Review

Clinical Approach to Migraine

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After tension type headache, migraine is the most common form of headache affecting about 15% of females and 10% of males.

Diagnostic criteria (Table 1) are well-established but a myriad of issues present diagnostic challenges. There is some overlap of the symptoms of migraine and tension type headache and migraine may exist even if the full criteria are not met.

While migraine may be of rapid onset, especially exertional migraine, sudden headaches demand emergent evaluation for subarachnoid hemorrhage. Other causes of sudden headache include acute hypertensive crisis, venous sinus thrombosis and carotid dissection. Thunderclap headache and exertional migraine are diagnoses of exclusion. The benign jabbing "ice pick" headache has a sudden jabbing quality and is more common in migraineurs.

Diagnosis of migraine is primarily a clinical diagnosis and does not require investigation when criteria are met.

Diagnostic dilemmas may arise with the presence of migraine aura. Migraine aura evolves gradually, between four and 60 minutes. Headache begins within 60 minutes of onset of aura. The vast majority of aura are visual with symptoms including scotoma, scintillations, fortification spectra and various visual distortions. The next most common pattern is with sensory symptoms, typically hemisensory, migrating from hand to arm and then face over several minutes. Olfactory, motor (hemiplegic), language and delusional symptoms are uncommon forms of aura but must be considered, especially in younger persons with other features to suggest migraine.

Migraine phenomenon may occur without headache, especially after the age of 40. The most common phenomena remain positive visual phenomenon such as scintillations. Ischaemic symptoms are typically negative, with loss of visual function. Recurrent stereotyped events also favour migraine.

Melissa's case

Melissa, a 24-year-old female, has had a history of typical migraine headaches since her teens. Frequency in the first few years was 4 to 6 per year, with trigger factors including menstruation, sleep deprivation, missing a meal, strong perfumes and odours. Oral sumatriptan would provide significant relief, usually within 2 hours, with benefit being established more quickly if taken when the headache was mild.

Over the last 3 years, the headache frequency gradually increased and in the last year, she would typically have 2 to 4 severe headaches per month. Sumatriptan would often help as before, but even with initial relief, the headache would re-emerge after several hours.

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Table 1

Diagnostic criteria for migraine

A. At least 5 attacks fulfilling criteria B-D
B. Headache attacks lasting 4-72 hours (when untreated)
C. Headache has at least 2 of the following characteristics:
   - Unilateral location
   - Pulsating quality
   - Moderate or severe pain intensity
   - Aggravation by or causing avoidance of routine physical activity
D. During the headache at least one of the following:
   - Nausea and/or vomiting
   - Photophobia and phonophobia
E. Not attributed to another disorder

Frequently Asked Questions

When do I investigate a headache?

Headache not meeting the migraine criteria or headache with "red flags" need to be pursued further. Red flags for potentially sinister causes of headache include sudden onset, associated fever, significant change in pre-existing pattern, onset after age 50, the presence of fever or neck rigidity and an abnormality on the neurological exam.

Typically, the first investigation will be a CT scan of the head. Sudden headaches and those with fever normally will also require a lumbar puncture. A spinal tap may identify a subarachnoid hemorrhage even when the CT is normal. Headache onset after age 50 mandates an erythrocyte sedimentation rate as part of the assessment for cranial arteritis.

The first step in management remains accurate diagnosis; once the diagnosis of migraine has been established with reasonable certainty, this has to be transmitted to the patient clearly and with confidence. The majority of patients, when first presenting to a physician with a headache are primarily concerned with the diagnosis and so a prescription for symptomatic therapy is insufficient if the patient remains concerned about the underlying diagnosis.

The importance of trigger factors is often underestimated. While most patients can identify three or four trigger factors readily, this number can be doubled by educating the patient regarding potential triggers and use of a diary. While well-recognized triggers such as stress, menstruation, red wine and cheese are readily considered, many others are overlooked. These include many environmental factors such as smoke, perfumes and bright lights, exertion including sports, skipping meals, other pain syndromes around the head and neck and either excess or insufficient sleep. There is evidence that recognizing multiple triggers will lead to steps to ultimately reduce headache frequency.

Persons presenting to a physician with headache commonly have already used OTC medications. Reasons for failure of these medications include delay in taking the medication, insufficient dose and impaired gut motility. Impaired gut motility is part of the migraine syndrome and this symptom, along with the impaired absorption of the analgesic, can be overcome by the concomitant use of metoclopramide. Multiple studies have demonstrated better headache control by taking metoclopramide along with a variety of medications used for migraine.

Triptans remain a highly effective group of medications for managing migraine symptoms. Seven triptans are now available in Canada. Subcutaneous sumatriptan is the fastest and most effective. Rizatriptan and eletriptan are the fastest oral formats followed after several minutes by zolmitriptan, almotriptan and sumatriptan. These oral formats achieve > 60% response rates at two hours and > 70% response rates at four hours,

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Melissa's case cont'd...

This is a common clinical scenario. Melissa has avoided typical triggers to the extent possible. Triptans are very helpful but in one-third of patients, rebound will occur, as in this case. Some triptans, such as naratriptan and frovatriptan are slower to work but are less likely to cause rebound and can help with that aspect of the problem. However, with headache frequency approaching weekly, prophylaxis is indicated both to help headache control and to prevent the emergence of chronic daily headache due to analgesic rebound. Propranolol, flunarizine and amitriptyline are common first choices.

Take-home message

Migraine is a major source of disability and loss of productivity in the working population. Early management must include developing strategies to identify and manage trigger factors. Early acute therapy is more effective than delayed treatment and effectiveness is enhanced by concomitant use of metoclopramide. Triptans remain the most effective abortive therapy. Prophylaxis is underutilized and should be considered when headaches are compromising work and social functioning for more than a few days per month.

about double the placebo response. Intranasal formats (zolmitriptan, sumatriptan) have faster onset for some persons and will bypass the gut. Melt formats (rizatriptan, zolmitriptan) are more convenient but are no faster than oral formats. Rebound headache occurs in > 30% but this can fall to < 20% with nanatriptan, frovatriptan and eletriptan. Triptan side-effects can be annoying but are least with naratriptan and frovatriptan. If one triptan does not work, one or two others can be tried.

The use of opioids is discouraged in the management of migraine. In the ED, one of the best options for pain control is a combination of sumatriptan and parenteral ketorolac. Other agents that may be helpful include metoclopramide, chlorpromazine, dihydroergotamine and IV steroids.

A key objective in the management of migraine is the prevention of analgesic rebound headache. Persons using analgesics and triptans more than two days per week are at significantly higher risk of chronic daily headache. Therefore, persons with headaches that are not reasonably well-controlled by the above measures should be offered prophylaxis. Most clinical trials consider success to be a 50% reduction in headache frequency. The most common errors in the use of prophylactics include inadequate dose or inadequate duration of therapy. Once a prophylactic is chosen, it should be offered for at least two months if tolerated, gradually increasing the dose if necessary. Reasonable options include several β-blockers, amitriptyline, imipramine, flunarizine, topiramate, valproic acid and others. These are much less likely to be helpful if the person is using analgesics more than two days per week and this is another common reason for failure of a prophylactic.

In summary, migraine remains a clinical diagnosis but consideration needs to be given to other headaches with overlapping symptoms, especially if "red flag" symptoms are present (See FAQ). Initial management includes reassuring transmission of diagnosis to patient, identification of trigger factors, early use of analgesics or abortive therapies (triptans) and concomitant use of metoclopramide. A low threshold needs to be applied in the use of prophylactics which are currently underutilized and can play an important role in the prevention of analgesic rebound headache.

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Resources
1. Rapoport AM: Acute And Prophylactic Treatments For Migraine: Present And Future. Neurol Sci 2008; 29 Suppl 1:S110-22.
2. Grimaldi D, Cevoli S, Cortelli P: Headache In The Emergency Department. How To Handle The Problem? Neurol Sci 2008; 29 Suppl 1:S103-6.