

HIV: problems and perspectives

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Correspondence: Bogoyavlenskiy AP, laboratory of antiviral protection, Institute of microbiology and virology, Almaty, Kazakhstan, Email anpav_63@mail.ru**Received:** June 14, 2016 | **Published:** June 17, 2016**Keywords:** AIDS, HIV infection, Virus, CD4 T cells, Immune system**Abbreviations:** AIDS, Acquired Immunodeficiency Syndrome; HTLV-1, Human T-cell Leukemia/Lymphoma Virus Type 1; NRTIs, Nucleoside Reverse Transcriptase Inhibitors; NNRTIs, Non-Nucleoside Reverse Transcriptase Inhibitors; PIs, Protease Inhibitors; INSTIs, Integrase Strand Transfer Inhibitors; CCR5s, CCR5 Antagonists

Editorial

Human immunodeficiency virus is a retrovirus of the lentivirus genus, causing a slowly progressive disease – HIV infection and eventually acquired immunodeficiency syndrome (AIDS)¹ The first case report of AIDS appeared in 1981 with the identification of previously healthy homosexual men from the USA who presented with *Pneumocystis carinii* pneumonia and Kaposi's sarcoma.^{2,3} The virus was first isolated by Barre-Sinoussi et al.² and was the second human retrovirus leading to the isolation of human T-cell leukemia/lymphoma virus type 1 (HTLV-1) in 1981.³⁻⁵ Human immunodeficiency virus is one of the important problems of infectious pathology of the 21st century. About 40 million people in different countries are living with this virus today. The number of cases of HIV is increasing to more than 2.0 million people every year and about 1 million people died from AIDS-related illnesses. Unfortunately, the proportion of patients infected with sexually transmitted HIV increases every year, indicating the need to review the principles of prevention and treatment of HIV infection. For example, in some countries, up to 50% women got the virus from their husbands.⁶

During more than 30-year history of dealing with this virus, mankind has achieved much. The rate of the virus spread among groups with high-risk has declined in many countries. In some regions, the vertical transmission of the virus from mother to child was stopped. There was the 2-fold reduction in the number of infected children. There was a hope of creating of effective vaccines. It was detected that genetic characteristics of human insensitivity to the virus are typical for 1% of the population of Scandinavia and Russia. The introduction of antiretroviral therapy to the largest possible amount of HIV-infected people has resulted in the development of the concept of "treatment as prevention". It has the positive effect on the economy of the state, reduces the disease burden, increases the population of working people and improves the demographic situation. Treatment becomes a two-level understanding. The first is to reduce the possibility of transmission of infection (condoms, microbicides, vaccines based on antibodies and proteins), the second is in the appointment of antiretroviral therapy taking into account additional history factors of HIV infection: coexisting conditions, diseases, drug interactions, potential adverse effects on drug medication adherence capacity, pharmacological properties, resistance to the drugs, and others. The appointment of treatment takes into account the number of CD4 T cells, viral load, and clinical presentations. For the purpose of the earlier treatment, it is recommended to take into account the patient's age, certain diseases and conditions. The reason to start the

treatment having the number of 350–500 cells / μ l CD4-lymphocytes or more appears neurocognitive disorders, kidney disease, the presence of a tumor, chronic viral hepatitis B and C, autoimmune, and cardiovascular diseases.⁷ Drug treatment should consider the peculiarities of the use of different classes of antiviral drugs: non-nucleoside reverse transcriptase inhibitors (NNRTIs), nucleoside reverse transcriptase inhibitors (NRTIs), protease inhibitors (PIs), fusion inhibitors, CCR5 antagonists (CCR5s) (inhibitors of entry), integrase strand transfer inhibitors (INSTIs).⁸ It was found that the treatment with one or two drugs has short therapy effect due to the rapid emergence of mutant forms of the virus with reduced susceptibility to antiretroviral drugs. The combination of three or four drugs makes possible to suppress virus replication and achieve recovery of the immune system in many cases. However, you should remember that in this case we are not talking about the destruction of the virus, and its reduction to undetectable levels (up to 400 RNA copies).

There are still many unresolved issues that determine the direction of scientists and clinicians research involved in the fight against HIV. Among them are:

- Creation of a new organizational model laboratory service for the diagnosis of HIV infection,
- Optimizing the organization of specialized outpatient care for people living with HIV,
- Study the features of the epidemic and the mathematical modeling of the epidemic process,
- HIV genotyping geographical assessing viral resistance to the treatment,
- Study of the mechanisms of destruction of organs and systems for HIV infection,
- Study the conditions of the central nervous system and the behavior of people with HIV,
- Especially, the treatment of comorbidity in patients with HIV (drug addiction, hepatitis, tuberculosis and other infections).^{9,10}

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Conflicts of interest

None.

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