

Benefits and risks of sugammadex

Jong-Yeon Park

Department of Anesthesiology and Pain Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

Anesthesiologists daily use a range of drugs, including intravenous anesthetics, neuromuscular-blocking drugs and their antagonists, opioids, and local anesthetics. Antagonists of neuromuscular-blocking drugs are used to reverse the action of neuromuscular-blocking drugs. However, rarely paradoxical muscle weakness [1,2], nausea, vomiting [3], bradyarrhythmias [4,5], and bronchoconstriction [6,7] occur with acetylcholinesterase inhibitors.

Sugammadex is a recently introduced antagonist of neuromuscular-blocking drugs. It binds and inactivates neuromuscular-blocking agents, particularly rocuronium and vecuronium. Complex formation between sugammadex and rocuronium or vecuronium results in the rapid reversal of neuromuscular blockade compared to anticholinesterase drugs [8]. In clinical practice and during an unexpectedly difficult airway (cannot intubate, cannot ventilate situation), a rocuronium neuromuscular blockade can be immediately reversed using sugammadex to restore spontaneous ventilation [9]. This is probably the most significant benefit of sugammadex. The ability of sugammadex to reverse rocuronium-induced neuromuscular blockade is not influenced by the choice of anesthetic (e.g., propofol versus sevoflurane) [10,11]. Therefore, when using sugammadex as the antagonist of neuromuscular-blocking drugs, there is a small risk of incomplete neuromuscular recovery or the reoccurrence of neuromuscular blockade following surgery. No dose adjust-

ments are required in older patients [12]. When using antagonists of neuromuscular-blocking drugs, anticholinesterase drugs and anticholinergics (glycopyrrolate and atropine) are coadministered to reduce the cholinergic action of anticholinesterase drugs. In this particular treatment, a side effect is dry mouth. Some patients complain of dry mouth and a gritty taste after general anesthesia and surgery. However, should we select sugammadex as the antagonist of neuromuscular-blocking drugs, we could avoid these problems.

Although sugammadex has some benefits, it also has several side effects. Hypersensitivity to sugammadex is the major concern. However, hypersensitivity reactions rarely occur. In patients with known sugammadex hypersensitivity, it is contraindicated. Other reported side effects include coughing, movement of a limb or the body, parosmia (abnormal sense of smell), and elevated urine levels of *N*-acetyl-glucosaminidase [13]. Theoretically, sugammadex can bind to endogenous and pharmaceutical molecules other than steroidal neuromuscular-blocking drugs, therefore reducing the efficacy of these molecules. When sugammadex has a very high affinity for another molecule, this molecule may displace rocuronium or vecuronium from the complex with sugammadex, resulting in the reoccurrence of neuromuscular blockade [14]. Sugammadex may interact with hormonal contraceptive drugs via unwanted binding, therefore, possibly reducing their clinical efficacy [15]. It should be explained to female patients using hormonal contraceptives that the effectiveness of such drugs could be reduced by the administration of sugammadex. The efficacy and safety of sugammadex in obstetric anesthesia have not been determined. To date, no serious adverse event in the mother or neonate after sugammadex has been reported. Because sugammadex is expensive, this is an important factor that may limit its use as a routine antagonist of neuromuscular-blocking drugs.

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Corresponding author: Jong-Yeon Park, M.D., Ph.D.
Department of Anesthesiology and Pain Medicine, Asan Medical Center, University of Ulsan College of Medicine, 88 Olympic-ro 43-gil, Songpa-gu, Seoul 138-736, Korea
Tel: 82-2-3010-3867, Fax: 82-2-470-1363
E-mail: jongyeon_park@amc.seoul.kr

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are three interesting papers on muscle relaxants [16,17], and sugammadex [18]. The study of sugammadex and its influence on bleeding is quite novel [18].

If you wish to use an antagonist of neuromuscular-blocking drugs, which would you choose between sugammadex and ace-

tylcholinesterase inhibitors? This depends on the decision and experience of the anesthesiologists regarding the benefits and risks of sugammadex, with which they should therefore be well acquainted.

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