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Review Article

APPROACH TO HEADACHE IN THE ER

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Abstract:

Introduction: Acute severe headache is always serious and demands care and usually patients present to the emergency department (ED). There are many medications available, and many hazards to be avoided, both regarding the diagnosis and the management. It represents an agonizingly painful and disturbing event for the patients, families, as well as the medical team. Usually, these patients have done many methods with expert doctors to no benefit. Inpatient assessment and management could be helpful in some patients. The major diagnostic difficulties in diagnosing the cases of severe acute headache in the ED are misdiagnosis of primary headache syndromes and undiagnosed secondary causes of headache. Missing the correct diagnosis will decrease the chances of correct management. Red flags such as meningismus, fever, neurologic signs, and concurrent medical illnesses should raise the attention.

Aim of work: In this review, we will discuss the most recent evidence regarding the recent approach to the emergency management of patients with headache. We will also discuss options for the management.

Methodology: We did a systematic search for approach to headache in the emergency department using PubMed search engine (<http://www.ncbi.nlm.nih.gov/>) and Google Scholar search engine (<https://scholar.google.com>). We only included full articles.

Conclusions: Most cases of headache are evaluated in EDs have migraine, however some of them have other primary and secondary headache disorders that must be excluded. When this is performed, many medications are available to relief of headache, involving parenteral ketorolac, neuroleptic antiemetics, DHE, triptans, and magnesium sulfate. Opioids, while commonly employed, are generally less useful, and may lead to readmission to the ED. Even though most chronic headache problems could be treated in the outpatient setting, inpatient management can offer many benefits, especially in patients who are overusing medications. Intravenous DHE has good evidence for efficacy. Few commonly proposed management plans for acute headache relief in the ED have been studied in that setting; similarly, most inpatient IV treatment protocols are not clearly established to be effective. Problems to further research include lack of funding and individual differences between refractory headache patients, making comparison studies difficult.

Key words: Headache, emergency department, management.

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INTRODUCTION:

Acute severe headache is always serious and demands care and usually patients present to the emergency department (ED). There are many medications available, and many hazards to be avoided, both regarding the diagnosis and the management. It represents an agonizingly painful and disturbing event for the patients, families, as well as the medical team. Usually, these patients have done many methods with expert doctors to no benefit. Inpatient assessment and management could be helpful in some patients. The major diagnostic difficulties in diagnosing the cases of severe acute headache in the ED are misdiagnosis of primary headache syndromes and undiagnosed secondary causes of headache. Missing the correct diagnosis will decrease the chances of correct management. Red flags such as meningismus, fever, neurologic signs, and concurrent medical illnesses should raise the attention [1,2].

In this review, we will discuss the most recent evidence regarding the recent approach to the emergency management of patients with headache. We will also discuss options for the management.

METHODOLOGY:

We did a systematic search for approach to headache in the emergency department using PubMed search engine (<http://www.ncbi.nlm.nih.gov/>) and Google Scholar search engine (<https://scholar.google.com>). We only included full articles. We will also discuss options for the management.

The terms used in the search were: Headache, emergency department, management.

History:

History taking in the acute headache is extremely necessary. The mode of onset is very essential, with acute progression to severe headache indicating secondary causes. Exertion during or before the onset is also troublesome, even though it could be a benign condition. The Severity is important as well, however most cases in the ED would complain of high level of

pain intensity. Further questioning the nature of the pain would reveal the seriousness of the condition. If the patient present with the worst headache he or she have ever had is not usually helpful. Focal symptoms would imply neurologic disease, like arterial dissection, intracranial mass or vasculitis. The current agents like sedatives, stimulants, and anticoagulants and others must be known so potential causes of headache as well as potential roadblocks to the management could identified [3,4].

Physical Examination:

Examination of patient with acute headache should involve an evaluation of meningismus as a clue to meningeal inflammation due to infection or hemorrhage. Thee eye examination, include but not limited to carefully examining the pupils, is very useful in order to exclude eye diseases, like acute angle-closure glaucoma. The fundoscopic evaluation is also important because it indicates the intracranial pressure. Head and neck assessment should involve palpation of the paranasal sinuses, temporomandibular joint regions, submandibular tissues, carotids, temporal arteries, and supraorbital regions [5].

Work up:

Routine lab tests in acute headache could of low importance, however glucose serum level, electrolytes, blood cell counts, and pregnancy tests are routinely performed. Computed tomography (CT) is important for patients who have had recent head trauma or in whom a mass lesion or subarachnoid hemorrhage is suspected. Computed tomography could be overused in assessing acute headache, as approximately more then ninety five percent have no obvious abnormalities. Computed tomography angiography (CTA) could be extremely useful if any of the following is suspected: aneurysmal rupture or expansion, reversible cerebral vasoconstriction syndrome, cerebral vasculitis, cerebral venous thrombosis (with CTvenography [CTV]), or arterial dissection (carotid or vertebral) [4]. Magnetic resonance imaging (MRI) is seldom ordered in acute

headache in the absence of focal neurologic symptoms suggestive of stroke or intracranial mass. Lumbar puncture (LP) is compulsory if meningitis or subarachnoid hemorrhage is suspected.

Differential diagnosis:

The most common cause of severe acute headache in the ED is migraine,⁵ even though it is challenging to the identity how much common due to the fact that migraine is underdiagnosed in ED.⁶ However, the diagnosis of migraine is usually clear to ED clinicians when the patient has a history of severe migrainous headaches requiring acute management. But when the patient's symptoms are not entirely explained by migraine or if there are red flags, further workup for secondary causes is indicated.

A troublesome presentation is the thunderclap headache. Thunderclap headache could suggest subarachnoid hemorrhage and the best next step would be a CT of the head followed by LP.

There are several primary headache disorders other than migraine that may present to the ED. Cluster headache is usually easily diagnosed. Exertional and sex-related headaches may have thunderclap onset, but these both tend to be self-limited and are largely treatable with nonsteroidal anti-inflammatory medications (NSAIDs). When secondary headaches and the rare forms of primary headache have been excluded, management of severe migraine becomes the focus. Most patients will also present with nausea.

Neuroleptic Antiemetics

Chlorpromazine twenty five to fifty mg intravenously (IV), prochlorperazine ten mg IV, and metoclopramide ten mg IV are all good available agents. There is excellent evidence supporting the effectiveness of these agents [6]. The mechanism of these medications in migraine is still unknown. Side effects include but not limited to dystonia, which is avoidable by administering diphenhydramine 25 mg. Akathisia is another unpleasant side effect, which may also be avoided with diphenhydramine [7].

Triptans and Ergots

Like other ergot agents, dihydroergotamine (DHE) has a mild vasoconstrictive effect that influences veins rather than arteries. Side effects are usually mild nausea, muscle cramps, mild blood pressure elevation, and sedation. It is helpful to give an antiemetic, which can help migraine-related nausea and DHE-induced nausea.

Parenteral Nonsteroidal Anti-Inflammatory

Agents

Intramuscular ketorolac is a frequently used option for acute migraine treatment in the ED.⁸ It can be administered IV at a dose of thirty mg, or IM generally at a dose of sixty mg. It has a benign adverse effect, even though renal toxicity is a major issue when given over time. Other side effects are gastrointestinal disturbance, weakness, and dizziness.

Valproate

Divalproex sodium could be administered in a dose of five hundred to one thousand mg diluted in fifty ml of normal saline and infused over thirty minutes. Potential side effects include dizziness and somnolence are usually temporary. Efficacy has not been well established, in spite of many trials.

IV Magnesium

Several patients with acute severe migraine will respond properly to magnesium sulfate one g IV administered over ten to thirty minutes. This could be administered again to a total of five g.

Opioids

Opioids are one of the most common prescribed medications for acute migraine in the acute setting¹⁸ in spite of their relative ineffectiveness in pain relief⁹ and clear association with increased rates of return to the ED.¹⁰ They do not seem to have a useful effect on ending migraine attacks, however they can suppress some pain on the basis of their effects on mu opioid receptors. Side effects from high doses reduce head pain include but not limited to constipation, urinary retention, nausea, edema, and pruritus, and in susceptible patients, seizures and respiratory depression.

Corticosteroids

The main aim of acute migraine management must include prevention of recurrence in addition to pain relief. Corticosteroids are believed to be of help¹¹ A common choice is a single dose of dexamethasone four to ten mg IV. The repeated doses of steroids could lead to aseptic bone necrosis, it is highly critical to know if there is recurrent use of steroids in headache patients being admitted in the ED.

Peripheral Nerve Blockade

The greater occipital nerve blockade has become more common in the acute relief of severe migraine pain [12]. Evidence is deficient because it is difficult to design a controlled study. Side effects are due to the systemic absorption of the local anesthetics injected in the scalp. Lightheadedness is common.

Antinauseants

Management of nausea could be achieved by the neuroleptic antiemetics with the same doses discussed previously. Additionally, ondansetron, a serotonin-3 receptor antagonist, can be very useful as an IV injection of four to eight mg slowly pushed. Hydroxyzine, an antihistamine, is as well effective parenterally, at a dose of twenty-five to fifty IV or IM.

Children

Similar to adult patients, children who go to the ED with headache have migraine or other primary headaches, however secondary headaches, particularly in those due to infection, are also common. So, careful evaluation is necessary. Although the treatment of migraine in the ED follows the above approaches, there is very little evidence for the use of these medications in children. The benefits of neuroleptic medications and ketorolac are supported by reasonably good evidence [13].

Pregnancy

Management options for severe migraine in pregnancy are little. Magnesium intravenously has been useful for many patients, as has occipital nerve blockade. Hydration could be beneficial as well.

Guidelines for ED management of acute migraine have been challenging, due to the disparate methods of evaluating the success in the studies. Unfortunately, the results of acute headache management in the ED are not striking. One study found that only twenty two percent of patients had relief on discharge from a university ED, and that sixty four percent of them discharged with improvement had recurrent severe symptoms within less than twenty four hours. Part of any ED method to manage acute migraine is to lay the groundwork for future evaluation and prophylactic management by neurologists or other headache specialists.

Inpatient Management of Refractory Headaches

Most chronic headache disorders are managed in an outpatient setting with prophylactic and “rescue” (analgesic/ abortive) medication along with careful management of lifestyle triggers. However, some patients do not improve. It is challenging to know how many patients would benefit from inpatient treatment, but given the fact that about four percent of the adult population have headaches daily [14,15].

CONCLUSIONS:

Most cases of headache are evaluated in EDs have migraine; however some of them have other primary and secondary headache disorders that must be excluded. When this is performed, many medications

are available to relief of headache, involving parenteral ketorolac, neuroleptic antiemetics, DHE, triptans, and magnesium sulfate. Opioids, while commonly employed, are generally less useful, and may lead to readmission to the ED. Even though most chronic headache problems could be treated in the outpatient setting, inpatient management can offer many benefits, especially in patients who are overusing medications. Intravenous DHE has good evidence for efficacy. Few commonly proposed managements plan for acute headache relief in the ED have been studied in that setting; similarly, most inpatient IV treatment protocols are not clearly established to be effective. Problems to further research include lack of funding and individual differences between refractory headache patients, making comparison studies difficult.

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