Make the pain stop:

Relieving acute migraine pain

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In this article:

1. **How to assess a migraine headache.**
2. **What are the goals of therapy?**
3. **What are the treatment options?**

Migraines affect 17% to 25% of women and 5% to 9% of men.[1,2] Migraines are often under-recognized and under-diagnosed because physicians are not familiar with the specific diagnostic criteria and because there is no objective "gold standard." Recent advances in migraine treatment have led to the development of a new class of therapeutic agents called triptans. These are specific serotonin agonists that selectively control migraine headache pain, as well as associated symptoms, such as nausea, vomiting, photophobia and phonophobia.

How to diagnose a migraine?

The Canadian Headache Society recommends physicians use the modified International Headache Society (IHS) criteria through a semi-structured interview (Table 1).[3] The IHS criteria are reliable and show excellent inter-rater concordance.[4]

Most migraine headaches are unilateral, throbbing and of moderate to severe intensity. Most patients find usual activities or exertions exacerbate the pain and other migraine-

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associated symptoms, such as photophobia, phonophobia and osmophobia.

Migraine triggers vary from patient to patient and should be sought out while taking an appropriate history. Women often notice a menstrual pattern to migraine headaches. Patients may experience "let-down" headaches, occurring after the resolution of a period of stress or anxiety. Migraines may be preceded by a prodrome in which patients experience irritability, changes in appetite or mood, and increased sensitivity to light or sound. Migraine patients may also exhibit significant photophobia between attacks. Often, migraine headaches may resolve with sleep.

A migraine may be accompanied by an aura. The Genetic Epidemiology of Migraine (GEM) study revealed 63.9% of migraine patients experience a migraine without aura, 17.9% experienced migraine with aura, and 13.1% experienced both forms of migraine.[2] The aura may be visual, sensory or motor and may precede, accompany or follow the headache phase. A family history of migraine is often identified. The differential diagnosis of a headache includes the tension-type headache, which is characterized by bilateral pressure quality, mild to moderate severity and lack of exacerbation with activity. Tension-type headaches are more common than migraines and have an estimated prevalence of 69%.[5]

Table 1

IHS Criteria

Migraine without aura

1. At least five attacks.
2. Attack lasting four to 72 hours.
3. At least two of the following characteristics:
   a. Unilateral location.
   b. Pulsating quality.
   c. Moderate or severe intensity (hinders daily activities).
   d. Aggravated by routine physical activity.
4. During headache, at least one of the following should be present:
   a. Nausea and/or vomiting.
   b. Photophobia and phonophobia.

Migraine with aura

1. At least two attacks satisfying all of the following characteristics:
   a. One or more fully reversible aura symptoms.
   b. At least one aura symptom lasting four minutes, or two or more symptoms in succession.
   c. Aura lasting less than 60 minutes; if more than one aura, duration increases proportionately.
2. Headache onset follows aura within 60 minutes.

Adapted from: Headache Classification Committee of the International Headache Society: Classification and diagnostic criteria for headache disorders, cranial neuralgias and facial pain. Cephalalgia 1988; 8(suppl 7): S1-96.

The patient's history and physical examination should exclude other serious conditions or diseases causing the headache. The existence of the following symptoms should prompt a search for a more serious cause: thunderclap headaches, a change in headache pattern, systemic symptoms, the new onset of headache in middle-age, and progressive headaches that are worse in the morning or headaches that are provoked by cough, valsalva, or bending forward. The presence of focal neurologic signs or papilledema on clinical examination would require the use of neuroimaging to exclude a structural cause for the headache.

How do I treat migraine pain?

Non-pharmacologic treatment of migraines may include behavioral therapy, avoidance of triggers and sleep, rest, or application of ice to the head. The deci-

sion to use a specific acute treatment option depends on the severity of headache, the patient's history of success with medication and tolerability, safety and cost.

During migraine attacks, gastrointestinal motility is reduced with resulting decreased oral absorption of drugs. The use of effervescent or mouth-dispersible acetylsalicylic acid (ASA) may improve gastric emptying and absorption. The presence of nausea and vomiting also limits the oral availability of migraine agents. Parenteral formulations or newer agents, such as triptans that reduce nausea and vomiting, may be preferred in some situations.

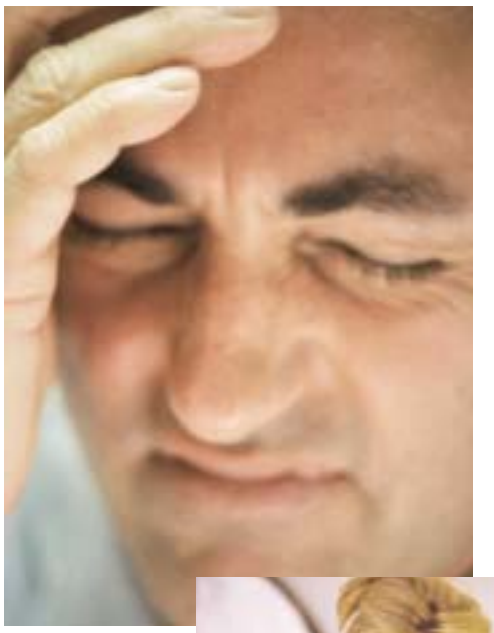
Goals of Therapy

The goals of acute migraine treatment include:

- Treat attacks rapidly and consistently without recurrence.
- Restore the patient's ability to function.
- Ensure there are minimal or no adverse events to treatment.
- Optimize self-care

Mild to moderate headaches may be best treated with ASA, acetaminophen, ibuprofen, naproxen and other non-steroidal anti-inflammatory drugs (NSAIDs), such as diclofenac, tolfenamic acid or ketorolac. The benefit of these agents may be limited by their lack of efficacy in moderate to severe attacks, as well as by their associated gastrointestinal and renovascular side effects. The Migraine Disability Assessment (MIDAS) questionnaire may be used to evaluate the severity of migraine-related functional disability and to assist in the rational selection of migraine treatment options.[6]

Ergotamines, including dihydroergotamine (DHE), are non-selective agonists at the 5-HT1, 5-HT2, dopamine and other catecholamine receptors.[7] Ergotamine has not been found to be significantly better than NSAIDs and may be associated with significant nausea and vomiting. It is available in oral, sublingual and suppository



form. DHE is a modified ergotamine molecule that is available for parenteral use (subcutaneous, intra-muscular, or intravenous) or as an intranasal formulation. In the emergency department, DHE may be administered intravenously at a dose of 0.5 mg to 1.0 mg along with 10 mg of metoclopramide. In this setting, intravenous metoclopramide, prochlorperazine and chlorpromazine have been used as single agents; their effectiveness is limited by the common side effects of drowsiness, sedation and hypotension.

Combination medications have been used successfully by patients. Combination therapy includes acetaminophen with codeine; ASA combined with caffeine and butalbital; and acetaminophen, aspirin and caffeine. All the combinations that include codeine may lead to the development of rebound and chronic daily headaches.[8,9] Butorphanol is a synthetically-derived opioid that has agonist activity at opioid receptors and mixed agonist-antagonist activity at opioid receptors. Its use in migraine is complicated by the propensity of its users to develop dependency, addiction and opioid-like adverse events.

The available triptans include sumatriptan, naratriptan, zolmitriptan, rizatriptan, almotriptan and eletriptan. They demonstrate similar binding affinities at the 5-HT1B and 5-HT1D receptors.[10] Triptan absorption and bioavailability are important factors in determining the rapidity of headache relief. Newer triptans appear to have higher bioavailability.[11]

In acute migraine, a recent meta-analysis of controlled clinical trials has demonstrated the administration of oral triptans results in two-hour headache response rates of approximately 60% and two-hour pain-free rates of approximately 30%.[12] These results correlate well with elimination of functional disability. The 24-hour headache recurrence rate approximates 25%, however recurrent headaches may respond well to a second dose of medication.

Treatment decisions should be individualized,[13] as triptans vary in terms of the completeness and rapidity of headache response, recurrence rate, tolerability[14] and patient preference.[15] With the exception of sumatriptan, which is available in a subcutaneous[16] and intranasal formulation,[17] the triptans are taken orally; rizatriptan and zolmitriptan are also available as a rapidly dissolving wafer.

Therapy Options

Mild to moderate migraines:	ASA acetaminophen ibuprofen naproxen NSAIDs
Moderate to severe migraines:	oral triptans ergotamines parenteral agents opioids

Side effects include symptoms of chest tightness or heaviness, flushing, asthenia, dizziness and parasthesiae in 2% to 6% of patients.[15] The intranasal and parenteral formulations of sumatriptan may be associated with altered taste or injection site reactions respectively. Patients with coronary artery disease, significant risk factors for coronary artery disease, Prinzmetal's angina, Raynaud's disease, peripheral vascular disease, hypertension, migraine with prolonged auras, basilar artery migraine or pregnancy should not be prescribed triptans.

Choosing the best therapy

Many patients with migraine remain undiagnosed and under-treated. Patients should be screened using a careful, semi-structured interview to determine if they meet the criteria for migraine. Once the diagnosis is established, patients should be stratified by headache severity to determine if they require treatment with NSAIDs, ASA

or more specific acute therapy. The choice of therapy must be individualized and careful attention must be given to identifying important risk factors that would preclude their safe use. Migraine causes significant social morbidity[18] and effective treatment can have significant impact on the quality of patients' lives.[19] Dx

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