

# Hiv aids essays example

[Health & Medicine](#), [Disease](#)



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HIV infection is slowly progressive disease caused by the human immunodeficiency virus (HIV). The virus affects the immune system cells that have receptors on their surface CD4: Helper T cells, monocytes, macrophages, Langerhans cells, dendritic cells, microglia. As a result of the work of the immune system is suppressed, is developed acquired immune deficiency syndrome (AIDS), the patient loses the ability to defend against infections and tumors that occur secondary opportunistic diseases that are not typical for people with normal immune status.

## **Etiology**

HIV is a human immunodeficiency virus, belonging to the family of retroviruses, lentivirus genus. The HIV genome contains a ribonucleic acid and the infected cells were subjected to reverse transcription. HIV infects human blood cells having on their surface CD4-receptors: T-lymphocytes, macrophages and dendritic cells. Virus-infected T cells are killed by the destruction of the virus, apoptosis or destruction by cytotoxic T lymphocytes. After the number of CD4 + T-lymphocytes is below 200 in one microliter of

blood, cellular immune system to defend the body ceases.

Viral envelope consists of a lipid bilayer membrane in which is embedded a number of proteins, such as the transmembrane glycoprotein gp41, and the surface glycoprotein gp120. Inside the "core" of the virus, which consists of a matrix of protein and p17 capsid protein p24, are two single-stranded molecules of genomic RNA and several enzymes, reverse transcriptase, protease and integrase.

## **Pathophysiology**

The hallmark of HIV infection is the profound immunodeficiency due to progressive qualitative and quantitative deficiency of T-lymphocytes.

Reducing the number of T-lymphocytes to a certain level leads to the development of various infectious and neoplastic processes. It should be noted that some of the manifestations of AIDS cannot be explained only by the immunosuppressive effect of HIV. The pathogenetic mechanisms of HIV infection are multifactorial and multiphasic, so you should consider the characteristics of the course of HIV infection in more detail.

Activation of the immune system is an important component of an adequate immune response to foreign antigen. Under physiological conditions, when the immune system reacts to an antigenic stimulus, it returns to the state of relative calm. However, during HIV infection immune system is in a constant state of activation due to the presence of chronic infection. This condition is characterized by hyperstimulation of B-lymphocytes, spontaneous lymphocyte proliferation, expression of activation markers on the surface of CD4 + and CD8 + T-lymphocytes, hyperplasia nodes, enhanced secretion of proinflammatory cytokines, increased levels of neopterin, B2-microglobulin,

acid-sensitive interferon, interleukin-2, and and autoimmune processes.

There is a hypothesis that apoptosis is one of the pathogenic mechanisms of HIV infection due to the fact that successive activation stimuli are capable of destroying CD4 + T cells by apoptosis. The degree of apoptosis is significantly increased in HIV-infection and a non-specific mechanism, reflecting abnormal immune activation process constant.

Superantigens are able to bind and activate the entire subpopulation of T-lymphocytes, and this leads to a massive activation of T-cells, which as a result, are not able to respond to other stimulatory signals, and are excluded from the process of immune response.

## **Diagnostics**

Currently, there are the following methods to diagnose HIV: indirect tests to detect specific antibodies to HIV that are almost 100% of HIV-infected; direct tests determine the actual HIV HIV antigens or nucleic acids of HIV (viral load). The viral load (number of molecules of HIV genomic RNA per ml of blood) is directly associated with a speed reduction of CD4 + T lymphocytes, this characteristic is an important prognostic indicator in early-stage disease.

For detection of antibodies to HIV, it is necessary to use at least two different assays: a preliminary test (screening test) and a confirmatory test. Most modern screening tests based on the enzyme immunoassay (EIA) or similar methods; they have a high sensitivity (99%) and specificity (99.5%).

Antigens used in the assay correspond to antibodies that can develop in a patient's body to a specific type HIV (HIV-1, HIV-2 and HIV-1-N, HIV-1-O, HIV-1-M). In order to confirm the results of screening tests most often used

immunoblotting. Immunoblotting is carried out only after receiving positive screening test.

## **Treatment**

The issue of HIV treatment still has not the final solution, as medicine has no means to enable used to completely cure the patient. However, there are developed regimens that can delay progression of the disease, perhaps by the time when there will be new effective drugs.

The basic principles of the treatment of HIV infections are warning of disease progression, persistence and chronic low-grade infection, the use of antiviral therapy and treatment of opportunistic infections.

Immunodeficiency requires primary prevention of pneumocystis pneumonia, cryptococcal and other fungal infection, cytomegalovirus infection, tuberculosis. Causal agents administered for this purpose at the level of CD4 lymphocytes in less than 200 microliters. Secondary prevention is carried etiotropic means for the prevention of recurrence of opportunistic infections. Proper use of treatment delays progression to AIDS for an indefinite period (10-20 years), the emergence of new classes of drugs are mainly aimed at reducing the side effects of therapy, because the life expectancy of HIV-positive people receiving therapy, almost equal to the life expectancy of HIV negative population. During the later development of HAART (2000-2005) survival of HIV-infected patients with exclusion of patients with hepatitis C reaches 38.9 years (37.8 - 40.1 for men and - women).

Importance is attached to maintaining the health of HIV-positive drug-free means (proper nutrition, healthy sleep, avoiding stress and strong long-term

exposure to the sun, healthy life), as well as regular (2-4 times a year) to monitor the health of the doctors-specialists in HIV.

## **References**

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