

Differential Diagnosis of Acute Headache

Cause grouping	Differentials	Classical history	Classic examination findings	Investigation findings (Initial test, diagnostic test)	Definitive management (remember ABCDE first)
Primary	Tension headache	<ul style="list-style-type: none"> Bilateral tight band sensation Recurrent Occurs late in day Association with stress 	<ul style="list-style-type: none"> Tension and tenderness in neck and scalp muscles 	Clinical diagnosis	<ul style="list-style-type: none"> Simple analgesics Avoid triggers
	Cluster headache	<ul style="list-style-type: none"> Short painful attacks around one eye Last between 30 mins – 3 hours Occur once/twice a day for 1-3 months May be lacrimation and flushing 	<ul style="list-style-type: none"> Conjunctival injection Lacrimation Swollen eye lid Horners syndrome during attack 	Clinical diagnosis	<ul style="list-style-type: none"> 100% oxygen Triptan Verapamil may prevent
	Migraine	<ul style="list-style-type: none"> Unilateral pulsating headache in trigeminal nerve distribution Last between few hours – days May be aura (usually visual) Need to lie down in dark room (photophobia) 	<ul style="list-style-type: none"> May be focal neurology with aura Otherwise normal 	Clinical diagnosis	<ul style="list-style-type: none"> Abortive: <ol style="list-style-type: none"> Paracetamol/NSAID Triptan Preventative: <ol style="list-style-type: none"> Propranolol Pizotifen Amitriptyline
	Trigeminal neuralgia	<ul style="list-style-type: none"> 2 second paroxysms of stabbing pain in unilateral trigeminal nerve distribution Face screws up with pain Triggers (e.g. washing area, shaving, eating, talking) or symptoms of underlying cause (e.g. aneurysm, tumour, MS) 	<ul style="list-style-type: none"> Normal 	Clinical diagnosis •MRI to find cause	<ul style="list-style-type: none"> Anti-epileptics Treat cause

Secondary-intracranial	Meningitis	<ul style="list-style-type: none"> Photophobia Neck stiffness Systemic symptoms e.g. fever, non-blanching rash 	<ul style="list-style-type: none"> Photophobia Neck stiffness Kernig's and Brudzinski's +ve Non-blanching rash (meningococcal) Focal neurology (20%) 	<ul style="list-style-type: none"> Blood culture and meningococcal PCR LP Throat swab CXR: pneumonia may be cause 	<ul style="list-style-type: none"> IV 3rd generation cephalosporin without delay IM benzylpenicillin if in community Steroids Ciprofloxacin prophylaxis for close contacts
	Temporal arteritis	<ul style="list-style-type: none"> Unilateral throbbing pain Scalp tenderness and jaw claudication >55 years May be visual problems 	<ul style="list-style-type: none"> Ipsilateral blindness Temporal tenderness Optic nerve oedema 	<ul style="list-style-type: none"> ESR: raised Temporal artery biopsy Doppler temporal artery: ↓flow 	<ul style="list-style-type: none"> High dose steroids
	Subarachnoid haemorrhage	<ul style="list-style-type: none"> Very sudden onset severe headache "Like someone hit me with a brick over the head" Meningismus 	<ul style="list-style-type: none"> Nuchal rigidity Meningism 	<ol style="list-style-type: none"> CT head: blood within area of circle of Willis LP (if CT normal): xanthochromia 	<ul style="list-style-type: none"> Calcium antagonists (to reduce vasospasm) Coiling/clipping of aneurysm
	Raised intracranial pressure (e.g. tumour, benign intracranial hypertension, acute hydrocephalus)	<ul style="list-style-type: none"> Worse in morning and with coughing and bending Vomiting & reduced GCS Visual disturbance May be neurological symptoms & seizures if tumour 	<ul style="list-style-type: none"> ↓GCS Papilloedema CN6 (abducens) palsy Ipsilateral mydriasis Cushing response (↓pulse, ↑BP) Cheyne-Stokes respiration 	<ul style="list-style-type: none"> CT head: to confirm and determine cause 	<ul style="list-style-type: none"> Mannitol + hyperventilation Treat cause
	Venous sinus thrombosis	<ul style="list-style-type: none"> Headache Nausea and vomiting History of hypercoagulable state 	<ul style="list-style-type: none"> Papilloedema Visual field defects Cranial nerve palsies Focal neurology 	<ul style="list-style-type: none"> CT head MR venography 	<ul style="list-style-type: none"> Treatment dose LMWH Cavernous sinus thrombosis: also antibiotics (drains nose) and hypopituitarism treatment if required
	Intracerebral haemorrhage	<ul style="list-style-type: none"> Symptoms of stroke + headache 	<ul style="list-style-type: none"> Neurological defects e.g. hemiplegia, homonymous hemianopia, dysphasia 	<ul style="list-style-type: none"> CT head 	<ul style="list-style-type: none"> Supportive Craniotomy if significant midline shift/↑ICP
	Other differentials	Encephalitis, cerebral abscess, tumour, pituitary apoplexy, subdural haematoma, extradural haematoma			

Secondary-extracranial	Acute closed-angle glaucoma	<ul style="list-style-type: none"> Pain around one eye Swollen red eye Visual blurring and halos 	<ul style="list-style-type: none"> Reduced acuity Conjunctival injection Cloudy cornea Pupil mid-dilated and irregular 	<ul style="list-style-type: none"> Tonometry >24mmHg (>21mmHg suspicious) 	<ul style="list-style-type: none"> Myiosis with pilocarpine drops and IV acetazolamide Peripheral iridectomy
	Sinusitis	<ul style="list-style-type: none"> Facial pain exacerbated by leaning head forward, coughing etc Rhinorrhoea/nasal congestion 	<ul style="list-style-type: none"> Sinus tenderness Pain on percussion of frontal/temporal sinuses 	Clinical diagnosis	<ul style="list-style-type: none"> Antibiotics if bacterial Warm face packs Saline nasal drops Analgesia
	Hypertensive encephalopathy	<ul style="list-style-type: none"> Headache Visual blurring Vomiting 	<ul style="list-style-type: none"> Severe hypertension Bilateral retinal haemorrhages Papilloedema 	Clinical diagnosis •Urine dip: microscopic haematuria •Look for cause •CT brain: may be required to exclude cerebral haemorrhage	Controlled BP reduction •PO: atenolol/amlodipine •or IV: labetalol or sodium nitroprusside

	Pre-eclampsia	<ul style="list-style-type: none"> •3rd trimester or peripartum •Headache •Visual disturbance •Epigastric pain •Vomiting 	<ul style="list-style-type: none"> •Hypertensive •Brisk reflexes 	<ul style="list-style-type: none"> •Urine dip: proteinuria •Bloods: Haemolysis, Elevated Liver enzymes, Low Platelets •CTG 	<ul style="list-style-type: none"> •Delivery is only cure (aim to wait >34w) •BP control (methyldopa, labetalol) •Magnesium sulphate (prevent fits) •Aspirin
	Carotid/vertebral artery dissection	<ul style="list-style-type: none"> •Most common cause of stroke in young adult •Dull/pressure occipital headache •Neck and facial pain •Stroke symptoms (may be transient) •Risk factors e.g. trauma, neck manipulation, connective tissue disease 	<ul style="list-style-type: none"> •Signs of stroke 	<ul style="list-style-type: none"> •<u>CT or MR angiography</u> •Duplex carotid ultrasonography 	<ul style="list-style-type: none"> •Treat stroke (anticoagulation or antiplatelet drugs) •Endovascular stent
	Other differentials	Drugs (e.g. nitrates, PPI, Ca ²⁺ antagonists, caffeine, analgesia overuse, hormones), drug withdrawal, CO poisoning, post-traumatic, Pagets disease, hypoxia, cervical spondylosis; otitis media			