



Faculty of Medicine, University of Ruhuna

Third Examination for Medical Degrees (Part II) December 2022

Pharmacology Paper I

Thursday 15th December 2022

Answer all 05 questions

Answer each question in a separate book

(9.00 a.m. - 11.30 a.m.) 2 ½ hours

1.

- 1.1. Compare tricyclic antidepressants and selective serotonin re-uptake inhibitors in relation to mechanism of action, adverse effects and indications **(40 marks)**
- 1.2. Describe the pharmacological basis of using clozapine in resistant schizophrenia **(30 marks)**
- 1.3. State the adverse effect of clozapine which could limit its usage **(10 marks)**
- 1.4. State the investigation which should be done in order to detect the adverse effect mentioned in 1.3 **(10 marks)**
- 1.5. Name two (02) drugs that belong to any other drug group/s which need close monitoring **(10 marks)**

2. A 40 year-old male admitted with fever for two weeks. After obtaining history, examination and performing some investigations patient was suspected to have subacute infective endocarditis. He was started on intravenous penicillin four hourly and gentamicin eight hourly.

- 2.1. List five (05) evidence the above patient would have shown in the history, examination or investigations to consider the above diagnosis **(20 marks)**
- 2.2. State the most specific blood investigation that need to be taken before starting treatment and two (02) special instructions that need to be followed in obtaining the sample **(10 marks)**
- 2.3. State the reason for starting above two antibiotics simultaneously **(10 marks)**
- 2.4. Explain briefly how you would change this patient's antibiotic regimen if he gives a history of "penicillin allergy" **(15 marks)**

- 2.5. This patient tolerated gentamicin well and it was continued up to two weeks
- 2.5.1. Mention the drug class of "gentamicin" (05 marks)
 - 2.5.2. State its mode of action (10 marks)
 - 2.5.3. List two (02) important factors each that are needed to
 - 2.5.3.1. calculate the dose of gentamicin (10 marks)
 - 2.5.3.2. monitor the patient while on gentamicin treatment (10 marks)
 - 2.5.4. State another common usage of gentamicin along with the specific change in dosage regimen that need to be considered compared with the treatment in subacute infective endocarditis (10 marks)

3. A 56 year-old man with asthma admitted with worsening shortness of breath, wheezing and productive cough for five days. He also had fever for three days. On admission, his saturation is 92% on room air, pulse rate is 110 beats/min and blood pressure is 110/75 mmHg. He was unable to complete a sentence and was tachypnoeic with respiratory rate of 32 breaths per minute and was using accessory muscles of respiration. Chest examination revealed diffuse rhonchi.

- 3.1. What is the cause for his acute presentation? (10 marks)
- 3.2. List five (05) acute pharmacological management steps of this patient (25 marks)
- 3.3. Explain the mechanism of action of two (02) of the pharmacological agents you mentioned in 3.2 (30 marks)

The patient became restless and more tachypnoeic despite your medical management and auscultation revealed widespread rhonchi.

- 3.4. Mention an additional pharmacological agent that can be used to treat this patient's condition (10 marks)
- 3.5. List five (05) pharmacological agents that can be used to treat chronic asthma (25 marks)

4. A 24 year-old boy presented with upper abdominal pain and polyuria, increased thirst and weight loss for one week. He has no preceding medical illnesses. On examination patient was ill looking, thinly built, having dry mucous membranes. His pulse rate was 120/min, blood pressure was 100/70 mmHg and the respiratory rate was 20/min. The rest of the cardiovascular, respiratory and neurological examinations were normal. His abdominal examination revealed epigastric tenderness. On admission blood glucose was 458 mg/dL.

4.1. What is the most likely diagnosis? **(10 marks)**

4.2. Outline four further investigations you would perform and mention the expected results and their importance in the management of this patient **(40 marks)**

4.3. Describe the management of this patient during first 24 hours of admission **(50 marks)**

5.

5.1.

5.1.1. Define hypertension **(10 marks)**

5.1.2. Angiotensin converting enzyme (ACE) inhibitors are mainstay of treatment for hypertension.

List **five (05)** benefits of ACE inhibitors in hypertension **(25 marks)**

5.1.3. Explain the reason for prescribing at least one medication at bedtime in treating hypertension rather than taking all medications in the morning **(20 marks)**

5.2.

5.2.1. Prolongation of patient survival in heart failure has been documented with some of the drugs or drug combinations.

Name **four (04)** drug groups or drug combinations which have survival benefits in heart failure **(20 marks)**

5.2.2. Diuretics are cornerstone in the treatment of acute heart failure.

5.2.2.1. What is the rationale of using diuretics in acute heart failure? **(10 marks)**

5.2.2.2. State the initial dose of the diuretic you would prescribe for a patient with acute heart failure including the name of the diuretic, dose and the route of administration **(15 marks)**