Migraine in the ED:
Where do I Start?

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Presented at the 29th Annual February Refresher Program

Headache accounts for approximately 1.4% of visits to emergency departments (EDs) in Canada. About $2 million is spent annually due to ED visits in Ontario.[1] The importance of a systematic approach to this common presentation allows assessment of the patient in a timely and thorough fashion, while still attempting to maintain patient flow in busy EDs. Determining which patients require further investigations and/or treatment is an important aspect in assessment.

Headache is believed to be due to various factors which may work in combination. The following theories have been put forth as possible mechanisms:[2]

- Distention, traction and/or dilatation of vessels,
- Compression, traction and/or inflammation of nerves,
- Spasm, inflammation and/or traction of muscles,
- Meningeal irritation and/or raised intracranial pressure, and
- Disturbance of serotonergic receptors.

The factors which are responsible for the headache may be difficult to determine, and may be present in combination. The classification criteria for headache may indicate which cause is felt to be primarily responsible for the presentation.

The classification of headache includes the following categories:[3]

- Migraine,
- Tension-type headache,
- Cluster headache and/or chronic paroxysmal hemicrania; and
- Traction and/or inflammatory headache.

To properly diagnose a headache and rule out significant underlying pathology, a thorough history and physical exam must be performed (Table 1).

Specific criteria for the diagnosis of specific forms of headache have been described by the International Headache Society (Table 2).

Ramirez-Lassepas et al[1] found that 3.8% of patients presenting to the ED with a chief complaint of headache had intracranial pathology (Table 3).

Key points in the physical exam of the patient presenting with headache include:

- Fundoscopy,
- Visual fields,
- Extraocular eye movements,
- Strength and reflexes,
- Co-ordination; and

Headaches

Table 1
Important historical data

- Type of pain: sharp, dull, throbbing
- Onset: sudden versus gradual
- Duration: hours, days or months
- Severity: maximal at onset or gradual increase in intensity
- Associated symptoms: nausea, photophobia, focal neurologic symptoms
- Location of pain: temporal versus global
- Precipitating factors: valsalva, trauma
- Exertional factors
- Prior history and investigations: previous history of vascular type, recent magnetic resonance imaging
- Preceding symptoms: exertion, trauma
- Medications: oral contraceptives, antihypertensives or specific medications used for this headache
- Allergies

Gladstone JP, Edmeads JG: Approaching the patient with headache. The Canadian Journal of CME, Jan 2003, 83-8.

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- Palpation of the head and neck.

All key points of the physical exam assist in the diagnosis of headache and help assess for signs of intracranial pathology, such as raised intracranial pressure.[4]

Table 2
Specific criteria for headaches

Modified IHS criteria for migraine without aura

A. Minimum of 5 attacks corresponding to criteria B, C and D
B. Headache lasting 4-72 hours (untreated or unsuccessfully treated)
C. Headache has at least 2 of the following:
- unilateral location
- pulsating character
- moderate or severe intensity
- worsening with routine activity

D. During the headache, at least 1 of the following elements occurs:
- nausea and/or vomiting
- photophobia, phonophobia and/or osmophobia

E. No evidence of other disease processes causing the headache

Migraine with aura

A. At least 2 attacks fulfilling criteria B
B. At least 3 of the following 4 characteristics:
- 1 or more fully reversible aura symptoms indicating a focal dysfunction
- at least 1 aura symptom developing gradually over 4 minutes or 2 in succession
- no aura symptoms lasting more than 60 minutes; can be additive
- the headache follows the aura after a free interval of less than 60 minutes or occurs before, or at the same time as, the aura

C. Neither antecedents nor physical and neurologic examinations would suggest the presence of an underlying illness

IHS: International Headache Society

Morillo LE: Migraine headache. Am Fam Physician. 2002; 65(9):1871-3.

LEAD BY EXAMPLE

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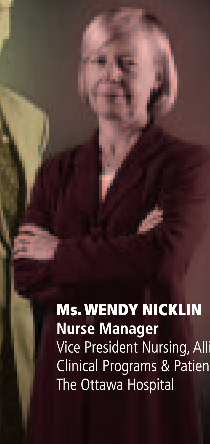

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Table 3
Risk factors for significant pathology

- First or worst headache, especially if rapid onset
- Change in a previous headache pattern
- New onset in a patient older than 55
- Occurrence of new progressive headache that persists for days
- Precipitation of the headache with the Valsalva manoeuver
- Presence of systemic features
- Focal neurologic symptoms
- Abnormal neurologic exam
- Confusion
- Seizures
- Decreasing level of consciousness

Adapted from: Ramirez-Lassepas M, Johnston KL, Cipolle RJ, et al: Predictors of intracranial pathologic findings in patients who seek emergency care because of headache. Arch Neurol 1997; 54(12):1506-9.

Why a computed tomography scan?

There are several reasons why a CT scan would be beneficial:[5]

- Clinical suspicion of cerebellar hemorrhage or infarct.
- Stroke in evolution, or completed, if considering anticoagulation.

Table 4
Medications for migraine

Medication	Dosage
Acetisalicylic acid	650-1300 mg every 4 hours 2 pills oral
Ibuprofen	400-800 mg every 6 hours 2 pills oral
Naproxen sodium	275-550 mg every 2-6 hours oral
Acetaminophen	650-1300 mg every 4 hours 2 pills oral
Adjunctive medication for mild migraine	
Diphenhydrinate	50-100 mg oral
Domperidone	10-20 mg oral
Metoclopramide	10 mg oral
Moderate migraines	
Ibuprofen	400-800 mg every 6 hours 2 pills oral
Naproxen sodium	275-550 mg every 2-6 hours oral
Mefanamic Acid	250-500 mg every 6 hours oral
Sumatriptan	50-100 mg oral or 6mg sc
Dihydroergotamine	0.5-1.0mg sc, IM or IV
Severe or ultra-severe	
Chlorpromazine	50 mg IM or 0.1 mg/kg IV
Metoclopramide	10 mg IV
Prochlorperazine	25 mg rectal or 5-10 mg IV or IM
Suamtriptan	50-100 mg oral, 6 mg sc
Dihydroergotamine	0.5-1.0 mg sc, IM or IV
Meperidine	50-100 mg IM or IV
Butorphanol	1mg IN
Ketorolac	30-60 mg IM
Dexamethasone	10-20 mg IM or IV
Lidocaine	0.5 cc of 4% IN

SC: Subcutaneous IM: Intramuscular cc: Cubic centimetres
IV: Intravenous IN: Intranasal

Adapted from:
Pryse-Phillips, Dodick DW, Edmeads JC, et al: Guidelines for the diagnosis and management of migraine in clinical practice. CMAJ. 1997; 156(9):1273-87.
Ducharme J: Canadian Association of Emergency Physicians Guidelines for the acute management of migraine headache. J Emerg Med 1999;17(1):137-44.
Morillo L.E: Migraine headache. Clin Evi 2002; 7:1179-94.

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- History and exam suggestive of intracerebral hemorrhage or mass lesion.
- Acute signs of raised intracranial pressure.
- Patient at risk for cerebral abscess.
- Trauma.

What are the medications for migraines in the ED?

- Dopamine antagonists (anti-emetics),
- Serotonin receptor agonists,
- Local anesthetics,
- Opioids,
- Non-steroidal anti-inflammatory drugs; and
- Steroids (Table 4).

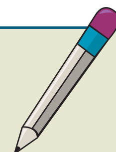
Headache is a common presenting complaint in patients seeking advice in either a family physician's office or the ED. The importance of a careful history and physical exam to rule out serious underlying pathology is imperative, and the treatment success is dependent on the correct diagnosis. Many options for treatment are available, and a common sense approach to the selection is important. CME

References
1. Ramirez-Lassepas M, Espinosa CE, Cicero JJ, et al: Predictors of intracranial pathologic findings in patients who seek emergency care because of headache. Arch Neurol 1997; 54(12):1506-9.
2. Morillo LE: Migraine headache. Am Fam Physician 2002; 65(9):1871-3.
3. Polizzotto MJ: Evaluation and treatment of the adult patient with migraine. J Fam Pract 2002; 51(2):161-7.
4. Gladstone JP, Edmeads JG: Approaching the patient with headache. The Canadian Journal of CME 2003; 16(1):83-8.
5. Elrington G: Migraine: Diagnosis and management. J Neurol Neurosurg Psychiatry 2002; 72(Suppl 2):ii10-15.

Net Readings

1. International Headache Society: *www.i-h-s.org*
2. Migraine Canada: *www.migrainecanada.com*
3. Migraine Awareness Group: A National Understanding for Migraineurs: *www.migraines.org*

Take-home message



- About 1.4% of visits to emergency departments in Canada are due to headache.
- All key points of the physical exam assist in the diagnosis of headache and help assess for signs of intracranial pathology, such as raised intracranial pressure

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