~~FroFDoF~~ SIMPLY FINALS - Neuro

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the exam

- based on previous exams
- I have been involved in standard setting this years 5B exam
- single MCQ paper with common content
- 3 part OSCE
- neuro content appears to be focussed on that which is relevant to acute general practice

topic areas

- head injury including GCS
- epilepsy
- stroke
- headache
- collapse
- radiology
- the examination

functional anatomy

- suggest you revise the functional neurological anatomy of UMN/LMN lesions, somatosensory deficits, visual fields
- blackboard, year 4, B&B, lecture notes, “functional neuroanatomy”

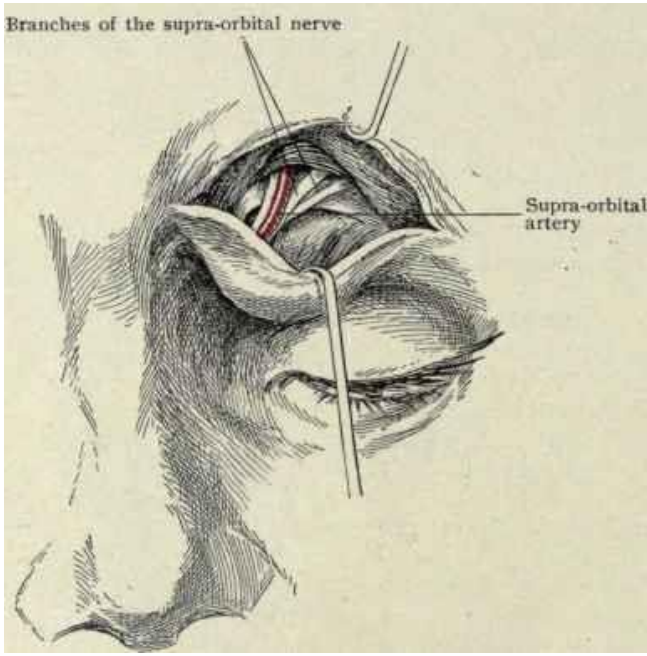
GCS: concepts

- in order to:-
  - measure the severity of head injury
  - estimate prognosis
  - detect deterioration (or improvement)
- a graded scale of conscious level which is internally and externally consistent and universally understood and applied is required

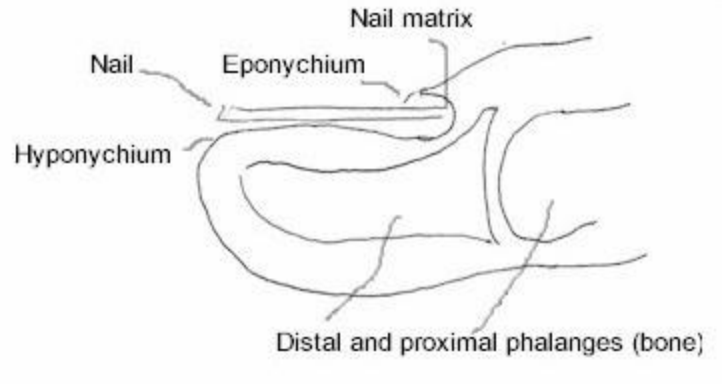
Glasgow Coma Scale

- motor
  - obeying commands (6)
  - localising to pain (5)
  - flexing (of arm to nail bed pressure) (4-3)
  - extension (ditto) (2)
  - no response (1)
- verbal
  - orientated (5)
  - confused (4)
  - words (3)
  - sounds (2)
- eye opening
  - spontaneously (4)
  - to speech (3)
  - to pain (2)

how to examine the GCS



- “squeeze my fingers” bilaterally
- apply supraorbital pressure, each side in turn
- with the elbow at 90^{o}, apply nail bed pressure, each side in turn
- record best response in each domain



head injury: concepts

- common, mostly minor with good outcome but surprisingly frequent psychological sequelae
- principle determinant of mortality in polytrauma
- 25% mortality amongst severe (GCS≤8)
- brain injury is irreversible
- primary brain injury has already happened
- secondary brain injury can be prevented
  - by rapid resuscitation
  - ensure the brain is perfused with well oxygenated blood at adequate pressure (MAP>90mmHg)
  - sometimes by surgical decompression

in practice

- good rapid resuscitation
  - Comatose patients may need ventilating
  - remember C-spine
- early accurate application of GCS
- CT just about everyone (current guidelines in NICE CG56)
- refer to neurosurgery if
  - GCS$\leq$8
  - significant CT abnormality
  - CSF leak, compound depressed skull fracture

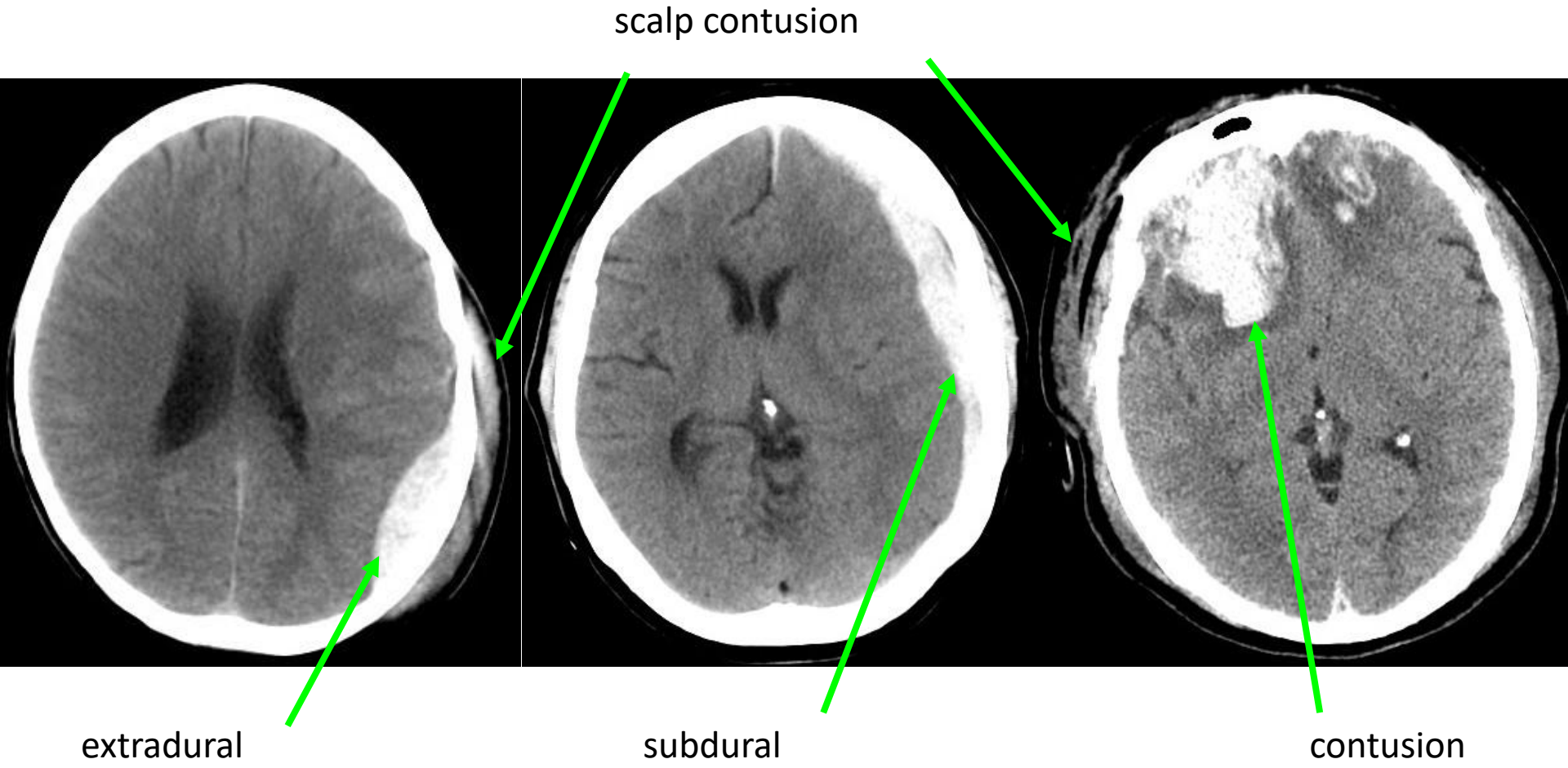
a case

- 25 year old man falls skiing, and lacerates scalp on a rock. Initially well, over the course of 2 hours he complains of generalised headache, becomes drowsy and weak on one side before deteriorating into coma
  - priority in management?
  - after resuscitation, priority investigation?
  - likely diagnosis?

another

- 28 year old in high speed motor vehicle collision. In deep coma and hypotensive at scene.
  - Priority management?
  - Likely diagnosis?
  - Pupils start to dilate – what now?

traumatic haemorrhage



generalised seizures

- resuscitation
  - place of safety e.g. recovery position on floor
  - oxygen, capillary glucose check
  - benzodiazepines e.g. rectal diazepam, iv lorazepam (remember conscious level will fall)
  - load with phenytoin 15mg/kg over 20 minutes
  - 30 minutes, still seizing? time for GA and ITU

first seizure

- investigate for cause
  - CVA in elderly
  - tumour, head injury, infection in adults
  - fever in children
- consider treatment, especially if structural cause found
  - phenytoin can be given rapidly
  - carbamezapine good for focal seizures and fertile women
  - valproate and lamotrigine are alternatives for monotherapy
  - Keppra/Levetiracetam becoming the new standard

established epilepsy

- epilepsy is the disorder of recurrent seizures
- AED maintenance plagued by drug interactions
  - Carb., phen. induce hepatic enzymes
  - so some drugs are metabolised faster
    - OCD, warfarin, etc
  - check BNF
- AED toxicity and levels
- beware drugs that reduce seizure threshold eg SSRI
- compliance
- pseudoseizures - consider video EEG telemetry
- neurology referral

stroke

- the sudden onset of a neurological deficit
- most is ischaemic due to cardiac or carotid emboli
- c. 10% haemorrhagic
- 150,000/year most >65
- 3rd most common cause of death
- commonest neurological disorder
- most common cause of severe disability

stroke

- resuscitation if appropriate
- consider thrombolysis
  - good clinical syndrome
    - PACI, TACI, LACI, POCI
    - by vessel
  - normal CT
  - within 3 hours
  - no contraindication
- stroke rehab

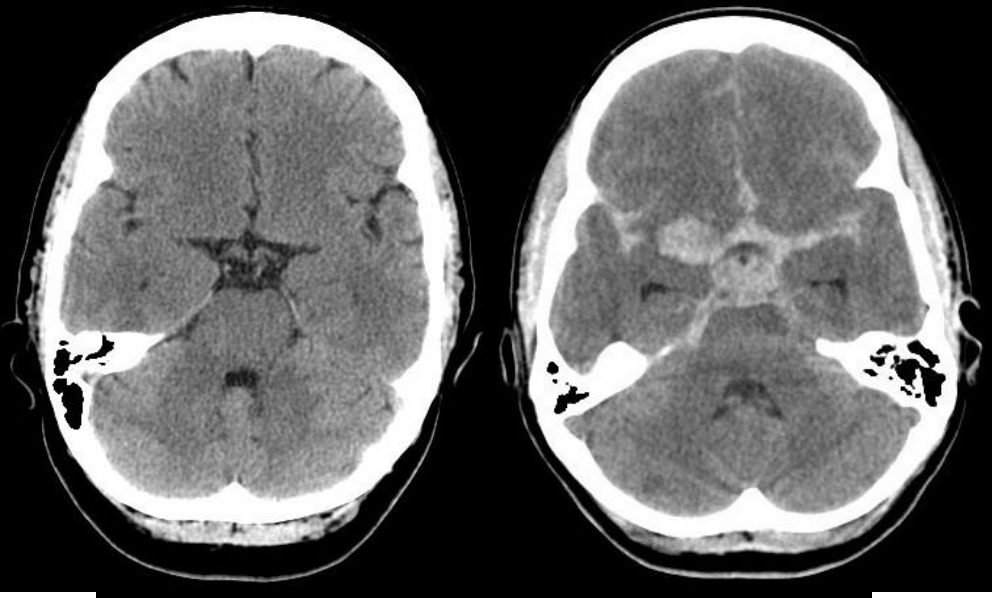
prevention

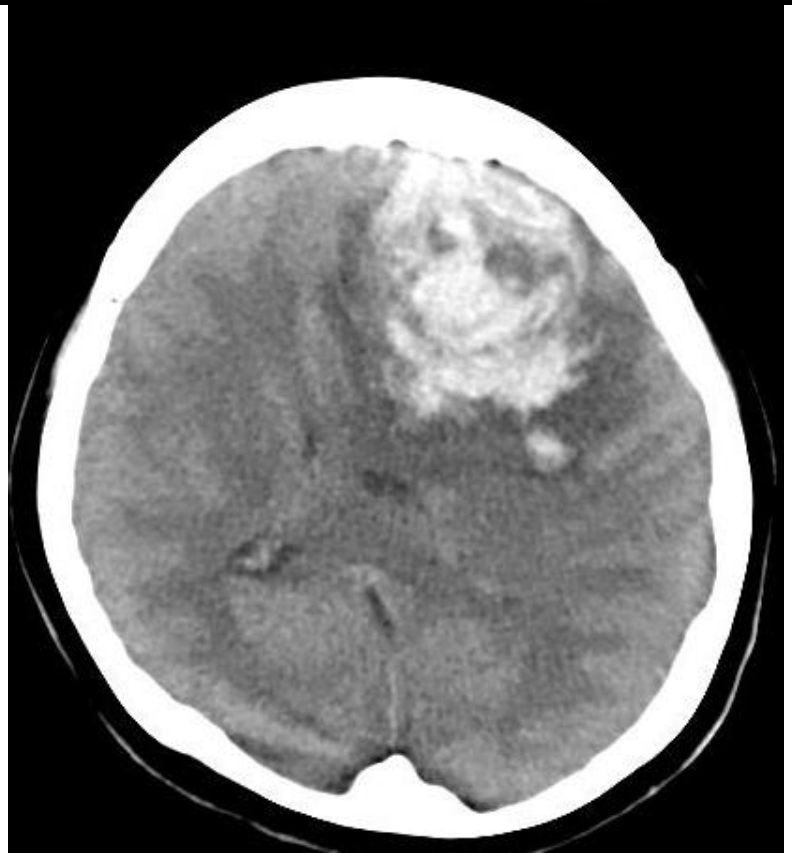
- TIA - ischaemic event with complete clinical resolution within 24hours
- should prompt search for cause e.g.
  - AF, anticoagulate
  - high grade carotid stenosis, CEA
- stop smoking, treat hypertension & hypercholesterolaemia, optimise diabetic control
- antiplatelets

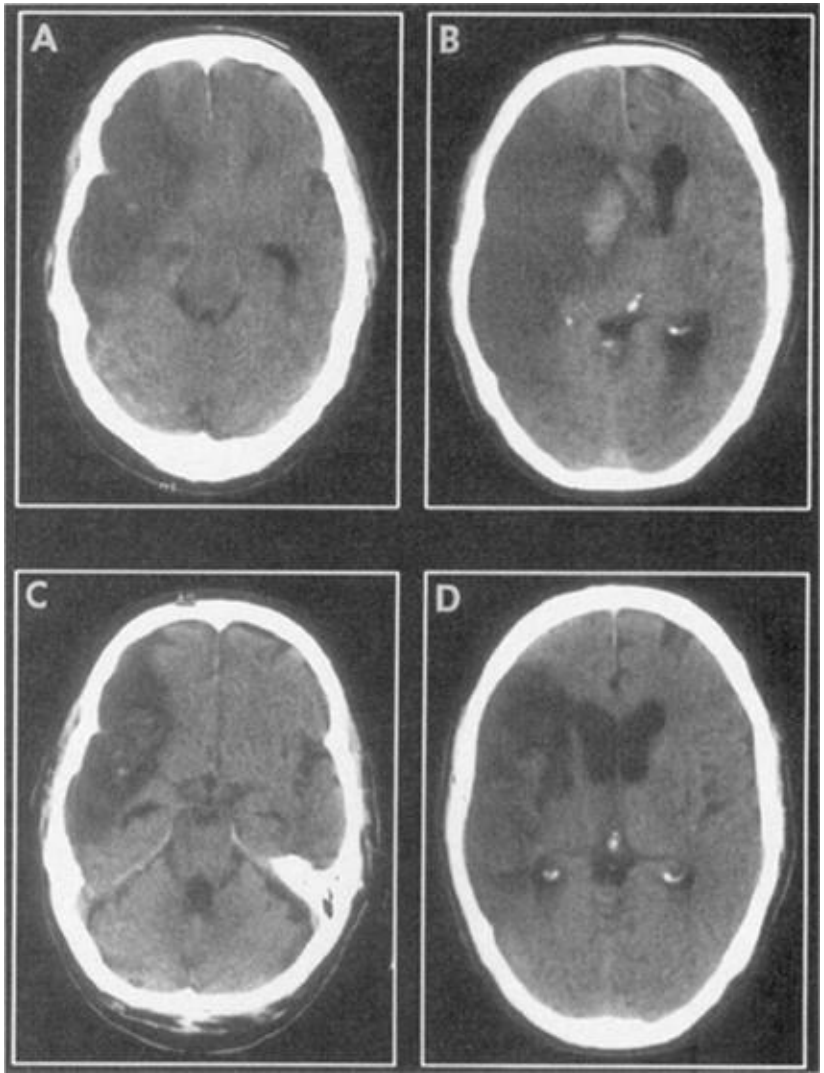
a case

- 58 year old woman with hypertension complains of the instantaneous onset of the worst headache she's ever had. She has vomited twice and feels sick.
  - priority in management?
  - likely diagnosis?
  - what next?

stroke imaging







headache

- all in the history
  - time course critical - sudden onset, recurrent, diurnal variation, progressive
  - visual disturbance - flashing lights, blurring
  - associated deficit or seizure
  - meningism - stiff neck, vomiting, photophobia
  - fever

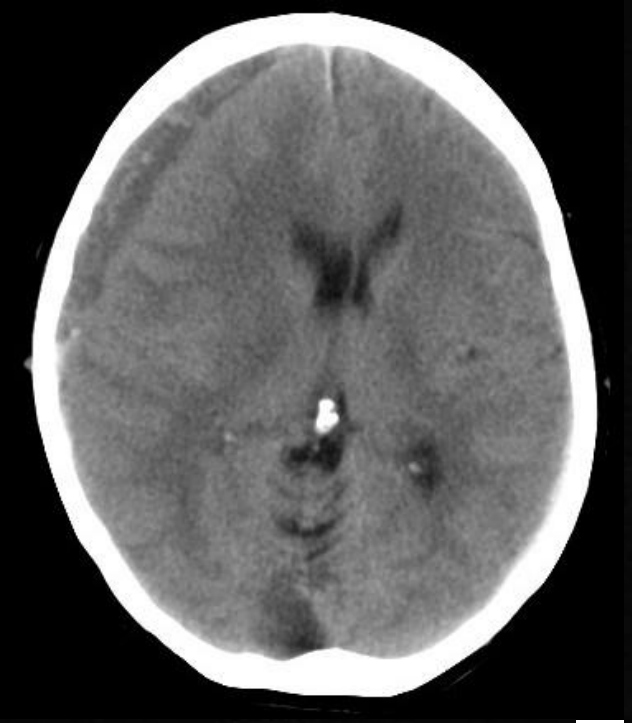
acute headaches

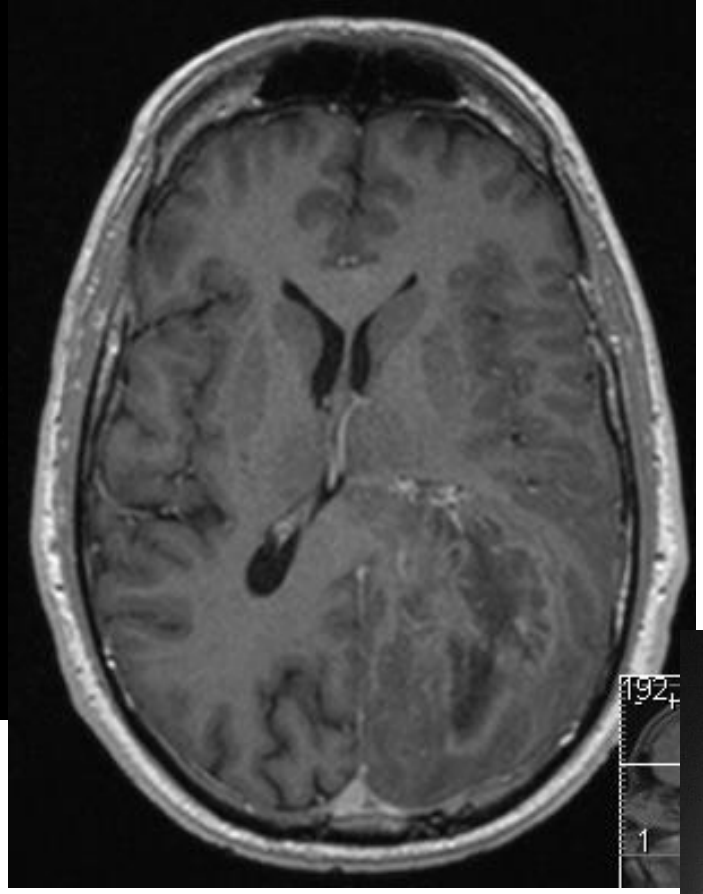
- meningitis - rapid progression, unwell, vomiting and photophobia, fever
  - iv benzyl pen/cephalosporin
  - CT to exclude SOL
  - LP
- SAH - instantaneous onset, vomiting, unwell
  - CT to make diagnosis
  - LP if CT normal for xanthochromia
  - neurosurgical referral

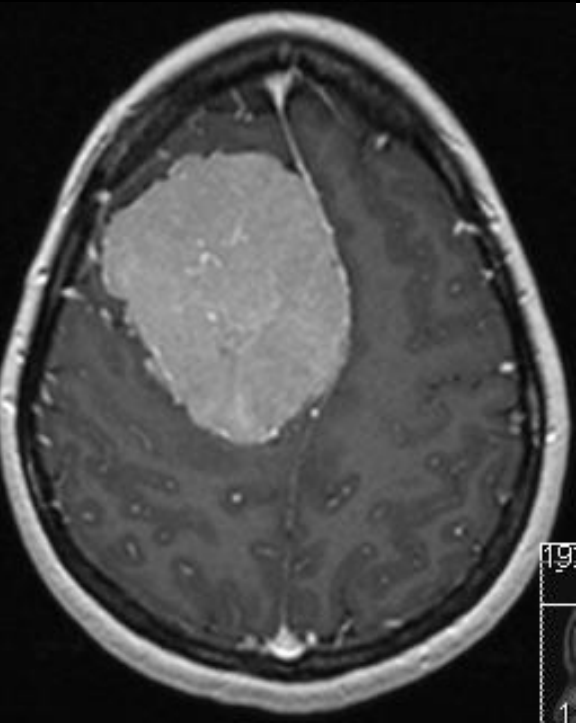
chronic headache

- raised ICP/SOL/intracranial hypertension
  - exacerbated by recumbency and sleep
  - N&V, blurred vision from papilloedema
  - many causes are progressive e.g.
    - brain tumour
    - cSDH
    - hydrocephalus
  - this is the sort of chronic headache that needs imaging

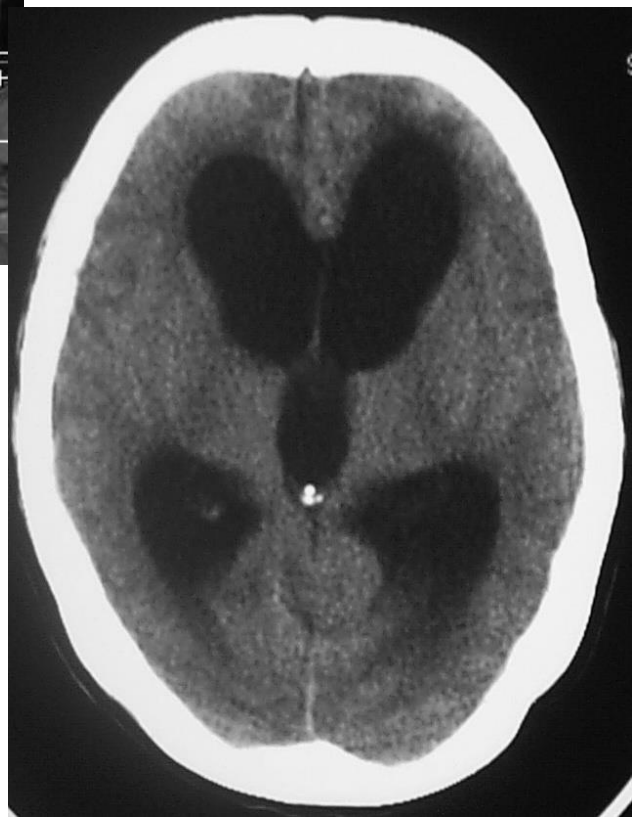
SOLs







- consider dex
- refer to neurosurgery



other headaches

- are very common or even universal
- recurrent one sided h/e with n&V, visual disturbance with zig-zag lines or flashing lights lasting 24 hours - consider migraine
- frequent headache, worse at end of day, often felt behind the eyes - consider tension headache
- see blackboard, year 4, B&B, lecture notes, headache for more

case

- 42 year old man describes four weeks of rapid onset headaches 2 or 3 times every day lasting about an hour. He feels them around his left eye. he had a bad month 2 years previously but had been well since until recently. During the headache his left eye waters.
  - Diagnosis?

and again

- 76 year old woman complains of pain on the right side of her face, worsened by chewing. The scalp feels tender on brushing her hair. She has felt tired and weak for about a month.
  - investigation?
  - diagnosis?
  - treatment?
  - risk of not treating?

collapse

- a common, non-specific presentation that makes people go to the doctor
- history from the patient and witness are the key
- distinguish between
  - a mechanical fall, and a loss of consciousness
  - first time, recurrent events
- pmh, aura, medication, environment, associated symptoms

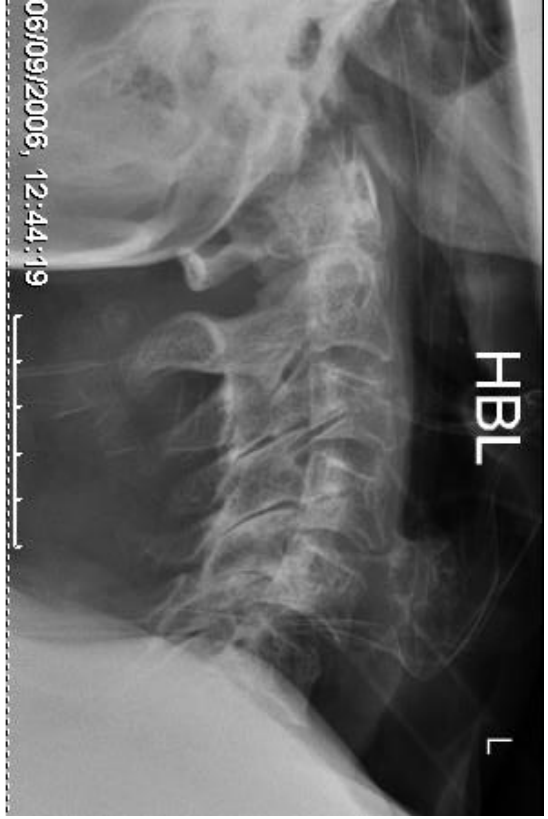
cause of collapse

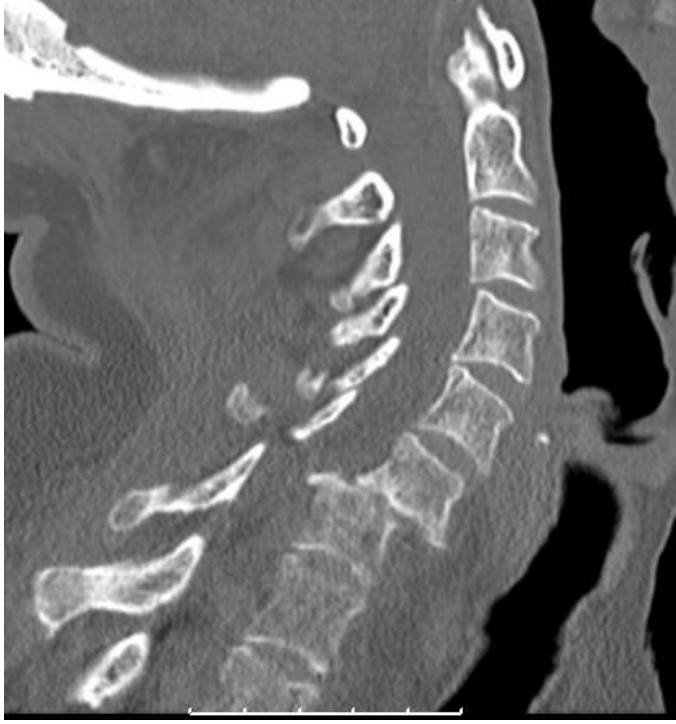
- cardiovascular
  - faint - aura, rapid recovery, upset or micturating at time
  - paroxysmal dysrythmia - palpitations
  - carotid sinus hypersensitivity - while shaving or dressing
  - aortic stenosis
- neurological
  - seizure - aura, witnessed convulsions, bit tongue, soiled
  - intracranial event - lasting effects
- metabolic
  - diabetes related - Medicalert, BM
  - postural hypotension - on rapid standing
  - drug related - look at DH, alcohol
- environmental e.g. CO poisoning

collapse

- resuscitate
- full history and exam if possible
- Ix to include
  - BM
  - bloods
  - ECG and tape
  - consider brain imaging
- falls clinic can be a useful resource

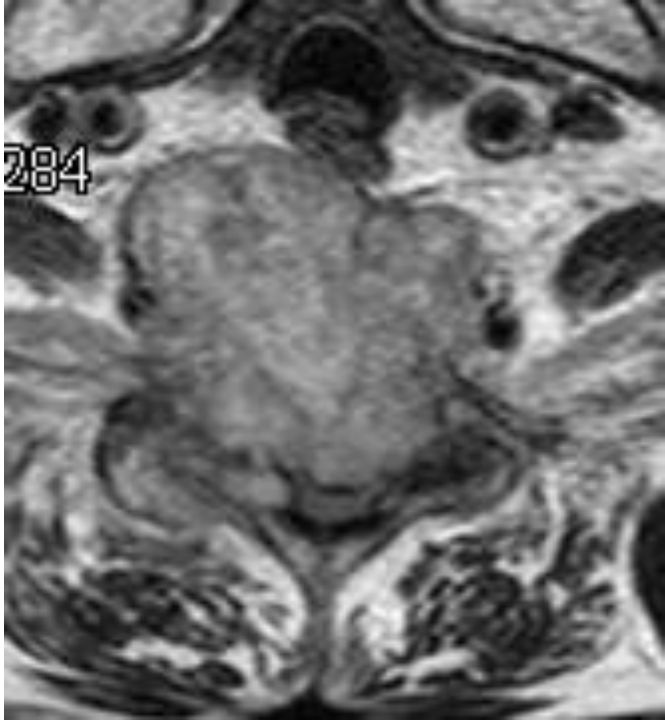
other neuro emergencies





- potential spinal injury
  - remember that after trauma (including falls) a patient with neck pain, or an unconscious patient has a broken neck until proven otherwise
  - so immobilise and image - usually CT occiput to T4

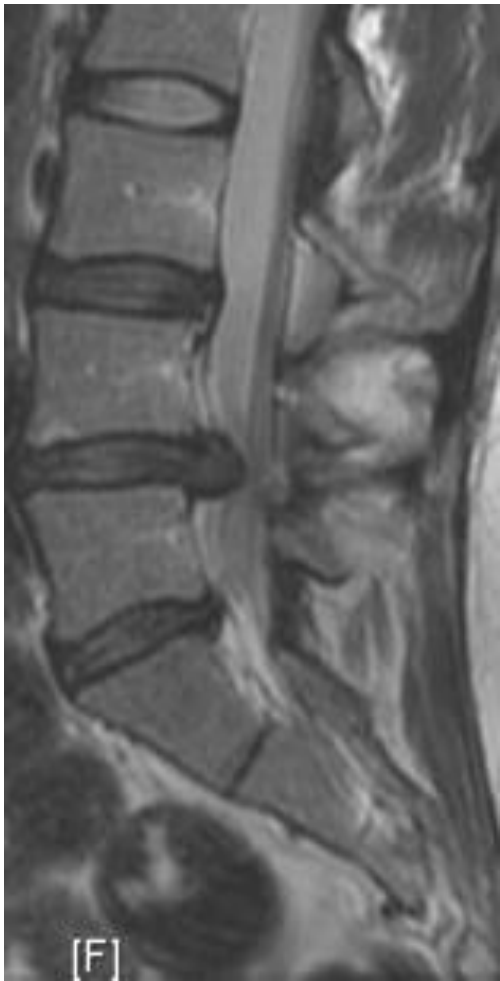
metastatic spinal cord compression



- patients with painful, acute para- or quadra-paresis require MRI, whole spine, within 24hours (stat if deficit progressive)
- rapid introduction of dexamethasone, followed by radiotherapy and or surgical decompression can save ambulation

cauda equina syndrome

- acute urinary retention with new or worsened back and or leg pain should lead to
  - neuro exam ?lumbar root signs, perianal numbness, decreased anal tone
  - catheteristation and measure residual volume
  - emergency MRI L spine if suspicion persists
  - rapid decompression can save continence (and litigation)



neuromuscular respiratory failure

- some severe neurological disorders can affect ventilation
  - Guillain Barre Syndrome
  - MND
  - myasthenia gravis
  - cervical cord injury
- CO_2 rises, lung volumes on spirometry fall
- consider pressure support or intubation

other common stuff

- dementia
- PD, MS
- degenerative spine
  - cervical myelopathy
    - numb or tingly clumsy fingers
    - gait deterioration
  - root pain in arm or leg

general stuff

- most points are for general performance aspects
- so behave like your favourite role model clinician - be pleasantly professional
- speak in colloquial English to the patient, and medical English to the examiner
- is that facial piercing, bright green shirt, unusual hair cut etc. important enough to you to risk irritating multiple scorers
- read the instructions (RTFQ)

summarise your findings

- guess what this means
- spend a few minutes practising presenting fairly straight forward cases in one sentence without leaving important stuff out eg
  - this 78 year old woman with hypertension presents with the sudden onset of a left hemiparesis 2 hours ago

Oh, oh, oh…

I. Olfactory
II. Optic
III. Oculomotor
IV. Trochlear
V. Trigeminal
VI. Abducens
VII. Facial
VIII. Auditory (vestibulo-cochlear)
IX. Glossopharyngeal
X. Vagus
XI. Accessory
XII. Hypoglossal

common questions

- UMN facial palsy spares the face
- hypoglossal weakness results in ipsilateral tongue wasting which deviates towards the weak side when protruded
- bulbar palsy results in the uvula deviating away from the weak side on phonation
- the jaw opens away from the weak side

top tips

- visual field
- the H, not too close, not too far, hand on head
- centre of the face for sensation
- power against resistance
- light before phonation
- trapezius instead of scm
- make sure you know how to turn a pen torch on
- pupils light from the side

top tips

- tone, how to hold an arm
- isolate joint to be examined
  - don't pull Granny off the bed
- adopt a system so as not to leave things out
- still time to practice
  - you don't want to look like you've not done it before
  - especially reflexes
- timing of reinforcement if required
- boosy shots
- biceps on the other side of the bed

top tips

- are you a large man or a little lady
  - or perhaps something in between
  - some suggestions for alternative techniques
- some techniques to avoid and why
  - rolling femur and lifting leg
  - finger tips – really
  - sharp end of tendon hammer
  - proprioception