Neurology for the Internist
Headache Cases and Imaging

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Disclosures

• None

Ask a neurologist
Topics for consultation

• What are the top 5 questions posed for neurological consultation?

Ask a neurologist
Topics for consultation

• Headache 17%
• Incidental imaging findings 11%
• Numbness / tingling 11%
• Seizure 9%
• Cerebrovascular disease 9%
MKSAP 18 Content for Neurology

- Headache and Facial Pain
- Head Injury
- Seizure and Epilepsy
- Stroke
- Cognitive Impairment
- Movement Disorders
- Multiple Sclerosis
- Disorders of the Spinal Cord
- Neuromuscular Disorders
- Neuro-oncology

Overview of themes

- Headache with focus on secondary
- Systematic use of “Red flags”
- Imaging
- Diagnoses using ICHD-3
Outline for presentation

- Background and Review for Headache
- Three cases exploring an approach to suspected secondary headache

Background and Review for Headache

International Headache Society Classification

www.ichd-3.org
International Headache Society Classification
Migraine

ICHD-3
Migraine with aura

Is it migraine with aura?

- At least one aura symptom spreads gradually over ≥ 5 minutes
- Two or more aura symptoms occur in succession
- Each individual aura symptom lasts 5-60 minutes
- At least one aura symptom is unilateral
- At least one aura symptom is positive
- The aura is accompanied or followed within 60 minutes by headache
Is it migraine with aura?

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Onset of symptoms?

- Categorize any aura
- Duration of aura symptom?
- Which side was affected?
- Description of the symptom?
- Was there a headache?

Secondary Headache Classification

- First or worst headache
- Abrupt-onset or thunderclap headache
- Progression of fundamental change in headache pattern
- Abnormal physical examination findings
- Neurologic symptoms lasting longer than 1 hour
- New headache in persons younger than 5 years old or older than 50 years old
- New headache in patient with malignancy, immunosuppression, or pregnancy
- Association with alteration or loss of consciousness
- Headache triggered by exertion, sexual activity, or Valsalva maneuver

Clinical “red flags”

- Onset of symptoms?
Is it migraine aura?

Are there clinical “red flags?”

A patient with headache and arm symptoms

Case of a woman with headache and arm numbness

28 year old woman presents with headaches that are similar to ones she has had in the past. She described a dull pain around the forehead and sides of the head. Pain may last a few hours and then subsides without treatment. These are occurring about once per week. Previously would have 2 to 3 headache per year. She has had 6 episodes of left arm numbness in the past 2 months. These would start suddenly, last about 30 seconds, and involve most of the arm. It has not been directly associated with headache.

Past Medical History
- Congenital aortic bicuspid valve and pulmonic valve stenosis
- Aortic valve repair with mechanical valve
- Pulmonary valve repair with bovine valve
- Pace maker for complete heart block

Medications
- Warfarin
- Stopped oral contraception 3 months prior
Case of a woman with headache and arm numbness

Neurologic exam
  Sensation described as "off" in the left hand

Is it migraine with aura?

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Clinical “red flags”

- Progression or fundamental change in headache pattern
- Neurologic symptoms lasting longer than 1 hour? Recurrence
- New headache in patient with pregnancy
- Use of PO anticoagulation (warfarin)
- Vascular risk background
Pregnancy and headache

• Primary headache
  – 65%

• Secondary headache
  – 35%

Pregnancy and headache

• Thunderclap headache
• Hypertension
• Visual loss
• Seizure
• Horner syndrome
• Papilledema
• Focal neurologic findings

Pregnancy and headache

Secondary headache diagnosis

• No previous history of headache syndrome
• Longer headache duration
Pregnancy and headache
Secondary headache diagnoses

- Hypertension
  - Hypertension
  - Preeclampsia / eclampsia
  - Posterior reversible encephalopathy syndrome (PRES)
- Reversible cerebral vasoconstriction syndrome

What is the diagnosis?

Case of a woman with headache and arm numbness

Headache - neoplasia
7.4 Headache attributed to intracranial neoplasia

• Prevalence of 61 per 100,000
• CNS metastasis has approximately 10 time this prevalence

A 52 year old right handed man presented to clinic with headache. The headache started 1 week prior and did not have a particular onset. Pain was described as whole head pressure with neck stiffness. The pain has been continuous and has been getting worse in intensity over the past few days. He has had two episodes where he felt his right leg was weak and he dragged his right foot. This lasted about 1 minute with a sudden onset. The day prior to presentation he had an episode of dizziness and double vision that lasted minutes.
### Case of a new headache in a 52 year old man

- **Past medical history**
  - Cataract surgery, nephrolithiasis, BPH
  - No history of headache syndrome, cancer, or tobacco use
- **Medications**
- **Neurologic examination**
  - Intact mental status, motor, sensory, coordination, and gait
  - Cranial nerve findings?

### What was the cranial nerve finding?

A. Impaired bilateral eye abduction  
B. Funduscopic exam with papilledema  
C. Miosis with partial Horner’s syndrome

### What was the cranial nerve finding?

Funduscopic exam with early signs of papilledema

### Is it migraine with aura?

- At least one aura symptom spreads gradually over ≥ 5 minutes  
- Two or more aura symptoms occur in succession  
- Each individual aura symptom lasts 5-60 minutes  
- At least one aura symptom is unilateral  
- At least one aura symptom is positive  
- The aura is accompanied or followed within 60 minutes by headache  
- No – sudden onset  
- No – two auras, but not in succession  
- No – duration  
- Yes – lateralized to right leg  
- No – loss of leg function  
- No
### Clinical “red flags”

- First or worst headache
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### Case of a new headache in a 52 year old man

- CT scan reported as having abnormality in the right frontal lobe described as either blood or artifact.

### Clinical "red flags"

- First or worst headache
- Progression or fundamental change in headache pattern
- Abnormal physical examination findings
- New headache in person older than 50 years old

### What is the diagnosis?
Case of a new headache in a 52 year old man

What is the anatomical structure affected?

Headache – Cerebral Venous Thrombosis
6.6.1 Headache attributed to cerebral venous thrombosis

- Headache present in 80-90% of cases
- Characteristics
  - Diffuse
  - Progressive
  - Severe
  - Signs of intracranial hypertension
- Neurologic Exam abnormal in over 90% cases
  - Focal deficits (loss of function or seizure)
  - Intracranial hypertension (papilledema)
  - Encephalopathy

69 year old woman with new and persistent headache

69 year old woman presented with 2 weeks of headache. Headache is new and has been persistent. Onset was as gradual. Intensity has been waxing and waning. Pain described as a throbbing or pulsing pain in the back of the head and behind the eyes. She has had some light headedness and nausea with severe attacks. Pain is exacerbated by Valsalva. She is pain free in the morning when she awakens. Pain then is present about half hour after getting out of bed.
### Past Medical History

- Intermittent atrial fibrillation
- Dyslipidemia

### Medications

- Warfarin
- Pravastatin

### Neurological exam was normal including funduscopic exam

### 69 year old woman with new and persistent headache

### Is it migraine with aura?

- At least on aura symptom spreads gradually over ≥ 5 minutes
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- At least on aura symptom is unilateral
- At least one aura symptom is positive
- The aura is accompanied or followed within 60 minutes by headache

### No aura

### Clinical “red flags”

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### Clinical “red flags”

- First or worst headache
- Progression or fundamental change in headache pattern
- New headache in person older than 50 years old
- Headache triggered by Valsalva maneuver
- Orthostatic features
- Warfarin use
What is the diagnosis?

69 year old woman with new and persistent headache

69 year old woman with new and persistent headache

Headache - neoplasia
7.2 Headache attributed to low cerebrospinal fluid pressure

In this case there was spontaneous intracranial hypotension

- Characteristics
  - Orthostatic symptoms suggestive, but not always present
  - Headache worse with sitting and standing
  - Headache improves with lying down

- Imaging
  - Sagging of the brain
  - Pachymeningeal enhancement
  - Spine imaging with extradural CSF

- Treatment
  - Blood patch

- Utilize the ICHD-3 criteria to aid diagnosis of headache
- Compare characteristics of migraine aura with those of secondary headache
- Identify “red flag” features for headache
- Diagnose secondary headache during pregnancy
- Identify physical exam findings associated with secondary headache
- Recognize the symptoms and findings for spontaneous intracranial hypotension
Questions?