Examples of practically oriented tasks to the question № 27 (Section 4) from next themes: 27. Gamma herpesvirus. The causative agent of infectious mononucleosis. Pathogenesis, immunity, laboratory diagnosis, prevention of diseases.

Question 1. A 3-years-old child has continuous fever, lymph nodes are enlarged, the number of lymphocytes in blood is significantly increased. Enzyme linked immunosorbent assay (ELISA) revealed antigen of Epstein-Barr virus. What diagnosis can be made based on the information given above?
   A. Infectious mononucleosis.
   B. Burkitt’s lymphoma.
   C. Herpetic lymphadenopathy.
   D. Generalized infection caused by herpes-zoster.
   E. Cytomegalovirus infection.

Question 2. What is the form Epstein-Barr virus?
   A. Spherical shape
   B. Bullet shaped
   C. Brick-shaped
   D. Filamentous

Question 3. Indicate the antigenic structure of Epstein-Barr virus.
   A. Capsid antigen – VCA.
   B. Capsid antigen – G.
   C. Nuclear antigen – EBNA.
   D. Early antigens (diffuse - EAD and localized - EAR).
   E. Membrane antigen (MA).
   F. LMPs
   G. Nucleoprotein (NP).
   H. K-antigen.
   I. F-antigen.
   J. F-antigen.

Question 4. A source of infection for Infectious mononucleosis is:
   A. Sick people.
   B. Healthy viruses-carrier.
   C. Animals.
   D. Arthropods.

Question 5. What are the ways of Epstein-Barr virus transmission?
   A. Infection of a healthy person with EBV can be carried out by airborne way.
   B. Infection of a healthy person with EBV can be carried out by contact-domestic and sexual ways.
   C. It has been established that it can be transmitted through blood transfusion and other parenteral interventions.
   D. Transmissible way.
   E. Through bites.
Question 6. What is the primary infection for EBV?
A. +The primary infection of EBV during human infection is most often in the oral part of the pharynx, where it multiplies in B-lymphocytes and epithelial cells.
   - The primary infection of EBV during human infection is most often in the blood.
B. -The primary infection of EBV during human infection is most often in the epithelial cells of the skin.
C. -The primary infection of EBV during human infection is most often the in epithelial cells the intestines.

Question 7. Is there viremia during Epstein-Barr virus infection?
A. +Yes
B. -No

Question 8. Describe the main stages of the Epstein-Barr virus pathogenesis?
A. +EBV is commonly transmitted by infected saliva and initiates infection in the oropharynx. Viral replication occurs in epithelial cells (or surface of B lymphocytes) of the pharynx and salivary glands. Many people shed low levels of virus for weeks to months after infection. Infected B cells spread the infection from the oropharynx throughout the body. In normal individuals, most virus-infected cells are eliminated, but small numbers of latently infected lymphocytes persist.
B. -The route of infection is the mucosa of the upper respiratory tract or conjunctiva. Following initial replication in regional lymph nodes, primary viremia spreads virus and leads to replication in liver and spleen. Secondary viremia involving infected mononuclear cells transports virus to the skin, where the typical rash develops. Swelling of epithelial cells, ballooning degeneration, and accumulation of tissue fluids result in vesicle formation. EBV virus replication and spread are limited by host’s humoral and cellular immune responses. Interferon may also be involved.
C. -EBV is transmitted by the contact of a susceptible person with an individual excreting virus. The virus must encounter mucosal surfaces or broken skin in order to initiate an infection (unbroken skin is resistant). EBV infections are usually limited to the oropharynx, and virus is spread by respiratory droplets or by direct contact with infected saliva. EBV is usually transmitted by genital routes. Viral replication occurs first at the site of infection. Virus then invades local nerve endings and is transported by retrograde axonal flow to dorsal root ganglia, where, after further replication, latency is established.

Question 9. What are the diseases caused by Epstein-Barr virus?
A. +Infectious mononucleosis.
B. +Nasopharyngeal carcinoma.
C. +Lymphomas.
D. +Burkitt's lymphoma.
E. -HIV infection.
F. -Cytomegalovirus infection.

Question 10. What complications may appear after Epstein-Barr virus infection?
A. +Encephalitis.
B. +Pneumonia.
C. -Baby infection during pregnancy.
D. -Carcinoma of the genital tract.
E. -Infertility.
F. -Pneumonitis and coagulopathy in newborn.
G. -Renal impairment.
H. -Violation of liver function.
I. -No complications.

**Question 11. Give the characteristic of the immunity, which is formed after Epstein-Barr virus infection?**

A. +Humoral, cellular, type specific, long-life.
B. +No autoimmunity.
C. -Local, non-specific, short, cellular.
D. -General, group-specific, cellular.
E. -Local and general, humoral, non-protective.
F. -Type-specific, non-protective.

**Question 12. What materials are taken for serological laboratory investigation of Epstein-Barr virus infection?**

A. +Blood.
B. -Material from uterine.
C. -Biopsy from kidneys.
D. -Urine.
E. -Liquor.
F. -Nasopharyngeal secretion.
G. -Sperm.
H. -Autopsy material.
I. -Feces.
J. -Arthropods.
K. -Saliva.

**Question 13. What are the serological tests for diagnosis of Epstein-Barr virus infection?**

A. +ELISA.
B. -NT.
C. -HAIT.
D. -IFT.
E. -AT.

**Question 14. Specify the serological markers that can be used in the diagnosis of infectious mononucleosis.**

A. +Serological tests for antibodies specific for Epstein-Barr virus (EBV) antigens are frequently used to define infection status and for the differential diagnosis of other pathogens responsible for mononucleosis syndrome.
B. +Using only three parameters (viral capsid antigen (VCA) IgG, VCA IgM and EBV nuclear antigen (EBNA)-1 IgG), it is normally possible to distinguish acute from past infection.

C. -Using only three parameters (viral capsid antigen (VCA) IgE, VCA IgM and EBV nuclear antigen (EBNA)-1 IgA), it is normally possible to distinguish acute from past infection.

D. -The presence of any antibody against the nucleic acid of the virus.

**Question 15.** The results of laboratory tests of patient with suspected infectious mononucleosis are: the presence of VCA IgM and VCA IgG without EBNA-1 IgG. **What diagnosis is confirmed by these results?**

A. +Indicates acute infection.
B. -Is typical of past infection.

**Question 16.** To detect EBV DNA in various biological samples of the examined individuals (blood serum, saliva, liquor, smears from the mucosa of the oropharynx and urogenital tract, peripheral leukocytes garlic blood) most current widely used method is:

A. +PCR.
B. -NT.
C. -CFT.
D. -PHAT.
E. -IFT.

**Question 17.** Detection of which indicators confirms active EBV-infection:

A. +Detection of EBV DNA in the blood plasma.
B. +VCA IgM and VCA IgG without EBNA-1 IgG.
C. -VCA IgG and EBNA-1 IgG without VCA IgM.

**Question 18.** What indicators confirms the multiplication of the EBV in the nervous system?

A. +Detection of EBV DNA in the cerebrospinal fluid.
B. -Detection of EBV DNA in the blood plasma.
C. -VCA IgG and EBNA-1 IgG without VCA IgM.

**Question 19.** When can anti-EA IgG be detected in a patient's blood with suspected EBV-infection?

A. +Anti-EA IgG can be detected in the blood of patients in the first week of the disease, and the maximum values of their concentration - at the 2-4th week.
B. -Anti-EA IgG can be detected in the blood of patients in the 2-4 weeks of the disease, and the maximum values of their concentration – after recover.
C. -Anti-EA IgG can only be detected in the blood of patients during the incubation period.

**Question 20.** What is the specific prophylaxis of Epstein-Barr virus infection?

A. +Specific prophylaxis is not carried out.
B. -Live vaccine.
C. Groups at risk.
D. Gamma-globulins.
E. Vaccination at the beginning of the epidemic season.
F. Live vaccines or subunits.
G. Vaccination by the immunization calendar.
H. All population.
I. Serum.

The tasks may include questions on the principles of serological reactions, which are used to diagnose a particular disease, the composition of preventive, therapeutic and diagnostic products.

In preparing for the exam, use the literature: a link to the list of recommended literature

List of literature http://hygiene.med.sumdu.edu.ua/en