Local Anesthetic Systemic Toxicity following Peripheral Nerve Block in a Patient With Severe Hypoalbuminemia.

Case Report

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INTRODUCTION

Local anesthetics (LA) have a high rate of binding to plasma proteins, mainly to albumin and alpha 1 acid glycoprotein. Albumin is not a specific transporter but it is the most important given its abundance in plasma.

Toxicity signs and symptoms for LA use include neuro and cardio toxicity, with seizures and cardiac arrests.

Hypoalbuminemia is frequent in patients with prolonged immobilization¹. Serum albumin predicts mortality at 30 days in patients in medical emergencies ².

OBJECTIVE

To report a rare cause and symptoms of local anesthetic systemic toxicity (LAST)

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Fig A: tibial plateau fracture

DESCRIPTION OF THE CASE

- 85 y.o. F: LAST following an US-guided, neuro-stimulated femoral nerve block.
- Solution: 0,525% ropivacaine + 0,6% lidocaine, total volume 15 ml.
- Lab tests: albuminemia 1.6 g/dl as positive data.
- IV injection was avoided by administering the lowest effective dose, aspirating with the syringe prior to each injection and incrementally injecting 3 to 5 ml, every 15 seconds while observing through ultrasound both the needle and local anesthetic dispersion.

After blocking, vital-sign monitoring system evidenced a 70% O2 desaturation and bradycardia. She was disoriented and presented severe signs of respiratory difficulty.

Hemodynamic support and orotracheal intubation were performed. LAST was identified. Two boluses of 1.5 ml/kg of 20% intravenous lipid emulsion were given. She remained intubated in the ICU and extubated three days later with sensorium restitution.

Fig B and C:
ultrasound guided femoral nerve block;
Local anesthetic dispersion.

CONCLUSIONS

We interpreted LAST as secondary to the hypoproteinemia presented by the patient and assumed that the low levels of albumin had led to an increase in the free fraction of local anesthetics and thus to their deleterious effects.

Neurotoxicity observed was not the standard that LAST can produce (there were no convulsions). Intoxication stemmed from the patient’s hypoproteinemia, which is not a common cause. In risk patients it is important to check proteinogram to detect hypoalbuminemia prior to performing a peripheral nerve block.

REFERENCES

¹ Nicholson JP, Wolmarans MR, Park GR. The role of albumin in critical illness. British Journal of Anaesthesia. 2000; 85:599-610.

² Lyons O, Welham B, Bennet K, et al. Serum albumin as an outcome predictor in hospital emergency medical admissions. European Journal of Intern Medicine. 2010; 21:17-20.