11. HEADACHE

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Approach

We identified articles on the evaluation and management of headache by conducting a MEDLINE search of English language articles between 1990 and 1995 (keywords headache, diagnosis, treatment) and by reviewing two textbooks on primary care (Pruitt, 1995, in Goroll et al., 1995; Bleeker and Meyd, 1991, in Barker et al., 1991). Of the fourteen relevant articles that were retrieved, nine were review articles and five were observational studies. Several of these articles addressed the selection of diagnostic tests and principles of pharmacological management, with a focus on tension headache and migraine. We did not find controlled trials that analyzed elements of an appropriate history or physical examination, and for these topics expert opinion was the primary source of information.

IMPORTANCE

Headache accounts for 18 million outpatient visits per year. Approximately 73 percent of adults in the United States report having experienced a headache within the past year. Headaches lead to 638 million days of lost work per year, costing employers between $5.6 and $7.2 billion annually (Kumar and Cooney, 1995).

EFFICACY AND/OR EFFECTIVENESS OF INTERVENTIONS

Diagnosis

The International Headache Society (IHS) has developed a thorough and comprehensive etiologic classification system for headaches (Dalessio, 1994). Common categories include: tension, migraine, cluster, noncephalic infection (e.g., influenza), head trauma, intracranial vascular disorders (e.g., hemorrhage), intracranial nonvascular disorders (e.g., meningitis, neoplasm), substance withdrawal, and neuralgias. Much of the initial diagnostic work-up for headaches focuses on distinguishing benign etiologies like tension.
headaches from the more serious causes like meningitis, hemorrhage, or neoplasm. Once that distinction is made, clinicians should distinguish among the more common benign etiologies in order to prescribe the most efficacious treatment (Pruitt, 1995, in Goroll et al., 1995).

All sources recommended a detailed history as the first step in making these distinctions. Essential elements include: temporal profile (chronology, onset, frequency), associated symptoms (nausea, aura, lacrimation, fever), location (unilateral, bilateral, frontal, temporal), severity, and family history (Dalessio, 1994; Bleeker and Meyd, 1991, in Barker et al., 1991). There is less confusion about the essential elements of the neurologic examination, though most sources recommend at least an evaluation of the cranial nerves, a fundoscopic examination to rule out papilledema, and examination of reflexes (Dalessio, 1994; Larson et al., 1980; Frishberg, 1994).

One of the most difficult diagnostic decisions in the evaluation of new onset headache is the indication for computerized tomography (CT) and magnetic resonance imaging (MRI) of the head to find structural lesions like arteriovascular malformations, subdural hematomas, and tumors. Several observational studies suggest that a head CT scan is a low-yield evaluation tool in patients with normal neurological examinations (Larson et al., 1980; Masters et al., 1987; Becker et al., 1988; Nelson et al., 1992; Becker et al., 1993; Frishberg, 1994), though even in such patients severe headaches may indicate subarachnoid hemorrhage and constant headaches may indicate intracranial tumors. As a consequence, guidelines from a 1981 National Institutes of Health Consensus Panel on the use of CT recommended imaging only when the patient has an abnormal neurological examination or a severe or constant headache (NIH Consensus Statement, 1981). Others have expressed reservations that using severity alone as criteria for head imaging may lead to extensive overuse (Pruitt, 1995, in Goroll et al., 1995; Becker et al., 1988). The American Academy of Neurology (AAN) (1993) previously reviewed 17 case series to define the yield of pathology when CT or MRI scanning is used to evaluate headache patients. In 897 migraine patients, they found only 4 abnormalities, none of which were clinically unsuspected. Of the 1825 patients with headaches and normal
neurologic examinations, 2.4 percent had intracranial pathology. Based on these data, the AAN recommended against scanning migraine patients, but concluded there was insufficient evidence to recommend for or against scanning other headache patients with normal neurologic examinations.

Head trauma is another strong indication for imaging. In a study of 3658 head trauma patients, the Skull X-Ray Referral Criteria Panel identified focal neurologic signs, decreasing level of consciousness and penetrating skull injury as indications for CT scanning (Masters et al., 1987). In a separate study of 374 blunt trauma patients, there were 7 abnormal head CT results in patients without abnormal neurological findings, but the best initial treatment for these cases was observation alone (Nelson et al., 1992).

While there is still some debate as to the proper indications for CT or MRI in headache patients, there is little controversy surrounding the use of skull radiographs in such patients. Clinical trials have shown skull radiographs to be poor predictors of adverse outcomes in patients with head trauma or others presenting for evaluation of headache (Masters et al., 1987).

**Treatment**

Our quality indicators address the two most common etiologies for headaches in women under 50: migraine and tension headaches.

The treatment of migraine headache depends on the frequency and severity of symptoms. Placebo-controlled trials support the use of aspirin, acetaminophen, and nonsteroidal anti-inflammatory medications in mild cases (Kumar and Cooney, 1995). For more severe pain, clinicians often rely on ergot preparations, antiemetics, opioids, and sumatriptan. Though clinical trials have found intravenous dihydroergotamine to be effective in reducing both pain and emergency room use, three clinical trials failed to find any effect of oral ergotamines on migraine pain (Kumar and Cooney, 1995). Metoclopramide and chlorpromazine also have clinical trial support in the treatment of acute migraine headaches (Kumar and Cooney, 1995). The newest agent in the migraine pharmacopoeia is sumatriptan, a 5-hydroxytryptamine 1D
agonist, available only in injectable form in the United States. Sumatriptan reduced the pain and associated symptoms of migraine headaches in 70 to 90 percent of subjects in several clinical trials (Kumar and Cooney, 1995). However, sumatriptan should not be used concurrently with ergotamine due to an interactive vasoconstrictive effect (Raskin, 1994; Kumar and Cooney, 1995). Both sumatriptan and ergotamine preparations should be avoided in patients with uncontrolled hypertension, angina, or atypical chest pain for that same reason.

A consensus exists that, if a patient has more than two migraine headaches per month, then prophylactic treatment is indicated, and this concept has been endorsed by the International Headache Society. The use of beta blockers, valproic acid, calcium channel blockers, tricyclic antidepressants, naproxen, aspirin, cyproheptadine and valproate are supported by controlled clinical trials. No clinical trials have compared any of these agents with another in preventing migraines (Raskin, 1993; Sheftell, 1993; Raskin, 1994; Rapoport, 1994; Kumar and Cooney, 1995).

Treatment options for tension headaches include aspirin, acetaminophen, and nonsteroidal anti-inflammatory agents. At least one clinical trial found prophylaxis with tricyclic antidepressants to be beneficial. Tension headache and migraine have been considered to be part of a continuum of the same process and as a result clear distinctions between appropriate treatments for the two diagnoses are not always present. While clinical trials support the effectiveness of oral opioid agonists and barbiturates in these two conditions, most sources recommend against initial therapy with these agents due to the risk of dependence (Markley, 1994). Butorphanol nasal spray has been encouraged as an outpatient opioid agent because it is less addictive and has been shown to reduce emergency room visits for severe migraine headache (Markley, 1994; Kumar, 1994).

**Follow-up Care**

The need for physician visits depends on the frequency and severity of headache and cannot be precisely defined. Indeed, in the United States most people who experience headaches do not seek evaluation or
treatment from physicians (Kumar and Cooney, 1995). Accepted guidelines for specialist referral are not present in the literature, and most cases of migraine and tension headache can be handled adequately by a primary care physician.
## RECOMMENDED QUALITY INDICATORS FOR HEADACHE

These indicators apply to women aged 18-50.

### Diagnosis

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<tr>
<th>Indicator</th>
<th>Quality of evidence</th>
<th>Literature</th>
<th>Benefits</th>
<th>Comments</th>
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<tr>
<td>1. Patients with new onset headache should be asked about: a. Location of the pain (e.g., frontal, bilateral); b. Associated symptoms (e.g., aura); c. Temporal profile (e.g., new onset, constant); d. Severity; and e. Family history</td>
<td>III</td>
<td>Dalessio, 1994; Larson et al., 1980; Frishberg, 1994</td>
<td>Decrease symptoms of sinusitis (e.g., post nasal drip, fever) and prevent potential complications of mastoiditis, periosteal and epidural abscess. Decrease neurologic symptoms from migraines. Reduce tension headache symptoms and side effects of unwarranted therapy. Preserve neurologic function.</td>
<td>Location can distinguish sinus, tension, and cluster. Associated symptoms can distinguish migraines and cluster headaches. Temporal profile can distinguish cluster, tension, and tumors. Severity can distinguish hemorrhage. Family history can distinguish migraine. Accurate diagnosis of sinusitis can prompt antibiotic or decongestant treatment. Accurate diagnosis of migraine and cluster can prompt treatment (see below). Accurate diagnosis of tension headaches can prompt treatment (see below). Accurate diagnosis of tumors can prompt lifesaving radiation or surgery.</td>
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<td>2. Patients with new onset headache should have a neurological examination evaluating the: a. Cranial nerves, b. Fundi, and c. Deep tendon reflexes.</td>
<td>III</td>
<td>Dalessio, 1994; Larson et al., 1980; Frishberg, 1994</td>
<td>Preserve neurologic function.</td>
<td>Abnormal neurologic examination is an indication for CT or MRI scanning. Increased detection of tumors, cerebrovascular accidents and intracranial hemorrhage can lead to lifesaving radiation or surgery.</td>
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<tr>
<td>3. CT or MRI scanning is indicated in patients with new onset headache and any of the following circumstances: Abnormal neurological examination, constant headache, or severe headache.</td>
<td>III</td>
<td>NIH Consensus Statement, 1981</td>
<td>Preserve neurologic function.</td>
<td>Recommendations of NIH Consensus Panel on Computed Tomographic Scanning of the Brain.</td>
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<td>4. Skull X-rays should not be part of an evaluation for headache.</td>
<td>II</td>
<td>Masters et al., 1987</td>
<td>Averts side effects (e.g., radiation) of skull X-ray. Averts delays in CT or MRI scanning where indicated.</td>
<td>Four observational trials found a combined incidence of pathology of 0.7% in patients who would not otherwise receive a CT or MRI scan.</td>
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### Treatment

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<tr>
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<tr>
<td>5. Patients with acute mild migraine or tension headache should receive aspirin, tylenol, or other nonsteroidal anti-inflammatory agents before being prescribed any other medication.</td>
<td>I</td>
<td>Kumar and Cooney, 1995</td>
<td>Reduced migraine symptoms* with fewest side effects from other potential agents.*</td>
<td>More effective than placebo in reducing headaches, nausea and photophobia, but no effect on vomiting.</td>
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<td>6.</td>
<td>Patients with acute moderate or severe migraine headache should receive one of the following before being prescribed any other agent: intramuscular ketorolac, subcutaneous sumatriptan, intravenous dihydroergotamine, intravenous chlorpromazine, or Intravenous metoclopramide.</td>
<td>I</td>
<td>Kumar and Cooney, 1995; Raskin, 1993; Raskin, 1994; Sheftell, 1993; Rapoport, 1994</td>
<td>Reduced migraine symptoms.*</td>
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<td>7.</td>
<td>Recurrent moderate or severe tension headaches should be treated with a trial of tricyclic antidepressant agents.</td>
<td>I</td>
<td>Kumar and Cooney, 1995</td>
<td>Reduced rate of tension headache recurrence. Improve quality of life and functioning.</td>
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<td>8.</td>
<td>If a patient has more than 2 migraine headaches each month, then prophylactic treatment is indicated with one of the following agents: beta blockers, calcium channel blockers, tricyclic antidepressants, naproxen, aspirin, fluoxetine, valproate, or cyproheptadine.</td>
<td>I</td>
<td>Kumar and Cooney, 1995; Sheftell, 1993; Markley, 1994</td>
<td>Reduced rate of recurrent migraine symptoms.*</td>
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<td>9.</td>
<td>Sumatriptan and ergotamine should not be concurrently administered.</td>
<td>III</td>
<td>Kumar and Cooney, 1995</td>
<td>Averts adverse effects of vasoconstriction: exacerbation of chest pain in ischemic disease, hypertension, painful extremities.</td>
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<td>10.</td>
<td>Opioid agonists and barbiturates should not be first-line therapy for migraine or tension headaches.</td>
<td>III</td>
<td>Markley, 1994; Kumar, 1994</td>
<td>Averts adverse effects of opiate therapy.*</td>
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<td>11.</td>
<td>Sumatriptan and ergotamine should not be given in patients with a history of: uncontrolled hypertension, atypical chest pain, or ischemic heart disease or angina.</td>
<td>II</td>
<td>Kumar and Cooney, 1995; Raskin, 1994</td>
<td>Averts adverse effects of vasoconstriction (see above).</td>
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* Side effects of migraine therapeutic agents include:
Ergotamines: vasoconstriction, exacerbation of coronary artery disease, nausea, abdominal pain, and somnolence;
Opiates: dependence, somnolence, and withdrawal;
Phenothiazines: dystonic reactions, anticholinergic reactions, and insomnia.

Migraine symptoms include: headache, nausea, photophobia, vomiting, phonophobia, scotomata, and other focal neurologic symptoms.

Quality of Evidence Codes:
I: RCT
II-1: Nonrandomized controlled trials
II-2: Cohort or case analysis
II-3: Multiple time series
III: Opinions or descriptive studies
REFERENCES – HEADACHE


