Aortic stenosis
Mitral regurgitation
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Prosthetic heart valves
Bronchiectasis
Collapse
Consolidation
COPD
Interstitial lung disease
Pleural effusion
Approach to lateral thoracotomy scar
Lobectomy/Pneumonectomy
Ascites
Chronic liver disease
Hepatomegaly
Hepatosplenomegaly
Splenomegaly
Enlarged kidneys
A. Bilateral
B. Unilateral
Transplanted kidney

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Aortic stenosis

1. Diagnosis

2. Evidence
   a. Findings
      - ESM aortic area
      - radiate to carotids
      - grade
      - thrill
      - Gallavardin
   b. Severity
      - early ejection click
      - long systolic murmur
      - S4
      - paradoxical splitting of S2
      - heaving displaced apex
      - systolic thrill
      - pulsus parvus et tardus
      - narrow pulse pressure
      - Sx: angina 5: syncope 3: dyspnoea 2
   c. Pulse

3. Complications
   a. CCF
b. IE

c. Haemolytic anaemia

4. Aetiology (N.A)

5. Wish list
   - BP: narrow pulse pressure
   - Temperature
   - Sx: angina, syncope, dyspnoea

6. Summary
   - lesion
   - severity
   - Cx
   - causes: rheumatic heart disease, calcified bicuspid AV, degen calcified aortic valve

7. Investigations and management
   a. Investigations
      - ECG: LVH with strain, 1st degree AVB, LBBB
      - CXR: calcified aortic valve, cardiomegaly, pulmonary congestion
      - 2DE: Dx, severity, Cx eg IE
   b. Management
      i. Education
      ii. Medical
         - antibiotic prophylaxis
         - Rx Cx eg arrhythmias, CCF
         - statins – reduce calcifications
      iii. Surgical (replacement vs valvuloplasty)
         - symptomatic and severe
         - asymptomatic but area <0.6, LV systolic dysfunction, hypotension on exercise, VT, LVH >15mm
         - moderate but going for surgery for CABG, MVR or aortic root surgery

**Mitral regurgitation**

1. Diagnosis

2. Evidence
   a. Findings
      - PSM
      - apex, radiate axilla
      - if radiate to carotids, PVML rupture
      - grade, thrill
      - soft S1
      - S3
      - MDM
      - apex thrusting and displaced, location

   b. Severity
      - mild: no pulmonary hypertension
      - mod: pulmonary hypertension
- severe: LVH, S3

3. Complications
   a. pulmonary hypertension
   b. CCF
   c. AF
   d. overanticoagulation (bruising)
   e. IE

4. Aetiology
   - Marfan's
   - rheumatoid

5. Wish list
   - BP, temperature (fever)
   - IE: abdo exam, urine dipstick, fundoscopy

6. Summary
   - lesion
   - severity
   - Cx
   - Causes:
     - IHD
     - MVP
     - RHD
     - IE
     - AS
     - LV dilation
     - CMP
     - Marfan's
     - Rheumatoid
   - Acute causes:
     - MI
     - IE
     - Trauma
     - Surgery
     - Spont rupture
     - mitral valvotomy
     - annular calcification

7. Investigation and management
   a. Investigation
      - ECG: LA enlargement (P mitrale, bifid P waves in limb leads, terminal P negativity in V1), LVH, AF, pulmonary hypertension
      - CXR: CCF, LA enlargement, pulmonary artery enlargement
      - 2DE: Dx, severity (EF<60, LV end systolic diameter>45), cause, Cx eg IE
      - COROS: stenosis, regurgitation, intracardiac shunting
   b. Management
      i. Education
      ii. Medical therapy
         - antibiotic prophylaxis
Mitral stenosis

1. Diagnosis

2. Evidence
   a. Findings
      - mid diastolic murmur
      - apex
      - accentuated left lateral position
      - grade
      - diastolic thrill
      - loud S1
      - apex: tapping, not displaced, location
   
b. Severity
      - early opening snap
      - long MDM
      - pulm HPT (mod severity)
      - CCF (severe)
      - pulses parvus
   
c. Peripheries
      - pulse, AF
      - mitral facies
      - hoarse voice (Ortner's syndrome)
      - lat thoractomy scar with possible mitral valvotomy

3. Cx
   - pulm HPT + functional TR (PSM at LLSE, louder w inspiration, giant V wave)
   - Graham steel (PR)
   - CCF
   - IE
   - AF
   - pulsus parvus
   - overanticoagulation (bruises)

4. Aetiology
   - SLE
   - RA

5. Wishlist
   - temperature
   - BP
6. Summary
- lesion
- severity
- Cx
- possible aetiology

Causes
- RHD
- congenital parachute valve
- calcif of mitral annulus and leaflets
- CTDs: SLE, RA
- carcinoid (malignant)

Aortic regurgitation

1. Diagnosis

2. Evidence
   a. Findings
      - high pitched EDM
      - LLSE
      - loudest end expiration with patient sitting forward
      - diastolic thrill
   b. Severity
      - S3
      - Austin Flint (MDM apex)
      - soft S2
      - duration of decrescendo murmur and loudness of murmur (cf AS)
      - apex displaced and thrusting
      - CCF
      - wide pulse pressure
      - Hill sign
   c. Peripheries
      - pulse: rate, bounding/collapsing
      - no RR/RF delay (coarctation of aorta)
      - Quincke/Corrigan/brachial dance/Muller/Duroziez/Traube

3. Cx
   - CCF
   - IE

4. Aetiology
   - RA
   - Marfan
   - Lewitic disease: Argyll Robertson pupil

5. Wish list
- BP: wide pulse pressure and severe HPT
- temperature

6. Summary
- lesion
- severity
- Cx
- aetiology

Causes
a. Valvular: Rh, IE, congenital bicuspid (a/w CoA)
b. Aortic root dilation: syphilis/RA/AS/Marfan/severe HPT
c. Acute causes: IE, trauma, aortic dissection, rupture of sinus of Vasalva

7. Investigation and management
a. Investigation
- ECG: LVH with diastolic overload pattern
- CXR: valvular calcification, cardiomegaly, pulmonary congestion, widened aorta
- 2DE: Dx, cause, severity, Cx

b. Management
i. Education
ii. Medical
- antibiotic prophylaxis
- underlying cause
- Cx: CCF, IE
- vasodilators: ACE, CCB
iii. Surgical
- symptomatic: CCF, angina, severe AR
- LV ESD >55 mm
- aortic root >55 mm
- reduction of EF>5% on exercise

Prosthetic heart valves
1. Diagnosis

2. Evidence
- midline sternotomy scar
- audible metallic clicks to unaided ear

a. MVR
- metallic S1, normal S2
- PSM: valve leakage
- apex: displaced (MR)
- pulm HPT
- AF

b. AVR
- normal S1 – metallic click – metallic S2
- EDM +/- collapsing pulse: valve leakage
- apex: displaced (AR)
- collapsing pulse (AVR for leakage)

3. Cx
- valve thrombosis
- haemolytic anaemia
- CCF
- IE
- overanticoagulation (bruising)
- pulm HPT (MVR)
- AF (MVR)
- collapsing pulse (AVR with leak)

4. Aetiology
- Marfan
- RA
- AS
- syphilis

5. Wishlist
- BP, temperature
- neuro: strokes

6. Summary

7. Investigation and management
a. Investigation
i. valve dysfunction
   - cinefluoroscopy
   - TTE
   - TEE (MV)
ii. valve thrombosis
   - reduced movement of disc/poppet
   - reduced orifice area
   - increased regurgitation/transvalvular pressure
b. Rx
i. valve thrombosis
   - <5mm: iv heparin
   - >5mm: fibrinolysis
ii. haemolytic anaemia
   - iron, folate, transfusions
   - beta blockers
   - if fit for op, repair of valve replacement

**Bronchiectasis**
1. Diagnosis

2. Evidence
a. Findings
- late coarse inspiratory crepitations
- heard best posteriorly, bilateral
- productive cough
- large volume purulent sputum
- haemoptysis

b. Peripheries
- chest expansion: reduced bilaterally
- percussion: normal
- vocal resonance: normal
- trachea
- apex
- clubbing
- nicotine staining, cachexic, LNs

c. Rx: steroid/salbutamol/ipratropium MDI

3. Cx
- respiratory distress (RR, accessory muscles)
- respiratory failure (O2, cyanosis, asterixis, bounding pulse)
- COPD
- pulm HPT + cor pulmonale
- polycythaemia

4. Aetiology
- Kartagener: dextrocardia, nasal voice
- RA
- SLE
- kyphoscoliosis

5. Wish list
- T: fever
- abdo: splenomegaly (amyloid)
- neuro: brain abscess

6. Summary

Causes
a. Focal
- luminal blockage: FB, broncholith
- arising from wall: CA
- extrinsic: LN esp middle lobe, from TB/fungi, displacement of airways, post-lobar resection

b. Diffuse
i. Post-infectious
- bact: Pseudomonas, Haemophilus, Pertussis
- TB
- Aspergillus
- virus: adenovirus, measles, flu
ii. Congenital
CF
- alpha1AT deficiency
- Kartagener
- hypogammaglobulniameia

iii. Immunodeficiency
- chemo
- immune modulation post transplant

iv. RA/SLE/Sjogren

v. Misc
- yellow nail syndrome
- Young’s syndrome
- IBD
- Congenital kyphoscoliosis
- idiopathic (50%)

7. Investigation and management
a. Investigation
i. CXR
- Dx, extent, complications (pneumonia, abscess, pleural effusion)
- specific: dilated and thickened airways, ring shadows, tram lines
- non-specific: linear/plate atelectasis, scattered irregular opacities, focal pneumonitis
ii. lung function tests: obstructive, reversibility with beta agonist
iii. HRCT
- Dx: dilation of airway lumen >1.5x vessel, signet ring sign, lack of tapering of airway towards periphery with presence of bronchi within 1cm of pleura
- Reid's classification: cylindrical/tubular, varicose, saccular/cystic
- cause of focal bronchiectasis
- Distribution: usu lower, upper (CF/ABPA), proximal (ABPA), ML/lingual (MAC)
- Cx

b. Management
i. Education and counselling
- stop smoking, vaccinations (yearly influenza, 3 yrly pneumococcal)
- chest percussion, postural drainage
ii. Cause
iii. Meds
- antibiotics
- Haem, Ps, Strep, Moraxella
- fluoroquinolones
- MAC: rifampicin, ethambutol, azithro till c/s negative 1 yr
- ABPA: augmentation of corticosteroids, itraconazole
- bronchodilators: improve function, reduce sputum volume
- aerolised recombinant human DNAse for CF

iv. Surgery
- focal: removal of obs tumour/FB
- Diffuse:
  o segments most damaged and contrib to recurrent acute exacerbations
  o segments involved with uncontrolled haemorrhage
  o removal of segments suspected of harbouring drug resistant organisms eg MDR MTB, MAC
- lung transplant
v. Haemoptysis
- lie on affected side
- protect airway
- bronchoscope or CT to determine site of bleed
- interventional radiology/surgical removal

**Collapse**

1. Diagnosis

2. Evidence
- reduced chest expansion
- percussion: dull
- reduced vesicular breath sounds
- reduced vocal resonance
- extent
- trachea: deviation to same side
- apex displaced

3. Cx
- respiratory distress
- respiratory failure
- if malignancy: Horner, SVCO

4. Aetiology
   a. Malignancy
      - cachexia, clubbing, HPOA, LN, pallor/jaundice
      - pleural effusion
      - raised hemidiaphragm
      - SVCO
      - Horner
      - wasting of intrinsic muscles of hand
      - hoarseness of voice (left)
      - fever/cough/haemoptysis

   b. TB
      - Mantoux, LOW, cachexia, Cx LN
      - fever, cough, haemoptysis

   c. Pneumonia (collapse consolidation)
      - Cx LN
      - fever/cough/haemoptysis

   d. Treatment
      - RT: hyperpigmentation
      - chemotherapy: alopecia, phlebitis veins, oral ulcers

5. Wish list
- temperature
- sputum
6. Summary

Causes
a. intraluminal
   - mucus plugging: asthma, ABPA
   - FB
b. Endobronchial tumour, TB
c. Extrinsic compression
   - enlarged LNs from mitotic lesion (primary or secondary)
   - lymphoma
   - TB

7. Investigation and management
a. Investigation
   - CXR, ABG, FBC, biochemical profile
   - Dx: bronchoscopy, bx
   - staging: CT thorax and abdo with adrenal cuts, bone scan
   - physiological staging: lung function test (FEV1 >1.5), transfer factor >50%

b. Treatment
i. Underlying cause
ii. Mitotic lesion
   - multidisciplinary
   - education and counselling, support groups, stop smoking
   - symptomatic
   - NSCLC: surgery (IIIA), physiological staging, chemo (neo/adjuv), RT (adjuv/palliative), palliative RT/chemo
   - SCLC: palliative

NB Palliative RT – pain, bone mets, SOB from bronchial obstruction, dysphagia, SVCO, Pancoast syndrome, chemotherapy

Consolidation
1. Diagnosis

2. Evidence
   - reduced chest expansion of hemithorax
   - percussion note: dull
   - bronchial breath sounds and creps
   - increased vocal resonance
   - location and extent
   - trachea
   - apex beat

3. Cx
   - respiratory distress
   - respiratory failure
   - RT on chest
   - chemo: alopecia, oral ulcers
4. Aetiology
   a. Infection (toxic, prod cough with purulent sputum)
      - pneumonia
      - abscess
      - TB: Mantoux test
      - aspergilloma, cryptococcoma, hydatid cyst
   b. Neoplastic/mass (CA, lymphoma)
      - cachexia, clubbing, HPOA, LN, pallor/jaundice, nicotine staining
      - pleural effusion
      - raised hemidiaphragm
      - SVCO
      - Horner
      - wasting of intrinsic muscles of hand
      - hoarseness of voice (left)
      - fever/cough/haemoptysis
      - thrombophlebitis (Trousseau sign)
      - pericardial effusion: soft heart sounds
   c. DVT
      - swelling and tender calves

5. Wish list
   - temperature
   - sputum
   - BP

6. Summary

Causes
   a. Infection
      - pneumonia
      - abscess
      - TB
      - aspergilloma, cryptococcoma, hydatid cyst
   b. Neoplastic/mass
      - carcinoma
      - lymphoma
   c. Pulmonary infarction

7. Investigations (see management separately in book)
   a. Simple
      - CXR
      - ABG, blood tests, FBC and biochemical profile, blood c/s
      - sputum
   b. Directed
      - infection
      - cancer: bronchoscropy, bx, CT, bone scan, physio staging
      - infarction
COPD

1. Diagnosis

2. Evidence
   - hyperinflated chest
   - reduced chest expansion bilaterally
   - percussion note: resonant, loss of liver and cardiac dullness
   - prolonged expiratory phase with expiratory rhonchi
   - vocal resonance normal
   - trachea central
   - apex beat: not displaced
   - Rx: steroid MDI, bronchodilators

3. Cx
   - respiratory distress
   - respiratory failure, CO2 retention
   - pulm HPT + cor pulmonale
   - polycythaemia
   - Rx: hoarse voice, oral thrush (chronic systemic steroid)

4. Aetiology
   - nicotine stain: smoking
   - clubbing
   - cachexia
   - enlarged cx LN

5. Wish list
   - forced expiratory time
   - temperature
   - sputum

6. Summary

DDx
   - asthma
   - cancer
   - bronchiectasis
   - ILD

7. Investigation and management
   a. Investigation of acute exacerbation
      - FBC (anaemia, polycythaemia), biochemical, theophylline levels, ABG
      - blood c/s if febrile
      - CXR
      - spirometry
      - ECG, 2DE
      - AAT if young, family hx, no smoking

   b. Management
      i. Non-pharmacological
         - stop smoking
- regular f/u (>500ml decline over 5 yr – accelerated decline)
- pneumococcal and influenza vaccine
- pulmonary rehab for MRC 3 or above (PT/OT)
- MSW, nurse
- assessment of inhaler technique

ii. Pharmacological
- bronchodilators
- theophylline
- steroids (FEV1 <50%, 2 or more exacerb a yr requiring abx/steroids) + prophylaxis against osteoporosis (once>65)
- mucolytics
- exacerb: bronchodilator, systemic steroids, iv aminophylline, abx eg macrolide, O2
- Cx:
  - hypoxaemia for LTOT (PaO2<55mmHg, PaO2 <60 + polycythaemia/pulm HPT/cor pulmonale/nocturnal hypoxaemia), at least 15 hr/day if not 20
  - cor pulmonale: diuretics
  - polycythaemia >55%: venesection

iii. Surgical
- Bullectomy: single large bulla, FEV1<50%
- LVRS: upper lobe bullous involvement, FEV1<20%, TLCO>20%, PO2<45, emphysema, no/mild pulm HPT, no concomitant disabling disease
- transplant

Severity of dyspnoea
MRC scale
1 – SOB on strenuous exercise
2 – on hurrying or up hill
3 – walks slower than contemporaries and stops for breath
4 – stops for breath after walking 100m
5 – SOB on ADLs

**Interstitial lung disease**

1. Diagnosis

2. Evidence
   a. Findings
      - location (UL vs LL)
      - fine Velcro-like late inspiratory crepitations
      - heard best: extent
      - clubbing
      - non-productive cough

   b. Peripheries
      - chest excursion reduced bilaterally
      - percussion: normal
      - vocal resonance: normal
      - trachea central
- apex beat not displaced

3. Cx
   a. respiratory rate/distress
   b. respiratory failure
   c. pulm HPT + cor pulmonale
   d. polycythaemia
   e. cachexia: wasting of temporalis
   f. Rx
     - chronic steroid use: Cushingoid, papery thin skin, steroid purpura
     - scar: open lung biopsy

4. Aetiology
   a. nicotine staining
   b. RA
   c. cutaneous: SLE, dermatomyositis, scleroderma

5. Wish list
   - drug history
   - occupational history

6. Summary

Causes
   a. Upper lobes
      - S – silicosis, sarcoidosis
      - C – coal worker pneumoconiosis
      - H – histiocytosis
      - A – ankylosing spondylitis, ABPA
      - R – radiation
      - T – TB
   b. Lower lobes
      - R – RA
      - A – asbestosis
      - S – scleroderma
      - I – idiopathic pulmonary fibrosis
      - O – others ie drugs
       o cytotoxics: MTX, AZA, bleomycin, busulphan, cyclo, chlorambucil
       o CNS: amitryptiline, phenytoin, carbamazepine
       o CVS: amiodarone, hydralazine, procainamide
       o antibiotics: nitrofurantoin, isoniazid
       o antirheumatics: gold, sulphasalazine
   c. Both
      - N – neurofibromatosis, tuberous sclerosis
      - E – extrinsic allergic alveolitis (6h)
      - P – pulmonary haemorrhage syndromes
      - A – alveolar proteinosis
      - L – lymphangiomyomatosis

DDx for clubbing and creps
   - pulmonary fibrosis
- bronchiectasis
- lung abscess
- mitotic lung conditions

7. Investigation and management
a. Investigation
i. CXR
- bilateral basal reticulonodular shadows, peripheries which advance upwards
- honeycombing in advanced cases
- loss of lung volume
- extent, distribution, complications
ii. Lung function
- restrictive pattern, severity
- reduced transfer factor
iii. HRCT
- Dx: patchy reticular abnormalities, focal ground glass, architectural distortion, volume loss, subpleural cyst, honeycombing
- extent and severity: basal, peripheral, subpleural
- complications
iv. Bronchoscopy lavage
- predominantly lymphocyte: respond to steroids, better Px
- predominantly neutrophils and eosinophils: poor Px = UIP
- >20% eosinophils: eosinophilic lung disease
v. Lung bx
- IPF – usual interstitial pneumonia
vi. Bloods
- ABG
- causes

b. Management
i. Education and counselling
- stop smoking
- regular f/u
- vaccinations
ii. Cause
iii. Pharmacological
- trial of steroids
- if not respond, cyclophosphamide/azathioprine
- antifibrotic agents eg penicillamine
iv. Surgical
- lung transplant (single lung transplantation)
v. Complications
- cor pulmonale: dieresis for heart failure
- polycythaemia: venesection if Hct >55%
- respiratory failure – O2 therapy
- monitor for lung cancer

Good prognosis: young, female, ground glass, minimal fibrosis on lung biopsy
**Pleural effusion**

1. Diagnosis

2. Evidence
   - location, extent
   - reduced chest excursion of hemithorax
   - percussion: stony dull
   - reduced/absent vesicular breath sounds
   - reduced/absent vocal resonance
   - apex beat
   - trachea
   - scars: chest tube, thoracotomy

3. Cx
   - respiratory distress
   - respiratory failure
   - Rx: lung CA – radiation marks, chemo (alopecia, oral ulcers)

4. Aetiology
   a. Transudates
      - CCF: JVP, S3, pedal oedema
      - nephrotic syndrome: gen oedema, renal bx scar
      - chronic liver disease: stigmata
      - hypothyroidism
   b. exudative
      - lung CA: as previous
      - pneumonia: bronchial breathing above effusion, toxic
      - TB: Mantoux
      - RA
      - DVT: calf swelling, tenderness

5. Wish list
   - temperature
   - sputum
   - female: breasts

6. Summary

**Causes**

a. Transudative
   - CCF, constrictive pericarditis
   - nephrotic syndrome, hypoalbuminaemia, peritoneal dialysis
   - chronic liver disease (hepatic hydrothorax)
   - myxoedema
   - atelectasis
b. Exudative
   - malignancy
   o primary: bronchial, pleural
   o secondary: breast, pancreas, kidneys, ovaries, lymphomas
   - infective: parapneumonic, TB
- CTD: SLE, RA
- PE (can also be transudative)
- pancreatitis (left side)
- drug: nitrofurantoin, bromocriptine
- Meig’s syndrome
- yellow nail syndrome

7. Investigation and management
   a. Investigation
      - CXR
      - sputum
      - pleural tap and pleural biopsy
      - blood Ix, mantoux
      - bronchoscope
      - CT scan

   b. Management
      - underlying cause
      - symptoms
      - chest tube: complicated parapneumonic effusion (pus/empyema, pH<7.2, glucose<3.0, Gram stain positive for organism, LDH>1000), hemothorax
      - pleurectomy (malignant)

**Approach to lateral thoracotomy scar**

1. Asymmetrical chest wall with absent ribs
   - thoracoplasty for TB
2. Symmetrical or no chest wall deformity
   a. Normal underlying lung
      - lung transplant
      - pleurectomy (eg recurrent pneumothorax in Ehler Danlos)
      - bullectomy
   b. Abnormal underlying lung
      - reduced breath sounds: lobectomy, pneumonectomy
      - COPD with lung volume reduction surgery
      - lung transplant with complications

**Lobectomy/Pneumonectomy**

1. Diagnosis

2. Evidence
   - thoractomy scar
   - asymmetrical deformity of chest
   - reduced chest expansion
   - dull percussion note

   a. Pneumonectomy
      - absent breath sounds and vocal resonance
- trachea and apex deviation
- hyperinflation with hyper-resonant percussion note and loss of liver dullness (right side)

b. Lobectomy
- decreased breath sounds and vocal resonance

3. Complications
- respiratory failure
- respiratory distress

4. Aetiology
- bronchiectasis: coarse inspiratory crepitations
- COPD/ABPA: rhonchi, prolonged expiratory phase
- mitotic/TB: nicotine staining, clubbing, cervical lymph nodes, cachexia

5. Wish list
- temperature chart
- sputum

6. Summary

Causes
a. Lobectomy and pneumonectomy
- mitotic lesion or SPN of uncertain nature
- abscess
- bronchiectasis: localised/complications
- mycetoma, ABPA (remaining lungs may have rhonchi)
- TB treatment
- LVRS for COPD (emphysema, upper lobes, no/mild pulm PHT, no concomitant disabling ds, FEV1>20%, DLCO<20%)
- trauma

b. Lobectomy and splenectomy
- TB
- sarcoidosis

**Ascites**

1. Diagnosis

2. Evidence
   a. Findings
- abdo distension
- everted umbilicus
- fluid thrill, shifting dullness
- abdo tender
- lie flat
- scar: abdo tap

b. Peripheries
- liver/spleen/kidney/masses
- cachexia, pallor
- palpable cervical LNs
- toxic looking

3. Cx
   a. Decompensated liver failure
      - A: albumin (oedema)
      - B: bilirubin (jaundice)
      - C: coagulopathy
      - D: distension - ascites
      - E: Encephalopathy – hepatic flap, hepatic fetor

4. Aetiology
   a. Chronic liver disease
      - leukonychia, clubbing, palmar erythema
      - spider naevi
      - gynaecomastia
      - loss of axillary hair
      - fetor/flap
   b. Renal failure – sallow, uraemic fetor
   c. Hypothyroidism – peaches and cream, macroGLOSSia, hoarse voice, bradycardia

5. Wish list
   a. CVS: constrictive pericarditis (JVP with steep x and y descent, early S3)
   b. Urine dipstick for proteinuria
   c. Temperature: TB
   d. PR: rectal mass

6. Summary

Causes
   a. SAAG >1.1 (portal hypertension)
      - cirrhosis of liver
      - Budd Chiari
      - CCF
      - constrictive pericarditis
      - malabsorption
      - Meig’s syndrome
      - hypothyroidism
   b. SAAG<1.1
      - intra-abdo malignancy
      - TB
      - nephrotic syndrome
      - protein losing enteropathy

7. Investigations and management
   a. Investigation
      - FBC, LFT, renal, coagulation, TFT
      - ascitic tap
- USS/CT
- Echo and ECG
- CXR: TB, pleural effusion

b. Management of ascites secondary to cirrhosis
- cause
- avoid alcohol/meds
- ascites – general measures: salt restriction <2g/day, fluid restriction<1L/day (for ascites, oedema with Na<130)
- ascites – specific measures: diuretics (spironolactone, frusemide)
- paracentesis (>5L, need albumin 8g per L removed)
- TIPSS
- liver transplant (MELD score): refractory ascites, SBP, HRS
- complications

c. SBP (>250)
- 3rd gen cephalosporin
- iv albumin to prevent HRS
- prophylaxis with ciprofloxacin/norfloxacin

**Chronic liver disease**

1. Diagnosis

2. Findings
a. Abdomen
- spleen
- liver
- kidneys
- ascites
- tender

b. Stigmata of chronic liver disease
- leukonychia, clubbing, palmar erythema
- spider naevi
- gynaecomastia
- loss of axillary hair
- fetor/flap

c. Rx
- abdo tap marks
- sinus bradycardia (beta blockers)

3. Complications
a. Decompensated liver failure
- A: albumin (oedema)
- B: bilirubin (jaundice)
- C: coagulopathy
- D: distension - ascites
- E: Encephalopathy – hepatic flap, hepatic fetor
b. Malignancy
- enlarged cx LN
- cachexia
- pallor

4. Aetiology
a. Alcohol: parotidomegaly, Dupuytren's contractures
b. Tattoos
c. Surgical scars (possib prev transfusions)
d. Thrombosed veins

5. Wish list
- temperature
- PR: hard impacted stools, melaena

6. Summary
- decompensated CLD
- portal hypertension, splenomegaly, ascites
- Cx

Causes of cirrhosis
- EtOH
- hep B/C
- cardiac failure
- autoimmune chronic active hepatitis
- primary biliary cirrhosis
- primary sclerosing cholangitis
- haemochromatosis
- haemolytic disease
- Wilson's disease
- alpha 1 AT deficiency
- galactosaemia
- type 4 glycogen storage disease
- Budd Chiari
- drugs: MTX, amiodarone, isoniazid, methyldopa
- cryptogenic

7. Investigation and management
a. Investigation
- Dx: abdo US/CT
- Aetiology: hep markers, CAGE, liver bx
- prognosticate: LFT (albumin, bilirubin), INR
- Cx: endoscopy of UGIT, mitotic change (US, AFP), renal function, ascetic fluid
- Evaluation for liver transplant
  o in those with refractory ascites, SBP, HRS
  o MELD: bilirubin, creatinine, INR

b. Management
i. Education and counselling
- stop EtOH
- regular follow up
ii. Underlying disease
- Hep B: gen (stop EtOH, hep A vaccination), surveillance for HCC, antiviral (IFN alpha, lamivudine)
- Hep C: gen, surveillance (HCC, HIV), peg interferon, ribavirin
- alcoholic liver disease: steroids and TPN (if Maddrey’s > 32 severe)
iii. Cx
- Hepatic encephalopathy: Rx ppt, low protein diet, lactulose
- HRS: noradr, terlipresin, midodrine with octeotride, iv albumin
- ascites
- UGIB: vitals, endoscopy, op, prevention (propranolol, variceal banding)
- HCC
iv. Definitive
- liver transplant
- MARS

**Hepatomegaly**

1. Diagnosis

2. Evidence
   a. Findings
      - mod/massive
      - size
      - edge
      - surface
      - consistency
      - tender
      - pulsatile
      - bruit
   b. Abdo
      - spleen: palpable, percussible
      - kidneys
      - ascites

3. Complications
   a. Decompensated liver failure
      - A: albumin (oedema)
      - B: bilirubin (jaundice)
      - C: coagulopathy
      - D: distension - ascites
      - E: Encephalopathy – hepatic flap, hepatic fetor

4. Aetiology
   - malig: cachexia, cx LN, conj pallor
   - alcohol: Dupuytren, parotidomegaly
   - infectious: toxic, rashes, injected throat, enlarged tonsils
   - CCF: raised JVP

5. Wish list
- temperature (infective)
- PR: mass (secondaries)

6. Summary

Causes

a. Massive
- HCC/mets/myeloproliferative
- RVF
- alcoholic liver disease

b. Mild-mod
- as (a)
- infection
  o viruses: EBV, CMV, hep A and B
  o bacteria: Weil (leptospirosis), melioidosis, abscesses, TB, brucellosis, syphilitic gumma
  o protozoa: hydatid cysts, amoebic abscess
- malig: lymphoproliferative, myeloproliferative, primary/secondary, adenoma (OCP)
- infiltrative: sarcoïd, amyloid, fatty liver
- endocrine: acromegaly, hyperthyroid
- collagen vasc disease
- chronic haemolytic anaemia (AI, thal, HS)
- Riedel’s lobe
- possibility of minimal CLD signs with just hepatomegaly: PBC, haemochromatosis

c. Tender
- liver abscess/infective (viral, bact, parasites)
- HCC, mets
- RHF, Budd Chiari

d. Pulsatile
- TR
- HCC
- AVM

e. Hard/irregular
- mitotic
- macronodular cirrhosis (>3mm): hep, Wilson, AAT
- amyloidosis
- hydatid cyst
- granulomatous disease
- gummatous disease
- APCKD

7. Investigation and management

a. Investigation
- blood: Dx, Px
- imaging
- liver bx

b. Management
- acc to aetiologies
Hepatospmenomegaly

1. Diagnosis

2. Evidence
- liver: size, edge, surface, consistency, tender, bruit, pulsatile
- spleen: size, edge, surface, consistency, tender, bruit
- kidneys
- ascites

3. Complications
a. Decompensated liver failure
   - A: albumin (oedema)
   - B: bilirubin (jaundice)
   - C: coagulopathy
   - D: distension - ascites
   - E: Encephalopathy – hepatic flap, hepatic fetor

4. Aetiology
a. Chronic liver disease
   - leukonychia, clubbing, palmar erythema
   - spider naevi
   - gynaecomastia
   - loss of axillary hair
   - fetor/flap
b. Others
   - pallor, cachexia, Cx LN, PRV
   - toxic, rashes, tonsils
   - EtOH
   - SBE, SLE, RA, haemolytic anaemia

5. Wish list

6. Summary

Causes (det predom enlarged organ)
a. Haematology
   i. Myeloproliferative: CML, myelofibrosis, PRV, essential thrombocytosis
   ii. Lymphoproliferative: lymphoma, ALL, CLL, hairy cell leukaemia, myeloma, Waldenstrom
   iii. Haemolytic anaemia
b. Portal hypertension
c. Infective: hepatitis, infectious mononucleosis, leptospirosis, malaria, toxoplasmosis, leishmaniasis
d. Others: storage disorders eg Gaucher, sarcoidosis, amyloidosis

7. Investigation and management
**Splenomegaly**

1. Diagnosis

2. Evidence
   a. Findings
   - size from left costal margin
   - mild/mod/massive
   - palpable notch
   - edge
   - surface
   - consistency
   - tender
   - splenic rub
   - percussion: dull fr left 9th rib in XL → inf med in axis of 10th rib
   - moves inf med with inspiration

   b. Abdo
   - liver
   - kidneys
   - ascites

3. Complications
   a. jaundice
   b. bruises/petechiae

4. Aetiology
   a. Chronic liver disease
   - leukonychia, clubbing, palmar erythema
   - spider naevi
   - gynaecomastia
   - loss of axillary hair
   - fetor/flap

   b. Others
   - pallor, cachexia, Cx LN, polycythaemia
   - toxic, rashes, tonsils
   - IE, splinter haemorrhages
   - SLE, RA, haemolytic anaemia

5. Wish list
   - temperature
   - hx: night sweats, LOW, travel hx

6. Summary

Causes
   a. Massive (>8cm)
   - CML
   - myelofibrosis
   - PRV
   - chronic malaria
- kala azar (visceral leismaniasis)
- others: Gaucher's, rapidly progressive lymphoma

b. Mod (4-8 cm, 2-4 FB)
- myeloproliferative
- lymphoproliferative
- haematologic: AI, ITP, thalassaemia, HS
- chronic malaria
- cirrhosis

c. Mild (<4cm, 1-2 FB)
- myeloproliferative, lymphoproliferative
- infections
  o viral (CMV, EBV)
  o SBE, splenic abscesses, leptospirosis, meliodosis, TB, typhoid, brucellosis
  o ac malaria
- infiltrative: amyloidosis, sarcoidosis
- endocrine: acromegaly, thyrotoxicosis
- collagen vascular: SLE, Felty
- chronic haemolytic: thal, AI, HS, ITP

d. tender
- infective
- ac myelo/lymphoproliferative

e. pallor
- myelo/lymphoproliferative
- malaria
- haemolytic anaemia (thal, AIHA)
- AI: Felty, SLE
- cirrhosis with portal hypertension

f. LN
- lymphoproliferative: CLL, lymphoma
- infective: IMS, meliodosis, CMV, TB, HIV

7. Investigation and management

**Enlarged kidneys**

**A. Bilateral**

1. Diagnosis

2. Evidence
   a. Kidneys
      - bilateral masses in flanks
      - bimanually palpable and ballotable
      - nodular
      - able to get above both masses
- percussion resonant over both kidneys
- move inferiorly with respiration
- tender/not
- bruit

b. Abdo
- scars
- liver
- spleen
- ascites
- bladder

3. Complications
a. CKD/uraemia
- sallow, cachexia
- Kussmaul
- uraemic fetor
- pruritic scratch marks
- leukonychia, Terry's nails
- flapping tremor
- bruising
- polycythaemia vs pallor
- fluid overload

b. Rx
- AVF: thrill, recent injection marks, aneurysms
- TK catheter
- transplanted kidney

4. Aetiology
- acromegaly
- DM dermopathy
- tuberous sclerosis: adenoma sebaceum

5. Wish list
- temperature
- BP: HPT
- fundus: HPT
- urine dipstick: haematuria, proteinuria, pyuria
- CVS: MVP, AR
- neuro: CN3 palsy (berry aneurysm), stroke
- FH of aneurysm/stroke

6. Summary

Causes
a. APCKD
b. Commoner
- acromegaly (hepatosplenomegaly)
- early DM nephropathy
- bilateral hydronephrosis
c. Rare
- tuberous sclerosis
- amyloidosis
- VHL

7. Investigation and management
a. Investigation (esp APCKD)
- bloods: FBC, biochem, CRF – Ca/PO4/iPTH, uric acid, urinalysis
- USS
- CT/MRI
- MRA: high risk of aneurysm, Ba enema, 2DE
- genetic testing

b. Management (APCKD)
- education and counselling
- regular f/u
- screening of 1st degree relatives
- avoid nephrotoxic drugs

i. Medical
- HPT with ACEi/ARB
- UTI, cysts infection – bactrim, fluoroquinolones
- pain
- renal failure – med Rx, RRT for ESRF
- antibiotic prophylaxis

ii. Surgical Rx
- pyocyst: drainage
- cystectomy
- nephrectomy
- alcohol sclerosant
- RRT
- aneurysm clipping, MVP with MR

B. Unilateral
1. Diagnosis

2. Evidence
a. Kidney
- unilateral mass in flank
- bimanually palpable and ballotable
- nodular
- able to get above
- percussion resonant
- move inferiorly with respiration
- does not cross midline
- tender/not
- bruit

b. Abdo
- scars
- liver
- spleen
- ascites
- bladder

3. Complications
a. CKD/uraemia
- sallow, cachexia
- Kussmaul
- uraemic fetor
- pruritic scratch marks
- leukonychia, Terry’s nails
- flapping tremor
- bruising
- polycythaemia vs pallor
- fluid overload

b. Rx
- AVF: thrill, recent injection marks, aneurysms
- TK catheter
- transplanted kidney

4. Aetiology
- acromegaly
- DM dermopathy
- tuberous sclerosis: adenoma sebaceum

5. Wish list
- temperature
- BP: HPT
- fundus: HPT
- urine dipstick: haematuria, proteinuria, pyuria
- CVS: MVP, AR
- neuro: CN3 palsy (berry aneurysm), stroke
- FH of aneurysm/stroke

6. Summary

Causes
- RCC
- acute renal vein thrombosis
- pyonephrosis
- hypertrophy of single functioning kidney
- asymmetrical bilateral enlargement (see above)

Transplanted kidney
Comment on function – uraemic
1. Diagnosis

2. Evidence
   a. Findings
      - location: iliac fossa
      - rounded palpable mass
      - overlying scar
      - tender
      - kidneys
      - ascites
      - renal bruit
      - liver, spleen

3. Complications
   a. Renal impairment (function)
      - sallow, thin
      - bruises
      - pruritic scratch marks
      - leukonychia, Terry's nails
      - pallor
      - polycythaemia: plethoric facies, conj effusion
      - fluid overload: pedal oedema, lie flat, O2
      - Kussmaul breathing
      - uraemia fetor
      - flapping tremor
   
   b. Treatment
      - AVF: location, thrill, recent puncture marks, aneurysm
   
   c. Cx of transplant
      - hep B/C: jaundice, stigmata of chronic liver disease
      - cyclosporine: hypertrichosis, gum hypertrophy
      - steroid: Cushingoid, steroid purpura, thin skin

4. Aetiology
   - DM dermopathy

5. Wish list
   - Temperature chart: fever
   - BP: HPT
   - fundus: HPT
   - urinalysis: haematuria, proteinuria, pyuria
   - CVM: MVP, AR
   - neuro: CN3 palsy, h/o stroke

6. Summary