

Research Submission

Menstrual Migraine: Case Studies of Women with Estrogen-Related Headaches

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This paper presents 2 case scenarios that illustrate the complexity of diagnosing and managing migraine associated with hormonal changes. Migraine is commonly associated with comorbidities such as depression, anxiety, obesity, cardiovascular disease, as well as other conditions, thereby making management more challenging for the physician and the patient. The first case is a 35-year-old woman who has migraine almost exclusively during menstruation. She is under a physician's care for long-term management of premenstrual dysphoric disorder (PMDD). Achieving a differential diagnosis of pure menstrual migraine is illustrated, and a detailed treatment plan including use of a migraine miniprophyllaxis protocol, management of her PMDD, and prescription of acute treatment medications is reviewed. The second case scenario describes the diagnosis of menstrually associated migraine in a woman who suffers from a frequent disabling migraine along with work-related anxiety and depression. This paper reviews her differential diagnosis, laboratory testing, treatment plan, including management of her comorbid anxiety and depressive symptoms.

Key words: Menstrual Migraine, estrogen-related headaches, women

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CASE 1: WOMAN WITH PREDICTABLE AND DISABLING MONTHLY MIGRAINE

Clinical Presentation.—Peggy is a 35-year-old interior designer with a history of migraine without aura. Over the last 6 months she noticed an increase in her headache frequency and severity and a decreased response to treatment. She is not married and has no children. Peggy said she has headaches around her period. Two years ago, she was prescribed sertraline 50 mg, to treat her premenstrual dysphoric disorder (PMDD). Despite the use of sertraline, Peggy reports

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that her headaches are severe and disabling, but her other dysphoric symptoms are improved.

Medical History

- Denies allergies
- Denies tobacco use
- Averages 3 glasses of alcohol per week

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- Medications: sertraline 50 mg
- Denies use of oral contraceptives
- History of chicken pox and measles

Family and Social History.—Upon completion of her medical history, Peggy explains that her mother also had a history of headaches, which responded to over-the-counter medication (naproxen sodium). She reports no history of headache on her father's side, and her brother also has no history of headaches. Peggy's mother experienced mild depression during perimenopause, which resolved. Peggy finds her job stressful when closing a design project, but otherwise she feels stress levels are tolerable and manageable.

Review of Systems.—Peggy denies vision problems, recent weight gain or loss, insomnia or daytime sleepiness, arthralgias or myalgias, fevers or chills, diarrhea or constipation, focal weakness or numbness, history of significant head trauma, dyspnea, or chest pain.

Physical Exam

- Vital signs: Ht = 65 in, Wt = 139 lb, BP = 118/70, P = 88, afebrile.
- General: Alert cooperative female in no distress. Cardiac regular rate and rhythm and no extra sounds. No carotid bruits appreciated.
- Head/neck: Atraumatic, fundi with flat sharp discs with visible venous pulsations. Neck supple with full range of motion. Nares are clear and non-inflamed to bedside rhinoscopy.
- Neurological: Mental status, cranial nerves, motor, coordination, reflexes, gait, and sensory exam normal.

Differential Diagnosis.—Upon further questioning about her headaches, Peggy explained how most of her headaches occur regularly during her menstrual cycle, and they are frequently disabling (mostly due to severe pain and nausea), throbbing, unilateral in location (mostly on the left), and associated with sensitivity to light (photophobia).

These clinical features follow the standard ICHD diagnostic criteria for migraine without aura (Table 1¹). Peggy is diligent and keeps a monthly headache diary to assess the frequency and severity of

Table 1.—Migraine Without Aura (International Classification of Headache Disorders, 2004)

Description of migraine without aura: Recurrent headache disorder manifesting in attacks lasting 4-72 hours. Typical characteristics of the headache are unilateral location, pulsating quality, moderate or severe intensity, aggravation by routine physical activity and association with nausea and/or photophobia and phonophobia.

Diagnostic criteria for migraine without aura:

- At least 5 attacks fulfilling criteria B-D below
 - Headache attacks lasting 4-72 hours (untreated or unsuccessfully treated)
 - Headache has at least 2 of the following characteristics
 - unilateral location
 - pulsating quality
 - moderate or severe pain intensity
 - aggravation by or causing avoidance of routine physical activity (eg, walking or climbing stairs)
 - During headache at least one of the following:
 - Nausea and/or vomiting
 - Photophobia and phonophobia
 - Not attributed to any other disorder
-

her headaches (Fig. 1). From the diary, it is noted that she has a mild headache type during the middle of her menstrual cycle, and this headache does not appear to be associated with nausea, or photophobia (and therefore does not meet classification for migraine¹). She also has a severe headache (6 days) that starts just before her menstrual period and lasts throughout the cycle. The benefit of having a monthly headache calendar such as this is clearly seen because the severity, frequency, and onset of attacks can be noted in a temporal relationship to menstrual cycle occurrence or other events.

Based on Peggy's pattern of headache occurrence, a differential diagnosis for possible menstrual migraine is now clearly needed. Many women may have menstrual migraine or menstrually related migraine along with other medical conditions, such as PMDD. Therefore, a complete understanding of exactly what types of migraine she has will facilitate development of treatment plan that will individualize care for her specific headache condition and her PMDD.

Using Peggy's detailed headache calendar, it is easy to see the specific headache pattern in relation to her menstrual cycle—which demonstrated that Peggy has pure menstrual migraine, based on the ICHD criteria reviewed below:¹

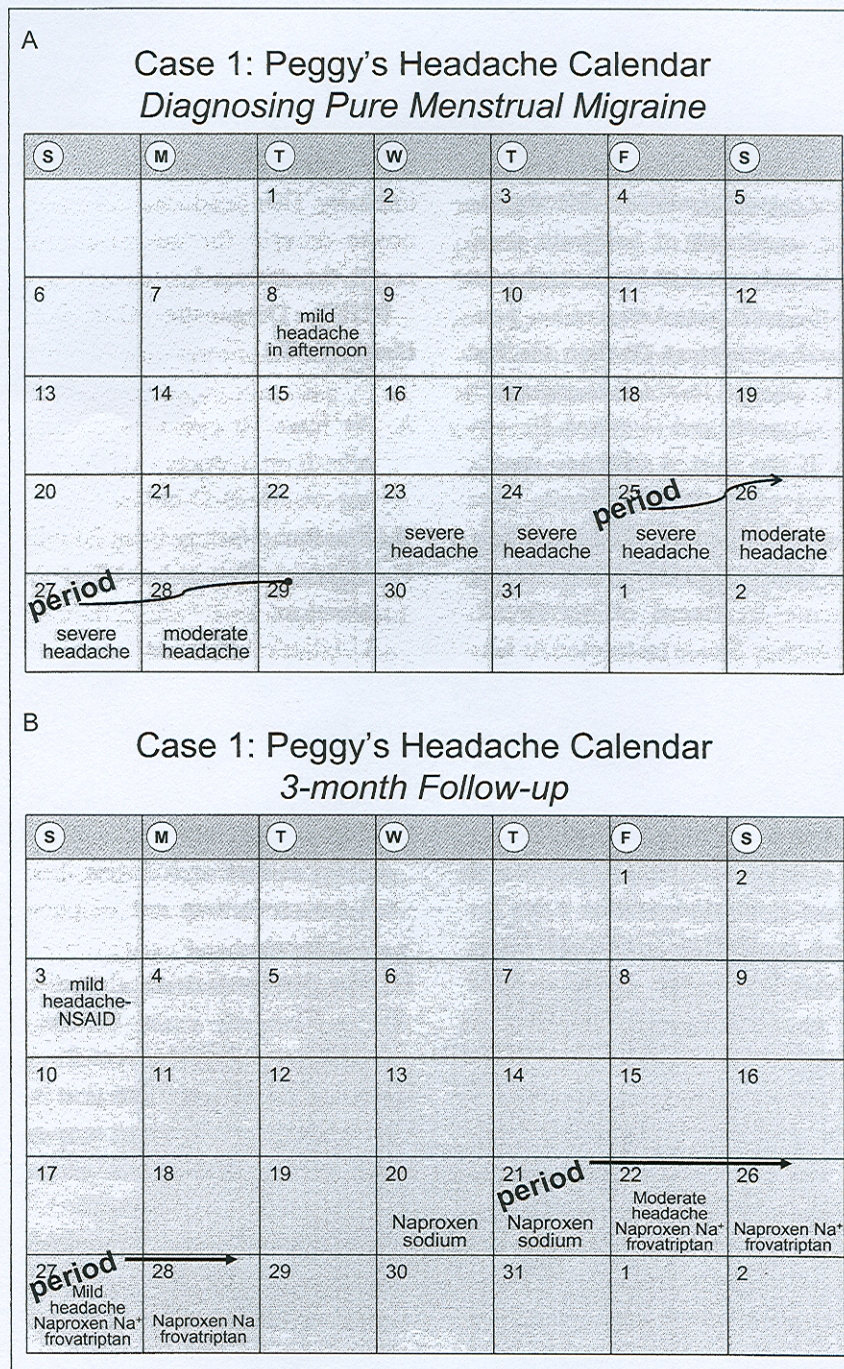


Fig 1.—Headache diary for case 1 (Peggy) showing a clear and predictable relationship between migraine and her menstrual cycle.

- A. Attacks, in a menstruating woman, fulfilling criteria for 1.1 migraine without aura (Table 1)
- B. Attacks occur exclusively on day 1 ± 2 (ie, days -2 to +3) of menstruation in at least two out of three menstrual cycles and at no other times of the cycle.

Clinical Course: Treatment.—For Peggy, monotherapy with sertraline has improved her PMDD but has not proven effective for managing her migraine (although for some, migraine prevention using monotherapy is convenient and can be effective.²).

Migraine is a medical condition that is frequently associated with common comorbid conditions including depression, anxiety, PMDD, among others and polytherapy may be needed to treat multiple conditions optimally.^{2,3}

Peggy is prescribed naproxen sodium 500 mg as a short-term preventive treatment of her pure menstrual migraine.⁴ She is instructed to begin naproxen sodium 2 days before the anticipated start of her perimenstrual migraine and continuing through the last day of her cycle. She is advised to not take naproxen sodium on an empty stomach and to watch for any signs of gastric upset. If she started with any gastric symptoms that differed from those normally seen with her migraine, she is instructed to call the office.

She also is given a prescription of frovatriptan 2.5 mg tablets for acute treatment of her breakthrough migraine headaches. She is instructed to take one tablet at the first sign of a migraine pain, and she is instructed that she could take a second tablet if pain persisted or if it returned. She also is told that if she experienced repeated breakthrough or recurrent migraine headaches, she could take a single 2.5 mg tablet of frovatriptan at the onset of her migraine and then she could continue frovatriptan twice a day for the remainder of her menstrual period. Previous studies have shown that frovatriptan is effective for miniprevention for menstrual migraine.⁵ She is instructed to return to the office in 3 months.

Clinical Course: Follow-up.—Peggy returned to the office after 3 months and she brought her well-populated headache diary (Fig. 1B). Her migraine attacks associated with her menstrual periods are shorter in duration and less severe than what is noted on her headache diary 3 months prior. Peggy commented that she noted a clear benefit during the third month, which is evident because she did not need all the triptan tablets this last month and she missed no time from work.

Her prescriptions are renewed and she is instructed again about the importance of following the treatment plan. Watching for the risk of side effects is reviewed again, including a specific discussion about watching for gastric upset. She is asked to continue populating her headache diary and return to the office in another 3 months.

Discussion.—The mild headaches that Peggy experiences in the middle of the month are non-disabling headache and not associated with photophobia, nausea or other non-pain symptoms. She describes these types of headaches as bilateral and mild in intensity. This headache does not meet the full diagnostic criteria for migraine; rather, this headache meets the criteria for tension-type headache.

ICHD Diagnostic Criteria for Tension-Type Headache¹

- A. At least 10 episodes occurring on <1 day per month on average (<12 days per year) and fulfilling criteria B-D below
- B. Headache lasting from 30 minutes to 7 days
- C. Headache has at least 2 of the following characteristics:
 1. bilateral location
 2. pressing/tightening (non-pulsating) quality
 3. mild or moderate intensity
 4. not aggravated by routine physical activity such as walking or climbing stairs
- D. Both of the following:
 1. no nausea or vomiting (anorexia may occur)
 2. no more than one of photophobia or phonophobia
- E. Not attributed to another disorder

Another relevant point from her history is her use of the SSRI sertraline that is commonly used to treat anxiety and depression associated with PMDD. However, there is no good evidence for its effectiveness in migraine prevention.⁶ Therefore, women with multiple disorders should be assessed for the benefits of polytherapy vs monotherapy for treating migraine and other coexisting or comorbid conditions.²

For women, menstrual migraine may differ from nonmenstrual migraine given the most likely origin of its trigger—plummeting estrogen levels. Individual assessment of each woman's headache pattern in relation to menstruation and ovulation, and headache frequency and severity is needed. Women with PMDD may have a lower tolerance to pain and disability of migraine associated with menses due to the other symptom resulting from fluctuating hormone

levels (eg, fatigue, lethargy, bloating, and irritability). Below are potential differences that may occur in some women who experience menstrual migraine:⁷

- Longer duration
- Higher rate of recurrence
- Higher associated disability
- More resistance to treatment than other migraine attacks
- Association with non-pain symptoms including photo/phonophobia, nausea, or vomiting
- Dysmenorrhea
- Premenstrual syndrome symptoms

MacGregor and colleagues reported the results of a study in 155 women who tracked their migraine attacks over 698 menstrual cycles.⁸ This study found that menstrual migraine may be more severe, more frequent, and more often associated with vomiting than women who have migraine outside the menstrual cycle. Other studies suggest the contrary.⁹ In a population-based diary sample of 81 women, diary data from over 7000 days showed headache was more likely to occur during 2 days before and the first 2 days of menstruation, but overall these headaches were not more severe than headaches at other times.⁹ Attacks that were classified specifically as migraine were significantly more severe, but the differences were small. In this population-based sample of women with migraine, it also was not clear if hormonally triggered headaches respond less well to treatment than nonhormonally triggered headaches.

Peggy's clinical presentation is a typical example of pure menstrual migraine, and she also represents a large group of women who experience other important clinical conditions (PMDD, anxiety, depression, etc.) that make diagnosing and managing migraine slightly more complex. Peggy also had a few headaches that met the diagnostic criteria for tension type, thereby requiring Peggy to be able to differentiate between her headache types in order to treat each with the appropriate medication. She also had a significant history of PMDD, which required an independent management strategy to treat each condition optimally.

CASE 2: WOMAN WITH FREQUENT MIGRAINE ATTACKS

Clinical Presentation.—Erin is a 28-year-old nurse who works at a busy inner-city emergency department (ED) during the night shift. She finds this job stressful and very disturbing when trauma cases present to the ED. She is married with no children. She complains of frequent disabling headaches that usually start at work and sometimes she has to leave work due to disabling headaches. She sees no pattern to her headaches or triggers, other than they often occur during the evening while at work.

Medical History

- Positive diagnosis for migraine since age 17
- Migraine headache averaging 5-10 days per month
- Allergies to spring pollen
- Denies tobacco use
- Averages 4 glasses of alcohol per week
- Medications:
 - Use of oral contraceptive: Ethinyl estradiol 30 mcg and 3 mcg drospirenone tablet daily
 - Sumatriptan 100 mg oral tablets for acute treatment migraine (effective except for migraine occurring during her menstrual periods; she sometimes runs out of tablets and takes 2 tablets of an over-the-counter combination of aspirin, acetaminophen, and caffeine)

Family History.—Erin is not aware of a family history for headache. Father has high cholesterol and mother is in good health.

Social History.—Working evenings is particularly difficult for Erin because her husband works as an accountant with regular daytime hours. Both have a 30-40 minute commute into the city from their home in the suburbs. She also complained of financial stresses. They both work in order to make payments on their new house, cars, and student loans. During her free time, Erin spends time gardening. She would like kids but feels they cannot afford a family at this time.

Some days when she gets home from work Erin has trouble resting and sleeping because she feels

anxious about her job and her financial situation. She is very concerned that her headaches are increasing in frequency and severity. Erin feels she cannot get a handle on her headaches, and her feelings of sadness and defeat are exacerbating.

Review of Systems

- General: Positive for fatigue, sadness, insomnia
- Skin: Denies rashes, lesions
- Head and neck: Tension in neck
- Hematologic: Denies bruising, bleeding, or melena
- Cardiopulmonary: Denies shortness of breath or other respiratory difficulty, CP, DOE
- Gastrointestinal: Denies abdominal pain, n/v/d, denies constipation
- Genitourinary: Denies dysuria, hematuria, increased frequency
- Musculoskeletal: Denies myalgias, arthralgias
- Neurologic: Denies dizziness, presyncope, syncope, motor weakness or loss of sensation
- Psychiatric: Discloses feeling of depression, sadness, anxiety but no positive diagnosis for psychiatric conditions

- Vision and hearing: Denies problems or changes

Physical Exam

General: Patient Ht 66"; weight 120 lbs; BP 122/82; afebrile

Head/Neck: Cervical spine examination appear normal; tenderness in trapezius; temporomandibular joint examination within normal limits

Heart: Regular rhythm

Lungs: Clear

Abdomen: Nontender, good bowel sounds, no organomegaly, bladder nonpalpable

Neuro: Cranial nerve examination normal; normal reflexes, gait, sensory

Affect: Patient appeared anxious, she noted alteration in ability to concentrate, had no suicidal ideation.

Differential Diagnosis.—Erin is asked to recall the last 4 weeks of headaches on a calendar and include other relevant information such as severity of attacks, work stresses, and her menstrual cycle (Fig. 2). Erin noted that she typically experiences migraine headaches on at least 3-5 moderate headache days mid-

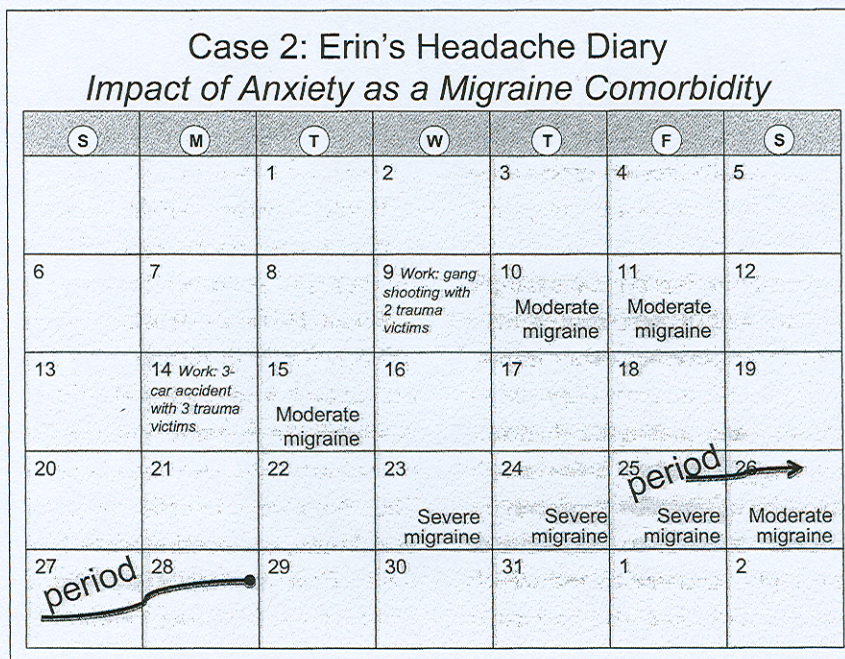


Fig 2.—Headache diary for case 2 (Erin) that shows the relationship of headache frequency and severity in relation to her menstrual cycle and a potential influence of comorbid anxiety.

month and about 3-4 days of severe attacks during the perimenstrual phase. She describes her attacks as disabling because they often cause her to take breaks at work or even go home from work.

Her attacks are associated with nausea about 80% of the time, and on rare occasion she vomits. Her most annoying symptom is pain and photophobia (difficult to enduring while in the ED), which she says accompany all attacks. She responds well to sumatriptan for attacks not associated with her menses. For attacks that are associated with menstruation she starts with a sumatriptan tablet and takes a second if needed. When she runs out of tablets, she takes an over-the-counter combination analgesic that contains caffeine.

Given these symptoms, Erin meets the diagnosis of migraine without aura (Table 1¹). The frequency of migraine attacks throughout the month eliminates the diagnosis of pure menstrual migraine, as reviewed previously in case 1, because she also has migraine not associated with menstruation. Classification criteria for menstrually related migraine show that these women have migraine inside and outside of their menstrual cycle. The IHS classification criteria for menstrually related migraine include:¹

- A. Attacks, in a menstruating woman, fulfilling criteria for 1.1 migraine without aura
- B. Attacks occur on day 1 ± 2 (ie, days -2 to $+3$) of menstruation in at least two out of three menstrual cycles and additionally at other times of the cycle.

The headache calendar also shows that Erin is susceptible to migraine attacks following the evening shifts when there is trauma at work. Stress appears to be one of the triggering factors for her attacks in addition to the hormone fluctuations associated with menses. These issues suggest that Erin may benefit from a full history and workup in order to screen for other medical conditions and risk factors including anxiety, depression, and a sleep disorder. She also says that she is worried that her headaches are increasing in frequency and severity.

Clinical Testing and Laboratory Work.—Given her social history and comments her concerns about

being sad and defeated, Erin is asked to complete a PHQ-9 test,¹⁰ which is a self-administered screening tool for depression. The results from this screening test show that Erin has mild depression, which she agrees with and she also expresses her concern over her work-related anxiety. Upon further questioning of her sleep condition, she explains that she has no trouble sleeping when she is on vacation or if things are going well at work. She agrees that her sleep is likely complicated by stress at work, so a sleep study is not ordered.

Given her concerns over increasing frequency of headache, Erin is also asked to complete a MIDAS questionnaire that reflects the impact of her headaches over the last 3 months (Fig. 3). Assessing the impact of migraine and the frequency of attacks and number of headache days per month will help determine if Erin is at risk of developing chronic migraine (CM¹¹). Erin has several risk factors that may increase the chances of her episodic migraine progressing to CM, including: (1) her high frequency of headache attacks; (2) high medication use; and (3) depressive/anxiety symptoms.¹²⁻¹⁴ The results from her MIDAS questionnaire show that Erin has a score of 25 which places her in the severely disabled group (Fig. 3).

Clinical Course.—Erin's diagnosis of migraine without aura is confirmed, and she also is told that she has menstrually related migraine, as noted with migraine occurring inside and outside the menstrual window. She is asked to track the frequency and severity of her attacks in relation to her menstrual cycle, which may help her know when she is most at risk of having a migraine.

Erin's prescription for sumatriptan 100 mg is renewed and she is also given a prescription for naproxen sodium 500 mg. She is instructed to take naproxen sodium and sumatriptan together for the difficult to treat attacks that are associated with her menstrual cycle. They also discuss concerns regarding caffeine in the over-the-counter analgesics, which may be leading to her sleeping difficulties. Erin is also warned about the risk of medication overuse headache if she takes too much (more than 15 days per month) of acute headache medication.

Erin is given a prescription of amitriptyline 10 mg hs for the first week with instruction to increase

> **The Migraine Disability Assessment Test**

Acknowledging Disability

Measuring the impact of migraine on a person's life will help the doctor understand the severity of illness and the need for treatment. Disability assessment tools that have been developed include MIDAS (MIgraine Disability ASsessment) and PACE (Physician Access to Clinical Evaluation - in clinical development).

Directions:

Complete questions 1-5 and A and B for ALL of your headaches during the last three months. Enter 0 if you did not experience the activity in the last three months.

1. How many days in the last 3 months did you miss work or school because of your headaches? 4

2. How many days in the last 3 months was your productivity at work or school reduced by half or more because of headaches? (Do not include days you counted in question 1 where you missed work or school.) 4

3. How many days in the last 3 months did you NOT do housework because of your headaches? 5

4. How many days in the last three months was your productivity in household work reduced by half of more because of your headaches? (Do not include days you counted in question 3 where you did not do household work.) 6

5. How many days in the last 3 months did you miss family, social or leisure activities because of your headaches? 6

TOTAL MIDAS SCORE **25**

What your Physician will need to know about your headache:

A. How many days in the last 3 months did you have headache? (If headache lasted more than 1 day, count each day.) 27

B. On a scale of 0 - 10, on average how painful were these headaches? (where 0 = no pain at all, and 10 = pain as bad as it can be.) 8

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MIDAS Grade	Definition	MIDAS Score
I	Little or no disability	0-5
II	Mild disability	6-10
III	Moderate disability	11-20
IV	Severe disability	21+

Please give the completed form to your clinician.

This survey was developed by Richard B. Lipton, MD, Professor of Neurology, Albert Einstein College of Medicine, New York, NY, and Walter F. Stewart, MPH, PhD, Associate Professor of Epidemiology, Johns Hopkins University, Baltimore, MD.

Fig 3.—MIDAS score (Erin) 3 months prior to treatment showing the severity of illness (grade IV—severe disabled) Erin experiences with her headache condition. Three months after treatment her score dropped to 15 (grade III—moderately disabled).

the dose by 10 mg every week until she reaches 50 mg hs. Amitriptyline will likely help treat her mild depression. Amitriptyline is also an effective migraine preventive treatment, and may improve her migraine status.⁶ One of the side effects of amitriptyline includes sleepiness, which may prove helpful for her sleep difficulties, especially if she takes it prior to going to bed. Erin agrees to discontinue taking her combination analgesic (that contains caffeine) while at work and this may help improve her ability to sleep when she gets home.

Erin is advised to see a cognitive therapist to help treat and monitor her anxiety and depression. This approach may also help her gain coping skills to manage her work stress. A list of names and contact information for several different cognitive therapists is provided, and she is told that there are many others that she may be able to see as well, depending on her reimbursement with her insurance provider. Because Erin would like to start a family in the near future, nonpharmacological treatment may be helpful in managing her overall health concerns and her migraine.⁶

Erin is asked to return to the office in 3 months for a follow-up visit. She also is asked to keep a daily medication and headache diary. She is told that she had several risk factors for developing CM, and therefore, careful monitoring of her headache status, medication use (with careful instruction to avoid medication overuse), and other medical symptoms is important in order to reduce the risk of her headache progression.

Follow-up.—At her 3-month follow-up visit, Erin presented with an improved affective condition. She is talkative, positive, and smiled. She informed the office that she had gone to 9 therapy sessions over the last 3 months and she is very happy with her visits. Four weeks prior to her office visit, Erin switched to working from the evening shift in ED to the morning shift in the cardiac unit, and she is very happy with this change. Since changing her job and seeing the therapist regularly, her anxiety level and the feelings of sadness/depression are significantly reduced and she is sleeping very well at night.

The combination of treating her menstrually related migraine attacks with sumatriptan and an

NSAID proved very helpful and her nonmenstrually related migraine continued to respond to her triptan monotherapy. She is tolerating the amitriptyline and increased her exercise routine (to help avoid possible weight gain side effects from amitriptyline) now that she is working a day shift. She is given another MIDAS test and her score is reduced to 14, suggesting an improvement in overall disability associated with her headache condition.

She is asked to return to the office in 3 months and to keep their office informed of her counseling progression. The future treatment plan is to eventually reduce her amitriptyline dose with the intention of removing it all together, depending on her headache status. Reducing her reliance on the oral medications would be a long-term goal if she would like to start a family.

Discussion.—This case illustrates that menstrual migraine is often not a simple headache condition, and it may be associated with other factors that lend to complex management issues. Menstrually related migraine is much more common than pure menstrual migraine. Approximately 50% of women migraineurs have migraine in association with menses. Of those 50%, the majority have menstrual related migraine; only 10-14% of women migraineurs have pure menstrual migraine.^{15,16}

Comorbidity or other coexisting conditions are not uncommon in migraine.^{2,3} Comorbidity is defined as an illness that occurs more frequently in association with a specific disorder than that would be found as a coincidental association in the general population.³ Common illnesses that are associated with migraine and influence its management include comorbid conditions such as depression, anxiety disorders, epilepsy, sleep disorders, and stroke and concomitant illnesses such as hypertension and obesity.²

For example, Breslau and colleagues¹⁷ performed an analysis in patients with depression and found they had a significantly higher chance of developing migraine (9.3%) within 2 years compared with subjects without depression (2.8%).¹⁷ Similarly, subjects with migraine had a significantly higher risk of developing depression (10.5%) compared with nonmigraine subjects (2.0%) or those with headaches of the nonmigraine type.

Erin expressed concern over her headache severity and frequency increasing, which should alert health care providers to a potentially progressing headache condition. In one study by Katsarava and colleagues 450 subjects with episodic migraine were followed over the course of 1 year.¹³ These participants had headache on <15 days per month. By the end of the study, 14% of episodic migraine patients developed CM. In this population of subjects, the single most significant risk factor for developing CM was a high baseline headache frequency (subjects with 10-14 days per month). This study emphasizes the importance of monitoring baseline headache frequency.

Asking patients to complete a 3-month headache diary is an important part of getting an accurate assessment of headache frequency (or identifying the potential of increasing frequency) and for identifying potential triggers such as menstruation. (For example, recording daily headache status and treatment will help determine if patients are having a single long attack or multiple attacks close together.) Identifying risk factors for developing CM is also critical when establishing a treatment plan aimed at reducing the risk of headache progression (eg, using migraine preventive therapy vs regular acute therapies). These patients are followed more closely in the clinic with careful attention paid to medication use because they are at risk of increasing medication use when treating frequent attacks.

One epidemiological study found that the incidence of chronic daily headache is 3 per 100 person-years, meaning 3% of the general population will develop chronic daily headache over the next year.¹⁴ Inherited genetic predisposition for migraine cannot be modified such as being female, but some risk factors are modifiable and intervention may help reduce these risk factors such as attack frequency, obesity, and medication overuse (Table 2). These are important factors that we ought to be looking for in our patients with frequent headache because modifying them may prevent progression to CM in susceptible individuals. They also may be risk factors that, if modified, may increase the conversion of CM to episodic headache.

The IHS Classification current criteria for CM is shown below:¹¹

Table 2.—Risk Factors for Headache Progression from Episodic to Chronic Migraine¹⁷

Not modifiable risk factors	Readily modifiable risk factors
<ul style="list-style-type: none"> • Migraine • Gender—female • Low education • Low socioeconomic status • Head injury 	<ul style="list-style-type: none"> • Attack frequency • Obesity • Medication overuse • Stressful life events • Snoring (sleep apnea, sleep disturbance)

Description of chronic migraine: Migraine headache occurring on 15 or more days per month for more than 3 months in the absence of medication overuse.

Revised Diagnostic Criteria for Chronic Migraine:

- A. Headache \geq 15 days/month for at least 3 months
- B. Patient *had* \geq 5 attacks fulfilling criteria B-D for *Migraine without aura*
- C. On \geq 8 days/month for \geq 3 months headache has fulfilled 1 or 2
 1. Has at least 2 of:
 - (a) unilateral location
 - (b) pulsating quality
 - (c) moderate or severe pain intensity
 - (d) aggravation by or causing avoidance of routine physical activity
 - And at least one of:
 - (a) nausea and/or vomiting
 - (b) photophobia and phonophobia
 2. Headache treated with triptan(s) or ergot and not meeting above criteria
- D. No medication overuse and not attributed to another causative disorder

Chronic migraine is not uncommon and may be found in 4-5% of the American population.¹² Before diagnosing CM it is important to rule out the potential role of medication overuse headache, as is commonly seen with frequent use of combination analgesics, eg, acetaminophen/ASA/caffeine combination or other headache medications. Other common triggers that may exacerbate headache

include frequent and almost daily use of caffeine as well as opiates or narcotics.¹ Frequent ergotamine use or triptans may also cause increasing frequency of headache, and therefore their use should be assessed during a headache workup. Although Erin does not meet the classification criteria for CM, she is not far from it and significant attention should be paid to her headache status and treatment plan.

Erin is also on an oral contraceptive, which is important to know because some oral contraceptives may exacerbate or improve the patient's migraine status. Erin is on a low-dose, monophasic oral contraceptive, which is important to know because it will influence her hormone fluctuations, which will in turn potentially influence migraine occurrence. Since she is responding well to the sumatriptan, cognitive therapy, and amitriptyline, no changes to her oral contraceptive therapy appears to be necessary at this time.

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