Emergency - Quality, Education and Safety Teleconference

E-QuEST

13th June 2018

Dr Nicholas Lelos | Advanced Trainee | Emergency Care Institute

Thanks for joining

House rules

Confidentiality

Respect

AGENDA

- Case reviews
- Underlying causes
- Clinical context
- NSW Health guidance

Participation encouraged throughout

(But please turn off camera & mute mic when not talking)

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Case 1 – Initial presentation

- 35 yr old female, rural facility Monday 19:30
- R hand numbness and L sided headache

- Triaging: RN → slow speech, odd responses to questions: documented as catatonia

- X3 vomits in triage

- Triage Cat 3

Case 1 - continued

Nurse contacted the Visiting locum GP to attend ED - ?MH patient

Doctor remarked that husband answered questions
Patient did not look sick

Pupils PERLA 3, GCS 15

Answered questions appropriately

Weakness in limbs

THOUGHTS ON THE CASE?

Confidentiality

Respect

Case 1 - continued

Plan:

iv cannula – BIx sent to neighbouring town
Iv fluids – 100 ml per hour
Antiemetic

Needs CT brain and urinalysis

Case 1 - continued

22:30 Documentation – pt asleep

01:30 vital signs between flags GCS 15/15

Noted: intermittent lack of coordinated control, unable to maintain a standing position → collapsed on bed during assessment

No urine since presentation – able to lift pelvis but no urine
→ ?neuro ?MH

07:00 documented in progress note that pt mentions a FHx of aneurysms – father died from them

Case 1 - continued

09:40 shower but no breakfast, obeying commands only when asked repeatedly

Headache 10/10 – documented doctor aware. Relieved by analgesia

14:00 – patient asleep all shift, no lunch. Transport to base hospital 30 mins away

15:15 – arrived: patient appeared unwell

Triage Cat 2 – moved to resuscitation

Case 1 - continued

JMO review: - 3 days of reduced GCS
Collateral FHx from husband: brothers and grandfather with a history of brain aneurysms and mother had a stroke

Letter from neurologist about previous headaches – Hx of depression and anxiety, but nothing suggested raised ICP or aneurysms at CT then

Pt of warfarin for DVT and OTC meds

Meanwhile GCS fluctuating between 10 and 13 (grip on L but not R)

Pupils 2 PERLA

THOUGHTS?

Case 1 - continued

CT: probable acute L parietal/occipital infarct with supratentorial edema, no herniation → ?thrombosis

Stroke bed and MRI + other tests

Med reg to neuro reg in tertiary about transfer by phone – called neurology consultant and relayed conversation

Symptoms 5 days – no need for transfer, established stroke: “usual stroke work up and thrombophilia screen”

Case 1 - continued

Patient deteriorated in ward, fluctuation GCS and pain 10/10
Bradycardia at 45
Given iv fluids

In a.m. on review - reassured that patient improved

5 p.m. – GCS 11, restless

Repeat CT scan – effacement of cisterns and midline shift

22:50 ICU, GCS drop → intubation, pupils equal not reative

Retrieval at 01:30 am and neurosurgical input at tertiary

Case 1 - Aftermath

Neurosurgical evacuation – rehab

Serious and permanent brain injuries

DISCUSS

- What went well?
- What could have been improved?
- How can this help local management?

Lessons

System Issues: - cognitive loading and bias – Mental health

- Transferring to higher centres - difficult

Skills: - Inadequate information – attempt collaterals and multiple sources

- Reassessment and frequency thereof

Staffing: - experience and senior involvement

No Root Cause analysis found

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RCA FINDINGS:

- “The incident seems to support the conclusion that decisions to transfer patients after hours or weekends from rural to tertiary centres is more likely to result in less than comprehensive reviews”

- Could have been escalated from rural level
- Secondary level also reassured from tertiary centre

Teaching points on headaches

‘Red flags’ warrant further imaging

- New headache in the older population
- New onset headache in a patient with a history of cancer or immunodeficiency syndrome
- Headache with mental state changes
- Headache with fever/neck stiffness/meningeal signs
- Headache with focal neurological deficit if not previously recognised in the context of a migrainous aura
- Headache causing wakening from sleep
- Headache in a patient with recent ingestion of amphetamine/cocaine
- Headache in pregnancy/post-partum
- Headache worsened by Valsalva and progressively worsening headache

CT head is the initial imaging modality of choice

Further imaging, MRI ± MRA (Magnetic Resonance Angiography) or MRV (Magnetic Resonance Venography) is dependant on the clinical context

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From Imaging Pathways Health – WA available at

http://www.imagingpathways.health.wa.gov.au/index.php/imaging-pathways/neurological?id=64#teaching-points

Case 2 – Clear and present danger

40 yr old female at rural ED

13:32 with feeling tired post endoscopy (colon + upper) done 1/7 previously at base hospital – discharged back to husbands care, normal swallow test

PMHx: Fibromyalgia, SLE, GORD, chronic persistent pain

Triage Cat 3

Case 2 - continued

Locum GP ED doctor review – examined

Woke up a.m. – felt tired, went back to bed; woken up by “sharp pain and tightness at back of head”

Headache 9/10, associated vertigo when trying to move

Headache still 6-7/10, vertigo moving head, nausea but no vomiting

Plan to contact base hospital for med reg to organise MRI

→ ECG, iStat and Bix NAD

→ Iv Morphine for headache, im stemetil for nausea

Case 2 - continued

Central vs peripheral suspected and documented

Contacted back by base hospital – MRI and MRI angio best modality, transfer across → ?vertebral artery dissection

Headache down to 3/10 with meds

Transfer by 17:53 – Triage Cat 3 at new ED → ?vertigo

GCS 15 pain 2/10 → ED RMO reviewed patient, spoke to senior → CT B

Admit to ED SSU for overnight monitoring

Case 2 - continued

Episodes of vertigo overnight

Discharged a.m with medication, diagnosis of ‘vertigo’

THOUGHTS?

Case 2 - continued

4 days later – 14:26 represents at rural ED site with headache 8/10, collapsed on floor found frothing at the mouth by husband

In ED GCS 14/15 L pupil 5 mm, brisk reaction, double vision with R open

Triage Cat 2

Im stemetil and iv Panadol given

15:25 ED Dr – husband reports wife to have a “drunk-like manner”, but no alcohol

Occipital headaches with vertigo, unable to walk despite stemetil at home

Case 2 - continued

Sent over to base ED at 18:11 transfer. Cat 2 converted to 1

Central causes found with nystagmus → CT brain at 18:34: possible thrombus at main vertebral artery ?dissection

20:40 patient felt “something wrong” – full tonic clonic grand mal seizure
→ Midazolam and lorazepam given to stop seizure, no success

→ Intubated and ventilated, transferred by retrieval at 22:40 to tertiary centre

→ CT there confirmed dissection. Condition worsened: extubated and died peacefully

Case 2 - Aftermath

Infarct of Pons R Lateral Medulla and inferior cerebellum due to R Vertebral Artery Dissection

RCA Findings:

Due process followed, some communication and hand-over issues

Diagnostic anchoring occurred at first transfer

Difficulty diagnosing VAD – no stroke-like symptoms → SAH also likely from Hx

Case 3 - Thunderstruck

43 year old male sudden onset headache at rural ED 22:09 Saturday

Lawyer, accompanied by wife – sudden onset headache in morning, intermittent confusion and vomiting

GCS 13/15 pain 9/10 slurring, confusion of words

Observations: BP 153/94 BSL 9.22 Pain 9/10

Triage Cat 2

Case 3 - Continued

Triage nurse going off duty referral to Nurse practitioner

Wife mentions he had a fall 2 days ago, has been sleepy and not eating/drinking much since

Physical examination normal with small amount of bruising on chest

?impression of potential viral illness or agitation of unknown cause

Bix and pathology mostly normal: Na 133 → iv fluids commenced

Case 3 - Continued

Discussion with FACEM at base hospital at 23:50 – symptoms had improved by that point

Keep overnight in ED and to contact if any issues

GCS 11/15 at 00:49, falling asleep during questions. Informed NP: requested repeat Na → 134

Patient out of character, agitated with photophobia and severe headache at 04:30 am → escalated to NP who contacted base hospital
→ ED reg on phone → asked for transfer at 05:35

Case 3 - Continued

Departure at 08:32 due to delays about staffing and paramedic availability for the agitation ?possible police escort

Arrival in ED 08:47 Triage Cat 2 in resuscitation

Given iv ceftriaxone and dexamethasone

CT Brain ordered

Case 3 - Continued

Extensive subarachnoid haemorrhage, especiallt around basal cisterns and intraventricular haemorrhage

Intubated, tertiary referral with helicopter for neurosurgery by 15:40

MRI then surgery

2 days postoperatively – deterioration and reintubation

Extensive brain damage – extubated and died 2 days later

RCA findings and Lesson

Similar issues – lack of direction about escalation in rural or remote facilities

Usage of First Line Emergency Care (FLEC) Guidelines

Issues and delays with transferring

CLINICAL TOOLS AND GUIDELINES

Rapid Reference Guide to Serious Headaches

6 Apr 2018

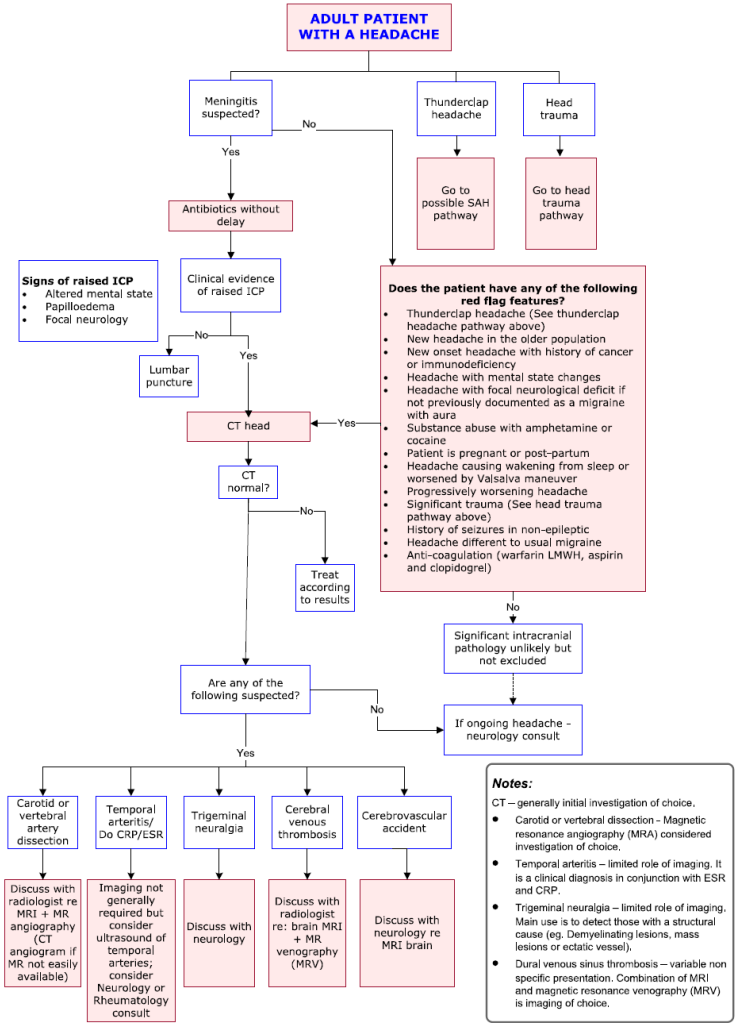
Clinical Indicators/ Red Flags	Secondary Headache **Diagnoses**	Initial **investigations**
Nature of Headache **'Thunderclap'** headache: severe pain maximal within 1-2 minutes.	**Subarachnoid haemorrhage (SAH)** or **intracerebral haemorrhage (ICH). Other differentials include arterial dissection and venous thrombosis.** If no bleed or aneurysm, most common diagnosis is **Reversible Cerebral Vasoconstriction Syndrome (RCVS).**	**CTB, consider CTA** for thunderclap headaches*. **LP** at 12 hours if CT normal but concern for missed SAH. (NB **CTA** is useful for non-bleed differentials, does not diagnose SAH). Consult for any positive investigations or concerns, consider RCVS follow-up. *Indications for vascular imaging include multiple or recurrent episodes, presence of any additional red flags (e.g. persistence, physiological compromise, neurological deficit, vascular or thrombotic risks) and informed patient request. MRI/ MR angiography may be an option depending on availability. Consider risk of false-positive or incidental findings.
Persistent or progressive pain, or failure to respond to treatment.	**Cerebral venous thrombosis**: may have thrombotic risk or facial infection	**CTB** only 30% sensitive for thrombosis. **CTV** preferred to MRV.
Pressure/ postural headache: strain/ cough/ supine/ standing.	High intracranial pressure**: Idiopathic intracranial hypertension (IIH)**,	Fundoscopy required if suspicion of raised ICP. **CTB** (may be normal) and **CTV** to exclude venous thrombosis. Consult re LP/ further imaging.

Clinical

- Clinical Resources
  - ED Apps
  - Clinical Tools
  - Procedures
  - Forms
  - Equipment
- Emergency Department Factsheets
- Nurse Delegated Emergency Care
- Aged Care Emergency
- Red Flag Modules
- Improving Quality and Safety in the ED
- Publications
- The Best from the Best
- The top twenty sites you must visit

2017 ACEM Guidelines

2.6 Adult patient with a headache



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E-QuESTs so far

- Atypical Chest Pain - ACS
- Sepsis in the elderly
- Abdominal pain in the elderly - AAA & Ischaemic gut
- Scrotal emergencies
- Headaches Part I: Deadly headaches
- Paediatric deterioration
- Head injuries
- Opthalmological emergencies
- Pediatric emergencies and bronchiolitis
- Headaches Part II: undifferentiated headaches

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Looking to next month, please…

- Share your cases
- Share your patient safety actions
- Spread the word with your colleagues

(or send me their email: Nicholas.lelos@health.nsw.gov.au)

What would you like to see / hear about?

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Many thanks!

Next E-QuEST
Wednesday 18th July 14:00

Look out for our email survey
We need your responses to guide future work

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