

Ketamine and its Application in the Clinical Setting

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Abstract

- The purpose of this research was to assess the level of understanding within the Adventist University student nurse anesthesia (SRNA) population regarding Ketamine
- An extended literature review was conducted, these results demonstrated a gap between understanding and administration of Ketamine, indicating an opportunity to increase understanding amongst the Adventist University SRNA population
- PowerPoint lecture was presented to the SRNA graduating cohorts of 2016 and 2017, informed consent was obtained, and a pre-test and post-test were administered to determine whether understanding increased, decreased, or remained the same
- The results of the pre-test and post-test indicated a statistically significant increase in understanding of Ketamine and its application in the clinical setting
- The PowerPoint presentation may serve as a teaching tool for future SRNAs as well as CRNAs

Problem

As part of a growing profession, the anesthesia provider attends to more complex cases than in the past, requiring a broader range of understanding and experience with various treatment modalities

Ketamine has many positive attributes supporting its use in the operating room. However, side effects such as emergence hallucinations have prompted many anesthesia professionals to forgo its use in the operating room.

This decreased use of Ketamine has created a generation of anesthesia providers who are generally knowledgeable about its use, but uncomfortable enough to apply it.

Review of Literature

Pain control presents a difficult challenge for anesthesia providers in multiple surgical settings, and it continues to be one of the main components patients use to judge the success of their surgical experience. Several studies have been completed with the implementation of Ketamine use in a multimodal approach with positive results.

Multiple mechanisms are involved in causing postoperative pain, and a multimodal analgesia regimen using opioids and non-opioids such as ketamine and gabapentinoids can provide pain relief, reduced opioid consumption, less adverse effects and the prevention of hyperalgesia. The literature is decisive in that the use of ketamine perioperatively leads to a more effective and longer lasting analgesic effect (Weinbroum, 2012).

In an article by Ahern et al. (2014) a study was conducted to describe the safe clinical use of ketamine in an emergency department for treatment of acute pain. Ketamine was used along with nonsteroidal anti-inflammatory drugs (NSAIDs) and opioids to achieve multimodal analgesia in this clinical setting. The study was conducted at an urban Emergency Department between 2012 and 2013 where 530 patients received low dose Ketamine for pain.

Out of 530 patients in the study, only 30 patients (6%) of the total sample met criteria for adverse events. Eighteen patients (3.5%) experienced psychomimetic or dysphoric reactions, and none of these reactions were lasting or led to changes. Only five patients (1%) developed emesis. According to the study, there were no cases of serious adverse events. The study concludes that the side effects of Ketamine found during this study such as emesis and hypoxia are equally or less common than reported with opioids.

Results

The average percentage score increased from 48.5 to 88.5 with a much smaller standard deviation for the post-test, The obtained t value is associated with a p value that is <.05 level of confidence. A paired t-test was performed for pre-test and post-test scores. It can therefore be concluded that the average percentage scores increased significantly after the presentation.

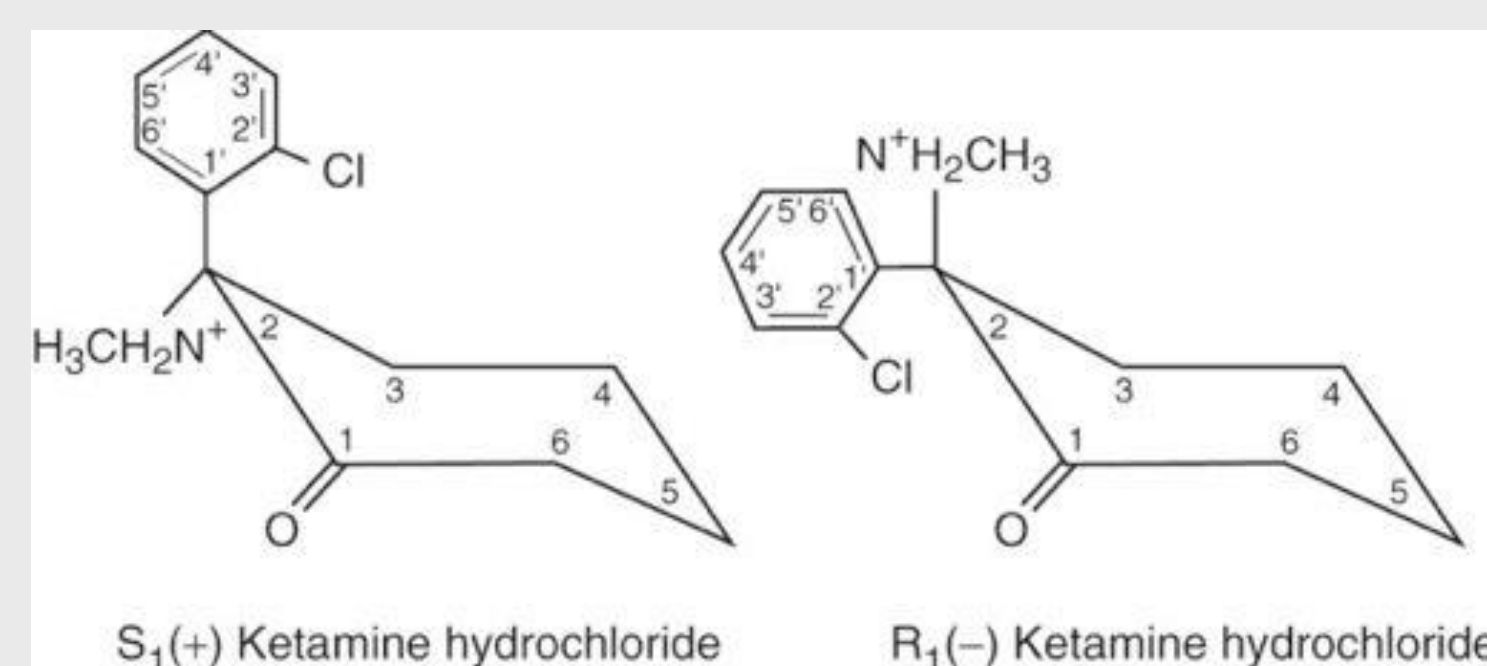
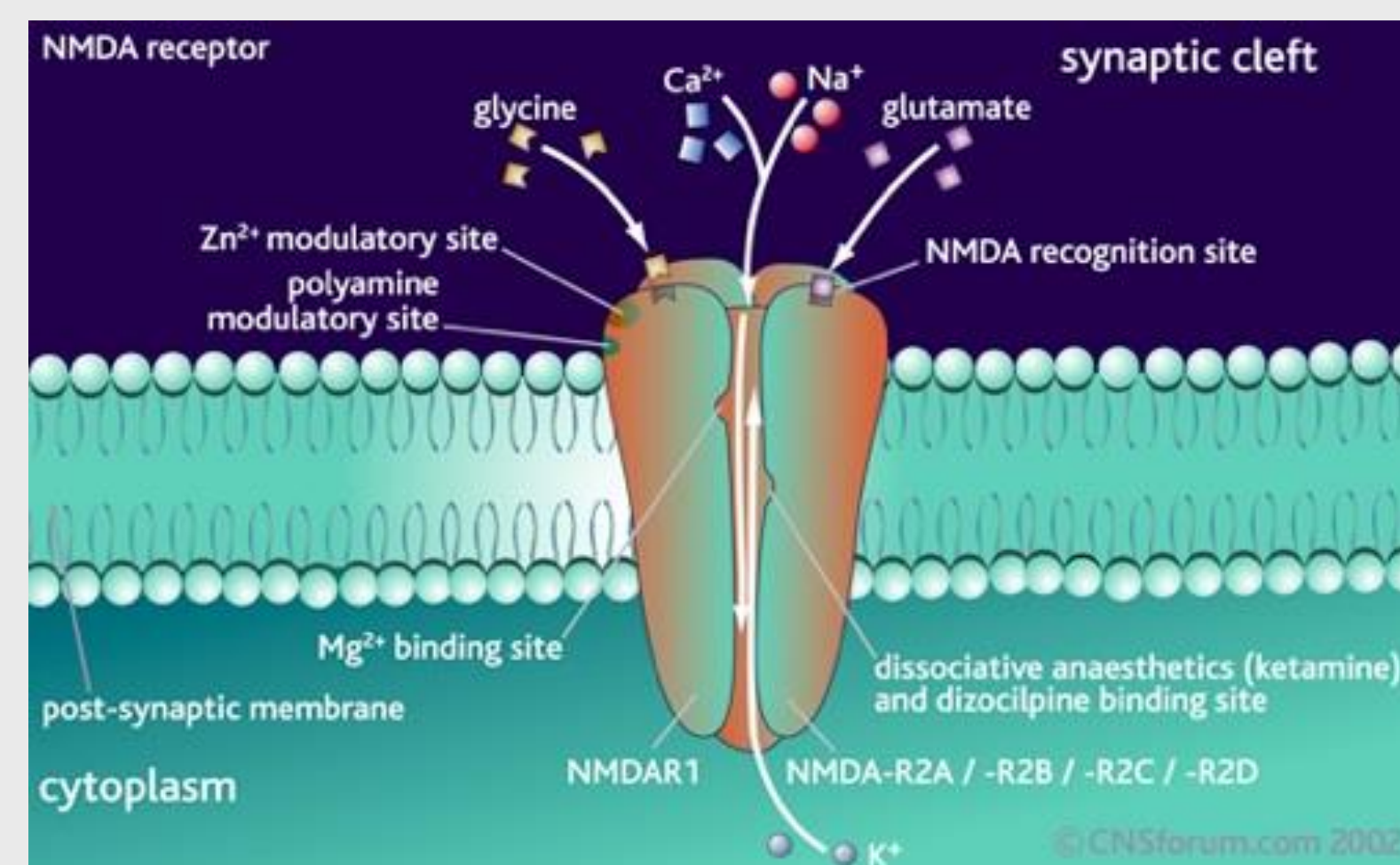
Paired Samples Statistics

| | Mean | N | Std. Deviation | Std. Error Mean |
|-------------|---------|----|----------------|-----------------|
| Pre-Test % | 48.5000 | 40 | 23.48486 | 3.71328 |
| Post-Test % | 88.5000 | 40 | 8.92993 | 1.41195 |

Paired Samples Test

| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | Sig. (2-tailed) |
|--------------------------|-----------|----------------|-----------------|---|-----------|---------|----|-----------------|
| | | | | Lower | Upper | | | |
| Pre-Test % - Post-Test % | -40.00000 | 21.72084 | 3.43437 | -46.94666 | -33.05334 | -11.647 | 39 | .000 |

Properties of Ketamine



Conclusions

- Data analysis revealed a statistically significant increase in understanding regarding Ketamine from the pre-test to the post-test. This may be attributed to a lack of student understanding as a result of inconsistent and diminished use of Ketamine within the clinical setting
- Research indicates that when pre-treated with a benzodiazepine, untoward reactions to Ketamine remain less than 1%
- The PowerPoint presentation served as an effective means of increasing understanding and may serve as a teaching tool for other SRNA's and CRNA's in the future