



MedED EMQ Revision Course

Notes Set 1

These notes have been made from the learning slides of the previous 2-3 years of EMQ sessions. There may be some repetition of material and this **document is not exhaustive**.

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Session 5 Neurology

Headache

- **Migraine**
 - Photophobia; vomiting; associated with certain foods
 - Precipitant and aura
 - Unilateral throbbing
 - F>M
- **Cluster headaches** – daily clusters for 4-6 wks then nothing for months
 - M>>>F (middle aged men)
 - Intense pain at night – getting out of bed and walking relieves
 - Lacrimation, ptosis during attack
- **BIH (benign intracranial hypertension)** – middle-aged, large women
 - Papilloedema, blurred vision
- **High intracranial pressure:**
 - Headaches + vomiting; drowsiness
 - Worse on cough, stooping straining
 - Worse in the morning
- **Meningitis and SAH (sub-arachnoid haemorrhage)**
 - Both cause meningism (neck stiffness, photophobia and headache)
 - SAH – more sudden, ‘worse headache ever’
 - Associated with PCKD – Berry aneurysms in the Circle of Willis
 - Meningitis – look for fever and rashes; Kernigs sign
 - Tension headache – stress, ‘tight band’
- **Trigeminal neuralgia** – pain on TOUCHING the face
 - Division of the trigeminal nerve
- **Cf. temporal arteritis** – ‘tender’ to touch...



- High ESR
- Jaw claudication (pain on chewing)
- Polymyalgia rheumatica
- Risk of blindness – MUST give steroids
- Temporal artery biopsy confirms the diagnosis
- Vision: Amaurosis fugax
- Age>50

- **Sinusitis**
 - Fever
 - Nasal obstruction/ purulent nasal discharge
 - Loss of smell
 - Aggravated by bending over

- **Subdural Haematoma**
 - N – no history of head trauma
 - Longer history... Days/weeks
 - Elderly, alcoholic, on anticoagulation
 - FLUCTUATING LOC
 - Confusion, ataxia, gradual physical and mental deterioration
 - CT head shows a sickle shaped haematoma, with midline shift

- **Extradural Haemorrhage**
 - Head trauma
 - Shorter history – hours... days
 - Followed by a LUCID INTERVAL
 - Then rapid deterioration (unconscious/dead)
 - CT head!! Shows a biconvex (lens-shaped) haematoma due to sutures of skull (cf. subdural)

- **Meningitis – see below**

Neuro-muscular Disorders

- **MG (Myasthenia Gravis)**
 - Young women with muscle weakness. Associated with other autoimmune diseases, thymoma
 - Antibody to ACh receptor on post-synaptic membrane/muscle specific tyrosine



kinase

- Progressive weakness, difficulty swallowing, eye involvement (bilateral ptosis, diplopia). Can involve respiratory muscles.
 - Symptoms worsened by certain drugs, pregnancy
 - Sensation, tone and reflexes are **normal**.
 - Voice tailing off when counting to 50, unable to keep head up to focus on your finger
 - Tensilon test: 1 ampoule of normal saline, 1 of edrophonium (short acting anticholinesterase) – edrophonium will improve power in c. 1 minute. Need atropine and resuscitation facilities on hand
 - EMG – decreased muscle action after continuous stimulation
- **LEMS (Lambert-Eaton myasthenic Syndrome)**
 - hyporeflexia, autonomic disturbance
 - Pre-synaptic membrane antibody to Ca²⁺ receptor
 - Associated with small cell lung Ca
 - NO EYE INVOLVEMENT
 - Gets stronger with exercise
 - Increased muscle action after continuous stimulation
- **Myotonic dystrophy**
 - Sleepy, balding, diabetic men with cataracts
 - Distal muscle weakness and wasting
 - Family history (with genetic anticipation)
- **MND (Motor Neurone disease) – UMN and LMN signs**
 - Eyes unaffected, tongue fasciculation
 - UMN signs in lower limbs
 - LMN signs in upper limbs
 - NO SENSORY LOSS



Post- infectious Neurological syndromes

- **Guillain-Barre** – Campylobacter infection
 - Ascending paralysis 2-3 wks after infection
 - ‘walking on air’
- **Miller-Fischer** - triad of:
 - Ophthalmoplegia
 - Ataxia
 - Areflexia

Meningitis

Disease	CSF Pressure	Glucose	Protein	Cells
Bacterial	Raised	DOWN	UP	UP – NEUTROPHILS
TB	May be normal	DOWN	UP	UP – LYMPHOCYTES
Viral	Normal	NORMAL	NORMAL	LYMPHOCYTES

Infective organisms: (that cause meningitis)

- Meningococcus – Gram negative (diplococcus) sepsis, purpuric rash etc
- Strep pneumoniae – alcoholic, elderly, skull fracture
- HiB (Haemophilus Influenza)
- M Tb
- Listeria – pregnant, alcoholic, immunocompromised
- (Cryptococcus) - HIV

Treatment

- TB – 12 months
- Meningococcus – ceftriaxone (+dexamethasone)



- In community (prior to hospital admission) give benzylpenicillin

Multiple Sclerosis

- F>M
- Relapsing remitting, primary progressive or secondary progressive
- Eye signs – early...
 - Optic neuritis
 - Transient blindness
 - Blurred vision
- Other symptoms e.g. weakness, numbness, bowel or bladder disturbance (transverse myelitis)
- Lhermitte's sign (electric sensations down limbs and back with neck flexion) and Uhthoff's phenomenon (worsening symptoms in hot water/exercise)
- Diagnosis based on demonstration of lesions disseminated in time and space
- Oligoclonal bands in CSF (antibodies), increased CSF protein, lymphocytosis
- MRI is best; demonstrates plaques of demyelination

Dizziness and vertigo

- Ramsay Hunt syndrome - Ramsay Hunt syndrome is a herpes zoster infection of the geniculate ganglion. O/E – paralysis of facial muscles on affected side, herpetic eruption on ear canal, tinnitus, hearing loss vertigo. Aciclovir is the treatment of choice.
- Menière's disease triad – vertigo, tinnitus and deafness. Aetiology unknown (accumulation of endolymph). Patient generally 40-60, ¼ of cases are bilateral. Causes intermittent rotational vertigo lasting a few hours with distorted hearing. Vertigo can be disabling – so patient may vomit or call an ambulance.
- Benign paroxysmal positional vertigo - BPPV occurs due to otolith stimulation of the auditory canal for several seconds after head movement. Patients have short episodes of vertigo triggered by head movement, often rolling over in bed. Diagnosis confirmed by Hallpike test and treated with Epley manoeuvre. Without Epley resolution usually occurs within weeks.
- Lateral medullary syndrome - Eponymously known as Wallenberg's syndrome. Posterior inferior cerebellar artery occlusion

Ipsilateral signs:

- Decreased pain and temperature sensation of face



- Vocal fold paralysis
- Horner's syndrome
- Cerebellar signs

Contralateral signs;

-decreased pain and temperature sensation of the body

- Vestibular neuronitis/ Labyrinthitis - most common cause of vertigo, may be viral in origin. In an EMQ the person will have had a previous viral infection, probably the flu. Causes 'explosive' severe vertigo, vomiting and ataxia. No tinnitus or deafness. Symptoms settle over a few days but manage with antiemetics for patient comfort. Some patients go on to develop BPPV

Stroke

- Over 24 hours!
- Haemorrhagic vs ischaemic
 - NEED CT head to exclude haemorrhagic
 - 300 mg aspirin chewed – 1st line treatment + heparin
 - Haemorrhagic... neurosurgical referral

Collapse

Either Cardiovascular or Neurological!

Risk factors (age, PMH)

Neurological: (causes)

- **Meningitis:**
 - Pyrexia – infection!
 - Meningeal irritation – neurological symptoms
 - Purpuric rash in meningococcal septicaemia
 - iv benzylpenicillin
- **Normal Pressure Hydrocephalus:**



- Triad of: cognitive impairment, gait dyspraxia (falls), urinary incontinence
- Subcortical dementia
- **Subarachnoid haemorrhage:**
 - Sudden onset, occipital headache, like being kicked in the head
 - FH of Polycystic Kidney Disease (associated with Berry aneurysms). Other associations: Ehlers Danlos syndrome, coarctation of aorta
 - Signs/symptoms of meningism
 - Sub-hypoid haemorrhage. CT scan to confirm diagnosis
 - CT can be negative in up to 15% of cases; do a lumbar puncture > 12 hours after presentation. Early on LP is bloody, later on shows xanthochromia (yellow colour due to RBC breakdown products)
- **Postural Hypotension:**
 - DM – Autonomic Neuropathy
 - Antihypertensive medication
- **Alcohol Induced Cerebellar Syndrome:**
 - Signs of Chronic Liver Disease
 - DANISH (signs of a cerebellar problem):
 - Dysdiadochokinesia; Ataxia; Nystagmus; Intention tremor; Slurred Speech/dysarthria; Hyporeflexia

Seizures: (causes)

- **SIADH:**
 - Hyponatraemia (esp if serum below 115 mmol/l)
- **Hypocalcaemia**
 - Chvostek's sign: twitching in the facial muscles induced by gentle tapping on the cheek
 - Trousseau's sign: tetanic spasm in the fingers and hand after blowing up a BP cuff for



- several minutes
- Seizures if significant hypocalcaemia
- **Hypomagnesaemia**
 - S/e of frusemide
- **Decompensated hepatic failure**
 - Hepatic encephalopathy
- **Hypoglycaemia**
 - Gliclazide
 - Oral hypoglycaemic
 - sulfonylurea

Dementia (causes)

- **Vascular dementia:**
 - Previously 'multi-infarct disease' – due to recurrent cerebral infarcts, seen in arteriopathies
 - Step-wise loss of cognitive function
- **Frontotemporal dementia/Pick's Disease:**
 - Early personality changes with relative sparing of intellect e.g. aggression, disinhibition
 - Patient appears unkempt, mimics doctor's gestures/words
- **Alzheimer's Disease: -**
 - The **commonest** of all dementias
 - Insidious deterioration of cognitive function, associated with dyspraxia, visuospatial and speech problems
 - Initial phases with short-term memory loss
- **Lewy Body dementia: -**



- Accounts for c. 15-20% of all dementias
- Parkinsonian symptoms, fluctuating levels of awareness (alternating confusion and lucidity) and prominent visual hallucinations
- **Normal pressure hydrocephalus (see above, under collapse)**
- **Folstein test:**
 - Cognitive test, tests short-term memory, long-term memory and cognitive skills (e.g. concentration)
 - Out of 30, 23-26 mild impairment, 16-22 moderate to severe impairment, ≤15 severe impairment
- **Hypothyroidism:**
 - Reversible cognitive impairment providing no other underlying dementia
- **Alcoholic dementia**
 - Long-term excessive drinking
 - Symptoms similar to Alzheimer's

Alcohol related:

Wernicke's encephalopathy – nystagmus/ ophthalmoplegia/ ataxia. Thiamine def.
Reversible....

Untreated -· Korsakoffs

- **Korsakoff's syndrome** – gross defect in memory of recent events. Confabulation.
Irreversible

Unilateral facial palsy

- **Acoustic neuroma** – benign/ hearing deficit/ 5/6/7 can be affected
- **Ramsay Hunt** – form of herpes zoster of the geniculate ganglion. LMN facial palsy, with herpetic vesicles in the EAM / soft palate. Deafness

Parkinsonism

A triad of bradykinesia, rigidity and tremor. Rigidity is lead-pipe, tremor is 4-6Hz resting "pill-rolling."
Other features:



- Micrographia (small writing)
- Poverty of blinking
- Hypomimic face (mask-like)
- Cogwheeling (tremor superimposed on rigidity)

Causes:

Parkinson's Disease – due to degeneration of dopaminergic substantia nigra neurones. Symptoms of parkinsonism, no additional symptoms, with normal routine investigations. Treat with dopamine replacement e.g. Sinemet, Madopar, dopamine agonists (bromocriptine)

Multiple system atrophy – a Parkinson-plus syndrome, characterised by a triad of Parkinsonism, autonomic disturbance (e.g. postural hypotension) and cerebellar signs

Progressive supranuclear palsy (Steele-Richardson-Olszewski syndrome) – a Parkinson-plus syndrome characterised by a triad of Parkinsonism, vertical gaze palsy and cognitive deterioration

Wilson's Disease – neuropsychiatric manifestations of this copper metabolism disorder e.g. asymmetric tremor, labile emotions, depression (See notes set 1 for more detail)

Drug-induced – dopamine antagonists e.g. metoclopramide (anti-emetic), haloperidol, chlorpromazine (antipsychotics)

Gait disturbances

- **Antalgic gait:** associated with osteoarthritis
- **Cerebellar ataxia:** signs of chronic liver disease and cerebellar disease evidenced by dysdiadochokinesia and past pointing, pts classically have a wide-based ataxic gait
- **Festinating gait:** pt has parkinsonism, most likely due to idiopathic PD, no arm swing, characterized by a flexed trunk with the legs flexed stiffly at the knees and hips. The trunk is the part of the body below the head, not including the arms and legs. People with festinating gait take short steps, which eventually become faster. The steps become faster because the person is trying to catch up with him/herself, since is/her center of gravity (the part where the entire weight of the body is concentrated) has been altered.
- **Hemiparetic/ circumducting gait:** pt with hemiplegia
- **Hysterical gait:** foot dragged or pushed ahead, pt with hysterical neurosis i.e. somatoform disorder
- **Scissoring gait:** most common in pts with spastic cerebral palsy, Legs flexed slightly at the hips and knees, giving the appearance of crouching, with the knees and thighs hitting or crossing in a scissors-like movement. Often mixed with or accompanied by spastic gait, a stiff, foot-dragging walk caused by one-sided, long-term muscle contraction.
- **Sensory ataxia:** pt has developed a high stepping gait consistent with sensory ataxia due to peripheral sensory neuropathy, pt described as anaemic which suggests possible B12



deficiency

- **Trendelenburg gait:** due to weakness of abductor muscles of lower limb e.g. due to superior gluteal nerve lesion
- **Waddling gait:** pt has been on long term steroids, which has caused secondary Cushing's and proximal myopathy as evidenced by the weakness of the upper limbs in abduction and being unable to stand from a sitting position, proximal myopathy produces a "waddling" gait

Specific nerve lesions –

Limb;

- Ulnar nerve lesions = wasting of hypothenar eminence, sensory loss over medial one and a half fingers, claw hand deformity, can test for weakness in abductor digiti minimi.
- Median nerve lesions = wasting of thenar eminence, sensory loss on lateral palmar surface of three and a half digits, test for weakness in abductor pollicis brevis, affected in carpal tunnel syndrome.
- Radial nerve lesion = paralysis in extensors of the wrist causing wrist drop, sensory loss on dorsal surface of most of the first three digits.
- Tibial nerve lesions = inability to invert foot or stand on tiptoes, sensory loss over the sole of the foot
- Common peroneal nerve lesions = Weakness in dorsiflexion and eversion of foot, sensory loss over dorsum of the foot.

Optic;

- Superior quadrantanopia = temporal lobe lesion
- Inferior quadrantanopia = parietal lobe lesion
- Homonymous hemianopia = optic radiation, visual cortex injury
- Central scotoma = macula (degeneration or oedema)
- Bitemporal hemianopia = chiasma lesions

Cerebral venous thrombosis

- Pregnancy, thrombophiliacs...
- Presents as raised ICP
- Cushing's reflex!

Subacute combined cord degeneration (SACD)

- Bilateral, absent ankle jerks, spastic paraparesis, peripheral neuropathy
- SE Asian women
- Folate – will worsen it!!
- Rx - B12

Miscellaneous conditions with neurological symptoms

- Syringomyelia - Due to a fluid filled cavity (syrinx) in spinal cord. Compression of the cord results in loss of pain and temperature first as compresses the decussating spinothalamic fibres anteriorly in the ventral horns. Often 'cape distribution'.



Wasting/weakness due to involvement of cervical anterior horn cells. Patient may have Charcot’s joints and horners syndrome. Can be associated to an Arnold-Chiari malformation

- Von Hippel Lindau – Von Hippel Lindau is an AD defect on chromosome 3. Syndrome characterised by retinal and intracranial haemangiomas and haemangioblastomas, renal cysts, renal cell adenocarcinoma, pancreatic tumours and pheochromocytomas. Presenting complaint for one of the tumours e.g. pheochromocytoma (neuro link is that patient will present claiming they have frequent panic attacks – EMQs stems sometimes have tenuous connections)but PMH of other tumours
- Neurofibromatosis is an AD disorder characterised by the development of multiple neurofibromas from the sheaths of central and peripheral nerves. There are 2 types; Type 1 = ‘peripheral form’ (70% of cases), patient has multiple cutaneous neurofibromas, café-au-lait patches, axillary/inguinal freckling and hamartomas on the iris (Lisch nodules). Also known as von Recklinghausen’s disease Type 2 = ‘central form’, few or no cutaneous lesions but development of bilateral neural tumours.
- Brown-Séquard syndrome = unilateral transection (/Hemisectomy) of the spinal cord. Ipsilateral loss of motor function with impaired proprioception and vibration sense. Contralateral loss of pain and temperature sensation.
- Charcot-Marie-Tooth- inverted champagne bottle appearance of lower limbs

Glasgow Coma Scale (GCS)

Glasgow Coma Scale						
	1	2	3	4	5	6
Eyes	Does not open eyes	Opens eyes in response to painful stimuli	Opens eyes in response to voice	Opens eyes spontaneously	N/A	N/A
Verbal	Makes no sounds	Incomprehensible sounds	Utters inappropriate words	Confused, disoriented	Oriented, converses normally	N/A
Motor	Makes no movements	Extension to painful stimuli	Abnormal flexion to painful stimuli	Flexion / Withdrawal to painful stimuli	Localizes painful stimuli	Obeys Commands

EO – Eye opening: 1-4

BMR – Best motor response: 1-6

BVR – Best eye opening response: 1-5

MINIMUM SCORE: 3

Head Injury



GCS 8: EO: 2, BMR: 4 normal flexion (withdraws from pain), BVR: 2 incomprehensible sounds
– GCS 8: **Severe head injury**

Extradural haematoma: classically a lucid interval before a rapid decline, GCS 12

GCS 11: EO to pain: 2, BMR: 5 localises pain, BVR: 4 confused speech; moderate head injury (GCS 9-13)

Basal skull fracture: Evidenced by characteristic signs: “panda or racoon eyes”, subconjunctival haemorrhage, otorrhoea from eyes, not emergency, but should be admitted

Subdural haematoma: Due to rupture of bridging vein, GCS 5, death imminent without intervention, long-term prognosis poor

Session 6 – Renal medicine and urology

Haematuria

- Hx: Timing is important
 - Bleeding at the start – think urethral/ prostate cause
 - Bleeding at the end – think more bladder cause
 - If painful as well – think infection!
 - Painless – think cancer!

Causes:

- **Bladder cancer:**
 - Two types:
 - Transitional cell carcinoma – 90% - common in west
 - Squamous cell carcinoma – 7% - associated with schistosomiasis
 - Occurs throughout adult life – peak between 60-70
 - Males more than females
 - Smoking; rubber industry; insecticides; cyclophosphamide
 - Painless haematuria!
 - Haematuria can be intermittent



- **Pyelonephritis**
 - Ascending UTI that has reached the pyelum (pelvis) of the kidney
 - In this case will get the UTI symptoms – haematuria, painful micturition;
 - Then if have loin pain, fevers/rigors, confusion – think of pyelonephritis
 - Common cause is a renal stone!
 - Others:
 - Sex
 - Pregnancy
 - Female
 - Diabetes
 - Incomplete bladder emptying

- **Renal Cell carcinoma**
 - Presents most commonly in 5th decade of life.
 - Arise from proximal tubular epithelium and may be solitary, multiple and occasionally bilateral
 - Haematuria; loin pain and loin mass
 - Can get general malaise; fever; wt loss
 - Polycythaemia; hypertension; hypercalcaemia
 - Cannon ball mets!
 - Wilms tumour – Anaplastic tumour in children under 5. Large mass in loin. Haematuria is less common!

- **Cystitis**
 - UTI – but in this case, no fever/rigors
 - Just local symptoms
 - Therefore think of cystitis in this instance.
 - Most common cause is E coli
 - Others include:
 - Proteus Mirabilis, strep faecalis
 - Treat with a 3-5 day course of oral amoxicillin, nitrofurantoin or trimethoprim

- **Schistosomiasis**
 - Fluke worm (trematode)
 - Disease is caused by inflammatory response to eggs or adult worms
 - The earliest symptom is painless terminal haematuria (for haematobium)
 - As bladder inflammation progresses – increased urinary frequency and groin pain
 - Strong association with chronic schistosomiasis and squamous cell carcinoma of the bladder.

- **Renal stones**



- severe loin to groin pain is classic. Is colicky
- patient cannot sit still, pale and sweaty
- nowadays gold standard is non contrast CT scan (shows c. 97% of stones). AXR only shows 80% of stones

- **More on UTI;**

- E coli commonest
- Proteus mirabilis (can cause struvite stones)
- Trimethoprim, nitrofurantoin
- Dipstick – nitrites and leucocytes
- MCS of MSU – if no bacteria but positive white cells – sterile pyuria - TB

Glomerulonephritis

- Inflammation of the glomeruli
- **Can present in different ways; Nephrotic syndrome, Nephritic syndrome and Acute/chronic renal failure**

Nephrotic Syndrome

- Massive proteinuria
- Hypoalbuminemia
- Edema
- Hyperlipidemia/hyperlipiduria
 - *E.g. Minimal change GN, Membranous GN*
 - *'Non proliferative'*

Nephritic Syndrome

- Hematuria
- Oliguria
- Uremia
- Hypertension
 - *E.g. IgA nephropathy, Post-streptococcal.*
 - *'Proliferative'*

Minimal Change Glomerulonephritis

- Signs and symptoms all point to **nephrotic syndrome**. Think loss of **prOtein**.
- The **most common cause of nephrotic syndrome in children** is minimal change GN
- On renal biopsy the histological appearance is normal, hence 'minimal change'
- Electron microscopy demonstrates podocyte fusion

Membranous Glomerulonephritis



- Again nephrotic syndrome
- BUT this is an adult... **most common cause of nephrotic syndrome in adults** is membranous GN
- Mainly idiopathic, but can be induced by a number of disease processes;
 - SLE
 - HBV
 - Drugs

Other causes of Nephrotic Syndrome

- Minimal change GN...children
- Membranous GN...adults
- Diabetic nephropathy
- Amyloidosis
- Henoch-Schonlein Purpura
 - Triad of purpura, arthritis and abdo pain in children
 - **Rash is found on legs and buttocks.**

IgA Nephropathy – Berger's disease

- This is nephritic syndrome
- Upper respiratory tract infection
- Simultaneous/c. 1-2 days after, development of haematuria
- IgA deposition in kidney
- 30% develop CRF

Cf

Post-streptococcal glomerulonephritis

- Usually seen 1-2 weeks after an infection caused by a group A β -haemolytic streptococcus e.g. tonsillitis or cellulitis
- Nephritic syndrome and '**pepsi urine**'
- Investigations reveal an **elevated anti-streptolysin O titres.**



Goodpasture's Syndrome

- Auto-antibodies formed against glomerular basement membrane, (**anti glomerular basement membrane antibody**).
- Renal failure, pulmonary haemorrhage and haemoptysis.
- **Rapidly progressive glomerulonephritis**
- Wegener's granulomatosis and polyarteritis (**ANCA antibody**)

Complications of Renal Failure

- Renal failure can arise from numerous causes
- The effect of Renal failure is extensive and can manifest in a variety of ways
- Need to understand complication and appropriate treatment

Anaemia... 'Lethargic...pale conjunctivae'

- 'ejection systolic murmur' = murmur created by high output state...no valve pathology
- Reduced secretion of erythropoietin by kidneys
- Recognise treatment...
 - Iron stores are normal so not corrected by iron supplementation
 - Primarily treat root of problem – give IV EPO

Renal osteodystrophy...bone disease due to renal failure.

- High phosphate due to reduced excretion
- Renal Disease – leads to – Reduced Vit D – leads to – Osteomalacia (hypocalcaemia)
- Recognise treatment...
 - Alfacalcidol is a form of Vit D

High BP

- Renal disease causes high BP and uncontrolled high BP can induce renal disease



- Recognise treatment...
 - Renal artery stenosis is contraindication of ACE inhibitor.
 - So give alternative...CCB

Uraemic encephalopathy ...high levels of urea are entering the brain.

- Definitive treatment is dialysis
- **Uremia...build up of urea**
 - Lethargy, irritability
 - Pruritus, hiccups, flapping tremor
 - **Pericarditis**
 - Skin colour...**yellow/pale tinge**
- **GI**
 - **Anorexia, nausea and vomiting**
- **Neurological**
 - Motor, sensory and autonomic neuropathy

Miscellaneous renal conditions

Alport's Syndrome: typically in an EMQ, a child with renal symptoms (haematuria, progressive RF), sensorineural deafness and visual problems (anterior lenticonus)

Polycystic Kidney Disease: in children is autosomal RECESSIVE and in adults is autosomal DOMINANT. Typically, abdominal pain, haematuria, hypertension. Bilateral ballotable masses on examination. Associated with Berry aneurysms (SAH), mitral valve prolapse, liver cysts

Tuberous sclerosis: multisystem hamartoma formation. Manifests with seizures, and skin changes: Shagreen patches (shark-like thickened skin on lower back), adenoma sebaceum (reddish nodules on cheeks and nose), ash leaf macules (areas of depigmentation). Renal involvement: multiple angiomyolipomata, asymptomatic but can cause intrarenal haemorrhage

Haemolytic uraemic syndrome: commonest cause of renal failure in children, usually due to infection with E. Coli. Triad of microangiopathic haemolytic anaemia, acute renal failure and thrombocytopenia

Some causes of Urinary tract obstruction



Benign Prostatic Hypertrophy (BPH)

- 70% of men have benign hyperplasia by the age of 70
- The inner portion of the prostate gland hypertrophies during late adult life
- As it grows it compresses the outer layers in a false capsule and therefore bulges centrally into the urethra
- So majority of symptoms – mechanical obstruction to the act of micturition
- Hesitancy; poor flow; intermittent flow; dribbling
- Irritative symptoms – muscular instability of bladder
- Can get haematuria at the end of micturition.

Prostate Cancer

- Begins in its outer part and so NO false capsule and so can easily spread in the floor of the pelvis
- Commonly quite advanced before symptoms
- Commonest symptoms – prostatism (poor stream, urgency, frequency)
- Rectal exam - prostate is asymmetrically enlarged or distorted, irregular texture
- PSA – A PSA alone does NOT give enough information to distinguish between benign and cancer.

Renal Stones – can cause urinary obstruction amongst other things (like haematuria)

- Predisposing factors to stone formation;
 - Increased urinary concentration
 - Inadequate volume
 - Increased excretion of calcium (hypercalcaemia)
 - Increased uric acid
 - Stagnant urine
 - UTI
 - Drugs (loop diuretics, antacids...)
- UTI – generally produces phosphate stones. Can get a large stag-horn calculus deposited within a pyonephros (infection of renal collecting system)

Multiple myeloma can cause renal problems – like obstruction

- Multiple myeloma is a malignant disorder of B cells characterized by abnormal plasma cells in the bone marrow compartment.
- It is characterised by **lytic lesions!!**



- Also have **bence-jones proteins** (light chains) which can obstruct tubules.
- MM can also cause renal failure for other reasons.
- **High calcium** is typical (due to lytic lesions)
- **High ESR**

Neurogenic Bladder

- Refers to a dysfunction of the bladder due to a disease of the CNS such as stroke, tumours and cord compression
- Or due to peripheral system damage due to direct invasion of the nerves or damage to the sacral plexus
- IN this patient bony metastasis has caused spinal cord compression

Urinary Incontinence – some causes

Spinal Cord Compression

- Breast cancer ► Metastasis ► spread to vertebra ► Spinal cord compression
 - Look out for 'sensory level'
 - Paralysis of the limbs
 - **'automatic bladder'**
- Categorised as **'overflow incontinence.'** Nerve supply to bladder is interrupted ► urine builds up ► urine leaves at certain pressure

Neurogenic bladder – Autonomic

- Transection of spinal cord
- Bladder **automatically empties**

Neurogenic Bladder – Atonic

- Lesions to the sensory nerves(DM)
- Bladder fills, but no micturation reflex and **dribbling**

Normal Pressure Hydrocephalus

- Classical triad of confusion, incontinence and gait dyspraxia in an elderly patients



BPH – can also cause incontinence

- Enlarged prostate blocks outflow of urine ► bladder is never fully empty ► **frequently** need to urinate but outflow is obstructed so **poor stream**.
- **‘Overflow incontinence’**
- Alpha blockers such as **terazosin** relax smooth muscle at neck of bladder so aid voiding.
- **Prostate cancer can also lead to overflow incontinence, so also look for weight loss**

UTI

- Very very common
- Elderly women
- Frequency, urgency and fever
- Can also present insidiously, **NO URINARY SYMPTOMS....sepsis**
- UTI is an example of **urge incontinence**

Stress Incontinence

- Leak of urine when intra-abdominal pressure rises.
- Event in the past has weakened the pelvic muscles
 - **Child birth**
 - **Pelvic surgery**

Summary of Incontinence

Overflow – BPH and Spinal Cord Compression

Urge – Often Idiopathic in Women. Treat with anticholinergics

Stress – Increase in abdominal pressure. Treat with pelvic floor exercises/bladder retraining

Functional – dementia, poor mobility

Scrotal Swellings



- 4 questions
 1. Can you get above the swelling
 2. Can you identify the testis and epididymis
 3. Is the swelling translucent
 4. Is the swelling painful
- **Swellings NOT confined to the scrotum**
 - **Hernia** – you CANNOT get above it! –

 - **Infantile hydrocele** – extends from testis to the internal inguinal ring BUT does NOT pass into peritoneal cavity
 - It is TRANSLUCENT
 - No cough impulse; not reduble
 - Testis not palpable
- **Swellings CONFINED TO THE SCROTUM**
 - **Testis and Epididymus NOT definable**
 - **Opaque and NON-tender**
 - ✓ **Chronic haematocele** – collection of blood within the tunica vaginalis
 - ✓ **Gumma (rare)** – congenital syphilis
 - ✓ **Tumour:**
 - Seminoma – carcinoma of seminiferous tubules
 - Teratoma – malignant germ cell tumour
 - Heavy testis – almost diagnostic!
 - **Tender**
 - ✓ **Torsion**
 - ✓ **Severe Epididymo-orchitis**
 - ✓ **Acute haematocele**
 - **Translucent**
 - ✓ **vaginal hydrocele**
 - **Testis and epididymis DEFINABLE:**
 - **Opaque and NON tender:**
 - ✓ **Tumour**

 - ✓ **Tuberculous epididymis** – rare now in the UK. May be systemic symptoms of Tb. Vas deferens is often irregular and swollen and feels like a string of beads (rare physical sign but diagnostic)
 - **Tender:**



✓ Acute epididymo-orchitis

▪ Translucent:

✓ Cyst of epididymis – usually contains clear fluid

- The swelling is separate from the testis (cf to hydrocele)

More Information on some conditions

- **Indirect inguinal hernia** – may be aware of the lump, and may be able to reduce it. impossible to get above the swelling. May become painful and irreducible
- **Hydrocele** – Painless scrotal swelling. Over 50 years. Unilateral. Fluctuant, transilluminates and dull to percussion. Testis cannot be palpated separately. Impossible to get above the swelling.
 - An abnormal quantity of fluid in the tunica vaginalis (so testis impalpable)
 - Primary (idiopathic) – occurs in men over the age of 40 and develops slowly
 - Secondary:
 - Infection
 - Trauma
 - Malignancy
 - These will appear rapidly and will usually be associated with other symptoms.
 - You can drain the fluid – straw coloured with flecks of cholesterol
- **Epididmal cyst** – Painless. Slowly enlarge over yrs. Can be bilateral. Feels lobulated. Above and behind the testis, so the testis can be palpated separately. Fluctuant. Don't always transilluminate.
- **Epididymo-orchitis** – Pain, swelling, unilateral. Malaise, fever. Accompanied with UTI with dysuria and frequency. Scrotal skin is hot, red, oedematous, tender.
 - Acute infections usually arise in the vas deferens, spreading first to the epididymis and then the testis
 - Occasionally blood borne (Mumps – most common. Usually follows a week after parotid gland enlargement)
 - Ascending infection is usually a consequence of preceding UTI or prostatitis from an STD
 - Common in young/middle aged men
 - DD – torsion
 - May be a history of urethral discharge
- **Testicular torsion** – around puberty, sudden onset of pain w/out nausea and vomiting. Hx of violent exercise. Testis is red, hot, tender, drawn up towards the groin
 - The commonest age for torsion is 10-15



- A normal testis is fixed with the tunica so cannot turn but there is some variability in the extent to which the tunica covers the testis
 - Usually you have torsion of the spermatic cord in a congenitally abnormal testis.
 - Surgical emergency!!
 - Initial symptom is an uncomfortable poorly localised abdo pain
 - Severe pain and tenderness in the testicle follow
 - Nausea and vomiting follow
 - Swelling is confined to the scrotum and the affected testis can lie higher than the normal
- **Varicocele** – ‘dragging’ ache in the scrotum/groin. More common on the left. On standing – dilated veins are visible and palpable (palpation - a bag of worms) cf to tuberculous epididymis where the vas deferens feels like a string of beads!
- **Acute Haematocele**
 - A haematocele is a collection of blood within the tunica vaginalis
 - Acute haematocele is a common accompaniment of scrota trauma.
 - The testis cannot be felt!
 - Also does not transilluminate!
 - It will be very tense and tender
- **Tuberculous Epididymis**
 - Condition is now uncommon in the UK
 - Infection develops slowly without causing severe or acute pain or tenderness
 - May be systematic signs of TB
 - Epididymus is hard and can be 2-3 times its normal size
 - Then vas deferens is often irregular and swollen and feels like a string of beads – physical sign is rare but diagnostic
- **Testicular cancer**
 - **Teratoma** are germ cell tumours which usually occur in 20-30
 - **Seminoma** (30-40)
 - Both present as a swelling or lump in the testis which is palpable as a hard, irregular mass
 - Alpha fetoprotein is raised in teratoma BUT not in seminoma
 - Beta HCG can be high in both



Session 7 – Infectious disease and eponymous syndromes

Respiratory Infections:

Pneumonia:

- **Streptococcus pneumoniae** – rust coloured sputum, rapid onset of fever with SOB and cough, - lobar consolidation.
 - Strep pneumoniae: most common form of community acquired pneumonia, cough productive with rusty coloured sputum, consolidation – AMOXICILLIN (sensitivity: erythromycin)
- **Staphylococcal/klebsiella** – cavitating lesions in lung. Klebsiella seen in alcoholics
- **Mycoplasma pneumonia** – bilateral patchy consolidation
 - non-specific symptoms
 - extra-pulmonary conditions
 - cold agglutinin
 - Headache and malaise precedes chest symptoms
- **Staph aureus:** previous H Influenzae infection, then deteriorates, circular opacities, Gram +ve cocci and clusters
- **Legionella pneumonia** – dry cough, dyspnoea, diarrhoea and confusion
 - plumber, recently on holiday in a hotel, shower and cooling systems contaminated, usually middle-aged, smokers
 - Classic Xray shows bibasal consolidation
 - bloods can show hyponatraemia, deranged LFTs
- **Pseudomonas aeruginosa** – intensive care, - cystic fibrosis / bronchiectasis
- **Pneumocystis jirovecii (carinii)** – HIV, bilateral hilar shadowing, dyspnoea, drop in SATS with exertion
- **Chlamydia psittaci** – BIRDS!

Other respiratory infections

Streptococcus Pyogenes

Scarlet fever



- Tonsillitis
- Erythematous rash (trunk)
- Sore coated tongue (strawberry tongue)
- Desquamation of the skin of the palms and soles

Burkholderia Capacia

Pneumonias in immunocompromised or those with underlying lung disease (CF)

Staph Aureus

Post viral-infection

Cavities on CXR

Bordetella Pertussis

Whooping cough (100 days' cough)

- Starts with cold-like symptoms
- 1-12 days later develops paroxysmal violent cough with 'whoop' noise
- Coughing spells may lead to vomiting and LOC
- In UK: vaccination programme

Cytomegalovirus

Immunocompromised patients develop infection, which can be life threatening.

Commonly:

- AIDS
- Post-transplant (BMT, solid organ)

Infections:

- CMV pneumonia
- CMV retinitis
- CMV gastroenteritis
- CMV oesophagitis

Diarrhoea:

- **Staphylococcus Aureus (G+ve bacteria)**
 - prominent vomiting and watery diarrhoea in hours (through an enterotoxin)
 - Self-limiting
- **Cryptosporidium parvum (protozoan)**
 - Severe watery diarrhoea in immunocompromised
 - Look for oocytes in the stool
- **Bacillus Cereus (G+ve bacteria)**



- Spores germinate in reheated fried rice (Chinese take-away)
- Self-limiting watery diarrhoea
- **Giardia Lamblia (protozoan)**
 - Trophozoite 'pear shaped', attaches to the duodenum
 - Causes malabsorption of fat and protein
 - Foul smelling, non-bloody, explosive diarrhoea, abdo cramps, flatulencem no fever, pale fatty stools
- **Vibrio cholerae (G-ve)**
 - Toxin mediated diarrhoea (doesn't invade the epithelium)
 - Massive diarrhoea, rice water stool (w/o inflammatory cekks)

Bloody Diarrhoea

- **Shigella (G-ve)**
 - Person-to-person spread
- **Campylobacter (G-ve)**
 - Watery, foul smelling, bloody diarrhoea
 - Fever and severe abdominal pain
 - Associated with Guillian-Barre Syndrome
- **E.coli (G-ve)**
 - Traveller's diarrhoea
 - E.coli O157:H7 causes Haemolytic Uremic Syndrome
- Salmonella enteritidis
- C. difficile

General management for diarrhoea

- Ciprofloxacin (Quinolone) – Severe bacterial
- Doxycycline (Tetracycline) – Broad spectrum
- Amoxicillin (Beta lactam) – Broad spectrum, GI SE
- Codeine – Chronic and persistent



Tropical Disease / fever in returned traveller

Entamoeba Histolytica (Amoebiasis) - faecal/ oral, intermittent fever, swelling in hypochondrium - liver abscess, Trophozoites remain in bowel or invade extra intestinal tissues, leaving "flask-shaped" GI ulcers – severe amoebic dysentery

- Intestinal Amoebiasis (Amoebic dysentery)
 - Get tissue ulceration and necrosis.
 - The presentation varies from mild bloody diarrhoea to fulminating colitis, with risk of toxic dilatation, perforation and peritonitis
 - Can get blood and mucus in the stool
 - Increased incidence in tropical countries
 - Amoebic Liver abscess
 - If enters portal vein and then the liver.
 - Get an abscess (usually single) with tender hepatomegaly, high swinging fever and profound malaise.
- Amoebic fluorescent antibody test (FAT) is positive in 90% of patients with liver abscess and 70% with active colitis

Salmonella typhi (Typhoid – enteric fever) – Think when has headache and GI symptoms

- Faecal/ oral spread, high fever, malaise and diarrhoea, CNS and delirium; Gram –ve bacilli
- Humans are the only known reservoir and spread is faecal-oral
- Incubation period of 10-14 days
- Insidious onset of headache, dry cough and constipation
- Rising fever and relative bradycardia
- In second week can get an **erythematous maculopapular rash** that blanches on pressure - rose spots – upper abdomen and thorax
- Can get pneumonia; meningitis; acute cholecystitis.
- Blood count can show **leucopenia**



Shistosomiasis

- Fluke worm (trematode)
- Disease is caused by inflammatory response to eggs or adult worms
- The earliest symptom is painless terminal haematuria (for haematobium)
- As bladder inflammation progresses – increased urinary frequency and groin pain
- Strong association with chronic shistosomiasis and squamous cell carcinoma of the bladder.

Malaria – Plasmodium Falciparum - flu like illness followed by fever and chills, classic periodic fever and rigors; Signs: anaemia, jaundice and hepatosplenomegaly, no rash or lymphadenopathy

- One of the 4 species of plasmodium that infects man
- Malaria is characterized by headache and episodic very high fevers
- Can get complications with falciparum including severe anaemia or cerebral malaria
- Plasmodium vivax is not found in West Africa
- Always think of malaria in traveller from an endemic area
- The incubation period is about 10-14 days.

Neisseria meningitidis type B : only vaccination against Mening C, high fever, neck

- stiffness and drowsiness, CSF: Gram –ve diplococci

Dengue virus: fever, headache, myalgia, rash, thrombocytopenia and leucopenia

Lassa Fever: Nigeria, Sierra Leone and Liberia, fever and exudative sore throat, face oedema and collapse

Vibrio Cholera

- Profuse watery diarrhoea!! (not bloody)
- Rice water stool
- Infection is caused by faecal-oral route.
- Cholera toxin causes massive secretion of isotonic fluid into the intestinal lumen
- The incubation period varies from a few hours to 6 days
- Effective rehydration is key – mainly oral but in severe cases IV fluids can be given



- Oral rehydration solutions – high in glucose

Giardiasis

- It is a cause of travellers diarrhoea and may cause prolonged symptoms
- Get damage to the small intestine
- Diarrhoea, nausea, abdominal pain and distention
- Can get malabsorption and steatorrhoea in some cases
- No blood or pus in the diarrhoea
- Can get wt loss in more than 50% of patients

Toxoplasmosis

- The primary host is a cat
- During first few weeks, infection causes a mild flu like illness
- Doesn't really cause symptoms in otherwise healthy adults.
- In HIV patients or pregnant women can be fatal
- Complications include;
- Encephalitis; Chorioretinitis;
- Can effect the heart and the liver

Trypanosomiasis

- Different types of parasitic infection
- The Human African form is transmitted by the Tsetse fly - gives sleeping sickness
 - Endemic in subsaharan Africa
 - First get fever, headaches, joint pains and itching
 - Then neurological phase – Confusion, disruption of the sleep cycle with bouts of fatigue

Leishmaniasis – Kala-Azar

- Parasitic disease spread by the sand-fly
- Cutaneous leishmaniasis – can give you a skin sore which can progress to an ulcer which takes ages to heal



- Can also get breathing difficulty
- Swallowing difficult
- Systemic or visceral Leishmaniasis (2-8 months after bite) – fatigue, vomiting, diarrhoea, weakness
 - Night sweats; abdominal discomfort; weight loss

Viral Infections

Cytomegalovirus

- Also known as human herpes virus 5 (HHV5)
- Infections are frequently associated with the salivary glands
- 90% of people are seropositive by the age of 80!
- Asymptomatic in healthy individuals
- In immunocompromised individuals can get severe disease with fever, diarrhoea, retinitis, hepatitis and encephalitis.
- Inflammation of the retina leads to a so-called 'pizza pie' appearance on fundoscopy (haemorrhages and yellowish retinal infiltrates)
- Treat - ganciclovir

Dengue Fever – Flavi Virus

- Has an incubation period of 5-6 days
- Some patients can present with a biphasic fever
- The rash – bright red petechiae usually appears first on lower limbs and chest
- Classically there is fever with no localising source of infection, rash, thrombocytopenia and leucopenia
- Found mainly in Africa, central and southern America

Herpes Simplex Virus

- Two types:
- I – oral herpes – cold sores
- II – Genital herpes – transmitted sexually.
 - Get painful genital ulceration, fever and local lymphadenopathy.



- Anorectal infection may also occur
- Note that the division between the two is not rigid.

Herpes Zoster Virus

- After primary infection (chicken pox) the virus is not eliminated from the body but becomes latent in nerve cell bodies.
- It can then several years later – travel down nerve axons to cause a viral infection of the skin in the region of the nerve
- Never crosses the midline!
- Can get tingling/pain before rash
- Rash consists of papules and vesicles in same dermatome

Hepatitis A

- Faecal-oral spread from ingestion of contaminated food (shellfish/clams and water)
- Virus excreted in faeces of infected individuals for about 2 weeks before and 7 days after onset
- Incubation period averages 30 days
- Jaundice, fever, malaise, nausea, vomiting and itching.
- Can get hepatomegaly.

Epstein Barr Virus

- 90% of cases of glandular fever is caused by EBV
- 10% of CMV
- Get fever, sore throat, arthralgia, myalgia and fatigue
- Can get splenomegaly
- There is generalized lymphadenopathy and **Paul Bunnell test is +ve!**
- It is an acute disease characterized by fever, swollen lymph nodes and an abnormal increase of monoculcear leucocytes or monocytes in the blood. Atypical lymphocytes on blood film.
- **EBV can also cause Burkitts lymphoma.**

Measles

- Fever, cough, conjunctivitis. Maculopapular rash with Koplik spots being pathognomonic.



- Koplik spots – small greyish, irregular lesions surrounded by an erythematous base found in greatest number in the buccal cavity

Eponymous Syndromes – this are just a few, for a full list please refer to OCHM (there is a whole chapter!!!)

- **Henoch-Schonlein purpura**
 - Systemic vasculitis (IgA complex deposition)
 - Purpura, abdo pain and arthritis (Triad)
 - Kidney involvement common (haematuria)
 - Common post infection, esp resp tract
 - Symptom control, spont resolution within 4/52
- **Pancoast's syndrome**
 - Horner's (Ptosis, Miosis, Anhidrosis)
 - HPOA (Clubbing, IM wasting, wrist pain)
 - Arm pain/paraesthesia
 - Vocal change
 - Apical lung CA (Often Sq.cell) invades sympathetic chain
- **VwD**
 - Most common coag defect (Plt affected)
 - Bleeding tendency
 - Menstrual, gums, nose bleeds, PPH, easy bruising (not haemophilia!)
 - Blood plasma lx
- **Kaposi's sarcoma**
 - Tumour, Herpesvirus 8
 - AIDS associated
 - Papular lesions (lower limbs and intra oral)
 - Airway and GI involvement
- **Peutz-Jegher's syndrome**
 - Benign GI polyps
 - AD
 - Hyperpig lips and oral mucosal macules
- **Barrets Oesophagus**
 - Sq to Col epith
 - Chronic reflux
 - M 50-70
 - Inc risk dysphagia + (CA)
- **Gardner's**
 - Colonic polyps + extracolonic tumours (e.g. osteomas and thyroid)
 - AD



- FAP similarity
- **Alports**
 - Glomerulonephritis (Haematuria) + RF + Hearing loss (bilateral sensorineural)
 - X Linked
 - Collagen synthesis
 - Occular lesions
- **Tabes Dorsalis**
 - Slow degen nerve cells DC
 - = neuro craziness
 - Unteated syphilis (HIV)
 - Paralysis, dementia, blindness

- **Chrug-strauss**
 - Asthma + Eosinophilia + vasculitis
- **Dressler's syndrome**
 - Pericardial effusion post MI
- **Felty's syndrome**
 - Rheumatoid, splenomegaly and neutropenia
- **Charcot-Marie-Tooth**
 - inverted champagne bottle appearance of legs; get foot drop
- **Osler-Weber-Rendu –**
 - telangiectasia on the skin and the mucous membranes, which may cause epistaxis, or chronic GI bleeds, with IDA
- **Von-Hippel-Lindau syndrome –**
 - Bilateral renal carcinoma and cerebellar haemangioblastoma and phaeochromocytoma.
 - It may present with visual impairment and cerebellar signs.
- **Berger's Disease**
 - IgA nephropathy
 - Most common form of primary glomerular disease
 - Serum IgA increased in 50%
 - Haematuria appears quickly after infections (mostly respiratory)
 - 25% will develop ESRF in around 25 years
- **Sjögren's Syndrome**
 - Autoimmune (anti-La, anti-Ro)
 - Chronic inflammatory infiltrate in both lacrimal (dry eyes) and salivary glands (dry mouth)
 - Schirmer's test
- **Meig's Syndrome**
 - Triad of ovarian fibroma or tumour, ascites and pleural effusion
 - The removal of the ovarian lesion results in resolution of ascites and pleural effusion
- **Zollinger-Ellison Syndrome**
 - Gastrin-secreting tumour
 - Large amounts of hydrochloric acid production in gastric antrum leads to recurrent



peptic ulceration (often duodenal).

Session 8 – Endocrinology, Emergencies and poisoning

Thyroid Disease

Hyperthyroidism:

- **Primary thyroid disease**
 - **Grave's disease**
 - This is HYPERTHYROID
 - Diarrhoea, feeling warm, weight loss despite a good appetite and tremor.
 - Specific to graves...
 - Auto-antibodies that stimulate the TSH receptors
 - **Pretibial myxoedema**=lower limb swelling, waxy, discolored induration of the skin
 - **Periorbital myxoedema**=exophthalmus
 - **Thyroid Acropachy**
 - **Toxic multinodular goiter**...Look for a background of non-toxic multinodular goiter
 - **Plummer's disease** (solitary toxic nodule)
- **Others (still hyperthyroid)**
 - **De Quervain's thyroiditis**
 - Usually precipitated by a viral infection
 - Inflammation of the thyroid gland...tender
 - Inflammation...transient release of thyroxine...HYPERTHYROID ▶
 - No thyroxine left...transient HYPOTHYROID ▶
 - Patient then recovers and becomes EUTHYROID
 - **TSH secreting tumours**
 - **Iatrogenic (e.g. amiodarone)**
- **Thyroid Storm (Severe Hyperthyroidism)** – treat:
 - Transferred to intensive care
 - Fluids and gentle cooling



- Beta-blockers
- Sodium iodopodate (which inhibits thyroxine release)
- Carbimazole (inhibits synthesis of thyroxine)

Hypothyroidism

- **Chronic autoimmune thyroiditis – Hashimoto's**
 - Hypothyroid symptoms...tiredness, cold intolerance, constipation, bradycardia, slow-relaxing reflexes
 - Autoimmune hypothyroiditis...**antibodies to thyroid peroxidase**
 - Diffusely enlarged rubbery goitre
- **Iatrogenic (thyroidectomy)**
- **Drugs (e.g. Lithium, amiodarone)**
- **Iodine deficiency**
- **Myxoedema Coma**
 - SEVERE hypothyroidism
 - Impaired consciousness, hypothermia, bradycardia, and hypoglycaemia
 - Treat:
 - Transferred to intensive care
 - Fluids
 - Gentle rewarming
 - IV thyroid hormones

Thyroid Cancer

- **Papillary** -70% - age 30-50
- **Follicular** – 15% - age 40-50
- **Medullary** - Calcitonin levels important
- **Anaplastic** – Rare - 70s - poor prognosis; aggressive

Diabetes Treatment

- **T1DM:**



- Insulin
- **T2DM:**
 - Risk factor reduction (exercise, smoking cessation, low dose aspirin, BP control, statins)
 - Diet
 - HbA_{1c} >7%:
 - Obese: Metformin (biguanide, insulin sensitizer)
 - Non-obese: Sulphonylurea (promotes insulin secretion)
 - If uncontrolled: metformin + Sulphonylurea
 - Still uncontrolled: insulin

Note:

- When choosing **sulphonylurea...glibenclamide** is most popular...but must be avoided in elderly due to its long duration of action...so use **Tolbutamide**, (potential hypoglycaemia)
- Metformin contraindicated in renal failure, liver disease and severe heart failure due to risk for lactic acidosis.
- Make sure you learn the diagnostic criteria
 - Fasting plasma glucose ≥ 7 mmol/L
 - Random plasma glucose ≥ 11.1 mmol/L
- ❖ **One abnormal laboratory value is diagnostic in a patient with typical hyperglycaemic symptoms; two values are needed in asymptomatic people.**
 - OGTT, 2 hours after glucose administration ≥ 11.1 mmol/L
 - **Impaired fasting glucose**, fasting glucose ≥ 6.1 but < 7 mmol/L...high risk of getting DM 2...then do a glucose tolerance test.
 - **Impaired glucose tolerance**, fasting glucose < 7 mmol/L and OGTT 2h glucose ≥ 7.8 mmol/L but < 11.1 mmol/L

Diabetic Keto-acidosis – only in Type I DM (ie Insulin dependent diabetes) – often first presentation

- Usually triggered by underlying illness (chest infection), where the insulin requirements increase but the patient does not adjust.



- Glucose increases...dehydration....rise in ketones and acid. – metabolic acidosis! (reduced renal perfusion)
- Look for...**Kussmaul's respiration, breath smells of ketones...abdominal pain.**
- Fluid replacement...
 - 1L 0.9% saline immediately
 - 1L over 1 hour
 - 1L over 2 hours
 - 1L over 4 hours
 - 1L over 6 hours
 - Note measure glucose hourly, if falls below 12mM then IV fluid change to 5% dextrose
- **+ IV insulin (sliding scale)**
- **(potassium replacement)**
- Diagnostic Pitfalls
 - – BM may be normal
 - – Elevated WCC (NOT infection)
 - – Amylase Inc (NOT pancreatitis)
 - – Inc ketones & norm BM ?ETOH

Hyper-osmotic Non-ketotic Coma (HONK) – only type II diabetes (insulin independent)

- This is DM Type 2 with HONK (**HyperOsmolar Non-Ketotic state**)
- Triggered by underlying illness, large sugar dose...uncontrolled rise in glucose...severe dehydration.
- **Not enough insulin to keep glucose down...but enough to prevent ketone formation!**
- **Compare to: DM 1, NO INSULIN at all...ketoacidoses**

Extra information:

Oral hypoglycaemic drugs

- **Secretagogues (Sulphonylureas)**
 - Thinnies
- **Sensitisers (Biguanides)**
 - Fatties
- **Glitazones**



- Cardiac SE
- **Acarbose**
 - Alpha Glucosidase Inhib

Hyperaldosteronism: Conn's (primary hyperaldosteronism), CAH

- Low potassium
- Cause of hypertension

Phaeochromocytoma –

- phenoxybenzamine followed by propanolol
- 10% rule – bilateral, malignant, familial, extra-adrenal
- Von-Hippel Lindau, neurofibromatosis, MEN II

Other adrenal problems:

- **Waterhouse-Friedrichson syndrome** – adrenal haemorrhage following massive G –ive meningitis
- **Nelson's syndrome:** pituitary enlargement following bilateral adrenalectomy – high ACTH and pigmentation
- **Failure:**
 - **Primary – TB, Addison's**
 - Secondary – low ACTH (pituitary failure)
- Short SynACTHen test – if cortisol rises then the problem is probably in the pituitary
- Long SynACTHen test – fails to rise

Cushing's

- Learn the features
- May be iatrogenic – Rheum patients!
- Pseudo-Cushing's – depression/alcohol with normal cortisol and ACTH
- Cushing's disease – pituitary over-producing ACTH
- Low dose dexamethasone suppression test – won't suppress any hyperACTH state
- High dose will suppress only Cushing's disease, not SCC of the lung



Prolactinoma

- Galactorrhoea
- Infertility in women
- DA agonists inhibit PL secretion – cabergoline and bromocriptine
- ...TRH increases it – could be d/t hypothyroidism

Growth Hormone

- **Acromegaly** – glucose tolerance test – GH levels fail to suppress
- Big hands, tongue, hat sizes
- Diabetes and hypertension; cardiomyopathy
- Acne
- Arthritis

Diabetes Insipidus

- ‘Dilute urine’
- Getting up at night to drink water
- Nephrogenic (renal insensitivity) vs central
 - DDAVP controlled – central

MEN syndromes

- 1 – The Ps – parathyroid, pituitary, pancreatic islet cell
- 2(a) – phaeo! (also parathyroid, medullary thyroid carcinoma)
- 2(b) or 3 – mmmm.... Marfanoid and mucousal neuromas

Brief Notes on Emergencies (look at OCHM and other handout notes)

Acute Asthma (please see OCHM for details!!)

- High dose 100% Oxygen
- Salbutamol nebulised with oxygen
- Steroid
- CXR to exclude pneumothorax
- If no real improvement move to ITU and prepare to intubate.



Cricothyroidotomy is a small incision in the neck...thus avoiding trauma area.

Symptomatic AF:

- Oxygen
- heparin
- synchronised DC shock

Chronic / Asymptomatic AF:

- **Rate** (Beta-blocker, digoxin)
- **Rhythm** (Anti-arrhythmics, Verapamil)
- **Anti-coagulant** (warfarin)

Hyperkalaemia:

- Calcium gluconate (Protects heart...MOST IMPORTANT)
- Insulin + glucose (moves K+ into cells)
- Nebulized salbutamol (moves k+ into cells)
- Calcium resonium (reduces K+ absorption from GI tract)
- Dialysis

Poisoning + antidotes

Poison / drug	Antidote
Aspirin	<500mg/L – supportive >500 mg/L – alkaline diuresis with i.v sodium bicarbonate >700 mg/L - haemodialysis
Diazepam	Flumazenil
TCA	Lorazepam
Opiates	Naloxone
Paracetamol	N-Acetylcysteine
Heparin	Protamine sulphate
Warfarin	Vit K
Methanol	Ethanol
B-blockers	Atropine, Glucagon



Organophosphorous poisoning	Pralidoxime mesilate
Cyanide	Dicobalt Edetate
Haemachromatosis	Desferrioxamine
Wilson's disease / mercury	Penicillamine
Arsenic	Dimercaprol
Paraquat / CCB	Activated Charcoal
Lithium	Dialysis
Cocaine / extasy	Diazepam

Drugs and their Side effects*

Drug	Toxicity / SE
Phenytoin	Macrocytic anaemia, hypocalcaemia, nystagmus, confusion, lethargy, cerebellar signs
Cimetidine	Gynaecomastia
Digoxin	Gynaecomastia
Spirolactone	Gynaecomastia
Bendrofluazide	Gout
Minoxidil	Hirsutism
Isoniazid	Peripheral neuropathy, hepatitis
Ethambutol	Retrolubar palsy
Pyrazinamide	Gout
Neuroleptics	Tardive dyskinesia
Aspirin	Tinnitus, N & V, overbreathing, hyperpyrexia, sweating, tachycardia

* These are not the most important or all the side effects of the drugs. For full side effects please see BNF.

