

Head Injuries

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Background

- ▶ Very common presenting condition to A&E, 1.4million/year in England and Wales, 150 000 admissions, 4000/yr require neurosurgical intervention
- ▶ 2% of population/yr
- ▶ Common cause of death in polytrauma

Minor Head Injuries

- ▶ Most common type-90%
- ▶ Always do GCS, pupils, otoscopy, neurological exam
- ▶ Don't assume alcohol responsible for symptoms
- ▶ If in doubt discuss with senior
- ▶ Usually can be discharged with responsible adult supervision, advice card & analgesia
- ▶ Beware WARFARIN+HEAD INJURY-don't discharge



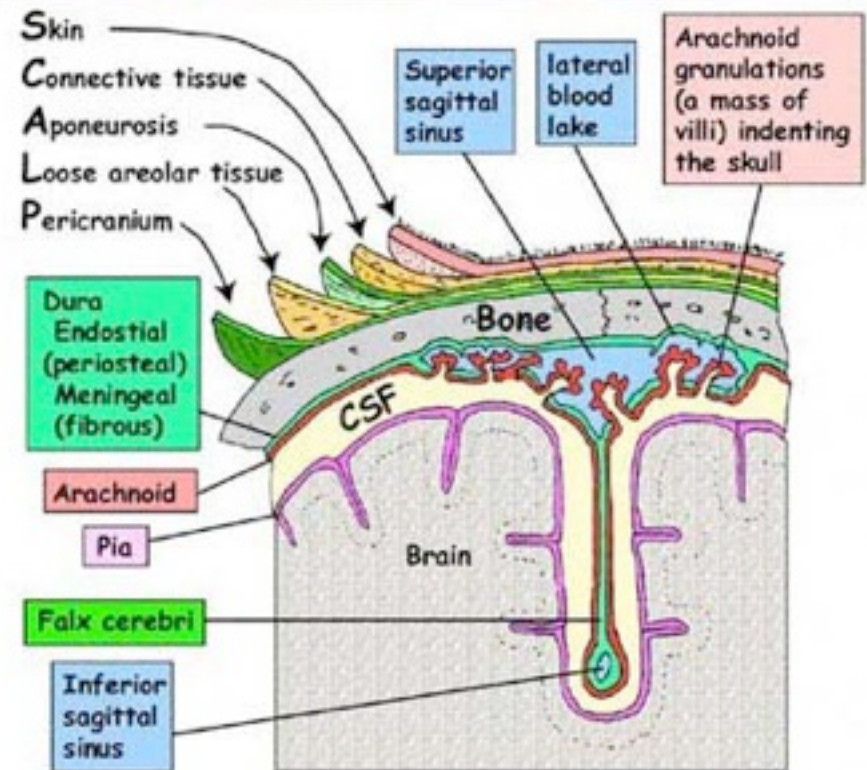
Scalp Wounds

Scalp Wounds

- ▶ Can bleed heavily but if in shock first assume from elsewhere
- ▶ Suture with 3-4/0 catching the crista galla (pericranium), very effective at stopping blood loss
- ▶ Some places use staples
- ▶ Don't shave the hair

CORONAL SECTION OF SKULL, SCALP & MENINGES IN MIDLINE

To show layers of scalp, meninges and falx cerebri



CEREBROSPINAL FLUID

- 130ml - 30ml in ventricles, 75ml in spinal system, 25ml in cranium
- Turn over - 500ml per day from choroid plexus to 4th ventricle to subarachnoid space to arachnoid villi
- Pressure - 130mm of water
- Function - Brain floats in it, some metabolic change, effectively reduces weight of brain from 1500g to 50g

Discharge Advice

return if any of the following develop

- ▶ Unconsciousness
- ▶ Confusion
- ▶ Fits
- ▶ Vomiting
- ▶ 1 or more limbs becoming weak
- ▶ Severe/Worsening head ache
- ▶ Problems with eyesight

A&E Trauma Beds

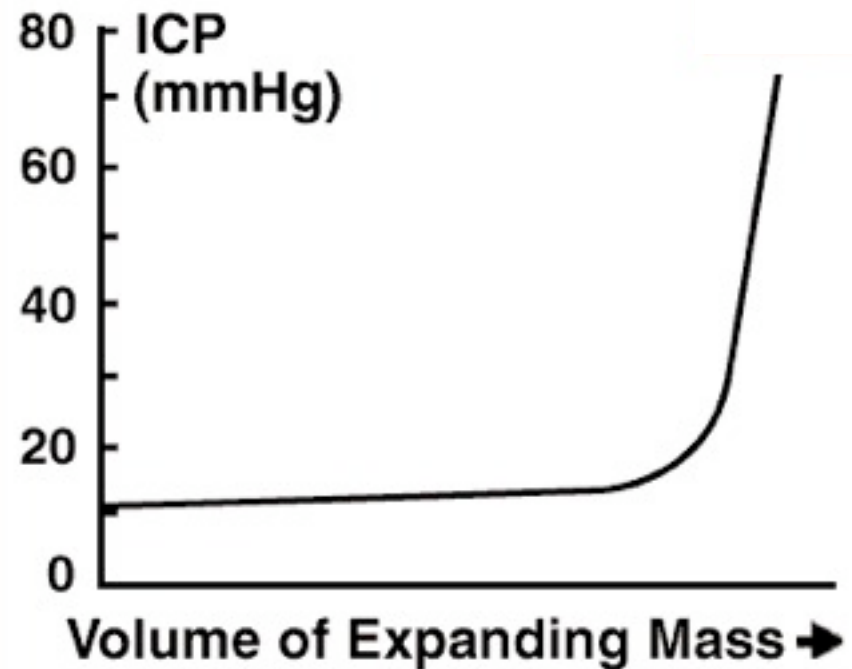
- ▶ Patients with head injuries needing observation but nobody at home e.g. elderly
- ▶ Head injuries with alcohol
- ▶ Patients not filling criteria for scan who you are worried about sending home
- ▶ Head injuries on warfarin
- ▶ NOT for multiple medical problem patients and long term DAI/subdural etc
- ▶ Patients with particularly significant mechanism injury
- ▶ ALWAYS check with middle grade/consultant first
- ▶ ALWAYS fill drug chart

Major Head Injuries

- ▶ Altered GCS especially after significant mechanism; high speed RTA, falls from height, assault with bat etc
- ▶ All should receive a CT scan if clinically stable
- ▶ Beware C-spine injuries
- ▶ Primary, at time of injury and Secondary (treatable)

Pathophysiology

- ▶ Skull is a closed box
- ▶ Space taken up by swelling/blood displaces first CSF then venous blood then sudden rapid rise in pressure with coning of the uncus and death (Monroe-Kelly Doctrine)
- ▶ As pressure rises in the skull, systemic blood pressure rises to push blood into the head. Hypotension and hypoxia worsen prognosis by causing more brain cell death



Assessment

- ▶ ATLS ABCDE
- ▶ Check pupils, GCS, cranial nerves
- ▶ Screening peripheral neuro assessment
- ▶ Careful and detailed if any suspicion
- ▶ Look for and treat airway/breathing/circulation problems before addressing head injury

Glasgow Coma Scale

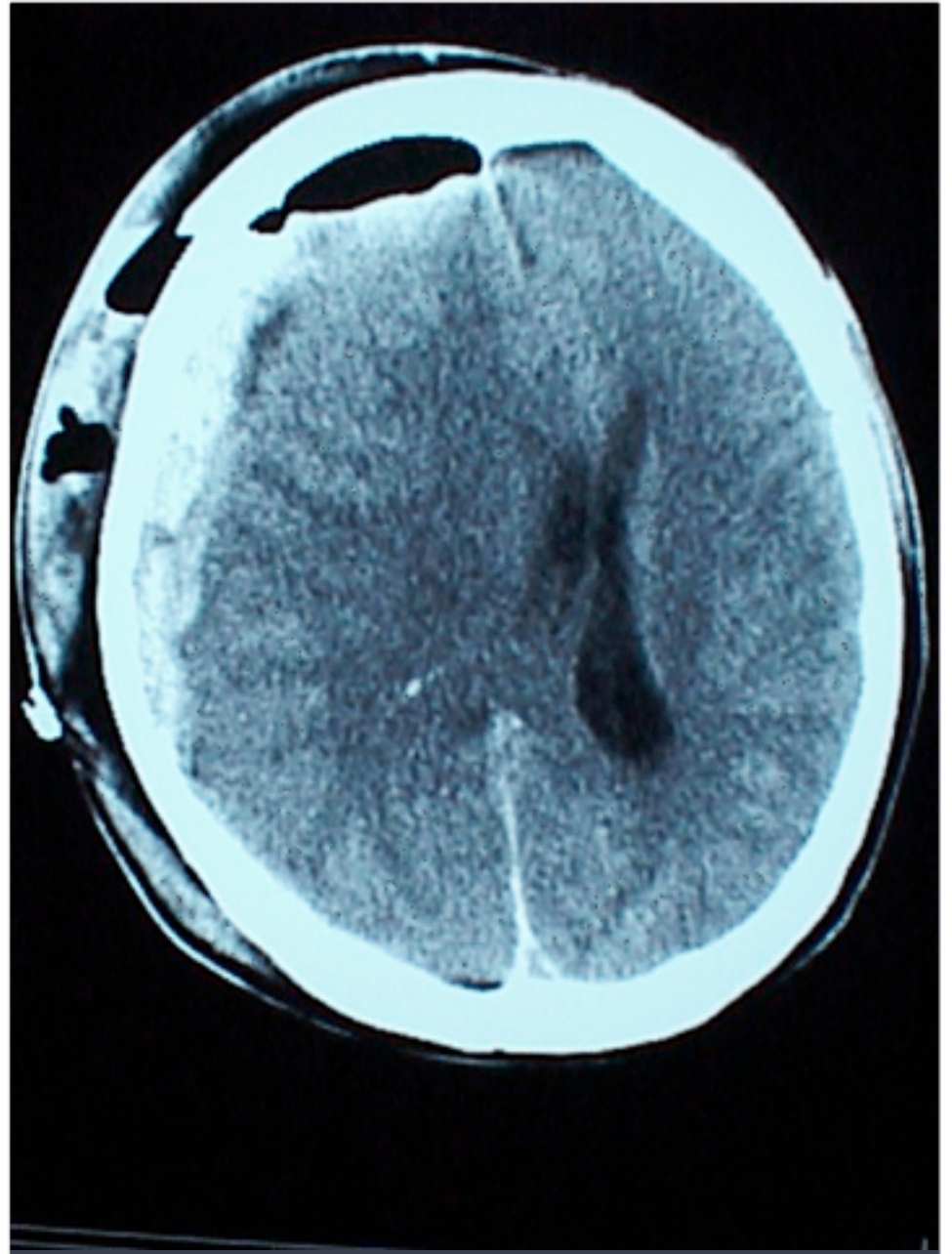
Eyes	Verbal Response	Motor Response
1. Nil	1. Nil	1. Nil
2. Opens to pain	2. Incomprehensible sounds	2. Extensor posturing
3. Opens to Speech	3. Inappropriate words	3. Flexure posturing
4. Open spontaneously	4. Confused	4. Withdrawal
	5. Orientated	5. Localising
		6. Obeys Commands

CT scanning

- ▶ GCS <13 since injury
- ▶ GCS 13-14 two hours post injury
- ▶ ?open/depressed or signs of basal skull fracture
- ▶ Post traumatic seizure
- ▶ Focal neurology
- ▶ >1 vomit (maybe >2 in <12yrs)
- ▶ Amnesia >30mins before injury
- ▶ LOC >65, coagulopathy/dangerous mechanism

Subdural Haematoma

- ▶ More common in elderly/ alcoholics
- ▶ Poorer prognosis due to underlying brain damage
- ▶ Needs evacuation in causing pressure effects (midline shift)
- ▶ More diffuse edges on CT
- ▶ May be sub-acute/chronic



Extradural Haematoma

- ▶ Commonly from middle meningeal artery-strips off periostium
- ▶ Lucid interval (“talk and die”)
- ▶ Better prognosis if treated promptly with evacuation
- ▶ Lenticular shape on CT



Cerebral Contusions

- ▶ Not usually amenable to surgery
- ▶ Can cause months of post-concussion syndrome



Management

- ▶ O₂, fluids to correct hypotension
- ▶ Assume spinal injury and actively rule it out
- ▶ 20° head up
- ▶ Control oxygenation, BP, temperature and glucose
- ▶ If GCS <8, RSI and ventilate
- ▶ CT scan definitive investigation if stable
- ▶ Neurosurgery referral



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