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LETTER

Evaluation of the Effect of New Multimodal Analgesia Regimen for Cardiac Surgery: A Prospective, Randomized Controlled, Single-Center Clinical Study [Letter]

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Dear editor

In a single-center, prospective, randomized, controlled clinical trial of 108 patients who underwent cardiac surgery, Jin et al[1] showed that a multimodal regimen including paracetamol, gabapentin, ketamine, lidocaine, dexmedetomidine and sufentanil was not superior to the traditional opioid-based regimen in terms of analgesia effects but it reduced perioperative opioid consumption and rescue analgesia use. Given that use of a multimodal opioid-sparing regimen is increasingly emphasized in current practice of enhanced recovery after cardiac surgery (ERACS),[2] this study has potentially clinical implications. However, we had several questions about the design and results of this study and wished to get the authors' responses.

First, for reliable hypothesis testing, sample size calculation is an important component of a randomized controlled trial.[3] In this study, sample size was calculated based on the findings of their previous study with the same protocol, in which incidence of moderate-to-severe pain was 64% and 35% in the control and multimodal groups, respectively. However, their reporting of sample size calculation was incomplete. The authors did not specify how many patients were included in each group of their previous study and whether the incidence of moderate-to-severe pain at rest or on coughing was used for sample size calculation. Most importantly, it was unclear whether the between-group difference in incidence of moderate-to-severe pain in their previous study was statistically significant and what effective size was designed as clinically significant in this study. We believe that clarification of these issues would improve the transparency of this study design.

Second, as pain following cardiac surgery is often severe, the current strategies of ERACS recommend that a multimodal analgesic strategy should be applied to minimize pain (ie, a visual analog scale (VAS) score of 3 or less), facilitate early mobilization and reduce the risk of postoperative complications.[2] We noted that incidences of moderate-to-severe pain with a VAS score of 4 or more during hospitalization were 29.6% vs 27.8% at rest in the control and multimodal groups, respectively; and 68.5% vs 64.8% on coughing. Especially, as primary outcome of this study, incidence of moderate-to-severe pain on coughing was more than 60%, which will inevitably delay early mobilization and increase the risk of postoperative complications. Evidently, this does not meet the requirements of current ERACS protocols.[2] Furthermore, incidences of rescue analgesia and chronic pain at 3 months postoperatively were 57.4% and 50.0% in the control group, respectively; and 31.5% and 42.6% in the multimodal group. Based on these results, we argue that the multimodal analgesic regimen designed by this study is not ideal for pain control after cardiac surgery.

Finally, the multimodal analgesic regimen designed by this study consisted of 6 drugs and required continuous infusions of 4 drugs in the ICU. Undoubtedly, this is a huge burden of ICU care. Just like this study had shown,

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moreover, pain after cardiac surgery may not be adequately controlled using systemic analgesics alone.[4] Available literatures indicate that ultrasound-guided paravertebral and intercostal blocks enable safe, effective, opioid-free pain control and have been recommended as a component of multimodal analgesic regimens for ERACS practice.[2,5] We would like to know why the authors did not consider including a local block in their multimodal analgesic regimen.

Disclosure

The authors report no conflicts of interest in this communication.

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