

Journal Club Block 13
Kartik Rao D.O. EM3 PGY4

Clinical Scenario: You are on your second week of the trauma service. It is one of the first nice days of the year and the motorcycles are out. A CAT 1 trauma arrives. 46 year old helmeted male flung into tree. GCS 14 with hypotension and respiratory distress, right sided rib fractures are suspected with story concerning for tension pathology. Additionally he has multiple long bone deformities. After initial trauma assessment, patient undergoes needle decompression of right chest that improves vital signs and respiratory status. Patient appears presently stable. He is maintaining his own airway and breathing easier however multiple rib fractures are appreciated on exam on right chest. His GCS is intact. He has right sided femoral fracture and tib fib on the left he has a tri-maleolar fracture. FAST is negative. Ortho has arrived to reduce his fractures and attending tells the surgery intern to place a right sided chest tube and you are delegated to provide conscious sedation for both the reduction and chest tube placement. The attending suggests a medication to use but leaves it up to you. Considering this patient you are unsure if his suggestion is the best option. Given the available medications or combinations of medications which would you choose and for what reasons?

Introduction:

While the intent of journal club is to encourage and teach us as clinicians to critically assess current literature that is relevant to practice, it occasionally becomes esoteric and ends with an unsatisfying conclusion once the articles are scrutinized by the group as a whole. Part of my motivation for this topic was self-serving. While this may be an example of the Baader-Meinhoff phenomenon of seeing something everywhere once it has come to your attention, after thinking about this topic it became apparent how crucial and ubiquitous procedural sedation is. I have adopted Ketamine-Propofol in my own practice after being introduced to this combination by one of our own academic faculty. As highlighted in the clinical policy guidelines that I used as background, emergency physicians are uniquely trained to be the experts in procedural sedation. Not only do we have a skill set that reaches from a simple laceration to a tube thoracostomy, we are also the most qualified to deal with any complications resulting from the sedation itself. That being said there is no recognized standard of care for pharmacological choice or dosage. In addition there are new and novel combinations that are being used with good effects. Not only did I want to illustrate the current literature on this essential topic but I wanted to illuminate to my peers how to navigate an issue with ultimately no "right answer".

Background Articles:

1. Clinical policy: procedural sedation and analgesia in the emergency department Godwin SA, Burton JH, Gerardo CJ, Hatten BW, Mace SE, Silvers SM, Fesmire FM; American College of Emergency Physicians. *Ann Emerg Med*. 2014 Feb;63(2):247-58.e18. doi: 10.1016/j.annemergmed.2013.10.015. Review.

This was a useful piece from two years ago highlighting the current literature at the time with stratified recommendations based on the quality of the literature. It serves as the best foundation for the remaining reading and discussion as it is the current clinical policy set forth by ACEP.

2. Incidence of Adverse Events in Adults Undergoing Procedural Sedation in the Emergency Department A Systematic Review and Meta-analysis Bellolio MF, Gilani WI, Barrionuevo P, Murad MH, Erwin PJ,

Anderson JR, Miner JR, Hess EP. Acad Emerg Med. 2016 Feb;23(2):119-34. doi: 10.1111/acem.12875. Epub 2016 Jan 22.

This article was arguably the most integral to the discussion despite being a background article. The fundamental issue here is deciding what if any harm or risk there is during this precarious procedure. It highlights the overall safety of many of the choices and provides excellent information that will directly help when providing information for informed consent and discussing risks to patients.

Discussion Articles:

1. The use of propofol for procedural sedation in emergency departments Wakai A, Blackburn C, McCabe A, Reece E, O'Connor G, Glasheen J, Staunton P, Cronin J, Sampson C, McCoy SC, O'Sullivan R, Cummins F. Cochrane Database Syst Rev. 2015 Jul 29;(7):CD007399. doi: 10.1002/14651858.CD007399.pub2. Review

This is a Cochrane review and therefore is the most robust of all three articles. This paper set out to assess the efficacy and safety profile of propofol for procedural sedation in the emergency department. They performed a literature review and found ten studies with 813 participants. The primary measured outcomes were adverse effects and participant satisfaction. Due to the variability in the studies and the parameters between studies, it was difficult to directly compare the results. Their ultimate conclusion was that there are no clear conclusions that can be drawn. However, over all the studies showed that it was relatively safe and effective.

2. Ketamine-Propofol Versus Propofol Alone for Procedural Sedation in the Emergency Department: A Systematic Review and Meta-analysis Yan JW, McLeod SL, Iansavitchene A. Acad Emerg Med. 2015 Sep;22(9):1003-13. doi: 10.1111/acem.12737. Epub 2015 Aug 20. Review

This paper was the centerpiece of the journal club for me as it was the one outlining what has become my own personal preference for procedural sedation. That being said it was a systematic review and meta-analysis. However, it did combine and compare the results of 6 randomized control trials. The primary goal of this study was to compare the incidence of adverse respiratory events specifically compared to propofol alone in the setting of the ED. With a total of 932 patients pooled from all randomized control trials they were able to prove with statistical significance that ketofol does contribute to less adverse events than propofol alone and was equally effective in achieving the desired sedation.

3. Ketamine/Propofol versus midazolam/fentanyl for procedural sedation and analgesia in the emergency department: a randomized prospective double-blind trial Nejati A, Moharari RS, Ashraf H, Labaf A, Golshani K. Acad Emerg Med. 2011 Aug;18(8):800-6. doi: 10.1111/j.1553-2712.2011.01133.x.

While this study was the only randomized double blind prospective study, it was the weakest of the group with only 62 patients. While proving non-inferiority, the majority of the conclusions were equivocal further proving that ketofol continues to be a viable choice without making any great strides in the topic.

Discussion/Conclusions:

The overall conclusion on this topic could essentially have been made with the background articles alone; however, the discussion articles did bolster the argument that ketofol is just as safe if not more safe of an option in the right setting. The primary discussion revolved around personal preference. The discussion took place under the framework as presenting to a “mock attending” the drug or combination of choice using the discussion article as defense. I hoped to use this discussion as real life teaching on how to approach this situation not only for procedural sedation but any procedure or decision that has no clear lines of standard care and possibly more current literature than the attending or supervising physician may be familiar with. The take home point is be familiar with not only your drug or combination of choice but other options in your arsenal and most importantly be aware of your goals for sedation and what options you have to best achieve those goals. The literature provides assurance that regardless when done appropriately the outcomes are generally good and the adverse effects are rare and manageable.