

Journal Club Synopsis

Feb 3, 2015

Topic: Early Pain Management in the course of the trauma patient and its effect on the development of PTSD

Scenario:

You are a passenger in a 2000 Toyota 4-Runner, driving down a back road on summer vacation during your undergraduate years with a high school friend. At some point in the drive your friend swerves to avoid hitting a deer that suddenly darted into the middle of the road. In swerving, the vehicle veers into a drainage ditch and begins to violently roll over. The cascade of events finally ends in the SUV striking a tree, with the majority of the force being applied to the front passenger-side door. After regaining consciousness you realize that your right forearm is obviously deformed and a portion of what once was your intact right femur is sticking out of the top of your thigh. You are in excruciating pain and pinned in your seat. You begin to cry out for help and realize that firefighters and paramedics are already there, leading you to wonder how long you have been unconscious. In contemplating your situation you finally look over to the driver's side and see your friend, dead, with fatal wounds to his torso made by the now impaled shards of metal from the vehicle's shattered frame. After a prolonged extrication, you are finally in route to the closest trauma center and still in pain. As you are wheeled away toward the medic you see a sympathetic firefighter place a blanket over your friend's body

Introduction:

This topic was an interesting one in my opinion, not because it garners any particularly good conversation regarding one treatment modality over another, but rather because it brings up a discussion regarding more empathetic treatment of trauma patients. I am just as guilty as any other of forgetting to address pain when I'm faced with a trauma patient when there are other glaring issues. After experiencing this journal club I hope that you have some improved appreciation for the utility of pain management, not just for the obvious reason of alleviating pain at that time, but also to help with future issues resulting from the traumatic experience itself.

Article 1:

Morphine use after combat injury in Iraq and post-traumatic stress disorder. Holbrook TL, Galarneau MR, Dye JL, Quinn K, Dougherty AL. *N Engl J Med.* 2010 Jan 14;362(2):110-7. doi: 10.1056/NEJMoa0903326. PMID: 20071700

The first article was published in the *New England Journal of Medicine* in 2010 and looked at the rates of PTSD in trauma patients who were given morphine during their resuscitation versus those who did not receive morphine. The study was a review of the Navy-Marine Corps Combat Trauma Registry data and analysis of two groups regarding their development of PTSD following the trauma. The result showed a significant decrease in the rates of PTSD in the morphine group when compared to the non-morphine group. The presence or absence of PTSD was confirmed by records review from the Career History Archival Medical and Personnel System and verified with medical records documentation. Assessments for PTSD were made from 1 to 24 months after trauma and were based on DSM-IV criteria outlining PTSD.

Article 2:

The correlation between ketamine and posttraumatic stress disorder in burned service members. McGhee LL, Maani CV, Garza TH, Gaylord KM, Black IH. *J Trauma*. 2008 Feb;64(2 Suppl):S195-8; Discussion S197-8. doi: 10.1097/TA.0b013e318160ba1d.

The second article addressed the correlation between Ketamine use and PTSD development in burned service members. As opposed to the previous article this was peri-operative use of ketamine and intended to determine if the use of ketamine, a hallucinogenic medication, would increase the incidence of PTSD. Not surprisingly, PTSD rates were actually lower in the ketamine group as opposed to the non-ketamine group. The study group was burned patients requiring at least one operation for mitigation of their injuries. I was not surprised to find this to be the result of this study as there is a pretty significant dissociative and amnestic effects of ketamine, likely lessening the lasting effects of the traumatic experience. An issue with this study is the lack of power, and lack of direct application to the ER population due to the peri-operative application, but we can deduce that peri-traumatic use of ketamine is safe and may potentially result in improved psychological outcomes.

Article 3:

Glasgow Coma Scores, early opioids, and posttraumatic stress disorder among combat amputees. Melcer T, Walker J, Sechriest VF 2nd, Lebedda M, Quinn K, Galarneau M. *J Trauma Stress*. 2014 Apr;27(2):152-9. doi: 10.1002/jts.21909. Epub 2014 Mar 25.

The final discussion article was a retrospective review of casualty records in the wars in Iraq and Afghanistan looking at whether or not GCS correlated with PTSD development. All patients studied had injuries resulting in amputation of at least one limb. They found that those injured service members with lower initial GSC scores had decreased rates of PTSD development. Additionally, as shown in the first discussion article, early opiate medication administration resulted in decreased rates of PTSD as well.

Bottom line:

This discussion topic and the discussion articles were not traditional in the sense that they compare two separate treatment modalities but they did spark some reasonable discussion. Regarding the scenario, I think it's important to place ourselves in the position of the casualty. How would we like to be treated as a trauma patient? How do you think your post-traumatic psychological outcomes would be affected with sub-therapeutic/absent analgesia versus appropriate analgesia? Remember the importance of treating pain as well as the trauma patient's various other maladies during your next visit to the trauma bay (hopefully as the provider).