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A 30-year-old woman with headache

A 30-year-old woman presents with a 10-year history of headaches. These occur two to four times per month and last 1 to 3 days, followed by a day of fatigue. She describes the pain as a feeling of "fullness," occurring "everywhere in the head."

The headaches are more likely to occur on weekends, especially Saturdays, but the patient can identify no triggers for them. She says she has no prodromal symptoms or aura.

During the headaches, the patient has a poor appetite and nausea at times, although she has never vomited during a headache. She says she feels irritable during the headaches: "I just want to be left alone. Everything bothers me. Even my kids' talking makes my head pound." If she can, she lays down during the headaches, but can rarely do this at work or at home. She has a cousin who has headaches during her menses.

On physical examination, the patient appears comfortable and has a pleasant demeanor. Her vital signs are normal. She is normocephalic, and has no nasal or oral abnormalities. Her eardrums and optic fundi are normal. Her neck muscles are supple to palpation, and no lymph nodes are palpable. Her thyroid gland is normal to palpation.

The remainder of her general medical examination reveals nothing abnormal. Her cranial nerves, motor and sensory systems, coordination, reflexes, and gait are all normal.

WHAT IS THE DIAGNOSIS?

1 What is the most likely diagnosis in this patient?

- ☐ Tension headache
- ☐ Recurrent acute sinusitis
- ☐ Migraine headache
- ☐ Pseudotumor cerebri

Migraine headache is the most likely diagnosis. Migraine most often develops in persons in their teens or 20s, but is also common in children. It affects more women than men. The frequency of attacks varies widely, from a single episode in life to—more typically—one to four attacks per month. Attacks last from 4 to 72 hours and are often followed by a recovery period (postdrome).[1]

Characteristics of migraines

Usually unilateral. The term "migraine" evolved from the original term "hemicrania," and describes the unilateral location of the headache. However, up to 40% of patients have bilateral pain.[2] Classically, the pain is pulsatile, but up to 50% of patients describe it as pressure-like.[3] It is moderate to severe in intensity.

Aura usually absent. The current headache classification system lists "migraine without aura" (previously called "common migraine," since most migraineurs do not describe an aura preceding a migraine attack) and "migraine with aura" (previously "classic

TABLE 1

FREQUENT MIGRAINE TRIGGERS

Stress
- Stressful events
- "Stress letdown" after a stressful event

Sleep
- Too much
- Too little
- Change in sleep schedule

Hormones
- Menses
- Contraceptive agents
- Hormone replacement therapy
- First-trimester pregnancy

Diet
- Fasting
- Certain foods

Odors
- Gasoline or exhaust fumes
- Perfumes or colognes
- Tobacco smoke

Environment
- Weather changes
- Sunlight, glare

Patients with gastrointestinal symptoms can take metoclopramide 15 to 20 minutes before oral migraine medications, or use a parenteral form

migraine"), which occurs less often. According to the conventional definition, a migraine aura:

- Is a symptom of fully reversible focal brain dysfunction.
- Begins gradually over 4 minutes or more.
- Lasts less than 60 minutes.
- Is followed by a headache within 60 minutes.

Most migraine auras take the form of hemianoptic visual symptoms, which are typically "positive" phenomena (ie, they are superimposed on the patient's vision) such as flashes, sparkles, scotomata, or fortification spectra.[4] Other sensory symptoms are also common, including unilateral face or limb paresthesias.

Prodromal symptoms. Some migraineurs experience prodromal symptoms such as irritability, euphoria, depression of affect and mood, difficulty concentrating, food cravings, thirst, and diarrhea, which begin hours to 1 day before a migraine. Many patients do not initially recognize these symptoms as part of a migraine attack.

Gastrointestinal symptoms that can accompany migraine range in severity from anorexia to nausea and vomiting. These symptoms reflect the state of relative gastroparesis during a migraine attack. Depending on their prominence, these symptoms may preclude the use of oral medications to stop attacks or may mandate the addition of adjunctive antiemetics.

Irritability to environmental stimuli is a hallmark of migraine. Patients describe varying degrees of sensitivity to light (photophobia), sound (phonophobia), smell (osmophobia), and irritability with other people. Physical exertion intensifies the pain, especially maneuvers that raise cardiac output or intrathoracic pressure (thereby transiently decreasing jugular venous return). Classically, the migraineur lies in a darkened, quiet room, head under pillow, avoiding any movement or contact with others. Other patients can carry on with their duties at work or in the home, but with considerably decreased efficiency.

Numerous migraine "triggers" exist (TABLE 1). Migraine attacks that occur primarily on weekends, as in this patient, may have multiple triggers: stress letdown, changes in sleep patterns, or changes in caffeine or alcohol intake.

A family history of migraine is reported by approximately 60% of migraine patients. Because of this, many migraineurs consider their symptoms as "normal" headaches that "everyone gets."

Differential diagnosis of migraine

Tension headache is usually bilateral or holocephalic. It can occur intermittently, frequently, or daily, but the course tends to not be as episodic as migraine. Most patients describe the pain as pressure-like, although it can be pulsatile. Sensitivity to light, sound, smell, or other stimuli is less likely in tension headache than in migraine, and gastrointestinal dysfunction is usually absent, except in a few of the patient's most severe headaches.

This patient's headache has some features that are consistent with tension-type

headache—holocephalic location and pressure-like character—but the typical presence of nausea, worsening of pain with physical exertion, and postdromal recovery period are more suggestive of migraine.

Recurrent acute sinusitis, like migraine, is episodic, but each event is accompanied by fever, chills, constitutional symptoms, discolored nasal discharge, halitosis, and cough.

Pseudotumor cerebri causes intermittent or daily headache and may produce nausea and vomiting, but gets worse under conditions of increased intracranial pressure (such as bending over and the Valsalva maneuver), and may be associated with symptoms of transient visual obscuration or diplopia. Papilledema is present on funduscopic examination. This diagnosis is not likely in this patient, given the lack of risk factors for pseudotumor cerebri (such as obese body habitus), the unresponsiveness of the headache to provocative maneuvers, and a normal funduscopic examination.

ABORTING MIGRAINE ATTACKS

2 What would be the abortive therapy of choice?

- ☐ Isometheptene mucate
- ☐ Ergotamine tartrate
- ☐ Sumatriptan
- ☐ Butalbital, aspirin, and caffeine

The arsenal of abortive therapies for migraine is expanding now that drugs such as sumatriptan are being engineered expressly for stopping migraine attacks. Several classes of migraine abortive therapies currently exist (TABLE 2).

A discussion with the patient can establish what she wants, needs, and expects from abortive therapy, and clarify to her what each type of therapy can reasonably achieve.

Several factors influence the choice of abortive therapy: the frequency of attacks, the time of day the attacks begin (eg, at rising), the severity and timing of gastrointestinal dysfunction (eg, at the onset, or even preceding the head pain), concurrent conditions, adverse drug interactions, side effects, and cost.

For this patient, a mild vasoconstrictor such as isometheptene is the initial abortive therapy of choice: it is effective, has minimal side effects and adverse drug reactions, and is comparatively inexpensive. More powerful vasoconstrictors such as ergotamine tartrate or sumatriptan are less attractive as initial therapy because they cause side effects more often. In addition, sumatriptan is relatively expensive, costing approximately $20 to $50 per headache.

TABLE 2

MIGRAINE ABORTIVE THERAPIES

Vasoconstrictors
- Isometheptene mucate-acetaminophen-dichloralphenazone
- Ergotamines
  - Ergotamine tartrate (oral, sublingual, rectal)
  - Dihydroergotamine (nasal, parenteral)
- Sumatriptan (subcutaneous, oral)

Nonsteroidal anti-inflammatory drugs
- Flurbiprofen
- Naproxen sodium
- Meclofenamate
- Ketorolac

Antiemetics
- Chlorpromazine
- Prochlorperazine
- Metoclopramide

Corticosteroids
- Dexamethasone

Others
- Lidocaine nasal spray

Adjunctive agents
- Metoclopramide

The combination preparation of butalbital, aspirin, and caffeine successfully aborts migraine in some patients, but for many patients it does not eliminate the headache completely; the pain continues at a lesser severity and still affects quality of life. In patients with frequent migraine, the potential for substance withdrawal headache and habituation also make this option less attractive. Although not listed in the responses above, a nonsteroidal anti-inflammatory drug (NSAID) is another reasonable choice for migraine abortive therapy.

Patients with gastrointestinal symptoms that are severe or that occur early in the attacks can take metoclopramide 15 to 20 minutes before an oral abortive medication to stimulate gastric motility, increase drug absorption, and decrease nausea and vomiting; as an alternative, they can use parenteral preparations to circumvent gastric dysfunction.

Abortive agents are most effective at the onset of a headache and become less effective as the migraine evolves; therefore, the patient needs to take responsibility for having the

Tell patients to take their abortive medication at the onset of an attack, when it is most effective

TABLE 3

MIGRAINE PREVENTIVE THERAPIES

Beta blockers
- Propranolol
- Nadolol
- Metoprolol
- Atenolol
- Timolol

Calcium channel blockers
- Verapamil
- Diltiazem
- Nicardipine
- Nimodipine
- Flunarizine

Nonsteroidal anti-inflammatory drugs
- Aspirin
- Fenoprofen
- Flurbiprofen
- Ketoprofen
- Naproxen

Antidepressants
- Sedating
  - With anticholinergic effects
    - Amitriptyline
    - Nortriptyline
    - Imipramine
    - Doxepin
  - With less anticholinergic effects
    - Trazodone
- Nonsedating
  - With anticholinergic effects
    - Desipramine
    - Protriptyline
  - With less anticholinergic effects
    - Fluoxetine
    - Sertraline
    - Paroxetine
    - Venlafaxine
  - Monoamine oxidase inhibitors
    - Nefazodone
    - Buspirone
    - Bupropion

Others
- Methysergide
- Cyproheptadine
- Valproic acid

Migraines that occur more than two or three times per month may warrant daily preventive therapy, but sporadic migraine does not

drugs available when the headache begins, and the clinician must be sensitive to drug side effects and important issues in the patient's lifestyle such as maintaining the ability to function when treating a headache. Cost is a vital consideration in the current health care environment—patients sometimes refrain from using a costly but potentially effective abortive early in the course of the headache to see if the headache will "just go away," thereby missing the window of effective abortive treatment.

PREVENTIVE THERAPY

3 What would be the preventive therapy of choice for this patient?

- ☐ Valproic acid
- ☐ Propranolol
- ☐ Amitriptyline
- ☐ The low frequency of headache does not justify daily preventive therapy

The goals of preventive therapy for migraine are to decrease the frequency, intensity, and duration of attacks and make a migraine more responsive to abortive treatment. The most important factor to consider is the frequency of the headaches: migraines that occur more than two or three times per month may warrant daily preventive therapy, but sporadic migraine does not.

The duration and intensity of the headache are also important considerations. For example, a patient who has one migraine per month that lasts for 3 days followed by 1 day of postdromal fatigue may experience 3 days of lost function and 1 additional day of decreased function and may consider effective preventive therapy worthwhile. Moreover, patients who incur dehydration from anorexia or vomiting may avoid this complication of migraine with effective preventive therapy.

Preventive therapy may enhance the efficacy of abortive therapies, an important consideration in patients whose migraine attacks are resistant to abortive therapies. Even if good abortive control with tolerable side effects is difficult to achieve, prophylaxis may be justified to at least decrease the frequency of abortive therapy treatment failures.

Moreover, an effective preventive regimen may decrease the anticipatory dread of the next migraine attack, increase the patient's

confidence about treating migraines that do occur, and enhance the patient's quality of life.

The physician should discuss the limitations of preventive therapy with the patient. A sporadic headache that "breaks through" the preventive therapy does not represent a failure of prophylaxis.

A physician and patient who are considering preventive therapies can use concurrent conditions, adverse drug interactions, side effect profiles, the choice of abortive agent, and cost to help them choose the best available preventive therapy (TABLE 3).

Certain concurrent conditions may steer the clinician away from some preventive therapies (eg, NSAIDs in patients with gastroesophageal reflux disease), or toward others (eg, changing from an ACE inhibitor to a calcium channel blocker or beta blocker in a hypertensive migraineur).

For the patient described above, propranolol would be the treatment of choice. Valproic acid and amitriptyline are also effective migraine preventive agents, but have more troublesome side effects: both agents can cause weight gain, valproic acid can produce alopecia, and amitriptyline can produce considerable anticholinergic side effects such as dry mouth and urinary retention. However, all three agents listed can cause lethargy and fatigue. Other reasonable choices for this patient include a calcium channel blocker or an NSAID.

FOLLOW-UP CARE

The importance of follow-up care in treating migraine cannot be overemphasized. At follow-up, the physician and patient should discuss:

- How well each medication is working for its intended purpose.
- The goals of treatment established at the first visit.
- What the patient expects from treatment.
- How well the patient understands the dosage and timing of therapy (especially if the therapy is not meeting reasonable expectations).
- Side effects (initially approached through general, open-ended questions, followed by specific, closed-ended questions).

In the initial visit, the clinician can tell the patient what questions will be asked in the follow-up visits about the performance of the therapies. Examples:

- Did your preventive agent change the frequency, intensity, duration, or treatability of your migraines?
- Did your abortive agent abort the headache, or did it blunt the process and allow it to continue?

Telling the patient the questions in advance prompts her to make valuable observations in the interval, gives her a sense of control and responsibility over the treatment program, and enforces the importance of her observations in guiding the treatment plan. In addition, she can be asked to observe any details not clear in the original history, since they may affect future treatment.

Preventive therapy may enhance the efficacy of abortive therapies

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