

1. A 27 year old man presents with a 3 week history of progressive shortness of breath, dry cough and low grade fever. He has received a course of oral amoxicillin without much improvement. He completed treatment for sputum positive pulmonary tuberculosis (PTB) 2 months ago; and had responded well to the PTB treatment. Physical examination reveals a cachexic patient in severe respiratory disease and with florid oral thrush. His pulse rate is 111 beats/minute, temperature is 37.9°C, respiratory rate is 32 beats/minute, BP is 110/75 mmHg and O<sub>2</sub> saturation on pulse oximetry is less than 90% on room air. He weighs 46 kg. HIV test done after counselling comes back as positive.



(a) What is the most likely diagnosis? (2 Marks)

PCP

(b) What is the WHO clinical stage of this patient? (1 Mark)

Stage IV

(c) List 5 priority investigations you would carry out and the expected findings.

Investigations (5 Marks)

Expected findings (5 Marks)

- |                 |   |
|-----------------|---|
| 1. CXR          | 1. Batwing appearance                     |
| 2. Sputum m/c/r | 2. Trophozoites, sporozoites, cysts       |
| 3. FHC          | 3. anaemia, neutropenia, thrombocytopenia |
| 4. BGA          | 4. ↓ PaO <sub>2</sub>                     |
| 5. LDH          | 5. ↑ (indicates degree of lung injury)    |

(d) List 2 parameters that objectively indicate severity of respiratory disease and the need for adjunctive therapy in this patient. (2 Marks)

- |  |                                     |
|--|-------------------------------------|
| 1. RR > 30                               | PaO <sub>2</sub> < 70               |
| 2. SpO <sub>2</sub> < 90mmHg on room air | Alveolar arterial gradient > 35mmHg |

(e) Outline 5 principles of management of this patient. (5 Marks)

1. High flow O<sub>2</sub> on a NRM (10-15L)
2. High dose co-trimoxazole 15-20mg/kg Trimethoprim + 10mg BD day 1-5  
 \* 2nd line - clindamycin + primaquine  
 20mg OD day 11-21
3. Prednisolone 20mg BD day 6-10
4. ARVs 2 wks after PCP Rx
5. Nutritional support

2. A 22 year old woman presents with a 2 month history of shortness of breath, irregular heart beat and haemoptysis. She has previously been followed up in the Cardiac Clinic for 1 year during which she has been relatively stable. Physical exam reveals dyspnoea at rest, temperature of 36.7°C, pulse rate of 120 beats/min with irregularly irregular rhythm. The jugular venous pressure is 14 cm of water. Praecordial exam reveals a tapping apex beat in the 5<sup>th</sup> intercostal space, mid-clavicular line. The heart sounds are irregular and there is a mid-diastolic murmur at the apex. There are fine bibasal crepitations.

(a) What is the clinical diagnosis? (2 Marks)

Heart failure with atrial fibrillation in valvular heart disease

(b) List 6 factors that could have contributed to the worsening of her clinical state. (3 Marks)

1. A. fib
2. Renal insufficiency
3. Failure to take medication
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

(c) List 3 investigations that will elicit her underlying structural cardiac lesion and the expected finding for each. (3 Marks)

Investigations (3 Marks)	Expected finding (3 Marks)
1. ECHD	1. ↓ flow through MV
2. ECG	2. LA enlargement (P mitrale)
3. Cardiac MRI	3. show MS

(d) List 4 long-term complications of the cardiac lesion (other than mortality). (4 Marks)

- |                                    |                           |
|------------------------------------|---------------------------|
| 1. Pulmonary arterial HTN          | - PE                      |
| 2. Recurrent pulmonary infections. | - Ventricular arrhythmias |
| 3. AKI                             | - Cardiac cirrhosis       |
| 4. CVA                             |                           |

(e) Outline 5 principles of management of this patient. (5 M)

1. O<sub>2</sub>
2. Relieve congestion - Diuretics, progs up
3. Relieve arrhythmia - CCB, DC conversion
4. Anticoagulation
5. Vasodilators - ACE, ARB

3. A 63 year old man presents with a 3 month history of cough, frank haemoptysis and weight loss. He has a 30 pack-year history of cigarette smoking. Sputum microscopy and culture is negative for tuberculosis. *Mets are common to liver, bone, brain, adrenal glands.*

(a) What is the most likely diagnosis? (2 Marks)

*Lung cancer based on long standing history of smoking together with weight loss.*

(b) Outline other clinical features that would be indicative of the diagnosis under the areas:

General Exam

(4 Marks)

1. *Chubbiness* *-Hyperpigmentation (paraneoplastic syndrome)*
2. *Lymphadenopathy*
3. *Warting*
4. *Pallor*

Local Effects

(4 Marks)

1. *Stony dullness - pleural effusion* *-Pericarditis*
2. *↓ chest expansion on the affected side*
3. *Tracheal deviation*
4. *Wheeze*

(c) Outline 4 priority investigations you would carry out and the expected findings.

*UEG + Ca<sup>2+</sup>, PO<sub>f</sub><sup>s-</sup>*

**Investigations (4 Marks)**

*↑ Ca<sup>2+</sup>*  
*low hct*  
**Expected finding (4 Marks)**

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. <i>CXR</i></li> <li>2. <i>Bronchoscopy and biopsy</i></li> <li>3. <i>CT chest</i></li> <li>4. <i>FBC</i><br/><i>LFTs</i></li> </ol> | <ol style="list-style-type: none"> <li>1. <i>collapse, mediastinal widening, mass,</i></li> <li>2. <i>SCLC (common in smokers)</i></li> <li>3. <i>to stage the disease</i></li> <li>4. <i>anaemia</i><br/><i>↑ ALT, AST</i></li> </ol> |
|---|--|

(d) Outline 2 approaches to the definitive management of this condition.

(2 Marks)

1. *Surgery and chemotherapy for early NSCLC*
2. *Chemo and radiotherapy for SCLC and late stage NSCLC*

A 61 year old man is brought to the casualty with acute onset of right-sided body weakness. The patient was eating lunch when he suddenly lost strength in the right side of his body. He was unable to move his right arm and leg and also noted a loss of sensation in the right arm and leg. He had difficulty speaking. His medical history is remarkable for long-standing hypertension. Physical exam reveals blood pressure of 184/100 mmHg. Neurological exam reveals right facial droop and dense right hemiplegia. CT scan of the brain shows no evidence of haemorrhage.

(a) What is the diagnosis? (2 Marks)

Complete <sup>dense</sup> right-sided hemiplegia with difficulty in speaking due to ischaemia in the left cortex as a result of uncontrolled hypertension and subcortex.

(b) What vascular territory is involved? (1 Mark)  
MCA

(c) List 4 risk factors for this condition. (4 Marks)

- |                         |                       |                 |
|-------------------------|-----------------------|-----------------|
| 1. Age > 55yrs          | - Obesity             | - Thrombophilia |
| 2. Gender -> in men     | - Sedentary lifestyle | - Dyslipidemia  |
| 3. Race -> in blacks    | - Smoking             | - HTN - DM      |
| 4. Family hx            | - Dyslipidemia        | - Heart disease |
| Previous vascular event |                       |                 |

(d) List 4 priority investigations to establish the predisposing factors and the expected findings.

Investigations (4 Marks)	Expected finding (4 Marks)
1. HbA <sub>1c</sub>	1. ↑ > 6.5% A.f.b
2. Lipid profile	2. ↑ LDL, ↓ HDL
3. ECHO	3. Vegetations, mural thrombus
4. FBC	4. Thrombocytosis
ANA	↑

(e) Outline 5 principles of management of this patient. (5 Marks)

1. Fibrinolysis within 4.5 hrs - alteplase 0.9mg/kg. max of 90mg
2. Antiplatelet treatment - ASA 75mg, Clopidogrel 75mg
3. Statins - plaque stabilization, lipid lowering, anti-inflammatory
4. Resuscitation - ABCs, O<sub>2</sub>, IV fluids, NGT, NPO
5. Rehabilitation - physiotherapy, OT

5. A 23 year old woman presents with general malaise, leg swelling, progressive reduction in urine output, poor appetite and nausea. She has pallor ++, bilateral pitting oedema++ and blood pressure is 182/115 mmHg. She is nulliparous. She has been managed for hypertension for the last 3 years.

Investigations reveal:

Urinalysis - protein +++, RBCs ++, granular casts, no growth obtained on culture.

FBC - Haemoglobin 9.2 g/dl, MCV 86 fl, normocytic normochromic

WBC -  $5.3 \times 10^9/L$ , platelets -  $176 \times 10^9/L \rightarrow$

UECr - Serum creatinine 201  $\mu\text{mol/L}$ ,  
(2.8 - 8.2)

Urea 13 mmol/L, K<sup>+</sup> - 5.3 mmol/L,  $\rightarrow$

Na<sup>+</sup> - 131 mmol/L  $\downarrow$

Renal ultrasound shows - echogenic kidneys, right - 8.1 x 3.6 cm, left - 7.9 x 3.6 cm

(a) What is the clinical diagnosis? (2 Marks)

CGN based on proteinuria, haematuria, HTN in a young patient and small kidneys on US

(b) List 4 possible secondary causes of this condition and give screening tests for these secondary causes.

Post-strep GN  
Secondary Cause (4 Marks)

ASOT

Screening Test (4 Marks)

1. SLE

1. ANA

2. HIV

2. Rapid test

3. DM

3. RBS

4. Hep B  
Hep C

4. HBs Ag  
Hep C DNA PCR

(c) What is the commonest haematological complication associated with this condition? (1 Mark)

(Normocytic normochromic) anaemia of chronic disease

(d) List 4 causes of the haematological complication. (4 Marks)

1.  $\downarrow$  EPO

$\uparrow$  bleeding due to platelet abnormalities

2.  $\downarrow$  Fe absorption from the GIT

3. Uremic toxicity of the BM

4.  $\downarrow$  lifespan

(e) Outline 5 principles/modalities used to slow down the progression of this condition (5 Marks)



Index Number H31/2859/2009

8. A 35 year old African man presents with tense ascites, leg oedema and a liver span of 3 cm. He has no Pruritus and no respiratory signs. Serum albumin was found to be 20g/L and serum-ascites albumin gradient was > 11g/L.

(a) What is the clinical diagnosis?

Portal hypertension in cirrhosis

(2 Marks)

(b) List 4 possible causes of this condition.

1. Cirrhosis - chronic alcohol use

2. - injection (HBV, HCV)

3. - NASH

4. - autoimmune hepatitis

Portal HTN - cirrhosis

- schistosomiasis

- metastases

- Budd Chiari syndrome

(4 Marks)

(c) List 3 complications that this patient is at risk of.

1. Acute UGIB

2. AKI due to hypovolemia

3. Panycytopenia due to hypersplenism  
f. Spontaneous bacterial peritonitis

5. Hepatic encephalopathy

6. Malabsorption of ADEK

(3 Marks)

(d) List 4 tests you would carry out on the ascitic fluid and how you would interpret the results.

Test (4 Marks)

1. Cytology

2. M/C/S

3. LDH

4. Albumin

5. Amylase

Results Interpretation (4 Marks)

1. Presence of malignant cells

2. Micro-organisms

3. Transudate vs. Exudate  
< serum -> TB, malignancy

4. = serum -> Normal

↑ in pancreatitis

(e) Outline 3 principles of management of the ascites in this patient. (3 Marks)

1. Paracentesis

2. Diuretics - lasix

3. Salt and H<sub>2</sub>O restriction

Hyperthyroidism  
 ↑ metabolic rate  
 ↑ heart rate  
 ↑ sweating  
 ↑ appetite  
 ↑ weight gain

Index Number H31/2859/2009

10. A 40 year old woman presents with a 5 week history of palpitations, heat intolerance and an anterior neck swelling. She has lost 3 kg weight despite an increased appetite. On examination, the neck swelling moves up with swelling.

(a) What is the most likely diagnosis? (2 Marks)

Hyperthyroidism Hyperthyroidism due to a toxic goitre

(b) List 5 signs you would expect to find during physical examination. (5 Mark)

- |   |   |
|---|---|
| 1. <u>Tachycardia, ↑BP</u>              | 7. <u>Irregular, irregular high vol. pulse</u>  |
| 2. <u>Anxious, irritable</u>            | 8. <u>Exophthalmos, lid lag, lid retraction</u> |
| 3. <u>Atrophia</u>                      | 9. <u>Hyperreflexia</u>                         |
| 4. <u>Fine tremor</u>                   | 10. <u>Systolic murmur, S3 gallop</u>           |
| 5. <u>Warm, sweaty, hyperemic palms</u> | 11. <u>Pemberton's sign</u>                     |
| 6. <u>Acropachy</u>                     |   |

(c) Outline 4 priority investigations you would carry out to establish the diagnosis and the expected finding.

ECG	A. fib
Investigations (4 Marks)	Expected findings (4 Marks)
1. <u>TFTs</u>	1. <u>↓TSH, ↑T3, ↑T4</u>
2. <u>U/S</u>	2. <u>Enlarged thyroid</u>
3. <u>FNA</u>	3. <u>R/O malignancy</u>
4. <u><sup>123</sup>I</u>	4. <u>cold vs. hot nodules</u>
5. <u>TSH</u>	<u>elevated in goitre</u>

(d) Outline 3 definitive treatment options for this patient. (3 Marks)

- Medical - thionamides e.g. methimazole
- Surgical - total or sub-total thyroidectomy
- Radioactive iodine therapy with <sup>131</sup>I

(e) List 2 expected complications of this condition (other than mortality). (2)

- Thyroid storm
- Embolic phenomena due to a-fib (stroke, M.I)
- Hypothyroidism due to treatment
- Pressure symptoms - dysphagia, dysproea, dysphonia
- Secondary HTN

A 57 year old man presents with a 7 month history of progressive left upper quadrant swelling, early satiety and fatigue. Physical exam reveals an enlarged spleen extending 20cm below the left costal margin. Massive splenomegaly

(a) List 5 differential diagnoses for this presentation. (5 Marks)

1. Infectious - Leishmaniasis
2. - Tropical splenomegaly syndrome
3. Haematological - CML
4. - Myelofibrosis
5. Storage disorders - Gaucher  
- Niemann Pick

His complete blood count reveals WBC -  $348 \times 10^9/L$ , platelets -  $602 \times 10^9/L$ ,  
Hemoglobin - 9 g/dl ↓

(b) What is the most likely diagnosis? (1 Mark)

CML

(c) List 4 priority investigations and the expected findings.

Uric acid  
Investigations (4 Marks)

↑ due to ↑ cell breakdown  
Expected findings (4 Marks)

- |                                      |  |
|--------------------------------------|--|
| 1. <u>PBF</u>                        | 1. <u>Predominant neutrophils &amp; myelocytes</u> |
| 2. <u>BM aspirate - cytology</u>     | 2. <u>↑ in granulocytes</u>                        |
| 3. <u>Chromosome analysis</u>        | 3. <u>Presence of Philadelphia chromosome</u>      |
| 4. <u>RNA analysis</u><br><u>CBF</u> | 4. <u>Presence of BCR ABL gene</u><br>↑            |

(d) List 3 phases in the natural course of this condition. (3 Marks)

1. Chronic phase - responsive to Rx; last 3-5yrs or even >5yrs with imatinib
2. Accelerated phase
3. Blastic phase - transform to acute leukemia (AML or APL) which doesn't respond to Rx.  
70%      30%

(e) Name 3 drugs used in the management of this condition. (3 Mark)

1. Chronic phase - imatinib, Dasatinib, nilotinib or allogeneic HSCT or classical
2. Cytotoxics like hydroxyurea or interferon are used if imatinib doesn't work

Accelerated phase & Blastic crisis - imatinib if it has not been used, hydroxyurea, low dose cytarabine,