To the Editor

I read the comprehensive review on identification and confirmation of the epidural space by Dr. Teng WN1 with a great interest. I would like to provide additional information on the technique I have been using in pediatric epidural analgesia for more than a quarter of a century.2–4 Robin Cox also quotes this technique in the special article.5

This technique is one of the methods that modify the loss of resistance technique.2,4 A sterile intravenous micro-drip infusion set, prepared with saline as for an intravenous infusion, is added to the standard epidural tray. The tip of the epidural needle is inserted into inter spinous ligament, the stiletto is removed and the distal end of the infusion set is connected to the needle hub. The micro-drip chamber is kept about 1 m above the puncture site. The clamp of the infusion set is opened fully; no dripping should be observed if the tip of the needle is in inter spinous ligament. An assistant observes the drip chamber while the anesthesiologist advances the needle slowly and carefully. At the first sight of dripping (an objective sign of loss of resistance), the anesthesiologist is notified immediately. He stops advancing the needle, confirms free flow of fluid in the drip chamber, and closes the clamp. Usually, movement of a tiny air bubble at the hub of the epidural needle towards the epidural space can be observed by the anesthesiologist.

This technique has many advantages.

Firstly, an epidural needle with wings can be advanced with both hands; precise control of movement is easier by this method than by the loss-of-resistance method, where one hand holds the needle and the thumb of the other hand pushes the piston of the syringe.

Secondly, air is not injected into the epidural space. Air bubbles in the epidural space have been reported to be the cause of incomplete analgesia during epidural analgesia.

In addition, air in the epidural space has been blamed for lumbar root compression, subcutaneous emphysema, and inter scapular pain can be prevented with this method.

Thirdly, only a very small amount of saline is infused into the epidural space, so dilution of the local anesthetic is minimized.

Fourthly, it needs no special talent to identify the epidural space. It only needs to confirm free flow of saline in the drip chamber. Epidural space can be identified not only the anesthesiologist operating epidural analgesia but also assistant.

Fifthly, tools to do this technique are very simple and all tools exist in operating room and are very inexpensive.

Since this method is useful especially in pediatrics, in adults also be useful. We can use just same approach in adults.

With this technique, I measured the distance from the skin to the lumbar epidural space in pediatrics and made simple formula to estimate the distance.3 Predicting the distance before doing epidurals is very important to avoid dural puncture.

I hope that you and the readers will also pay attention to this technique of identifying the epidural space.

Conflicts of interest

None.

References


Aki Uemura
Anshin Hospital, Dept. of Anesthesiology, 1–4–12 MinatojimaMinamiMachi, Chuo-Ku Kobe-city, Hyogo 650-0047, Japan
E-mail address: akiue@mac.com.

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