

Late recurarization after sugammadex in a magnesium-sensitized patient precipitated by clindamycin

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To the Editor,

The availability of sugammadex has markedly improved the reliability of reversal of amino-steroid neuromuscular blockade, and a train-of-four (TOF) ratio ≥ 0.9 is widely accepted as adequate recovery. We report a case of late TOF regression after documented quantitative recovery, highlighting the vulnerability of neuromuscular transmission in pharmacologically sensitized patients.

A 28-year-old obese primigravida (body mass index 36 kg/m²) with preeclampsia received a 2 g bolus of magnesium sulfate 1 h before induction of general anesthesia. Neuromuscular blockade was maintained with rocuronium. At the conclusion of surgery, quantitative monitoring demonstrated a TOF count of 1. Sugammadex 2 mg/kg was administered. A TOF ratio of 0.9 was confirmed using objective monitoring, and the patient fulfilled clinical criteria for extubation. She was transferred to the post-anesthesia care unit (PACU) in stable condition. One hour later, the patient received intravenous clindamycin 600 mg. Within 15 min, she developed respiratory distress with labored breathing. Immediate repeat quantitative monitoring revealed a TOF ratio of 0.6, confirming late recurarization.

We propose a convergent pharmacologic mechanism. Magnesium inhibits presynaptic calcium entry and reduces acetylcholine (ACh) release, narrowing the safety margin of neuromuscular transmission and prolonging recovery from blockade [1]. Lincosamides such as clindamycin further depress neuromuscular transmission by blocking ACh receptor channels at the motor end plate and may potentiate muscle weakness that is resistant to conventional reversal [2,3]. We hypothesize that insufficient sugammadex dosing in the deep block allowed redistribution of unbound rocuronium from peripheral compartments. In a sensitized neuromuscular junction, even small increases in free relaxant may precipitate clinically significant weakness. Administration of 2 mg/kg in the presence of a TOF count of 1, where 4 mg/kg is recommended [4],

may have left inadequate circulating sugammadex to buffer redistribution. Hudson *et al.* similarly found that 4 mg/kg of sugammadex effectively overcomes antibiotic synergy [5]. Use of 2 mg/kg in our case, for a deep block (TOF count of 1), was insufficient to maintain the “redistribution trap.”

Beyond specific interactions, several endogenous and exogenous factors can impair the efficacy of sugammadex or prolong recovery. While compounds such as flucloxacillin, fusidic acid, and various steroids show biochemical affinity for sugammadex, only the selective estrogen receptor modulator toremifene has demonstrated clinical significance in delaying recovery. Furthermore, post-operative weakness can be exacerbated by physiological stressors, including induced hypothermia, residual sevoflurane, and electrolyte imbalances such as hypokalemia [6-8].

Coexisting pathologies, such as myasthenia gravis, attenuate the physiological safety factor of neuromuscular transmission by reducing the density of functional post-synaptic ACh receptors. Consequently, these patient cohorts require extended quantitative surveillance to ensure sustained recovery [9]. Similar pharmacodynamic variability is seen in other conditions affecting the neuromuscular junction; for instance, reports in patients with amyotrophic lateral sclerosis show that recurarization can occur even after reaching a TOF ratio of 0.92 [10].

This case suggests that a TOF ratio of 0.9 may represent a physiologically fragile threshold in patients exposed to potentiating agents. In individuals receiving magnesium or neuromuscular-depressant antibiotics, strict adherence to recommended dosing for deep block and continued quantitative monitoring in the PACU may help detect delayed regression. Late recurrence after apparent recovery is uncommon but clinically important. Recognition of additive pharmacologic interactions remains essential to post-operative respiratory safety.

REFERENCES

1. Benette G, Braga A, Ribeiro C, Fernandez AP, Carvalho VH. Influence of magnesium sulfate on the pharmacodynamic

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- characteristics of rocuronium. A randomized clinical trial. *Anaesthesiol Intensive Ther* 2025;57:e11-7.
2. Best JA, Marashi AH, Pollan LD. Neuromuscular blockade after clindamycin administration: A case report. *J Oral Maxillofac Surg* 1999;57:600-3.
 3. Becker LD, Miller RD. Clindamycin enhances a nondepolarizing neuromuscular blockade. *Anesthesiology* 1976;45:84-7.
 4. Thilen SR, Weigel WA, Todd MM, Dutton RP, Lien CA, Grant SA, *et al.* 2023 American society of anesthesiologists practice guidelines for monitoring and antagonism of neuromuscular blockade: A report by the American society of anesthesiologists task force on neuromuscular blockade. *Anesthesiology* 2023;138:13-41.
 5. Hudson ME, Rietbergen H, Chelly JE. Sugammadex is effective in reversing rocuronium in the presence of antibiotics. *BMC Anesthesiol* 2014;14:69.
 6. Murata T, Kubodera T, Ohbayashi M, Murase K, Adachi YU, Matsuda N. Recurarization after sugammadex following a prolonged rocuronium infusion for induced hypothermia. *Can J Anaesth* 2013;60:508-9.
 7. Germano-Filho PA, Cavalcanti IL, Micuci AJ, Velarde LG, De Boer HD, Verçosa N. Recurarization with magnesium sulfate administered after two minutes sugammadex reversal: A randomized, double-blind, controlled trial. *J Clin Anesth* 2023;89:111186.
 8. Kim MJ, Valerio C, Knobloch GK. Potassium disorders: Hypokalemia and hyperkalemia. *Am Fam Physician* 2023;107:59-70.
 9. Kuo KC, Wong CS, Wu TJ. Case report: Successful reversal of residual block with sugammadex in a patient not known to have myasthenia gravis. *Am J Case Rep* 2022;23:e937128.
 10. Wang YW, Zhang Y, Hu X, Li X, Han L, Wang DX, *et al.* Recurarization after sugammadex reversal in a patient with amyotrophic lateral sclerosis: Case report. *Medicine (Baltimore)* 2026;105:e46928.

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