



Editorial

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Another new kid on the BLOCK for pain control in pediatric cardiac surgery

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Cardiac surgery under median sternotomy remains one of the most painful procedures in pediatrics. Adequate pain control is vital for fast tracking in this vulnerable patient group and has been shown to be associated with decreased morbidity and a shorter hospital stay. In recognition of the importance of adequate pain control, early studies evaluated the long-term effects of caudal or epidural analgesia. Unfortunately, studies have reported inconsistent results with caudal analgesia, and many have been reluctant to perform higher-level epidural analgesia due to the risk of hypotension or hematoma formation. Thus, recent studies have focused on evaluating the efficacy and safety of more superficial non-neuraxial regional fascial plane blocks [1,2]. Although these studies have reported favorable results regarding pain scores and opioid consumption, whether these favorable effects lead to positive long-term outcomes remains unknown.

In this issue of the *Korean Journal of Anesthesiology*, to further address the positive role of regional blocks in pediatric patients undergoing cardiac surgery, Abdelbaser et al. [3] reported their experience using the ultrasound-guided bilateral thoracic retrolaminar block (TRLB). The TRLB is a relatively novel plane block proposed as an alternative to the classic paravertebral block, with a lower risk of pleural injury. The authors prospectively evaluated 66 patients aged 2–8 years who underwent cardiac surgery via midline sternotomy for repair of simple congenital heart diseases. By comparing patients who received either normal saline (control group) or bupivacaine (study group) during the TRLB, they reported the following significant findings: a reduction in perioperative fentanyl consumption, faster extubation, and a shorter ICU stay. The results are consistent with those of previous studies using alternative regional blocks [1,2], and most valuably, they report the first collection of prospective data regarding the use of the TRLB in this specific patient group.

The results are significant in that they agree with the recent trend of perioperative opioid sparing [4]. In the pediatric population, the potential reduction in the total amount of anesthetics administered with TRLBs may also be particularly beneficial. Although the risk of anesthesia-induced neurotoxicity in young brains remains unknown and has not been well studied in pediatric patients undergoing cardiac surgery, studies have reported the possibility of neurotoxicity with the use of anesthetics during neurodevelopment [5]. Thus, by providing effective analgesia, the bilateral TRLB may reduce the neurotoxic properties of anesthetics by reducing the required dose. However, while most studies have measured changes in opioid consumption, the effects of regional blocks on the total anesthetic dose have not been studied. Abdelbaser et al. [3] stated that sevoflurane was controlled at 1–2% regardless of the use of the bilateral TRLB. The lack of studies addressing the dose of anesthetics may be due to difficulties in measuring the depth of anesthesia, as the use of processed EEG monitoring remains less reliable in pediatric pa-

tients. Future studies should address the need for anesthesia dose adjustment, as this would also affect the use of opioids.

While this prospective study conducted by Abdelbaser et al. [3] strongly supports the bilateral TRLB as an effective regional block for pediatric cardiac surgery, additional studies are needed to acquire in-depth knowledge regarding long-term benefits and potential risks (including the systemic toxicity of local anesthetics). Future studies comparing safety and efficacy among various regional blocks, such as the erector spinae plane block and transversus thoracis muscle plane block, are also necessary to identify the most appropriate treatment method.

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Conflicts of Interest

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

References

1. Kaushal B, Chauhan S, Magoon R, Krishna NS, Saini K, Bhoi D, et al. Efficacy of bilateral erector spinae plane block in management of acute postoperative surgical pain after pediatric cardiac surgeries through a midline sternotomy. *J Cardiothorac Vasc Anesth* 2020; 34: 981-6.
2. Zhang Y, Chen S, Gong H, Zhan B. Efficacy of bilateral transversus thoracis muscle plane block in pediatric patients undergoing open cardiac surgery. *J Cardiothorac Vasc Anesth* 2020; 34: 2430-4.
3. Abdelbaser I, Mageed NA, Elfayoumy SI, Magdy M, Elmorsy MM, Alseoudy MM. The effect of ultrasound-guided bilateral thoracic retrolaminar block on analgesia after pediatric open cardiac surgery: a randomized controlled double-blind study. *Korean J Anesthesiol* 2022; 75: 276-82.
4. Cravero JP, Agarwal R, Berde C, Birmingham P, Coté CJ, Galinkin J, et al. The Society for Pediatric Anesthesia recommendations for the use of opioids in children during the perioperative period. *Paediatr Anaesth* 2019; 29: 547-71.
5. Ing C, Jackson WM, Zaccariello MJ, Goldberg TE, McCann ME, Grobler A, et al. Prospectively assessed neurodevelopmental outcomes in studies of anaesthetic neurotoxicity in children: a systematic review and meta-analysis. *Br J Anaesth* 2021; 126: 433-44.