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CAT Block 6

Reference Article: Ferguson, Ian, et. al. "Propofol or Ketofol for Procedural Sedation and Analgesia in EM – The POKER Study: A Randomized DB Clinical Trial" Annals of Emergency Medicine 68.5 (2016); 574-582

PICO Question: Is there a significant difference in the frequency of airway and respiratory adverse advents between 1:1 ketofol and propofol alone when used for procedural sedation in the Emergency Department?

Introduction: Emergency Medicine physicians are responsible for the deliverance of procedural sedation in the Emergency Department. The monitoring and care of the patient during after the procedure falls on us as well, and coordinated care between the physician and the ancillary staff is important. Propofol has classically been used as the drug of choice in these situations, but as ketamine comes in vogue we are seeing more and more younger physicians call for it for a variety of uses. One of these uses lies in the realm of procedural sedation via 1:1 mix with ketamine. When monitoring these patients the most important aspect of their care is the A in ABC, and an important question that arises from this is whether ketofol is superior, inferior, or otherwise when compared to propofol with regards to airway compromise or required intervention.

Methods: Double-blind randomized trial at multiple centers of varying size and patient populations in Australia. 1028 patients 18 and over who required procedural sedation were screened for inclusion and permission were split into 2 groups with final n=591.; 296 were allocated to propofol and 295 to ketofol with final n + 292 and 281 respectively. Patient airways were monitored for events defined as desat below or equal to 93%, apnea > 15s, RR less than or equal to 8, airway obstruction, laryngospasm, or aspiration. Patients that required airway intervention were defined as those that needed increased oxygen flow rate, airway repositioning, adjunct airway, or BVM.

Procedural sedation in this study required 2 physicians in the room, so busy times in the ED resulted in patient exclusion as well as egg allergy, hypertension, GCS < 15, increased ICP, AAA, symptomatic ischemic heart disease or recent MI, or other sever disease. Some of the patients were excluded based solely on physician decision.

Results: There were no statistically significant differences in the two groups with regards to either airway events or respiratory interventions. There were more patients who had airway events in those who received propofol alone, and more of these patients required intervention, especially BVM, but none of this was statistically significant. Patient population characteristics were similar in both arms of the study. Secondary outcome of hypotension was greater in the propofol group (8 vs 1), however this was not deemed to be statistically significant. Patient satisfaction scores were equal.

Discussion: It seems this study lends validity to the emerging use of ketamine in the ED, specifically in the setting of procedural sedation. This was the largest study ever conducted in this arena, and the outcomes were statistically insignificant with regards to the primary and secondary endpoints. However, looking at the number of airway events compared to the number of interventions, you can see that there were more interventions. This likely means that physicians were subjectively intervening rather than adhering to the protocols of the trial. The subjects who received ketofol also had decreased pain scores at 30 minutes, however they required an average of 9 minutes more monitoring after the procedure was completed than the propofol group alone, which could be limiting in a busy ED. The

sedation scores of the ketofol patients were also lower (used Wisconsin scale) than those in the ketofol group, however the propofol group patients had more agitation during the procedure.

Limitations: As mentioned above, there were actually more interventions than there were events in both groups. This means that in some aspect there was subjectivity at play. It should also be mentioned that all patients were pre-oxygenated with nasal cannulas. Although this is common practice, there is no way of knowing whether this prevented adverse events in one group or the other and if removing this factor would have resulted in a statistically significant change in a group. There is also the factor of emergence phenomena and hallucinations in the ketofol group. While patient satisfaction scores were the same in both groups, and the study did evaluate whether the hallucinations were pleasant or not, this is another subjective factor that could differ from population to population, as “pleasant” is a wildly subjective term.

Bottom Line: Overall a well-done and thorough study. Gives credence to the use of ketofol in the ED for procedural sedation without having any more concern over respiratory issues than with propofol.