



UNIVERSITY OF JAFFNA, SRI LANKA
SECOND EXAMINATION FOR MEDICAL DEGREES PART I
October 2024
ACADEMIC YEAR - 2019/2020
Microbiology - Paper II

Date: 09.10.2024

9.00 am to 11.00 am. (Two hours)

Answer all four questions

Answer each question in a separate answer book

1. A 21-year-old previously healthy man was admitted with a history of gradual onset of fever for six days associated with malaise, frontal headache and loss of appetite. His brother was treated for typhoid fever two weeks ago. On examination, he looked ill, his temperature was 39°C and he had mild hepatosplenomegaly. There were no other significant symptoms or signs. Typhoid fever was suspected.

- 1.1 Name the aetiological agent of typhoid fever. (05 marks)
- 1.2 Describe the possible sources and modes of transmission of typhoid fever. (15 marks)
- 1.3 Describe the pathogenesis of typhoid fever. (20 marks)
- 1.4 Name the microbiological investigation done in clinical settings to confirm typhoid fever. (05 marks)
- 1.5 Discuss the antibiotic treatment for typhoid fever. (25 marks)

Staphylococcus epidermidis was isolated from the specimen sent for the aetiological diagnosis.

- 1.6 Discuss in detail the possible reasons for isolating *Staphylococcus epidermidis* from the specimen. (30 marks)

2. A four-year-old child was admitted with a history of sudden onset of high fever, fatigue, headache and vomiting of one day duration. On examination, she was irritable, drowsy and had neck stiffness.

- 2.1 State the most probable diagnosis of this patient. (05 marks)
- 2.2 Name the **three (3)** most common causative organisms of the infection in this patient. (15 marks)
- 2.3 Name **two (2)** microbiological investigations done to confirm the infection in this patient. (05 marks)
- 2.4 Discuss the empirical antimicrobial treatment of this patient. (25 marks)

The Microbiologist informed that Gram negative diplococci were seen in both the specimens received from this patient for the aetiological diagnosis.

- 2.5 Name the bacteria seen in the specimens of this patient. (05 marks)
- 2.6 Discuss how to prevent her three-year-old sister getting the same infection at this time. (20 marks)
- 2.7 Name and describe the transmission-based precautions that should be practiced in this patient when in the ward. (25 marks)

3. A nine-year-old girl presents with a three-day history of sore throat, difficulty in swallowing and fever. She does not have any other significant complaints. Physical examination reveals that her tonsils are enlarged with exudate and her anterior cervical lymph nodes are enlarged and tender. Her temperature is 39°C.

3.1 State the most likely microorganism responsible for the condition in this patient. (05 marks)

3.2 Name **two (2)** microbiological investigations done in clinical settings to confirm the aetiological agent in this patient. (10 marks)

3.3 Name **two (2)** possible immunological complications that can occur after the infection with the microorganism mentioned in 3.1. (10 marks)

3.4 Describe the pathogenesis of each complication you mentioned in 3.3. (40 marks)

3.5 Name **two (2)** serological tests done to confirm the preceding infection, if this patient develops any of the complications mentioned in 3.3. (10 marks)

3.6 Discuss how the complications you mentioned in 3.3 can be prevented. (25 marks)

4. A 25-year-old man presented to the hospital with a four-day history of high fever, headache and severe muscle and joint pain. He also experienced retro-orbital pain. His platelet counts on the third and fourth days were 136,000/ μ l and 90,000/ μ l, respectively. Over the last 12 hours, he developed severe right hypochondrial pain. Ultrasound scanning revealed mild pleural effusion and ascites.

4.1 State the most probable diagnosis. (10 Marks)

4.2 Describe the source and mode of transmission of the illness you mentioned in 4.1. (20 Marks)

4.3 Briefly describe the pathogenesis of the illness in this patient. (35 Marks)

4.4 Discuss the microbiological tests that can be done in clinical settings for the diagnosis of the illness you mentioned in 4.1. (35 Marks)

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