Headache in the Emergency Department

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Headaches are one of the most challenging problems for emergency physicians.

CASE
This 35-year-old man has a 3-year history of headaches occurring about once a month described as a right-sided throbbing with an intensity of 4/10 with light and noise sensitivity but no nausea or aura. He takes ibuprofen and the headache lasts about 6 hours. He has had 4 similar headaches in the last 2 years which intensify to an intensity of 10/10 with nausea and vomiting not responding to ibuprofen lasting 8 hours. He had 2 within 10 days and went to the emergency room with both. A computerized tomography of the brain was negative. He was diagnosed with a sinus infection and given an antibiotic and a butalbital combination medication. The charges for both emergency room visits were $2900 (he has a $3000 deductible).

Questions.— How common are headaches in the emergency department (ED)? Do emergency medicine physicians typically follow society guidelines for treatment of primary headaches? Why might neuroimaging be overutilized in the ED? What training do emergency medicine physicians have in headache medicine?

EXPERT COMMENTARY
Acute headache is a frequent cause of presentation to US ED. Two million visits per year place headache as the fifth most common reason for visit to an ED – more common than low back pain but less common than chest or abdominal pain.\(^1\)\(^2\) Of the acute headaches, migraine is the most frequent actual diagnosis,\(^3\) but because emergency physicians are often focused on excluding pathological headaches that acutely threaten life and limb, migraines are often lumped into a category of benign or nonspecific headache.\(^4\)

Medical management of acute migraine in the ED has lagged behind evidence-based care. In 1998, opioids were used more often than triptans or DHE.\(^5\) My own review of national data from 2005 revealed that not much has changed: use of meperidine has been replaced by hydromorphone, but opioids are still used much more commonly. The obvious question of why this is so has not been addressed systematically.

What is the optimal parenteral therapy for a patient who presents to the ED with an acute exacerbation of an underlying migraine disorder? Assume the patient has 10/10 pain (which has been the median baseline pain score in many of the ED-based migraine clinical trials I have conducted) precluding a detailed history and physical exam. Assume that the patient has an elevated blood pressure, which is not uncommon in patients who present to an ED with acute pain. Assume that the headache duration has been more than 8 hours, which is typical for ED patients, and thus the efficacy of subcutaneous sumatriptan may be limited. Is there any role for...
parenteral opioids in these patients with acute severe pain who may or may not have cardiac risk factors or other contraindications to first-line migraine medication? The appeal of opioids is that they are excellent analgesics with few contraindications and, if need be, are easily reversed with readily available antagonists. Does the harm of opioids outweigh their convenience in the acute setting? Frequently used oral opioids are associated with exacerbation of the underlying migraine disorder, but the same has not been demonstrated for infrequent use of parenteral opioids in the ED. Meperidine is associated with return visits to the ED, but the same may not be true of morphine.

On the other hand, the reality is that despite their pain, most migraine patients can give a brief but relevant history, and there are quite a few effective and evidence-based parenteral therapies that can be administered without cardiac risk stratification, such as prochlorperazine, metoclopramide, and ketorolac. Many migraine patients who use an ED have been to that ED before. While there may be a need for opioids in some patients, these medications should not be used as commonly as they are.

So why then the rampant use of opioids in the ED? It may be that despite the fact that the emergency medicine literature is replete with high-quality clinical studies demonstrating effective alternatives to opioids, emergency physicians have not been convinced of the harm of opioids. Or it may be that, in the mind of some, the safety or adverse event profile of parenteral alternatives is still concerning.

Physician use of opioids may also be related to patient request, “Doc, please, just give me my Demerol.” The easiest way to deal with recidivist patients, at least in the short term, is to give in to their demands, particularly in an overcrowded ED. Strategies to deal with the “frequent flyers” are best determined between clinical shifts, using an interdisciplinary approach, medication contracts, and patient-specific strategies that are applied in the same way by all practitioners in the department.

Now with regard to the specifics of the case presented, one is left bewildered why this patient left the ED with a prescription for antibiotics. There is little evidence this patient had sinusitis, let alone acute bacterial sinusitis. Much has been written on the misdiagnosis of migraine as sinusitis, and it seems that this problem has not exempted the ED. I do wish to draw a distinction between the inaccurate diagnosis made in this case and the willful conflation of the various primary headache disorders into the catchall “benign” or nonspecific headache. One can understand the reasoning behind the conflation: specific diagnosis will not change the parenteral therapy used.

Acute migraine and acute tension-type headache both respond to sumatriptan, the dopamine-antagonists, ketorolac, and the opioids. The trouble with not providing a specific headache diagnosis is most problematic after ED discharge: specific and accurate diagnoses can be used by patients to educate themselves and to seek out further care.

The overuse of advanced imaging is rampant and not isolated to headache. Using a national database, I recently identified a threefold increase in the rate of advanced imaging in the ED for low back pain, between 2002 (3%) and 2006 (9%). This may be explained partly by the Field of Dreams principle: “If you build it, they will come” – as scanners are more readily available, they are used. Defensive medicine may also play a role – the American College of Emergency Physician acute headache guidelines discuss when a head computerized tomography should be performed but not when a head computerized tomography is not necessary. Similarly, authoritative reviews recommend a diagnostic workup for all patients with a “First, worst, or changed” headache. In my experience, perhaps to justify the rationale for their visit, most ED patients describe their headache as “first,” “worst,” or “changed.”

Most of an emergency physician’s headache training comes on-the-job, ie, caring for the 2 million patients who present to EDs with headache. Emergency physicians are required by the Accreditation Council for Graduate Medical Education to be competent in headache care, but this is done with limited formal didactics. Most programs have no more than 2 hours of structured primary headache lectures per year. Therefore, the quality of an emergency medicine resident’s headache education depends largely on the clinical teachers – attending emergency physicians and consulting neurologists and headache specialists.
Is this sufficient? It is difficult to quantify the adequacy of headache care delivered in EDs by emergency physicians. On the one hand, there are many stories of substandard care. On the other hand, when surveyed, many headache patients seem satisfied with the care they received in the ED.

It is clear that ED care of headache can be streamlined and homogenized through the use of a thoughtful protocol. This would be developed by a team of interested and informed clinicians representing the relevant specialties. Protocols can be used to standardize workup of secondary headaches, determine criteria for admission to the hospital, homogenize parenteral treatment and discharge prescriptions, and expedite outpatient referral. Although substantial time would be required to develop a useful and flexible protocol appropriate for a specific medical center, it could result in improved relations between departments and a better experience for both the clinicians and the patients. Ideally, a protocol would decrease throughput time, determine the right balance of diagnostic testing, decrease medical error, decrease litigation, and improve pain outcomes for the millions of migraineurs who utilize US EDs every year.

REFERENCES

3. Friedman BW, et al. Applying the International Classification of Headache Disorders to the emergency department: An assessment of reproducibility and the frequency with which a unique diagnosis can be assigned to every acute headache presentation. Ann Emerg Med. 2007;••:••-••.
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