Faculty of Medicine, University of Ruhuna

3rd MBBS (Part II Examination)

Pharmacology Paper I

September 2015

Answer all 05 questions ***(9.00 a.m. - 11.30 a.m.) 2 ½ hours***

Answer each part in a separate answer book

1.

1.1. A 60 year-old male with 10 years history of type 2 diabetes mellitus who is taking glibenclamide 10 mg b.d. and metformin 1 g t.d.s., found to have HbA_{1C} of 8.5% (good control < 7%) while having good dietary and drug compliance.

1.1.1. Name an oral hypoglycaemic drug that can be added to treat this patient. (05 marks)

1.1.2. Describe the mechanism of action of the drug you mentioned in 1.1.1. (30 marks)

1.1.3. Compare and contrast biguanides and sulphonylureas in relation to their mechanism of actions, clinical uses and adverse effects. (40 marks)

1.2.

1.2.1. List the types of insulin according to the duration of action. (05 marks)

1.2.2. Write two examples for each of them. (10 marks)

1.2.3. Write five indications for insulin therapy (10 marks)

2.

2.1. Dipivefrine is a sympathomimetic agent, used in the treatment of open angle glaucoma to control the progressive increase in intra ocular pressure.

Regarding this drug,

2.1.1. describe the mode of action. (20 marks)

2.1.2. describe the therapeutic effects. (20 marks)

2.2. List the other drug groups used in the treatment of open angle glaucoma. (10 marks)

2.3. Describe the pharmacological / pharmaceutical reasons for manufacturing

2.3.1. sustained release capsules. (25 marks)

2.3.2. impregnated intrauterine device. (25 marks)

3.

3.1. List two drugs from different drug groups, used in the management of status epilepticus. (10 marks)

3.2. Briefly describe the mode of actions of the above drugs mentioned in 3.1. (30 marks)

3.3. A 68 year-old man with long standing hypertension and alcoholic liver disease complicated with gross ascites admitted to the medical casualty ward with symptoms of community acquired pneumonia. On admission, his blood pressure was 95/70 mmHg. The treating physician decided to start him on modified dose of vancomycin. He was on nifedipine 20 mg b.d. and carvedilol 12.5 mg b.d. for the management of hypertension.

3.3.1. Considering his clinical condition, how you would modify the doses of the above three drugs? (15 marks)

3.3.2. Briefly describe the rationale of dose modifications mentioned in 3.3.1. (45 marks)

4.

4.1. A 25 year-old female presented with headache for two days. She gave a history of sleep deprivation over past few days. Her headache was generalized and throbbing in nature. Associated symptoms included nausea, photophobia and poor appetite.

She gave a history of similar episodes in the previous year.

She was normotensive and the clinical examination was normal. Baseline investigations and neuroimaging did not reveal any abnormality.

4.1.1. List four drugs used in the acute management of this patient. (10 marks)

4.1.2. Briefly explain the pharmacological basis of using two drugs mentioned in 4.1.1. (30 marks)

4.2. She claimed that the frequency of headache had increased to 1-2 attacks/ week over last three months.

4.2.1. List four groups of drugs which can be used for prophylaxis in this patient and state an example for each group. (20 marks)

4.3. Compare and contrast the following drugs in relation to their mechanism of actions, clinical uses and adverse effects.

4.3.1. Morphine and pethidine (25 marks)

4.3.2. Ibuprofen and celecoxib (15 marks)

5.

5.1. A 54 year-old previously healthy male presented with exertional angina over last three months. At the time of presentation, he was free of chest pain and had blood pressure of 142/82 mmHg. Electrocardiogram was normal and fasting blood sugar was 84 mg/dL.

5.1.1. Mention four drug groups with an example for each group indicated in the management of this patient. (10 marks)

5.1.2. Describe in brief the pharmacological basis of using one of the drugs mentioned in 5.1.1. (30 marks)

5.2. A 65 year-old male with a history of chronic heart failure presented with shortness of breath for three days duration. On examination, he was dyspnoeic, had raised jugular venous pressure and bilateral fine basal crepitation. His blood pressure was 82/62 mmHg and heart rate was 140/min. Electrocardiogram taken at admission revealed atrial fibrillation.

5.2.1. Describe in brief how you would treat the following clinical conditions of this patient, emphasizing the drugs indicated and their mode of administration.

5.2.1.1 Hypotension (15 marks)

5.2.1.2 Atrial fibrillation (15 marks)

5.2.1.3 Dyspnoea (15 marks)

5.2.2. List four drug groups with an example for each group indicated in the long term management of this patient. (15 marks)