

Clinical Case for Facilitators

A 45-year-old female with headache

Presentation: *You are the general physician of an emergency department (ED). Miss Karami refers to you saying that she has had a headache since today morning. The headache has prevented her to go to her work. She had tried to relieve her headaches by using painkillers. She googles her symptoms and concerns about having brain tumor.*

Question 01: what's the chief complaint of the patient? What questions do you consider asking about the patient's complaint?

Information for facilitators: The main complaint of the patient is a headache. The approach to headaches depends on the temporal patterns. Temporal patterns can be divided into “acute”, “recurrent acute”, “chronic progressive”, “chronic non-progressive” and “mixed pattern”. So, one of the important questions that should be asked is about the temporal pattern of the headache. Students should also ask about the onset, duration, frequency, location, characteristics (pulsatile, band-like, thunderclap), aggravating factors, relieving factors, the severity of headache, associated factors (such as nausea, vomiting, fever, phonophobia, and photophobia), systemic illnesses (including hypertension), social factors, family history, and medication history.

Answer: The patient is a 45-year-old female came with chief complaint of headache since today morning. The headache is two-sided at frontal and not pulsatile. The patient reported similar episodes of headache since adolescences. When the headaches start, she prefers to rest in a dark room, and sometimes it associates with nausea, but no vomiting were reported. The headache severity was 7/10. She reported that the headache starts usually after sleep-deficit. Dark room and using acetaminophen leading to relieve the headache. But sometimes, as today, the headache is not improved with acetaminophen using. She also was concerned about having brain tumor and referred to the ED. The patient reported no systemic illnesses. She uses alcohol occasionally, but no smoking was reported. Her mother had been diagnosed of having migraine headache. She reported no aura.

Questions 02: What are your differential diagnoses based on the initial evaluation of the patient?

Information for facilitators: The patient suffers from recurrent acute episodes of headache. The most common causes of recurrent acute headaches are primary headaches. So, three differential diagnoses of primary headaches should be considered. On the other hand, due to the fatality of some causes of secondary headache, students should also ask and examine the secondary causes of the headache. It's better to make a table of differential diagnoses at this step.

	History		Physical exam		Other investigations	
	For	Against	For	Against	For	Against
Migraine						
Cluster						
Tension						
Secondary causes						

Questions 03: What are the further questions you'll ask from the patient?

Information for facilitators: now the students should ask about the different key features of primary headaches to differentiate between migraine, tension, and cluster headaches. It's better to fill the table with the taken history. This makes them understand the process of diagnostic reasoning. They should also ask about the red flags of headaches to R/O secondary causes of headaches.

Questions they should ask include:

- Does the headache spread elsewhere?
- How has the headache changed over time?
- Does the patient have a fever, rash, or weight loss?
- has the patient's level of consciousness decreased?
- does the patient have red eyes or visual disturbances?

- Are you currently using anything to treat your headache?
- Has the patient had any head trauma recently?
- Is the headache worsening with lying down or cough ?

Question 04: What are the key features of the history?

Information for the facilitator: the red-colored words are indicating the key features of the taken history.

Answer: The patient is a 45-year-old female who came with a chief complaint of headache since today morning. The headache is two-sided at the frontal and not pulsatile. The patient reported similar episodes of headaches since adolescence. When the headaches start, she prefers to rest in a dark room, and sometimes it associates with nausea, but no vomiting was reported. The headache severity was 7/10. She reported that the headache starts usually after sleep deficit. Darkroom and using acetaminophen lead to relieving the headache. But sometimes, as today, the headache is not improved with acetaminophen use. She also was concerned about having a brain tumor and referred to the ED. The patient reported no systemic illnesses. She uses alcohol occasionally, but no smoking was reported. Her mother had been diagnosed of having migraine headaches. She reported no visual or auditory aura. Usually, it takes about a day to relieve the headache. The headache radiates nowhere. The severity of the headache was constant through these years. The patient hasn't suffered from fever, rash, or weight loss recently. She takes no medication regularly for her headaches. She experiences no decreased LOC, red eye, and decreased vision till now.

Questions 05: Which parts of the physical exam you'll perform? How they'll help you to distinguish between different types of headaches?

Information for the facilitator: Physical exams of headache doesn't help to distinguish between three types of primary headache. The goal of the physical exam is to R/O secondary causes of the headache. Physical exams should be performed include:

- Vital signs of the patient including blood pressure (Hypertension) and temperature (Fever)

- General appearance of the patient such as being sick (suggestive of meningitis) or not
- Eyes: Check visions-refractory errors, check pupil, ocular movements, and fundus examination (all signs assessed to check raised ICP)
- ENT: check sinus tenderness,
- Skull: evidence of skull trauma, hematoma, temporal tenderness
- Neck: check meningeal signs, nuchal rigidity
- Complete neurology exam, including: gait, tone, reflexes

Answer:

Blood pressure :110/70, pulse rate: 88, temperature: 36.7

General appearance: the pt was a young woman, not ill

Eyes: Vision: 10/10, Pupils were reactive to dilate and midsize, normal ocular movements, and normal fundoscopy, no redness,

ENT: no sinus tenderness

Skull: no evidence of trauma or hematoma, no temporal tenderness,

Neck: negative nuchal rigidity,

Neurology exam: Normal

Questions 06: Which diagnostic investigations you'll perform? How they'll help you to distinguish between different types of headaches?

Information for the facilitator: The patient had no red flags for imaging. So, no further investigations are needed for the patient.

Question 07: What's your most probable diagnosis of the patient? does any further investigation need to confirm the diagnosis?

Information for the facilitator: The most probable diagnosis is migraine headache. The patients symptoms fulfill the criteria of migraine headache.

Table 1. ICHD-3 Criteria For Migraine Without Aura

Diagnostic criteria:

- A. At least five attacks fulfilling criteria B–D
- B. Headache attacks lasting 4-72 hours (untreated or unsuccessfully treated)
- C. Headache has at least two of the following four characteristics:
 - 1. unilateral location
 - 2. pulsating quality
 - 3. moderate or severe pain intensity
 - 4. aggravation by or causing avoidance of routine physical activity (eg, walking or climbing stairs)
- D. During headache at least one of the following:
 - 1. nausea and/or vomiting
 - 2. photophobia and phonophobia
- E. Not better accounted for by another ICHD-3 diagnosis

Table 01: Diagnostic criteria of migraine headache (1)

Characteristic	Migraine	Tension type	Cluster
Intensity	Moderate to severe ⁴	Mild to moderate ⁴	Severe or very severe ⁴
Headache location	Often unilateral, can be bilateral ⁴	Bilateral ⁴	Unilateral, typically around or behind 1 eye ⁴
Headache duration	4-72 hours ^{4,*}	30 min-1 week ⁴	15-180 min ⁴
Headache frequency	Recurrent with variable frequency ⁴	Infrequent to daily ⁴	Frequent [†] during clusters ⁴
Other possible symptoms	Nausea, vomiting, sound and/or light sensitivity, aggravated by physical activity, ⁴ aura, ^{15,2} allodynia ¹⁰⁻¹²	Pericranial tenderness, sound or light sensitivity ⁴	Nasal congestion, facial sweating, agitation/restlessness, eyelid edema or drooping, eye redness/tearing, and constricted pupils ⁴
Demographics	Affects women 2-3 times more often than men ¹⁶	Higher prevalence in women than in men ¹⁷	Affect men 3 times more often than women ¹³

Table 02: Characteristics of different types of primary headaches (2)(3)

	History		Physical exam		Other investigations	
	For	Against	For	Against	For	Against
Migraine	<i>Female, since adolescences, to rest in a dark, nausea, Severity, sleep-deficit, positive family history, last 24 hours</i>	<i>two-sided, not pulsatile</i>	Normal physical exam			
Cluster		<i>Female, two-sided, last 24 hours</i>	Normal physical exam			
Tension	<i>Female, two-sided, not pulsatile</i>	<i>Severity, last 24 hours</i>	Normal physical exam			
Secondary causes		<i>no systemic illnesses, No fever, No rash, No weight loss, No decrease of LOC, no eye problems</i>		Normal physical exam		

The course is designed based on the “Principles and practice of case-based clinical reasoning education: a method for preclinical students”(4).

References

1. Rao PM, Ailani J. Diagnosis and Treatment of Migraine. Journal of Clinical Outcomes Management. 2017;24(11).
2. Arnold M. Headache classification committee of the international headache society (IHS) the international classification of headache disorders. Cephalalgia. 2018;38(1):1-211.
3. <https://www.scienceofmigraine.com/management/migraine-diagnosis-criteria>
4. Ten Cate O, Custers EJ, Durning SJ. Principles and practice of case-based clinical reasoning education: a method for preclinical students. 2017.