THE UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

DEPARTMENT OF PATHOLOGY & MICROBIOLOGY

END OF YEAR EXAMINATION FOR ACADEMIC YEAR 2019/2020

GENERAL AND SYSTEMIC PATHOLOGY (MB CHB) PTM 4210

2nd DECEMBER, 2020

COMPUTER NO:**.....**

TIME: THREE (3) HOURS

INSTRUCTIONS

1. Answer all questions on this paper.
2. Answer each question in a different/separate answer booklet.
3. Each answer sheet should be clearly labeled with the question number and with your computer number.

QUESTION 1

Paroxysmal Nocturnal Dyspnea

An 77-year-old man (Mr Eddie) presents to the ED with worsening dyspnea on exertion, PND, and edema over the last week. He has a history of coronary artery disease with a prior MI at the age of 70. He is a known diabetic and hypertensive patient who developed biventricular heart failure 3 years ago but has done well since then with stable New York Heart Association (NYHA) class II symptoms and BMI of 28 (previous BMI 37). He has been free of angina, palpitations, or syncope. He has a past history of alcoholism and cigarette. He follows a low salt diet and is compliant with medications. He denies fever, chills, sweats, or productive cough. His weight has increased by 1.2 kg in the past week. His past medical history is significant for hyperlipidemia, chronic obstructive lung disease, and mild renal insufficiency. Examination also revealed a raised JVP, splenomegaly and hepatomegaly

a. What modifiable risk factors of heart failure did/does Mr Eddie have?
b. What clinical features are suggestive of a failing left heart pump?
c. On examination of Mr Eddies lungs what will you most likely hear?
d. What is the most likely explanation of Mr Eddies recent weight gain in the past week?
e. Describe a patient who is in NYHA class II.

(10 marks)

QUESTION 2

A 9 year old boy presents at University Teaching Hospital with enlarged cervical and axillary lymph nodes. At examination, a low grade fever is noted. An HIV test done at admission is negative. A biopsy of one of the cervical lymph nodes is taken and shows a spindle cell tumour with atypical mitotic figures and extravasated red blood cells.

a. What is the most likely diagnosis? (5 marks)
b. What is the cell of origin for this lesion? (5 marks)
c. What immunohistochemical stain can be used to confirm the diagnosis and why? (10 marks)
d. What is the causal viral infection for this tumour? (5 marks)

QUESTION 3

A 35 year old man presents at University Teaching Hospital complaining of epigastric pain which worsens when hungry and is relieved with food intake. A urea breath test is positive.

a. What is the most likely diagnosis? (2 marks)
b. What is the site of the lesion/disorder? (1 marks)
c. What organism is responsible for this disorder? (5 marks)
d. List 2 (two) special histologic stains you would advise the laboratory to do if a biopsy from this patient is done to highlight this organism. (5 marks)
e. List 2 cancers this patient is predisposed to developing due to this disorder. (2 marks)
f. You suspect the patient has a bowel perforation, how would you confirm it? (5 marks)

QUESTION 4

An 8 year old boy presents at the UTHs Children's hospital with a swollen face. The mother informs you that it is of recent onset. She also informs you that his urine is frothy. You examine the child and note normal range blood pressure. A urinalysis using urine dipsticks demonstrates a raised protein level 3+. There is no blood detected in the urine.

a. What is the most likely diagnosis? (5 marks)
b. What features in this patient help you arrive at this diagnosis? (3 marks)
c. What other features would you check for to confirm the diagnosis? (2 marks)
d. Describe two (2) possible lesions (glomerulopathies) the patient may have in his kidneys if a biopsy is done. (10 marks)
e. Of the two lesions, which one is the commonest in this age group and what would be the drug of choice in treating this patient? (5 marks)

QUESTION 5

A 15-year-old healthy girl with no major medical problems notes blotchy areas of erythema that are pruritic over the skin of her arms, legs, and trunk within an hour every time she eats seafood, followed by diarrhoea. These problems abate within 3 hours, and then physical examination reveals no abnormal findings.

a. What is the diagnosis (5 marks)
b. Briefly discuss the pathogenesis (20 marks

QUESTION 6

A 3-year-old boy is admitted to the emergency unit with 3-day history of inconsolable crying, swelling in the hands and feet, distended abdomen and fever. This is the first child of a couple who give history of sickle cell disease in the family.

Clinical examination reveals that the child is febrile (temperature 38.5°C), has swollen hands and feet (dactylitis) which are very tender to touch, is markedly pale and has splenomegaly.

Full blood count (FBC) shows WCC = $25x10^9$/L ($4-10x10^9$/L); HB = 4g/dl (12-18g/dl); Platelets = $505x10^9$/L ($150-450x10^9$/L).

a. What is the possible diagnosis in this case?
b. What further investigations would you request to confirm your diagnosis?
c. What is the molecular pathology of the diagnosis in this child?
d. What is the inheritance pattern of this condition? Autosomal Recessive
e. What genotype would you expect in this child? Homozygous haemoglobin (HbSS)
f. What is your interpretation of the FBC in this child?
g. If you performed a peripheral blood smear, what are the main features you would see in the blood? Sickle shaped cells: Microcytic, Target, Howel Jolly
h. What could be the possible causes of fever in this child? Give two (2).

FBC = Leukocytosis
Thrombocytosis
Anaemia

(h) (i) Hemolysis ↑
(ii) Infections in

(i)(ii)

Blood culture
Inflammatory markers
+

i. What further investigations would you request to confirm your two (2) possible causes? Unconjugated Bilirubin Test & Blood Serology for Infe

j. Give one complication that this child has and the pathogenesis of this complication?

Splenomegally: This is due to ↑ Splenic Sequestration & ↑ Sickle Shaped RBCs destruction.

QUESTION 7

A 60 year old man presented with shortness of breath, which had developed gradually over several years. He had been a heavy smoker since age 20. On examination he was short of breath at rest and centrally cyanosed. He had a barrel-shaped chest and a marked expiratory wheeze.

- CXR showed hyperinflation and other signs consistent with emphysema.
- Arterial blood gases : pH -7.2, pO2 - 8.0 kPa, pCO2 - 9.0 kPa. SBC- 36 mmol/l

a) Comment on and interpret all the biochemical data (using correct biochemical terms).

b) How do these biochemical results differ from those in a patient with an acute asthma attack?

c) Explain the likely cause for this acid-base disturbance.

d) Describe what would happen if this patient were given oxygen to breathe by face mask.

(10 marks)

(a) Chronic Respiratory Acidosis, Metabolic Compensation
Hypoxia

QUESTION 8:

(b) Chronic ⇒ ↑ Bicarb (very high) due to Renal Comp. & Acute = ↓ Bicarb (not that ↓) ⇒ takes time for Bicarb to build!.

Briefly discuss the causes, pathophysiology and clinical manifestation of diabetic ketoacidosis. *(10 marks)*

QUESTION 9:

Write short notes on megaloblastic anaemia under the following headings:

a. Aetiology
b. Pathogenesis
c. Clinical findings
d. Laboratory findings

(10 marks)

Good luck

Q1: Overweight 28 kg.
Hypertension
Smoking
Alcoholism.
Diabetes

DIABETIC KETOACIDOSIS

(a) CAUSES: diabetic mellitus type 1.

Pathophysiol ⇒ lack of Glucose due to insulin deficiency (production.)

⇒ Body will use fats to produce Acetoacetic acid {. . . . .

⇒ Whose by products will be keto acids.

MEAT.

M = Myocardial infarction.

I = Infection.

T = Trauma.

I = Insulin deficiency.