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HIV INFECTION.
Opportunistic infections.

(manual for english – speaking students
of 5, 6 course of medical faculty)

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У навчальному посібнику розкриваються питання щодо сучасних уявлень етіології, патогенезу, класифікації, клінічних проявів, специфічної діагностики, лікування та профілактики ВІЛ-інфекції. Навчальний посібник для англомовних студентів 5, 6 курсів медичних факультетів.

In the manual reveals issues of modern concepts of etiology, pathogenesis, classification, clinical manifestations, specific diagnosis, treatment and prevention of HIV. The manual for English students of 5, 6 courses of medical faculty.

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CONTENT

List of abbreviations

ABC	abacavir
AIDS	acquired Immune Deficiency Syndrome
AI	integrase inhibitors
ALT	alanine aminotransferase
ART	antiretroviral therapy
AST	aspartate aminotransferase
ATV	atazanavir
AZT	zidovudine
CD 4	CD 4 cells
CD 8	CD 8 cells
CMV	cytomegalovirus
CNS	central nervous system
DNA	deoxyribonuclease
DRV	darunavir
d4T	stavudine
ddI	didanosine
EFV	efavirenz
FPV	fosamprenavir
ETR	etravirine
FTC	emtritsitabin
HBV	viral hepatitis B
HCV	viral hepatitis C
HIV	human immunodeficiency virus
IFA	linked immunosorbent assay
IL	interleukin
IDUs	injecting drug users
LPV	lopinavir
NFV	nelfinavir

NK	normal killer cells
NRTIs	nucleoside reverse transcriptase inhibitors
NNRTIs	non-nucleoside reverse transcriptase inhibitors
NVP	nevirapine
PCP	Pneumocystis pneumonia
PCR	polymerase chain reaction
PEP	post-exposure prophylaxis
PGL	persistent generalized lymphadenopathy
PI	protease inhibitors
RAL	integrase inhibitor raltegravir
RNA	ribonuclease
RTV	pitonavir
rtv	ritonavir
SMZ	sulfamethoxazole
SQV	saquinavir
TB	tuberculosis
TDF	tenofovir
Th	T-helper cells
TMP	trimethoprim
ZTS	lamivudine
γ-IFN	gamma interferon

HIV-anthroponotic progressive disease characterized by specific damage to the nervous and immune systems.

The motivation for the study of the topic.

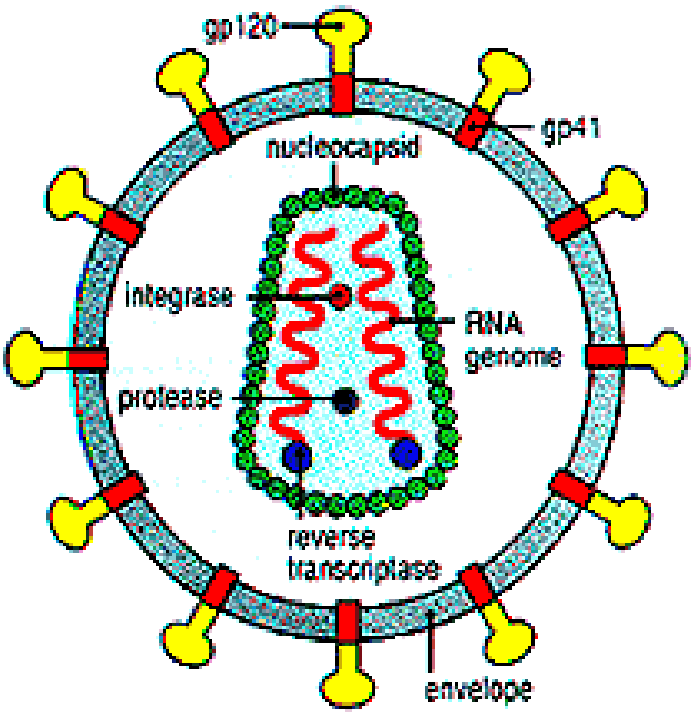
It is unlikely that in the world there is now a pathology that attracts so much attention, such as HIV infection. Particularly acute problem not only gives that suffer mostly young people are the most active life -, social, sexual, and that while each contracting HIV doomed. The prevalence of HIV - infection in Ukraine – 283,6 per 100 thousand. Population, had more than 24 thousand. HIV - infected persons has reached the final stage of the disease - AIDS. AIDS prevalence rate is 52,9 per 100 thousand. Population (order the Cabinet of Ministers № 356-p from 13.05.2013). Although most active work of scientists of all countries is only possible to achieve that the use of antiretroviral drugs prolong the life of patients. Treatment of AIDS patients require huge material costs (treatment of one patient costs the state a year near 20,5 thousand dollars), which is a heavy burden on the budget of any country.

Etiology.

HIV infection is caused by the human immunodeficiency virus (HIV), which is genetically and antigenically heterogeneous: HIV1 and HIV2. HIV1 first isolated in 1983, HIV 2-1985 year.

HIV belongs to the family of retroviruses (Retroviridae), subfamily lentivirus-slow infections (Lentiviridae). The name of the retroviruses have received because of the peculiarities of its development: in their life cycle has a stage where genetic information is transferred in a direction opposite to that which is considered normal.

Mature virions of HIV - a spherical particle diameter of about 100 nm, consisting of a core and shell (picture 1). Each RNA molecule comprises nine genes (three structural and six regulatory genes). The structural genes include gag, env, pol.



Picture 1. Model of human immunodeficiency virus.

Gag gene encodes the internal formation of proteins (p 17/18, p 24/26, p 55/56). HIV1 and HIV2 differ in molecular weight internal proteins. Thus, HIV-1 comprises a series 24, HIV-2 - p 26. In the early stages of the disease there is an antibody to p24 and p 26.

HIV env gene encodes the viral envelope protein (gp 120/105, gp 41/36). Thus, HIV-1 gp120 contains, and HIV 2 - gr105 which in the form of pins protrude above the surface of cells, gp41 of HIV-1 and HIV-2 gr36 like rod immersed into the membrane. Through this glycoprotein complex virus can attach and enter a cell having CD4-receptors. Depending on the structure of the env gene was isolated 10 subtypes of HIV-1, designated by letters (A-J). In different regions of the world these subtypes are distinguished with different frequency. For example in Central Africa increasingly finding subtypes A, D, H; South-East Asia - B, E, G.

The pol gene encodes three enzymes: protease, reverse transcriptase, an endonuclease. Reverse transcriptase, using viral RNA as a template, carries out the synthesis of viral DNA. Endonuclease produces insertion of viral DNA into the

host cell genome. Retroviruses are harmful to cells, as incorporated into the chromosome of the cell, acquiring the status of the cellular genome.

In addition to structural genes are regulatory: tat, rev, nef, vpr, vit, vpu. The first three of them provide for control of viral replication, they are identical for HIV1 and HIV2.

From laboratory animals susceptible to HIV only chimpanzees.

The virus is unstable in the environment. When boiling virus dies within 1-5 minutes at a pasteurization - 30 minutes. 96 ° alcohol kills the virus after 1 minute. Quick die under the action of bleach, 3% hydrogen peroxide solution (3-5 minutes). Resistant to ultraviolet light, ionizing radiation, and frozen at -70 ° C. There is evidence of possible pathogens remain in the environment for a few days in the dried state, especially in blood and semen.

Epidemiology.

HIV-1 is found everywhere, HIV-2 infection is spread mainly in the countries of West Africa.

The source of HIV infection - persons: the patient or a virus carrier. The human immunodeficiency virus is found in all body fluids: blood, lymph, vaginal secretions, saliva, tears, sweat gland secretions, breast milk, semen, menstualnyh secretions, cerebrospinal fluid, urine, bronchial fluid. For the concentration of the virus infection is important. Enough for a virus infection share are blood, semen, vaginal secretions. An important factor influencing the infectious stage of the disease is. The infected person blood contains a high dose of the virus in the early stage and the stage of AIDS.

There are natural and artificial mechanisms of transmission. The natural mechanisms of transmission is sexual and vertical. More dangerous is the homosexual. If a homosexual, HIV-infected patients, has contact with 10 women can infect only 2. If he has a relationship with 10 passive homosexuals, it infects everyone. The mucosa of the rectum is more sensitive and easily injured, and a homosexual act more traumatic, besides, chromaffin cells of the rectum are receptors CD4, which focused on the gp-120. Simultaneously with this, passive homosexuals always reduced immunity (to relax the sphincter they use drugs, which suppress the immune system, in addition to the sperm of the male body, introduced per rectum, it has an immunosuppressive effect). When heterosexual greater risk of infection in women, due to a high concentration of the virus in the semen.

Vertical mechanism of infection - from an infected mother to unborn child virus is transmitted in different ways: transplatsent, ascending path, intrapartum. It is proved that an infected mother, not receiving antiretroviral therapy in 50% of cases can give birth to an infected child. Pregnant women are tested for HIV on voluntary consent. All HIV-infected pregnant women are prescribed antiretroviral therapy for HIV infection in women, and the maximum viral suppression to reduce the risk of perinatal HIV transmission. The risk of fetal infection with significantly

reduced (20%) (Order of the Ministry of Health Ukraine № 551 - 12. 07. 2010) «On approval of the clinical protocol antiretroviral treatment of HIV infection in adults and adolescents».

A child can become infected through breastfeeding, since breast milk contains the virus infected woman.

Cases of infection from women infected infants through breastfeeding, when the transmission factor was the blood of the damage in the mouth of the child, and the entrance gate - cracks peripapillary region in the mother.

Artificial (the artificial) transmission mechanism is possible:

• transfusion of blood and blood components containing HIV, the danger may be asymptomatic carriers of HIV donor: 250 ml of blood taken from such carriers contain 15,000 copies of the infecting dose of the virus;

• For parenteral manipulations if they are produced without changing the syringes and even more so - the needle (a special risk are therefore of injecting drug users). In most countries of Asia and Europe, spreading the infection is injecting drug users;

• in the transplantation of infected organs.

Susceptibility to HIV-general.

Pathogenesis.

HIV can penetrate only in those cells which have receptors thereto. The receptor is a complex antigen CD4. This receptor has a CD4 antigen on helper membranes, macrophages, monocytes, glial cells and other cells. Therefore, the virus can infect macrophages, oligodendroglial cells and astrocytes of the brain, thymus, bone marrow, endothelial cells of blood vessels, lymph nodes, macrophages, alveolar (lung), Langerhans cells (skin), cervical cells, chromaffin cells and other cells of the intestine. When HIV-1 is close to the cells having the CD4 receptor, coat protein gp-120 binds to CD4. As a result of exposing the viral transmembrane protein gp-41, one end of which is embedded in the cell membrane of the affected cells, resulting in cell membrane fusion and virus.

Virus penetrating the cell behaves differently depending on the type of the affected cells and its level of activity. In macrophages, monocytes their predecessors, the virus multiplies continuously but slowly, without killing the cell and affecting its operation. As a result of the direct action of HIV on their macrophages reduced chemotaxis and bactericidal activity deteriorates antigen presentation of T and B cells. Due to the fact that monocytes and macrophages do not die after infection with HIV - they are the major reservoir of the virus, and transferred conservation virus in different organs, especially the brain.

With the penetration of HIV into the CNS (central nervous system) it affects nerve cells and glial cells. The virus has a direct cytopathic effect on infected cells they nervous system, affects the endothelial cells of the vascular plexus and ependyma of the ventricles of the brain to the development of virus-induced vasculitis, reduces the production of neuropeptides - epiphyseal hormone-hypothalamic complex. Not less than 5% of HIV-infected patients die from HIV dementia before the development of immunodeficiency. The autopsy of patients who died from HIV infection, only in the National Assembly, in contrast to all other internal organs, morphological features are specific to the disease. All changes in all internal organs, except for the National Assembly, both macro and microscopic, caused either by opportunistic infections or a developed tumors.

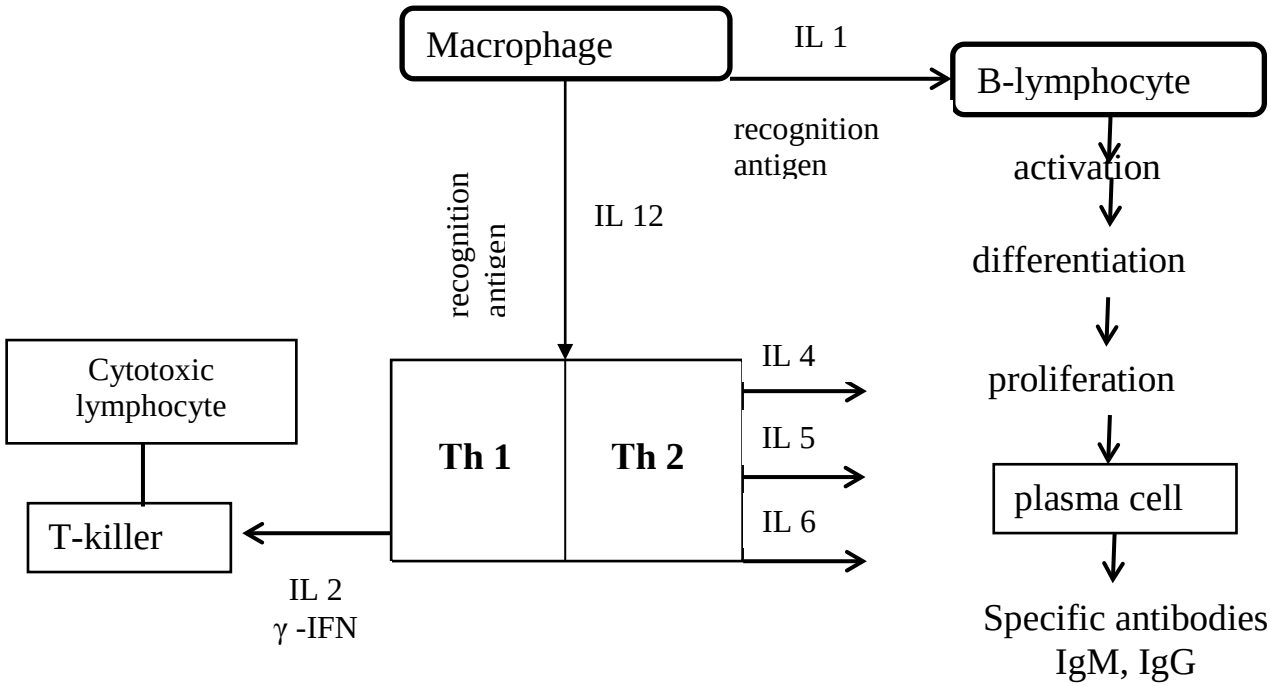
Most receptors are CD4 T-helper cells (Th). Virus hitting the T helper under the action of proteases cytoplasmatic undressing point by proteolysis. Virus is released from the core of the viral RNA. Then, thanks to the reverse transcriptase is a sequential synthesis of single-stranded RNA virus, then the synthesis of the second DNA strand, thereby forming a double-stranded DNA, so a DNA code. DNA code is introduced into the genome of the helper is integrated into the chromosomal DNA helpers and in this form the provirus will play together with their own genes lymphocyte by dividing it and passed to the next generation of lymphocytes. An integration and stage of HIV provirus in the genome of the infected cell, like other pathogens of slow viral infections, will persist for a long time without causing clinical symptoms of the disease until it is activated the cell.

The system consists of nonspecific immunity and specific. For natural protection include normal killer cells (NK), macrophages, interferon.

Targeted struggle with a particular antigen-specific immunity factors carry: cytotoxic lymphocytes (activated T-killers), specific antibodies. With the penetration of any antigen (virus, bacteria) into the human macrophages capture the antigen, process it into fragments and present their T and B cells. T-helper cells have two subpopulations: Th 1 and Th 2.

Th type 1 is responsible for a specific cellular immune response. When activated, they produce IL(interleukin) -2 and gamma interferon (γ-IFN) which activate the activity of CD8 lymphocytes recognize and destroy infected cells.

Th type 2responsible for the production of antigen-specific antibodies. Type Th 2 secrete interleukins, under the action of B-lymphocytes that undergo activation, differentiation, proliferation, and only then will the plasma cells producing antibodies specific to antigens, which are currently infiltrated into the human body (schema 1).



Schema 1. Scheme immune response

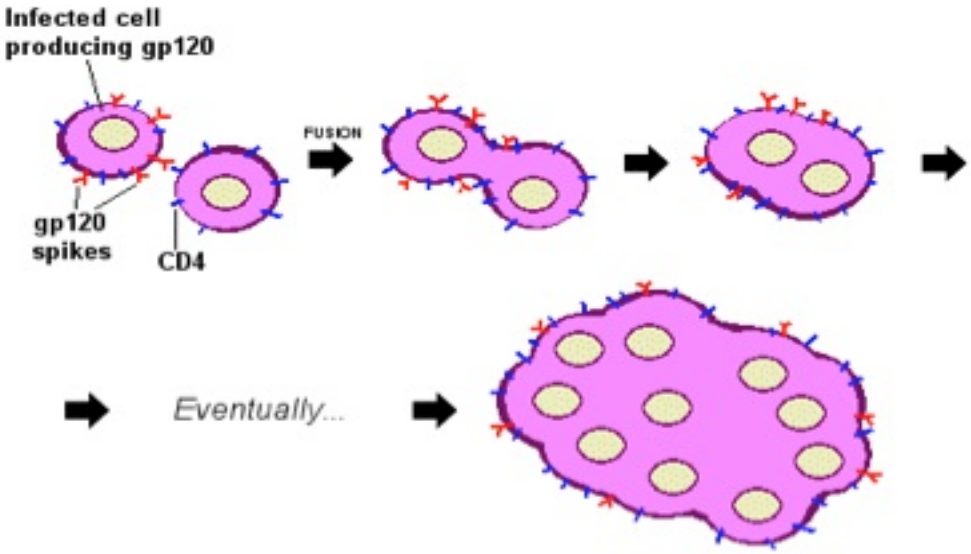
In healthy humans a strictly definite correlation between the number of CD4 lymphocytes and CD8 lymphocytes. The index of CD4 + / CD8 + is 1,5-1,7. When HIV decrease of the index.

Immune deficiency in HIV infection is developed firstly as a result of activation of the provirus. When activated, the infected helper should provirus activation. The active cell is the reversion of viral DNA and RNA synthesis begins RNA copies. This process largely determines the viral protease. The more actively infected helper functions, the more it is the reproduction of the virus. Activating factors can be different antigens, cytokines, and other factors transactivator. The process of viral replication can occur rapidly: 5 minutes in one infected helper can be formed up to 5 thousand virus particles. During the day, it can be configured to 1 billion viral particles. The replication of the virus and is accompanied by significant loss of infected helper. This process, also called apoptosis, one of the main phenomena cytopathic effect of HIV. From a person turns into a virus carrier patients with HIV infection.

Active viral replication contributes to the accumulation of a large number of mutant variants which, in turn, helps the pathogen evade from the immune surveillance. HIV has an increased ability to mutate, as it has no special adjustment mechanisms of genetic errors.

Activation of the virus can go and under the influence of gene «tat». Gene «tat» have cytomegalovirus, hepatitis B virus and the gene is always «tat», such as cytomegalovirus, can wake gene «tat» HIV and vice versa, the gene «tat» HIV activates gene «tat» cytomegalovirus. Gene «tat», thus a transactivator, it enhances HIV replication.

The second reason is the formation of syncytium immunodeficiency (schema 2).



Schema 2. Syncytium formation.

Syncytium - a set of helper cores enclosed in a cell membrane. Cells infected with HIV-1, are characterized by the membrane not only CD4, and gp120. And one affected by HIV helper, has the ability to take over, as if to capture hundreds of healthy helper. Syncytia functionally active interleukin and produces no viable. It should be noted that the virus isolated from a patient with HIV virus carrier and is characterized by sintsitioobrazuyuschey activity. In virus carrier virus has a weak syncytia forming activity, the patient - strong syncytia forming activity.

A third cause of immunodeficiency may be the development of autoimmune reactions and death resulting from these reactions helper cells and other cells having CD4 receptors.

The next reason. During viremia in blood includes both complete virus particles and virus fragments, including gp120, which circulates in the blood separately, it binds to the receptor CD4 helper. Helper on the hulls have envelope antigens of the virus, it becomes alien target, which directed the forces of both cellular and humoral immunity. Killers tend to kill the modified helper, considering him a stranger. Antibodies to gp120 also tend to the death of the Helper. In addition, the helper whose receptors are involved (CD4 + gp120) can not participate in the normal immune response, but the cell remains uninfected.

Patients in the acute phase of HIV infection index of CD4 / CD8 is reduced by increasing the number of CD8 lymphocytes, although the CD4 cell counts did not change. It is believed that CD8 lymphocytes prevent replication of HIV infection and prolonged without clinical manifestations owes CD8 lymphocytes, ie, long latency period may be due to a HIV-specific cytotoxic lymphocytes which suppress viral replication.

Due to the depletion of the population of their reduced number of helpers. In AIDS index CD4 / CD8 is reduced to 0,5 or less. Reducing the number and functional activity of the immune system T is a risk factor for cancer and opportunistic infections.

In HIV-infected patients is gradually increasing the number of gamma globulin. Hypergammaglobulinemia - a sign of polyclonal activation of B-lymphocytes (gp120-nonspecific mitogen). In patients with HIV infection poyavlyaetcya large amounts of antibodies to non-existent at present antigens. They all belong to the immunoglobulin G, then there are antibodies to pathogens, which previously met the patient. Hyperproduction antibodies spontaneous, unregulated leads to the depletion of the immune system.

Antibody formation, especially during AIDS-related complex, to novel antigens and impaired terminally offline. Tx 2 broken production of interleukins

(IL-4, IL-5, IL-6) and as a result, plasma cells do not synthesize specific immunoglobulins.

Dysfunction of the immune system is a prerequisite for the development of B-cell lymphoma. The patient defenseless and dies by opportunistic infections. Thus, leading to the pathogenesis of HIV is the defeat of the immune system with the development of acquired secondary immune deficiency

Clinical characteristics.

The incubation period lasts from 2-4 weeks to 2-3 months, and according to some longer. During this period of time it can be detected only by the virus, an antigen or genetic material of the virus. The incubation period ends seroconversion, ie the appearance of antibodies and some patients - the first clinical manifestations.

It proposed several clinical classifications. According to the WHO international classification developed in 1987 and supplemented in 1989, in the clinic of HIV infection can be identified stages: the acute stage, persistent generalized lymphadenopathy (PGL), AIDS-related complex and AIDS.

Currently, most countries adhere to the classification adopted in 1993 by the Center for Disease Control (CDC, USA), which provides correlation of clinical and immunological parameters. This classification includes three clinical categories A, B, C, and three categories of content of T-helpers (table 1).

Table 1

Classification of stages of HIV infection and expanded definition of AIDS cases in adults and adolescents

Number (%) CD4-T-lymphocytes 1 mkl	Clinical category		
	A Asymptomatic acute (primary) or PGL	B manifest not A not B	C AIDS-defining illness
1.> 500 (> 29 %)	A1	B1	C I *
2. 200-499 (14—28 %)	A2	B2	C2*
3. < 200 (<14 %) — AIDS Indicator	A3*	B3*	C3*

* — category A3, B3, C I , C2, C3 are crucial for AIDS.

Category A.

This category includes asymptomatic HIV infection (primary and secondary period of latency), acute stage of HIV infection and persistent generalized lymphadenopathy (PGL).

The clinical manifestations of acute HIV infection often have specific and they are polymorphic. There are:

1. Syndrome lesions of the upper respiratory tract and lungs. Fever may be moderate or high, held from 2 to 6 weeks. The degree of intoxication corresponds fever. Patients complain of cough (dry or with phlegm), runny nose, pain in the chest. Clinic pharyngitis, tonsillitis, or pneumonia. Available kore- or krasnuhopodobnaya rash, lymphadenopathy, and thrombocytopenia skoroprohodyaschaya. Antibiotic therapy is ineffective in this case.

2. Syndrome lesions of the gastrointestinal tract characterized by diarrhea disorders. Patients complain of loss of appetite, nausea, vomiting, diarrhea with mucus, undigested. Stool frequency ranges from 2-3 to 10-15 days. The duration of 3 days to three weeks.

3. Syndrome nervous system. Clinic of acute serous meningitis, meningoencephalitis, possibly isolated lesions of the cranial nerves. The patient recovers in 2-3 weeks

4. lymphadenopathy syndrome. The clinic resembles infectious mononucleosis: undulating fever, tonsillitis, swollen lymph nodes, liver and spleen. The young blood lymphocytes form that takes an inexperienced technician for atypical mononuclear cells.

5. Syndrome thrombocytopenia. Against the background of subfebrile temperature of patients complain of weakness, bleeding gums, gratuitous appearance of "bruises". In the blood - a decrease of platelets.

Most patients can be a combination of several features characteristic of each of the above syndromes.

After some time, all of the clinical manifestations of the acute period of the disease subside, and proceeds to the next phase - the second-latency. The duration of this step for 2 years, sometimes up to 10 years. At this time, patients feel quite well.

Then comes the next phase - persistent generalized lymphadenopathy. Swollen lymph nodes, most often located in the anterior and posterior cervical chains, submandibular, over-and subclavian, axillary, mesenteric, bronchopulmonary, the temperature can rise to frequent night sweats. For the diagnosis of this form is necessary to increase the 2 groups of lymph nodes (excluding inguinal) in diameter larger than 1 cm in the period of 3 months or more. The consistency of the lymph nodes may be different. They can be benign (focal hyperplasia of follicles), black (instead of the lymph nodes - the connective tissue), painless, not soldered to surrounding tissues. It can be increased by the

liver and spleen. The duration of this step depends on the absolute number of CD4-lymphocytes.

The content of T-helper cells in patients in this category is equal to or more than 500 cell microliter, helper-suppressor index is lowered due to the increase of CD8 lymphocytes. The majority of patients in the blood appear antibodies to HIV, however, 10% of patients antibodies appear later, after 3-6 months, and 1% - at a later date.

Categories B according to AIDS-related complex. The most important stage of this syndrome are:

localized lesion of the skin and mucous membranes of viral, bacterial, fungal origin. Joining of herpes viruses type 1 and 2 accompanied by painful eruptions in the skin, mucous membranes in the genital organs, the anus.

Relapses of shingles often result in atrophy and scarring of the skin, there are extensive ulceration complicated by a bacterial infection.

There may be pointed kandilomy localization often in the genital area.

Hairy leukoplakia language (language overlay appear white, reminiscent of the hair is a horny epithelium, which can not be removed)

Characteristic vaginal candidiasis more than 1 month, is not amenable to treatment.

Streptodermia.

The lack of generalization of the process - the main difference between this stage of AIDS;

In patients younger than 60 years of developing localized Kaposi's sarcoma (a tumor vascular endothelium of blood vessels). The first elements of Kaposi's sarcoma appear on the skin of the eyelids, cheek, skin, ears, on the back of the foot, first in the form of a pale pink spots up to 3 cm. Then, the spot darkens, becomes purple-crimson, brown and bluish tint increases in size and appears on the skin. Items can coalesce to ulcerate.

Peripheral neuropathy is caused by HIV lesions of the spinal cord (progressive a vakulyar myelopathy).

The defeat of the internal organs of bacterial, viral, protozoal etiology is localized, without dissemination. Most observed bacterial pneumonia caused by streptococcus, staphylococcus, Klebsiella, Pseudomonas aeruginosa, etc. Pulmonary tuberculosis.

Cervical dysplasia.

Patients in this category, the number of T-helper cells in the blood serum ranges from 499-200 cell microliters. Helper-suppressor index decreased due to a decrease in CD4 lymphocytes.

Categories C or directly characterized by severe immunodeficiency of AIDS when the number of T-helper cells in the blood serum of less than 200 cells in L, in the terminal phase - about 50 ul to cells. Regardless of the number of CD4 lymphocytes, the presence of the AIDS clinic also makes it possible to diagnose AIDS.

For AIDS is characterized by a generalization of the process caused by fungi, protozoa, viruses, bacteria. Joining opportunistic infections caused by opportunistic pathogens, infection that a person with a well-functioning immune system is not capable of causing disease or infectious process is easy.

Pneumocystis pneumonia (PCP) in AIDS is the leading cause of death. Pathogen - Yeast fungus Pneumocystis jiroveci (formerly carini).

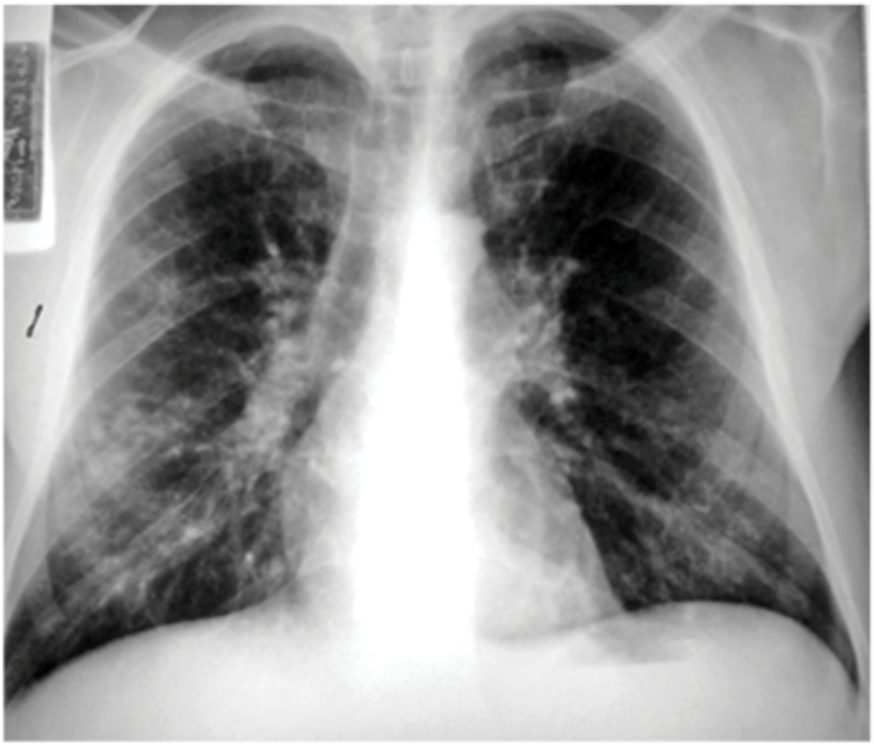
The source of infection - a sick person or vehicle.

The route of transmission - airborne. More than half of people (72%) are infected, but with a good immune response, the disease does not develop, while anergy is seemingly "harmless disease" often ends in death.

The first stage of the disease characterized by the development of alveolitis. As a result of thickening of the alveolar membrane (membrane thickness

sometimes 10 times normal) develops the alveolar-capillary unit, which leads to disruption of the development of gas exchange and severe respiratory failure.

At the beginning of the AIDS PCP little noticeable prodromal period is extended until about 3 weeks. Fever may not be high, but there is shortness of breath (the number of breaths over 30 min.), Cyanosis. Guards at the severity of the scant local data (auscultation - dry wheezing on chest radiograph - increased pulmonary pattern). Then there is unproductive cough with discharge of the so-called "milk" sputum (frothy, dense). X-ray examination carried out on 3-4 week of illness, you can see the wire-mesh pattern, gain root infiltration, a symptom of "matte" shadow areas balloon emphysema, we see light as if through a veil (picture 2). Patients die from severe respiratory failure.



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Picture 2. Patient with pneumocystis pneumonia

The diagnosis is confirmed by detection of Pneumocystis in bronchial secretions obtained during bronchoscopy.

Prevention is important in patients with AIDS. By reducing the content of CD4-lymphocytes less than 200 cells in 1 mkl appointed trimethoprim-sulfamethoxazole (480 mg) two tablets daily.

In the case of PCP in AIDS patients the gold standard of treatment is considered the appointment of trimethoprim-sulfamethoxazole (Biseptol, Bactrim, Septra). In severe or moderate during the drug is administered intravenously (5-6 ampoules three times a day). After stabilization of the patient is applied in a dose of 1820 mg (four tablets of 480 mg) orally. Duration of treatment 21 days. In mild cases, treatment may be administered orally once (Order of the Ministry of Health Ukraine № 182 - 13.04.2007).

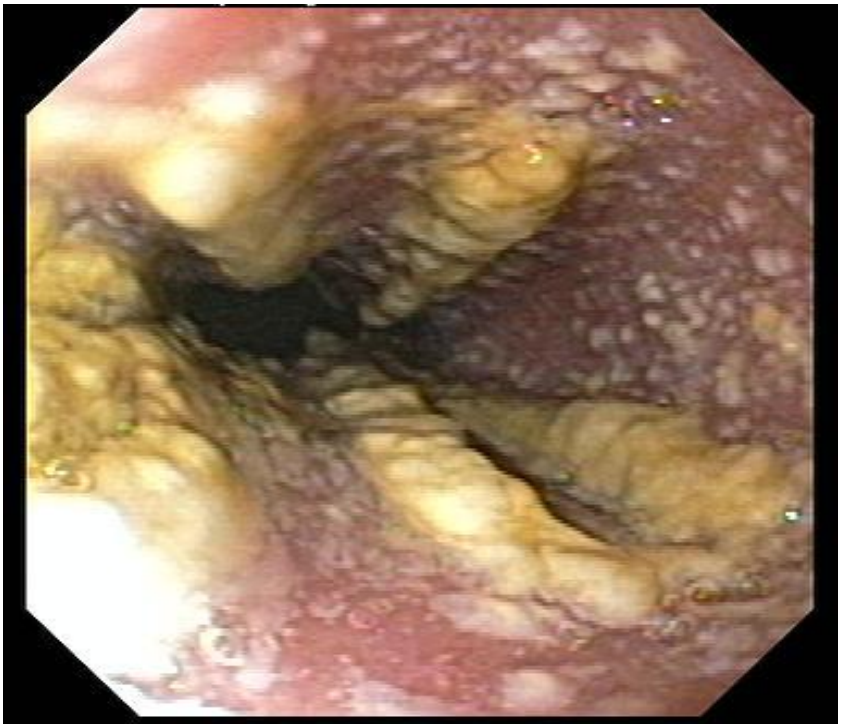
Candidiasis - a disease caused by the fungus Candida albicans and Candida tropicalis.

Candida fungi are widespread in nature: they Detect-alive on the skin and mucous membranes of humans and animals, for objects of the environment, food, air, and so on.

Candidiasis in immunocompetent organism is most often seen in the form of carrier, oral lesions - thrush. Perhaps the development of candidiasis of the colon, often manifested clinic ulcerative colitis with abdominal pain, unstable stool, admixture of pus and blood in the stool. Fungus infestation of the vagina leads to the development of vulvovaginal candidiasis, in which the characteristic of the film formed on the mucosa of the female genital organs.

AIDS develops visceral candidiasis with lesions of the esophagus, bronchi, trachea and lungs.

For esophageal candidiasis characterized by dysphagia, burning sensation and pain in the chest, are often vomiting, fever. The vomit sometimes found cheesy film, maybe take blood. When fibrogastroscopy can be found in various sizes small whitish plaque located on the edematous and erythematous mucosa of the esophagus (picture 3).



Picture 3. Fibrogastroscopy - esophageal candidiasis.

With the defeat of the bronchi and trachea there are infringements of ob constructively type: difficulty breathing, shortness of breath with exertion, spasmodic cough with scanty sputum.

If it affects the lung tissue Clinic reminds bakterial pneumonia: a cough, chest pain when breathing. First, there is a cough with scanty sputum, and then abundant. Sputum has a grayish color, with severe course in it an admixture of blood. Depending on the severity of the process temperature is low-grade or high.

The most reliable method of diagnosis is the detection of fungi in the material from the mucous membranes of the blood and other body fluids and isolation of pure culture.

For the treatment of esophageal candidiasis in AIDS patients using 400 mg of fluconazole and after the disappearance of pain 1 200 mg once a day orally or intravenously during 14-21 days, or ketoconazole 200 mg 2 times a day, orally for 21 days.

For treatment of vaginal candidiasis used 100mg fluconazole once orally or 500 mg dose of clotrimazole vaginally.

For the treatment of systemic candidiasis administered fluconazole 600 mg, at normal temperature - 400 mg 1 time per day intravenously, 2-3 weeks, or 0,6-0,8 mg/kg amphotericin B 1 time a day for 2-3 weeks intravenously (Order of the Ministry of Health Ukraine № 182 - 13.04.2007.)

Cryptococcosis - a disease caused by a ubiquitous fungus Cryptococcus neoformans.

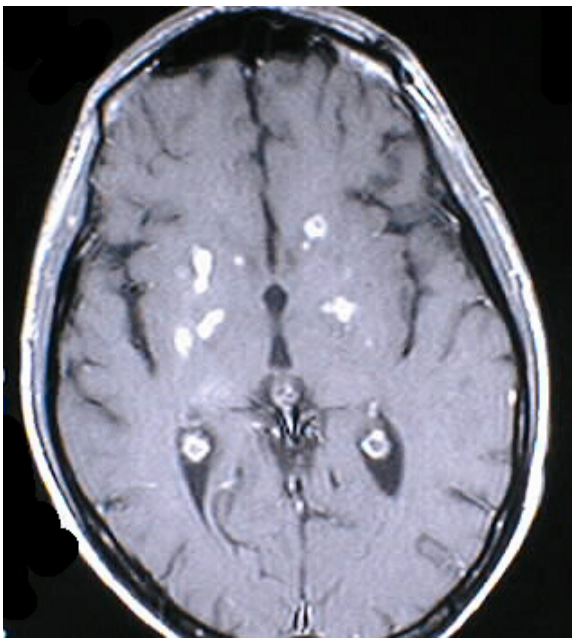
Cryptococcus can be detected in the soil at various foods on vegetables. Most infection occurs environment with droppings of pigeons, in which Cryptococcus multiply in large numbers. Human infection occurs primarily by inhalation of dust particles containing Cryptococcus.

In immunocompetent patients Cryptococcus disease does not cause or is not manifested pronounced phenomena of bronchitis.

For AIDS is characterized by extrapulmonary cryptococcosis. Most often when extrapulmonary cryptococcosis of the CNS is affected. The disease may develop acute: against fever and other general toxic effects (weakness, malaise, decreased performance) a headache in conjunction with meningeal signs; further developing impaired consciousness, coma is possible.

However, most CNS appears gradually: weakness, decreased performance, some patients may be a progressive loss of memory, intellect, and even mental disorders. Later usually develops meningoencephalitis, against which there are focal neurological disorders; possible convulsions. When meningitis in 95% of cases of cryptococcal antigen is detected in the cerebrospinal fluid.

CNS AIDS is often combined with lesions and dysfunction of other organs and systems, developing on the background of the process of generalization (disseminated infection).



Picture 4. Cryptococcosis of brain.

The diagnosis of disseminated process based on expeirmen- fungi in blood, urine, cerebrospinal fluid, as well as in biopsies of affected organs (if possible biopsy).

The importance of prevention is cryptococcosis. By reducing the content of CD4 lymphocytes <50 / mkl fluconazole assigned 100-200 mg per day.

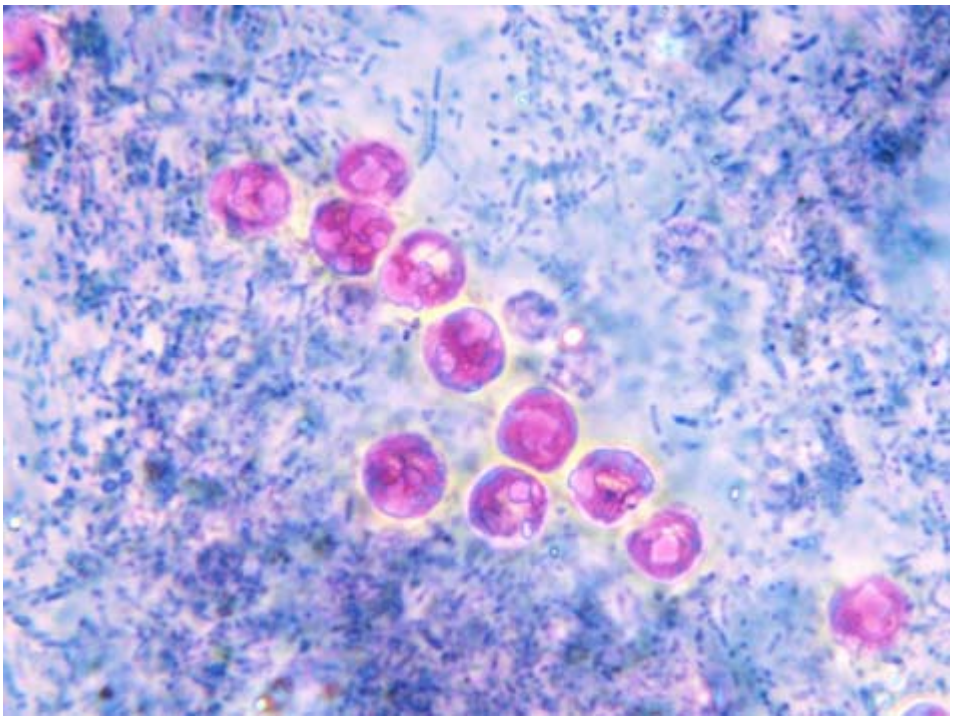
With the development of cryptococcosis in patients with AIDS is assigned, despite the high toxicity of amphotericin B 1,0 mg / kg one time a day in combination with intravenous 5-flucytosine 25 mg / kg four times a day intravenously 14 days; Further fluconazole 400 mg 1 time per day orally for at least 10 weeks, followed by one 200 mg fluconazole once daily orally long (Order of the Ministry of Health Ukraine № 182 - 13.04.2007.)

Cryptosporidiosis - protozoal infection caused by an intracellular parasite Cryptosporidium. The source of infection - the animals: patients and carriers. The mechanism of transmission - the fecal-oral.

Once in the human body, the oocysts safely pass through the stomach and into the small intestine of each oocyst leaves 4 sporozoites that invade epithelial cells and multiply rapidly. Kriptosporodii located inside intestinal epithelial cells at

the interface between the fibers and the cytoplasm. Villus atrophy, cell is not receiving power, violated all kinds of metabolism.

In immunocompetent individuals diarrhea lasts 3-5 days. Patients complain of fever, weakness, nausea, abdominal pain. The chair can be 5-15 times per day. The stools have a very bad smell. In the future, within 2-3 weeks can be released oocysts (picture 5).



Picture 5. Cryptosporidium, protozoa oocysts in a human Stool.

AIDS Clinic is characterized by long-term debilitating fever, diarrhea that can last months or even years, when the depletion dotigaet critical degrees, rapid weight loss. Chance of bronchopulmonary and cryptosporidiosis, when he smote the epithelium of the upper respiratory tract. Shortness of breath, cyanosis

Laboratory: Microscopy of the material (sputum, duodenal contents, feces). At coloring of Ziehl-Nilsson kriptosporodii visible.

For the treatment of cryptosporidiosis in AIDS patients administered paramomitsin 1,0 c 3 times a day in combination with azithromycin, 600 mg 1 time per day orally for 4 weeks; paramomitsin further 1.0 g 2 times a day orally to 8

weeks (Order of the Ministry of Health Ukraine № 182 - 13.04.2007.). Restores the loss of fluids and electrolytes.

Toxoplasmosis - protozoan diseases. Pathogen - Toxoplasma gondii. The source of infection - the animals, especially cats, are excreted in faeces of Toxoplasma oocysts. Oocysts for many months can survive in the soil of courtyards, gardens, sandboxes, etc. Intermediate hosts Toxoplasma may be man, animal, bird, but for others they are safe. Human infection is mainly fecal-oral mechanism:

- The ingestion of cysts contained in an insufficiently processed meat, especially pigs, rabbits;

- The ingestion of oocysts isolated cats with food, water, if contaminated hands in the care of cats.

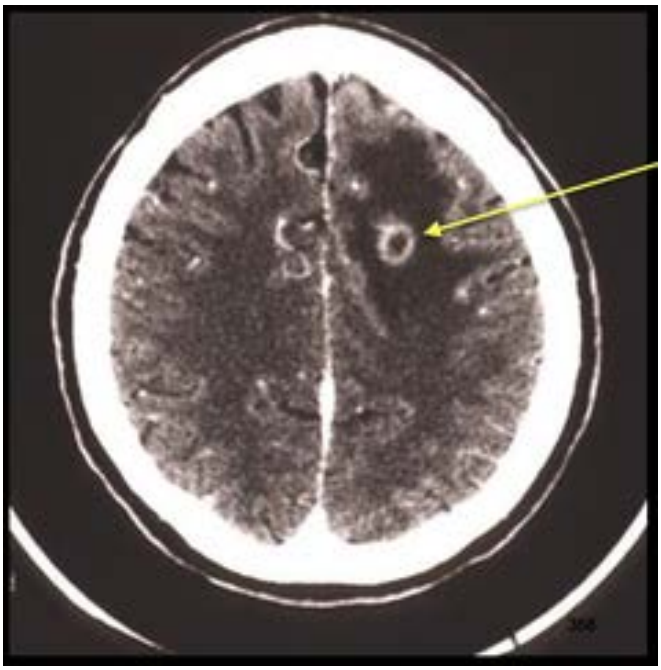
Infection possibly transplacentally.

Toxoplasma infection of people in different parts of the world ranging from 5% to 80% and it does not always lead to the disease. Clinical manifestations in immunocompetent individuals are highly polymorphic: lymphadenitis, nephritis, hepatitis, chorioretinitis and others. Toxoplasma can penetrate into the central nervous system, but there they remain for years in a dormant state.

AIDS develops disseminated toxoplasmosis with encephalitis symptoms, ocular, pulmonary infarction, liver and other organs. Symptoms in lesions of the brain is very colorful and depends on the localization process. Patients at high fever, persistent headache, weakness. Often there is hemiparesis, hemiplegia, aphasia, ataxia, tremor. Possible confusion. If it affects the spinal cord develops Toxoplasma transverse myelitis.

Toxoplasmosis encephalitis genesis confirms the detection of Toxoplasma in the cerebrospinal fluid. An important role in the diagnosis of encephalitis toxoplasmic play computed tomography and magnetic resonance imaging. Almost all patients revealed cerebral edema. Determined by the presence of contrast

enhancement of multiple necrotic lesions in the basal ganglia and white matter of the brain.



Picture 6. Cerebral toxoplasmosis.

In order to prevent toxoplasmosis in AIDS patients with a decrease in CD4 lymphocyte counts less than 100 cells / mkl prescribed trimethoprim - sulfamethoxazole (TMP – SMZ) 2 tablets each day.

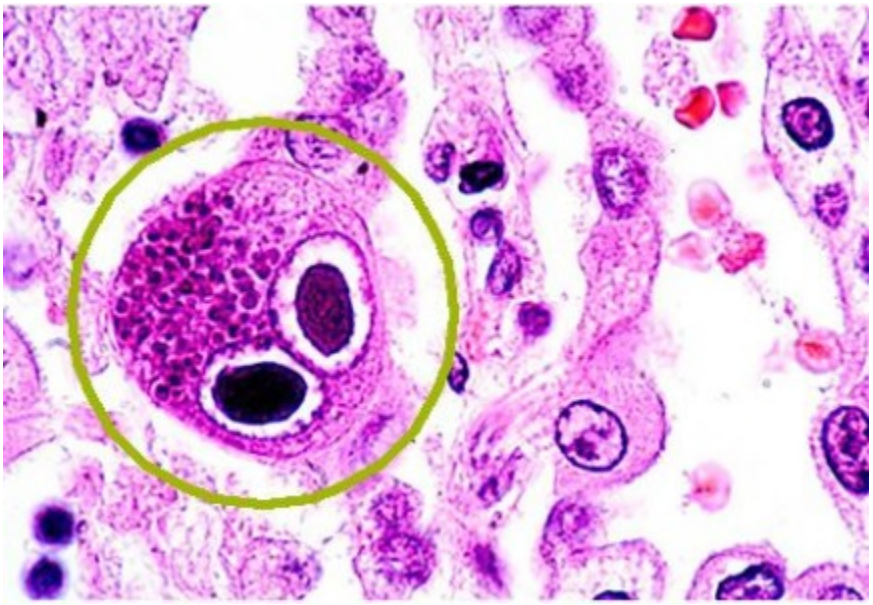
With the development of cerebral toxoplasmosis in AIDS patients administered 200 mg pyrimethamine once the first day, more pyrimethamine 25 mg three times daily or 50 mg twice a day in combination with leucovorin 15 mg once daily sulfadiazine and 1,0 grams orally every 6 hours 6- 8 weeks (Order of the Ministry of Health Ukraine № 182 - 13.04.2007.).

Of fundamental importance of viral infections are herpes and, above all, **cytomegalovirus** (CMV), which is diagnosed in 20-40% of HIV-infected people is the cause of death of one in five of them.

Pathogen CMV - herpes simplex virus type 5 are not sensitive to interferon. Besides the synthesis of interferon in a cell, if it penetrated cytomegalovirus

inhibited. CMV has the ability to persist in the body for life, besides CMV and HIV activate each other's action. Even possible exchange of genetic information and CMV HIV exist in one cell, which may be a consequence of the creation of mutant viruses.

The source of infection - the person. The virus is found in saliva, breast milk, urine, semen, vaginal secretions. The route of transmission - transplacental, contact, parenteral. Cytomegalovirus, penetrated into the cell, causing cell transformation cytomegalovirus. The cell becomes large in the center of her very large core «owl eyes» (picture 7). Such cells can be detected in any affected organ.



Picture 7. Cytomegalovirus, «owl eyes».

In most cases, infections are asymptomatic. In immunocompetent patients symptomatic forms occur mainly with mononucleosis syndrome.

AIDS has disseminated lesions of different organs (except for the liver, spleen and lymph nodes) of the lungs, digestive tract, central nervous system, eyes. In most cases, the disease develops unnoticed, gradually. At first, patients have fatigue, weakness, decreased appetite, and then the temperature starts to rise, there is sweating. The defeat of the respiratory tract is most often seen Clinic pneumonia (usually interstitial). Patients concerned about a cough, shortness of breath,

increasing as the disease progresses and the increasing hypoxia.

The defeat of the digestive tract can occur at any level - from the esophagus to the rectum. Patients on the background of fever, progressive depletion and often diarrhea, there are signs of esophagitis (difficulty in swallowing, pain when passing food through the esophagus, with esophagoscopy revealed erosion and even ulcers in the mucosa of the esophagus), gastritis, stomach ulcers, colitis (pain stomach, erosions and ulcers on the mucosal surface). Erosions and ulcers can cause bleeding and even perforation with the development peritonina. If it affects the intestines particularly fast growing progressive depletion.

With the defeat of the central nervous system develops encephalitis, becomes chronic and relatively quickly (within a few months or even weeks) leading to dementia.

In 20-25% of AIDS patients detected chorioretinitis-tion due to CMV infection (first damage is unilateral, then the other eye is affected). The process of the initial stages of proceed unnoticed, but progresses, it leads to blindness.

In order to prevent dissemination of CMV infection in AIDS patients with a decrease of less than 100 CD4- lymphocytes in 1 mkl of the need for primary prevention of ganciclovir.

In the presence of clinical CMV infection in AIDS patients using ganciclovir 5 mg / kg 2 times a day for 14-21 days, or 90 mg foscarnet / kg 2 times a day for 14 days (Order of the Ministry of Health Ukraine № 182 - 13.04.2007.)

Among the bacterial infections become more topical mycobacterioses tuberculosis.

Mycobacterioses can be caused by one of the 40 species of mycobacteria. Pathogenicity in humans have only some of them, particularly M. avium. The reservoir of M. avium are wild and domestic birds. Mycobacteria are found in nature in various environmental media (soil, water, etc.). Human infection can occur from contaminated water and food, aerosol inhalation of air containing mycobacteria, mycobacteria when hit on the damaged skin.

Mycobacteria, hitting the body immunocompetent patient, behave as saprophytes. By reducing some immunity mycobacteria (M. gordonae) are the cause of cervical lymphadenitis; other (M. chelonei) cause the formation of abscesses in the skin, non-severe pneumonia. M.avium, the most virulent, can cause severe pneumonia accompanied by severe sweating, fever, cough with phlegm, chest pain, and very similar to tuberculosis.

For AIDS is characterized by a generalization of the process with the defeat of not only the skin, lymph nodes, lungs, and other organs. Pronounced intoxication syndrome (prolonged debilitating fever, sweats, chills, weakness, fatigue), abdominal pain, diarrhea, hepatosplenomegaly, dramatic weight loss, anemia, leukopenia, thrombocytopenia.

Diagnosis is based on isolation of mycobacteria from blood, sputum, biopsies of lymph nodes. Sowing is carried out for special protection - Lowenstein and others.

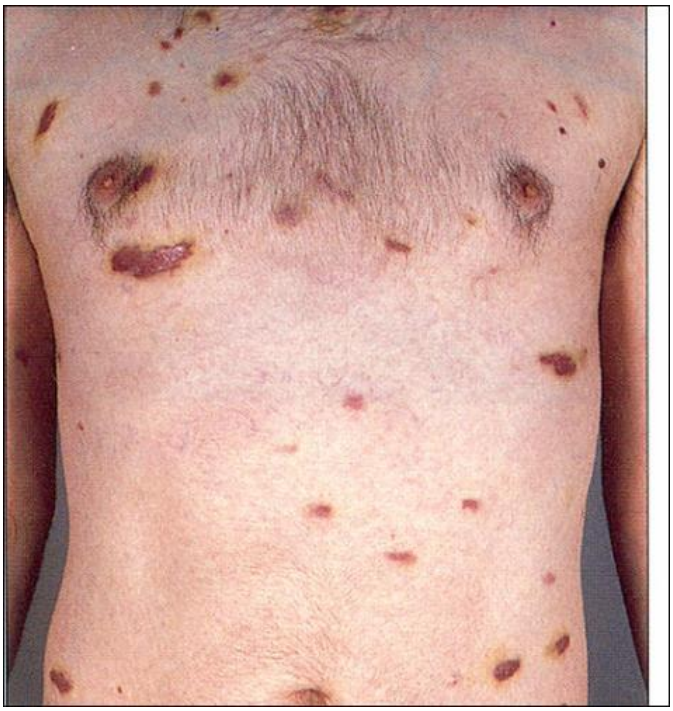
The importance of AIDS patients is prevention of mycobacteriosis. By reducing the content of CD4-lymphocytes up to 50 cells / ml and less than 1200 mg azithromycin assigned a week.

In the presence of disseminated mycobacteriosis in AIDS patients prescribed clarithromycin 500-1000 mg 2 times a day in combination with etambutolom 400 mg 1 time a day and rifabutin 300-450 mg orally 1 time in 6 months (Order of the Ministry of Health Ukraine № 182 - 13.04.2007.)

It must be remembered that any pathogen that can only be destroyed by a powerful immune response, can cause serious illness in AIDS. Deep immunosuppression leads to the steady progression of the disease even against retroviral therapy, which can ultimately result in death.

In addition to clinical AIDS opportunistic infections can be caused by neoplastic processes, HIV encephalopathy.

The most important tumors is **generalized Kaposi's sarcoma**, except when the skin lesions suffered larynx (croup clinic, obstruction), lungs (more about sarcoma of the pleura with severe pain), colon (bleeding, obstruction)



Picture 8. Generalized Kaposi's sarcoma.

Non-Hodgkin lymphoma (primary lymphoma of the brain) in second place after Kaposi's sarcoma. The disease progresses rapidly, despite the active chemotherapy.

With the localization of Kaposi's sarcoma on the skin used radiation therapy, with visceral localization prescribed anticancer drugs.

In 5% of those infected with HIV develop dementia or **HIV dementia**. The defeat of the brain are not always accompanied by immunodeficiency.

At the heart of the HIV dementia is a subacute encephalitis caused by HIV. As a result of viral replication in neuronal cells are degenerate.

The diagnosis of HIV dementia is set based on the following criteria: of cognitive, behavioral and motor functions, progressing for weeks and months. Patients appear weakness, drowsiness, confusion, forgetfulness. Early intellectual disorders are manifested in the reduction of the memory names, phone numbers, addresses, has slowed motor responses, facial expressions impoverishment. Then comes the tremors, unsteady gait, change handwriting, blunted emotions, clearly weakened intellect. Violated cognitive functions, increases drowsiness, untidiness appears, indifferent attitude to everything, hyperkinesis. After a few months

developed severe dementia, paraparesis, urinary and faecal incontinence. Nervous system is irreversible.

Installed genetically determined predisposition to the development of AIDS in individuals with HLA locus DR5.

It should be noted that certain failures in the brain fails to recognize a considerable number (up to 50-75%) HIV-infected. This weakening attention, slow reaction, difficulty coordinating movement.

Laboratory diagnosis:

For the diagnosis of HIV infection requires laboratory confirmation: the detection of antibodies to HIV antigens, genetic material of the virus and the virus itself. However, testing for HIV infetsiyu spend on informed consent.

Already in the acute phase, many patients have antibodies to p24, gp 120 and gp 41. The amount of antibodies is reduced during the AIDS epidemic. For detection of antibodies using enzyme-linked immunosorbent assay (IFA). Upon receipt of a positive test is carried out 2 more times with the same serum and the same test system. With the positive results of a study carried out by other test system, and then immunoblotting that allows antibodies to identify specific proteins of the virus. The basis immunnoblottinga put electrophoresis. Immunnoblottinga result is considered positive if the detection of antibodies to the patient 2 or more viral proteins (gp 120, gp 41, p 24, p 18, and others.).

- Determination of viral antigens. Most proteins p24 determined by IFA. The method is very simple, used in blood transfusion stations. The result is obtained in a few (3-5) minutes. However, the p24 protein can be detected only to its binding with antibodies to it, which, unfortunately, occur in the early stages of the disease.
- In recent years, the greatest recognition of the PCR (polymerase chain reaction), which has a very high degree of sensitivity. There were a test system, allowing to determine the 20 HIV RNA in 1 ml of serum. There are 2 variants of PCR:

• Identification of HIV RNA that make up the virions (this method is used for the quantitative determination of HIV in the blood and control treatment);

• detection of HIV proviral DNA integrated into the genome of peripheral blood mononuclear cells (used to diagnose HIV infection).

Recommend to put PCR in combination with IFA (ELISA first, defining the antibody, and then PCR). These reactions are not interchangeable.

Reliable sign of HIV infection is the isolation, cultivation and identification of the virus in cell cultures. However, this method is labor intensive, requires highly skilled performers and special equipment.

Auxiliary methods:

1. Immunological. The study of the immune status - a mandatory component of the survey of HIV-infected people needed to clarify the stage of the disease, evaluating the effectiveness of treatment, predicting the course and outcome.

2. Microscopic, virological, bacteriological, mycological - important for identifying opportunistic infections.

Plan of inspection of patient with the initial diagnosis of HIV infection:

- survey of complaints and medical history (including the history of the disease and life, the use of drugs; social history, etc.);
- objective (physical) examination;
- laboratory tests: determining the amount of CD4-lymphocytes; HIV viral load in blood plasma; general analysis of blood, urine; biochemical blood (bilirubin and its fractions, ALT, AST, alkaline phosphatase, urea, creatinine);
- serological tests for markers of viral hepatitis B and C; screening tests for tuberculosis, syphilis, gonorrhea, chlamydia, trichomoniasis, herpes simplex virus type 2;
- instrumental examination (ultrasound abdomen and kidney, radiography of the chest cavity) and the Mantoux test (Order of the Ministry of Health Ukraine № № 585 - 10.07.2013).

Treatment.

Currently, there is no possibility of complete elimination of HIV from the human body. The goal of therapy in prolonging the life of the patient and a longer preservation of the quality of life of infected individuals. For the therapy using anti-retroviral drugs. The essence of antiretroviral therapy (ART) is that the reverse transcriptase DNA building code. It takes one after the other nucleotides and of more than 9000, and in the sequence they are joined. In the appointment, for example, AZT (zidovudine) reverse transcriptase wrongly includes an azidothymidine triphosphate in growing a chain of virus DNA instead of thymidine. However, in the molecule azidothymidine triphosphate no hydroxyl group is needed for bonding with the next nucleotide. The virus is not able to correct the error and stops the construction of the DNA code, besides azidothymidine triphosphate blocking reverse transcriptase.

Antiretroviral drugs are divided into four groups: nucleoside reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), protease inhibitors (PI), integrase inhibitors (AI).

By NRTIs include zidovudine (AZT), lamivudine (ZTS), stavudine (d4T), didanosine (ddI), abacavir (ABC), emtritsitabin (FTC), tenofovir (TDF), a combination of AZT + lamifudin (AZT + ZTS), the combination AZT + lamifudin + ABC (AZT + ZTS + ABC).

For NNRTIs include efavirenz (EFV) of nevirapine (NVP), etravirine (ETR).

To protease inhibitors include ritonavir + lopinavir (LPV / rtv), nelfinavir (NFV), pitonavir (RTV), saquinavir (SQV), atazanavir (ATV), fosamprenavir (FPV), darunavir (DRV).

By the integrase inhibitor raltegravir is (RAL).

Antiretroviral drugs should be used only in cases when the patient clearly understands the strictest adherence to antiretroviral therapy throughout the remaining life of the patient and will be ready to comply strictly with the requirements of the doctor. ART carried out with the written consent of the patient

on ART compliance with the conditions of confidentiality of personal data and respect for individual rights and freedoms defined by the legislation of Ukraine (Order of the Ministry of Health Ukraine № 585 от 10.07.2013).

The main indications for ART are:

• a history of any AIDS defining illnesses;

• reducing the number of CD4-lymphocytes less than 350 cells / mkl.

Regardless of the number of CD4-lymphocytes ART should be started in the following groups of patients:

• pregnant women;

• patients with HIV-associated nephropathy, as this pathology has a clear connection with a reduction in the number of CD4-lymphocytes;

• patients co-infected with HBV / HIV.

• patients with active tuberculosis.

In patients with the number of CD4-lymphocytes more than 350 cells / ART can consider:

• if you have high HIV viral load (> 100 000 copies / mL);

• when a rapid decrease in number of CD4-lymphocytes (120 cells / mkl), which is confirmed by the two studies at intervals of 14-28 days;

• patients older than 50 years;

• the presence of risk factors not associated with HIV (ischemic heart disease, cancer).

Since 1996, patients with HIV appointed highly active antiretroviral therapy three drugs: the drug 2 NRTIs and 1 NNRTI drug or drug 2 NRTIs and 1 PI drug. The main first-line regimen: **tenofovir (NRTI) + emtritsitabin (or lamivudine) (NRTI) + efavirenz (NNRTIs).**

The advantages of this scheme are: high performance, limited range of side effects, the absence of the meal, reasonable cost of treatment. The drawback of efavirenz is the possibility of neuropsychiatric disorders (anxiety, insomnia, depressed mood), including contraindications - pregnancy.

The basic scheme of the treatment on the basis of 2 NRTIs and 1 PI: **tenofovir (NRTI) + emtritsitabin (or lamivudine) (NRTI) + LPV / r (PI).** The advantages of the scheme are: high performance, limited range of side effects, lower risk of development of resistance. The disadvantage of protease inhibitors are: diarrhea, high cost of treatment of the meal, the interaction with rifampicin in the case of treatment for tuberculosis.

Evaluating the effectiveness of antiretroviral therapy is carried out based on the following criteria: achieve clinical remission, reduction of RNA (preferably to reduce the level of HIV RNA and 50 copies in 1 mL of plasma and to maintain this level of viral load for the longest time - years), increase of CD4-lymphocytes . To determine the amount of HIV RNA and CD4-lymphocyte recommended after 1 month of starting treatment and subsequently every 3-6 months.

In addition to ART patients this AIDS receive treatment oportunisticheskih infections (see above).

It is necessary to take into account the features of HIV infection in specific population groups (those suffering from active tuberculosis, injecting drug users, co-infected with HBV / HIV, HCV / HIV).

Treatment of HIV-infected patients with tuberculosis (TB) it is an extremely difficult problem. In cases where HIV infection and active tuberculosis diagnosed at the same time, it is best to start ART upon completion of TB treatment to prevent the strengthening of the toxic effect of drugs on the liver.

Patients at high risk of HIV disease progression can start ART until completion of TB treatment. Preference should be given ART regimens based on NNRTIs (namely efavirenz), or assign a circuit that includes only NRTIs (AZT / lamivudine / abacavir) (Order of the Ministry of Health Ukraine № 276 от 28.05.2008).

Approaches to ART for injecting drug users (IDUs).

Treatment regimens are basically the same for both IDUs and to all the other people living with HIV / AIDS. It is advisable to use approaches such as directly observed therapy (Directly observed therapy = DOT), when the patient takes the

medication under the supervision of health workers (ART and substitution therapy) (Order of the Ministry of Health Ukraine № 476 от 19.08.2008).

Antiretroviral therapy in patients with chronic hepatitis B and C.

The presence of HIV co-infection in patients with chronic hepatitis increases the rate of progression of liver disease by 4-5 times compared with patients monoinfected HBV or HCV and increase mortality in patients with HIV as a result of terminal illness liver 10 times.

Patients co-infected with HBV / HIV should begin antiretroviral therapy using drugs with dual activity against HBV and HIV: tenofovir (NRTIs), emtritsitabin (NRTIs), lamivudine (NRTIs) (Order of the Ministry of Health Ukraine № 551 от 12.06.2010).

All patients with HCV / HIV antiretroviral therapy should be administered when the number of CD4-lymphocytes <350 cells / mkl. Antiviral therapy of HCV carried out using preparations of pegylated interferon in combination with ribavirin (Order of the Ministry of Health Ukraine № 233 от 02.04.2014).

Indications for hospitalization of HIV-infected are:

• the need for the planned studies that can not be performed on an outpatient basis;

• ART in cases requiring hospitalization;

• the need for correction of ART;

• development of toxicity or serious side effects of ART;

• opportunistic infections.

Patients with HIV and TB smear care is provided at TB clinics, TB hospitals respective of territorial medical associations (Order of the Ministry of Health Ukraine № 585 от 10.07.2013).

Clinical supervision of HIV infected

Registration of HIV-infected and medical observation are carried out under the condition of their voluntary consent. The frequency and volume of medical examinations depend on the stage of HIV infection and on the rate of progression of the disease:

routine medical examinations and laboratory tests conducted at least once every 6 months; where there is evidence of progression of HIV infection - at least once in 3 months:

a) The laboratory tests which are held at least once every 6 months:

• determination of the number of CD4 – lymphocytes

• HIV viral load in blood plasma;

• general analysis of blood, urine;

• biochemical blood (bilirubin and its fractions, ALT, AST, alkaline phosphatase, urea, creatinine);

b) laboratory tests are carried out at least once a year:

• serology: cytomegalovirus (if the number of CD4 - lymphocytes <100 cells / mkl), toxoplasmosis, hepatitis B, hepatitis C, if the results of previous studies were negative;

• For women: Papanicolaou test;

• lipid fractions of blood;

• screening for infections, sexually transmitted infections, and tuberculosis.

Prophilaxis.

It is now being intensive search friendly and effective vaccine. For the manufacture of killed virus vaccines are used, synthetic peptides, recombinant viruses. However, the variability of the HIV proteins, its rapid variability make it difficult to develop a vaccine for a specific prevention. Therefore, prevention is focused on ways to interrupt transmission.

The main method of prevention of HIV infection is the training of the population (from school age) proper sexual behavior, limit the number of sexual partners and safe sex (condom use).

As an anti-epidemic measures applied examination of donors of blood, sperm, organs; identifying sources of infection (survey of foreigners coming for more than 3 months., citizens who have returned from abroad -this, where they stayed for more than 1 month., patients with sexually transmitted diseases, homosexuals, drug addicts, prostitutes), as well as a survey conducted by clinical indications and testing of pregnant women. Testing is carried out as contact persons and anonymous survey.

Procedure for emergency post-exposure prophylaxis (PEP) of HIV infection among workers in the performance of professional duties (Order of the Ministry of Health Ukraine № 955 от 05.11.2013)

The procedure for first aid:

1. The first help organized and carried out immediately after the event of contact with a potential source of HIV infection associated with the performance of professional duties.

2. First aid comprises treating the contact points:

a) for wounding needle or other sharp instrument contaminated with blood or human biological materials: the point of contact is washed with soap and water; wounded surface under running water several minutes, or until the bleeding stops. In the absence of running water damaged area is treated with a disinfectant solution or gel for washing hands. With the exception of compression and friction of the

damaged place, extrusion or suctioning blood from a wound, the use of the solution of ethyl alcohol, iodine, hydrogen peroxide;

b) in contact with blood or other potentially dangerous biological fluids on intact skin contact place is washed with soap and water;

c) in contact with blood or other potentially dangerous biological fluids in the eye eye is rinsed with water or saline solution. It is not allowed: rinsing soap or disinfectant solution; Remove contact lenses during eyewash. After washing the eye contact lens is removed and processed, after which they are deemed safe for further use;

d) when blood or other potentially dangerous biological fluids on oral mucosa: a liquid gets into the oral cavity, spat, mouth several times with water or saline solution; rinsing the mouth can not use soap or disinfectants.

HIV testing worker who had the opportunity to contact with the source of a potential HIV infection associated with the performance of professional duties (Order of the Ministry of Health Ukraine № 955 от 05.11.2013)**:**

HIV testing is an employee who had the opportunity to contact with the source of a potential HIV infection associated with the performance of professional duties, carried out in accordance with the requirements of the Order of voluntary counseling and testing for HIV (Order of the Ministry of Health Ukraine № 415 от 19.08.2005 г.) and order and testing for HIV and research quality (Order of the Ministry of Health Ukraine № 1141 от 21.12.2010).

Medical indications for the purpose of medical post-exposure prophylaxis (PEP) (Order of the Ministry of Health Ukraine № 955 от 05.11.2013)**:**

PEP - a short-term course of antiretroviral drugs to reduce the likelihood of HIV infection after contact with body fluids associated with the risk of HIV infection:

- The control panel should be initiated as early as possible, preferably in the first 2 hours after exposure, but not later than 72 hours after contact.

- If the control panel is not started in the first 72 hours - a further appointment does not make sense.

- It is necessary to assess the degree of risk of HIV infection and, if necessary, referral to a psychologist AIDS Center.

- ARV drugs are prescribed for 28 days

Indications for PEP

- Damage to the skin with a sharp object contaminated with blood, body fluids with visible admixture of blood or other potentially infectious materials;
- The bite caused by HIV-infected patient who has a visible source of bleeding in the mouth;
- Contact with blood or other potentially infectious materials to mucous membranes of the mouth, nose and eyes;
- Contact with blood, fluids with visible admixture of blood or other potentially infectious materials in damaged skin (open wounds, abrasions, chapped or affected areas)

Actions in case of contact

- To evaluate the risk of infection - the amount of exposure, the type of biological material.
- Inspect the face, with the materials which contact occurred - after receiving written consent.
- Inspect the affected health worker - after receiving written consent.
- To prepare a report detailing all the activities.

If a patient's HIV status is negative, the PEP will not be held.

If you specify HIV - status of the patient, he can not be considered to be HIV - positive and the control panel is appointed.

If the status of the health worker is HIV-positive - meaning the infection has happened before, and the control panel is not assigned.

If a provider of HIV - negative status, and at the source (the patient) is assigned a positive 4 week course of preventive treatment.

Medicamentous PEP is assigned in the first 2 hours after contact - no later than 72 hours a combination of 3 products:
2 nucleoside reverse transcriptase inhibitors (2 NRTIs) + (protease inhibitor, ritonavir (PI / r): **TDF + FTC (or lamivudine) + LPV / r for 28 days**

Health care workers or other person with PEP recommended:

- abstain from sexual intercourse without a condom
- for 6 months not be a blood donor
- stop breastfeeding
- blood test, biochemistry - after 10 days and at the end of the course
- acquainted with the possible side effects of therapy
- HIV testing at 3, 6 months

If within 6 months of seroconversion did not happen - HIV MISSING !!!

Test tasks

1.Immunodeficiency virus refers to:

A paramyxovirus;

B * - retroviruses;

C. herpesviruses;

D- flaviviruses;

E arboviruses.

2. How much has the structural genes immunodeficiency virus:

A. one;

B. two;

C * - three;

D- five;

E- eight.

3. HIV genes encoding envelope glycoproteins include:

A. p 17;

B. p24,

C. endonuclease;

D * - gp 120;

E All true.

4. HIV genes encoding the formation of internal proteins are:

A*- p24;

B- gp120;

C- gp41;

D- endonuclease;

E- All true.

5. HIV-1 envelope glycoprotein structurally divided into subtypes:

A. A-B;

B. C-B;

C. A-D;

D.* A-J;

E. A-K.

6. HIV gene encodes all enzyme,s except:

A. endonuclease;

B. Proteinase;

C. reverse transcriptase;

D * - cholinesterase;

E. all true.

7. Control of viral replication provides:

A. p24;

B. gp120;

C.* gen «tat»;

D. endonuclease;

E. p17.

8. When virus is inactivated within 1 minute:

A. * boiling;

B. ultraviolet rays;

C.ionizing radiation;

D. freezing;

E. all true

9. To slow infections include:

A. malaria;

B. tick-borne encephalitis;

C. * HIV infection;

D. Lyme disease;

E. All true.

10. HIV refers to diseases:

A. * - anthroponotic;

B. anthroponotic;

C. sapronotic;

D. zoonotic;

E. endemic.

11. HIV virus can contained in:

A. blood;

B. semen;

C. vaginal secretions;

D. saliva;

E. * all true.

12. The greatest amount of virus in HIV-infected is contained in:

A. * - the semen;

B. sweat;

C. tears;

D. breast milk;

E. cerebrospinal fluid.

13. The mechanism of transmission of HIV:

A. * - contact;

B. airborne;

C. transmissible;

D. fecal-oral;

E. all right.

14. HIV-infected pregnant woman can infect the unborn child:

A. transplacental;

B. intrapartum;

C. after birth - breastfeeding;

D. * all right;

E. all wrong.

15. In order to prevent fetal infection with HIV-infected is assigned:

A. * zidovudine;

B. ganciclovir;

C. acyclovir;

D.ribavirin;

E. pentamidine.

16. Blood-borne transmission of HIV is possible with:

A. blood transfusion;

B. RBC;

C.infected organ transplant;

D. parenteral manipulations;

E * - all true

17.Antigenny complex CD4 + are:

A. Langerhans cells;

B. cells oligodendroglial;

C. alveolar macrophages;

D. T helpers;

E. * all true.

18. Immunodeficiency virus can penetrate into:

A. monocytes;

B. macrophages;

C. glial cells of the brain;

D. T helpers

E. * all of the above is true.

19. HIV has direct cytopathic effect on

A. cardiocytes;

B. hepatocytes;

C. * cells of the nervous system;

D. nephrocytes;

E. All true.

20. At healthy person helperno- suppressor index is:

A.0,3;

B. 0,5;

C.1,0;

D.* 1,7;

E. 3,0.

21. Specific antibodies are produced:

A. T helpers;

B. T-killer;

C. β cells;

D. * plasma cells;

E. macrophages.

22. In the construction of DNA -code immunodeficiency virus involved:

A. endonuclease;

B. * reverse transcriptase;

C. phosphatase;

D. cholinesterase;

E.all right.

23. Embeds viral DNA code into the host cell genome:

A. * endonuclease;

B. reverse transcriptase;

C. phosphatase;

D. cholinesterase;

E. all right.

24. Reverse viral DNA into RNA synthesis of RNA copies largely determines:

A. virus endonuclease;

B. virus reverse transcriptase;

C. * protease;

D. cholinesterase;

E. phosphatase.

25. In HIV-infected macrophage:

A. virus is constantly but slowly propagated;

B. decreases the bactericidal activity of macrophages;

C. reduced antigen-presenting ability of its T-helper cells;

D. reduced antigen presentation to B cells;

E. * all of the above is true.

26. HIV affects:

A. endothelial cells of the vascular plexus of the brain;

B. reduces the production of neuropeptides - epiphyseal hormone-gipotalemicheskogo complex;

C. has a cytopathic effect on nerve cells;

D. T helpers;

E. * all true.

27. Immunodeficiency in HIV infection is caused by:

A. positive activation of helper;

B. syncytium formation;

C. autoaggression;

D. death of healthy helper CD4 on the shell of which joined with gp120;

E. * all true.

28. Syncytia HIV - infection is formed by:

A. * capture HIV-infected healthy helper helper;

B. activation of T-killers;

C. reducing the number of T helper cells;

D. autoaggression;

E. polyclonal antibody activation.

29. Immunoregulatory index of CD4 + / CD8 + in the acute phase of HIV infection is reduced due to:

A. decline in CD4 lymphocytes;

B. Reducing the number of B lymphocytes CD8;

C. increase in CD4 lymphocytes;

D. * increasing the number of CD8 lymphocytes;

E. increasing the number of plasma cells.

30. Immunoregulatory index CD4 / CD8 in the terminal phase of HIV infection is reduced due to:

A. * - decrease in the number of CD4-cells;

B. Increasing the number of CD4 B-cells;

C. Increasing the amount of C-CD8 cells;

D. Reducing the amount of D- CD8-cells;

E. reduce the number of plasma cells.

31. In HIV infected:

A. reduced amount of gamma globulins;

B. * the amount of gamma globulin uvelichivaetsya;

C. decreases the number of normal killers;

D. increases the number of macrophages;

E. increases the production of interferon.

32. In category A in HIV infection on the classification adopted by the Centre for Disease Control (1993)., Includes:

A. virus carrier;

B. acute stage;

C. persistent generalized lymphadenopathy;

D. CD4 lymphocytes 500 cells / mkl;

E. * all true.

33. In HIV-infected were complaints of fever, headache, vomiting. The positive meningeal signs (Kernig, Brudzinsky). Cerebrospinal fluid transparent cell count of 30 cells by lymphocytes. The blood CD4 cell counts of 550 cells / mkl. Stage of HIV infection:

A. * the acute stage;

B.latent,

C. persistent generalized lymphadenopathy;

D. AIDS related complex;

E. AIDS.

34. Sick for 5 weeks has a fever T-37,5-38,0°. Complaints of sore throat. Hypertrophied tonsils, enlarged submandibular, rear neck, subclavian, inguinal lymph nodes. Hepatosplenomegaly. Immunoblotting antibodies to HIV-1 in the

immunological CD4 lymphocyte counts - 520 cells / mkl. Determine the stage of HIV infection:

A. primary latent period;

B. secondary latent period;

C. * - generalized lymphadenopathy;

D. AIDS related complex;

E. AIDS.

35. Step persistent generalized lymphadenopathy in HIV-infected patients can be diagnosed with the condition:

A. patient complaints on fever, sweating;

B. an increase of at least 2 groups of lymph nodes (excluding inguinal), the presence of

C.CD4 lymphocyte counts of at least 500 cells / mkl;

D. possible increase in liver:

E. * all true.

36. A patient within 3 weeks low-grade fever, fatigue, abdominal pain, frequent stools 8-10 times a day, weight loss. PCR - HIV RNA. In the immunological CD4 lymphocyte counts - 150 cells / mkl. CD8 lymphocytes -150 cells / mkl. Diagnosis:

A. acute stage of HIV infection;

B. secondary latency;

C. HFRS;

D. AIDS related complex;

E. * AIDS.

37. In HIV-infected in the background subfebrile temperature there was bleeding gums, increased weakness, unjustly began to appear on the skin, "bruises". The immunogram - CD4 lymphocytes - 560 cells / mkl, the index of CD4 + / CD8 + is 1.4. In the blood - thrombocytopenia. Determine the stage of the disease.

A. primary latent;

B. * the acute stage;

C. generalized lymphadenopathy;

D. dementia;

E. AIDS

38. The localized Kaposi's sarcoma in HIV-infected in the period observed:

A. secondary latency;

B. acute stage;

C. in generalized lymphadenopathy;

D. * AIDS-Related Complex;

E. AIDS.

39. HIV-infected within 2 months complaining of vaginal candidiasis, are not amenable to treatment, also in the genital area revealed pointed kandilomy. Determine the stage of the disease:

A. acute stage;

B. secondary latent period;

C. generalized lymphadenopathy;

D * AIDS-Related Complex;

E. AIDS.

40. HIV-positive revealed peripheral neuropathy. The immunogram - CD4 lymphocytes in an amount of 380 cells / mkl. Stage of disease?

A. sharp;

B. generalized lymphadenopathy;

C. dementia;

D.* AIDS-Related Complex;

E. AIDS.

41. AIDS-Related Complex diagnosed in HIV-infected in the case of:

A. localized presence of Kaposi's sarcoma;

B.pulmonary TB is not curable;

C. cervical dysplasia;

D. frequent recurrences of shingles;

E. * all right

42. The causative agent of PCP are:

A mycoplasma;

B * yeast-like fungus;

C. chlamydia;

D. protozoa;

E. Rickettsia.

43. The source of infection are infected with Pneumocystis carinii pneumonia:

A. rodents;

B. * is a man of;

C. pigs;

D. birds;

E. all right.

44 .The main transmission mechanism Pneumocystis carinii pneumonia:

A pin;

B fecal-oral;

C * airborne;

D. transmissible;

E. all right.

45. At what disease in HIV-infected lungs revealed by radiography wire-mesh pattern (a symptom of "matte"):

A. pneumococcal pneumonia;

B. lobar pneumonia;

C. * Pneumocystis carinii pneumonia;

D. tuberculosis;

E. candidiasis.

46. What disease in patients with AIDS has alveolar membrane thickness is increased 5-20 times against normal:

A. cryptosporidiosis;

B.tuberculosis;

C. toxoplasmosis;

D. * Pneumocystis carinii pneumonia;

E. cytomegalovirus infection.

47. Profilaxis of pneumocystis carinii pneumonia in HIV-infected held with the content in the blood CD4 lymphocytes in the amount of:

A. * 150 cells / mkl;

B. 250 cells / mkl;

C.350 cells / mkl;

D. 500 cells / mkl;

E. all right.

48. For treatment of Pneumocystis carinii pneumonia in AIDS patients use:

A. Biseptol;

B. clindamycin;

C. pentamidine;

D. dapsone-trimetaprim;

E. * - all true.

49.In immunocompetent organism candida can manifest itself in the form of:

A. carriage;

B. oral lesions (thrush);

C. vulvovaginal candidiasis;

D. candidiasis colon;

E. * all true.

50.Diagnosis AIDS is competent when:

A. * candidiasis of the esophagus, bronchi, lungs;

B. candidiasis colon;

C. vulvovaginal candidiasis;

D. streptodermia;

E. all right.

51. For the treatment of candidiasis can be used:

A. miconazole;

B. ketoconazole;

C. fluconazole;

D. amphotericin B;

E. * all true.

52. The causative agent of cryptococcosis are:

A. bacteria;

B. Rickettsia;

C. * mushrooms;

D. protozoa;

E. viruses.

53. The main mechanism of transmission for cryptococcosis:

A. pin;

B. * airborne dust;

C. transmissible;

D. transplacental;

E. intrapartum.

54. HIV-infected complains of weakness, memory loss, fever, headache, vomiting. Kernig and Brudzinsky positive. From liquor cryptococcal antigen is selected. Determine the stage of the disease:

A. severe;

B. second latent;

C. generalized lymphadenopathy;

D. AIDS related complex;

E. * AIDS.

55. Prevention of cryptococcosis in HIV-infected held with the content in the blood CD4 lymphocyte counts in the amount of:

A. * 50 cells / mkl;

B.200 cells / mkl;

C.300 cells / mkl;

D.400 cells / mkl;

E. all right.

56. For the treatment of cryptococcosis used:

A. acyclovir;

B. ganciclovir;

C. * fluconazole;

D. pentamidine;

E. interferon.

57. The causative agent of cryptosporidiosis are:

A. bacteria;

B. Rickettsia;

C. mushrooms;

D. * - protozoa;

E. viruses.

58. The source of the infection cryptosporidiosis:

A. man;

B. * the animals;

C. birds;

D. insects;

E. all right.

59. The main mechanism of transmission of cryptosporidiosis:

A. pin;

B. airborne;

C. * fecal-oral;

D. transmissible;

E. intrapartum.

60. The method of laboratory diagnosis of cryptosporidiosis:

A. bacteriological;

B. virologic;

C. * microscopic;

D. mycological;

E.allergic.

61. HIV-infected complains about the long-term within 2 months of fever, nausea, abdominal pain, often up to 10 times a day, watery stools, weight loss. In feces allocated cryptosporidium oocysts. Determine the stage of HIV infection.

A. sharp;

B. second latent;

C. generalized lymphadenopathy;

D. AIDS related complex;

E. * AIDS.

62. In the treatment of cryptosporidiosis is used:

A. * Azithromycin;

B. acyclovir;

C. fluconazole;

D. ganciclovir;

E. foscarnet.

63. The causative agent of toxoplasmosis are:

A. virus;

B. bacterium;

C. Rickettsia;

D. * protosoa;

E. fungi.

64. Infection of toxoplasmosis possible:

A. air-dust by;

B. by eating meat from infected animals;

C. from contaminated food and water;

D. tranplatsentarno;

E. * all true.

65. In immunocompetent individuals the clinical manifestations of toxoplasmosis may occur:

A. lymphadenitis;

B.Hepatitis B;

C. pneumonia;

D. chorioretinitis;

E. * all true.

66. Marker of AIDS in HIV-infected is toxoplasmosis

A.* brain;

B.eye;

C. liver;

D. lungs;

E. all right.

67. Prevention of toxoplasmosis in HIV-infected appointed in the presence of CD4 lymphocyte counts in the number of

A. 500 cells / mkl;

B. 300 cells / mkl;

C.200 cells / mkl;

D. * - less than 100 cells / mkl;

E. al right.

68. Therapy toxoplasmosis conducted:

A. ganciclovir;

B. * pyrimethamine;

C. antibiotics;

D. fluconazole;

E. interferon.

69. The source of the infection are already infected with cytomegalovirus infection:

A. rodents;

B. wild animals;

C. cattle;

D. *- people;

E.all right.

70. The patient has cytomegalovirus infection virus contains:

A. semen;

B. vaginal secretions;

C. saliva;

D. breast milk;

E. * all true.

71. A possible mechanism of infection cytomegalovirus infection:

A. pin;

B. parenteral;

C. transplacental;

D. intrapartum;

E.* all true.

72. When AIDS strikes cytomegalovirus:

A. lungs (pneumonia);

B. digestive tract (esophagitis, gastritis, colitis);

C. CNS (encephalitis);

D. eye (chorioretinitis);

E. * all true.

73. Prevention of cytomegalovirus infection in HIV-infected patients conducted at the maintenance in blood CD4-lymphocytes in the amount of:

A.* 100 cells / mkl;

B. 300 cells / mkl;

C.400 cells / mkl;

D.500 cells / mkl;

E. all right.

74. In the treatment of cytomegalovirus infection is used:

A. * ganciclovir;

B. dapsone;

C.pyrimethamine;

D. fluconazole;

E. amphotericin.

75. The main source of mycobacteriosis are:

A. mites;

B.man;

C. * birds;

D. soil;

E. water

76. Infection mycobacteriosis possible through:

A. infected food products;

B. infected water;

C. aerosol;

D. through broken skin;

E. * all true.

77. In HIV-infected showed an increase of 2 cm and submandibular lymph nodes posterior cervical, the skin over them is not changed, the lymph nodes are not soldered. From biopsies of lymph nodes isolated mycobacteria Gordonae. The immunogram -CD4 lymphocytes - 300 cells / mkl, CD4 + / CD8 + is 1.2. Determine the stage of HIV - infection:

A. sharp;

B. second latent;

C. generalized lymphadenopathy;

D. * AIDS-Related Complex;

E. AIDS.

78. HIV-infected complains expressed sweating, increase Temperature-38,5 °, cough, chest pain. Radiography - focal pneumonia. Mycobacteria isolated from sputum Kansasii. The immunogram CD4 - 400 cells / mkl, CD8 - 300 cells / mkl. Determine the stage of HIV infection:

A. sharp;

B. second latent;

C. generalized lymphadenopathy;

D. * AIDS-Related Complex;

E. AIDS.

79. A patient 30 years old, within 2 months of fever 38,0 -38,9 ° C, fatigue, abdominal pain, diarrhea, weight loss. Anemia, leukopenia, thrombocytopenia. PCR - HIV RNA. From the blood marked Mycobacterium avium. The immunogram: CD4 lymphocytes - 90 cells / mkl. The index of CD4 + / CD8 + is 1.0. Diagnosis:

A. acute stage of HIV infection;

B. mycobacteriosis;

C. generalized lymphadenopathy;

D. AIDS related complex;

E. * AIDS.

80. Prevention of mycobacteriosis in HIV-infected held with the content in the blood CD4 lymphocyte counts in the amount of:

A. * - 50 cells / mkl;

B. 200 cells / mkl;

C. 300 cells / mkl;

D. 500 cells / mkl;

E. all right.

81. Treatment of mycobacteriosis is conducted:

A. immunoglobulin;

B.interferon;

C. * antibiotics;

D. acyclovir;

E. dapsone.

82. In HIV-infected patients revealed generalized Kaposi's sarcoma (on the face, trunk, lungs and large intestine). Determine the stage of the disease:

A. severe;

B. second latent;

C. generalized lymphadenopathy;

D. AIDS related complex;

E. * AIDS.

83. With the localization of Kaposi's sarcoma on the skin prescribed therapy:

A. pentamidine;

B. antibiotics;

C.* the X ray therapy;

D. Biseptol;

E. all right.

84. In HIV-infected identified primary lymphoma of the brain. Determine the stage of the disease.

A. sharp;

B. second latent;

C. generalized lymphadenopathy;

D. AIDS related complex;

E. * AIDS.

85. HIV-infected complains of marked weakness, drowsiness, confusion, memory loss, unsteady gait. Sick slovenly, indifferent to all. There impoverishment of facial expressions, the deceleration of the motor reactions.

A. lymphoma of the brain;

B. encephalitis;

C. * dementia;

D. AIDS complex;

E. cytomegalovirus infection.

86. The diagnosis of AIDS in HIV-infected in the presence of empowered:

A. generalized Kaposi's sarcoma;

B. Pneumocystis carinii pneumonia;

C. cerebral toxoplasmosis;

D. disseminated mycobacteriosis;

E. * all true.

87. The diagnosis of HIV infection laboratory confirmed the presence in the blood of antibodies to the IFA:

A. gp120;

B. Gp 41;

C. * immunoblotting;

D. immunogram;

E. all right.

88. The diagnosis of HIV infection can be confirmed by laboratory:

A. PCR - detection of HIV RNA;

B. PCR - detection of HIV proviral DNA;

C. IFA - determination of antibodies;

D. IFA - determination of fragments of the virus;

E.* all true.

89. The main method of laboratory diagnosis of HIV infection, confirming the stage of the disease, is:

A. CD8 lymphocytes;

B. * CD4 lymphocytes;

C. B cells (CD19 +);

D. immunoglobulins;

E. all right.

90. At the initial examination of HIV-infected should be investigated:

A. general analysis of blood, urine;

B. biochemical parameters (bilirubin, ALT, creatinine, blood urea, sugar, protein and albumin levels);

C. feces on helminth eggs and protozoa;

D. CD4 lymphocytes;

E.* all true.

91. During the initial inspection of an HIV-infected patient is necessary to:

A. chest radiography;

B. serological screening for syphilis;

C. put tuberculin test;

D. gynecological examination;

E. * All right.

92. Nucleotide reverse transcriptase inhibitors (NRTIs) are:

A. efavirenz;

B. * zidovudine;

C. nevirapine;

D. lopinavir;

E. all right.

93. Nucleoside reverse transcriptase inhibitors (NNRTIs) are:

A. *efavirents;

B. zidovudine;

C. lamivudine;

D. lopinavir;

E. all right.

94. Protease inhibitors (PIs) are as follows:

A. efavirenz;

B. * lopinavir;

C. zidovudine;

D. lamivudine;

E. all right.

95. Integrase inhibitors include:

A. * raltegravir

B. zidovudine;

C. lamivudine;

D. lopinavir;

E. all right.

96. Antiretroviral therapy for HIV-positive is indicated for:

A. with the number of CD4-lymphocytes <350 cells / mm;

B. generalized mycobacteriosis;

C. Pneumocystis carinii pneumonia;

D. pregnant women;

E. * all true.

97. Highly active antiretroviral therapy is carried out under the scheme:

A. NNRTI;

B. * 2 NRTIs + 1 NNRTI;

C. 3 NNOT + 1 NRTIs;

D. 1 NRTIs + 2 NNRTI;

E. 2 NRTIs + 2 NNOT.

98. Highly active antiretroviral therapy is carried out under the scheme:

A. * - 2 NRTIs + 1 PI;

B. 1 NNOT + 1IP;

C. 1 NNOT +2 IP;

D. 2 NRTIs + 2 IP;

E. 1 NNRTI + 1 PI.

99. Newly diagnosed patients coinfected with HIV / active pulmonary tuberculosis. CD4 cell counts over 350 cells / mkl. Therapy:

A. start antiretroviral therapy;

B. * antivirals appoint after completion of the treatment of tuberculosis;

C. combined antivirus and anti-TB drugs;

D. antiretrovirusnuya therapy is contraindicated;

E. All right.

100. The basis of nucleoside antiretroviral drugs to patients co-infected with HBV / HIV can include everything except:

A. tenofovir;

B. emtricitabine,

C.amivudine ;

D. * zidovudine;

E. all right.

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