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Editorial

Local Anesthetic Systemic Toxicity

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Local anesthetic systemic toxicity (LAST) is a lethal adverse event which correlates with the widespread use of local anesthetic practices along with numerous health care settings, with an incidence currently estimated to be 0.03%, or 0.27 episodes per 1.000 peripheral nerve blocks [1].

To decrease the rate of LAST, prevention is the main and the most preferred method. Also, prevention of systemic toxicity from local anesthetics decreases the level of toxicity. Some methods to prevent systemic toxicity are listed below [2,3]:

1. Background pathology of patients who receive local anesthetics
2. Reducing the dose of local anesthetics
3. Small-dose, divided administration
4. Using local anesthetics associated with less risk for causing systemic toxicity
5. Performing an aspiration test after the puncture
6. Using a pharmacologic marker and/or test dose, e.g. epinephrine
7. Methods of detecting intravascular administration
8. Using combined ultrasound to see the location of the needle and nerve stimulator.

The most important side effects of LAST in clinical applications are in the cardiovascular system and central nervous system. These effects can range from tinnitus to bradycardia, hypotension, seizures, coma, cardiac arrest and death [4]. The American Society of Regional Anesthesia and Pain Medicine (ASRA) created a checklist for the management of LAST in 2010 and revised in 2012 and 2017 [5].

In the checklist:

- Considering the lipid emulsion is now recommended at the first sign of a severe LAST.
- Specific time intervals are recommended for post-event monitoring and are separated by the severity of the LAST.
- The upper limit of the lipid emulsion dose increased to 12 mL/kg, but it was emphasized that smaller doses were the most normal dosage.

The 2017 checklist, for patients who weigh more than 70 kg, simplifies lipid emulsion dose to contain a constant 100-mL bolus followed by the infusion of 200 to 250 mL over 15 to 20 minutes. For patients who weigh less than 70 kg, specific weight-based dosing is designated; nevertheless, even these recommendations shows that exact volume and flow rate are not very crucial. A further response to perceived unclear lipid emulsion dose recommendations, the checklist now recommend that a 30-minute resuscitation could include

lipid emulsion volumes approaching 1 L. As a result, the recommended total 1L of lipid emulsion 20% for a 'LAST Rescue Kit'. ASRA has developed an ASRA LAST app which is available in the Apple Store and Google Play Store. The application also shows the latest ASRA LAST Checklist and its practice advisory [5].

LAST is a life-threatening complication. It is important to provide airway management, control of convulsions and initiate lipid therapy. We should be very careful about LAST when using local anesthetics and when LAST develops, we should start treatment according to ASRA checklist. LAST and ASRA checklist awareness should be increased in everyone using local anesthetics.

Conflict of Interest

This study has received no financial support. We have no conflict of interest.

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