METHODOLOGICAL GUIDANCE FOR PRACTICAL TRAINING

Discipline: Microbiology and Immunology

Code of Discipline: MI 2219

Name and cipher of the EP: «Medicine»

Amount of study hours/credits: 150 hours (5 credits)

Course and semester of study: 2, IV

Amount of practical classes: 40 hours

Shymkent 2024 y.

Methodological guidance for practical training was developed in accordance with the working curriculum of the discipline (syllabus) «Microbiology and Immunology» and discussed at a meeting of the department.

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Head of department
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Lesson №1

1. Topic: Immunity. Non-specific resistance factors.

2. Objective: To master methods for determining non-specific protection factors and methods for assessing the immunological status of a microorganism

3. Learning objectives: To study methods for determining phagocytic parameters and opsonophagocytic index. To characterize the humoral factors of natural immunity.

4. Main issues of the topic:

1. Formulate the concept of "immunity", the main functions of immunity.
2. Types of immunity.
3. Mechanisms of species immunity.
4. Humoral factors of nonspecific immunity. Lysozyme. Acute phase proteins.
5. Cellular factors of non-specific immunity. Natural killers.
6. Formulate the concept of "phagocytosis". Cells related to the phagocytes of their function.
7. List the main stages of phagocytosis.
8. Describe the differences between completed and incomplete phagocytosis, their consequences.
9. Representing and secretory functions of phagocytes.
10. Determination of phagocytic parameters, opsonins and the opsonization reaction.
11. The complement system. Activation of the complement system.
12. Functions of the complement system.
13. Interferon system.
14. The human immune system as a diffuse organ.
15. Cells of the immune system.

5. The main forms/methods/technologies of training to achieve the LO of the discipline: Preparation and protection of a poster report, solution of situational tasks, fulfillment of tasks in the workbook.

6. Types of control to assess the level of achievement of the LO discipline: Assessment by the checklist

7. Literature: Application №1

8. Control:

Tests:

1. Cytocidal cells that destroy target cells

A) T-helpers
B) T-killers
C) T-effectors
D) T-suppressors
E) B-lymphocytes

2. Various acids of sebaceous and sweat glands of the skin, possessing antimicrobial properties, are the factors of protection
A) biological
B) immunological
C) physico-chemical
D) mechanical
E) specific
3. The humoral factor, competing with microorganisms for the metabolites necessary for them, without which the pathogens can not reproduce
A) interferon
B) B-lysine
C) transferrin
D) fibronectin
E) complement
4. The humoral factor interacting with the surface of microorganisms, contributing to their phagocytosis, fulfills the role of opsonins
A) B-lysine
B) fibronectin
C) transferrin
D) complement
E) interferon
5. Large granulosoderzhaschie lymphocytes, which have a cytotoxic effect against foreign cells
A) monocytes
B) leukocytes
C) natural killers
D) T-killers
E) platelets
6. Cells of mesoderm origin, absorbing and digesting microorganisms
A) phagocytes
B) red blood cells
C) platelets
D) T-suppressors
E) T-helpers
7. The humoral factor of nonspecific resistance of the organism
A) microphages
B) Properdin protein
C) T-killers
D) Hydrochloric acid of gastric juice
E) macrophages

8. The ratio of phagocytic parameters obtained with immune and non-immune serum is called the index
A) leukocyte
B) phagocytic
C) opsonic
D) opsonophagocytic
E) lymphocytic
9. Complex complex of proteins of serum, reacting with each other in a certain sequence
A) transferrin
B) B-lysine
C) complement
D) fibronectin
E) interferon
10. Biological active substances produced by macrophages, often found in saliva and tears
A) immunoglobulins
B) peroxidase
C) interleukins
D) complement proteins
E) lysozyme

Lesson №2

1. Topic: Specific factors of immunity. Antigens and antibodies.
2. Objective: To study the factors of immunity and assess the immunological status of the human body.
3. Learning objectives: To give an idea of the methods of assessing the T and B-system of human immunity.
4. Main issues of the topic:
1. Define the concept of "antigen" and list the main properties of antigens.
2. Classification of antigens.
3. Defective antigens.
4. Antigens of the human body
5. Antigens of the main complex of tissue compatibility.
6. Antigens of microorganisms.
7. Define the concept of "antibody", their functions.
8. Chemical nature and structure of antibodies or immunoglobulins.
9. Classes of immunoglobulins, their main characteristics, differences and features.
10. Antiglobulin antibodies.
11. Anti-idiotype antibodies.

12. Immunological memory.
13. Immunological tolerance.

5. The main forms/methods/technologies of training for achieving the final goals of the discipline: Preparation and protection of a poster report, solution of situational tasks, fulfillment of tasks in the workbook.

6. Types of control for assessing the level of achievement of the final results of the discipline: Assessment by the checklist

7. Literature: Application №1

8. Control:

1. Antibodies that are unable to aggregate particles into conglomerates, combining with the antigen
A) normal
B) abzymes
C) polyclonal
D) incomplete
E) monoclonal

2. In a pool of immunoglobulins synthesized by a set of cells after immunization with a mono-determinant antigen, antibodies
A) normal
B) incomplete
C) polyclonal
D) abzyme
E) monoclonal

3. Immunoglobulins found in serum and in secrets on the surface of the mucous membranes belong to the classes
A) Ig G
B) Ig A
C) IgM
D) Ig D
E) Ig E

4. Lymphocytes that block the development of humoral and cellular immunity
A) T-suppressors
B) T-helpers
C) T-killers
D) T-effectors
E) B-lymphocytes

5. Cytocidal cells that destroy target cells
A) T-helpers
B) T-killers
C) T-effectors
D) T-suppressors

E) B-lymphocytes
6. Common antigens that occur in different animal species
A) half-haptens
B) haptens
C) heteroantigens
D) propagens
E) alloantigens
7. Various antigens that occur within one species
A) proantigens
B) half-haptens
C) alloantigens
D) heteroantigens
E) haptens
8. The blood group in the ABO system and the resusantigen
A) alloantigens
B) half-haptens
C) proantigens
D) heteroantigens
E) haptens
9. Human tissues are characterized by the absolute individuality of tissue antigens, such antigens refer to
A) half-heptenes
B) alloantigens
C) proantigens
D) to haptens
E) heteroantigens
10. Immunological reaction of a local nature, associated with prolonged exposure to haptens
A) Immunological tolerance
B) Immunological memory
C) secondary response
D) atopy
E) primary response

Lesson №3

1. Topic: Serological reactions.
2. Objective: To master the methods of serological diagnosis of infectious diseases.
3. Learning objectives: To characterize the types of immunological reactions.
4. Main issues of the topic:
1. Serological and immunological reactions, their practical application in medicine.

1. Groups of serological reactions.
2. Agglutination reaction.
3. Indirect or passive agglutination reaction (RPA).
4. Precipitation reaction.
5. Immunodiffusion.
6. Immunoelectrophoresis (IEF).
7. Immunoblotting.
8. Coombs reaction (antiglobulin test).
9. Neutralization and flocculation reactions.
10. Hemagglutination inhibition reaction (RTGA).
11. Complement binding reaction (RSC).
12. Immune lysis, hemolysis, and immobilization reaction.
13. Opsonophagocytic reaction.
14. Reactions involving labeled antigens or antibodies.
15. Polymerase chain reaction.

5. The main forms/methods/technologies of training for achieving the final goals of the discipline: Preparation and protection of a poster report, solution of situational tasks, fulfillment of tasks in the workbook.

6. Types of control for assessing the level of achievement of the final results of the discipline: Assessment by the checklist

7. Literature: Application №1

8. Control:

Tests:

1. In the Coombs reaction, antibodies are detected
A) Monoclonal
B) Polyclonal
C) normal
D) Paragraphs
E) incomplete

2. Serological reaction, forming a turbidity, then a loose precipitate when mixing the antigen with the antibody
A) Neutralization
B) flocculation
C) Enzyme-linked immunosorbent assay
D) Immunofluorescence analysis
E) Immunodiffusion

3. Cell lysis, with the formation of immune complexes, occurs in the reaction
A) Flocculation
B) agglutination
C) precipitation
D) immune lysis

E) RSC
4. By binding the complement, the formation of the antigen-antibody complex occurs in the reaction
A) Agglutination
(B) Immobilization
(C) Neutralization
(D) Precipitation
E) RSC
5. Detection of the antibody when mixing the immune serum with the corresponding virus occurs in the reaction
A) complement binding
B) precipitation
C) agglutination
D) virus neutralization
(E) Immobilization
6. Neutralization of antigens occurs in the reaction
A) RTGA
B) RSC
C) Koons
D) RIA
(E) ELISA
7. The bonding of corpuscular antigens and their precipitation occurs in the reaction
A) Koonsa
(B) Neutralization
C) RSC
D) Precipitation
E) Immunofluorescence
8. The deposition of an antigen in a dispersed, colloidal state occurs in the reaction
A) precipitation
B) agglutination
C) flocculation
D) immune lysis
E) complement binding
9. The interaction of the antiserum with the antigen solution occurs in the reaction
A) Immunodiffusion
(B) Neutralization
(C) Immobilization
D) RSC
E) Immunofluorescence
10. Antitoxic immunity against diphtheria or scarlet fever is determined by the Chic or Dick reactions, which refer to the reactions

A) Agglutination
B) precipitation
C) immune lysis
(D) RNGA
(E) Neutralization

Lesson №4

1. Topic: Pathogens of purulent - inflammatory and purulent – septic infections.

2. Objective: To master the microbiological methods of diagnosis, their informative value and disadvantages, to learn the choice of the method of laboratory research. To master microbiological methods of diagnostics of staphylococcal and streptococcal infections.

3. Learning objectives: Give an idea of the rules for the collection and transport of biological material for microbiological research. To teach methods of laboratory diagnosis of staphylococcal and streptococcal infections.

4. Main issues of the topic:

1. Rules for taking, selecting the character and transporting the material for the study.
2. Preparation of accompanying documents for sending material to the laboratory.
3. Methods of clinical and diagnostic microbiological research.
4. Advantages and disadvantages of individual methods of laboratory diagnosis, theirinformativeness, consistency of application.
5. Evaluation of the results of clinical and diagnostic microbiological studies.
6. Morphology and cultural properties of staphylococci.
7. Biochemical activity and antigenic properties of staphylococci.
8. Factors of pathogenicity of staphylococci.
9. Resistance, epidemiology and immunity in staphylococcal infections.
10. Laboratory diagnostics of staphylococcal infections.
11. Treatment and prevention of staphylococcal infections.
12. Morphology and cultural properties of streptococci.
13. Biochemical activity and antigenic properties of streptococci.
14. Factors of pathogenicity of streptococci.
15. Resistance, epidemiology and immunity in streptococcal infections.
16. Biological properties of scarlet latin streptococcus.
17. Biological properties of enterococci.
18. Laboratory diagnostics of streptococcal infections.
19. Microbiological studies in sepsis.
20. Treatment and prevention of streptococcal infections.
21. Biological properties of Klebsiella.

5. The main forms / methods / technology of training to achieve the ultimate LR discipline: Preparation and protection of a poster report, performing laboratory work, fulfillment of tasks in the workbook.

6. Types of control for assessing the level of achievement of the final results of the discipline: Assessment by the checklist

7. Literature: Application №1

8. Control: (questions, tests, tasks, etc.)

1. In the patient K. from the wounded was taken pus in the amount of 0.5 ml after antimicrobial therapy in a vessel, which was processed at the beginning of the disinfectant. What are the tacticalmistakes in taking the material? How will the violations of the material take place affect the results of microbiological research?
2. Tubes of blood, bottles with urine and other material were delivered to the laboratory for testing, they were not sealed in bixes, they were taken in 24 hours, stored at room temperature. What violations of the taking, storage, and delivery of the material are installed by you?
3. Clinical material for microbiological studies was delivered in ukuporennoy dishes, without bixa, taken three days in advance to transport the material. What mistakes were made?
4. In the laboratory delivered clinical material, accompanied by a direction where the name, age, clinical diagnosis, place of work, home address of the patient were indicated. What data is lost in the direction? What consequences will these violations have on the results of the study?
5. The material for the study (mucus from the nose of the pharynx) was sown with a loop on the cups with blood and yellow-salt agar (HSA). The cultures were incubated at 37°C for 24 hours. The next day, golden round convex opaque colonies were formed, on the blood agar the hemolysis zone was noted. For the final determination of the staphylococcus species, 2-3 colonies were resected into test tubes with chopped nutrient agar. It is established that the culture ferments glucose and mannitol under anaerobic conditions, forms plasmacoagulase, as well as toxin. Identify this type of staphylococci.
6. In smears from pus, taken from a festering tooth, microorganisms are arranged in pairs or chains in a rounded shape. On dense media form small gray colonies. On liquid media, benthic growth is given. On the blood agar around the colony a transparent hemolysis zone is formed. Growth is given on medium with optohin (1: 1 00000), but there is no growth on medium with inulin and 40% bile. Set this type of streptococcus.
7. At the clinic, the patient entered a serious condition with suspected sepsis caused by Gram- positive cocci, after dental intervention. What research needs to be done to determine the genus and type of the isolated coccus?

Tests:

1. Nucleated cocci that lose the capsule during cultivation on artificial nutrient media and passfrom S- to R-form
A) Streptococci
B) pneumococci
C) Staphylococci
D) of the gonococcus
E) meningococci
2. Virulent property of staphylococci
A) fermentation of mannitol
B) coagulase activity
C) hemolysis of ram's erythrocytes
D) catalase activity
E) B-lactamase activity
3. The causative agent of purulent inflammation with growth on nutrient media has a specificsmell of jasmine
A) Staphylococcus aureus
B) Pseudomonas aeruginosa
C) hemolytic streptococcus
D) pneumococcus
E) Enterococcus
4. Gneadic cocci that give hemolysis on blood agar
A) meningococci
B) Staphylococci
C) gonococci
D) Streptococci
E) pneumococci
5. Gneadic cocci causing strictly type-specific post-infection immunity
A) meningococci
B) Streptococci
C) Staphylococci
D) of the gonococcus
E) pneumococci
6. Disease not suspected by staphylococci
A) sepsis
B) osteomyelitis
C) peritonitis
D) furuncle
E) scarlet fever
7. Basic methods of laboratory diagnosis of streptococcal infections
A) microscopic.

B) serological, biological.
C) allergic.
D) bacteriological, serological.
E) microscopic, allergic.
8. Property inherent to protein-M streptococcus
A) invasive properties
B) inhibits phagocytosis
C) destroys the red blood cells
D) depresses chemotaxis
E) determines antibiotic sensitivity
9. Proteolytic properties of Pseudomonas aeruginosa
A) does not dilute gelatin
B) hydrolyzes casein
C) forms indole
D) forms hydrogen sulphide
E) Do not roll litmus milk

Lesson №5

1. **Topic: Causative agents of anaerobic infections.**
2. **Objective**: To master microbiological diagnostics of clostridia of gas gangrene, tetanus, botulism.
3. **Learning objectives:**:To teach methods of laboratory diagnostics of gas gangrene, tetanus, botulism.
4. **Main questions of the topic**:

1. General characteristics of clostridia.
2. Morphology and cultural properties of the tetanus pathogen.
3. Biochemical properties and antigenic structure of the tetanus pathogen.
4. Resistance and epidemiology of tetanus
5. Factors of pathogenicity of the tetanus pathogen.
6. Pathogenesis, clinic and immunity in tetanus.
7. Microbiological diagnosis of tetanus.
8. Treatment and specific prevention of tetanus.
9. Morphology and cultural properties of clostridia, causing gas gangrene.
10. Biochemical properties and antigenic structure of causative agents of gas gangrene.
11. Factors of pathogenicity of causative agents of gas gangrene.
12. Features of pathogenesis, clinic and immunity in gas gangrene.
13. Microbiological diagnosis of gas gangrene.
14. Treatment and specific prevention of gas gangrene.
15. Morphology and cultural properties of the pathogen of botulism.

16. Biochemical properties and antigenic structure of the pathogen of botulism.
17. Resistance and epidemiology of botulism.
18. Pathogenicity factors causative agent of botulism.
19. Features of pathogenesis, clinic and immunity in botulism.
20. Microbiological diagnosis of botulism.
21. Treatment and specific prevention of botulism.

5. The main forms / methods / technology of training to achieve the ultimate LR discipline: Preparation and protection of a poster report, solution of situational tasks, fulfillment of tasks in the workbook.

6. Types of control for assessing the level of achievement of the final results of the discipline: Assessment by the checklist

7. Literature: Application №1

8. Control: (questions, tests, tasks, etc.) In the hospital, the injured M. was taken to a car accident. Objectively: there is a lacerated wound in the thigh, contaminated with soil and scraps of clothing. The victim was taken to the hospital a few hours after the incident, so the surgical help was rendered untimely. Despite the help, two days later, a profuse gas formation, edema and necrosis formed in the wound, against a background of severe intoxication. What measures need to be taken urgently to treat a patient? What mistake was made during the initial treatment of the wound to the victim? From swelling fluid and necrotic tissue were prepared swabs and painted on Gram. When they were microscopically revealed: large Gram-positive, capsule-forming sticks, the material was Controlined using Kitt-Tarotzi, Wilson-Blair and milk media, pre-tubes were heated at 80 ° C for 30 minutes to kill non-spore-forming bacteria. In milk, 4 hours after sowing, a spongy bunch containing bubbles of gas and a separated clear liquid was found. A day later on the Kitt- Tarozzi medium, turbidity and gas formation were noted, on Wilson-Blair medium - black colonies in the depth of the agar column. In smears from crops, large gram-positive rods were found. Is this enough to make a conclusion about the causative agent of the disease? What determines the toxigenicity of a culture? Is express diagnostics used? What preparations are recommended by you for treatment and prophylaxis of gas gangrene taking into account the laboratory data? What you need to know when introducing biological drugs, and how to prevent side reactions.

1. A patient with a trauma (a laceration with tissue decomposition) entered the surgical department. What drug should I administer to a patient to prevent anaerobic infections?
2. After eating canned meat the next day, patient K. appeared pain in the stomach, nausea, headache. What help should I give the patient? What material should be taken for research? Make a final diagnosis.

Tests:

1. An infectious disease characterized by severe intoxication with CNS damage, which occurswhen food is consumed

A) tetanus
B) botulism
C) meningitis
D) gonorrhea
E) gas gangrene

2. Gram-positive rods with rounded ends that form subterminal spores, having the appearance of atennis racket, are pathogens
A) gas gangrene
B) tetanus
C) botulism
D) of meningitis
E) scarlet fever

3. Clostridia, synthesizing a homogeneous exotoxin, forming on transparent media transparent orslightly grayish colonies with a rough surface, are pathogens
A) meningitis
B) botulism
C) gas gangrene
D) tetanus
E) scarlet fever

4. Clostridia, synthesizing exotoxin, consisting of tetanolysin and tetanospasmin, are pathogens
A) meningitis
B) botulism
C) gas gangrene
D) scarlet fever
E) tetanus

5. Clostridia of one species, causing sporadic morbidity with high lethality in wound infections,are pathogens
A) gas gangrene
B) botulism
C) tetanus
D) of meningitis
E) scarlet fever

6. Pyoinflammatory diseases, after which the post-infection immunity is persistent and prolonged
A) tetanus
B) food poisoning
C) sepsis
D) osteomyelitis
E) gonorrhea

7. Pathogens causing gas gangrene

A) C. botulinum, S. novyi
B) S. novyi, S. sordellii
C) C. septicum, C. tetani
D) C. sordellii, C. botulinum
E) C. tetani, C. septicum

8. The number of serological types of toxins in C. botulinum
A) 6
B) 10
C) 8
D) 5
E) 4

9. The causative agent, whose spores are located terminally
A) C. tetani
B) C. novyi
C) C. septicum
D) C. sordellii
E) C. botulinum

10. Bacteria with subterminal spores, producing specific for each species of toxins that release enzymes (collagenase, hyaluronidase, deoxyribonuclease) are pathogens
A) scarlet fever
B) botulism
C) tetanus
D) of meningitis
E) gas gangrene

Lesson №6

1. **Topic: Causative agents of intestinal infections. Pathogens of acute diarrheal infections. Cholera.**
2. **Objective**: To master microbiological diagnostics of escherichiosis, dysentery, salmonellosis, typhoidfever, paratyphoid.
3. **Learning objectives:** To teach methods of laboratory diagnosis of escherichiosis, dysentery,salmonellosis, typhoid fever, paratyphoid.
4. **Main questions of the topic:**

1. General characteristics of the family Enterobacteriaceae.
2. Morphology and cultural properties of Escherichia coli.
3. Biochemical properties and antigenic structure of Escherichia coli.
4. Factors of pathogenicity of diarrheal E. coli.
5. Categories of diarrhea E. coli.
6. Features of immunity in escherichiosis.

7. Microbiological diagnosis of colibenitis and escherichiosis.
8. Treatment and prevention of escherichiosis.
9. Morphology and cultural properties of Shigella.
10. Biochemical properties and antigenic structure of shigella.
11. Resistance and epidemiology of dysentery.
12. Factors of shigella pathogenicity.
13. Pathogenesis, clinic and postinfectious immunity of dysentery.
14. Microbiological diagnosis of dysentery.
15. Treatment and prevention of dysentery.
16. General characteristics and classification of the genus Salmonella.
17. Morphology and cultural signs of pathogens of typhoid and paratyphoid.
18. Biochemical properties and antigenic structure of pathogens of typhoid and paratyphoid.
19. Resistance and epidemiology of typhoid and paratyphoid pathogens.
20. Pathogenicity factors of typhoid and paratyphoid pathogens.
21. Pathogenesis, clinic and post-infectious immunity of typhoparathyphoid diseases.
22. Microbiological diagnosis of typhoparathyphoid diseases.
23. Treatment and prevention of typhoparathyphoid diseases.
24. Features of the pathogenesis and immunity of salmonellosis.
25. Laboratory diagnostics, treatment and prevention of salmonellosis.
26. Classification, morphology and cultural properties of campylobacteria.
27. Biochemical properties and antigenic structure of campylobacteria.
28. Resistance and epidemiology of campylobacteria.
29. Pathogenicity factors, pathogenesis, clinic and immunity in campylobacteriosis.
30. Laboratory diagnostics of campylobacterioses.
31. Prevention and treatment of campylobacteriosis.
32. Biological properties of Yersinia enterocolitica.
33. Pathogenicity factors, pathogenesis, clinic and immunity in yersiniosis.
34. Laboratory diagnostics of yersinioses.
35. Prevention and treatment of yersiniosis.
36. Classification, morphology and cultural properties of the genus Vibrio.
37. Biochemical properties of vibrions.
38. Antigenic structure of cholera vibrions.
39. Pathogenicity factors of V. cholerae.
40. Resistance and epidemiology of vibrio cholerae.
41. Pathogenesis, clinic and immunity in cholera.
42. Features of sampling, conservation and transportation of the test material in cholera to the laboratory.
43. Bacterioscopic, bacteriological examination of the material in cholera.
44. Methods used for rapid diagnosis of cholera and detection of vibration

transmission.

45. Drugs used for the prevention, diagnosis and treatment of cholera.

5. The main forms / methods / technology of training to achieve the ultimate RO discipline: Preparation and protection of a poster report, performing laboratory work, fulfillment of tasks in the workbook.

6. Types of control for assessing the level of achievement of the final RO discipline: Assessment by the checklist

7. Literature: Application №1

8. Control (questions, tests, tasks, etc.)

1. A microbe culture is isolated from the red colony on Endo's medium, which gives agglutination reactions with the complex serum O 55+ O26 + O3. What kind of disease is involved and how to determine the causative agent of the disease?

2. In the children's team there is an outbreak of OCI, corresponding to the clinical picture of dysentery. Disease in time is associated with the arrival of a new nanny.

1) What microbiological research needs to be done to investigate outbreaks?

2) Who should be subjected to bacteriological Controlination?

3. In the environment of Russell, glucose was decomposed to acid and gas, hydrogen sulphide wasformed. What kind of environment does the species have and what microbe it has?

4. Vidal's reaction is positive with diagnosis of typhus "C" in serum dilution 1: 200, with diagnostic A in the dilution 1: 100. Justify your diagnosis.

5. As a result of eating ice cream, an outbreak of intestinal infection occurred, which was characterized by a wide range of forms of manifestation of the clinical course. In the laboratory study of ice cream, as well as materials from the patient, Gram-negative, mobile, non-capsule sticks were isolated. The optimum cultivation temperature is up to 20-26°C. Identification shows that bacteria ferment sorbose, inositol, have a cut activity, cleave urea, decarboxylate the amino acid - ornithine. Determine the taxonomic identity of the selected culture. Justify your clinical diagnosis with laboratory data. Give your advice on the localization and elimination of the outbreak of OCI.

6. In summer, the outbreak was marked in the city by the type of food toxic-infection with diarrhea syndrome, the reasons for which were food and dairy products stored in the refrigerators. In laboratory studies of excrement from patients and food products on dense nutrient media with antibiotics (polymyxin B and linkomation) during anaerobic cultivation, microorganisms are isolated Gram-negative, thin, spiral sticks with 1-2 scrolls, mobile, not forming capsules. Enzymatic features: do not break down carbohydrates, have oxidase and catalase activity, do not liquefy gelatin, do not split urea. Determine the generic and species belonging of the selected culture. Justify the cause of the outbreak.

Tests:

1. The category of Escherichia coli that causes a disease that proceeds according to

the type ofcholera-like diarrhea
A) enterotoxigenic
B) enteroinvasive
C) enteropathogenic
D) enterohemorrhagic
E) enteroherapeutic

2. Bacteria growing on Endo medium in the form of dark crimson with metallic shine of colonies
A) Yersinia
B) Salmonella
C) Shigella
D) Campylobacter
E) E. coli

3. Shigella, not fermenting mannitol
A) shigella boudi
B) Shigella Sonne
C) Shigella Flexner
D) shigella dysentery

4. The bacterium on the ability to ferment xylose and arabinose is divided into 4 biochemicaltypes
A) dysentery bacillus
B) paratyphoid bacillus
C) E. coli
D) typhoid bacillus
E) cholera vibrio

5. A bacterium having a surface antigen, which is called an antigen of virulence
A) E. coli
B) paratyphoid bacillus
C) typhoid bacillus
D) dysentery bacillus
E) cholera vibrio

6. Bacteria that have two types of H-antigens: I-phase, II-phase
A) Shigella
B) Escherichia
C) Salmonella
D) Yersinia
E) Campylobacter

7. Family of enterobacteria, numbering more than 2200 serovariants
A) Escherichia
B) Salmonella
C) Shigella

D) Yersinia
E) Campylobacter

8. Disease arising from eating food infected with microorganisms, characterized by gastroenteritisand impairment water-salt exchange
A) botulism
B) food poisoning
C) tetanus
D) gas gangrene
E) food intoxication

9. Acute gastroenteritis resulting from eating food that contains only bacterial toxins
A) tetanus
B) botulism
C) food intoxication
D) gas gangrene
E) food poisoning

10. Only in typhoid and some other enterobacteria occur
A) Vi antigen
B) S-antigen
C) protective antigens
D) H antigen
E) K-antigen

Lesson №7

1. Topic: Zoonotic pathogens.

2. Objective: To master the microbiological diagnosis of plague, brucellosis, anthrax.

3. Learning objectives: To teach methods of laboratory diagnostics of plague, brucellosis, anthrax.

4.Main questions of the topic:

1. Pathogens of particularly dangerous infections.
2. Morphology and cultural properties of the plague pathogen.
3. Biochemical activity and antigenic structure of plague bacteria.
4. Pathogenicity factors of Y. pestis.
5. Resistance and epidemiology of the causative agent of plague.
6. Pathogenesis, clinic and post-infectious immunity of the plague.
7. Laboratory diagnostics of the plague.
8. Specific prevention and treatment of plague, intradermal allergic test with pestin.
9. Classification, morphology and cultural properties of brucella.
10. Biochemical and antigenic properties of brucella.

11. Resistance and epidemiology of brucellosis.
12. Pathogenicity factors, pathogenesis and post-infectious immunity of brucellosis.
13. Laboratory diagnostics of brucellosis.
14. Specific prevention and treatment of brucellosis.
15. Morphology and cultural properties of the causative agent of anthrax.
16. Biochemical and antigenic properties of anthrax bacilli.
17. Resistance and epidemiology of anthrax.
18. Pathogenicity factors, pathogenesis, clinic and immunity of anthrax.
19. Laboratory diagnostics of anthrax.
20. Specific prevention and treatment of anthrax.

5. The main forms/methods/technologies of training for achieving the final goals of the discipline: Preparation and protection of a poster report, solution of situational tasks, fulfillment of tasks in the workbook.

6. Types of control for assessing the level of achievement of the final results of the discipline: Assessment by the checklist

7. Literature: Application №1

8.Control:

Tasks

1.A patient with a high temperature of 39°C, chills, and headache was taken to the infectious diseases hospital. Objectively: the lymph nodes are dense, enlarged and painful. The patient was brought from a rural area endemic to the plague. A preliminary clinical diagnosis was made: bubonic plague. Microscopy of the contents of the bubons showed the presence of oval-shaped rods, bipolar colored. However, for the timely adoption of effective anti-epidemic measures, bacteriological confirmation is necessary. The test material was sown on cups with nutrient agar of Martin. The crops were incubated at 25-28 ° C during the day. On the agar, microscopy showed colonies in the form of a "lace handkerchief", and on the broth – flake-like growth. What studies should be conducted to identify the selected culture? What a tactical mistake was made in the study. Are express methods and serological tests used in laboratory diagnostics? What drugs are used to treat and prevent the plague? What are the distinctive features of preventive measures to prevent quarantine and particularly dangerous infections?

2. Milkmaid M., 40 years old, was admitted to the Infectious Department with complaints of high fever, malaise, the appearance of an ulcer on the left forearm, itching and burning in the area of the ulcer. From the anamnesis: the night before, a red spot appeared on the site of the ulcer, which turned into a copper-red papule, and then into a bubble filled with a dark liquid. Objectively: body temperature 39 ° C, on the skin of the left forearm, an ulcer with a diameter of up to 1 cm, covered with a black crust. The skin around the ulcer is hyperemic and marked. On palpation, the ulcer is painless. Preliminary diagnosis: Anthrax, cutaneous form. During bacterioscopy of Gram-stained smears, large Gram-positive rods with severed ends,

located in the form of chains, surrounded by a capsule, were found from the separated ulcer. Make a conclusion? How can I improve the reliability of the response? During the bacteriological Controlination of the separated ulcer, a flake-like precipitate was formed in the broth. Rough R - forms of the colony, resembling the "lion's mane" in appearance, are marked on the MPA. On the blood agar, hemolysis is not marked, microscopically gram-positive capsule-shaped sticks that dilute gelatin in the form of an"inverted herringbone". When cultured on agar with penicillin, the morphology of the cells changed – spherical cells were formed, located in the form of a pearl necklace. Are these tests sufficient to identify the pathogen? From which microorganisms should it be differentiated and how? What additional diagnostic methods can you suggest? What drugs are used for the treatment, prevention and diagnosis of anthrax? Justify the prevention measures for anthrax, taking into account the biological characteristics of the anthrax bacillus.

3. The patient went to the doctor with complaints of fatigue, irritability, headache, joint and muscle pain. Fever. There is repeated chills during the day, followed by profuse sweating. Objectively: the liver and spleen are enlarged. From the analysis: the patient works at a meat processing plant. A preliminary diagnosis was made: Brucellosis? To confirm the clinical diagnosis: a Wright agglutination reaction was performed with the patient's serum, which gave a positive result. What can this indicate, is it possible to give a final answer based on the results of serological reactions? Why are brucella bacteria rarely isolated? What diagnostic methods can be used in the later stages of the disease? Drugs used for the treatment, prevention and diagnosis of the disease.

Tests:

1. Protective antigens are found in pathogens
A) typhoid fever
B) gas gangrene
C) The plague
D) Cholera
E) Smallpox

2. The growth of the pathogen of the plague on a liquid nutrient medium
A) thin film
B) uniform opacity
C) solid sediment on the bottom
D) bottom-wall growth
E) loose film from which the threads descend

3. Quarantine disease, characterized by severe intoxication, fever, lymph node damage, septicemia, is caused by the pathogen
A) the plague
B) Tularemia
C) brucellosis

D) Anthrax
E) Cholera
4. Polymorphic ovoid stationary rods synthesizing the capsule at a temperature of 37°C, bipolar staining in smears, are pathogens
A) brucellosis
B) Tularemia
C) The plague
D) Anthrax
E) Cholera
5. Gram-negative, ovoid sticks, which are psychrophiles, the optimal growth temperature of which is 28°C, are pathogens
A) the plague
B) Tularemia
C) brucellosis
D) Anthrax
E) Cholera
6. Gram-negative ovoid rods, in which the R-forms of the colony have a high virulence, are pathogens
A) Tularemia
B) The plague
C) brucellosis
D) Anthrax
E) Cholera
7. Zoonotic disease occurring in bubonic, oculobubonic, anginal-bubonic and septic forms, the leading method of research, in which the biological
A) Anthrax
B) plague
C) brucellosis
D) Tularemia
E) Cholera
8. Zoonotic disease, in which the isolation and identification of the pathogen is carried out after the biological method of investigation
A) Anthrax
B) plague
C) brucellosis
D) Tularemia
E) Cholera
10. Zoonotic disease with prolonged fever, damage to the musculoskeletal system, nervous, cardiovascular and genitourinary systems
A) brucellosis
B) plague

C) Tularemia
D) Anthrax
E) Cholera

Lesson№8

1. Topic: Causative agents of airborne infections.
2. Objective: To master the microbiological diagnosis of meningococcal infection, diphtheria and pertussis.
3. Learning objectives: To teach methods of laboratory diagnostics of meningococcal, infection, diphtheria and pertussis.
4. Main questions of the topic:
1. Morphological and cultural properties of meningococci.
2. Biochemical properties and antigenic structure of meningococci.
3. Resistance and epidemiology of meningococci.
4. Factors of pathogenicity of meningococci.
5. Features of the pathogenesis and immunity clinic of meningococcal infections.
6. Collection of pathological material and bacterioscopic Controlination in meningococcal infection.
7. Bacteriological Controlination in meningitis.
8. Serological Controlination in meningitis.
9. Specific prevention and treatment of meningococcal infection.
10. Morphology and cultural properties of the causative agent of diphtheria.
11. Biochemical activity and antigenic structure of corynebacteria.
12. Resistance and epidemiology of diphtheria.
13. Factors of pathogenicity of the causative agent of diphtheria.
14. Features of pathogenesis and clinic, post-infectious immunity in diphtheria and methods of its assessment.
15. How is the microbiological Controlination of diphtheria carried out?
16. How is the toxigenicity of diphtheria bacteria determined?
17. Treatment and prevention of diphtheria.
18. Morphology and cultural characteristics of the causative agents of pertussis and paracoccussis.
19. Biochemical activity and antigenic structure of Bordetella.
20. Resistance and epidemiology of bordetella.
21. Factors of pathogenicity of Bordetella.
22. Pathogenesis, clinic, and immunity of pertussis and paracoccussis.
23. Microbiological diagnosis of pertussis.
24. Treatment and prevention of pertussis and paracoccussis.

5. The main forms/methods/technologies of training for achieving the final goals of the discipline: Preparation and protection of a poster report, performing laboratory work, fulfillment of tasks in the workbook.

6. Types of control for assessing the level of achievement of the final results of the discipline: Assessment by the checklist

7. Literature: Application №1

8. Control:

1. A patient was admitted to the hospital with the following clinical symptoms: temperature 39°C, chills, severe headache, agitation, motor restlessness. From the first day of the disease, there was copious repeated vomiting. There is a general hyperesthesia (hypersensitivity to light, noise, hyperesthesia of the skin). On the 2nd day of the disease, there was rigidity of the muscles of the occiput. A preliminary clinical diagnosis was made: meningococcal meningitis. To confirm the clinical diagnosis, the patient's CSF, mucus from the pharynx and nose, and blood were taken as the test material. Microscopy of a smear of cerebrospinal fluid sediment stained with conventional aniline paints (methylene blue, basic fuchsin) showed the presence of diplococci located inside white blood cells. Inoculation of the material was carried out before the start of etiotropic therapy, immediately after taking the material.

1. Is this correct?

2. What properties of the microbe are taken into account? Inoculation of the test material was performed on serum nutrient agar 48 hours after incubation of the crops at 37°C, colonies grew the size of a pinhead, with a blue tint and smooth edges. Typical colonies were transplanted into a tube with slanted agar to produce a pure culture that grew only in the presence of native protein, from carbohydrates glucose and maltose fermented to acid. Based on these properties, the isolated culture was identified as N. meningitidis.

3. Is this conclusion sufficiently justified?

4. What kind of research, and at what stage is it necessary to conduct?

5. What should be added to the culture medium with whey?

6. From which microorganisms should the pathogens of meningitis be differentiated?

7. How to conduct an express diagnosis?

8. What reaction is used to confirm the diagnosis during serological Controlination of patients?

9. How is the treatment and prevention of meningitis carried out?

2.A child with a temperature of 39 ° C and pronounced symptoms of general intoxication (weakness, adynamia, headache, chills) was admitted to the infectious diseases hospital. In the pharynx, there is diffuse hyperemia and edema, the surface of the tonsils is covered with a thick coating of dirty gray color. Heart sounds are muffled, tachycardia. All the cervical lymph nodes are enlarged. A preliminary

diagnosis of diphtheria was made. To confirm the clinical diagnosis, microscopy of the test material (mucus from the pharynx, nasopharynx, colored by Gram, Neisser and Leffler) was performed. Seeding was also carried out on Clauberg's curdled serum to obtain a pure culture. Microscopy gave a negative result. What conclusions can be drawn from this? Small colonies with a compaction in the center grew on the folded serum. A grayish-black color with radial striation was formed on the Klauberg medium. Then, 6b was transferred to the curdled serum to isolate the pure culture.

What needs to be done to deliver the final answer? What biological properties of C. diphtheriae distinguish it from similar corynebacteria? What is your treatment strategy based on a diagnosis based on laboratory tests? How is the prevention of diphtheria carried out?

3. In a child of 4 years, runny nose, malaise, subfebrile fever, dry cough. Ill for about 10 days. In the last 2 days, there were sharp attacks of spasmodic cough. A preliminary diagnosis was made: whooping cough.

The method of" cough plates " was used for sowing blood potato-glycerin agar containing penicillin. After 3 days at a temperature of 37 ° C, very small gray colonies, shiny as mercury droplets, appeared on the surface of the medium, convex and moist, with a small hemolysis zone. Microscopically, ovoid gram-negative rods were found in smears from these colonies. The colony material gave a positive agglutination reaction with pertussis serum. Is this data sufficient to produce a definitive answer? What other tests should be performed to identify the selected culture? In what cases do serodiagnostics apply? Name the drugs for specific prevention and treatment of whooping cough.

Tests:

1. Gram-negative pyogenic diplococci, shaped like coffee beans, causing inflammation of the meninges

A) Staphylococci
B) streptococci
C) Meningococci
D) Pneumococci
E) gonococci

2. Diplococci, vegetating on the mucous membrane of the nasopharynx of the human carrier, are poorly resistant in the environment

A) Meningococci
B) pneumococci
C) Streptococci
D) Proteus
E) Staphylococci

3. Gram-negative cocci, forming delicate colorless colonies of viscous consistency on the surface of whey agar

A) Pneumococci
B) streptococci
C) Staphylococci
D) Meningococci
E) gonococci

4. An infectious disease in which the cerebrospinal fluid is Controlined for the presence of antigens in it
A) gonorrhea
B) erysipelas
C) scarlet fever
(D) Pneumonia
E) Meningococcal infection

5. Pyogenic cocci growing only on media enriched with carbohydrates, blood, serum, ascitic fluid
A) Meningococci
B) gonococci
C) Streptococci
D) Staphylococci
E) Peptococci

6. A substance added to media to inhibit the growth of other types of bacteria, during the cultivation of the causative agent of diphtheria
A) Sodium chloride
B) potassium tellurite
C) Penicillin
D) diamond green
E) Sodium sulfate

7. The main factor of pathogenicity of the causative agent of pertussis
A) Thermolabile exotoxin
B) capsule
C) Hyaluronidase
D) Lecithinase
E) Plasmocoagulase

8. The DTP vaccine is used for prevention
A) Diphtheria
B) Measles
(C) Tularemia
D) dysentery
(E) Typhoid fever

9. To detect the toxigenicity of diphtheria bacteria, the following methods are used, except
(A) Biological samples

B) infection of chicken embryos
C) infection of cell cultures
D) Immunoblotting
E) the DNA probe method
10. The test that is put to determine the cystinase in Corynebacterium diphtheria
A) Dick
B) Chic
C) Zaksa
(D) Pisa
(E) Burne
11. Growth of the causative agent of pertussis in a liquid medium
A) diffuse turbidity with dense sediment
B) thin film
C) turbidity of the medium
D) Flake-like sediment
E) light opalescence of the medium
12. The Pisu test for diphtheria is put to determine
A) Ureases
B) B-lactomases
C) cystinases
D) Urea
E) Lecithinases
13. Diphtheria bacillus biotypes
A) intermedius
B) bovis
C) canis
D) ovis
E) suis
14. Infectious disease characterized by attacks of spasmodic cough, observed mainly in preschool children
A) mycoplasmosis
B) diphtheria
C) scarlet fever
D) Tuberculosis
E) Whooping cough
15. Disease caused by pyogenic cocci synthesizing erythrogenin, determined by the Dick test
A) whooping cough
B) diphtheria
C) scarlet fever
D) Tuberculosis

E) actinomycosis

Lesson №9

1. Topic: The causative agents of transmissible infections.
2. Objective: To master the microbiological diagnosis of transmissible infections.
3. Learning objectives: To give an idea about the rules for the collection and transportation of biological material for microbiological research. To teach methods of laboratory diagnostics of vector-borne infections.
4. Main questions of the topic:
1) Biological features and laboratory diagnosis of relapsing fever.
2) Biological features and laboratory diagnosis of epidemic typhus.
3) Biological features and laboratory diagnostics of Q fever.
4) Specific prevention and treatment of Q fever.
5) General characteristics of KKGL.
6) Epidemiology and clinic of CCHF.
7) Laboratory diagnosis of CCHF.
5. The main forms/methods/technologies of teaching to achieve the final RO of the discipline: Preparation and protection of a poster report, solution of situational tasks, fulfillment of tasks in the workbook.
6. Types of control for assessing the level of achievement of the final RO of the discipline: Assessment by the checklist
7. Literature: Application №1
8. Control:
Tests:
1 Rickettsia is the causative agent of typhus.
1 check
2 Musers
3 Akari
4 Burnets
5 Chiari

2 The source of typhus is:
1 sick person
2 Pincers
3 Pets
4 Rodents
5 All of the above
3 The transmission of the pathogen in typhus is carried out:
1 Lice
2 mosquitoes

3 pincers
4 Rodents
5 All of the above

4 Rash with typhus is characterized by:
1 Roseolous character
2 Roseolous-papular character
3 Element polymorphism
4 Scalloped roseola edges
5 All of the above

5 Complications of typhus include:
1 Acute cardiovascular failure
2 Myocarditis
3 Psychosis
4 Thrombophlebitis
5 All of the above

6 During the height of the disease, Brill's disease is characterized by all of the following symptoms, except:
1 Roseolous-papular rash
2 Fever
3 Lowering blood pressure
4 Moderate hepatosplenomegaly
5 Enterocolitis syndrome

7 Way of transmission of Q fever:
1 Alimentary
2 Airborne
3 Transmissive
4 Pin
5 All of the above

8 At the height of the illness, Q fever has all of the following symptoms except:
1 Fever
2 Roseolous-papular rash
3 Encephalopathies
4 Myalgia
5 Polyneuropathies

Lesson №10

1. Topic: Causative agents of acute respiratory viral infections.
2. Objective: To master the methods of diagnosis of influenza, parainfluenza and adenovirus infections.
3. Learning objectives: To study the methods of laboratory diagnostics of influenza, parainfluenza and adenovirus infections.
4. Main questions of the topic:
1. Viruses-pathogens of acute respiratory diseases.
2. Morphology and chemical composition of influenza A viruses.
3. The main functions of hemagglutinin and neuraminidase of the influenza A virus.
4. Virus resistance in the external environment and influenza epidemiology.
5. Features of the pathogenesis, clinic and immunity of influenza.
6. Laboratory diagnostics of influenza.
7. Treatment and specific prevention of influenza.
8. Distinctive features of influenza B and C viruses.
9. Morphology and chemical composition of parainfluenza viruses.
10. Structure and antigenic properties of adenoviruses.
11. Pathogenesis, clinic and post-infectious immunity of adenovirus infection.
12. Laboratory diagnostics of adenovirus infection.
13. Treatment and specific prevention of adenovirus infection.
5. The main forms/methods/technologies of training for achieving the final goals of the discipline: Preparation and protection of a poster report, performing laboratory work, fulfillment of tasks in the workbook.
6. Types of control for assessing the level of achievement of the final results of the discipline: Assessment by the checklist
7. Literature: Application №1
8. Control:
Tasks
1. Patient N. has complaints of severe headache, pain in the eyeballs, a rise in body temperature of 40 ° C, watery discharge from the nose, dry cough. Ill for the second day. The day before, I was on a visit, where I was in a room with a patient with acute respiratory infections. The Controlination revealed rhinitis, pharyngeal hyperemia, tachycardia, no wheezing in the lungs. A preliminary diagnosis was made – ARVI. Rhinocytoscopy was performed for diagnosis. Bright red cytoplasmic inclusions of the epithelium were detected in the preparations stained with acridine orange. Is it possible to make a conclusion based on this – "flu"?
2. In the study of flushes from the nasopharynx, sputum by the immunofluorescence method with a set of different specific sera, the antigens of HSV 1, HSV 2, and HSV 3 were detected. Justify your laboratory and clinical diagnosis. Suggest your tactics

for conducting therapeutic and preventive measures, taking into account the obtained laboratory data.

3. In the city of Sh. there was an outbreak among people using one swimming pool of an infectious disease characterized by respiratory tract damage, conjunctivitis, tonsillitis,pharyngitis, bronchitis, with the predominance of respiratory and conjunctival syndrome. In the laboratory study of the nasopharyngeal discharge, conjunctiva using the immunofluorescence method, antigens of adenoviruses of serovariants 1,2,5,6 were detected. In the study of paired sera of convalescents, an increase in antibody titers in the RSC to adenoviruses of serovariants 1,2,5,6 was detected. Justify your tactics of carrying out medical and preventive measures, based on the data of laboratory tests.

Tests:

1. Viruses that cause diseases, both in humans and in animals and birds
A) Influenza C virus
B) parainfluenza virus
C) Influenza B virus
(D) Influenza A virus
E) Adenovirus

2. Capsid protein not bound to fragments of virion RNA of influenza A virus
A) Protein M 1
B) nucleoprotein (NP)
C) protein PB 1
D) Protein PB 2
E) RA replicase

3. The genome of the influenza A virus
A) Double-stranded DNA
B) Single-stranded DNA
C) single-stranded fragmented negative RNA
D) double-stranded fragmented positive RNA
E) Single-stranded ring DNA

4. The number of antigen-differing types of hemagglutinin in the influenza A virus
A) 13
B) 10
C) 8
D) 15
E) 16

5. The route of transmission of adenovirus infection
A) airborne
B) Alimentary

C) Transmissive
D) Sexual
E) placental
6. RNA-containing virus that affects the mucous membranes, a characteristic feature of which is the variability of the hemagglutinin and neuraminidase antigens, is the causative agent
A) adenovirus infection
B) Ornithosis
C) Influenza
D) Parainfluenza
E) Scarlet fever
7. Viral respiratory disease characterized by pandemics and epidemics, covering up to 30-50 % population of the world
A) adenovirus infection
B) Ornithosis
C) Parainfluenza
D) Influenza
E) Scarlet fever
8. Methods of laboratory diagnostics not used for parainfluenza
A) IFM
B) contamination of laboratory animals
C) RTGA
D) Hemadsorption inhibition reaction
E) Neutralization reaction
9. Viral respiratory disease, for the treatment of which remantadine, adapromine, virazole are used
A) adenovirus infection
B) Ornithosis
C) scarlet fever
D) Parainfluenza
E) Influenza
10. Infections caused by adenoviruses
A) Gastroenteritis
B) encephalitis
C) meningitis
D) pharyngoconjunctivitis
E) Myocarditis

Lesson №11

1. Topic: The causative agents of measles, rubella, chickenpox and mumps.

2. Objective: To master the methods of diagnosis of influenza, parainfluenza and adenovirus infections of rubella, chickenpox and mumps.
3. Learning objectives: To study the methods of laboratory diagnostics of measles, rubella, chickenpox and mumps.
4. Main questions of the topic:
1. Morphology, chemical composition and antigenic structure of the measles virus.
2. Cultivation, reproduction, resistance and epidemiology of the measles virus.
3. Features of the pathogenesis, clinic and immunity of measles.
4. Laboratory diagnostics and specific prevention of measles.
5. Morphology, chemical composition and antigenic structure of the rubella virus.
6. Cultivation, reproduction, resistance and epidemiology of the rubella virus.
7. Features of the pathogenesis, clinic and immunity of rubella.
8. Laboratory diagnosis of rubella.
9. Treatment and specific prevention of rubella.
10. Morphology, chemical composition and antigenic structure of the mumps virus.
11. Cultivation, reproduction, resistance and epidemiology of the mumps virus.
12. Features of the pathogenesis, clinic and immunity of mumps.
13. Laboratory diagnostics and specific prevention of mumps.
14. Morphology, chemical composition and antigenic structure of the varicella zoster virus.
15. Cultivation, reproduction, resistance and epidemiology of the varicella zoster virus.
16. Features of the pathogenesis, clinic and immunity of chickenpox.
17. Laboratory diagnostics, treatment and specific prevention of chickenpox.
5. The main forms/methods/technologies of training for achieving the final goals of the discipline: Preparation and protection of a poster report, solution of situational tasks, fulfillment of tasks in the workbook.
6. Types of control for assessing the level of achievement of the final results of the discipline: Assessment by the checklist
7. Literature: Application №1
8. Control:
Tasks
1. A 5-year-old boy was admitted to the infectious diseases hospital with complaints of a rash that spread from top to bottom, fever. From anamnesis: visits a kindergarten where a patient with measles was identified. Justify the laboratory diagnosis of the study, taking into account the epidemiological data and the clinic. Your tactics for carrying out medical and preventive measures.
2. The infectious diseases department received a group of children with similar clinical signs, characterized by a rash of papular nature throughout the body, temperature, some had symptoms of conjunctivitis, pharyngitis, rhinitis before the rash appeared. When studied in the reaction of immunofluorescence with a set of

different labeled sera, a positive result was obtained – the presence of measles antigen in the affected cells. Justify the results of the obtained laboratory tests. Your clinical and laboratory diagnosis. Justify your tactics of carrying out medical and preventive measures in this case.

3. In the study of a stillborn child from a woman who suffered an infectious disease of unknown etiology during pregnancy, serological studies revealed the presence of antibodies of the IdM class to the rubella virus in both the mother and the deceased fetus. Justify your laboratory and retrospective diagnosis of the mother and the deceased fetus.

1. A patient who underwent a complex operation for the removal of a malignant lung tumor, in the postoperative period, after a rise in temperature, rashes appeared on the trunk in the form of bubbles filled with serous-turbid fluid. In the study of the material by the method of immunodiffusion in a gel with specific sera against the herpes virus, chickenpox-zoster. The reaction gave positive results with precipitating serums against chickenpox. Justify your clinical diagnosis. Justify your tactics of carrying out medical and preventive measures, taking into account the data of laboratory studies.

Tests:

1. A disease that mainly affects children, characterized by fever, catarrhal phenomena and papular rash

A) Chickenpox
B) flu
C) Mumps
D) Rubella
E) Measles

2.. A disease caused by a representative of rubiviruses, characterized by fever and rash

A) Mumps
B) flu
C) Measles
D) Rubella
E) Chickenpox

3. The measles virus belongs to the family

A) Orthomyxoviruses
B) paramyxoviruses
C) Togaviruses
D) Herpesviruses
E) Adenoviruses

4. A viral disease in which the inhibitory effect of the pathogen on the processes of hematopoiesis and the immune system leads to complications

A) flu

B) Rubella
C) Measles
D) Mumps
E) Chickenpox
5. A virus that primarily multiplies in the cervical lymph nodes
A) adenovirus
B) measles virus
C) rubella virus
D) Mumps virus
E) Chickenpox virus
6. A virus that causes damage to the parotid salivary glands, low-resistant, destroyed by the action of fat-soluble substances, formalin and alcohol,
is the causative agent
A) Measles
B) influenza
C) Mumps
D) Rubella
E) Chickenpox
7. RNA-containing virus belonging to morbilliviruses, which does not have antigenic variants, is the causative agent
A) Measles
B) influenza
C) Mumps
D) Rubella
E) Chickenpox
8. The genome of the chickenpox virus
A) single-stranded DNA
B) double-stranded DNA
C) Ring DNA
D) negative single-stranded RNA
E) positive single-stranded RNA
9. Viral disease, for the prevention of which a live attenuated vaccine is used, in accordance with the established procedure
A) Rubella
B) flu
C) Mumps
D) Measles
E) Chickenpox
10. What activity does the mumps virus not have?
A) Neuraminidase
B) hemolytic

C) hemagglutinating
D) symplast-forming
E) Lecithinase

Lesson №12

1. Topic: Causative agents of enterovirus and rotavirus infection. Viral hepatitis.
2. Objective: To master the virological and serological diagnosis of enterovirus and rotavirus infection, viral hepatitis.
3. Learning objectives: To teach methods of laboratory diagnostics of enteroviral infection, viral hepatitis.
4. Main questions of the topic:
1. General characteristics of enteroviruses, their classification and taxonomy.
2. Causes of the global or ubiquitous spread of enteroviruses as causative agents of AII.
3. Epidemic features of AII caused by viruses.
4. Morphological and antigenic features of polioviruses.
5. Features of the epidemiology, pathogenesis and clinic of poliomyelitis.
6. Post-infectious and post-vaccination immunity in poliomyelitis.
7. Laboratory diagnosis of poliomyelitis.
8. Advantages and disadvantages of vaccines used for the prevention of poliomyelitis. Treatment of poliomyelitis.
9. Epidemiology, pathogenesis and features of the hepatitis A clinic.
10. Laboratory diagnosis of hepatitis A.
11. General characteristics, epidemiology, clinic and laboratory diagnosis of rotavirus infection
12. General characteristics of enteroviruses, their classification and taxonomy.
13. Morphological and antigenic features of hepatitis A virus.
14. Pathogenesis, clinic, epidemiology and immunity of infectious hepatitis.
15. Laboratory diagnosis of hepatitis A.
16. Treatment and prevention of hepatitis A.
17. Morphological and antigenic features of hepatitis B virus.
18. Pathogenesis, clinic, epidemiology and immunity of hepatitis B.
19. Laboratory diagnosis of hepatitis B.
20. Treatment and prevention of hepatitis B.
21. Morphological, biological features and laboratory diagnosis of delta hepatitis.
22. General characteristics, epidemiology, clinic and laboratory diagnosis of hepatitis C.

5. The main forms/methods/technologies of training for achieving the final goals of the discipline: Preparation and protection of a poster report, solution of situational tasks, fulfillment of tasks in the workbook.

6. Types of control for assessing the level of achievement of the final results of the discipline: Assessment by the checklist

7. Literature: Application №1

8. Control:

Tasks

1. A 6-year-old child with symptoms of an intestinal infection, who attended a kindergarten, was admitted to the infectious diseases hospital. The attending physician made a preliminary diagnosis of poliomyelitis, taking into account the clinical picture. What laboratory tests should be performed to confirm the final diagnosis? What viruses need to be differentiated? What preventive measures should be taken in case of laboratory confirmation?

2. In a laboratory study of a sick child with meningitis phenomena in RTHA and RSK with reference mixtures of sera against enteroviruses, positive reactions to type 1 poliovirus antigens were established in the test material. Substantiate your arguments regarding the diagnosis on the basis of laboratory and clinical data. Develop tactics of treatment and preventive measures based on your diagnosis.

Tests:

1. Viral disease, which is accompanied by damage to the gray matter of the spinal cord

A) hepatitis B
B) hepatitis A
C) poliomyelitis
D) herpes
E) rubella

2. Viruses discovered in 1951 and called orphan viruses

A) poliomyelitis
B) hepatitis A
C) hepatitis B
D) Coxsackie
E) ECHO

3. Viruses that are the most cardiotropic of all enteroviruses

A) poliomyelitis
B) hepatitis A
C) hepatitis B
D) Coxsackie
E) ECHO

4. The virus belongs to the Picornaviridae family of the Poliovirus species ....

A. poliomyelitis

B. hepatitis A
C. hepatitis
D. Coxsackie
E. ECHO
5. For prevention... the vaccine is administered orally.
A. poliomyelitis
B. viral hepatitis A
C. viral hepatitis B
D. viral hepatitis C
E. rubella.

Application №1

Recommended literature

Basic literature

1. Murray P. R., Rosenthal K. S., Pfaller M. A.Medical Microbiology. - Mosby, 2015
2. W. Levinson McGraw-Hill. Review of Medical Microbiology and Immunology, 2014

Additional literature

1. Saparbekova A.A. Microbiology and virology : educ. manual. - Second Edition. - Almaty : ЭСПИ, 2023. - 188 с
2. Gladwin Mark T. Clinical microbiology made ridiculously simple / Mark T. Gladwin, William Trattler, Scott C. Mahan . - 7th ed. - Miami :MedMaster, Ins, 2016. - 413 p.
3. Usmle Step 1. Immunology and microbiology : Lecturer notes / Alley Tiffany L. [et. al.]. - New York, 2019. - 511 p. - (Kaplan Medical)

Electronic textbooks

1. B. T. Seytkhanova, Sh. Zh. Kurmanbekova, Sh.T. Polatbekova, Sh.Zh. Gabdrakhmanova, A.N. Tolegen. CAUSATIVE AGENTS OF ACUTE RESPIRATORY VIRAL INFECTIOUS DISEASES (influenza virus, adenovirus, coronavirus) (I part) http://lib.ukma.kz/wp-content/uploads/2022/10/Illustrated-teach.-material-eng-2.pdf
2. B.T. Seytkhanova, Sh. Zh. Kurmanbekova, Sh.T. Polatbekova, Sh.Zh. Gabdrakhmanova, A.N. Tolegen. Pathogens of children's viral infections (measles, rubella, chickenpox and mumps virus) (Part II) http://lib.ukma.kz/wp-content/uploads/2022/10/illustrated-textbook.pdf
3. B.T. Seytkhanova, A.A. Abdramanova, A.N. Tolegen, P. Vinoth kumar Lecture compolex on the subject "Microbiology and immunology " (General Microbiology) http://lib.ukma.kz/wp-content/uploads/2022/10/Lecture-complex-General-Microbiology-2022.pdf
4. B.T. Seytkhanova, A.A. Abdramanova, A.N. Tolegen, P. Vinoth kumar LECTURE COMPLEX ON THE SUBJECT "MICROBIOLOGY AND IMMUNOLOGY"(Private Microbiology) http://lib.ukma.kz/wp-content/uploads/2022/10/Lecture-complex-Private-Microbiology-2022.pdf

Electronic base

№	Name	Link
1	Electronic library SKMA	http://lib.ukma.kz/repository
2	Republican interuniversity electronic library	https://online.zakon.kz/Medicine
3	«Aknurpress» Digital library	https://www.aknurpress.kz/
4	«Epigraph» Electronic library	http://www.elib.kz/
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6	ABS IPR SMART	https://www.iprbookshop.ru/auth
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