

Journal Club Synopsis
Block 13
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Are occipital and paracervical blocks safe, effective, and efficient for headache management in the ED?

Clinical Scenario: You are working a busy shift in the ED when you pick up “32 year old white female with headache.” “I hope it’s chronic,” you think to yourself. When you enter the room you see what appears to be an uncomfortable woman of stated age. She tells you she is here for “another migraine.” She goes on to tell you she has a longstanding history of migraine headaches with aura that includes scintillations of her vision bilaterally and associated is with photophobia, phonophobia, and allodynia. Her pain is right sided, like it always is. She has these headaches at least six times a year. At home she tried her oral Compazine, Motrin, and a Maxalt with minimal improvement. She denies any of your questions regarding “red flags” for headache. She is afebrile, without meningismus, and has a non-focal neurological examination. You decide that this is likely her normal migraine headache and start to discuss treatment options. She drove herself to the ED. She tells you that this headache has been worsening for at least a few days and when they last this long nothing seems to ever help, except “that one with the ‘D’.” She appears in pain and reasonable. After your discussion about the likelihood of rebound headache if treated with narcotics, she admits that the headache does frequently return over the next several hours after narcotic treatment. You discuss with her this new technique you have seen all over the EM academic world on EM:Rap, ERcast, Medscape, and recently featured in Emergency Physicians Monthly. She just wants to feel better and agrees to let you bury a 1.5 inch, 25 gauge needle in her bilateral cervical paraspinal muscles to inject some bupivacaine.

Are you taking a safe and reasonable approach to treating her headache? Is she likely to have relief? Where and what should you inject? Does the literature help you with any of this?

Introduction:

“Headache” is a common complaint in the emergency department that is dealt with on a daily basis. We are taught starting in medical school the history and physical exam necessary for this evaluation and the determination of “red flags” for emergent headache presentations. The vast majority of the cases we encounter are not emergent headaches. Treatment options and “headache cocktails” can vary greatly between providers. The patients’ subjective responses often vary greatly to different treatments, as well. The most studied and common choices include phenothiazines, metoclopramide, Benadryl, anti-inflammatories, IV fluids, steroids, and triptans. Their efficacy varies in different studies and between patients and headache types. These medications have many different side effects, responses differ, and patients often cannot drive themselves home after treatment. Local anesthetic injections, specifically occipital nerve blocks and paracervical (paraspinal) blocks, have been getting a lot of publicity lately in the academic emergency medicine world. I was very interested in this topic because I believe, if effective, it could provide an extremely useful alternative treatment of headache management in the ED. When addressing the current literature on any topic, and any aspect of patient care for that matter, my goal is to determine if I feel the data presents an appropriate risk to benefit ratio for the situation. I took this approach with my journal club.

Article 1:

Peripheral Nerve Blocks and Trigger Point Injections in Headache Management – A Systematic Review and Suggestions for Future Research. Ashkenazi, Avi et al. *Headache* 2010; 50: 943-952.

This article was a review article performed with a PubMed search for data pertaining to peripheral nerve blocks (PNB) and trigger point injections (TPI) in the treatment of headache. The majority of the articles reviewed were small and non-controlled. The papers included used human subjects, provided original data, and examined efficacy and tolerability of PNBs and TPis. They report finding almost no data on TPis and I am unsure as to why they even included it in the title. They are a brief afterthought in the paper. The articles reviewed were performed in either the office or clinic settings. Data for greater occipital, lesser occipital, and supraorbital nerve blocks for headache were reviewed. Technique, location, anesthetic, use of steroids, use of other medications such as fentanyl, epinephrine, and clonidine, as well headache types treated varied greatly throughout the articles reviewed. This makes it very difficult to compare the results or even respect this as a cohort. Results for extent and duration of relief were different across the studies, but the vast majority did show benefit. Adverse effects were rare, but steroids were noted to cause local alopecia and epinephrine caused scalp necrosis in some cases. Patients with occipital nerve tenderness to palpation were seen to have a positive response in one study. The authors suggest that controlled, blinded studies are still necessary for further evaluation of this topic.

Article 2:

Occipital Nerve Blocks: When and What to Inject? Joshua Tobin and Stephen Flitman. *Headache* 2009; 49: 1521-1533.

This is another review article that used MD Consult and Google Scholar to review occipital nerve blocks for headache. Many of the same articles from Article 1 were reviewed. Again, technique, location, anesthetic, use of steroids, use of other medications such as fentanyl, epinephrine, and clonidine, as well headache types treated varied greatly throughout the articles reviewed. The authors attempted to look at whether reproduction of headache pain with occipital nerve pressure or occipital nerve tenderness to palpation could predict success. Isolated studies suggested that they did predict success, but the overall results were unclear. The techniques and populations reviewed again showed promise as effective treatment options for headache with few side effects.

Article 3:

Treatment of Headaches in the ED with Lower Cervical Intramuscular Bupivacaine Injections: A 1-Year Retrospective Review of 417 Patients. Larry Mellick, Timothy McIlrath, and Gary Mellick. *Headache* 2006; 46: 1441-1449.

This article is a retrospective review performed at an academic hospital associated with the Medical College of Georgia. It is probably the main reason that paraspinous (paracervical) blocks are receiving so much attention in the academic world. Dr. Larry Mellick is a Professor and Vice Chair of Emergency Medicine there. He has spent much time, along with his brother who is a neuropathic pain specialist, studying and practicing this procedure. This article actually featured patients in the ED. One and a half milliliters of bupivacaine 0.5% was used on each side in all of the paracervical intramuscular injections. A 1.5 inch 25 gauge needled was inserted 1 to 1.5 inches into the paraspinous musculature 2 to 3 centimeters bilateral to the spinous process of the sixth or seventh cervical vertebrae. In the review, the authors report complete headache relief in 65.1% of patients with partial relief in another 20.4% for an overall therapeutic response in 85.4%. Dr. Mellick reported even greater success rates in his personal

treatment population. Some patients were re-injected with partial improvement. Side effects were again rare and mild. A broad range of headache types were treated. Limitations included that it was not randomized, the procedure was performed by many different physicians with different levels of experience, and there was concern for patient selection bias. The authors felt that paraspinous block for headache is a safe and effective treatment option.

Overall Discussion and Bottom Line: These articles are sub-optimal in terms of study design, establishing real cohorts, and distinguishing the best technique and medications for anesthetic injections for headache in the emergency department. Even though the studies are flawed, they do help compile a respectable amount of patients that were benefited by performing peripheral blocks for headache with few side effects. I believe that in the emergency setting, the data suggest that we should likely be using only plain bupivacaine or lidocaine (I recommend bupivacaine). With the associated side effects, steroids and epinephrine should probably be omitted. Side effects were rare and mild for the most part. If the same precautions are taken that are used in every other local anesthetic injections, serious side effects can likely be avoided. It is important to remember that we are ultimately responsible for reading articles that become popular in our academic blogs and media. Dr. Mellick's article has been the cornerstone of most of the publicity and it does not hold up under scrutiny of what is considered to be a well-designed study for evidenced based medicine. All of that being said, we do more dangerous things with less support from the literature. After reading these articles, and several others that are not cited while preparing this journal club, I do feel that the risk to benefit profile is appropriate to consider this as an alternative treatment option for headache in the ED. The efficacy is decent across the board compared to the conventional treatments and the side effects are generally mild and rare.