ED QUICK QUIZ

WHAT IS THE DIAGNOSIS?

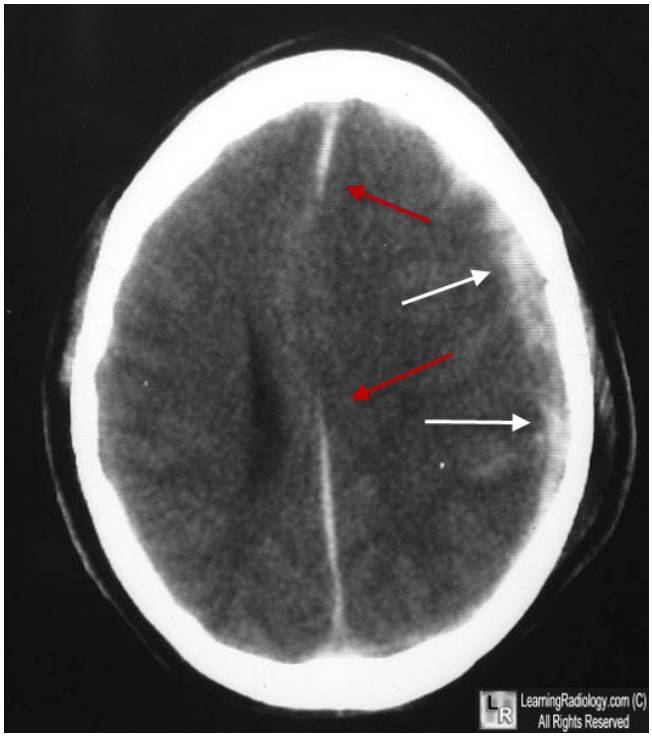
BACKGROUND

18 year old male presents following an alleged assault whilst in a nightclub in the city centre. He is intoxicated and admits to doing 'shots' earlier in the night followed by at least 6 beers. He denied any illicit drug use. He has no recollection of the event, however his friend who has accompanied him can give you additional information. He remembers dancing in the club and then wakening up on the floor surrounded by the paramedics. The event happened about 2 hours ago. He is complaining of a mild global headache and has vomited once. He has no PMH and takes no regular medication.

His friend tells you that he was punched in the face and fell backwards onto the floor. He had a LOC for about 5 minutes and was 'not right' for another 20 minutes.

On examination he is GCS 14 (E4, M6, V4) with PEARL. He has normal power, tone & reflexes in all 4 limbs. Cranial nerves II-XII are intact. He has no midline C spine tenderness and a full painless ROM. On palpating his skull you note a 5cm boggy haematoma to the left parietal region.

A CT head is performed:



QUESTIONS

1. What does the CT head show?
2. What are the NICE guidelines for CT head requirements in head injuries?
3. How should he be managed?
4. What is his prognosis?

ANSWERS & DISCUSSION

1. Diagnosis

Left parietal subdural haematoma with associated mass effect causing effacement of the left lateral ventricle and midline shift to the right.

A subdural haemorrhage is a collection of blood that accumulates in the potential space between the dura & arachnoid mater of the meninges surrounding the brain. It can happen in any age group and is usually due to head trauma. They are more common in males with a male:female ratio of 3:1.

It is thought to be a result of stretching & tearing of bridging cortical veins as they cross the subdural space to the adjacent dural sinus. They rupture when there is a sudden change in the velocity of the head.

The CT appearance is of a crescent shape (concave), homogeneous, hyperdense, extra-axial collection that spreads diffusely over the affected hemisphere. It is limited by dural reflections, such as the falx cerebri, tentorium & falx cerebelli. There may be evidence of cerebral swelling and mass effect with ventricular effacement & midline shift. There may also be associated skull fractures that can be seen on the bony window.

Of note, adhesions that exist in the subdural space are absent at birth & develop with aging, therefore bilateral subdural haematomas are more common in infants. They are usually associated with child abuse. 85% of subdural haematomas are unilateral in adults.

2. CT head

NICE Guidelines

Perform a CT head within 1 hour in adults that have sustained a head injury & have any of the following risk factors:

- GCS <13 on initial assessment in ED
- GCS<15 at 2 hours after injury on assessment in ED
- Suspected open or depressed skull fracture
- Any sign of basal skull fracture
- Post traumatic seizure
- Focal neurological deficit
- >1 episode of vomiting

Perform a CT head within 8 hours in adults that have sustained a head injury with LOC or amnesia since the injury & have any of the following risk factors:

- Age => 65 yrs
- Any history of bleeding or clotting disorders
- On warfarin (even when asymptomatic)
- Dangerous mechanism of injury (MOI) – pedestrian/cyclist struck by a car, occupant ejected from a motor vehicle or fall from >1 metre or down 5 stairs
- >30 minutes of retrograde amnesia of events immediately before head injury

3. Management

Treatment depends primarily on the amount of mass effect and neurological impairment caused by the collection, and thus correlates with the size of the subdural haemorrhage.

He should be discussed with the Neurosurgeon on call on page 17777. Ensure that you provide a GCS with the breakdown into eye, motor and verbal responses. Also, have an idea of his premorbid state and a full set of observations. If he is accepted for transfer clarify where he should be transferred to, whether anything else needs done in our ED and who should accompany him.

His C spine has been clinically cleared and he should be nursed with a 30 degree head up tilt. Ensure that his blood sugar level is normal. Baseline blood investigations should be sent including FBC, U&Es, LFTs, coagulation screen and a group & save. Consider mannitol after discussion with the neurosurgeons if he becomes hypertensive.

In this case, if he is not accepted by the neurosurgeons he should be admitted to ward 46 for neurological observations. Ensure his drug Kardex and an initial plan is documented in the clinical notes. Always clarify whether his case should be rediscussed with the neurosurgeons if he deteriorates.

4. Prognosis

The mortality associated with acute subdural hematoma has been reported to range from 36-79%. Many survivors do not regain previous levels of functioning, especially after an acute subdural hematoma severe enough to require surgical drainage.

Favorable outcome rates after acute subdural hematoma range from 14-40%. These are more common in younger patients with an age <40 yrs associated with a mortality rate of 20%, whereas 40-80 yrs is associated with a mortality rate of 65%. Age >80 yrs has a mortality rate of 88%.

In general a poor preoperative status indicates a poor outcome, such as:

- Initial GCS<8
- Pupillary abnormalities
- Alcohol use
- Injury by motorcycle
- Ischaemic damage
- Hypoxia
- Hypotension
- Difficulty controlling ICP

Findings on CT scan or MRI may help indicate prognosis, including:

- Depth/volume of haematoma
- Degree of midline shift
- Presence of associated intraparenchymal lesions
- Compression of the brainstem or basal cisterns