APPROACH TO THE UNDIFFERENTIATED HEADACHE

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Overview
Headache is one of the most common medical complaints affecting 12-16% of people in North America. The differential diagnosis may be divided into primary and secondary causes. A full history and physical should be completed to rule out secondary causes, which are often serious and life-threatening; only once these are excluded should you think about a diagnosis of a primary headache disorder.

Diagnostic Considerations

<table>
<thead>
<tr>
<th>History</th>
<th>Physical Examination</th>
<th>Red Flags¹,⁴</th>
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<tbody>
<tr>
<td>• Age at onset</td>
<td>• Vitals</td>
<td>• Onset &gt;50 years old</td>
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<td>• Prodrome/Aura</td>
<td>• Cardiac exam</td>
<td>• New or different</td>
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<tr>
<td>• Frequency, intensity, duration of headache</td>
<td>• Excranial exam (sinuses, scalp arteries, cervical and paraspinal muscles, TMJ)</td>
<td>• Worst ever or maximum severity at onset</td>
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<td>• # Headache days/month</td>
<td>• Cervical spine ROM (neck flexion) and pain</td>
<td>• Onset with exertion</td>
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<td>• Quality/location of pain</td>
<td>• Screening neurological exam (bruits over orbits/neck/cranium, fundoscopy, visual fields, pupillary reactions, CN V, corneal reflexes, motor of face and limbs, muscle reflexes, plantar responses, Romberg, gait)</td>
<td>• Subacute and/or progressive over months</td>
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<td>• Associated symptoms</td>
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<td>• Seizures</td>
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<td>• Family history of migraines</td>
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<td>• Unexplained focal neurological signs (meningismus, mental status change, impaired memory, papilloedema, visual field or cranial nerve defects, pronator drift, weakness, sensory deficit, reflex asymmetry, extensor plantar response, gait disturbance)</td>
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<tr>
<td>• Effect of activity/food/alcohol</td>
<td></td>
<td>• Concomitant infection</td>
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<tr>
<td>• Recent trauma</td>
<td></td>
<td>• History of head trauma</td>
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<tr>
<td>• Recent change in vision</td>
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<td>• Occipito-nuchal radiation of headache</td>
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<tr>
<td>• State of general health</td>
<td></td>
<td>• History of HIV or other immunosuppressed state</td>
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<td>• Effect upon work or lifestyle</td>
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<td></td>
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<tr>
<td>• Change in environment</td>
<td></td>
<td></td>
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<tr>
<td>• Change in birth control</td>
<td></td>
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<tr>
<td>• Association with menstrual cycle</td>
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Investigations

Neuroimaging:⁵,⁶
CT or MRI more likely to reveal abnormalities if the following is present:
• Red Flags
• Atypical headache that does not fulfill strict definition of primary headache disorder
• Rapidly increasing headache frequency
• Dizziness or lack of coordination
• Subjective paresthesias
• Headache causing awakening from sleep
• Headache worsening with Valsalva maneuver
• Unexplained abnormal neurological examination

LP if suspicious of meningitis, encephalitis, SAH or high or low-pressure headache syndromes:
• First or worst headache (if suspect SAH and CT negative, proceed with LP)
• Severe recurrent and rapid onset headache
• Progressive headache without signs of raised ICP
• Atypical chronic and intractable headache
• Associated with fever

ESR if suspect temporal arteritis/GCA
EEG has no role in the routine evaluation of headache⁷

Differential Diagnosis of Common Primary Headache Disorders
(see Migraine/Tension Headache one-pager)

Migraine

<table>
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<tr>
<th>Tension</th>
<th>Cluster</th>
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Other primary headache disorders:¹,²

Chronic migraine
• Chronic migraine
  • Tension type and/or migraine on ≥15d/mos for ≥3 mos
  • ≥5 previous attacks of migraine without aura, fulfills criteria for migraine without aura and/or responds to treatment with triptan or ergot on ≥8d/mo
  • No medication overuse or other cause

Chronic tension
• Fulfills criteria for tension-type headache but frequency >15 attacks/mo

Medication overuse
• Headache ≥15 d/mo and develops or worsens with medication overuse
• Regular overuse for >3mos of ≥1 of the following treatments:
  1) Ergotamine, triptan, opioid or combination on ≥10d/mo for >3mos
  2) Simple analgesia or combination of ergotamine, triptan, opioids on ≥15d/mo for >3mos without overuse of any single class alone

Dr. Michael Evans developed the One-Pager concept to provide clinicians with useful clinical information on primary care topics.
Differential Diagnosis of Secondary Headache Disorders

Most worrisome etiologies: hypertensive emergency, subarachnoid hemorrhage (SAH), intracerebral hemorrhage, acute ischemic stroke, subdural hematoma, epidural hematoma, ruptured intracranial aneurysm, cranio-cervical arterial dissection, infection (meningitis, encephalitis), tumour, giant cell arteritis (GCA), angle closure glaucoma, carbon monoxide poisoning, metabolic disorder, CSF leak (usually post-LP), cerebral venous thrombosis (uncommon)

CLINICAL CLUES:
Subacute onset, progressive over weeks to months
- Intracranial lesion: tumour, subdural hematoma, hydrocephalus
  - Investigations: MRI +/- gadolinium more sensitive than CT, but CT may be useful as quick initial screen

New, sudden onset, different or “worst headache of my life”
- SAH, venous sinus thrombosis, bacterial meningitis, spontaneous cerebral spinal fluid leak, carotid dissection, pituitary apoplexy (rare), hypertensive encephalopathy (rare)
  - Investigations: CT without contrast; if high suspicion of SAH, include LP, MRI with and without gadolinium, and neurology consult (+/- MRA and MRV)

Exertional/Valsalva
- Usually primary cough headache
- Intracranial abnormality, usually posterior fossa (e.g., Chiari malformation)
  - Investigations: MRI

New onset >50
- GCA or PMR (fever, scalp tenderness, jaw claudication, firm/nodular temporal arteries, decreased temporal pulses, visual changes), tumour (constitutional symptoms, abnormal neurological examination)
  - Investigations: ESR/CRP, CBC, liver enzymes, serum albumin, temporal artery biopsy, MRI head

Seizures
- Space-occupying lesion, infection, stroke, metabolic abnormalities, drug toxicity
  - Investigations: CBC, electrolytes, calcium, magnesium, serum glucose, renal function tests, liver function tests, toxicology screen, CT if acute head trauma, EEG, MRI

Fever
- Intracranial infection (meningitis, encephalitis, brain abscess, subdural empyema), systemic infection, other (SAH, CNS malignancy, rhinosinusitis, etc.)
  - Investigations: LP, CT, MRI, blood cultures

Management
Treatment of secondary causes of headache depends on the underlying cause. For symptomatic treatment of primary headaches, see Migraine/Tension Headache one-pager.

Bottom Line
Headaches are a common presenting complaint for family doctors. The differential is wide and contains both benign and life threatening causes. A complete history and physical examination that seeks to find red flags will identify conditions that require urgent evaluation and treatment. Please see Migraine/Tension Headache one-pager for further management of primary headache disorders.

References can be found online at http://www.dfcm.utoronto.ca/programs/postgraduateprograme/One_Pager_Project_References.htm