



## Adding dextran to local anesthetic enhances analgesia

Masahiko Tsuchiya<sup>1</sup> · Koh Mizutani<sup>2</sup> · Wasa Ueda<sup>3</sup>

Received: 8 September 2018 / Accepted: 27 October 2018 / Published online: 7 November 2018  
© Japanese Society of Anesthesiologists 2018

To the Editor:

We read with interest the review by Tobe et al. regarding approaches to extend local anesthetics (LA) action [1]. However, use of dextran as an LA adjuvant was not described.

Our previous studies showed that adding low-molecular weight dextran (LMWD) to LA and an adrenaline mixture reduced systemic adrenaline absorption, abrogating adverse hemodynamic effects [2]. Also, LMWD added to LA induced long-term profound analgesia with lower LA systemic toxicity by reducing systemic LA absorption [3]. These effects were demonstrated in infiltration nerve block (NB) [2], transversus abdominis plane block [3], rectus sheath block [3], quadratus lumborum block [4], and mandibular NB cases. Formation of an LMWD and LA complex that remains at the NB site longer may be the associated mechanism [3, 4].

Results of other studies are conflicting, as the NBs were performed with classical landmark methods. Our findings were obtained with an ultrasound-guided technique that enables accurate LA injection as a compartment NB around nerves or between fascias, which may be essential for the

effects of LMWD [3]. We believe that LMWD is another promising agent to extend LA action.

### Compliance with ethical standards

**Conflict of interest** There are no conflicts of interest to declare.

### References

1. Tobe M, Suto T, Saito S. The history and progress of local anesthesia: multiple approaches to elongate the action. *J Anesth*. 2018;32:632–6.
2. Ueda W, Hirakawa M, Mori K. Inhibition of epinephrine absorption by dextran. *Anesthesiology*. 1985;62:72–5.
3. Hamada T, Tsuchiya M, Mizutani K, Takahashi R, Muguruma K, Maeda K, Ueda W, Nishikawa K. Levobupivacaine-dextran mixture for transversus abdominis plane block and rectus sheath block in patients undergoing laparoscopic colectomy: a randomised controlled trial. *Anaesthesia*. 2016;71:411–6.
4. Tsuchiya M, Mizutani K, Ueda W. Large volume of low concentration of local anesthetic dissolved with low-molecular weight dextran as adjuvant for ultrasound-guided posterior quadratus lumborum block greatly enhances and extends analgesic effects. *Minerva Anesthesiol*. 2018;84:876–8.

✉ Masahiko Tsuchiya  
oxymasa@ea.mbn.or.jp

<sup>1</sup> Department of Anesthesiology, Osaka City University Graduate School of Medicine, 1-5-7 Asahi-machi, Abeno-ku, Osaka 545-8586, Japan

<sup>2</sup> Department of Anesthesia, Osaka Rosai Hospital, Sakai 591-8025, Japan

<sup>3</sup> Department of Anesthesiology and Intensive Care Medicine, Kochi Medical School, Kochi 783-8505, Japan