Headache –pitfalls and pearls

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Declarations

- No conflicts of interest
- Blind spot bias
- Not a criticism of intelligence!

Sir William Osler

"The phenomenal strides in every branch of scientific medicine have tended to overload it with detail"

Outline of talk

- Clinical vignettes
- Differential diagnosis
- Investigative strategies
- Pitfalls and pearls

Demographics

- 90% have headache in their lifetime
- 75% have headache in any year
- 3% have headache on most days
- 43/100 000/year – Thunderclap headache
- Cost to NHS £1 billion/year

Headache Services in England - A Report of the All-Party Parliamentary Group on Primary Headache Disorders 2014.

A common problem

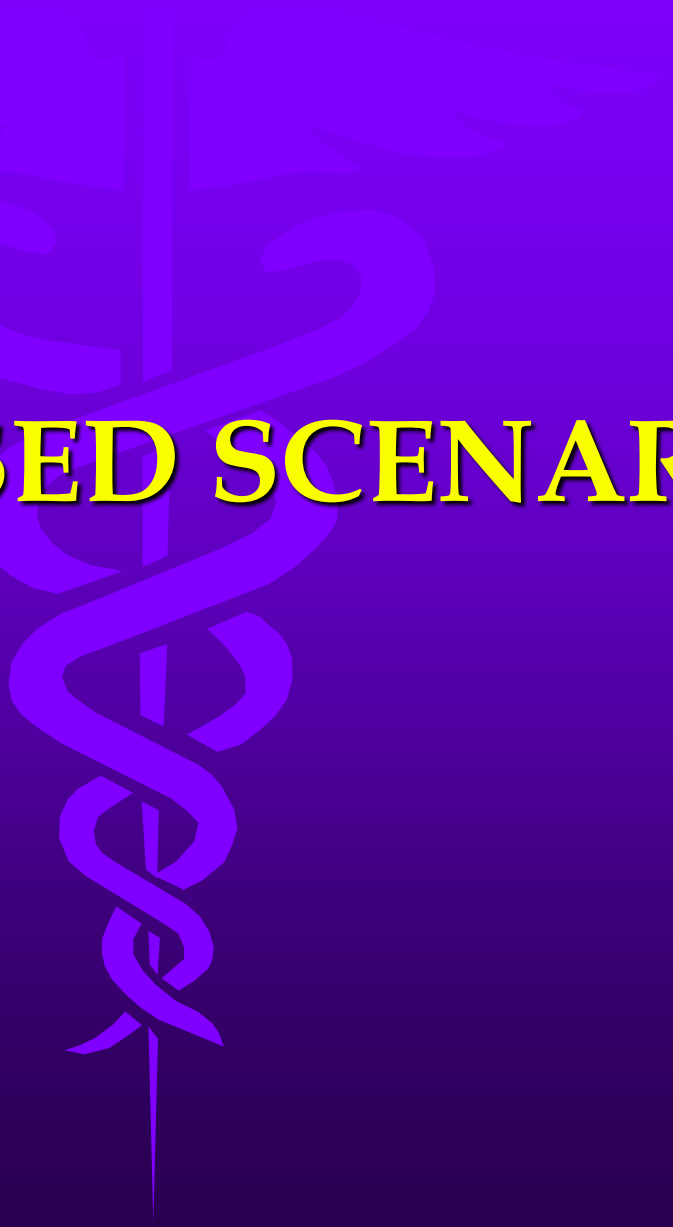
- A common problem in both primary and secondary care:
  - Common reason for consultation in GP
  - 1 in 5 of all acute medical admissions
  - 25% of all neurology referrals
- Frequently mis-diagnosed & under-treated

Latinovic R et al, JNNP 2006; Lipton RB et al, Neurology 1993; Schwartz BS et al, JAMA 1998; Scher AI et al, Headache 1998.

Clues…..

- A good history and
- A focused neurological examination ……

CASE BASED SCENARIOS



Known migraine…..

- 32 year old female, shop assistant
- Made redundant 6 months back
- Life long history of episodic migraines
- 1-2/month
- Worsening daily headaches over 6 months
- Probably similar to migraine

Usual migraine

- Throbbing
- Nausea
- Blurring of vision
- Need to lie in a quiet, dark room

Examination

- “Cranial – grossly intact
- No focal neurology
- Plantar Normal”

What do you do next?

- Normal CT brain
- Home on co-codamol and amitriptyline

Readmitted 1 week later

- Worsening throbbing headaches
- Nausea +
- Stressed +++; not sleeping well
- Blurring of vision
- O/E – no focal neurology

What would you do next?

- MRI brain – Normal
- Plan: increase amitriptyline and add ibuprofen
- Marked improvement
- Discharge
- Neurology follow up

Letter to the neurology

Dear Neurology,

Please see this patient with long standing history of migraines, now worsening.

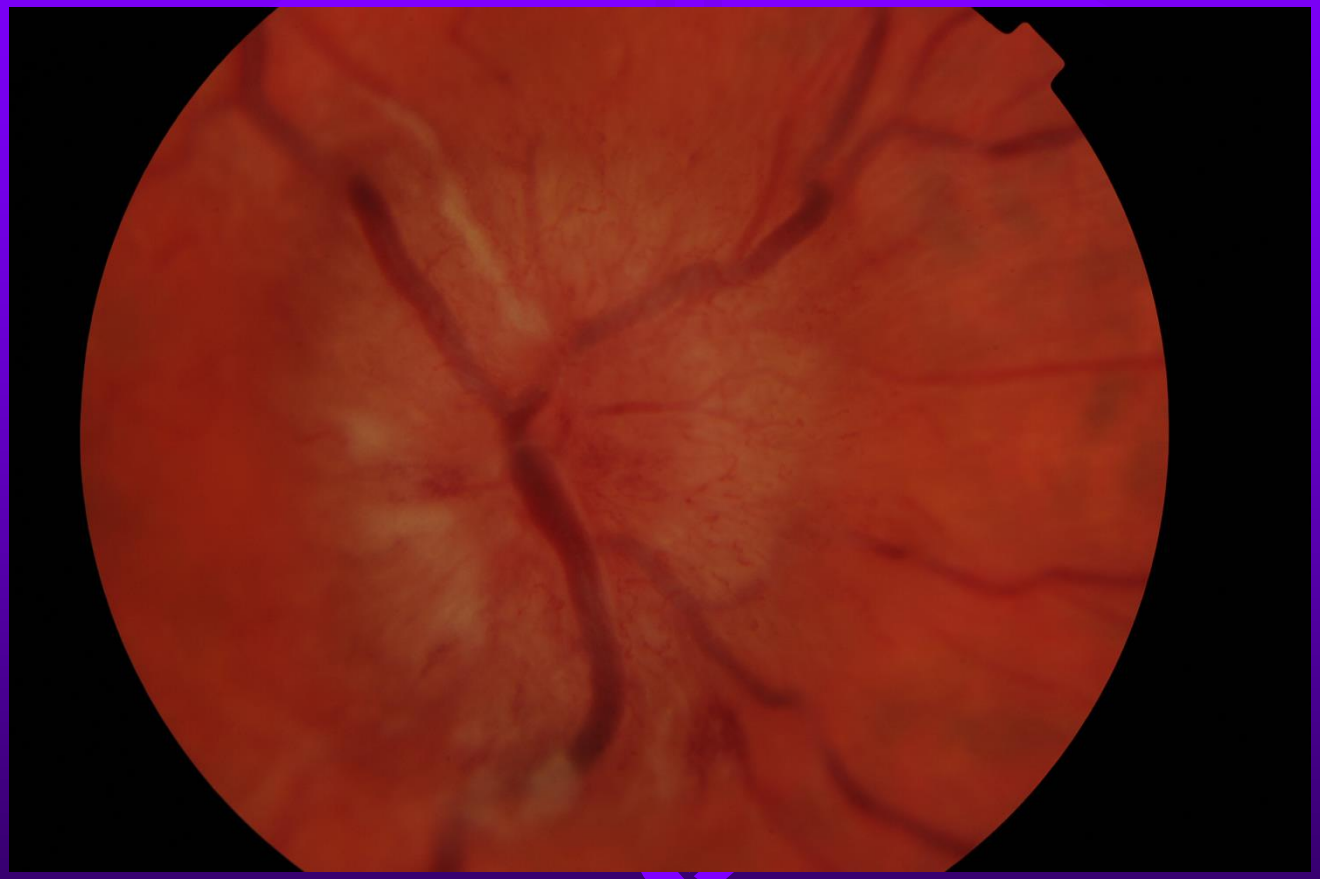
On examination NAD

MRI Normal

Lumbar Puncture Normal.

Many thanks.

Neurology OP



Reduced visual acuity!!!!

Clinical features

- Headaches
- Pulsatile Tinnitus
- Visual Obscurations
- Cranial Nerve Involvement
- Papilloedema

Causes

- “Idiopathic” – obesity
- High-dose vitamin A derivates
- Tetracycline
- Hormonal contraceptives
- Nitrofurantoin

Diagnosis

- Signs & symptoms of increased ICP – CSF pressure >25 cmH2O
- No localizing signs with the exception of abducens palsy
- Normal CSF composition
- Normal to small ventricles on imaging with no intracranial mass

Pitfall – Sutton's slip

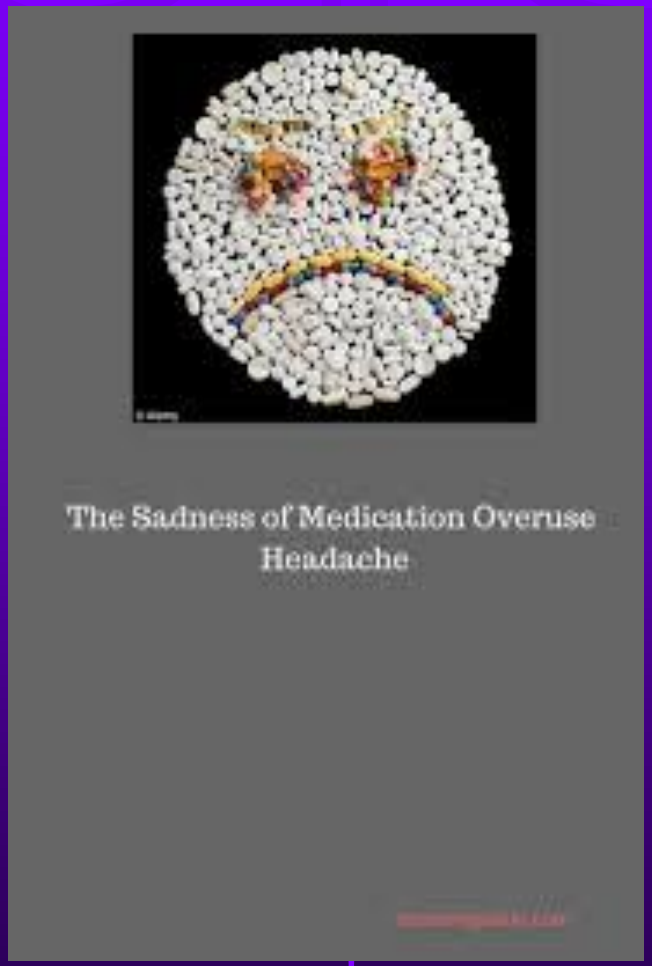
Going for the obvious

'Because that's where the money is!'

Pitfall : Examination

Pitfall : Investigation

Pitfall: Commission bias



Pitfall : Commission bias
Medication overuse

Results from overuse of analgesics

Simple analgesics on 15 or more days a month

Codeine-containing analgesics, ergot or triptans on 10 or more days a month > 3 months

Management

- Weight loss – up to 15%
- Monitor vision
- Therapeutic lumbar puncture
- Acetazolamide, Topiramate
- Avoid medication overuse

OPEN ACCESS

REVIEW

Idiopathic intracranial hypertension: consensus guidelines on management

Susan P Mollan,[1,2] Brendan Davies,[3] Nick C Silver,[4] Simon Shaw,[5] Conor L Mallucci,[6,7] Benjamin R Wakerley,[8,9] Anita Krishnan,[4] Swarupsinh V Chavda,[10] Satheesh Ramalingam,[10] Julie Edwards,[11,12] Krystal Hemmings,[13] Michelle Williamson,[13] Michael A Burdon,[2] Ghaniah Hassan-Smith,[1,12] Kathleen Digre,[14] Grant T Liu,[15] Rigmor Højland Jensen,[16] Alexandra J Sinclair[1,2,12,17]

Mollan SP, et al. J Neurol Neurosurg Psychiatry 2018;89:1088–1100. doi:10.1136/jnnp-2017-317440

Audit of 1114 inpatient neurology referrals

- 22.9 % for headaches
- 62% Primary headache
  - 82.3% Migraine
- 44.3 % pre-existing primary headache disorder
- > 90 % on suboptimal treatment

Recurrent Stroke

A 53 year old male with history of diabetes presents with pins and needles and weakness of the left arm and leg. He also had left sided visual loss and speech disturbances. He noticed headache within minutes of symptom onset. He has presented within 3 hours of symptom onset. What would you do?

Ongoing episodes

- Urgent referral
- The story ……..

Migraine Premonitory phase

- 60% of patients
- Upto 48 hours before an attack
  - Psychological : Depression, euphoria, restlessness, fatigue, irritability
  - Neurological : phobias
  - Others: disorder of taste, anorexia, food cravings

What is an aura

- Fully reversible visual symptoms including positive features (eg, flickering lights, spots or lines) and/or negative features (ie, loss of vision)

- Fully reversible sensory symptoms including positive features (ie, pins and needles) and/or negative features (ie, numbness)

Migraine with Aura

- Fully reversible dysphasic speech disturbance
- At least one aura symptom develops gradually over ≥5 minutes and/or different aura symptoms occur in succession over ≥5 minutes
- Each symptom lasts ≥5 and ≤60 minutes

Migraine or TIA

Migraine	TIA
• Gradual onset "spreading"	• Acute/abrupt onset
• Positive then negative symptoms	• Negative symptoms "loss of function"
• Long duration 15 to 60 mins in 75%	• Shorter duration <10mins

Headache

- U/L in 60%
- Scalp tenderness
- Stabbing headaches in 40% of patients

Associated symptoms

- Nausea: 90%
- Vomiting: 30%
- Anorexia, food cravings
- Diarrhoea : 16%
- Enhanced sensory perception

Acute attack treatment: NICE

- Combination treatment for acute migraine:
  - Oral triptan and an NSAID
  - Oral triptan and paracetamol
- If a patient prefers, consider monotherapy with an oral triptan, NSAID, aspirin or paracetamol
- Consider an anti-emetic, even in the absence of nausea and vomiting
- Do not offer opioids for the acute treatment of migraine

Simple analgesic/prokinetic

- Aspirin, paracetamol, Naproxen, ibuprofen
- Nausea and vomitting
  - Domperidone
  - Prochlorperazine

Triptans

- 30% fail ⟹ 70% chance another will work
- Synergistic effect with Naproxen
- S/C sumatriptan has highest response rate

Triptans

- Recurrence in 30% patients
- Use second dose
- Add Naproxen
- Long acting triptans : Frovitriptan, Nara

Preventatives

- Antiepileptic drugs
- Antidepressants
- Beta-adrenergic blockers
- Calcium channel antagonists
- Neurotoxins (eg, onabotulinumtoxinA)
- CGRP antagonists

Migraine Triggers

Trigger factor
Relaxation after stress, especially at weekends or on holiday
Other change in habit: missing meals; missing sleep; lying in late; long distance travel
Bright lights and loud noise (both perhaps stress-inducing)
Dietary: certain alcoholic drinks; some cheeses
Strenuous unaccustomed exercise
Menstruation

BASH
BRITISH ASSOCIATION FOR THE STUDY OF HEADACHE

Migraine versus tension-type

	Migraine	Tension-type
Unilateral	+	-
Pulsatile	+	-
Intensity	Moderate to severe	Mild to moderate
Increased by physical activity	+	-
Nausea	+	-
Photophobia /phonophobia	+	Not both
Duration	4–72 hrs	30 min – 7 days

Olesen et al. Cephalalgia 2013;33:629–808.

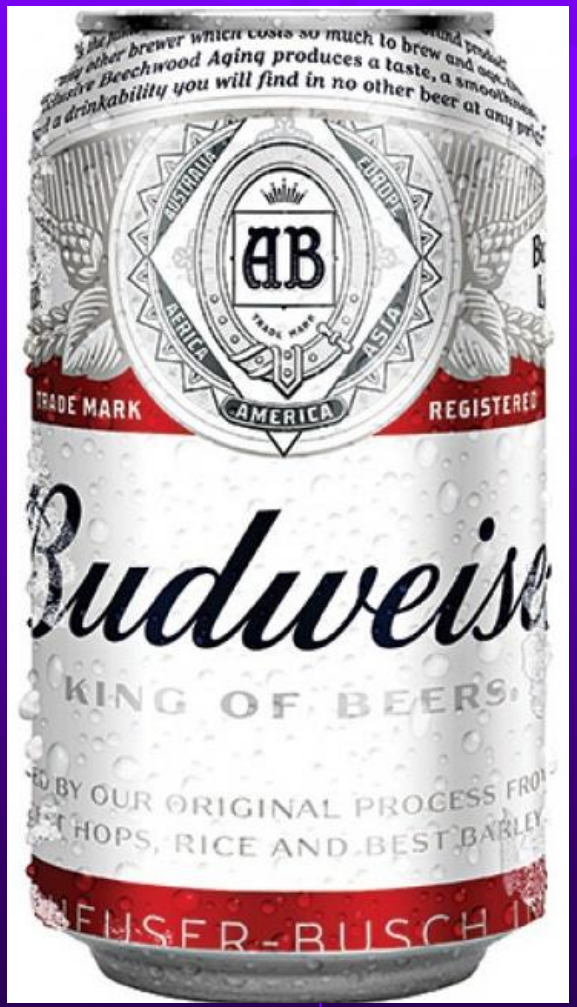
REVIEW

Migraine: mimics, borderlands and chameleons

Heather Angus-Leppan

Angus-Leppan H. Pract Neurol 2013;13:308–318.

Friday night and the king of beers



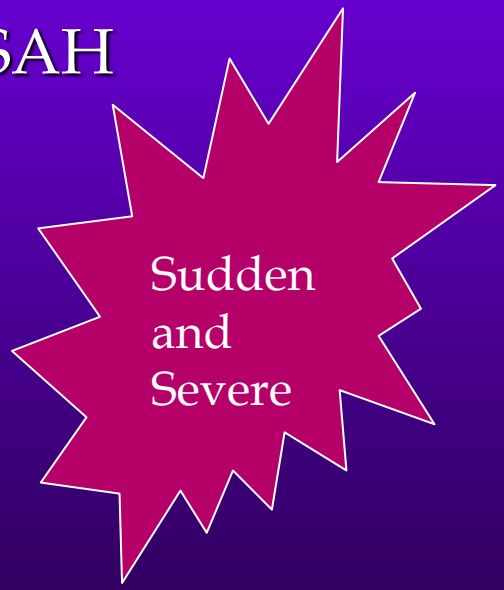
An unusual encounter

47 year old gentleman with history of alcohol excess presents with sudden onset of severe headache. He had taken 4 pints of budwiser before retiring to bed. He woke up at 2 AM with severe headaches and family attributed to budwiser. By 3 AM, his headaches were unbearable and was admitted to hospital . Given co-codamol. By PTWR headaches much better.

Diagnosis

Thunderclap headache

- SAH: most common cause of TCH
- Location of headache not specific
- 11–25% of patients with TCH may have SAH



Schwedt TJ et al. Thunderclap headache. Lancet Neurol. 2006;5:621-31

When would you perform CT brain

- ASAP
- Within 6 hours of arrival
- Within 12 hours of arrival
- The next day i.e. Within 24 hours
- It doesn't matter

If he has had a SAH, how likely is CT to be normal?

0%

1-5%

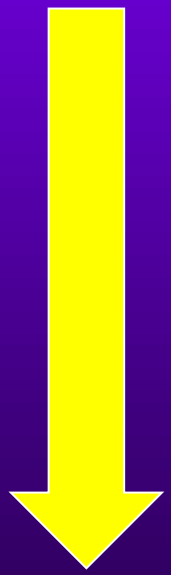
6-10%

10-20%

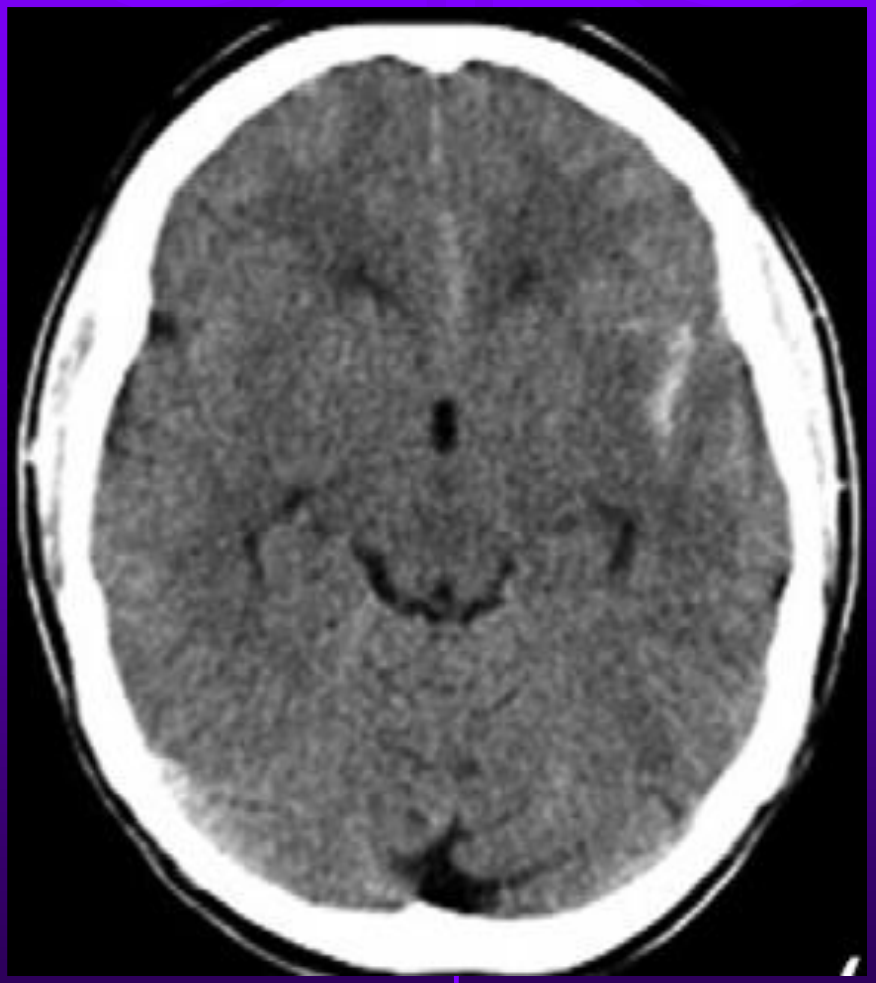
>20%

Can the CT wait?

- Sensitivity of CT to detect radiological evidence of SAH decreases over time
  - Within 12 hours : 98%
  - After 1 day : 86%
  - After 2 days 76%
  - By 5 days 58%
  - At 7 days 50%
  - After 2 weeks 30%
  - After 3 weeks: Almost nil



van Gijn J et al. The time course of aneurysmal haemorrhage on computed tomograms. Neuroradiology. 1982;23:153-6.



SAH

Negative CT → LP

12 hours – 2 weeks : 100% positive

Week 3 : 70%

4 weeks : 40%

Investigations……..

- CT Normal
- Lumbar puncture Normal
- Diagnosis ?

Diagnosis

- Alcohol related headaches
- Discharged on Co-codamol

12 hours later…….

- Readmitted with worsening headaches
- MRI brain normal

On examination

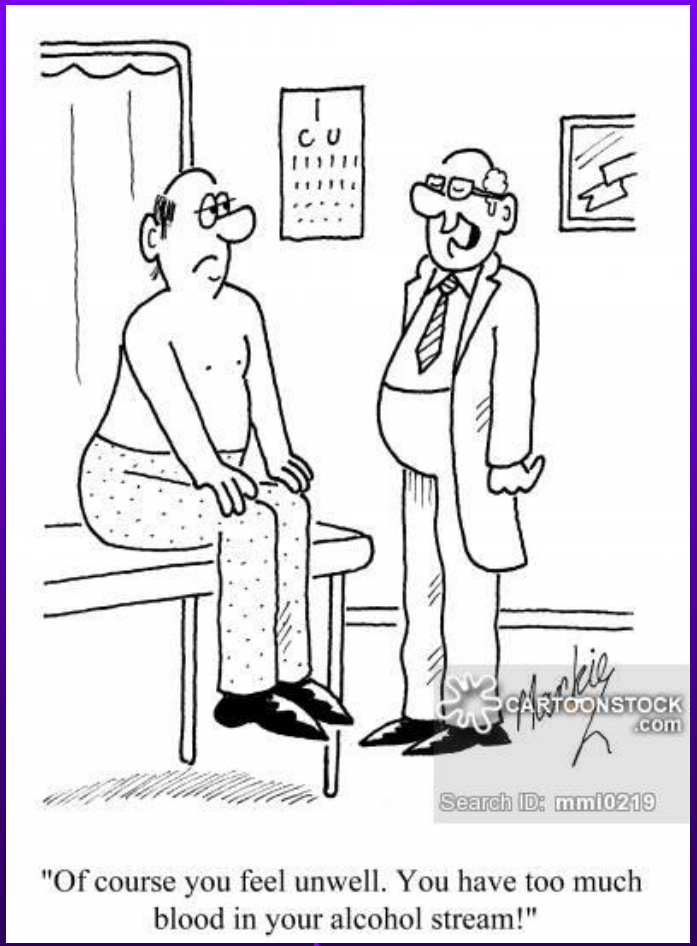
Diagnosis

- MRA neck vessels
- Left carotid artery dissection

Arterial dissection

- 20% present with TCH
- May be diffuse and bilateral
- Cervical : jaw, face, ears, periorbital, and frontal or temporal region
- Vertebral: occipital-nuchal region

Pitfall –attribution error



"Of course you feel unwell. You have too much blood in your alcohol stream!"

Pitfall : Confirmation bias

"The pain got better with ……

Known migraine…..

- 74 year old gentleman
- Life long history of episodic migraines
- 1-2/month
- Now sudden onset of severe headache
- Family history of SAH
- Normal examination

What do you do next?

- Normal CT brain
- Normal Lumbar Puncture
- Normal MRA
- Likely migraine
- Home on paracetamol and amitriptyline

Referred to On call by GP

- Headaches ongoing
- No recent weight loss/anorexia

What would you do now?

- ESR 84
- CRP 76

GCA

- Frontal, temporal, occipital
- Systemic symptoms in 50%
- Visual symptoms
- Jaw claudication +/- Tongue**
- Temporal artery tenderness
- ESR, CRP, WBC

Pitfall – The story

Use of heuristics

Pearl

- High index of suspicion in all adults with new onset headache
- Aged > 50 years
- ESR > 50 mm per hr

Devenney *et al. The Journal of Headache and Pain* 2014, **15**:49
http://www.thejournalofheadacheandpain.com/content/15/1/49

The Journal of Headache and Pain
a SpringerOpen Journal

RESEARCH ARTICLE **Open Access**

A systematic review of causes of sudden and severe headache (Thunderclap Headache): should lists be evidence based?

Conclusions: There are over 100 different published causes of sudden and severe headache, other than aneurysmal subarachnoid haemorrhage. We have now made a definitive list of causes for future reference which

TCH – cause usually detected on CT

- SAH
- Other intracranial haemorrhage e.g ICH, SDH
- Tumour e.g. colloid cyst
- Hydrocephalus

TCH – CT + LP

- SAH
- Low pressure headache
- Meningitis
- Valuable clues e.g. Venous sinus thrombosis

TCH – CT and LP may be normal

- Cervical artery Dissection
- Symptomatic aneurysm
- Venous sinus thrombosis
- Reversible cerebral vasoconstriction syndrome
- Posterior reversible encephalopathy syndrome
- Pituitary apoplexy
- Acute hypertensive crisis
- Pituitary apoplexy
- Temporal arteritis

Selection bias

CLINICAL REVIEW

bmj.com ▶ Visit BMJ Group's Neurology portal bmj.com/specialties/neurology

Thunderclap headache

Anne Ducros,[1] Marie-Germaine Bousser[2]

BMJ 2012;345:e8557

LP – A competency requirement

Procedural Competencies for CMT

As a minimum, the StR must be able to outline the indications for these procedures, recognise the importance of valid consent; aseptic technique; safe use of analgesia and local anaesthetics; minimisation of patient discomfort and when to request help. It is good medical practice to obtain training in procedural skills in a clinical skills lab before performing these procedures clinically.

The procedural competencies for the CMT framework are divided into three sections:

Essential CMT procedures (part A, clinical independence essential)
CMT StRs must be able to undertake the following procedures before completion of CMT:

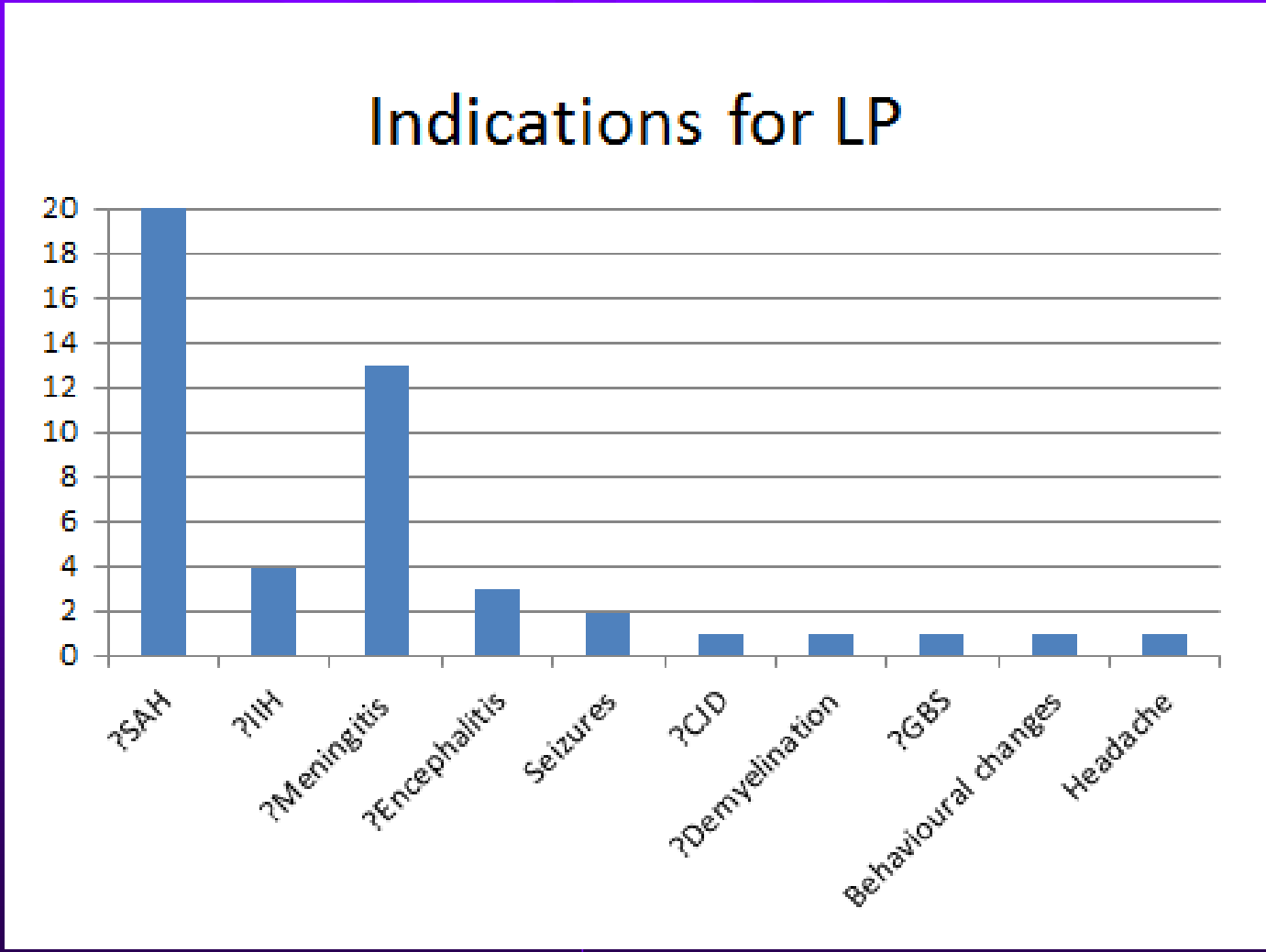
- advanced cardiopulmonary resuscitation (including external pacing)
- ascitic tap
- lumbar puncture
- nasogastric tube placement and checking
- Pleural aspiration or insertion intercostal drain for pneumothorax

CSF opening pressure

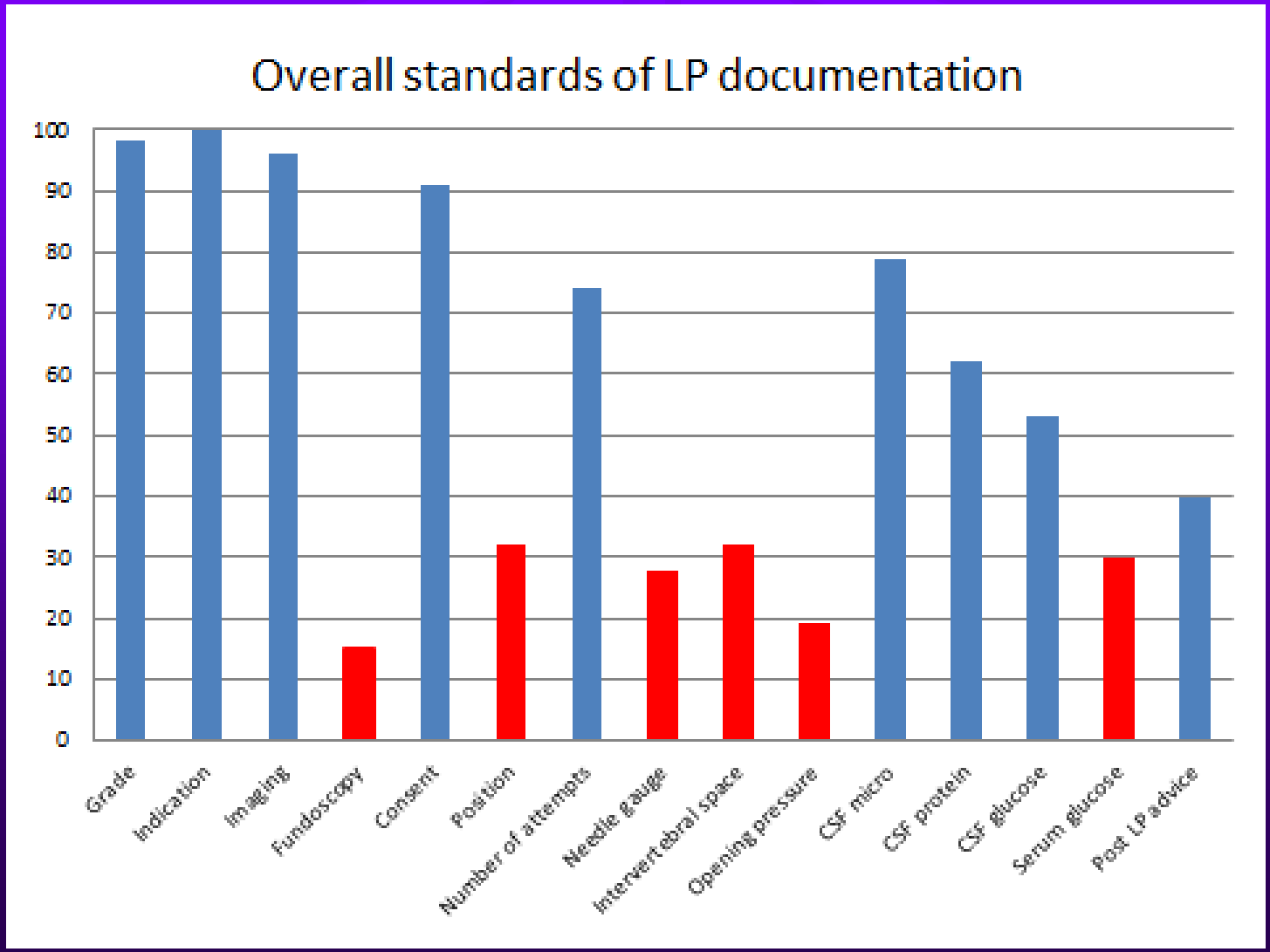
- Raised
  - IIH
  - VST
  - Meningitis
  - SAH
- Reduced
  - SIH

CSF opening pressure is a must!

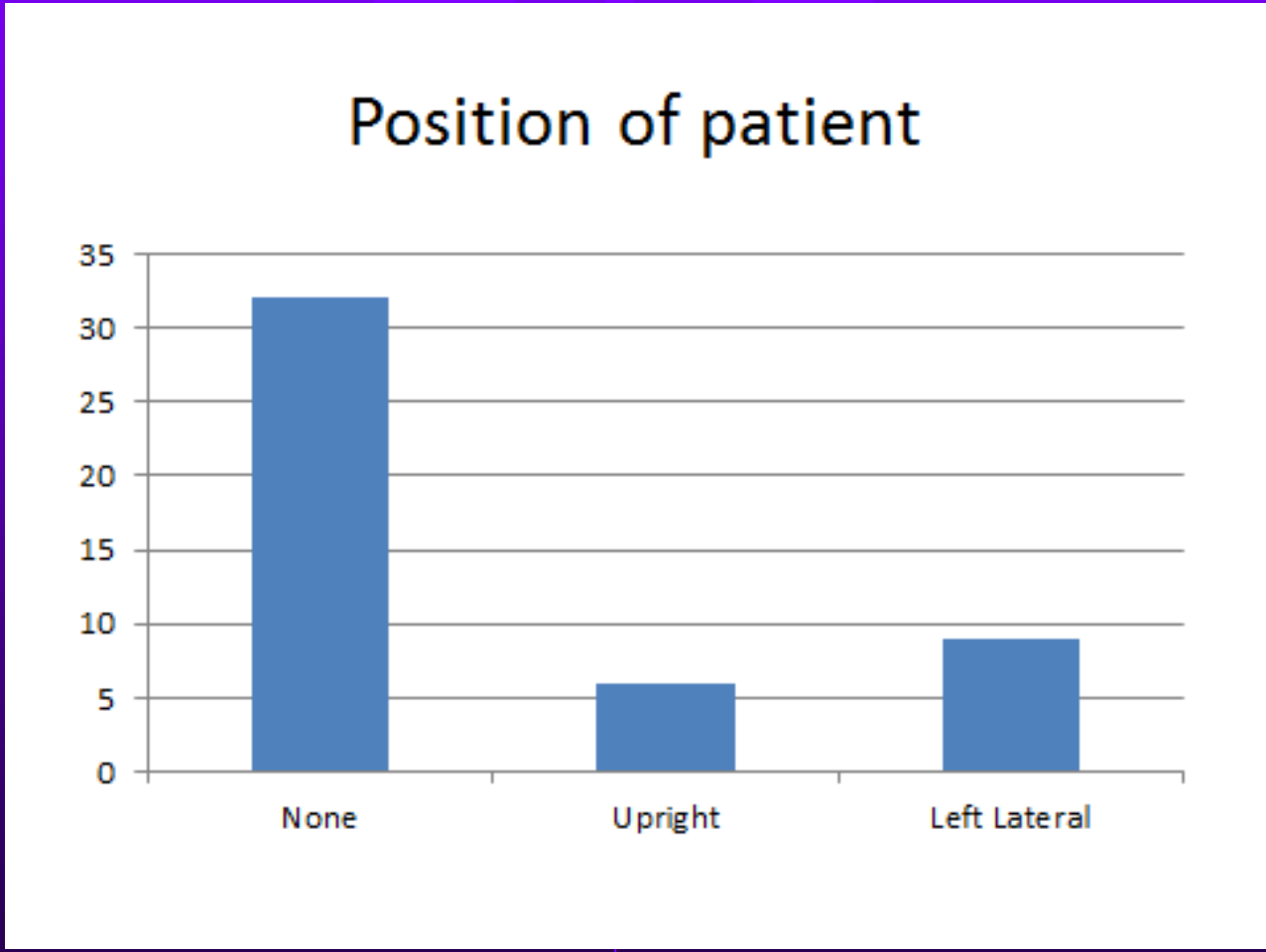
Audit in one of local hospitals (n=47)



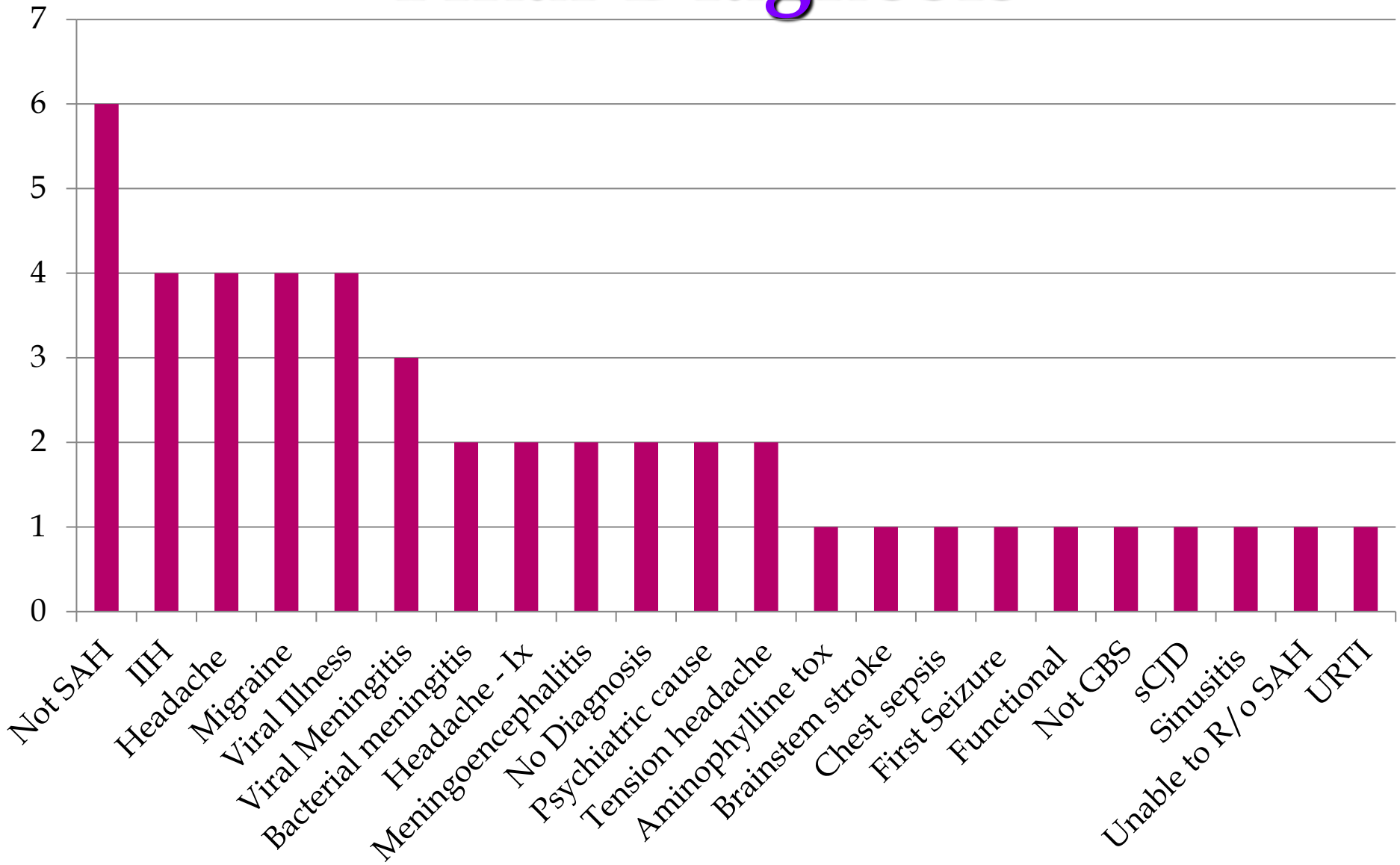
Results


Overall standards of LP documentation
100
90
80
70
60
50
40
30
20
10
0
Grade
Indication
Imaging
Fundoscopy
Consent
Position
Number of attempts
Needle gauge
Intervertebral space
Opening pressure
CSF micro
CSF protein
CSF glucose
Serum glucose
Post LP advice

Position of patient



Final Diagnosis



Pearls ……..

Thunderclap headache

- **11 – 25 % : SAH.**
- **10-25 % have other serious secondary causes.**

Take Home

SAH is not the only cause of thunderclap headache.

Landtblom AM et al. Sudden onset headache: a prospective study of features, incidence and causes. Cephalalgia 2002;22:354-60.
Linn FH et al. Prospective study of sentinel headache in aneurysmal subarachnoid haemorrhage. Lancet 1994;344:590-3.

Pearls - preceding events…

- Fever: Infectious disorders
- Trauma : Arterial dissection, intracranial hypotension
- Vasoactive substance use : RCVS
- Dural puncture: Intracranial hypotension
- Postpartum: RCVS, VST, eclampsia

Pearls: Other clues…..

- Neck stiffness: SAH; Meningitis
- Horner's sign or pulsatile tinnitus : ICA Dissection
- Unilateral IIIrd nerve palsy : PCOM aneurysm.
- Nystagmus or ataxia : Posterior fossa
- Patients avoid lying flat: SAH, VST, IIH
- Patients avoid standing up: SIH
- Papilloedema: IIH, VST
- Hypertension: SAH, eclampsia, PRES, RCVS

Worrying features

- First, worst, thunderclap
- Patient >50 years
- Pregnant/post-partum
- Known cancer, immunocompromised
- Worse stooping, exercise, Valsalva
- Early morning Headaches
- Focal neurology, Meningism
- Impaired consciousness, Fever, Papillodema

Motherhood statements

- *Chronic migraineurs get badness too*
- *Approach headache like chest pain - exclude badness.*
- *Have a differential diagnostic list of badness and "run the list" with every headache.*

Thank you……

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