Headache Evaluation and Treatment by Primary Care Physicians in an Emergency Department in the Era of Triptans

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**Background:** Despite advances in treatment, patients with migraine have been underdiagnosed and undertreated.

**Methods:** Documentation of visits by patients with headache to an urgent care department staffed by primary care physicians was reviewed. Patients were also sent a brief headache screen, and those who replied were interviewed by telephone. “Repeaters” (patients who made 3 or more visits in 6 months) were excluded from chart review.

**Results:** Over 6 months, 518 patients made 1004 visits to the emergency department for primary headache complaints: 464 patients (90%) made 1 or 2 visits (total visits, 502). A review of 174 charts documenting a diagnosis of migraine found that (1) the need for prophylaxis was determined in only 40 (31%) of the patients who were not already undergoing prophylaxis and (2) treatment in the emergency department was migraine specific in 46 patients (26%) or otherwise appropriate in 45 (25%). A review of 90 charts documenting nonmigraine diagnoses found that 30 patients (33%) had adequate history documented to exclude migraine as the diagnosis. Eighty-six patients (17%) were interviewed. An emergency department diagnosis of migraine (n = 59) corresponded to a final diagnosis of migraine with (n = 21) or without (n = 18) medication overuse or chronic daily headache and/or transformed migraine with (n = 18) or without (n = 2) medication overuse. Discharge diagnoses that were not migraine (n = 27) had final diagnoses of migraine with (n = 9) or without (n = 9) medication overuse or chronic daily headache/transformed migraine with (n = 7) or without (n = 2) medication overuse.

**Conclusions:** In this emergency department population, many patients with migraine, chronic daily headache, or medication overuse are not accurately diagnosed. The need for prophylaxis is not usually assessed. Treatment is migraine specific in the minority of patients. Tension-type headache is rarely an accurate diagnosis in this emergency department population.


**ANNUALLY, more than 10% of the population experiences at least 1 migraine headache.**¹ Migraine has a major economic impact² and strongly affects an individual’s quality of life.³ Despite significant disability, many patients with migraine remain undiagnosed. In a population-based survey, only 41% of women and 29% of men with migraine had ever had their migraine diagnosed by a physician.⁴ Of patients with migraine who do present to a physician, only 45% to 51% receive a correct diagnosis.⁵

Patients with chronic daily headache (4%-5% of adults) and drug-rebound headache (1.5% of adults) may have severe disability as well.⁶,⁷ Drug-rebound headache is a daily headache sustained by the daily intake of analgesic agents or headache remedies. It is the most common reason for refractory headache. Drug-rebound headache has been coined an unrecognized epidemic.⁸

Although most (54%) migraineurs first consult their family physician or internist, the next most common site for medical care is an emergency department (ED), accounting for 16% of first presentations.⁹ Few articles have characterized the nature of care for patients with headache in the ED. In one study of a health maintenance organization over a 4-month period in 1991 and 1992, 152 patients made 323 ED visits for migraine: 36% of the patients made repeat visits, averaging 4.2 visits for migraine in the 4-month period.¹⁰ Eighty-six percent of patients were treated in the ED with narcotics; 6% were given a discharge prescription for a migraine-specific compound (ergot or isometheptene compound); and 3% were given a prescription for a mi-
PATIENTS AND METHODS

PATIENTS

Our medical group serves a large health maintenance organization with about 3 million members. The local facility serves a population of 160,000. The urgent care department (UCD) is situated next to the ED; patients presenting with headache would be seen in the UCD between 7 AM and 10 PM daily and in the ED after hours. Approximately 245 patients are seen in the UCD daily. The UCD is staffed by 3 full-time UCD physicians and a mixture of approximately 20 per-diem physicians and 50 full-time primary care physicians. All physicians are board certified or board eligible in internal medicine or family practice.

On a weekly basis, UCD notes were reviewed to identify patients who were discharged with a primary headache disorder (migraine, tension-type headache, or headache otherwise unspecified). Patients with associated febrile conditions or medical conditions that were likely to explain the headache (eg, sinus symptoms or uncontrolled hypertension) were excluded. Headaches due to recent trauma were excluded. Patients who were evaluated for “worrisome” headaches were also excluded. Emergency department (as opposed to UCD) notes were not reviewed because patients visiting the ED more commonly presented with worrisome headache syndromes.

Chart review was limited to patients with fewer than 3 visits to the ED in 6 months (nonrepeaters). Charts of patients with 3 or more visits to the ED was months (repeaters) were not reviewed because these patients were usually well known to the ED staff, usually presented with a request for narcotic injection, and typically received little evaluation.

CHART REVIEW METHODS

For patients diagnosed as having migraine, we reviewed the charts if there was documentation of migraine prophylaxis, and if not, documentation of headache frequency. Medications considered to be migraine prophylaxis included tricyclic antidepressant, any β-blocker or calcium channel blocker, valproic acid, or gabapentin. Serotonin-specific reuptake inhibitors and other antidepressants were not considered migraine prophylactic agents. Appropriate reasons not to take prophylaxis included documented headache frequency of less than twice a month, documented lack of disability with headaches, failure with several prophylactic agents, or being followed by a neurologist.

For patients diagnosed as having migraine, we also checked if the prescribed treatment (both in the ED and at home) was migraine specific, and if not, if there was a documented reason not to use migraine-specific therapy. Migraine-specific treatment in the ED included any triptan or dihydroergotamine mesylate. Narcotics, parenteral nonsteroidal drugs (ketorolac tromethamine), and antiemetic agents were not considered migraine specific. Appropriate reasons for not using migraine-specific therapy included allergy to triptans; previous documented failure with such agents; unsuccessful use of triptan therapy for current headache episode; and contraindication to triptans because of a history of coronary artery disease or stroke, uncontrolled hypertension, or basilar or hemiplegic migraine. Relative contraindications were the presence of any 2 cardiac risk factors, including diabetes mellitus, hypertension, hyperlipidemia, smoking, age greater than 40 years for men or 50 years for women (or if no other risk factor was present, >50 years for men or >55 years for women). Migraine-specific treatment at home included ergotamine products, Midrin (Carnrick Laboratories Inc, Cedar Knolls, NJ), triptans, and dihydroergotamine. Butalbital products, nonsteroidal anti-inflammatory agents, and analgesic agents were not considered migraine specific.

For patients diagnosed as having headache other than migraine, we determined whether the history was adequate to exclude migraine based on criteria of the International Headache Society12 (Table 1). For all patients, we checked what physical examination was documented. Charts were reviewed for funduscopic and neurologic examination. An adequate neurologic examination was defined as any mention of cranial nerves and a motor response or deep tendon reflex examination.

After the first 3 months of chart review, protocol was revised to allow further investigation, and all patients were mailed a brief headache survey. Patients who returned the survey were contacted by telephone by a trained interviewer to confirm a clinical diagnosis. If the diagnosis did not conform to International Headache Society criteria13 for migraine, patients were diagnosed according to the revised criteria of Silberstein et al,13 as having transformed migraine (history of episodic migraine, now with daily headache); chronic tension-type headache; and either of these with or without medication overuse (use of analgesic agents or headache remedies >3/d/wk). The study design was approved by the institutional review board. Informed consent was not required.

RESULTS

Over 6 months, 518 patients made 1004 visits to the ED for primary headache complaints (Table 2): 426 patients (82%) made a single visit; 38 (7%) made 2 visits; and 54 (10%) made 3 or more visits (repeaters). Of all visits, 349 were to the UCD by nonrepeaters. From these 349 visits, 264 charts were available for review: 174 documented a discharge diagnosis of migraine, and 90 documented a nonmigraine headache diagnosis.

Eleven patients not previously identified as having migraine were diagnosed by UCD physicians. All other diagnoses of migraine were in patients who had identified themselves as having migraine. Overall, the need for prophylaxis was determined in only 40 patients (31%) who were not already undergoing prophylaxis. Two patients were started on prophylactic
treatment. Evaluation of physical examinations found
documentation of funduscopic examination in 37
migraineurs (27%) and an adequate neurologic exami-
nation in 7 (5%).

Table 3 summarizes the treatment of patients dis-
charged with a diagnosis of migraine. Treatment in the
ED was migraine specific for 46 patients (26%) or oth-
erwise appropriate for 43 (25%). Migraine-specific treat-
ment in the ED was highly associated with a written pre-
scription of a migraine-specific therapy. For the patients
who received migraine-specific care in the UCD (n = 46),
25 (54%) received migraine-specific prescriptions for home
use, of which 20 were for triptans. Only 1 patient in the
group not given migraine-specific care in the UCD re-
ceived a triptan prescription.

The physician diagnoses of the 90 patients who were
not diagnosed as having migraine are summarized in the
tabulation below.

Table 2. Distribution of Patients by Number of Visits
to the Emergency Department During a 6-Month Period*

<table>
<thead>
<tr>
<th>Visit No. Category</th>
<th>No. (%) of Patients</th>
<th>No. (%) of Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Visit</td>
<td>426 (82)</td>
<td>426 (42)</td>
</tr>
<tr>
<td>2 Visits</td>
<td>38 (7)</td>
<td>76 (7)</td>
</tr>
<tr>
<td>&gt;2 Visits</td>
<td>54 (10)</td>
<td>502 (50)</td>
</tr>
<tr>
<td>Total</td>
<td>518 (100)</td>
<td>1004 (100)</td>
</tr>
</tbody>
</table>

*Total percentages may not be exact because of rounding.†Range, 3 to 50 visits per patient; mean, 9.2 visits per patient.

A brief headache survey was mailed to all 518 pa-
tients; 92 were returned, of which 86 responders were
available for interview. Table 4 compares the UCD di-
agnoses with the clinical diagnoses made by a telephone
interviewer. Tension-type headache without associated
migraine or medication overuse was confirmed in only 1 patient.

Previous studies of ED care for headache did not dis-
tinguish patients with frequent ED visits for head-
ache (labeled as migraine) from patients who were
infrequent users of ED resources. Our population
sample of ED nonrepeaters was selected because one
would expect these patients to receive an adequate,
even if brief, evaluation in the ED. Furthermore,
since the medical staff is composed of family physi-
cians and internists, the documented care may reflect
the care of patients with primary headache outside an
ED setting.

Table 1. International Headache Society Criteria
for Diagnosis of Migraine Without Aura*

A. At least 5 attacks fulfilling B to D below.
B. Headache attacks lasting 4 to 72 hours (untreated or unsuccessfully
treated).
C. Headache has at least 2 of the following characteristics:
   1. unilateral location
   2. pulsating quality
   3. moderate or severe intensity (inhibits or prohibits daily activities)
   4. aggravation by walking stairs or similar routine physical activity
D. During headache at least 1 of the following conditions exist:
   1. nausea, vomiting, or both
   2. photophobia and phonophobia
E. No evidence of related organic disease.

*Reproduced from the Cephalalgia, 1988,12 with permission.

Table 3. Treatment of Patients With Urgent Care
Discharge Diagnosis of Migraine (n = 174)*

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>Migraine-Specific</th>
<th>Not Migraine-Specific, Appropriate</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgent care treatment</td>
<td>46 (26)</td>
<td>43 (25)</td>
<td>45 (26)</td>
</tr>
<tr>
<td>Prescriptions</td>
<td>39 (22)</td>
<td>37 (21)</td>
<td>26 (15)</td>
</tr>
</tbody>
</table>

*All data represent number (percentage) of patients.

Table 4. Urgent Care Diagnoses vs Diagnoses
by Trained Telephone Interviewer*

<table>
<thead>
<tr>
<th>Urgent Care Diagnosis (n = 86)</th>
<th>Telephone Diagnosis (n = 86)</th>
<th>Undergoing Prophylaxis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migraine, 59</td>
<td>Migraine, 39†</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Without MO, 18</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>With MO, 21†</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>CDH/TM, 20</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Without MO, 2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>With MO, 18</td>
<td>6</td>
</tr>
<tr>
<td>Not migraine, 27</td>
<td>Migraine, 18</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Without MO, 9</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>With MO, 9</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>CDH/TM, 9</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Without MO, 2‡</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>With MO, 7§</td>
<td>3</td>
</tr>
</tbody>
</table>

*All data represent number of patients. CDH indicates chronic daily
headache; TM, transformed migraine; and MO, medication overuse.
†Data not entered by 1 patient.
‡Includes 1 case of chronic tension-type headache.
§Includes 1 case of trigeminal neuralgia and 1 case of postconcussive
headache.

A brief headache survey was mailed to all 518 pa-
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available for interview. Table 4 compares the UCD di-
agnoses with the clinical diagnoses made by a telephone
interviewer. Tension-type headache without associated
migraine or medication overuse was confirmed in only 1 patient.

Comment

An adequate history to exclude migraine was docu-
mented in 30 (33%) records. Funduscopic examination
was documented in 33 (37%) and an adequate neuro-
logic examination in 8 (9%).
phylaxis is administered. Failure to recognize drug
symptomatic treatment is stopped and an appropriate pro-
ognition of the need for prophylaxis is an important as-
lar to asthma, is a chronic disease with acute flares. Rec-
headache could benefit from prophylaxis. Migraine, simi-
figure 1972

| Mnemonic criteria for migraine based on International Headache Society criteria (Table 1). 12 Diagnosis of migraine requires 2 of the first 4 criteria, and 1 of the second 2 criteria. Migraine is episodic and usually lasts 4 to 72 hours. |

Of the charts for patients not diagnosed as having migraine, only 30 (33%) had adequate information to exclude migraine. That this is not just a documentation failure is confirmed by the patients who returned their headache surveys: 24 (89%) of 27 patients not diagnosed as having migraine were found to have either migraine (18 [67%]) or transformed migraine (6 [22%]), with or without medication overuse. Many cases of chronic daily headache occur in patients with a history of episodic migraine that has evolved into daily headache, so-called transformed migraine. 7 It seems, then, that many physicians are not familiar with the diagnostic criteria for migraine published by the International Headache Society 11 (Table 1) or the importance of recognizing transformed migraine and medication overuse. A simple mnemonic to aid in the diagnosis of migraine has been suggested (Figure). 19

More than half of the patients who were treated in the ED and were appropriate candidates received migraine-specific therapy in the ED. This figure is higher than it would be if the ED repeaters who were diagnosed as having migraine were included in the database. Absolute and relative contraindications to triptans, as well as the patient’s previous experience with triptans, must be considered when judging whether the care is appropriate. Migraine-specific care in the ED is strongly associated with an appropriate prescription for home care. All but 1 of the outpatient triptan prescriptions were given to patients who received migraine-specific care in the ED.

Many patients who present to the ED with acute headache could benefit from prophylaxis. Migraine, similar to asthma, is a chronic disease with acute flares. Recognition of the need for prophylaxis is an important aspect of emergency care. Guidelines for migraine prophylaxis have been suggested. 15 A useful question may be, “Do your headaches trouble you enough to take daily preventive medication?”

Chronic daily headache is important to recognize because it is most appropriately treated with prophylaxis rather than with immediate medication. Medication overuse or drug-rebound headache should be recognized because the headache will not improve until symptomatic treatment is stopped and an appropriate prophylaxis is administered. Failure to recognize drug-

<p>| Table 5. Sample Evaluation for a Patient With Migraine Before Relief Medications Are Given |</p>
<table>
<thead>
<tr>
<th>History</th>
<th>Physical Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. First or worst severe migraine headache?</td>
<td>1. Normal vital signs?</td>
</tr>
<tr>
<td>2. Precipitated by exertion or trauma?</td>
<td>2. Normal fundi?</td>
</tr>
<tr>
<td>4. Any decrease in alertness or awareness?</td>
<td>4. Problems with strength, coordination, or gait?</td>
</tr>
<tr>
<td>5. Unusual neck stiffness or neck pain?</td>
<td></td>
</tr>
<tr>
<td>6. Infrascapular or back pain?</td>
<td></td>
</tr>
<tr>
<td>7. Prior febrile illness?</td>
<td></td>
</tr>
</tbody>
</table>

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CONCLUSIONS

Our study of primary care physicians in an ED setting confirms previous studies showing that migraine is underdiagnosed and undertreated. Evaluation of these patients suggests that (1) most patients diagnosed as having migraine in the ED have transformed migraine; (2) most patients given nonmigraine diagnoses have migraine or transformed migraine; (3) medication overuse is common in ED patients with headache; (4) most ED patients with headache are not undergoing prophylaxis, even those who experience daily headache or consume analgesic agents daily; and (5) tension-type headache without medication overuse is rarely an accurate diagnosis in the ED. Physicians who work in urgent care settings have an important opportunity to improve the care of patients with primary headache disorders.

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REFERENCES