Headaches: when to worry, who to treat

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Conflicts of interest

- None declared of relevance to this talk
- Any off-licence use of medication will be clearly signposted

Headaches in the age of Covid: Pragmatic challenges in primary care

The Usual Suspects	Covid-related
Red flags: are all created equal?	Post-vaccination headache
Who needs to go to ED/AMU?	Post-covid headache
Who needs steroids now?	Headache associated with physical activity
Why do neurologists call everything migraine?	Headache associated with weight gain
Are there clear referral guidelines anywhere?	BP & Fundoscopy with virtual assessments
No flags, normal exam. When to investigate?	Video examination: what to look for
Botox and antibodies: who gets those?	

Traditional wisdom

Primary versus secondary

- Primary
  - No underlying structural abnormality
  - Theoretically genetic in nature
  - Often not a medical emergency
- Secondary
  - Structural, CSF or meningeal
  - Potential medical emergencies

Phenotype of headache

- All in the history
- SOCRATES

SOCRATES

- Site
- Onset
- Character
- Radiation
- Associated factors
- Time course
- Exacerbation/Alleviation
- Severity

Headache: What to do in ten minutes

- Direct the history
- Focus on flags: onset, triggers, systemic upset, change in function
- Focus on frequency: Ask about crystal-clear days
- Ask about ‘their normal headaches’

Note: dehydration headaches, stress headaches, hunger headaches and hangover headaches = migraine

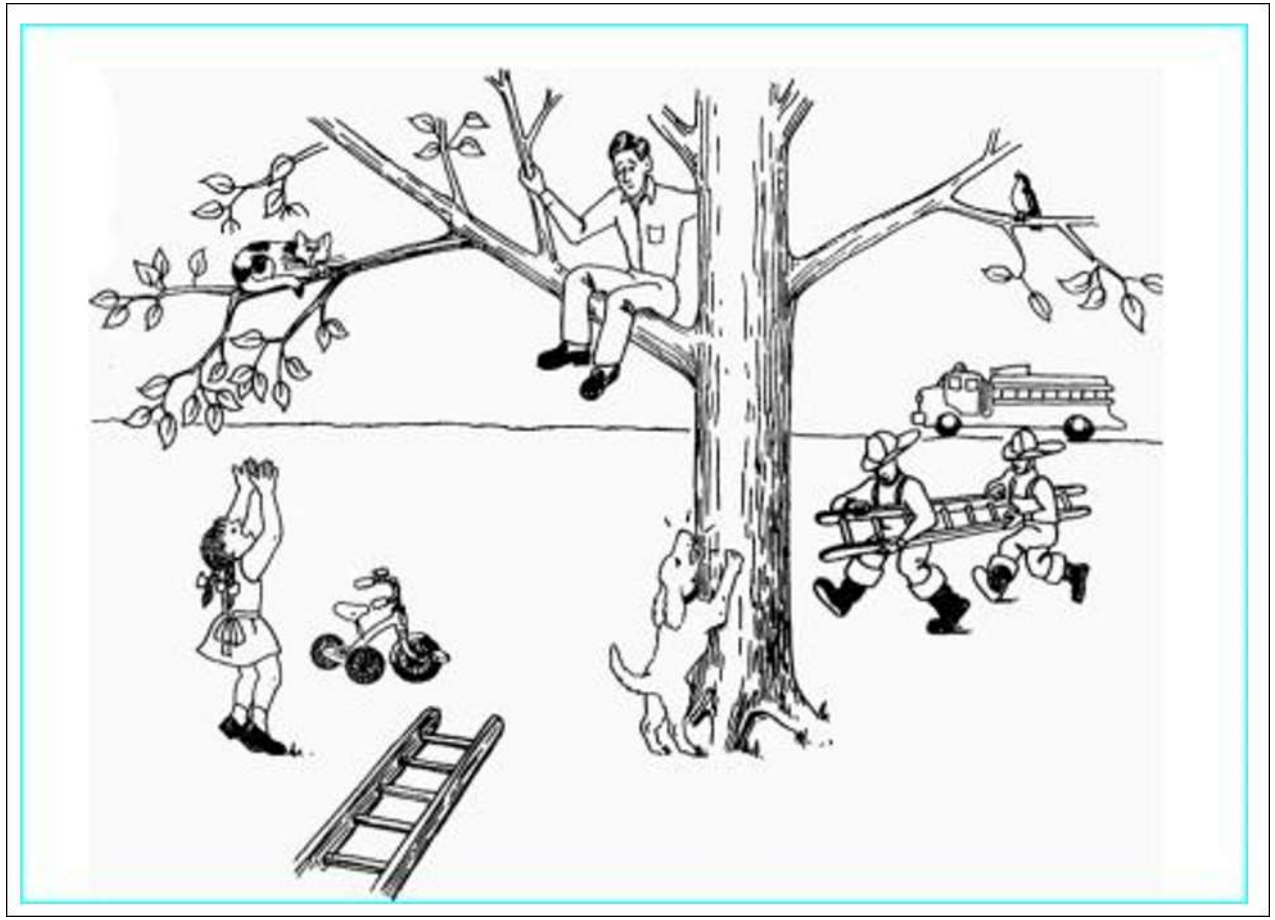
Note: alcohol usually triggers cluster within hours of ingestion; ‘next-day’ headaches usually represents migraine

- Thunderclap headache & (single) worse headache ever
- Cancer: active or previously treated
- DMTs/immunotherapies/immunosuppressants/weaning steroids

Headache exam: video

- Do they look sick (sweating, flushing, photophobic, deathly still)
- Look at the eye movements & eyelids
- Pupil size
- For fields: ‘Quickly describe this picture to me’ (vs. confrontation)
- Facial weakness
- Pronator drift
- Gait & tandem gait
- Speech: word selection, quality of speech, responses to Qs&Cs

Sample picture



My suggestion

- Take a ‘first past the post approach’
- If index acute headache with ‘proper’ red flag, refer to ED/AMU
- If recurrent acute headache with ‘other’ flag, refer to Neuro

- If recurrent, episodic headache, fits primary H/A disorder, treat.

- If new-onset daily headache, treat & refer to Neurology

- Chronification of previous headache, treat with preventative, review analgesic use. Refer to Neurology if fails adequate preventative trial.

Neurology 2019;92:1-11.
doi:10.1212/WNL.0000000000006697

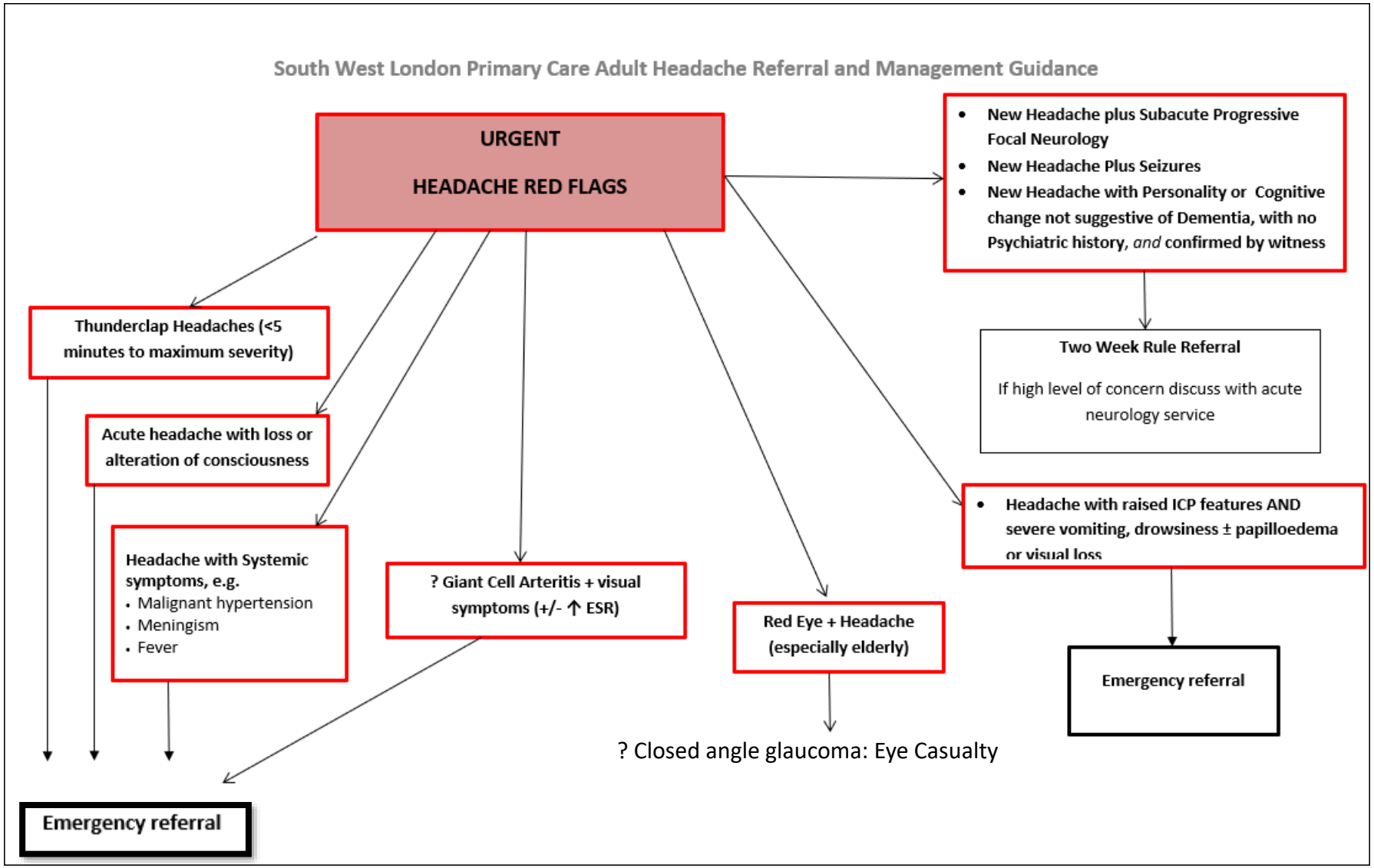
Are all red flags created equal?

Table 1 SNNOOP10 list of red and orange flags

	Sign or symptom	Related secondary headaches (most relevant ICHD-3b categories)	Flag color
1	Systemic symptoms including fever	Headache attributed to infection or nonvascular intracranial disorders, carcinoid or pheochromocytoma	Red (orange for isolated fever)
2	Neoplasm in history	Neoplasms of the brain; metastasis	Red
3	Neurologic deficit or dysfunction (including decreased consciousness)	Headaches attributed to vascular, nonvascular intracranial disorders; brain abscess and other infections	Red
4	Onset of headache is sudden or abrupt	Subarachnoid hemorrhage and other headaches attributed to cranial or cervical vascular disorders	Red
5	Older age (after 50 years)	Giant cell arteritis and other headache attributed to cranial or cervical vascular disorders; neoplasms and other nonvascular intracranial disorders	Red
6	Pattern change or recent onset of headache	Neoplasms, headaches attributed to vascular, nonvascular intracranial disorders	Red
7	Positional headache	Intracranial hypertension or hypotension	Red
8	Precipitated by sneezing, coughing, or exercise	Posterior fossa malformations; Chiari malformation	Red
9	Papilledema	Neoplasms and other nonvascular intracranial disorders; intracranial hypertension	Red
10	Progressive headache and atypical presentations	Neoplasms and other nonvascular intracranial disorders	Red
11	Pregnancy or puerperium	Headaches attributed to cranial or cervical vascular disorders; postdural puncture headache; hypertension-related disorders (e.g., preeclampsia); cerebral sinus thrombosis; hypothyroidism; anemia; diabetes	Red
12	Painful eye with autonomic features	Pathology in posterior fossa, pituitary region, or cavernous sinus; Tolosa-Hunt syndrome; ophthalmic causes	Red
13	Posttraumatic onset of headache	Acute and chronic posttraumatic headache; subdural hematoma and other headache attributed to vascular disorders	Red
14	Pathology of the immune system such as HIV	Opportunistic infections	Red
15	Painkiller overuse or new drug at onset of headache	Medication overuse headache; drug incompatibility	Red

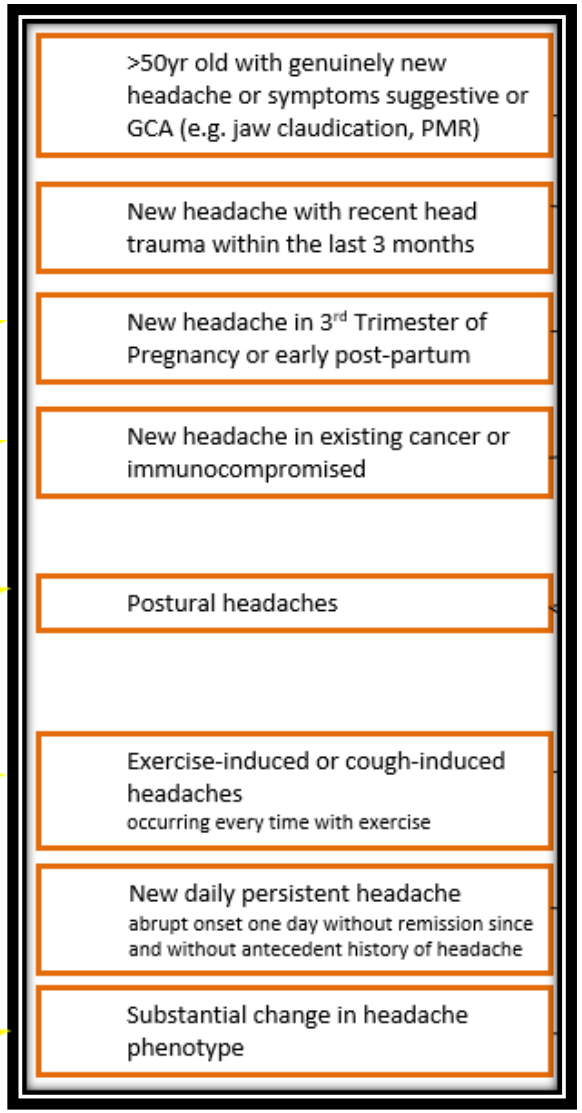
Abbreviation: ICHD-3b = International Classification of Headache Disorders 3b.
An overview of signs and symptoms, their related secondary headache, and distribution in red and orange flags.

Are all red flags created equal?



Blood pressure (and urine dipstick) mandatory

Urgent neurology referrals: within two weeks, sooner if evolution



Acute medicine + steroids if ESR/CRP raised. **<u>Repeat in 24-48 hours if normal and High index of suspicion for GCA!!</u>**

Ideally CT via primary care, especially if new gait disturbance
Or postural instability. Neurosurgeons or ENT depending on results.

<u>Fundoscopy is most important in this group.</u>
Least amenable/likely to be treated while awaiting diagnostics
If suspect low pressure headache: caffeine, fluid *(off-licence uniphyllin)*
Most likely to require urgent MRI/advanced MRI.

This group are still more likely to have a primary headache disorder
Coital headache is a specific type of exertional headache
<u>All amenable to treatment while awaiting diagnostics</u>

New, suspected Cluster headache also warrants urgent referral
Treat while awaiting review. Ask about suicidality. ED/AMU if this is the case.

Scenario one: Coital headache

- 24M, headaches with sexual activity
- Presents to primary care

- What would you ask: answers in the chat please (1 minute)
- Who would you treat?
- Who would you refer, and how urgent is it?

Suggested approach

- Age: < 30, >/=40
- Components: Pre-orgasmic, orgasmic or both
- Number of episodes: Single or multiple
- Nature of pain: gradual worsening (> 1 hour) vs. thunderclap (< 2 minutes); bilateral vs. unilateral
- Duration of symptom-triggering: within 48 hours, >/= 2 weeks
- Drugs: Viagra, vasodilators, vasoconstrictors, Herbals, illicit subs
- Headache or headache plus (syncope, neck pain with limited neck flexion, lateralised weakness, altered awareness)
- Other physiological triggers: cough, sneeze, strain, exercise
- Inter-ictal headache: migraine or non-migraine

- Green: routine neuro, trial beta-blocker or indomethacin
- Red: urgent assessment (ED/AMU)
- Other: urgent neuro, trial beta-blocker, ensure safety-netted

Coital headache

- High remission rate: 70%
- M:F = 3:1
- Co-exists with another headache type in 25% of those affected

- Distinguish between sudden-onset headache that worsens over time vs. sudden-onset, maximum @ onset-headache.

- First-presentation of ‘true’ thunderclap headache with sexual activity warrants exclusion of SAH (CT/LP if within two weeks of symptoms).

- Patients presenting with recurrent coital headache ONLY → Neurology

Aid memoire: secondary coital headaches

- SAH/ reversible cerebral vasoconstriction syndrome (thunderclap)
- Arterial dissection (Horner, tongue numbness, tongue weakness, ataxia)
- Central venous sinus thrombosis (positional worsening, blurred vision, seizures)
- Spontaneous intracranial hypotension (positional)
- Haemorrhage into a pituitary adenoma (LOC, visual symptoms, meningism)
- Neuro-endocrine causes (flushing, sweating, palpitations)
- Cardiac ischaemia (sweating, palpitations, shortness of breath, neck pain)

- Most will get an MRI/A.
- Some will need an MRI with GAD with venogram
- Smaller number will need funny urine and blood tests, or a DSE

Recurrent coital/activity-related headaches
Clear pattern of build-up. No other adverse symptoms

- Acute: Sumatriptan/zolmitriptan. Long-acting triptan if recurrence within four hours a consistent feature (Eletriptan, Frovatriptan).

- Preventative:

Propranolol: 20mg bd (standard release), Max: 80mg bd

Indomethacin: 25mg-75mg 30-60 minutes before activity. Max: 150mg

Change to celecoxib if Indomethacin-responsive

Asthmatic:

Preventative triptan: sumatriptan vs. Frovatriptan (depending on timing)

Diltiazem/Verapamil/magnesium (discuss first)

Splitting and Lumping

Primary

- Migraines (with or without aura)
- Cluster headaches
- Stabbing/ice pick headaches
- Thunderclap headaches
- Coital headaches
- Cough headaches
- Exertion headaches

Secondary

- Traumatic head injury
- Infection
  - meningitis
- Hypertensive
- Thunderclap headaches
  - SAH until proven otherwise
- Toxic/metabolic
- Coital headaches
  - Vascular until proven otherwise
- Raised pressure features
  - SOL/IIH/infectious

Thunderclap and acute headaches

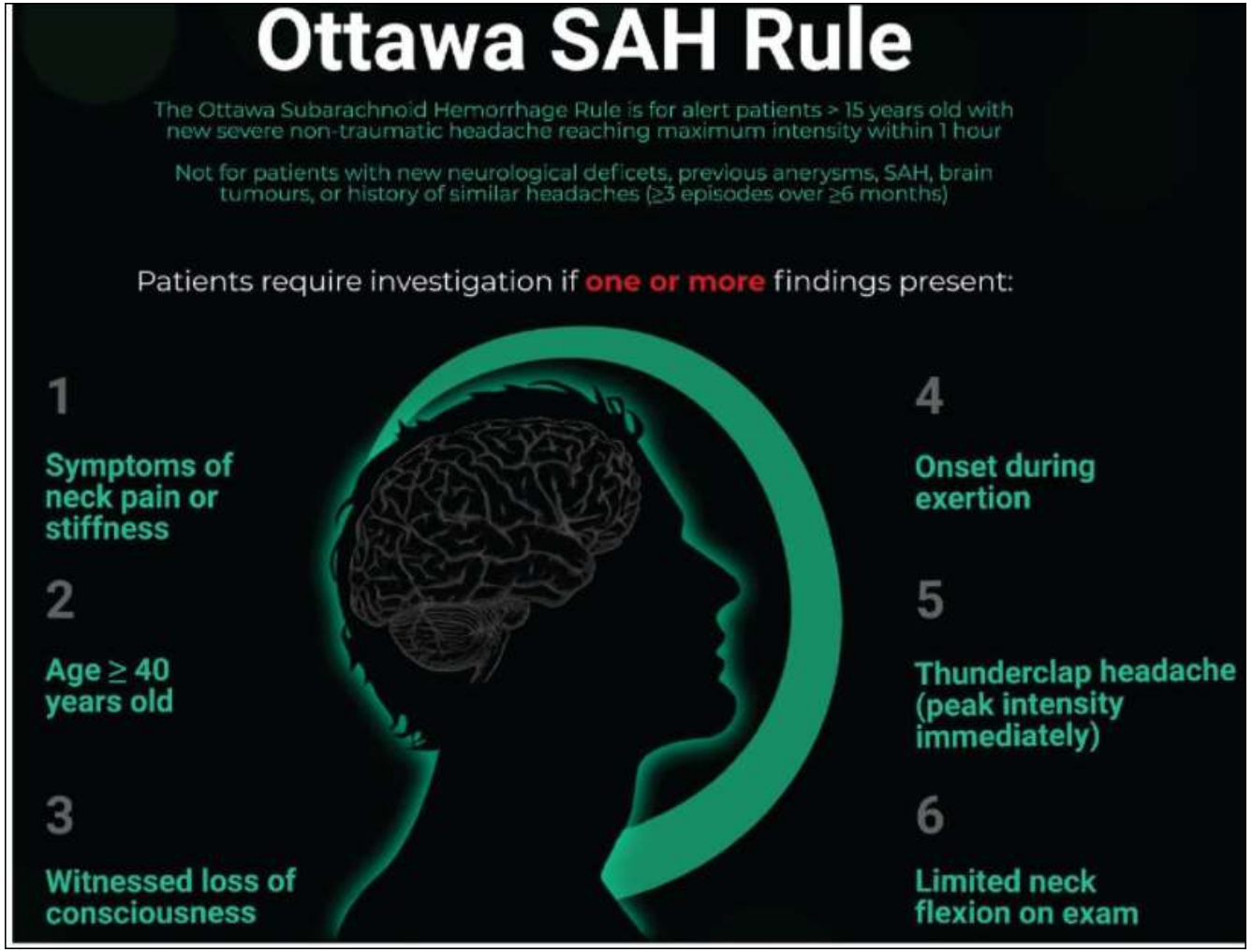
- ICHD-3, thunderclap headache (TCH): high-intensity headache of abrupt onset, reaching maximum intensity in < 1 minute
- Contrast to most EDs that use 5 minutes as a cut-off
- Contrast first ever severe headache
- Contrast to worse headache ever, regardless of onset

The Journal of Headache and Pain **volume 15**, Article number: 49 (2014)

First, sudden and severe headache

Cause	Cohort (N)	%	Case (N)	%	Case series	%	All (N)	%
Idiopathic thunderclap headache	265	16	87	27	107	29	459	20
Other, not specified	457	28	18	6	0	0	475	20
Primary headache	447	27	0	0	0	0	447	19
Cerebrovascular	281	17	153	47	198	53	632	27
Infection	119	7	17	5	24	6	160	7
Unknown	49	3	0	0	0	0	49	2
Non-neurovascular	27	2	46	14	46	12	119	5
Sudden death with headache	4	0.2	0	0	0	0	4	0
Total	**1,649**	**100**	**321**	**99**	**375**	**100**	**2345**	**100**

Keep it simple?



16 years or older

Headache reaching max severity within 60 mins

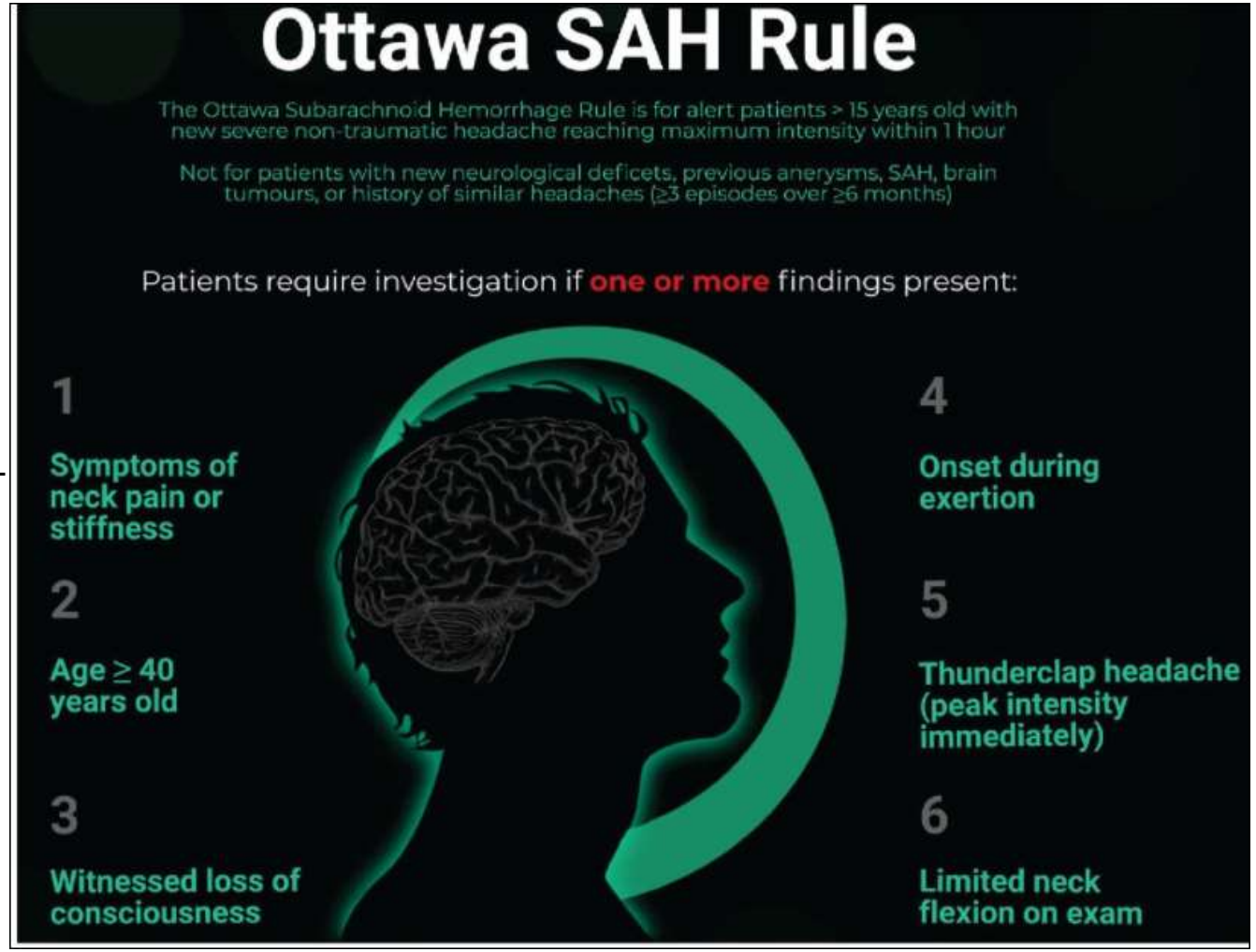
Does not apply if 3 or more similar headaches in last 6 months

Does not apply if:
New neurological deficits
Previous SAH/aneurysm
Known Cancer

Keep it simple?

My view on this:
<u>Investigation with CT/LP is not needed if there are no gross deficits, and none of these features are present</u>

e.g. 17yo with first severe headache, unprovoked, without meningism.



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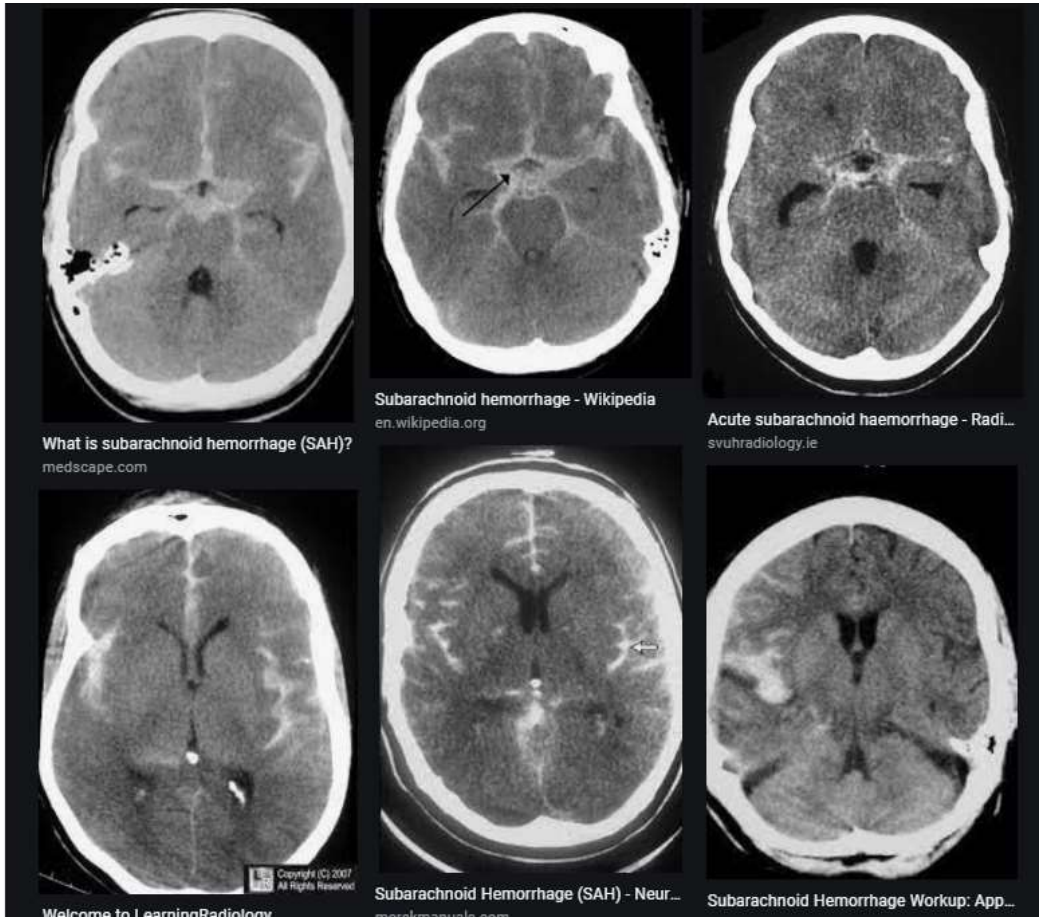
Known Cancer

Case

- 40-year-old female, know to have occasional migraines
- Woke up with a mild headache and went to the gym as normal
- As she lifted the weight, sudden exacerbation of headache
- Severe, over entire head, worse at the back
- Immediately fell to the floor clasping her head
- Staff at the gym called an ambulance
- She started vomiting and headache continued
- Ambulance brought her into A&E


What is subarachnoid hemorrhage (SAH)?
medscape.com
Subarachnoid hemorrhage - Wikipedia
en.wikipedia.org
Acute subarachnoid haemorrhage - Radi...
svuhradiology.ie
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Subarachnoid Hemorrhage (SAH) - Neur...
Subarachnoid Hemorrhage Workup: App...

Sudden headache, normal examination

	Pre-CT likelihood	Likelihood with normal CT
SAH	60%	2%
Aneurysmal (75%)		
Perimesencephalic (20%)		
Other (5%)		
Other Sinister	5%	8%
Venous thrombosis		
Arterial dissection		
CO poisoning		
Reversible vasoconstriction		

Linn *et al*., 1994; Van der Wee *et al*., 1995.

Sudden headache, normal examination

	Pre-CT likelihood	Likelihood with normal CT
Other Innocuous	35%	90%
Crash migraine		
Hypnic headache**		
Exploding head syndrome		
Benign exertional headache**		
Benign sex headache**		
Benign cough headache**		

Caveats:

1. CT reliable within twelve hours of symptom onset. Most sensitive within one hour
2. ECG all patients with suspected SAH
3. 1 in 50 patients with a normal CT: SAH diagnosed on LP
4. 4 in 50 patients with a normal CT: non-SAH, sinister cause for their headache
5. 1 in 50 people have small (<0.5cm) incidental aneurysms. Beware
6. Consider atypical meningitis presentation if clinical evidence of infection
7. If meningitis not suspected: wait 6-12 hours from symptom-onset for LP
8. LP of limited value if > 14 days have elapsed from symptom-onset

Reversible Cerebral Vasoconstriction Syndrome (RVCS)

Diagnostic Criteria

- Thunderclap headache with/without focal deficits OR seizures
- Monophasic course without sx persistence beyond one month
- Multifocal, multivessel segmental vasoconstriction
- Aneurysmal SAH has been excluded
- CSF Normal [WCC < 15, Protein < 1 g/l, normal CSF glucose ratio) Normalisation of vasoconstriction within twelve weeks of onset

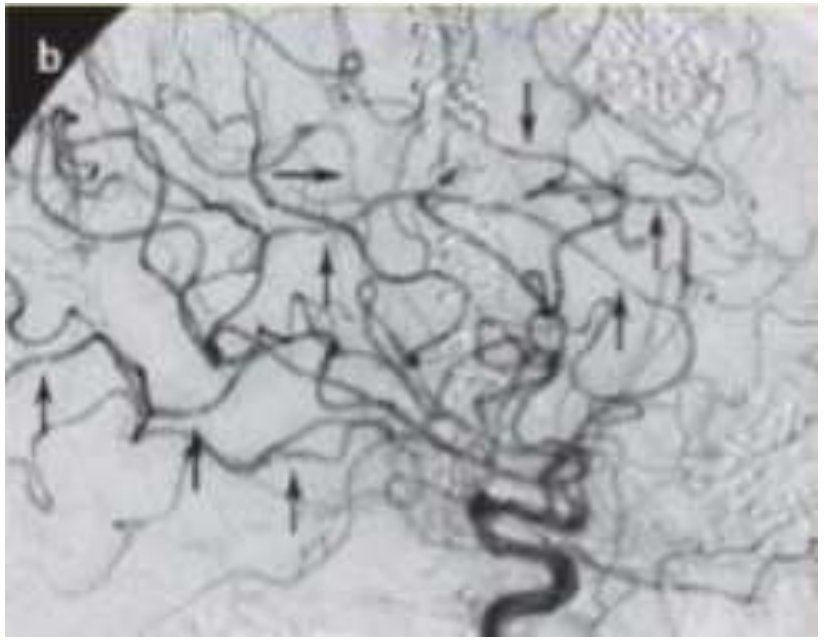
Other points

- F>M, mean age of onset: 45
- Major cx: SAH (20-25%), ischaemic or haemorrhagic stroke (30%)
- Drugs and pregnancy can provoke RVCS
- A subacute pattern of recurrent thunderclap HA is v suggestive of RVCS
- Non-vascular CT or MR imaging can be normal in up to 70% of cases

Conditions associated with RVCS (1)

- Pregnancy
- DOAs: Cocaine, ecstasy, methamphetamine, LSD, marijuana
- Prescription meds:

Nasal decongestants
Ergotamine
Modafinil/ methylphenidate
SSRIs, particularly Citalopram
Tacrolimus
Cyclophosphamide
Ivlg
EPO
Blood products



Conditions associated with RVCS (2)

- Neuroendocrine tumours

Phaeacromacytoma

Carcinoid

Hypercalcaemia

- Vascular:

Invasive arteriography

Post endartrectomy

Cervical artery dissection

- Ginseng & related supplements

Case

- 35F, 12-month history of migraines with visual aura (zig zags)
- Lasting a few minutes and varying in frequency from multiple times a day to every few weeks.
- OCP for one year and reports weight gain of around 1 stone in the last year
- Denies any change in vision, colour vision or visual field.
- GP started propranolol. This reduced the frequency and severity of her headaches.
- Went to optician for routine test, found to have bilateral disc swelling
- On examination: RVA 6/6 GL LVA 6/6 GL; Normal intraocular pressure; Ishihara colour vision 15/15 bilaterally

Idiopathic intracranial hypertension

- Raised intracranial pressure of unknown cause
- Typically young obese females
- New onset headache
- Papilloedema
- May or may not have visual disturbances
- May have symptoms of raised pressure e.g. double vision, tinnitus
- MUST HAVE MRI AND MRV to exclude a thrombus
- Then lumbar puncture diagnosis with an opening pressure >25 cmCSF and normal constituents
- Co-exists with migraine and can exacerbate migraine

Treatment

1. Long term: weight loss and keep it off seems to reverse the disease
2. Acetazolamide 250mg bd to help reduce CSF production temporarily
3. Threat to vision-consider VP shunt or optic nerve fenestration
4. Bariatric surgery
5. Chronic headache often develops and is managed as migraines

Cerebral Venous Sinus Thrombosis

- 1% of stroke; 85% make a full recovery if diagnosed early
- 51% of patients have acute onset headache

- Presentation is often subacute
- Headache, visual symptoms, seizures
- Headache, focal neurological deficits
- Headache of raised pressure with disc oedema
- Seizures, rapidly evolving coma

- Within one month of Covid vaccine, thrombocytopenic thrombocytosis. Raised d-dimer, low platelets useful screening for this condition specifically.

Primary headache syndromes

- 10 types
  - Migraine with/without aura
  - TACS (Cluster/SUNCT/Paroxysmal hemicrania)
  - Tension type headache
  - hemicrania continua
  - Thunderclap headache
  - Primary stabbing headache
  - Primary cough headache
  - Primary exertional headache
  - Hypnic headche
  - New persistent daily headache

MIGRAINE TRIGGERS

Physical exertion

Diet

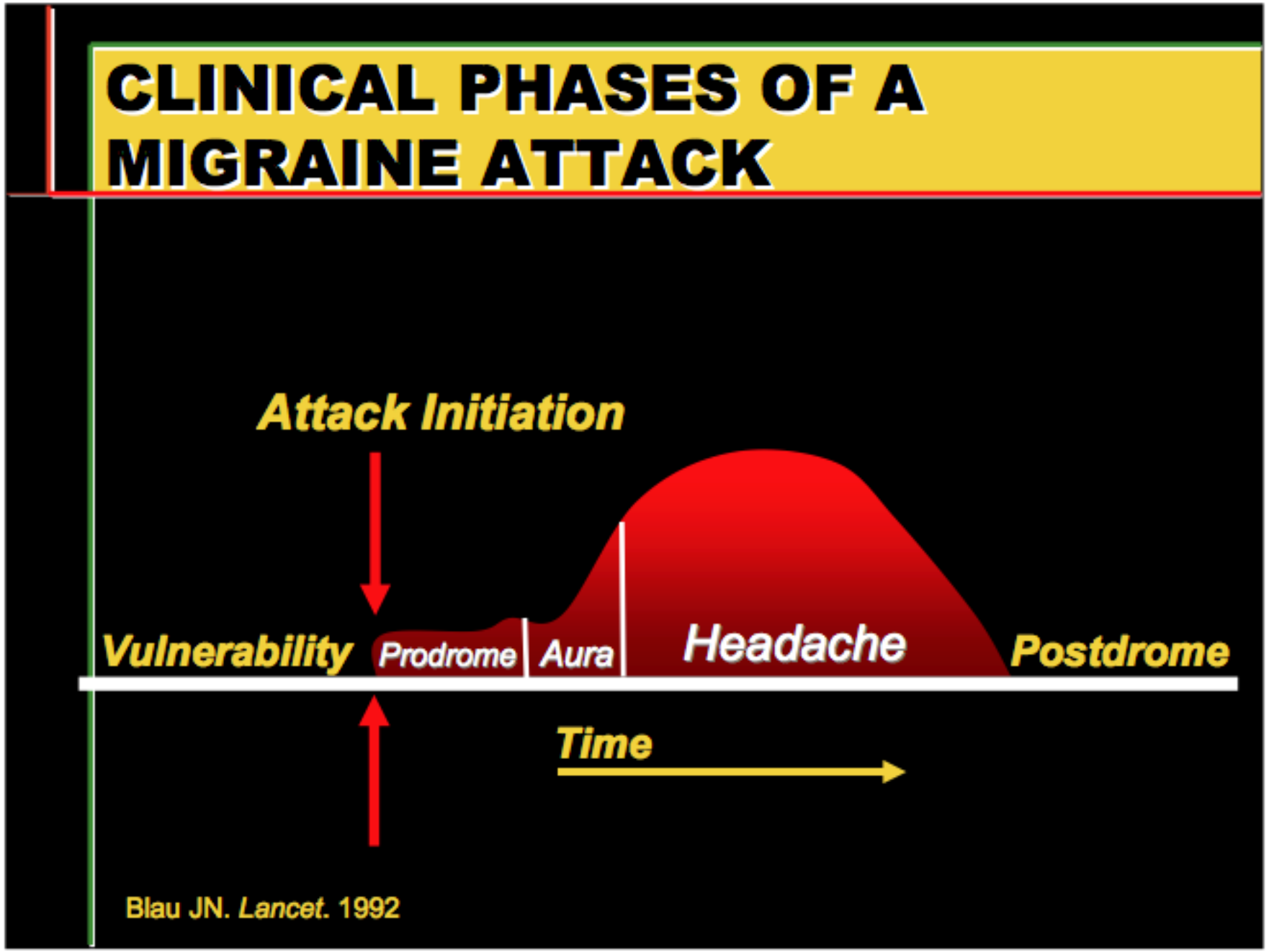
Hormonal changes

Head trauma

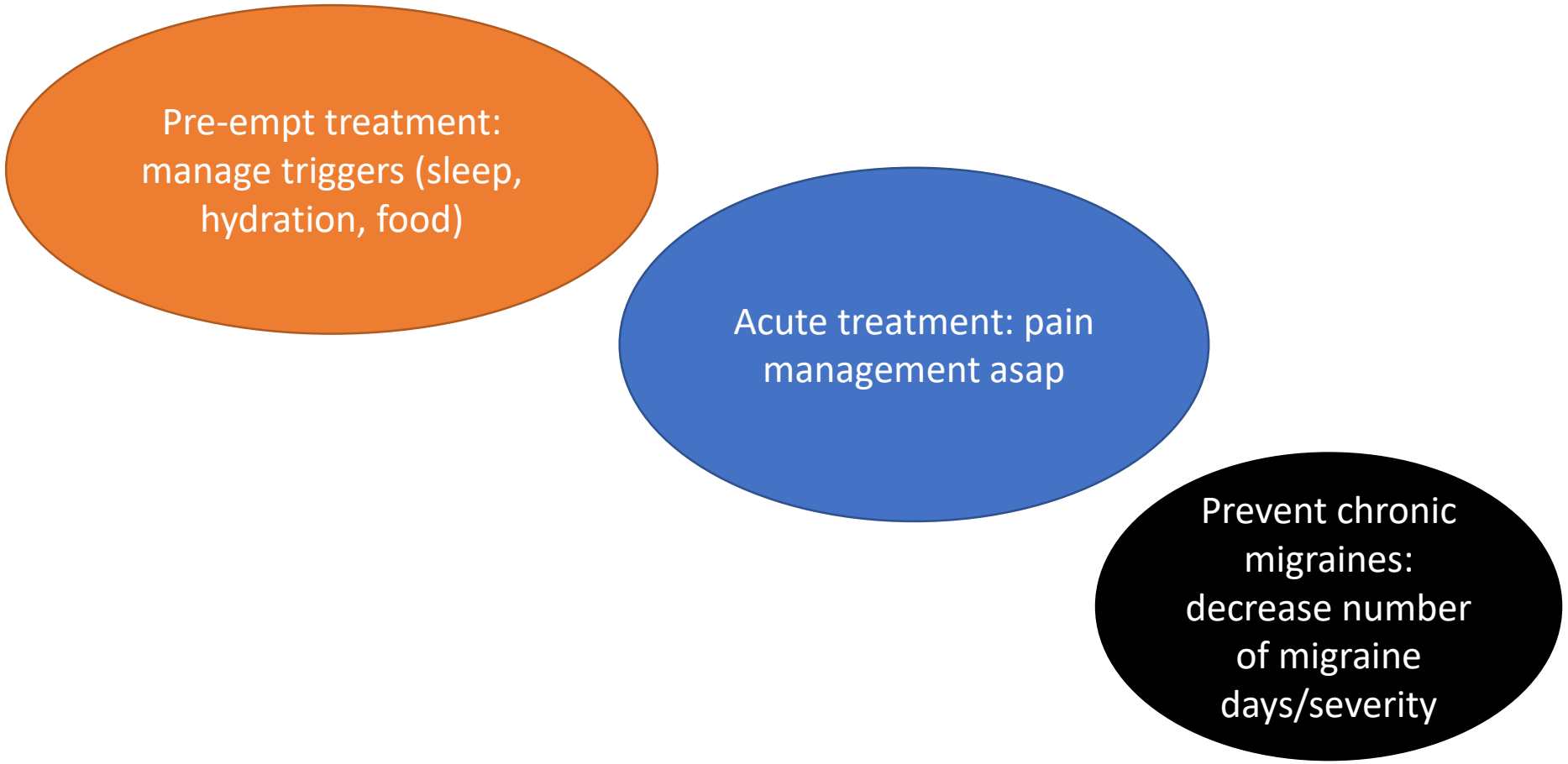
Stress and anxiety

Sleep deprivation or excess

Environmental factors


CLINICAL PHASES OF A MIGRAINE ATTACK
Attack Initiation
Vulnerability
Prodrome
Aura
Headache
Postdrome
Time
Blau JN. Lancet. 1992

Migraine management



Acute, abortive treatment strategies

- Best evidence:
- Triptans (sumatriptan 50mg oral, 6mg s/c; zolmitriptan 2.5mg oral etc)

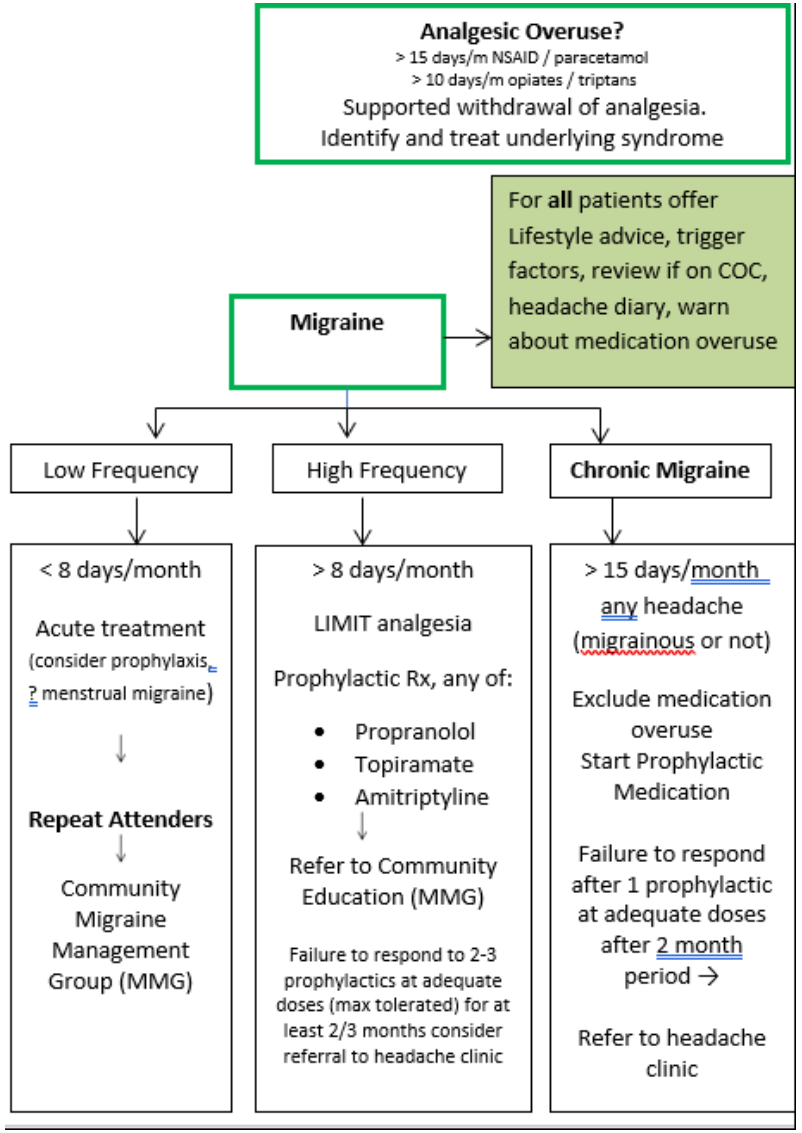
- Aspirin 900mg stat dose or ibuprofen 600-800mg stat dose
- Naproxen 500mg

- Prochlorperazine IV
- Opiates e.g. codeine 30-60mg stat dose (not for regular use)
- Sodium valproate intravenous in refractory cases (hardly used)
- Corticosteroid e.g. prednisolone 60mg as last resort

Principles of acute migraine Rx

- Headache-freedom within two hours
- Failure to return to normal within four hours represents Rx failure
- Barbiturates, opiates and steroids all work **but increase the risk of chronic migraine**
- If opiates or barbiturates are used, limit to a maximum of five days only

Principles of management



Cluster headaches

- Second most common primary headache syndrome
- Severe unilateral headache usually around the eye with autonomic features
  - Eye watering/red/swelling
  - Facial sweating/redness/swelling
  - Nasal dripping
  - Smaller pupil of affected eye

Lasts 15-30 minutes; 1-8 times a day

Usually at night after a couple of hours of sleeping

Always on the same side during that cluster

Patient is restless, unable to sit or sleep, agitated, feels like banging his head

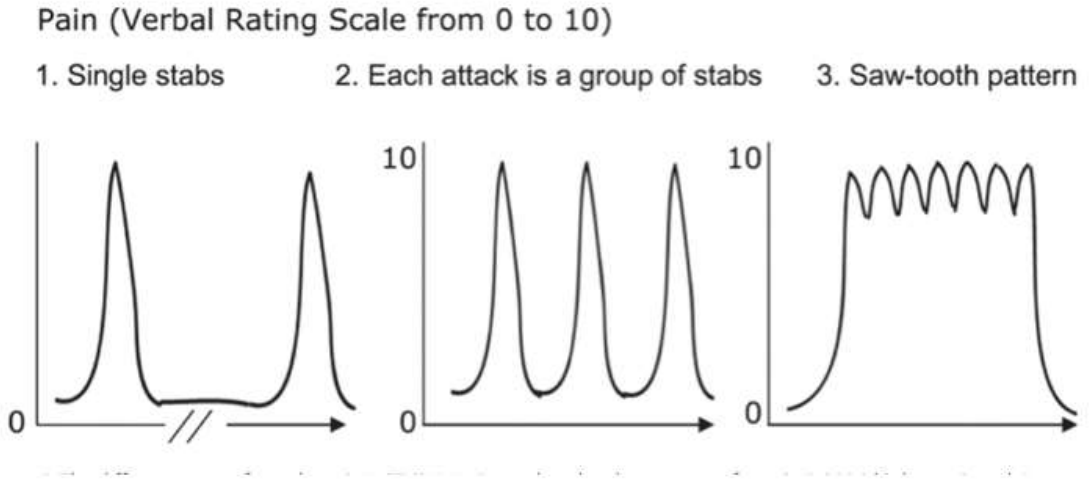
Treatment

- Known cluster: enact treatment plan. Inform Neurologist.
- If no treatment plan, start verapamil + refer to Neurology.
- If known O2 responder: HOOF form
- If usual strategies fail: will need an urgent GON block.
- Steroids only if delay in accessing services, and on specialist advice

- Suspected cluster: urgent neurology review.
- Remember glaucoma mimic in the elderly
- Send to ED if any doubt about mental health

SUNCT/SUNA (short lasting uniform neuralgic headache attacks)

- A rare headache disorder (cluster-like)
- Trigeminal Autonomic Cephalalgia
- Very short duration
- >100 attacks per day
- Multiple cutaneous stimuli can trigger it



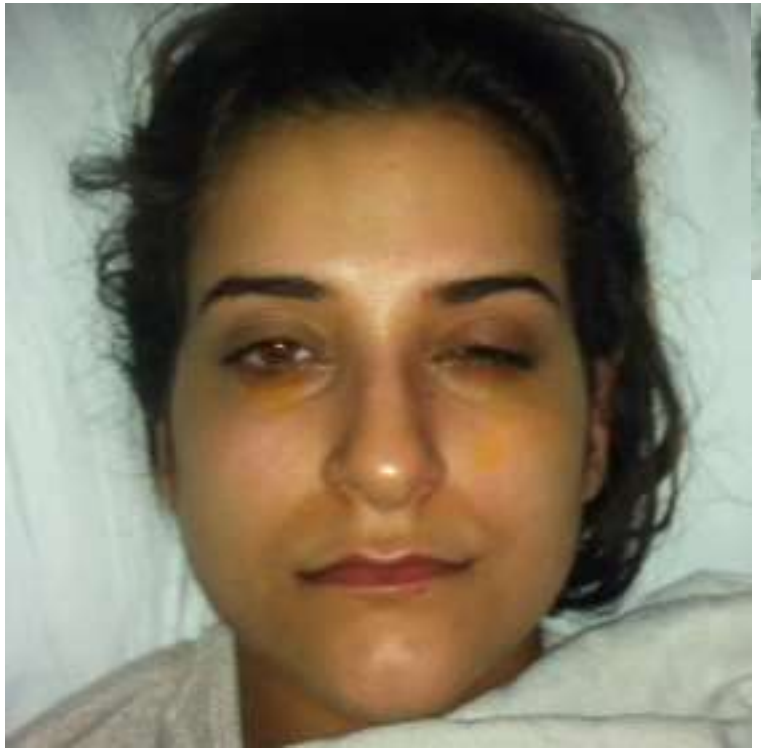
Diagnostic test for TAC

- Indomethacin trial
- 25mg bd, increasing every three days (50bd, 75bd, 100bd)

- Issue is preventatives once acute episodes are controlled

- Only on specialist advice/ after specialist review

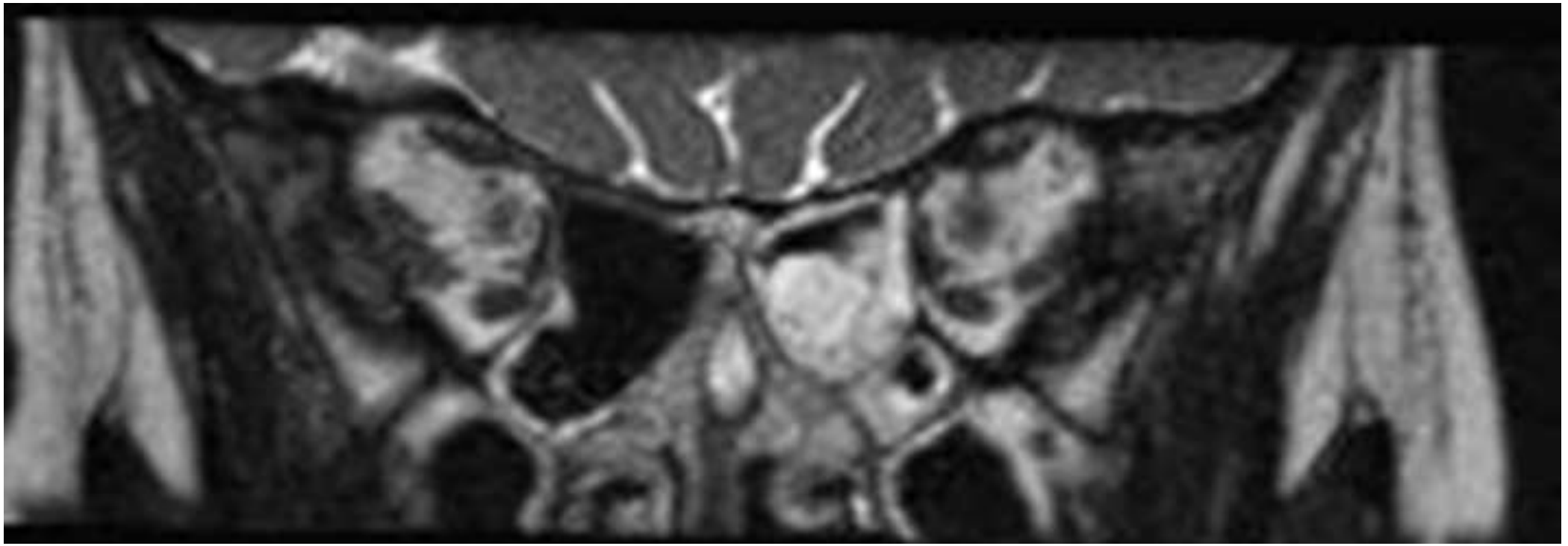
Referred for cluster



WCC: 11/ PMN: 9 CRP: 60

Trigeminal neuropathy (Va, Vb)
PEARL
FROEM
Fundi: NAD

MRI: sphenoidal sinusitis with Horner’s



Safety-netted

- 30-40M

Attends ED with headache

Symptom-onset during a bout of coughing

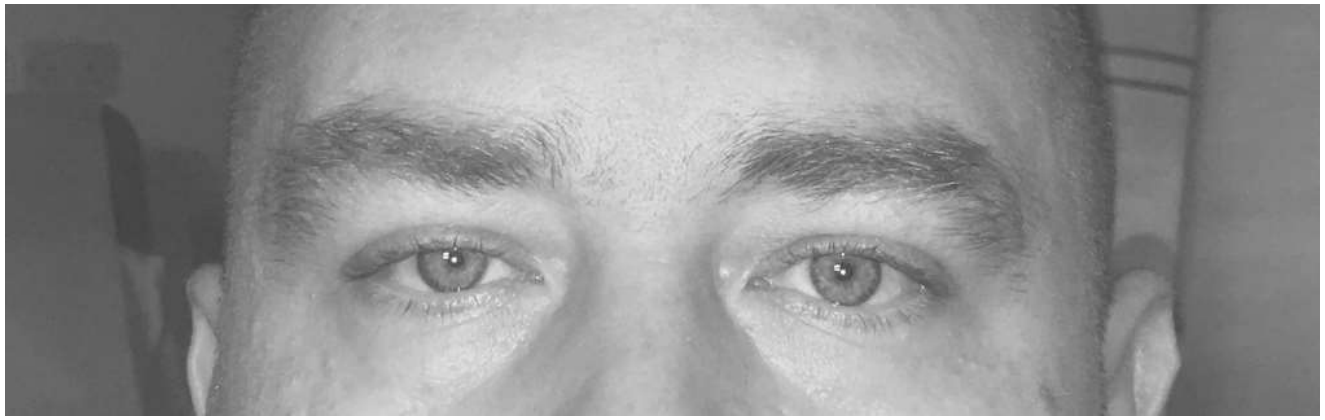
Maximum at onset, like a knife in the head

Burning scalp pain since

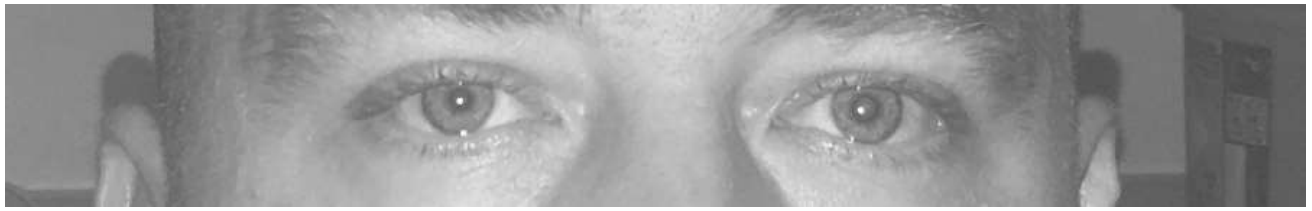
Pain settled with codydramol + naproxen

Safety-netted to Neuro hot clinic

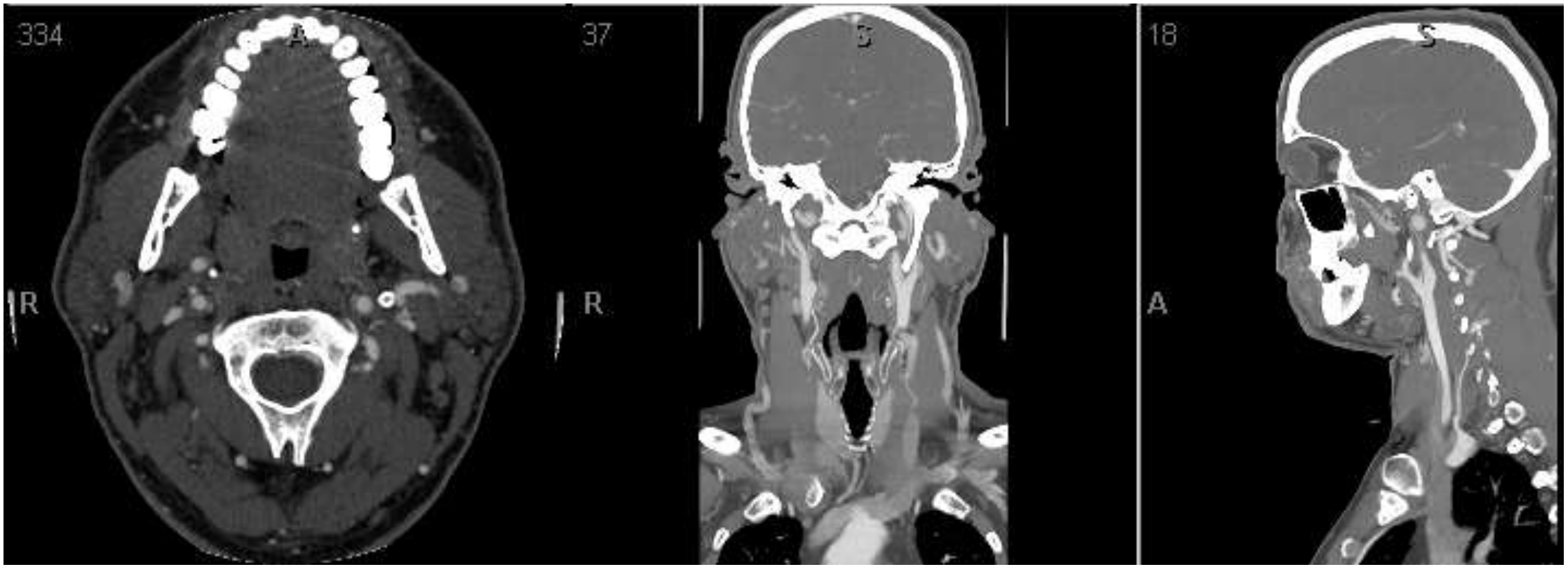
Dark room



Lit room



Right internal carotid dissection with Horner’s



Conclusions

- The vast majority of headache seen in ED and PHC are benign
- Onset, time-to-peak, precipitants are key to identifying patients requiring urgent review. History alone is sufficient to determine urgency of assessment.
- True thunderclap headaches, regardless of precipitant, if singleton require very urgent investigation
- Recurrent stereotyped action- provoked headache require urgent investigation and can be managed empirically until specialist reviewed