BACKGROUND
The patient is a 33-year-old Caucasian female with a history of headache and migraine equivalents in childhood, followed by episodic migraines (EM) since age 17. She describes her pain as moderately severe throbbing pressure pain. It is associated with nausea, vomiting, photophobia, and phonophobia. The headaches are triggered by certain foods, alcohol, lack of sleep, and her menstrual cycle. Although the headaches initially responded to over-the-counter and later to triptan medications, they gradually escalated in frequency and severity until “one day, approximately 6 years ago, my headache came and never went away.”

MEDICAL HISTORY
The patient has been treated for depression, but has had no other significant medical history. She has allergies to environmental allergens, including pollen, grass, and molds. Her medications at initial evaluation included lamotrigine 50 mg twice a day, topiramate 50 mg twice daily, amitriptyline 25 mg at bedtime, ziprasidone hydrochloride 20 mg daily, and zolmitriptan 5 mg for migraine attacks. Over the years, she had taken dihydroxyergotamine, Excedrin (acetaminophen, acetylsalicylic acid, and caffeine), ibuprofen, and Excedrin Migraine, but not within the past 3 years. She also had taken gabapentin. The patient had visited the emergency department several times over the years for severe migraine pain. Her appendix was removed at age 28.

FAMILY HISTORY
A paternal aunt and a cousin (the aunt’s daughter) have migraine headaches.

SOCIAL HISTORY
The patient is a therapist, who is currently separated from her husband. She does not smoke or use recreational drugs. She drinks white wine with dinner approximately 3 times/week.

PHYSICAL EXAMINATION
The patient’s vital signs were stable; she was afebrile. Her general physical examination was normal. The mental status examination was significant for a mildly depressed mood, and the remainder of the neurologic examination was nonfocal.

LABORATORY AND RADIOLOGIC STUDIES
Magnetic resonance imaging of the brain without and with gadolinium was normal, as were all of her laboratory studies.

DIAGNOSIS AND TREATMENT
The patient has chronic daily headache (CDH)/chronic migraine (CM), which developed on an initial background of EM. The patient’s prophylactic medications were optimized; topiramate was increased gradually to 150 mg/day, lamotrigine to 125 mg/day, and amitriptyline to 75 mg at night.

FOLLOW-UP
Over the 6 months following initial evaluation, the patient failed to achieve relief with the addition of antidepressants, including venlafaxine, escitalopram, and duloxetine. The patient agreed to a trial of botulinum toxin injection.

BACKGROUND INFORMATION
Chronic daily headache is an extremely prevalent disorder, affecting 4% to 5% of the general population, and accounting for 30% to 80% of visits among headache clinic populations. By definition, CDH is...
a primary headache syndrome for which organic causes of headache have been excluded, and episodes occur more than 15 days/month. The typical features include a previous onset of intermittent migraine (usually by age 20–30) followed (at age 25–40) by a gradual increase in headache frequency to daily or almost daily episodes of mild-to-moderate headache or face pain. Acute attacks resemble EM; however, the day-to-day pain may resemble tension-type headache or hemicrania continua (HC). Patients may report a family history of headache or psychiatric comorbidities, including depression, anxiety, and/or alcoholism. The patient also may report psychiatric comorbidities (ie, depression, bipolar disorder, anxiety, panic attacks, sleep disturbances, or personality disorders). There may be physical illnesses, such as comorbid irritable bowel syndrome, fibromyalgia and/or secondary illnesses (ie, gastritis, renal insufficiency, fibrosis, and allergies).

Chronic daily headache for which a secondary cause cannot be determined may be classified according to duration of attacks. Those of fairly short duration (<4 hours) include cluster headache, paroxysmal hemicranias, hypnic headache, and trigeminal neuralgia. Longer lasting daily headaches include the more common diagnoses of transformed migraine (TM/CM), chronic tension-type headache (CTTH), HC, and new daily persistent headache (NDPH). In addition, medication overuse headaches account for approximately 30% of chronic headaches among the general population and 80% of patients attending subspecialty clinics.

The second edition of the International Headache Society's (IHS) International Classification of Headache Disorders (ICHD) attempts to address the classification of very frequent headaches. As previously defined, many patients with frequent headache could not be classified or were inappropriately placed in the CTTH group. Silberstein et al recommended a revision or modification of the IHS criteria for frequent primary headache disorders and proposed adding several new headache types to the current IHS criteria. These changes include a subdivision of daily headache into TM/CM, CTTH, NDPH, and HC. In their study of 150 consecutive outpatients with CDH, Silberstein et al applied the first edition ICHD criteria for frequent headache and their proposed revisions to these individuals. Diagnosis of CDH or near-daily headache was based on the presence of pain lasting more than 4 hours/day for at least 15 days/month. Under the first edition ICHD criteria, 43% of the patients could not be classified. Using the proposed Silberstein and Lipton criteria, all patients in the study were classified, with 78% classified as TM/CM, 15% as CTTH, and 7% as NDPH or HC (Figure). In contrast with the first edition, the second edition of the ICHD includes criteria for CM, NDPH, and HC.

There have been several proposed mechanisms to explain CDH. These include intrinsic elements, such as genetic factors, neurogenic etiologies (eg, central hyperexcitability of pain systems or factors involving neurotransmitters), or menstrual cycle and hormonal changes. Extrinsic factors may include physical or emotional stress, trauma, infection, or, as previously mentioned, medication overuse. Table 1 lists medications that might induce CM or rebound. Rebound headaches occur in

### Table 1. Medications That May Trigger Chronic Migraine

- Most over-the-counter analgesics and decongestants
- Opioids
- Butalbital combinations
- Isometheptene combinations
- Benzodiazepines?
- Ergotamine tartrate
- Triptans

Data from Mathew et al; Saper and Jones; Gobel et al; and Meyler.
patients with pre-existing headache who suffer from a self-sustaining rhythm of predictable and escalating headache frequency and medication use. This type of headache is refractory to the usual appropriate symptomatic and preventive treatments, and to complicate the situation, medication withdrawal results in escalation of the patient's headaches.\textsuperscript{11,12,15}

Proper treatment of CDH is multifaceted and includes first and foremost establishing the proper diagnosis and ruling out organic disease. It is also essential to reduce aggravating factors, including medication overuse (limit use of analgesics, ergotamine tartrate, and/or triptans to \(\leq 2\) days/week). In their place, nonpharmacologic treatments (Table 2),\textsuperscript{16} limited preventive and acute pharmacotherapy, and treatment of neuropsychiatric, comorbid illnesses, and/or behavioral disturbances may be instituted. Specific preventive therapies include agents from a variety of pharmacologic classes, including nonsteroidal anti-inflammatory drugs, antidepressants, \(\beta\) adrenergic blockers, antiepileptic medications, and calcium channel antagonists.

### REFERENCES


### Table 2. Nonpharmacologic Treatments for CDH/CM

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<tr>
<th>Nonpharmacologic Treatment</th>
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<tbody>
<tr>
<td>Education</td>
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<tr>
<td>Reduce medication overuse, treat rebound headache</td>
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<tr>
<td>- Taper offending medication by the clock, not chasing pain</td>
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<td>Smoking cessation</td>
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<td>Regular eating patterns</td>
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<tr>
<td>- Several small meals</td>
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<td>- High protein, complex carbohydrates, low fat</td>
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<tr>
<td>Exercise</td>
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<td>- Walking</td>
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<td>- Swimming</td>
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<td>Sleep hygiene</td>
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<td>Stress reduction/control</td>
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<td>- Biofeedback</td>
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<td>- Cognitive-behavioral treatment</td>
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<tr>
<td>- Muscle relaxation therapies</td>
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<td>Other psychotherapeutic interventions</td>
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CDH = chronic daily headache; CM = chronic migraine.