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Programmed intermittent epidural bolus: a viable alternative to traditional methods?

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Editorial

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The demand for epidural analgesia, which has been widely used traditionally and particularly in thoracoabdominal surgery, has gradually declined owing to the development of minimally invasive surgery and the increasing number of red flags for anticoagulation in patients [1]. However, epidural analgesia remains one of the most reliable techniques for providing effective analgesia. Conventionally, continuous epidural infusion (CEI) and patient-controlled epidural analgesia (PCEA) have been widely used, with PCEA in particular allowing for the adjustment of the background infusion according to the situation or institution [2]. However, in recent years, interest in programmed intermittent epidural bolus (PIEB) as an alternative option has grown considerably.

PIEB involves the administration of boluses of a local anesthetic with narcotics at programmed intervals using an infusion pump. While extensive research has been conducted on PIEB in labor analgesia, to align with the trend of procedure-specific protocols, its application in postoperative pain management is also being explored. PIEB has been reported to reduce pain scores and breakthrough pain at various time points, increase patient satisfaction, and demonstrate equivalent or superior analgesic effects compared to CEI [3]. Additionally, PIEB reduces the incidence of motor blockade and reduces the total local anesthetic dose.

However, limited evidence persists for various clinical application challenges.

In this issue of the *Korean Journal of Anesthesiology*, Bang et al. [4] compared PIEB with CEI for postoperative pain control after cesarean section and showed that PIEB provided superior analgesia with less motor blockade. This study provides evidence for the effectiveness of PIEB as an analgesic and suggests its potential applicability in other surgical procedures.

However, further research and the clinical application of PIEB require addressing several issues, including determining the appropriate volume and concentration of boluses based on the minimal effective volume and concentration of the target nerve. Another critical consideration is the bolus interval, which differs significantly from CEI and can impact both analgesic and adverse effects [5]. Additionally, factors such as catheter design, pump device, maximal flow rate, volume, and resistance may vary, affecting the delivery of the prescribed bolus dose and infusion rate and thereby influencing epidural spread [6,7].

Furthermore, owing to the larger dose, volume, and longer interval of PIEB, unexpected complications such as intrathecal infusion or systemic delivery of local anesthetics may occur. Therefore, close monitoring of vital signs and sensorimotor functions is essential during bolus delivery.

With the accumulation of research results, I anticipate that PIEB will become a good

alternative option for postoperative analgesia.

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Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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