UNIVERSITY OF JAFFNA, SRI LANKA

SECOND EXAMINATION FOR MEDICAL DEGREES PART (I)

June 2023 /

2018/2019

Microbiology -Paper I

Date: 20.06.2023 **1.30 pm to 3.00 pm. (1½ hours)**

Answer all 30 questions

UNIVERSITY OF JAFFNA
Medical Library
FACULTY OF MEDICINE

1. Bacterial capsules
   a) are found on *Streptococcus pneumoniae*
   b) act as opsonins
   c) help the organisms adhere to the host cells or tissues
   d) are made use of in typing some bacteria
   e) are found on *Neisseria meningitidis*

2. Bacteria commonly considered as contaminants of blood cultures include
   a) *Cutibacterium acnes*
   b) *Staphylococcus epidermidis*
   c) *Streptococcus pneumoniae*
   d) *Salmonella* typhi
   e) Diphtheroids

3. Gloves are not indicated in healthcare settings while
   a) performing intramuscular injections
   b) writing in the patient chart
   c) giving oral medications to the patients
   d) performing vaginal examination
   e) drawing blood from the patient

4. A patient in the surgical ward was diagnosed to have an ulcer infected with carbapenem resistant coliform. State whether the following are true or false regarding the infection control measures to be taken for this patient.
   a) Contact precautions should be followed for this patient.
   b) Hand hygiene should be followed upon entering and when leaving the place allocated for him.
   c) Surgical mask should be worn all the time by those examining this patient.
   d) Standard precautions are not necessary.
   e) Disposable gloves should be worn when entering the allocated place.

5. Organisms acquired directly from the environment include
   a) nontuberculous mycobacteria
   b) *Actinomyces israelii*
   c) *Leptospira interrogans*
   d) *Legionella pneumophila*
   e) *Orientia tsutsugamushi*

6. Instances that minimise the selection of antibiotic resistant strains include
   a) prescribing antibiotics for all respiratory infections
   b) parents giving antibiotics to their children as soon as the child develops a cough
   c) restricting the availability of antibiotics over the counter to the public without a doctor's prescription
   d) patients stop taking the antibiotics prescribed by the doctor as soon as the symptoms disappear without completing the full course
   e) doctors prescribing suboptimal dose of antibiotic when an antibiotic is indicated

7. Antibiotics used for infections with *Acinetobacter* spp. include
   a) vancomycin
   b) cefoperazone-sulbactam
   c) amikacin
   d) co-amoxiclav
   e) ceftazidime

8. State whether the following are true or false regarding the cells of the immune system.
   a) Dendritic cells are the professional antigen presenting cells.
   b) Neutrophils play an important role in granuloma formation.
   c) Plasma cells are responsible for antibody production.
   d) Natural killer cells destroy virus infected cells.
   e) Neutrophils are present in the CSF of healthy adults.

9. Antibody mediated immune response plays a major role in
   a) overcoming fungal infections
   b) killing virus infected cells
   c) overcoming infections with intracellular bacteria
   d) neutralizing bacterial toxins
   e) overcoming infection with *Neisseria meningitidis*

10. Infections for which vaccines are given in Sri Lanka through the National Immunization Programme include
    a) diphtheria
    b) seasonal influenza
    c) mumps
    d) chickenpox
    e) Japanese encephalitis

11. Athlete's foot
    a) is caused by *Malassezia furfur*
    b) can be acquired by walking barefoot in public places such as swimming pools
    c) commonly presents with non-itchy lesions
    d) causative organism can be cultured in routine clinical microbiology laboratories
    e) can be treated with topical nystatin

UNIVERSITY OF JAFFNA
Medical Library
FACULTY OF MEDICINE

12. Caspofungin
    a) acts on the fungal cell membrane
    b) has a good bioavailability for oral use
    c) penetrates the CSF well
    d) is used for invasive infections with resistant Candida
    e) is useful in the treatment of *Cryptococcus neoformans*

13. State whether the following are true or false regarding *Pneumocystis jirovecii*.
    a) It is a dimorphic fungus.
    b) It causes disease mainly in patients with immunoglobulin deficiencies.
    c) Sputum expectorate is the recommended specimen for the diagnosis of pneumonia caused by it.
    d) Infection is confirmed by culturing the organism in reference laboratories.
    e) Infection is treated with voriconazole.

14. *Haemophilus influenzae*
    a) is a strict human pathogen
    b) causes infection mostly in children less than six months old
    c) cannot be isolated in routine clinical microbiology laboratories
    d) infection can be treated with co-amoxiclav
    e) type b vaccine eradicates nasopharyngeal carrier state of *Haemophilus influenzae* type b

15. *Chlamydia trachomatis*
    a) is a facultative intracellular organism
    b) causes zoonotic disease
    c) can cause mucopurulent conjunctivitis in infants born to infected mothers
    d) urethritis in men can be diagnosed by NAATs in first pass urine
    e) genital infection is best treated with penicillin G

16. *Klebsiella pneumoniae*
    a) can be carried in the respiratory tract of healthy people
    b) causes healthcare associated infections
    c) infection can lead to sepsis
    d) is resistant to ampicillin
    e) is an important ESBL producer

17. IgM anti-HBc is positive in
    a) acute hepatitis B viral infection
    b) the window period of hepatitis B viral infection
    c) chronic hepatitis B viral infection
    d) those who have recovered from hepatitis B viral infection
    e) those who received hepatitis B vaccine

18. Hepatitis A virus
    a) is transmitted by fecal-oral transmission
    b) infection can be confirmed by the detection of IgM anti-HAV in the blood
    c) infection commonly leads to chronic infection in exposed people
    d) can be acquired from animals such as pigs and cattle
    e) infection in pregnancy can lead to fulminant hepatitis

19. Human papilloma virus (HPV)
    a) can be transmitted by asymptomatically infected people
    b) types 16 and 18 are associated with anogenital cancer
    c) infection is diagnosed by serology in clinical settings
    d) infection leading to malignant transformation can be detected at the early stage by papanicolaou test
    e) vaccination is given through the National Immunization Programme in Sri Lanka

20. When a pregnant mother gets chickenpox
    a) she should be given varicella zoster vaccine
    b) she should be given varicella zoster immunoglobulin
    c) in the first trimester, the baby should be given immunoglobulin soon after birth
    d) she should be given antiviral treatment
    e) she can develop varicella pneumonia

21. Croup
    a) is commonly caused by respiratory syncytial virus
    b) commonly affects young adults
    c) presents with barking cough and inspiratory stridor
    d) is commonly diagnosed clinically
    e) is treated with antiviral therapy

22. Measles
    a) virus has only human reservoir
    b) is transmitted by airborne transmission
    c) has an incubation period of 3 - 5 days
    d) is confirmed by detection of measles-specific IgM antibody in the serum
    e) virus infection provides life-long immunity

23. Hantavirus
    a) is transmitted mainly by inhalation of the virus containing aerosols generated from faeces or urine of infected rodents
    b) infection does not occur in otherwise healthy individuals
    c) infected patients can have raised C reactive protein
    d) infections can be misdiagnosed as leptospirosis
    e) infections can be confirmed by serological tests

UNIVERSITY OF JA... Medical Library FACULTY OF MEDICINE

24. A 24- year-old university student developed sudden onset of fever with headache, vomiting and photophobia. She also had a generalised rash. On examination, she had neck stiffness. State whether the following are true or false regarding the infection in this patient.
    a) *Neisseria meningitidis* is the most possible causative agent of this infection.
    b) CSF specimen collected in the first bottle during lumbar puncture should be sent for bacterial culture and ABST.
    c) Antibiotic treatment should be started only after the ABST report.
    d) Penicillin is useful in the treatment of this infection.
    e) Conjugate vaccine can be given to this age group to prevent this infection.

25. State whether the following are true or false regarding renal TB.
    a) Two spot specimens and a first morning specimen of urine should be collected from this patient for mycobacterial investigation.
    b) Tuberculin skin test is a confirmatory test for the diagnosis of renal TB.
    c) Urine specimen for the mycobacterial culture should be kept at room temperature during the storage and transport to the laboratory.
    d) Urine mycobacterial culture results will be available within a week of sending the specimen.
    e) Direct smear microscopy of urine for acid fast bacilli is not useful for the diagnosis of renal TB.

26. A 29-year-old otherwise healthy married woman presented with dysuria, frequency and urgency for two days. She did not have fever. On examination, she had suprapubic tenderness. Her urine full report revealed 20 – 30 pus cells per HPF. State whether the following are true or false regarding this infection.
    a) *E. coli* is the most common causative organism of this infection.
    b) Urine culture and ABST is not necessary for the management of this patient.
    c) Empirical antibiotic is not indicated in this patient.
    d) Azithromycin can be used in the treatment of this patient.
    e) This patient should be given antibiotics for seven days.

27. A 68-year-old lady was admitted with a history of fever with chills, productive cough and dyspnea for three days. Her temperature was 39°C and her respiratory rate 28 per minute. Air entry was reduced and bronchial breathing and crepitations were heard over the lower zone of the right lung. The bacteria responsible for the infection in this patient include
    a) *Streptococcus pneumoniae*
    b) *Mycoplasma pneumoniae*
    c) *Legionella pneumophila*
    d) *Mycobacterium tuberculosis*
    e) *Chlamydia psittaci*

28. A 62-year-old chronic alcoholic with peripheral vascular disease was suspected to have necrotising fasciitis in his left leg. Features suggestive of necrotising fasciitis include
    a) bullous lesions
    b) severe, excruciating pain in the affected area
    c) wood hard induration of the subcutaneous tissue
    d) discolouration of the skin
    e) bradycardia

29. A two-day-old child was suspected to have meningitis. State whether the following are true or false regarding the empirical antibiotic treatment for this child.
    a) Cefotaxime is given to cover *Listeria monocytogenes*.
    b) The main reason for giving ampicillin is to cover *E. coli*.
    c) Vancomycin should be given to cover cephalosporin resistant pneumococci.
    d) Cefotaxime will not cover Group B streptococci.
    e) Ampicillin covers Group B streptococci.

30. State whether the following are true or false regarding the reason for giving antibiotic combinations for the particular infection.
    a) Cefuroxime plus metronidazole are given as prophylaxis before colorectal surgery to extend the antimicrobial spectrum beyond that achieved by use of a single agent.
    b) Multiple antibiotics are given in leprosy to prevent the development of resistance.
    c) Combination of penicillin and gentamicin are given in endocarditis for synergistic activity.
    d) Combination of antibiotics are given for the empirical treatment of febrile neutropenia to broaden the spectrum of antibiotics.
    e) Combination of ceftriaxone, metronidazole and vancomycin are given for the empirical treatment of cerebral abscess to prevent the development of antibiotic resistance.

UNIVERSITY OF JAFFNA
Medical Library
FACULTY OF MEDICINE