Family Medicine Preceptorship
Discussion Cases
Headache

Learning Objectives:

- Classify headaches as primary (migraine, tension, cluster, or miscellaneous) or secondary.
- Identify potential red-flag symptoms.
- Know basic treatment modalities for migraine, tension, and cluster headaches.

Suggested Reading:

Viera AJ, Antono B. Acute Headache in Adults: A Diagnostic Approach. *American Family Physician*, 2022; 106(3):260-268. May be found at: https://www.aafp.org/pubs/afp/issues/2022/0900/acute-headache-adults.html

Walling A. Frequent Headaches: Evaluation and Management. *American Family Physician*, 2020; 101(7):419-428. May be found at: https://www.aafp.org/pubs/afp/issues/2020/0401/p419.html

Callaghan BC, et al. Headache Neuroimaging: Routine testing when guidelines recommend against them. *Cephalalgia*, 2015; 35 (13): 1144-52. May be found at: https://www.ncbi.nlm.nih.gov/pubmed/25676384

Gamboa S. Headache (Chapter 45). In: Essentials of Family Medicine, 6th ed. Philadelphia, PA: Wolters Kluwer/Lippincott, Williams and Wilkins, 2012, 533-542.

CASE 1:

Sara is a 14-year-old female in 9th grade who comes to see you because of headaches and nausea occurring about once per month just prior to her menses. These are throbbing in nature and usually most prominent in the left frontal region. She often feels a stabbing type pain behind the left eye. There are no aura-like symptoms, but she has photophobia. When she gets these headaches, she often needs to leave school. She finds that sleeping in a dark quiet room helps. She has tried Tylenol 325 mg or Ibuprofen 200 mg without success. On further questioning, you find that she feels that she doesn't have many friends at school and that she is not involved in school activities. She denies smoking and alcohol use. PE is unremarkable.

Question 1: What type of headache do you think this is? What symptoms support this diagnosis?

This patient has symptoms typical for migraine headache without aura associated with the menses. It is unilateral, severe, throbbing, associated with nausea and photophobia, which is an example of meeting 4/5 criteria for the "POUND" mnemonic:

Pulsating or throbbing pain

One-day average duration

Unilateral location

Nausea or vomiting

Disabling

Probability of migraine in a primary care patient is 92% when 4 POUND symptoms are present and 64% with 3 symptoms.

They are also often associated with phonophobia and are exacerbated by activity. The physician should

be alert to the potential for secondary gain in this patient (missing school due to headache) and to the possibility of depression (patient feels she does not have many friends at school and is not involved in school activities).

Question 2: What suggestions would you make regarding treatment?

Since these headaches are only occurring once per month, it is very reasonable to try abortive therapy. However, the patient has been receiving suboptimal doses of analgesics. She should be encouraged to try 650 – 1000 mg of Acetaminophen every 4-6 hours and/or 200-400 mg of Ibuprofen every 4-6 hours at the first sign of a headache. Triptans are the second tier for treatment, while combination therapy is third tier for children. Another option is promethazine as an antiemetic which also reduces headache pain and helps facilitate sleep. Women with menstrual migraines often respond very well to the prostaglandin-blocking effects of NSAIDs, or a combination of aspirin, acetaminophen, and caffeine.

Question 3: What additional treatments are available for patients ages 18 and up?

Other appropriate choices would include additional antiemetics (prochlorperazine, metoclopramide, and others), CGRP antagonists (rimegepant, ubrogepant), lasmiditan (selective serotonin 1F receptor agonist, okay to use in pts with cardiovascular risk factors), ergotamines, etc. Neuromodulation and peripheral nerve blocks are growing fields with limited data suggesting benefit.

Question 4: Does this patient have any “red flag” symptoms? What symptoms, if they occurred, would raise the possibility of a more serious or life-threatening condition? What would you do if a patient has such danger symptoms or signs?

This patient does not have any red-flag symptoms. See table below.

SNNOOP10 Mnemonic for Serious Underlying Disorders in Patients with Headache

Sign of Symptom	Potential Cause of Headache
Systemic symptoms (e.g. fever, rash, myalgia, weight loss)	Intracranial infection (with or without nuchal rigidity) or nonvascular condition; carcinoid tumor, pheochromocytoma
Neoplasm history	Brain neoplasm, metastasis, or recurrence
Neurologic deficit or dysfunction (focal deficits, seizure, cognitive/personality change, consciousness change)	Intracranial disorder such as bleed, mass, or CNS infection
Onset sudden or abrupt	Subarachnoid hemorrhage, cranial or cervical vascular lesion
Older age (onset after age 50)	Giant cell arteritis, cervical or intracranial lesions
Painful eye plus autonomic features	Posterior fossa; pituitary, cavernous sinus, or ophthalmic condition; Tolosa-Hunt syndrome (neuro-immunological disorder with severe orbital pain and paralysis/weakness of eye muscles)
Painkiller overuse or new medication	Consider for reversible underlying cause, neuroimaging not indicated
Papilledema	Intracranial condition, intracranial hypertension
Pathology of immune system	HIV or opportunistic infection
Pattern: new headache or change in pattern of established headache	Intracranial condition
Position exacerbates or relieves pain	Intracranial hypo/hypertension (i.e. if bending over

	worsens headache, suggests intracranial hypertension such as brain tumor)
Posttraumatic onset (acute or chronic)	Subdural hematoma, vascular condition
Precipitated by sneezing, coughing, or exercise	Posterior fossa lesion or Arnold-Chiari malformation
Pregnancy or postpartum	Cranial or cervical vascular condition, hypertension/preeclampsia, cerebral sinus thrombosis, epidural-related headache
Progressive and atypical presentation	Nonvascular intracranial lesion

Danger signs, if present, should prompt a decision for neuroimaging. Also consider neuroimaging for children younger than age 6 or if headaches awaken the child from sleep. The ACR recommends MRI for evaluation of HA in immunocompromised patients or those with suspected temporal arteritis (along with biopsy/ESR). If concern exists for arterial dissection an MRI, or head/neck CTA or MRA would be appropriate. If concern for meningitis or evaluating a headache in pregnancy, a CT or MRI without contrast is recommended. In other severe or sudden headache, CT without contrast, CTA, MRI, or MRA may be indicated. Lumbar puncture is indicated (after imaging because of herniation risk) when concern exists for CNS infection, bleeding, or malignancy.

At other times, neuroimaging is not necessary and is often overutilized for patients with migraine headaches and no red flags.

Question 5: If her headaches became more frequent, how might you consider preventing them?

- *Discuss decision to begin prophylaxis. (>2 headaches/week, significant disability, failure/contraindication of other therapies, pt preference, cost, comorbidities)*
- *Some patients note improvement with wellness programs (good nutrition, sleep, exercise), relaxation training, cognitive therapy, biofeedback.*
- *Avoid triggers (alcohol, tobacco, caffeine, food additives like MSG or aspartame, sleep disruption, hormone changes, odors, lights, chocolate, nuts, beans, dairy, nitrites in meats, tyramine in smoked fish, aged cheese, red wine, sulfites in white wine).*
- *Frequently used migraine prophylactic agents include SSRI's, tricyclic antidepressants β-blockers, calcium channel blockers, valproic acid, gabapentin, topiramate.*
- *Injectable calcitonin gene-related peptide (CGRP) antagonists, botulinum toxin therapy, and portable neurostimulation devices are alternatives for the acute and preventative treatment of migraines when oral medications fail or are not tolerated.*

CASE 2:

Mike is a 39-year-old male businessman who comes in with a history of headaches occurring 2 to 3 times each week for the past several months. He has tried a variety of over-the-counter agents including Tylenol 650 mg every 4 hours, Ibuprofen 800 mg every 4-6 hours, and Naprosyn 500 mg twice a day with some success. However, he feels his headaches have increased in intensity since beginning his new job several months ago. He describes these as bilateral and constant, like a tight band around the head. There is no associated blurry or double vision, photo - or phonophobia, or other neurologic symptoms. Headaches are exacerbated by deadlines at work. They do not awaken him from sleep. He drinks 3-4 cups of coffee daily, does not smoke, and has 2 beers on the weekend. He does not exercise.

Question 1: What type of headache do you think this is? What symptoms support your diagnosis?

This case typifies tension headaches, possibly exacerbated by regular use of nonsteroidal agents.

Tension headaches are characterized by bilaterality, muscle tightness, constant nature, and radiation into neck and shoulders. They can last up to days at a time. Tension headaches are exacerbated by stress.

Question 2: What suggestions would you make regarding treatment?

Since these headaches are occurring 2-3 times per week and he has been using adequate doses of pain medications, lifestyle modification would be an appropriate first step. He should be encouraged to decrease the amount of over-the-counter analgesics he has been using to 2 or 3 doses no more than twice each week, decrease the amount of coffee to no more than 2 cups per day (gradually), and begin a regular exercise routine to help alleviate stress. Massage therapy, biofeedback, acupuncture, nutritional supplements, and relaxation techniques are often useful. Ergonomic evaluations of workstation can also benefit patients. It does not sound as though he has problems with other substance abuse such as tobacco or alcohol, but these should be explored with every patient. He should be seen back in 3-4 weeks to see if there has been any change in the character of the headaches once he has tried these measures. In the event that he develops a severe headache, it would be acceptable to treat with a combination analgesic. More frequent headaches may be amenable to prophylactic treatment with amitriptyline, mirtazapine, and/or cognitive behavioral therapy.

Case 3:

Shannon is a 45 yo woman with dull, global headaches every morning for the past couple of months. She is frustrated with consistent weight gain over the past several years, and feels tired throughout the day. Her marriage is rocky, and she feels like she can't meet her kids' needs. She has no other symptoms and hasn't tried any treatments thus far. She doesn't exercise. She relaxes with a couple of drinks each evening. She thinks she might have a brain tumor. Her physical exam is normal.

Question 1: What is the differential diagnosis?

Chronic morning headaches can be due to poor sleep (consider OSA, depression, anxiety), alcohol overuse, hypertension, or medication withdrawal. A more detailed history, including depression screening, sleep apnea symptoms, and alcohol habits would be beneficial. This patient doesn't use NSAIDs, but rebound headaches could also present this way.

Question 2: Would you order any tests?

A careful history and physical should be sufficient to establish a diagnosis in this patient. In the absence of danger signs, discussed above, there is no indication to perform any neuroimaging. However, if she endorses OSA symptoms, a polysomnogram may be useful. Likewise, if clinical evaluation raises suspicion for other causes of fatigue or poor sleep (pregnancy, perimenopause, pituitary disease, thyroid disease), these should be evaluated with appropriate laboratory testing. The patient can be educated about the absence of symptoms suggestive of mass lesion, and reassured that her medical team will continue to monitor this.

Question 3: What treatment would you recommend?

Once you have established your presumed diagnosis, treatment should be aimed at the underlying condition. Treating depression, anxiety, alcohol use disorders, hypertension, OSA, or other conditions should lead to resolution of her headaches. Follow-up is recommended and may take several visits over time.