Headache

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Headaches

- Classified as primary or secondary
- Primary headaches are benign, chronic and not life threatening
  - Tension
  - Migraine
  - Cluster
- Secondary headaches are generally due to another underlying cause
  - SAH/vascular
  - Malignancy
  - Infection
  - ischaemia

Pathophysiology

- For primary headaches the pathophysiology is unclear
- Likely neurovascular cause
- ?vasodilatation of cerebral blood vessels for migraine or nerve irritation
- Cluster headaches may be due to disinhibition of nocioceptic and autonomic pain pathways assoc with trigeminal nerve

Red flags

- Speed of onset
- Neck stiffness
- Fever
- Neurological deficit
- Trauma (within 3 months)
- Malignancy
- TB
- New onset in children<5 and adults >50
- Coagulopathy
- Alcohol
- Raised ICP signs (Nausea/vomiting, blurred vision, bulging fontanelle, Cushings, confusion/altered mental state, seizures, diplopia, focal neurology)

Case 1

- For several years Rob who is a 38 year old male has been having severe intermittent left sided headaches
- Intense burning pain on the left side of the head
- He has a runny nose and a teary left eye with the headaches
- Occur several times per day and last approximately 1 hour
- He can have months headache free
- No analgesia seems to work

- What is the diagnosis?
- What are the classic features?
- What are the abortive treatments?
- What are the preventative treatments?

Cluster headaches

- Men : women ratio is 5:1
- Normally start between ages of 20-40
- “Clusters” and “remissions”
- Worse in spring/autumn
- May have one long headache or several headaches per day
- Usually <4hrs per headache
- Stabbing, burning, hot poker in eye
- Swollen eyelid and contracted pupil

Treatment

- Avoid triggers
- Oxygen (8-10L/min)
- Ergotamines
- Triptans (less useful as take long time to be absorbed and work)
- Preventative therapies (Verapmamil, lithium, Triptans and steroids)
- Sphenopalatine ganglion block (large bunch of nerves behind the nose)
- Transcutaneous Vagus nerve stimulation

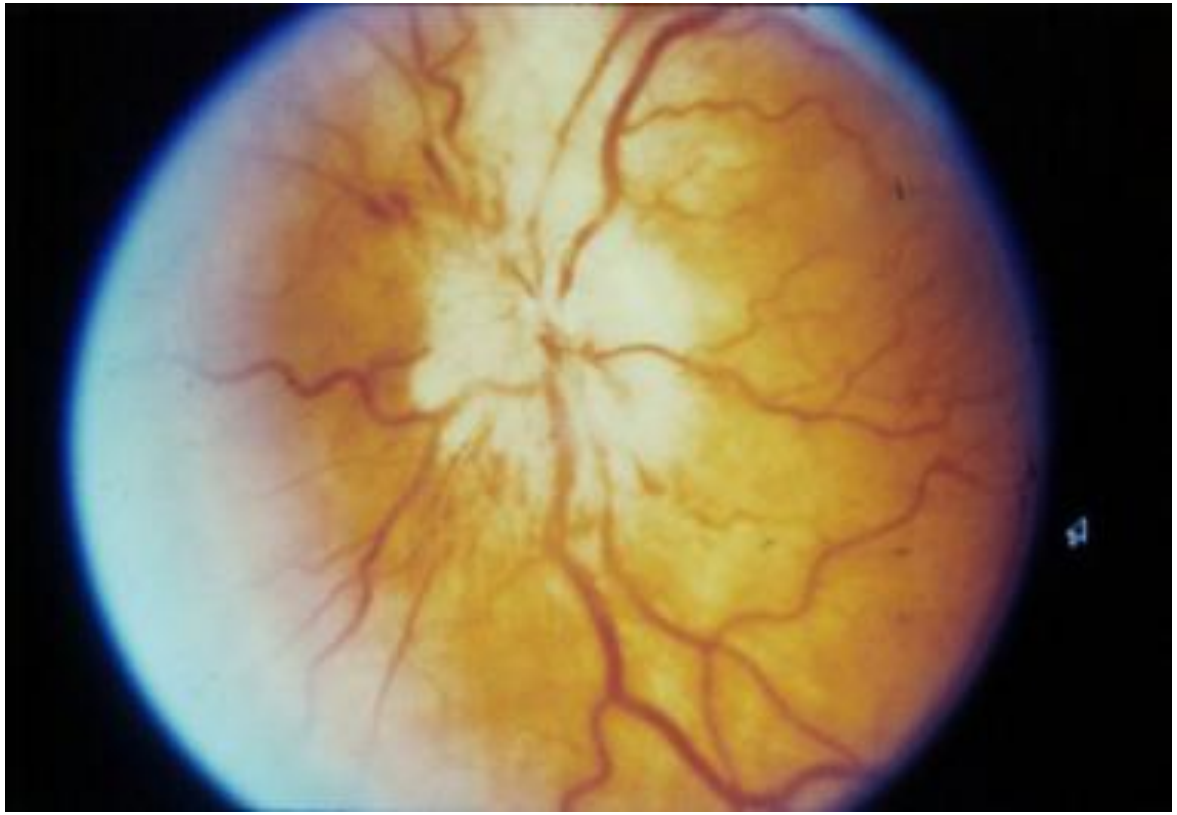
Case 2

- 72 year old male presents with several months of malaise and weight loss
- He has a left sided continuous throbbing headache
- His pain was worse when eating
- He has now started to develop intermittent blurred vision in the left
- Prior to this he did not have headaches

- What is the most likely diagnosis?
- What examination feature(s) would help to support your diagnosis?
- Which tests would you consider?
- What is the gold standard diagnostic test?
- What is the main complication and why does it occur?

Temporal Arteritis

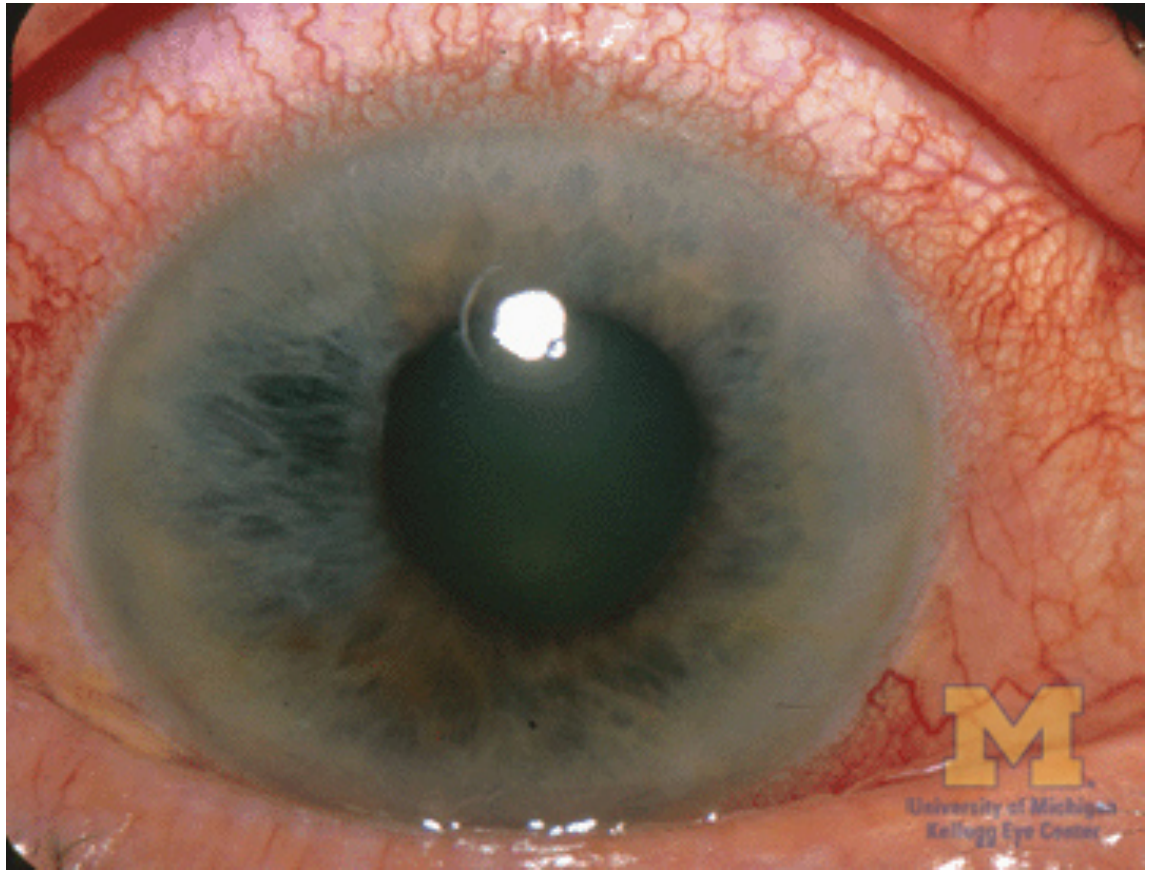
- Inflammation of the lining of the arteries and reduction in blood flow
- Symptoms include temporal headache, visual disturbance (loss/diplopia), scalp tenderness, jaw claudication, fever, weight loss, neck pain and stiffness
- Rare under the age of 50
- Women more prone, European and Scandinavians
- 50% have PMR
- Temporal artery – thickened, nodular, painful and reduced pulsation
- Diplopia, nystagmus, reduced VA, ptosis, pupil abnormalities



- ESR (>50)/CRP
- Temporal Artery Biopsy (TAB) (beware skip lesions)
- Ultrasound – Halo appearance
- Treat before TAB results
- High dose corticosteroids (to prevent blindness)
- Prednisolone 60mg, consider IV methylprednisolone for 3 days (PPI, aspirin and bisphosphonate)
- Immunosuppressant (Tocilizumab, MTX etc)
- Rheumatology and Ophthalmology input
- Complications include: Blindness (AION – anterior ischaemic optic neuropathy)

Case 3

- A 79 year old female presents with a ‘boring’ headache behind her right eye
- She complains of blurry vision and can see ‘halos’
- On examination she has reduced VA in the right eye
- Her right eye is non reactive


University of Michigan
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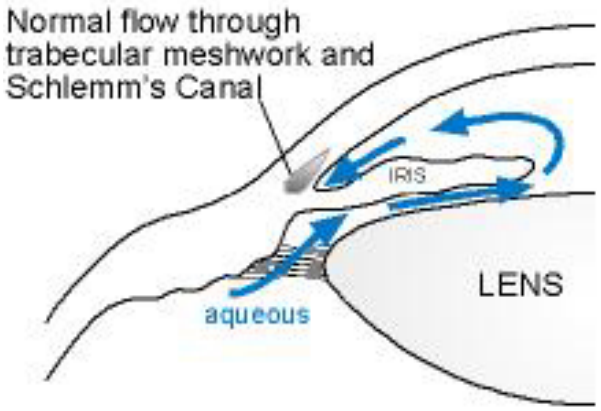
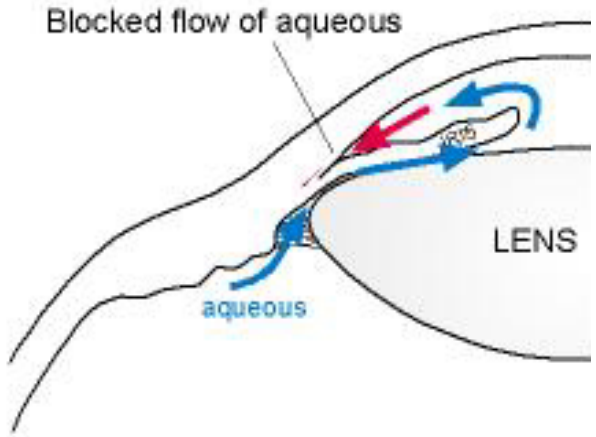
- What is the most likely diagnosis?
- What test will help confirm the diagnosis?
- What position should the patient be kept in?
- Is an eye patch of use?
- What treatments should be initiated in the ED?
- How do they work?

Acute Angle Closure Glaucoma

- Aqueous humour in the anterior chamber of the eye is unable to drain which causes a rise in intraocular pressure
- Risk factors include shallow anterior chamber of the eye, thin iris, thick lens, female sex, elderly, Asians/Eskimos and drugs
- Periorbital pain (boring in nature), visual defects, ipsilateral headache, halos
- Raised IOP (20mmHg)
- Treatment Acetazolomide – CA inhibitor which reduces production of aqueous humour (500mg IV stat then PO) , Topical beta blocker and topical corticosteroids (reduce optic nerve damage)
- Pilocarpine (miotic)
- Keep supine (lens falls away from the iris reducing IOP
- Iridotomy

Angle Closure Glaucoma





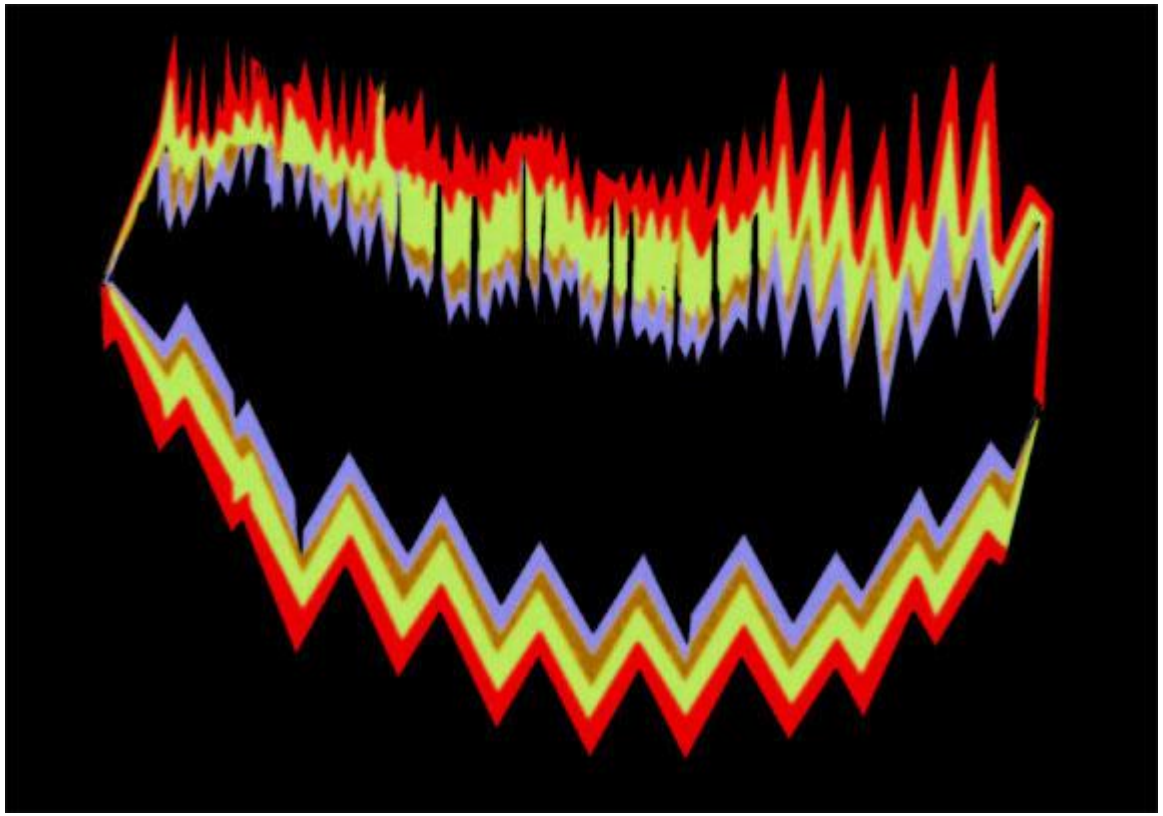
Case 4

- A 35 year old lady presents with a severe left sided headache this morning
- She has had similar previous headaches
- Prior to the headache she had some nausea and flashing lights
- She has taken some paracetamol and naproxen however these has not helped
- Her headaches normally settle with time and Paracetamol/Naproxen
- She has no focal neurological deficit on examination

- What is the most likely diagnosis?
- What are the common triggers for this type of condition?
- How would you manage this patient?
- What is the diagnostic criteria for these headache?
- What would be your next options for treatment?

Migraine

- Diagnostic criteria (international headache society)
- Repeated headache attacks lasting 4-72 hours *(minimum of 5)*
- Normal physical examination
- No other cause for headache
- Minimum of 1 of the following during attack
  - Nausea and/or vomiting
  - Phtophobia and/or phonophobia
- Minimum 2 of the following
  - Unilateral
  - Throbbing/pulsating
  - Worse on movement
  - Moderate to severe intensity



Treatments

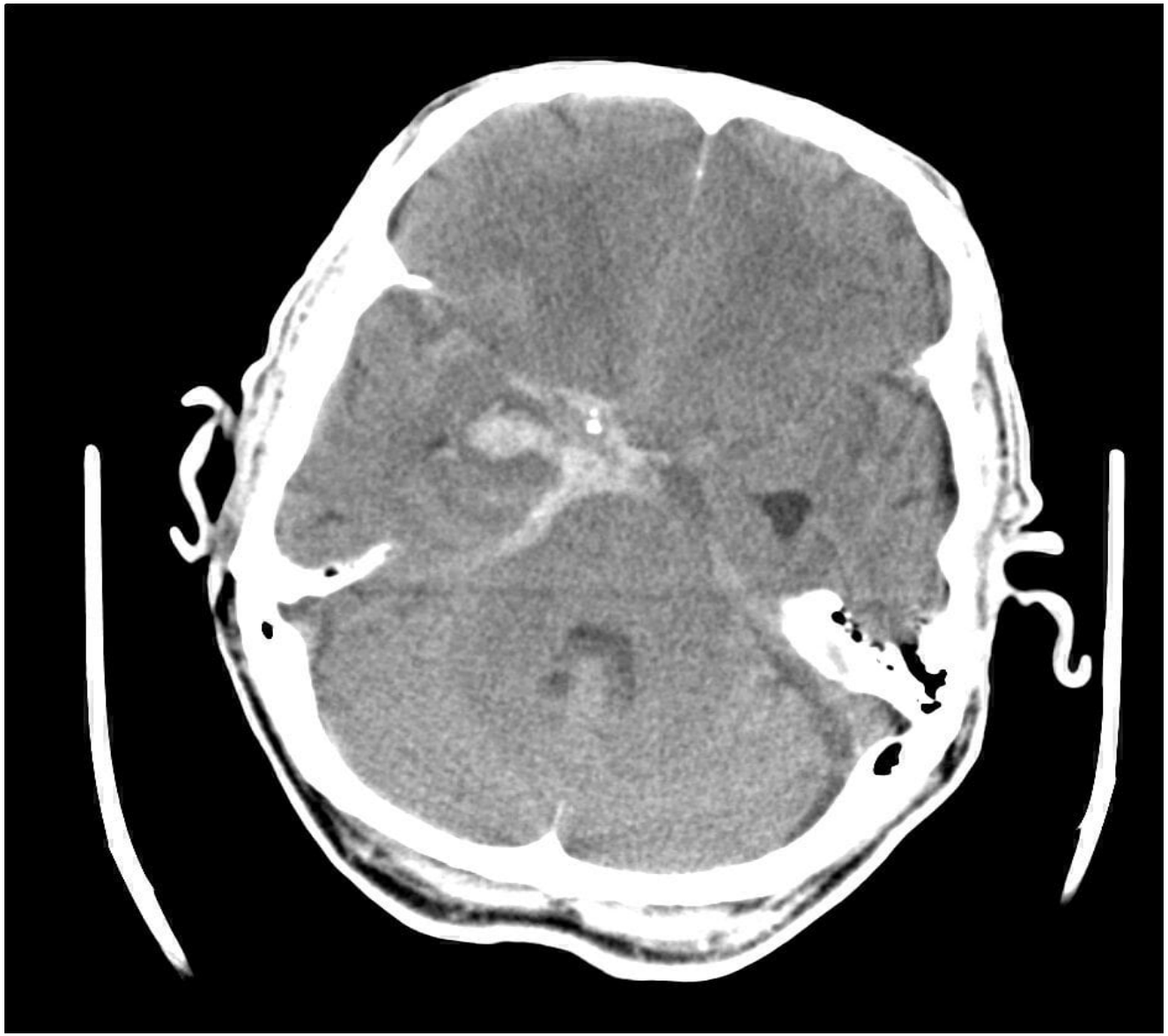
- Paracetamol
- NSAID (Ibuprofen or Aspirin 900mg 4-6hrly max 4 grams)
- Triptan (oral, subcutaneous or spray, can choose different ones)
- Antiemetic (Metocloperamide or Domperidone (max 5 days)
- DO NOT USE Ergots and Opioids
- Combination therapies vs monotherapy

Prevention

- Frequent attacks which are disabling
- Medication overuse Headaches (MOH)
- Use of Triptans or analgesics for more than 2 days a week regularly
- Two or more Triptans producing inadequate response
- Topiramate
- Propranolol
- Accupuncture (Better evidence than Topiramate and Propranolol)
- Mefenamic acid (menstrual related headaches)
- OCP (poor evidence)
- Avoid triggers (stress, depression, sleep deprivation, trauma, foods, lights, smells, excessive exercise)

Case 5

- A 52 year old patient presents with new confusion
- She keeps complaining of a severe headache
- She is taken for a CT scan
- On return from CT she has a tonic clonic seizure



- What is the diagnosis?
- What is the underlying pathophysiology?
- Which investigations can be used to exclude this diagnosis?
- How would you manage this patient?
- What are the definitive treatment?

Subarachnoid Haemorrhage (SAH)

- Ruptured cerebral aneurysm or AVM
- Sudden onset severe headache
- Dizziness, orbital pain, diplopia, visual loss, seizures, sensory/motor changes, ptosis and dysphasia, neck pain
- Sentinel leaks (30-50% may occur prior to rupture)
- Mass effect or emboli (intra-aneurysmal thrombus)
- Examination –signs of raised ICP, papilloedmea, cranial nerve palsy, examination may be normal
- Various Grading systems (Hunt and Hess (symptom based), WFNS (GCS based), Fisher scale (CT based))

- CT 6hours of onset of headache (CT/CTA) – third generation CT
- LP (>12hrs after onset, measure pressures and Xanthhocromia)
- LP contraindicated if signs of raised ICP, CT shows SAH, coagulopathy
- Treatment
  - Antihypertensives
  - Osmotic agents/loop diuretics
  - Steroids
  - Coiling or clipping of aneurysm
- Complications
  - Hydrocephalus
  - Rebleeding
  - Vasospasm
  - Seizures
  - Cardiac dysfunction

Case 6

- A 30 year old male has been unwell with mild headache and left sided sinus pain, he also noticed a boil on the left side of his face which he had squeezed
- After a few days he develops fevers, swelling around the left eye and numbness around the left side of his face
- The headache becomes progressively worse and he now complains of pain around both eyes and blurred vision
- On examination he has lateral gaze palsy and exopthalmous
- He has a temp of 38.9 and looks unwell

- What is the most likely diagnosis?
- What is the pathophysiology?
- What are the most likely organisms?
- What is the gold standard imaging used?
- What other tests should you consider?
- What are the treatments?

Venous Sinus Thrombosis

- Normally sinus or furuncle infection
- Generally staph infection but may be strep
- Venous blood supply from the cavernous sinus comes from various places (face, jugular and cerebral)
- Venous obstruction and impairment of cranial nerves near cavernous sinus (clot formed to stop spread of infection)
- Symptoms include headache, fevers, cranial nerve deficits and eye swelling/visual symptoms
- Usually use CT (fast) MRV is gold standard
- Lumbar puncture and Blood cultures
- Broad spectrum IV antibiotics
- Anticoagulants, steroids and surgery may be considered

Case 7

- A 62 year old female presents with a sudden, severe headache
- She has been experiencing double vision for the last few weeks
- Today she has developed bitemporal hemianopia
- She has also started vomiting and complaining of neck stiffness

- What is the most likely diagnosis?
- What is the pathophysiology?
- What imaging would you request?
- What treatment would you consider?

Pituitary Tumour Apoplexy

- Rare but life threatening cause of severe/sudden headache
- Can have loss of blood supply to the pituitary or bleeding into the pituitary tumour
- Risk factors include trauma, anticoagulants, pregnancy, hypertension, co-infection
- Functional (too much hormone) vs non functional (not enough)

Summary

- Headaches can be classified as primary or secondary
- Be aware of the Red Flags!
- Image wisely – CT does not rule out all causes of headaches
- Treat the underlying causes for secondary Headaches

Questions?