

UKOT'S BACK TO BASICS MCQs

PHARMACOLOGY AND
THERAPEUTICS, PARASITOLOGY,
AND INTERNAL MEDICINE



Inyang Ukot

Bentham Books

**Ukot's Back to Basics MCQs:
Pharmacology and Therapeutics,
Parasitology, and Internal
Medicine
(Volume 2)**

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**Ukot's Back to Basics MCQs: Pharmacology and Therapeutics, Parasitology
and Internal Medicine**

(Volume 2)

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FOREWORD

This MCQ book contains material that reasonably covers the three specialties indicated in its subtitle, yet is of a reasonable size. It is unique for at least the fact that it is a shift from the paradigm for most textbooks in the field of medicine.

The book covers three hundred and ninety-five multiple-choice questions (MCQs) in the single best answer format. Each MCQ has an unambiguous stem, which is further enhanced by making the font bold. The book makes a reasonable attempt to apply Bloom's taxonomy offering a balanced distribution of multiple-choice questions across both the lower and higher cognitive levels, therefore making the book suitable for medical students and clinicians. Every MCQ in this book provides the reader with four options, of which only one is the best, qualifying it to be the Answer. No matter how close any of the other options are, just one is the correct Answer; the reader should choose that one correct answer.

This book claims answers that are backed by some sound notes. Some of the notes are satisfactorily referenced using the Vancouver style. This book further includes a comprehensive Index, thus providing the reader with what is an uncommon feature of existing competing MCQ books.

Chapters 1 and 4 of this book are on **Pharmacology and Therapeutics**. Chapter 1 is devoted to the MCQs, and Chapter 4 contains the Answers and Notes for the MCQs. Chapter 1 has MCQs on the following topics: Anthelmintics, antiprotozoals, scabicides, pediculicides, anti-trypanosome drugs, benzodiazepines, antipsychotics, antidepressants, anti-seizure medications, cardiac medications, antihypertensives, bronchodilators, nasal decongestants, acetylsalicylic acid, acetaminophen, non-steroidal anti-inflammatory drugs, narcotic analgesics, antacids, histamine-h₂ receptor blocking agents, laxatives, antidiarrheal medications, topical dermatological agents, and antibiotics.

Chapter 2 and Chapter 5 contain MCQs on **Parasitology**. There are ninety-five questions that the author selected carefully. These two chapters give the reader a clear idea of the globally relevant parasitic diseases and the parasitic agents that cause them. The chapters are important because the prevalence of the parasitic conditions is not uniform; another reason is that these diseases are usually

communicable. Moreover, certain parasitic diseases are virtually indistinguishable from other diseases that are caused by bacteria and viruses. In these days of frequent travel, some parasitic diseases that are prevalent in one part of the world can easily be found in another part of the world where such diseases were rare. It is important for a doctor to be conversant with them right from when they were in medical school. The following parasitic diseases and the parasites that cause them are discussed: Dracunculiasis, Ascariasis, Hookworm disease, Cutaneous larva migrans, Trichuriasis, Enterobiasis, Taeniasis, Cysticercosis, Echinococcosis, Hymenolepiasis, Dipylidiasis, Paragonimiasis, Schistosomiasis, Fasciolopsiasis, Fascioliasis, Amebiasis, Amebic liver abscess, Giardiasis, Trichomoniasis, Dientamoebiasis, Balantidiasis, Cystoisosporiasis, Leishmaniasis, Toxoplasmosis, and Malaria. These clinical conditions come under infections that nematodes, cestodes, trematodes, and protozoa cause. In Chapter 2, the questions are mixed.

Chapters 3 and 6 include selected topics related to **Internal medicine**. These important topics come under bacterial infections, viral infections, cardio-respiratory diseases, neurological conditions, gastrointestinal diseases, hematological conditions, genetic disorders, renal diseases, thyroid and pituitary diseases, alcohol-related illness, snake bites, and diabetes mellitus. Bacterial infections in this book are meningococcal infections, tetanus, pneumonia, lung abscess, bronchiectasis, empyema thoracis, pulmonary tuberculosis, chronic bronchitis, extrapulmonary tuberculosis, typhoid fever, infections by the Enterobacteriaceae, Bacteroides and anaerobic infections, pyelonephritis, and septicemia. These chapters also treat viral infections like viral hepatitis, influenza, mumps, Burkitt's lymphoma, HIV/AIDS, COVID-19, Picornavirus infections, Rhabdovirus infections, Slow-virus diseases, RNA tumor virus diseases, and Lassa fever. Chapter 3 also covers questions on non-communicable diseases like pulmonary embolism, pneumothorax, bronchial carcinoma, angina pectoris, myocardial infarction, cardiac arrhythmias, hypertension, cardiomyopathy, heart failure, cardiac arrest, frontal lobe syndrome, Parkinsonism, pontine lesions, cerebellar disease, tropical ataxic neuropathy, subarachnoid hemorrhage, Horner's syndrome, liver cirrhosis, nephrotic syndrome, Meig's syndrome, malabsorption syndrome, anemia, leukemia, thrombocytopenia, autosomal abnormalities, recessive genetic abnormalities, acute kidney injury, hyperthyroidism, Graves' disease, hypopituitarism, alcoholism, snake bites, and diabetes mellitus.

I commend the author of this work for being painstaking to combine these specialties in one book. This book will definitely serve its target audience a good purpose. The book should be invaluable to medical students, general medical practitioners, and residents in the early part of any of the medical specialties—for the latter, Chapters 1 and 4, which cover **Pharmacology and Therapeutics**, would be the most relevant.

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PREFACE

Ukot's Back to Basics MCQs: Pharmacology and Therapeutics, Parasitology, and Internal Medicine should be a welcome addition to the plethora of books on the various subjects and specialties in medicine. In medicine, questions of the multiple-choice format have been a great resource for medical students to do self-assessments on numerous subjects at the undergraduate level. At the postgraduate level, residents also need to assess themselves in their areas of specialization. Regular self-testing enables the student or doctor to know how much acquired and retained medical information in the subjects can be reproduced, applied, analyzed, or used to create novelty. Testing oneself becomes a critical exercise as one prepares for any of the numerous professional examinations that medical students and postgraduate doctors must contend with.

This book attends to select areas/topics in **Pharmacology and Therapeutics, Parasitology, and Internal Medicine** that every medical student anywhere ought to be familiar with. This means that the reader should take these well-chosen topics to be the ones that an examiner in a medical school in any part of the world would not pardon a gross ignorance in.

Ukot's Back to Basics MCQs: Pharmacology and Therapeutics, Parasitology, and Internal Medicine is also designed to enable general doctors who are usually very busy in their day-to-day practices to return to the basics of medical practice without having to purchase and read the books all of us read in our pre-clinical and clinical years. The book therefore has three hundred and ninety-five MCQs of the Single Best Answer (SBA) format, with each question having four Answer options, the Answer, and robust Notes – only a few of the Notes are less than three lines long.

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DEDICATION

This book is dedicated to
my last daughter
Joy Inyang Ukot.

ACKNOWLEDGEMENTS

Although it is unknown to them, the patients who I have attended to over the years, have played a monumental role in the conceptualization, contents, and actualization of this work. The patients are numerous and while none can be pinpointed, the experience of their consulting me in the outpatient setting, ward, emergency room, and operating room settings has egged me on to attempt and actualize this project.

INTRODUCTION

Ukot's Back to Basics MCQs: Pharmacology and Therapeutics, Parasitology, and Internal Medicine is Volume 2 of the three-volume book series on multiple-choice questions. It was difficult to select, set, and cover the topics in the three MCQ Chapters of this book. This is because each of the Chapters is on a clear and standard, specific, medical specialty. The fact is that most academics in medicine recognize and treat the various broad specialties and their sub-specialties as standalone – which explains why the majority of textbooks on medicine deal only with a specialty or sub-specialty. This paradigm exists for multiple-choice books too.

This author chose to deviate from the archetype. What this author has attempted to do (and successfully done) in this work is to show the relationship between **Pharmacology and Therapeutics, Parasitology, and Internal Medicine**. This deliberate exploratory move is despite the fact that each of these three specialties has enough topics and conditions to provide material for another textbook or another multiple-choice questions book. The author of this book did not attempt to cover these specialties in the 395 multiple-choice questions because that would have been an impossibility. What the author has done with the contents of this book is to simply whet the appetite of the reader for further reading; this has been achieved by returning to and simplifying the subject principles, and concomitantly prying into the reader's analytical abilities when they encounter the clinical scenarios that some of the MCQs create and present.

The reader should note that some topics have just one, two, or three questions while others have more than ten. Using Pharmacology and Therapeutics (Chapters 1 and 4), good examples of a few questions are Scabicides and Pediculicides, which have one question each, and the one with many questions is Antibiotics that has more than twenty MCQs. The author chose to create a balance by providing relatively robust Notes for Scabicides (297 words), and Pediculicides (286 words) and short Notes on Antibiotics (some of which are just an average of thirty words). So, the reader receives enough information from the Notes on the scanty MCQs but obtains adequate information from the many multiple-choice questions that are set under Antibiotics. There are two answers to this apparent eccentricity.

The first answer is in the fact that diabetes mellitus had to give way to other diseases so that many topics could be squeezed into the remaining questions and hopefully provide, at the least, a bird's eye view of Internal Medicine. The second answer is that the author compensated diabetes mellitus in the Chapter on Answers and Notes (Chapter 6) where the Notes on this disease entity occupy 15% of the contents of that Chapter, thus adequately addressing the multi-faceted features of diabetes mellitus. This pattern of providing a compensatory mechanism runs through this book and makes the book have an overall recognizable contents balance despite its size.

Other exciting features of this MCQ book are as follows:

- References for each Chapter at the end of the Chapter.
- Differential diagnoses that make up an entire Chapter—Chapter 7; some of the differential diagnoses are referenced, with the references appearing at the bottom of Chapter 7. The differential diagnoses are arranged according to the Chapters, with the entries starting from Chapter 3.
- Comprehensive references to which the chapter preceding the Index (*i.e.*, Chapter 8) is devoted. Chapter 8 therefore incorporates Chapter 1 to Chapter 7 References.
- A detailed Index.

The organization of **Ukot's Back to Basics MCQs: Pharmacology and Therapeutics, Parasitology, and Internal Medicine** makes the reader's reading experience a pleasant one.

CHAPTER 1

MCQs on Pharmacology and Therapeutics

Abstract: Chapters 1 and 4 of this book are on Pharmacology and Therapeutics. While Chapter 1 is devoted to the Multiple-Choice Questions (MCQs), Chapter 4 contains the Answers and Notes for the MCQs. Chapter 1 has multiple-choice questions on the following twenty-three drug classes and specific drugs: Anthelmintics, Antiprotozoals, Scabicides, Pediculicides, Anti-trypanosome drugs, Benzodiazepines, Antipsychotics, Antidepressants, Anti-seizure medications, Cardiac medications, Antihypertensives, Bronchodilators, Nasal decongestants, Acetylsalicylic acid, Acetaminophen, Non-steroidal anti-inflammatory drugs, Narcotic analgesics, Antacids, Histamine-H2 receptor blocking agents, Laxatives, Antidiarrheal medications, Topical dermatological agents, and Antibiotics.

Keywords: Anti-infectives, Antihypertensives, Analgesics, Topical dermatological agents.

INTRODUCTION

This chapter contains one hundred and fifty carefully selected multiple-choice questions. The questions are crafted to be attractive to every reader; the author has achieved this by making over 90% of the questions stay at the level of the fundamentals of pharmacology and therapeutics. The chapter hardly contains questions that are at the higher levels of Bloom's taxonomy. It is only in the notes that accompany the answers of some MCQs that the author provides some important details with respect to the clinical care of patients. Occasionally mechanisms of action of some of the drug classes are attended to. Every reader should attempt all the multiple-choice questions as they not only test the reader's knowledge in terms of understanding and remembering but the questions are also designed to be of relevance to the reader in the rest of the book. The reader will discover the link as they go to Chapters 2 and 5, and Chapters 3 and 6. Most of the questions are therefore targeted at medical students and practicing physicians who are eager to "going back to their roots."

The MCQs in this book are of the Single Best Answer format (SBA). For every question, choose the best of the four options as the Answer.

Antiparasitic Drugs: Anthelmintics

1. Which of the following statements about mebendazole is correct?

- A. It is available as 25mg tablets.
- B. It is a benzimidazole derivative.
- C. It acts by inhibiting DNA synthesis in helminths.
- D. It is given to adults at a dose of 100mg twice daily for two days for hookworm disease.

2. Which of the following organisms would mebendazole be ineffective in treating the disease it causes?

- A. *Taenia saginata*.
- B. *Ascaris lumbricoides*.
- C. *Trichuris trichiura*.
- D. *Strongyloides stercoralis*.

3. Which of the following statements pertaining to piperazine is inaccurate?

- A. It is effective for the treatment of roundworm infestation.
- B. It should not be used in patients with seizure disorder.
- C. In the treatment of ascariasis, it should be given to a 15-year-old child or an adult at a dose of 500mg/day for two days.
- D. It acts by paralyzing helminths.

4. Regarding piperazine, which of the following statements is correct?

- A. It does not treat pinworm infestation.
- B. It should be taken after breakfast.
- C. It has no gastrointestinal side effects.
- D. It should be given to children at a dose of 75mg/kg/day for two days in ascariasis.

5. Which of the following statements about thiabendazole is incorrect?

- A. It is structurally related to mebendazole.
- B. It should be given to a 60kg patient at a dose of 1.5g/day for two days.
- C. It is contraindicated in children confirmed to have helminthic infestations.
- D. It may cause anorexia and vomiting.

6. Which of the following diseases is thiabendazole effective for treating?

- A. Schistosomiasis.
- B. Trichuriasis.
- C. Hookworm disease.
- D. Cutaneous larva migrans.

7. Which of the following drugs is not useful in the treatment of enterobiasis?

- A. Metronidazole.
- B. Mebendazole.
- C. Pyrantel pamoate.
- D. Albendazole.

CHAPTER 2

Parasitology MCQs

Abstract: Chapter 2 and Chapter 5 of this book are designed to give the reader a lucid idea of the most common parasitic diseases globally and the parasitic agents that cause them. The chapter is important because although parasitic diseases are global, their distribution around the world is not uniform; another reason for its importance is that these diseases are frequently communicable. Some parasitic diseases also tend to mimic other diseases that are caused by bacteria and viruses. The third reason is that in these days of frequent traveling, some parasitic diseases that are prevalent in one part of the world can easily be found in another part of the world where such diseases were hitherto uncommon. It is important for a doctor to know about them (and even become familiar with their presentation) right from medical school years.

Keywords: Cestode infections, Nematode infections, Protozoal infections, Trematode infections.

INTRODUCTION

This chapter contains Multiple-Choice Questions (MCQs) on parasitology. There are ninety-five questions which the author selected carefully; thus they form a good representation of the most common parasitic diseases on the global scene. The following parasitic diseases and the parasites that caused them are discussed: Dracunculiasis, Ascariasis, Hookworm disease, Cutaneous larva migrans, Trichuriasis, Enterobiasis, Taeniasis, Cysticercosis, Echinococcosis, Hymenolepiasis, Dipylidiasis, Paragonimiasis, Schistosomiasis, Fasciolopsiasis, Fascioliasis, Amebiasis, Amebic liver abscess, Giardiasis, Trichomoniasis, Dientamoebiasis, Balantidiasis, Cystoisosporiasis, Leishmaniasis, Toxoplasmosis, and Malaria. These clinical conditions come under infections caused by Nematodes, Cestodes, Trematodes, and Protozoa. In this Chapter, the questions are mixed.

The MCQs in this book are in the Single Best Answer (SBA) format. Choose the best of the four options as the answer for every question.

151. Dracontiasis: Which of the statements below is correct?

- A. It usually affects the face.
- B. It is spread by the gravid adult female worm discharging larvae when the affected part touches water.
- C. It does not cause arthritis.
- D. It is a cause of low morbidity in endemic areas [1].

152. Which of the following is correct for guinea worm infestation?

- A. It involves ingestion of water infested by a crustacean.
- B. It is caused by the bite of Cyclops on the exposed part of the body in contact with water.
- C. Extraction of the larvae is part of the treatment.
- D. Ivermectin is used for treatment.

153. Ascariasis: Which of the statements below is correct?

- A. It is a trematode disease.
- B. It is transmitted by the fecal-oral route.
- C. It is caused by an adult worm that is not visible to the naked eye.
- D. It can only be diagnosed by stool microscopy.

154. Ascaris lumbricoides: Which of the statements below is correct?

- A. Eggs survive in hot, dry soil.
- B. It is infective at the embryonated egg stage.
- C. It is found in human feces that contains segmented eggs of the worm.
- D. It is a tiny intestinal roundworm.

155. Which of the following statements about ascariasis is incorrect?

- A. It is a known cause of lymphocytosis.
- B. It may cause cough and abdominal pain.
- C. It causes intestinal obstruction, especially in small children.
- D. It can be treated satisfactorily with pyrantel pamoate.

156. Hookworm disease: Which of the statements below is correct?

- A. *Necator americanus* and *Ancylostoma duodenale* are causative organisms.
- B. It starts with penetration of intact skin by the infective egg.
- C. It causes a swimmer's itch.
- D. It can be diagnosed by macroscopic examination of stools.

157. Hookworm disease: Which of the statements below is correct?

- A. It is a known cause of macrocytic anemia.
- B. It usually causes malabsorption syndrome.
- C. It may coexist with ascariasis.
- D. It causes anemia that is treated with folic acid.

158. Cutaneous larva migrans: Which of the statements below is incorrect?

- A. It is caused by dog hookworms.
- B. It manifests as serpiginous cutaneous lesions.
- C. It rarely causes pruritus[89].
- D. It may be complicated by bacterial infection.

CHAPTER 3**Internal Medicine MCQs**

Abstract: Chapters 3 and 6 are on selected topics in Internal medicine. These essential topics come under bacterial infections, viral infections, cardio-respiratory diseases, neurological conditions, gastrointestinal diseases, hematological conditions, genetic disorders, renal diseases, thyroid and pituitary diseases, alcohol-related illnesses, snake bites, and diabetes mellitus.

Keywords: Bacterial infections, Viral infections, Non-communicable diseases.

INTRODUCTION

When considered in detail, the specific topics on which multiple-choice questions are set in Chapter 3 (and Answers and Notes are provided for the corresponding topics in Chapter 6) are bacterial infections like meningococcal infections, tetanus, pneumonia, lung abscess, bronchiectasis, empyema thoracis, pulmonary tuberculosis, chronic bronchitis, extrapulmonary tuberculosis, typhoid fever, infections by the Enterobacteriaceae, Bacteroides and anaerobic infections, pyelonephritis, and septicemia. The chapter also includes viral infections like viral hepatitis, influenza, mumps, Burkitt's lymphoma, HIV/AIDS, COVID-19, Picornavirus infections, Rhabdovirus infections, slow-virus diseases, RNA tumor virus diseases, and Lassa fever. The chapter also has questions on non-communicable diseases like pulmonary embolism, pneumothorax, bronchial carcinoma, angina pectoris, myocardial infarction, cardiac arrhythmias, hypertension, cardiomyopathy, heart failure, cardiac arrest, frontal lobe syndrome, Parkinsonism, pontine lesions, cerebellar disease, tropical ataxic neuropathy, subarachnoid hemorrhage, Horner's syndrome, liver cirrhosis, nephrotic syndrome, Meig's syndrome, malabsorption syndrome, anemia, leukemia, thrombocytopenia, autosomal abnormalities, recessive genetic abnormalities, acute kidney injury, hyperthyroidism, Graves' disease, hypopituitarism, alcoholism, snake bites, and diabetes mellitus.

The MCQs in this book are of the Single Best Answer (SBA) format. Choose the best of the four options as the Answer for every question.

Bacterial Infections

246. Regarding meningococci, which of the following statements is correct?

- A. They are Gram-positive cocci.
- B. They normally occur in pairs when cultured.
- C. They are morphologically like the organism that causes typhoid.
- D. Isolation of the organisms is enhanced if the culture medium contains blood or serum.

247. Which of the following organisms is not an etiological agent of acute meningitis?

- A. The pneumococcus.
- B. *Haemophilus influenzae*.
- C. *Escherichia coli*.
- D. *Neisseria gonorrhoeae*.

248. Which of the following statements about meningococcal septicemia is correct?

- A. It is a common presentation of meningococcal infection.
- B. Petechial hemorrhages are readily identified in dark-skinned patients.
- C. Severe hypertension is a complication of the infection.
- D. Disseminated Intravascular Coagulation (DIC) is a complication.

249. Which of the following statements about pyogenic meningitis is correct?

- A. The meningococcus is an uncommon cause of epidemic meningitis.
- B. Meningitis following chronic bone or paranasal sinus infection is most likely due to *Haemophilus influenzae*.
- C. The features usually unfold over a period of two weeks.
- D. An adult may present with just fever and confusion.

250. Which of the following is a positive indicator of pyogenic meningitis in an adult?

- A. Cerebrospinal fluid under pressure during lumbar puncture.
- B. Clear cerebrospinal fluid.
- C. Reduced cerebrospinal fluid protein concentration.
- D. Raised levels of glucose in the cerebrospinal fluid.

251. Which of the following does not constitute a part of the treatment of acute pyogenic meningitis?

- A. Intravenous fluids.
- B. Intravenous antibiotic.
- C. Diazepam.
- D. Sulfonamides.

CHAPTER 4**Answers and Notes for Pharmacology and Therapeutics**

Abstract: Chapters 1 and 4 of this book are on pharmacology and therapeutics. While Chapter 1 is devoted to the Multiple-Choice Questions (MCQs), Chapter 4 contains the answers and notes for the MCQs. Chapter 1 has multiple-choice questions on the following twenty-three drug classes and specific drugs: anthelmintics, antiprotozoals, scabicides, pediculicides, anti-trypanosome drugs, benzodiazepines, antipsychotics, antidepressants, anti-seizure medications, cardiac medications, antihypertensives, bronchodilators, nasal decongestants, acetylsalicylic acid, acetaminophen, non-steroidal anti-inflammatory drugs, narcotic analgesics, antacids, histamine-h2 receptor blocking agents, laxatives, antidiarrheal medications, topical dermatological agents, and antibiotics.

Keywords: Anti-infectives, Antihypertensives, Analgesics, Topical dermatological agents.

INTRODUCTION

This chapter contains answers and notes to the one hundred and fifty carefully selected multiple-choice questions in Chapter 1. The questions in Chapter 1 are crafted to be attractive to every reader; the author has achieved this by making over 90% of the questions stay at the level of the fundamentals of pharmacology and therapeutics. That Chapter hardly contains questions that are at the higher levels of Bloom's taxonomy. It is only in these notes that accompany the answers to some MCQs that the author provides some details that are of importance in the clinical care of patients. Occasionally mechanisms of action of some of the drug classes are attended to. Every reader should attempt all the multiple-choice questions before coming to Chapter 4, for they not only test the reader's knowledge in terms of understanding and remembering but the questions are also designed to be of relevance to the reader in the rest of the book. The reader will discover the link as they go to Chapters 2 and 5, and Chapters 3 and 6. Most of the questions are therefore targeted at medical students and practicing physicians who are desirous of "going back to their roots".

Antiparasitic Drugs: Anthelminthics

1. B Mebendazole is a synthetic benzimidazole derivative. It is available as 100mg tablets that are taken twice daily for three days. Its side effects include abdominal pain, diarrhea, headache, and dizziness – these are mild and transient [1]. By binding irreversibly to colchicine-sensitive sites on tubulin, mebendazole blocks the assembly of microtubules in the worm. The results are inhibition of the uptake of glucose by the worm and inhibition of cell division. Inhibition of the uptake of glucose, however, does not affect serum glucose levels in the human host. The inhibition of the uptake of glucose in the worm results in glycogen stored in the nematode being used more rapidly; this is the main source of energy for the worm that is being depleted to the disadvantage of the parasite [1]. The absorption of mebendazole from the gastrointestinal tract is low (less than 10%) and this poor penetration into tissue makes it a poor alternative to albendazole. Albendazole is not only available globally but it is also easier to take as a single dose. Cure rates with albendazole are also better [2]. Metabolism of mebendazole takes place in the human liver and this is by amide hydrolysis and ketone reduction. There are options for taking mebendazole tablets: chewing, swallowing whole, or crushing with food. It is recommended to wait for a minimum of seven days after completing the treatment regimen prior to retesting the patient for a cure of the helminthic disease.

2. A Mebendazole is effective in treating the nematodes (roundworms) *Ascaris lumbricoides*, *Trichuris trichiura*, and *Strongyloides stercoralis* – not *Taenia saginata* that is a cestode. Cestodes are tapeworms. The class name of cestodes is Cestoidea (cestoda) and the class belongs to the phylum Platyhelminthes.

3. C The dose of piperazine is 3.5g/day. Piperazine acts by paralyzing nematodes. The mode of action of piperazine is hyperpolarization and a reduction in spike frequency in the worm [3]. It is unsafe in patients with renal impairment and should not be used in patients with seizure disorder.

4. D Piperazine should be taken before breakfast. Its side effects include nausea, vomiting, and diarrhea.

5. B Thiabendazole dose is 1.5g/dose twice daily for two days. The drug is structurally related to mebendazole. It is contraindicated in children confirmed to have helminthic infestations. It may cause anorexia and vomiting. It is a drug of choice for strongyloidiasis.

6. A Schistosomiasis is caused by a trematode, not a nematode. Thiabendazole effectively treats hookworm disease, trichuriasis, cutaneous larva migrans, and visceral larva migrans.

7. A Drugs that may be used for treating enterobiasis include mebendazole, pyrantel pamoate, and albendazole.

8. C Pyrantel pamoate and piperazine paralyze worms. Pyrantel pamoate blocks the enzyme acetylcholinesterase in the worm and therefore causes a depolarizing neuromuscular blockade; this spastic paralysis and muscle contracture in the worm makes it possible to readily expel the worm during defecation[3]. While pyrantel pamoate is ineffective against *T. trichiura*, oxantel pamoate, in a single dose, is effective against *T. trichiura* and other species of *Trichuris* [3].

Thiabendazole inhibits fumarate reductase. Pyrvinium pamoate and mebendazole interfere with glucose absorption by the worm.

9. B Niclosamide effectively treats tapeworm infestation; it is given to adults as a 2g single oral dose. Its administration should be followed by purgation as this helps to expel the worm.

10. C Pyrantel also comes as an embonate preparation. Thiabendazole is given as 1.5g b.i.d. usually for two days. It is no longer in use in the United States. The mebendazole dose is 100mg b.i.d. for three days. The dose of Albendazole is two tablets *i.e.* 400mg as a single dose. Levamisole (Ketrax®), 120mg as a single dose.

11. B The correct dose of pyrantel pamoate is 10mg/kg as a single dose. For niclosamide, the dose is 1g as a single dose. For levamisole, the dose is 2.5mg/kg as a single dose. Levamisole 10ml syrup as a single dose is appropriate for a 10-year-old child.

12. A Praziquantel is a pyrazinoisoquinoline derivative. It is ineffective in nematode (roundworm) infections. Praziquantel enhances an influx of calcium into the parasite resulting in muscle contractions and the formation of vacuoles and bleb in the target worm's tegument (outer body covering). The overall result is that the host (human) is able to activate defenses against the worm [4]. Praziquantel is a drug that is taken orally. Praziquantel as a single dose of 20–40 mg/kg treats trematodes satisfactorily. At a dose of 5-10 mg/kg, it is efficacious in treating human cestode infections [5]. Praziquantel has a broad spectrum of activity against trematodes (flukes) and cestodes (tapeworms) and is highly effective against infections that these helminths cause [4-6]. There is rapid absorption of this drug

CHAPTER 5**Answers and Notes for Parasitology**

Abstract: Chapter 2 and Chapter 5 of this book are designed to give the reader a lucid idea of the most common parasitic diseases globally and the parasitic agents that cause them. The Chapter is important because although parasitic diseases are global, their distribution around the world is not uniform; another reason for its importance is that these diseases are frequently communicable. Some parasitic diseases also tend to mimic other diseases that are caused by bacteria and viruses. The third reason is that in these days of frequent travel, some parasitic diseases that are prevalent in one part of the world can easily be found in another part of the world where such diseases were hitherto uncommon. It is important for a doctor to know about them (and even become familiar with their presentation) right from medical school years.

Keywords: Cestode infections, Nematode infections, Protozoal infections, Trematode infections.

INTRODUCTION

This chapter contains Multiple-Choice Questions (MCQs) on parasitology. There are ninety-five questions, which the author selected carefully; thus they form a good representation of the most common parasitic diseases on the global scene. The following parasitic diseases and the parasites that caused them are discussed: Dracunculiasis, Ascariasis, Hookworm disease, Cutaneous larva migrans, Trichuriasis, Enterobiasis, Taeniasis, Cysticercosis, Echinococcosis, Hymenolepiasis, Dipylidiasis, Paragonimiasis, Schistosomiasis, Fasciolopsiasis, Fascioliasis, Amebiasis, Amebic liver abscess, Giardiasis, Trichomoniasis, Dientamoebiasis, Balantidiasis, Cystoisosporiasis, Leishmaniasis, Toxoplasmosis, and Malaria. These clinical conditions come under infections caused by nematodes, cestodes, trematodes, and protozoa.

151. B Dracontiasis (Dracunculiasis) is caused by *Dracunculus medinensis*, a nematode. The female is one of the longest nematodes that cause human disease. Guinea worm disease is spread by the gravid adult female worm discharging larvae when the affected part touches water. It is a neglected tropical disease that commonly affects the lower limbs. It is one of the causes of arthritis. Dracontiasis is a cause of high morbidity in endemic areas. Dracunculiasis is a debilitating disease but it is on the verge of eradication globally [1]. Menon, in the article published in 2011, reported the case of a 50-year-old “female laborer” on whom a

plain lumbar spine radiograph was taken based on her clinical presentation; the radiographic finding was a long, linear-beaded and fragmented soft tissue calcification. There were two calcifications with sites in the paraspinal muscles between the second and fifth vertebrae. *Dracunculus medinensis* lesions are usually in the lower limbs but the clinician should not be fixated on this as a diagnosis of guinea worm calcification at this site indicates [2].

152. A *Dracunculus medinensis* (Guinea worm) causes a disease that involves drinking water from a source that is infested with a crustacean. In endemic areas, a person drinks water that contains the tiny crustacean, Cyclops; the crustacean itself is infected by larvae of this nematode. In the human GIT the cyclops die and the larvae in them are released; the larvae penetrate the wall of the stomach and intestines, gain access into the abdominal cavity and grow. Mature males and females mate and the male counterparts die. The pregnant female travels toward the legs and feet of the infected person where it eventually penetrates subdermal tissues and creates uncomfortable and painful blisters on the skin. These break open when in contact with water to relieve the burning sensation and the larvae are released into water, get ingested by cyclops which becomes infected and another person drinks water containing the cyclops thus spreading the infection. Extraction of the adult worm is part of the treatment. The prevalence of dracontiasis is reduced by the provision of potable water regularly and in satisfactory amounts.

153. B Ascariasis, a nematode infestation, is transmitted by the feco-oral route. It can be acquired by eating improperly washed vegetables. It can also be diagnosed by identifying worms vomited or passed in feces.

154. B *Ascaris lumbricoides* eggs survive in warm, moist soil. *Ascaris lumbricoides* is infective at the embryonated egg stage. Larvae penetrate the duodenum and eventually gain access to the respiratory tract. *Ascaris lumbricoides* is a large roundworm.

155. A Ascariasis is a known cause of eosinophilia. Ascariasis causes cough and abdominal pain; in children, a heavy worm load may lead to intestinal obstruction. Ascariasis is caused by worms which can be passed in stools as well as being vomited. Ascariasis is treated satisfactorily with pyrantel pamoate; it is also treated with piperazine citrate or thiabendazole.

156. A The infective stage of *Necator americanus* or *Ankylostoma duodenale* is the filariform larva. Hookworm disease causes the ground itch. It can be diagnosed by microscopic examination of stool. When there is a cough, it is usually mild.

Swimmer's itch is a pruritic skin rash from allergy to larval forms of schistosomes; it is also called cercarial dermatitis or schistosome dermatitis.

157. C Hookworm disease is a known cause of microcytic anemia. It is satisfactorily treated with mebendazole. It usually causes iron deficiency anemia if the worm load is heavy. It may coexist with ascariasis. Hookworm disease is relatively uncommon in developed countries but it is a common diagnosis in developing countries. Hookworm disease may cause obscure presentations in patients [3-5].

158. C Cutaneous larva migrans is caused by dog hookworms and manifest as serpiginous cutaneous lesions. In cutaneous larva migrans, pruritus is a prominent feature. Bacterial infection usually follows skin excoriation secondary to scratching of the lesion. Cutaneous larva migrans can be treated with a five-day course of thiabendazole.

159. A *Trichuris trichiura* is synonymous with whipworm. Its eggs are well-demonstrated by the zinc sulfate flotation method.

160. B Enterobiasis is caused by worms, which usually deposit eggs at night. The infection usually involves the cecum and around the cecum. Pruritus ani is a common feature of enterobiasis. Enterobiasis is easily diagnosed by a Graham cellophane tape swab.

161. A Tapeworm is a cestode. The most mature part of tapeworm strobila is furthest from the scolex. The adult tapeworm is attached by the scolex but to the mucosa of the small intestine. Identification in stools, following treatment, is important; the scolex and the proglottids should be looked for; finding the scolex is more significant as proglottids grow from the scolex. A fluke, like *Fasciolopsis buski*, may be identified during upper gastrointestinal endoscopy [6]. More advanced techniques (enzyme-linked immunoassay and polymerase chain reaction) are available in standard laboratories for making a diagnosis of this disease with precision and distinguishing it from its differential diagnoses [7-9].

162. B Taeniasis requires one intermediate host; this is either a cow or a pig. The gravid uterus of the mature proglottid of *Taenia saginata* has more side branches than *Taenia solium*. *Taenia saginata asiatica* is a subspecies of *Taenia saginata*. Taeniasis has been satisfactorily treated with either niclosamide or quinacrine. Taeniasis and cysticercosis are eradicable [10]. Although it is possible, eradication

CHAPTER 6**Answers and Notes for MCQs in Internal Medicine**

Abstract: Chapters 3 and 6 are on selected topics in internal medicine. These essential topics come under bacterial infections, viral infections, cardio-respiratory diseases, neurological conditions, gastrointestinal diseases, hematological conditions, genetic disorders, renal diseases, thyroid and pituitary diseases, alcohol-related illnesses, snake bites, and diabetes mellitus.

Keywords: Bacterial infections, Cardio-respiratory diseases, Internal medicine, Non-communicable diseases, Viral infections.

INTRODUCTION

When considered in detail, the specific topics on which multiple-choice questions are set in Chapter 3, and Answers and Notes are provided for the corresponding topics in Chapter 6, are bacterial infections like meningococcal infections, tetanus, pneumonia, lung abscess, bronchiectasis, empyema thoracis, pulmonary tuberculosis, chronic bronchitis, extrapulmonary tuberculosis, typhoid fever, infections by the Enterobacteriaceae, Bacteroides and anaerobic infections, pyelonephritis, and septicemia. The Chapter also treats viral infections like viral hepatitis, influenza, mumps, Burkitt's lymphoma, HIV/AIDS, COVID-19, Picornavirus infections, Rhabdovirus infections, Slow-virus diseases, RNA tumor virus diseases, and Lassa fever. The Chapter also has questions on non-communicable diseases like pulmonary embolism, pneumothorax, bronchial carcinoma, angina pectoris, myocardial infarction, cardiac arrhythmias, hypertension, cardiomyopathy, heart failure, cardiac arrest, frontal lobe syndrome, Parkinsonism, pontine lesions, cerebellar disease, tropical ataxic neuropathy, subarachnoid hemorrhage, Horner's syndrome, liver cirrhosis, nephrotic syndrome, Meig's syndrome, malabsorption syndrome, anemia, leukemia, thrombocytopenia, autosomal abnormalities, recessive genetic abnormalities, acute kidney injury, hyperthyroidism, Graves' disease, hypopituitarism, alcoholism, snake bites, and diabetes mellitus.

Bacterial infections

246. B Meningococci are D-shaped diplococci with flattened sides in contact. They are classified as serogroups. They are Gram-negative diplococci. The

meningococcus, *Neisseria meningitidis*, is morphologically like the organism that causes gonorrhea. Isolation of the organisms is enhanced if the culture medium contains blood or serum *e.g.* chocolate agar; anaerobic conditions are also required.

247. D *Neisseria gonorrhoeae* causes gonorrhea, conjunctivitis, arthritis, *etc.* Pneumococcus is *Streptococcus pneumoniae*. *Escherichia coli* causes acute meningitis, especially in the neonatal period. *Neisseria meningitidis* and *Pseudomonas aeruginosa* are etiological agents of acute meningitis.

248. D The following conditions place individuals at an increased risk of developing meningococcal disease. Smoking or exposure to secondary smoke, recent influenza or another viral upper respiratory tract infection, being in close contact with a patient or patients who have a meningococcal infection, poverty that is severe enough to cause overcrowding in the household, or reduced immunity from malnutrition, infection with the Human Immunodeficiency Virus (HIV), functional asplenia or anatomic asplenia (like post-splenectomy), and eculizumab therapy. Eculizumab is a recombinant humanized monoclonal antibody used for treating conditions like paroxysmal nocturnal hemoglobinuria, generalized myasthenia gravis, and atypical hemolytic uremic syndrome. People who have abnormal complement factor H or those who are deficient in complement components [1-4].

Disseminated intravascular coagulation (DIC) and myocarditis are complications of meningococcal septicemia. Meningococcal septicemia is an uncommon presentation of meningococcal infection. In the dark-skinned, petechial hemorrhages are not readily discernible; such petechiae may be in the conjunctiva or other mucous membranes *e.g.* pharynx. Hypertension is not a complication; rather, endotoxin shock in the so-called Waterhouse-Friderichsen syndrome. Endotoxin shock is a life-threatening manifestation of meningococcal infection.

249. D A high index of suspicion for pyogenic meningitis is required in cases where an adult presents with just fever and confusion. The meningococcus is the most likely cause of epidemic meningitis. *Staphylococcus aureus* is the usual cause of meningitis following chronic bone or paranasal sinus infection. The usual time for features of pyogenic meningitis to unfold is under three days. Kernig's sign and Brudzinski's sign are positive in patients with meningitis.

250. A In pyogenic meningitis, cloudy or turbid cerebrospinal fluid is expected. Raised cerebrospinal fluid protein concentration is usual. The other finding is

reduced levels of glucose in the cerebrospinal fluid. A rise in white blood cell count in the cerebrospinal fluid is a significant finding.

251. D The likelihood of resistance to sulfonamides by the organisms is high; so in resource-poor practice settings chloramphenicol, which is affordable and Available, and to which the meningococcus, pneumococcus, and Haemophilus are sensitive is preferred. Vancomycin is recommended by WHO at all ages except in the first month of life; other drugs are used in combination with it. Analgesics are also part of the treatment.

252. C There is no meningeal inflammation in meningism though the symptoms and signs of meningitis are present; meningism is a feature of meningitis. Mumps virus is a cause of lymphocytic meningitis. Meningitis is a feature of leptospirosis and anthrax.

253. C *Clostridium tetani* is a Gram-positive bacillus. It forms spores. Clostridia are anaerobic bacilli. It exists as one type only.

254. A *Clostridium welchii* is the old name for *Clostridium perfringens*. Many clostridia can cause gas gangrene.

255. A *Clostridium tetani* is motile. Tetanospasmin is an exotoxin. *Clostridium perfringens* causes myonecrosis; it produces lecithinase, a hemolysin, and an enterotoxin. *Clostridium botulinum* elaborates as a neurotoxin.

256. D The incubation period of tetanus is one week to many months. A patient who has had tetanus may have another episode if exposed. Tetanus is not the only condition that presents with neck stiffness; meningitis, cervical spondylosis, etc. also cause neck stiffness. Opisthotonos, one of the features of tetanus, is from the rigidity of the nuchal and spinal muscles.

257. D The cerebrospinal fluid in tetanus is normal both macroscopically and microscopically. In patients with tetanus, diazepam helps relax the muscles and cause sedation. Patients should preferably be nursed in a quiet dark room as this reduces external stimuli of light and noise; when significant in the patient's immediate environment, they may trigger spasms. Tetanus may lead to respiratory failure if the diaphragm is involved in frequent severe spasms; laryngospasm is a significant cause of death in tetanus patients. Tetanus can be diagnosed clinically, especially when the clinical features fully unfold.

CHAPTER 7

Differential Diagnoses

CHAPTER 2 AND CHAPTER 5

Parasitology

Nematode Infections

Dracunculiasis

- Filariasis
- Chronic venous insufficiency
- Burns
- Dermatomyositis

Ascariasis

- Eosinophilic pneumonitis
- Community-acquired pneumonia
- Biliary tract obstruction with biliary colic
- Malabsorption
- Intestinal obstruction
- Acute pancreatitis

Cutaneous larva migrans

- Larva currens
- Scabies

- Contact dermatitis
- Schistosomiasis
- Myiasis
- Tinea corporis
- Phytophotodermatitis

Trichuriasis (Whipworm Disease)

- Appendicitis
- Cholecystitis
- Intestinal perforation
- Colitis
- Inflammatory bowel disease

Enterobiasis (Pinworm Infection)

- Atopic dermatitis
- Contact dermatitis
- Pruritus ani
- Anal fissure
- Anusitis
- Proctitis
- Cellulitis
- Pruritus vulvae
- Perirectal abscess

Cestode Infections

Taeniasis

- Bacterial meningitis in pediatrics
- Aseptic meningitis in pediatric patients
- Encephalitis
- Idiopathic epilepsy
- Temporal arteritis
- Cysticercosis
- Appendicitis
- Cholecystitis
- Irritable bowel syndrome
- Enteritis
- Gastroenteritis
- Empyema thoracis
- Gnathostomiasis
- Anaphylaxis

Echinococcosis (Hydatidosis)

Pertaining to the liver, the differential diagnoses include the following:

- Biliary colic
- Biliary cirrhosis
- Liver abscess

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CHAPTER 1 AND CHAPTER 4

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CHAPTER 2 AND CHAPTER 5

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CHAPTER 3 AND CHAPTER 6

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