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LETTER

A Response to: Letter to the Editor Regarding "The Effect of Ultrasound-Guided Erector Spinae Plane Block Combined with Dexmedetomidine on Postoperative Analgesia in Patients Undergoing Modified Radical Mastectomy: A Randomized Controlled Trial"

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To the Editor,

We thank Prof. Xue and his colleagues for their kind comments on the rigor of our recently published clinical study suggesting the effect of ultrasound-guided erector spinae plane block (ESPB) combined with dexmedetomidine on postoperative analgesia in patients undergoing modified radical mastectomy: a randomized controlled trial [1]. We agree that their comments would further clarify some details of the study protocol.

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First, we actually did the power analysis to determine the group size based on our pilot study. The primary outcome of this study is the cumulative dosage of flurbiprofen at 48 h after surgery. Our pilot study showed a mean (± SD) flurbiprofen consumption of 100 mg (± 25) at 48 h postoperatively in group R. For 90% power and an error of 0.01, the sample size necessary to detect a 30% difference in postoperative flurbiprofen requirements at 48 h using dexmedetomidine as an adjuvant combined with ESPB (group DR) compared with group R was calculated as 23 subjects for each group. We included 30 patients in each group to allow for patient dropouts. Although the sample size in this study is enough for avoidance of type 1 and type 2 statistical errors, it would be better to include this issue in the article. A flow diagram was already shown in Fig. 2 of the publication of interest [1]; thus, a total of 75 patients who underwent modified radical mastectomy were assessed as eligible, 15 of whom were excluded; 60 patients were randomly divided into two groups.

Second, general anesthesia for the patients in this study was conducted by total intravenous anesthesia without inhalation anesthetics. The anesthesiologist injected 0.2 μg/kg of sufentanil intravenously when the patient's hemodynamic parameters (mean arterial blood pressure or heart rate) exceeded 20% of the baseline. If the additional sufentanil could not prevent this

20% increase in hemodynamic parameters, the patients then received an intravenous infusion of remifentanil according to the hemodynamic values. Since the nerve block anesthesia team in our department is experienced in ESPB, our previous studies have shown that ESPB could significantly reduce the opioid (sufentanil and remifentanil) consumption during surgery [2, 3]. In accordance with the recommendation [4], the bispectral index system value during anesthesia maintenance was between 40 and 60, which is the conventional anesthesia depth in this study.

Third, Table 1 shows the proportion of patients with a visual analog scale (VAS) score of greater than 4 who needed rescue analgesia using intravenously administered flurbiprofen 50 mg. Although slightly more patients received flurbiprofen in group R than in group DR during the postoperative 48 h, the difference between the groups is not significant. These results suggest that dexmedetomidine as an adjunctive to ESPB can effectively relieve pain in patients undergoing breast cancer surgery.

Fourth, in this study, the patients with pain scale of greater than 4 were given 50 mg of flurbiprofen. The primary outcome is the cumulative dosage of flurbiprofen at 48 h after surgery. Gürkan et al. [5] have shown that ESPB is effective in reducing pain after modified radical mastectomy for breast cancer. However, the duration of this block is no more than 24 h [6]. Dexmedetomidine can assist local anesthetic agents by accelerating the onset and extending the duration of block in the brachial plexus block [7]. Therefore, the objective of this study is to determine the effect of dexmedetomidine on the ESPB 48 h after breast cancer surgery.

Moreover, as Prof. Xue and his colleagues suggested, the proportion of patients with a VAS score of greater than 4 who needed rescue analgesia using intravenous administration of flurbiprofen 50 mg is more valuable than the postoperative flurbiprofen consumption dose per kilogram body weight or per 24 h. Table 1 shows that fewer patients in group DR received flurbiprofen treatment.

Finally, we do agree that this study would be better at showing the improvement in postoperative analgesic efficacy for patients had patient satisfaction been included. Then, the primary outcome of this study would be the consumption of flurbiprofen at 48 h after surgery. The VAS scores at rest and at 90° shoulder abduction after surgery were also recorded. This study indicated an effective and safe postoperative analgesia strategy for patients undergoing modified radical mastectomy. Well-performed postoperative analgesia management will improve patient recovery, and it also could indirectly reflect the patients' satisfaction [8–10].

From what is stated above, we deeply thank Prof. Xue and his colleagues for identifying and reporting these issues. These issues have no further effects on the findings and conclusions.

Table 1 Postoperative rescue analgesic requirement in the two groups

Time frame (h)	Group R (*n*, %)	Group DR (*n*, %)	χ^2 value	*P* value
0–1	0	0	NA	NA
1–6	2 (6.7)	0	0.517	0.472
6–12	5 (16.7)	0	3.491	0.062
12–24	8 (26.7)	4 (13.3)	1.667	0.197
24–48	4 (13.3)	1 (3.3)	0.873	0.350

Group R erector spinae plane block with ropivacaine; *Group DR* erector spinae plane block with ropivacaine plus dexmedetomidine

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Disclosures. Xunxun Wang, Guo Ran, Xia Chen, Cuiyu Xie, Jing Wang, Xuesheng Liu, Yao Lu, and Weiping Fang have nothing to disclose.

Compliance with Ethics Guidelines. This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

Data Availability. All the extra data presented are available from the corresponding author on reasonable request.

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