

Station Number THREE: Teaching

Candidate instructions

This is a 7 minute station.

Dr Jones is a PGY3 doctor who has recently managed a patient with a thunderclap headache.

The patient was a 40 year old male who presented after sudden onset of a severe headache. He had some neck pain and photophobia, but no focal neurology on examination. He was managed under appropriate senior supervision and his ED course was uncomplicated. However Dr Jones felt that their knowledge of this subject was incomplete and has asked to meet with you for some teaching.

Your tasks are to:

- Teach the resident an approach to sudden onset headaches in the Emergency department
- Answer any other questions that the registrar may have

This OSCE will assess the following domains:

- Medical expertise
 - Assessment 20%
 - Management 30%
 - Teaching and scholarship 50%
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Confederate instructions

You are playing the role of Dr Jones, a PGY3 doctor currently working in the ED. You recently saw Patrick, a 46 year old man who presented to ED having suffered a sudden severe headache, which started over 24 hours prior to his presentation.

As a junior doctor you were aware of the potentially serious causes of thunderclap headache including subarachnoid haemorrhage, but were unsure how to go about the next steps in this delayed presentation.

Patrick described a thunderclap headache which started whilst he was on his home treadmill in the morning. It was severe at onset, and was persistent. He had some nausea but no vomiting. He had no neurological signs on a comprehensive examination.

His medical history included hypertension and pAF. He had no history of headaches. He had a regular antihypertensive and was on a direct oral anticoagulant. He was an ex smoker, of 5 pack years. He had no family history.

Given the relative contraindication to lumbar puncture the senior physician on for the day decided to undertake a shared decision making discussion with the patient. It was decided to undergo a CT angiogram which showed no bleeding and no aneurysm. The patient was then discharged.

You were not distressed by this case and do not require any input from an emotional perspective. You have a basic knowledge and understanding of symptoms of SAH and the need for CT scan, but do not have a detailed knowledge of the ED assessment.

The candidate may want to ask further details about the case - generally you may give brief information as above but steer them back to teaching a general approach to thunderclap headache, especially details of the investigation pathway to rule out subarachnoid haemorrhage.

The candidate is expected to teach a general approach to assessment of sudden onset headache, including a reasonable differential diagnosis as well as investigation considerations.

“So what do you think are the most likely causes for a headache like this?”

“Are there any other causes?”

“Is there a way to exclude subarachnoid haemorrhage without imaging?” - Ottawa SAH rule

The candidate should give a reasonable but broad differential:

- Subarachnoid haemorrhage (bold)
- Subdural
- Migraine
- RCVS (reversible cerebral vasoconstriction syndrome)
- Infection/meningitis
- Venous sinus thrombosis
- Cluster headache

“What investigations should we perform in this type of case?”

This is the crux of this question. The candidate is expected to demonstrate detailed knowledge of investigation pathway to rule out subarachnoid including indications for, application, pro's/cons and interpretation of non contrast CT, lumbar puncture and CT angiogram.

“What will the LP show us if a patient has SAH?”

“How do I interpret the LP results?”

“When can the LP be performed? Does the sensitivity decrease with time in a similar way to the CT?”

“Are there any contraindications to LP?”

If candidate does not mention anticoagulation:

“This patient was taking an anticoagulant. What are the options in this scenario?”

CT angio:

“What are the potential downsides of this route of investigation?”

“What if there is an aneurysm but no bleed?”

“What if we do not see an aneurysm?”

“Will this help to exclude other possible differential diagnoses?”

Shared decision making:

“I’ve heard that this can be an area where shared decision making with the patient is used. Can you tell me more about this?”

Examiner instructions

This is a teaching station that aims to test the candidates knowledge of the investigation for a thunderclap headache. The candidate is expected to teach the junior doctor an approach to sudden onset headache which should include a reasonable differential diagnosis, high risk history and exam features, as well as investigation to rule out subarachnoid haemorrhage. They are expected to demonstrate a thorough and detailed understanding of this topic.

You will not interact with the candidate and will observe only. You may redirect the candidate if the discussion is significantly off course.

Medical expertise

Historical features

- Sudden or gradual onset
- Time of onset
- Onset during exertion
- Syncope /seizure
- Neurological symptoms
- Vomiting
- Trauma
- Fever
- Neck stiffness/photophobia

Ottawa SAH rule

Age <40

witnessed LOC

neck stiffness or pain

limited neck flexion

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- onset during exertion
 - immediately peaking pain

100% sensitive but very poor specificity (25%)- so if none of the above probably don't need imaging

Examination findings

- Focal neurology (3rd nerve palsy)
- Nuchal rigidity
- Photophobia
- Visual disturbance
- ipsilateral autonomic changes (ptosis, meiosis, forehead sweating), injected tearing eye with unilateral nasal congestion - suggesting cluster
- Agitation
- Decreased conscious level

Differential diagnosis:

The candidate should give a reasonable but broad differential for example (other reasonable differentials may be acceptable):

- **Subarachnoid haemorrhage**
- Subdural
- Migraine
- RCVS (reversible cerebral vasoconstriction syndrome)
- Infection/meningitis
- Venous sinus thrombosis
- Cluster headache

Investigation

- ACEM standard (2012) all suspected SAH should undergo CT followed by LP
 - Modern CT scanners have higher sensitivity now, reasonable to exclude based on normal CT within 6 hours
 - LP should be delayed at least 6 hours, preferably 12
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LP contraindications

- presence of infection in soft tissues near site
- Increased ICP caused by space occupying lesion
 - Caution: lateralising signs, uncal herniation (unilateral 3rd nerve palsy).
 - Risk of herniation pronounced in patients with brain abscess.
- Bleeding diathesis or anticoagulation therapy
- Platelet count - thrombocytopenia highest risk of bleeding

In this case the anticoagulation is a relative contraindication to LP. Options would be to delay LP, alternative Ix strategy eg CT angio or reversal if available.

Interpretation

- Xanthochromia is either positive or negative - SAH confirmed if positive
- RBC's - can be difficult to interpret as often due to traumatic tap. If Tube 4 has >2000 RBC's this is likely to be SAH.

CT angio

- Multiple international guidelines suggesting this is acceptable practice
- However significant downside to identifying incidental aneurysm (present in up to 2% of the population). Including invasive neurosurgery and complications from this. theoretical risk of missing vasospasm of an aneurysm that has bled, but probably extremely rare.
- Probably a role in selected cases

Shared decision making

- process in which patients and clinicians work together to make decisions and select tests, treatments and care plans based on clinical evidence that balances risks and expected outcomes with patient preferences and values.
 - Possible when there is no single right option, such as treatment decision. When no one option has a clear advantage. Possible benefits and harms of each option affect patients differently
 - Decision aids help patients to engage in the process
 - Patients need to understand available options
 - Clinician needs to understand patient's values and preferences
 - Clinician needs to help patient to enact plan agreed upon
 - Dynamic process which can be re evaluated at any time
 - Involvement of other stakeholders eg neurosurgery or haematology
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Examiner Marking Sheet

Examiner name(s):

Candidate Name:

OSCE Station:

DOMAIN	ASSESSMENT CRITERIA	MET/NOT MET
Medical Expertise	- Appropriate differential diagnosis including SAH plus at least 2 other - Outlines high risk history and examination findings including at least syncope/seizure at onset, focal neurology and vomiting - Investigation including appropriate detail of timing of and sensitivity of non contrast CT - LP indications, contraindications, interpretation	
Teaching and Scholarship	- Checks prior knowledge - Appropriate manner and teaching style - Checks in regularly with candidate - Summarises and signposts key information - Delivers appropriate general approach to this presentation and appropriately answers candidates questions	

COMMENTS AND CONSTRUCTIVE FEEDBACK

GLOBAL ASSESSMENT RATING

Please rate this candidate's OVERALL performance in this OSCE:

In terms of a **safely practising junior emergency physician** please select the ONE option which best reflects this candidate's performance in this station

**Well
Below
Standard**

☐

**Below
Standard**

☐

**Just at
Standard**

☐

**Above
Standard**

☐

**Well
Above
Standard**

☐