Sugammadex in Patients With Myasthenia Gravis: A Critical Review

Jennifer A. Madsen

University of Kansas
In 2013, Sunger Ulke et al. conducted a research study entitled “Rocuronium and sugammadex in patients with myasthenia gravis undergoing thymectomy”. This study examined the use of sugammadex as a paralytic reversal agent in patients diagnosed with myasthenia gravis. While paralytic agents in this patient population are typically avoided due to their unpredictability, some surgical procedures require paralysis. In an effort to find a safe paralytic reversal agent that provides full reversal without the need for prolonged mechanical ventilation, sugammadex was chosen for further study. Sugammadex is a fairly new reversal agent that has not yet been approved by the Food and Drug Administration (FDA) for use in the United States. There are very few studies involving this new medication, particularly with this exclusive patient population. The results of this study show that sugammadex provides “rapid and complete neuromuscular recovery” (Sunger Ulke et al., 2013). While the study provides a detailed description of the design, there is no statistical analysis of the results provided.

The authors of this study were focused on determining whether or not sugammadex is safe for use in patients with myasthenia gravis. They utilized a quasi-experimental design in which no randomization or control group was provided. A short review of previous literature showed that this is the first series of cases to combine the use of rocuronium with sugammadex in myasthenic patients, comparable studies have examined the use of other paralytic agents with sugammadex. Ten subjects were included in the sample size- a table was provided which included age, weight, osserman number, and the subjects’ home pyridostigmine dose for each individual. Subjects all received the same weight-based dosages for induction medications. Previous case reports utilized a dose of 2mg/kg of sugammadex, the researchers in this study chose to give the same dose in this study and found it was sufficient to achieve adequate reversal. Specifics in the monitors used and medication dosages were provided such that the study is replicable.
The authors of this study remained focused on the research problem throughout the study and the write up. A relevant literature review was completed and included within the article, followed up with support that this study will provide new information to this area of interest. Independent variables, such as induction medications and monitoring equipment, were all described in detail, making the study replicable. The authors also mentioned one of the confounding variables, individual pyridostigmine doses, was controlled. Informed consent and approval from the Istanbul Medical Faculty Ethical Committee were obtained, addressing potential ethical issues. Tables were utilized to display results of the study and findings were related to prior studies. The authors addressed limitations of the study, including the lack of a control group and a small sample size. Lastly, a statement was made at the end of the article stating the authors declare no conflicts of interest.

While the authors did remain focused on the research problem, there was no mention of a hypothesis. They neglected to address exclusion criteria for the study participants, however all participants initially enrolled did complete the study. The investigators did not utilize randomization, blinding or a control group in an effort to control internal validity; additionally there was no discussion of a power analysis or alpha level appropriate to the study. The lack of statistical analyses in this article is it’s greatest downfall. The authors present the findings in a clear and organized fashion, but there is no determination of whether or not they are significant. While the study does inform clinical practice, it is difficult to justify its application without statistical testing.

In conclusion, this article was well written, organized and applicable to anesthesia practice, however there are multiple flaws that prevent the findings from being applied to practice. Future studies should determine a power analysis with an appropriate sample size, and an alpha
level suitable to the study. This information would not only educate practitioners, but provide support for its application into practice.
Reference List
