HEADACHE IN

Vlasta Vuković Cvetković
University Department of Neurology
University Clinic Center Sestre milosrdnice
Zagreb, Croatia

Headache

Primary
History sufficient

Secondary
Diagnostics
<table>
<thead>
<tr>
<th><strong>TEMPORAL PROFILE</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>onset – sudden, gradual</td>
<td>time from onset to peak</td>
</tr>
<tr>
<td>progressively worsening, continuous</td>
<td>duration</td>
</tr>
<tr>
<td>frequency</td>
<td></td>
</tr>
<tr>
<td><strong>PAIN CHARACTER</strong></td>
<td>dull, throbbing, lancinating, pressing, sharp</td>
</tr>
<tr>
<td><strong>LOCALIZATION</strong></td>
<td>diffuse, uni-, bilateral, changing sides, frontal, temporal</td>
</tr>
<tr>
<td><strong>INTENSITY</strong></td>
<td>mild, moderate, severe</td>
</tr>
<tr>
<td><strong>RESPONDS TO ANALGESICS</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>PRECIPITATING FACTORS</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>aura preceeded</td>
<td>premonitory symptoms</td>
</tr>
<tr>
<td><strong>DEMOGRAPHY</strong></td>
<td>new onset in pts with tumor, HIV-positive</td>
</tr>
<tr>
<td></td>
<td>&gt; 50 g years</td>
</tr>
<tr>
<td><strong>OTHER SYMPTOMS / NEUROLOGICAL EXAMINATION</strong></td>
<td></td>
</tr>
<tr>
<td>febrile</td>
<td>meningism</td>
</tr>
<tr>
<td>vomiting</td>
<td>focal neurological deficit</td>
</tr>
<tr>
<td>papiloedema</td>
<td>cognitive decline</td>
</tr>
<tr>
<td>seizures</td>
<td></td>
</tr>
</tbody>
</table>
ASSESSMENT OF THE HEADACHE CHARACTERISTICS IN NON-URGENT SETTING BUT MAY HELP IN ER:

Usual time of onset (season, month, menstrual cycle, week, hour of day)
Stable or changing over past 6 months and lifetime
Aggravating factors

Pharmacological and non-pharmacological treatments: effective or ineffective
Functional disabilities at work, school, housework or leisure activities
during the past 3 months
Factors which relieve the headache

Diagnostic alarms in the evaluation of headache disorders

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Suspected diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>headache begins after age 50</td>
<td>- temporal arteritis, mass lesion</td>
</tr>
<tr>
<td>sudden onset headache</td>
<td>- SAH, pituitary apoplexy, bleed into a mass or AVM, mass lesion (especially posterior fossa)</td>
</tr>
<tr>
<td>accelerating pattern of headaches</td>
<td>- mass lesion, subdural hematoma, medication overuse</td>
</tr>
<tr>
<td>new onset headache in patient with cancer or HIV</td>
<td>- meningitis (chronic or carcinomatous), brain abscess (including toxoplasmosis), metastasis</td>
</tr>
<tr>
<td>headache with systemic illness</td>
<td>- meningitis, encephalitis, Lyme disease, systemic infection, collagen vascular disease</td>
</tr>
<tr>
<td>focal or generalised neurologic symptoms or signs of disease</td>
<td>- mass lesion, AVM, stroke, collagen vascular</td>
</tr>
<tr>
<td>papilledema</td>
<td>- mass lesion, IIH, meningitis</td>
</tr>
</tbody>
</table>
DIAGNOSTICS

Emergent:
CT – hemorrhage, trauma, tumor

Urgent:
MRI – AVM, venous thrombosis, tumor, cervicomedular lesion, infection, white matter lesion, meningeal disease (carcinomatosis, sarcoidosis)

Ultrasound – artery dissection, occlusion

EEG – distinction between seizure and atypical migraine aura

Lumbar puncture - meningoencefalitis, SAH (negative CT)
- IIH

Laboratory tests red, white blood cell, SE, CRP, coagulation
blood glucose
hepatic, nephrology tests
respiratory gases (CO)
toxicology
Ca

WHICH PATIENTS WITH HEADACHE REQUIRE NEUROIMAGING IN THE ED?

headache + abnormal findings in neurologic examination (focal deficit, altered mental status, and altered cognitive function): emergent non-contrast head CT scan

older than 50 yrs, patient with tumor, HIV, presenting with new type of headache; atypical headache patterns, headache worsened by Valsalva maneuver, infective illness, accelerating pattern of headaches, papiloedema, without abnormal findings in a neurologic examination should be considered for an urgent neuroimaging study
General criteria for urgent admission:

1. Medical emergency presenting with a severe headache (secondary cause)
   - brain abscess, and meningitis
   - acute vascular compromise (aneurysm, subarachnoid hemorrhage, carotid dissection)
   - structural disorder causing symptoms requiring an acute setting (brain tumor, increased intracranial pressure)
   - low cerebrospinal fluid headache when an outpatient blood patch has failed and an outpatient treatment plan has failed

2. Severe headache associated with intractable nausea and vomiting producing dehydration or postural hypotension or unable to retain oral medication and unable to be controlled in an outpatient setting

3. Failed outpatient treatment of an exacerbation of episodic headache disorder with failure to respond to "rescue" or backup medications

4. Certain migraine variants (hemiplegic migraine, suspected migrainous infarction, basilar migraine with serious neurologic symptoms such as syncope, confusional migraine, etc.)
MIGRAINE WITH AURA

Typical aura: up to 60 min
visual, sensory (arm, face), speech problems
headache follows

Atypical – aura with dull, mild or no headache

1st headache?
dif.dg. TIA

Previously established migraine:
normal variation (probable migraine)
new headache (primary, secondary)?

DG: non
urgent CT

FAMILIAL HEMIPLEGIC MIGRAINE

Aura: reversible motoric weakness, and at least 1 of:
visual, sensory, speech problems
Followed by headache
Relatives?
1st attack: CT, ultrasound; admission; MRI, MRA

BASILAR MIGRAINE

Aura, 2 of:
dysarthria, vertigo, tinnitus, hipoacusis, diplopia, visual spts simultaneously in temporal or nasal halves, ataxia, altered consciousness, bilateral parestheasiae
Followed by headache
DG: MRI, MRA

TH: triptans contraindicated
**MIGRAINOUS STATUS**

Typical as previous, lasts longer > 72 hours, severe intensity
Atypical, neurologic deficit

DG: CT

Admission: vomiting
impaired consciousness

TH: analgesics, NSAIDs, triptans
fluids
tranquilizers

**CLUSTER HEADACHE**

Men, smokers
- severe unilateral orbital / temporal pain
- 30-180 min, 1-3/day
- autonomic spts
- couple weeks-months
- daily

Dif. dg: sinusitis - X ray

DG: not urgent in case of typical clinical signs
MR, MRA

TH
Acute: oxygen; triptans, ergotamins

Prophylaxis: verapamil, corticosteroids, AET, serotonine antagonists
PAROXYSMAL HEMICRANIA
Sjaastad’s sy

- at least 50 attacks
- severe unilateral pain (orbit, supraorbit, tempor)
- always same side
- 2-45 min
- frequency 5 day
- ipsilateral autonomic spts
- indometacin 150 mg

DG: not urgent, MR, MRA

OTHER PRIMARY HEADACHES

Hemicrania continua

- lasts > 3 mj
- continous, unilateral
- moderate intensity with severe exacerbations (Valsalva m?)
- ipsilateral autonomic spts
TH: indometacin
DG: CT
OTHER PRIMARY HEADACHES

BENIGN COUGH INDUCED HEADACHE
- bilateral pain,
- 1 sec-30 min
- 40 % symptomatic
DG: CT

BENIGN HEADACHE INDUCED BY PHYSICAL ACTIVITY
- during physical activity
- throbbing
- 5 min – 48 hours
- 1. onset – exclude SAH, dissection
DG: CT, LP, ultrasound, angiography admission

OTHER PRIMARY HEADACHES

HEADACHE CAUSED BY SEXUAL ACTIVITY
- preorgasmic
  - bilateral, dull
  - head, neck, jaw
- orgasmic
  - explosive
- 1 min - 3 hours (mean 30 min)
1st onset: exclude hemorrhage
DG: CT, ultrasound, angiography admission
OTHER PRIMARY HEADACHES

“THUNDERCLAP HEADACHE”

- sudden, severe headache
- maximal intensity < 1 min
- lasts 1 hour - do 10 days
- can re-occur within 1st week
- does not recur regularly
- dif dg: SAH, dissection
DG: CT, LP, ultrasound, angiography admission

Diffuse cerebral vasoconstriction sy (Call–Fleming syndrome)

Reversible segmental vasoconstriction of cerebral arteries manifested by
- severe headaches (“thunderclap”)
- with or without seizures
- focal neurological deficits

- resolves spontaneously in 1–3 months
- mean age of onset: 45 years
- approx. 60% of cases are secondary, postpartum and after exposure to vasoactive substances.

Complications: localised cortical SAH (22%)
parenchymal ischaemic or haemorrhagic strokes (7%)

Diagnosis requires the demonstration of the “string of beads”
appearance of cerebral arteries on angiography, with complete or almost complete resolution on repeat angiography 12 weeks after onset
Nimodipine seems to reduce thunderclap headaches within 48 h but has no definite effect on the haemorrhagic and ischaemic complications
SECONDARY HEADACHES

Posttraumatic headache

- loss of consciousness
- posttraumatic amnesia > 10 min
- abnormality in at least 2 of:
  - clinical examination
  - craniogram, neuroimaging
  - EP
  - LP
  - vestibular tests
  - neuropsychological testing (latter)
- onset of headache < 14 days from trauma
- headache lasts > 8 weeks from trauma
HEADACHE RELATED TO CEREBROVASCULAR DISEASE: STROKE, HAEMORRHAGE

- headache in temporal relation to symptoms
- neurological deficit, seizure

DG: CT

suspected:
- aneurysm
- AV malformation
- AV fistula
- cavernous angioma

DG: CT angio; MR, MR angio, DSA
DISSECTION OF CAROTID, CEREBRAL ARTERIES

- headache and cervical pain ipsilateral to side of dissection
- TIA, stroke in correspondent territory
- Horner sy, bruit ipsilateral, tinnitus
DG: ultrasound, MR angiography
TH: aspirin, heparin

TEMPORAL ARTERITIS (GIANT CELL ARTERITIS)

> 50 g
Clinical spts: amaurosis fugax, optic neuropathy, diplopia
Horner sy; IVC, TIA
painful palpation of ATS

DG: increased SE rate (85 +/- 30), CRP
normokromic microcytic anemia
increased α 2 globulins
biopsy
ultrasound

TH: prednisolon 60 mg /5 days, continue corticosteroids per os 2 yrs
- headache withdraws within 2-3 days from corticosteroid onset
CEREBRAL VENOUS THROMBOSIS

- postpartal, trauma, postoperative, Tm, abscess, meningitis, febrile state, policitemia,
- increased intracranial pressure
- headache diffuse or on affected side
- neurological deficit, papiloedema, coma, convulsions
Dg: emergent MRI, MRA
TH: heparin

Posterior reversible encephalopathy syndrome (PRES)
Due to hyperperfusion state with blood brain barrier breakthrough
Clinical manifestations include: - mental status change
- headache
- visual disturbance
- seizures
Related to hypertension, eclampsia, preeclampsia, Immuno-suppressive medication
Characteristic abnormalities in the posterior cerebral white matter, seen best on DW MRI:
- cortical or subcortical oedema
- preferential involvement of posterior aspect of the lobes (particularly parieto-occipital lobes)
- sparing of calcarine and paramedian occipital lobe structures
- usually bilateral
Rapid identification and appropriate diagnostics are essential, as prompt treatment usually results in reversal of symptoms
Axial non-contrast CT image

Axial FLAIR MR image shows abnormality in cortical and subcortical white matter of the posterior aspect of the occipital lobes.

INCREASED INTRACRANIAL PRESSURE

TUMOR
- headache, nausea, vomiting
- seizure
- psychological disturbance
- impaired consciousness
- change in respiration, pulse
DG: CT; MR

HYDROCEPHALUS
- diffuse pain, worse in morning
- worsening with Valsalva maneuver
- vomiting
- papiledema, paresis VI
- altered consciousness
- impaired balance
DG: CT
INCREASED INTRACRANIAL PRESSURE

IDIOPATHIC INTRACRANIAL HYPERTENSION

- LP > 20 cm H2O
- normal neurological findings (papilledema, paresis VI)
  (transitory obscurations <30s, tinnitus sinchrone with pulse)
- severe, throbbing pain, nause, meningism
- CSF – normal cell count, proteins

Exclude: CVT, mass, intraventricular enlargement
DG: CT, LP, funduscopy; MR

TH: acetazolamid < 2 g/dn, LP, cortikosteroids, shunting, fenestration of optical shealth

HYPERTENSIVE CRISIS,
HYPERTENSIVE ENCEFALOPATHY

- malignant hypertension
- eclampsia, acute nephritis, crises in essential hypertension
- headache, restlessness, nausea, disturbances of consciousness, seizures, retinal hemorrhages, papilledema

DG: elevated blood pressure
CT
blood sampling, blood gas analysis
urinanalysis
ECG
EEG
funduscopy
HEADACHE caused by INFECTION

Intracranial
- brain abscess
- encephalitis
- meningitis
- subdural empyema

Systemic
AIDS
Chronic postinfecutive

DG: CT; MR
LP
Lab (SE, LE, CRP)

HEADACHE caused by

OPHTHALMOLOGICAL DISEASE
Acute glaucoma
Infection

SINUSITIS
Pain frontal, temporal
Signs of nasal congestion
Lab: SE, CRP, LE
X ray sinuses
Trigeminal neuralgia; tic douloureux

- couple of sec – 2 min
- 4 of:
  - distribution in 1 or more branches trigeminal nerve
  - paroxysmal, sharp, lancinating pain
  - severe
  - triggers: chewing, speech, touch, wind
  - between attacks asymptomatic
- no other neurological deficit

DG: non emergent neuroimaging (MR, MRA)
Th: carbamazepine