

Epidemiological knowledge on human immunodeficiency virus infection as a basic for programme of prophylactic measures

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Received: 31 January 2015 / Accepted: 5 February 2015 / Published online: 25 February 2015
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Abstract

Objectives An epidemic situation on human immunodeficiency virus infection can be stopped and even compelled to step back, if adequate and comprehensive prophylactic measures are performed in the proper time.

Methods Prophylactic measures should be, directed on those groups, who are at high risk for becoming infected or who are carriers of HIV as the top priority. The epidemic situation in HIV infection in the northwestern region of Russia has been analyzed. The ways of the spread of HIV infection among the infected persons, residents of the St. Petersburg region, Kaliningrad, Novgorod, and Murmansk, have been studied. The infection is transmitted mainly through sexual contacts, both homosexual and heterosexual. High migration activity of HIV-infected persons, homo- and heterosexuals, has been established and a great number of unknown (casual) sexual contacts among them noted.

Results The results of these observations may be useful in the prognostication of the epidemic situation in HIV infection not only in the northwestern region, but also beyond its boundaries, and later in the optimization of screening.

Conclusions The pandemic of HIV infection causes enormous economic damage, destabilizes the socio-political situation in many countries of the world, and hinders the achievement of aims for the development of millennium, both in the area of health protection and in other spheres. In Novgorod region an epidemic situation on HIV infection is estimated as one of most strained one. The

basic indexes and tempos of their growth in a region are higher in relation to average federal data. But it can be stopped and even compelled to step back.

Keywords HIV infection · Sickness rate · Distribution rate · Prophylactic measures

Introduction

The epidemic of HIV infection during the first years, in 80-90s years of the last century, has already seriously guarded the mankind, making it to look on the problem and comprehend it from different positions. There were all bases for this purpose, as a number of people, who live with HIV, steadily increases that potentially threatens to the society and its further development [1].

According to the estimation data of the United Nations the general quantity of HIV-infected people in the world was 33–35 million [2]. In several countries it led to reduction of the expected duration of life by more than for 10 years.

The prophylaxis of HIV infection must be conducted taking into account the dynamics of sickness rate and changes, which take place in the epidemic process [2]. In spite of coverage almost all the globe by the epidemic of HIV infection, its development in different regions have own specific peculiarities and differences, modern detection, study and recognition of which can play very substantial role in the choice of the right approach and execution of the effective resistance of epidemic distribution [2, 3].

The aim of this study was to determine the character and peculiarities of epidemic of HIV infection distribution in the Novgorod region and study of the principles of its prophylaxis organization.

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Materials and methods

Materials

With the purpose of estimation, detailed analysis, and exposure of features for the development of HIV infection epidemic the indicators of sickness rate for 24 summer periods (1990–2013) were studied, and the prevailing ways of transmission, age structure, and basic death reason of people with HIV infection living in Novgorod region were determined.

In this work the materials of the official statistical data conducted by the Federal scientific-methodical center on a prophylaxis and fight against AIDS were used. The statistical data on the analysis of character, epidemiological and clinical peculiarities of distribution of HIV infection in the Novgorod region are represented on the basis of data of GOBUZ (Novgorod Center on prophylaxis and fight with AIDS and the infectious diseases “Helper”).

Presently in Russia the distribution of HIV infection among population and increase of the cumulative number of infected people are still continuing. According to the data of the Federal scientific-methodological center on prophylaxis and fight with AIDS, the whole situation on HIV infection in Russia can be acknowledged as steadily aggravating [4].

In Novgorod area the absolute quality of HIV-positive inhabitants enter into the group of unfavorable regions of North-West Russia (Table 1).

On 31st December in 2013 in Novgorod region 2,288 cases of HIV infection were registered. The analysis by the

epidemic department showed fluctuation in the ways of transmission and domination of different age groups of population in the structure of sickness rate. Presently the reproductive tract transmission replaced the injection infecting in drug users to the second place. For the analyzed years the infection by sexual way is met more than 4 times. Totally for the whole period of observance (since 1990) 41.4 % of the infected people became infected by the parenteral way, 51.6 %—by sexual way. Drug-addiction still remains the second moving force of HIV distribution after sexual transmission [5].

Active inclusion of women into the epidemic

According to the age structure of patients the subjects aged less than 30 years prevail (61.1 % on the date of diagnosing). Recently the part of HIV infected people is increased. They were people older than 30 years with simultaneous reduction of indicators of sickness rate in the groups of younger age.

There is the tendency of active inclusion of women into the epidemic. The involvement of women in an epidemiological process and increase of the number of infected people are connected with the parallel growth of sexual way of transmission; according to the data infecting of women happened from HIV-infected consumers of the injection drugs. Approximately 90 % HIV infected women in the childbearing age involve the problem of HIV infection distribution from mother to child during pregnancy and delivery.

Since 2007 the increase of HIV infection frequency is observed among pregnant women, and the number of children born to HIV infected mother grows. Perinatal HIV infection is one of the basic reasons of child AIDS. It became actual in our country upon the extent of growth of the number of deliveries in this category of women (Fig. 1).

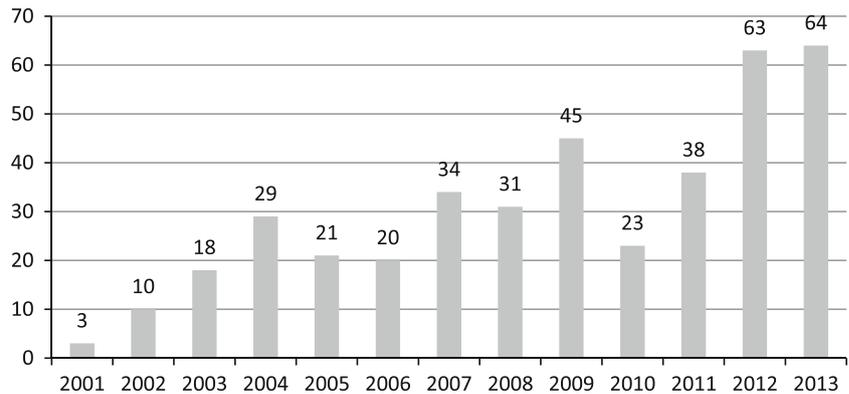
Prophylaxis

The prophylaxis of the perinatal transmission of HIV is a multi-stage, multi-profile process, including the access of women to the early pre-delivery observance, receipt of knowledge about infection, advising on the questions of HIV transmission and its prophylaxis, prescription of ART to women and children, control over the drug administration, and also social-psychological support for patients and their families [6, 7]. Many pregnant women arrive for delivery with undetected HIV-status. As a rule, they relate to the socially unfavourable people. As a result, among these women the high risk of HIV transmission is observed and most of these mothers refuses to have children.

Table 1 The data about results of testing of antibodies to HIV in the North–West Federal region of the Russian Federation in 2012

North–West Federal region	Blood serum testing	HIV+	The number of antibody-positive examined blood serums for 100,000
Republic of Karelia	89434	161	180.0
Republic of Komi	189167	203	107.3
Arkhangelsk region	228601	105	45.9
Nenets autonomous district	6925	0	0.0
Volgograd region	216077	195	90.2
Kaliningrad region	127228	434	341.1
Leningrad region	201106	1122	557.9
Murmansk region	150850	350	232.0
Novgorod region	102110	378	370.2
Pskov region	101006	100	99.0
Saint-Petersburg	629307	3308	525.7

Fig. 1 The quantity of children born by HIV infected women



Results

Methods of prophylactic works

In the Novgorod Center on prophylaxis and fight with AIDS and infectious diseases “Helper” the following methods of prophylactic works are implemented: conducting educational seminars on the issues of epidemiology, prophylaxis, treatment, and social aspect of HIV infection; conducting lectures, debates, round table discussions on the issues of HIV infection among pupils of senior forms of the secondary schools, professional-technical schools, technical schools, higher educational establishments; training of volunteers for prophylactic work, involvement of youth leaders, idols, former drug addicts to HIV problem; preparation of prophylaxis, based upon the principle of equality, or “peer-to-peer education”; conducting tele- and radiotransmissions for population on HIV infection prophylaxis among different groups of population; preparation of information material on the different aspects of HIV infection problem and their distribution in the computer network.

The basic instrument of resistance to HIV epidemic in Russia presently is the priority national project “Health” in 2009–2012.

Findings

In Novgorod region the epidemic rise of HIV infection sickness rate, connected with the rapid HIV infection distribution among people using drugs, is still continuing. More frequently the HIV infection affects young people in the age from 15 to 30 years, and in the last 2–3 years the increase of detection of patients of older age is observed.

The transit of epidemic is observed into the new phase—generalization: distribution in the socially favourable groups of population with activation of the sexual way of transmission, the increase of infecting the women and correspondingly the increase of children, born from HIV

infected mothers is observed. The majority of these women have in anamnesis the injection drug addiction that leads to creation of the unfavourable families and big rate of abandoned children, deterioration of clinical examination and increase of the children’s infection. Enough high frequency of HIV infection transmission from mother to child is observed in Novgorod region. As a result of intensification of the prophylactic work in this region, the indicators of the region are essentially lower than the indicators of the Russian Federation, but prevails than such indicators in the countries of the Western Europe.

For reduction of HIV infection distribution in the Russian Federation it is necessary to implement prophylactic measures, giving the notable effect. The prophylactic measures, directed on the groups of population, which can be infected or can distribute HIV with the utmost probability, must be given immediate priority.

Discussion

Since 1998 until present the detection rate of HIV among pregnant women raised by 100 times, and the quantity of deliveries and children born to HIV-positive mothers considerably increased. The situation is aggravated by that average 22 % of women having pre-delivery observance, and drug addiction in this group of pregnant women is distributed 3 times more, of whom 77.6 % consume drugs during pregnancy [8]. The unfavourable social status of HIV-positive mother and absence of pre-delivery observance reduce the coverage of perinatal prophylaxis, promoting to the support of virus level in the blood. They are the basic factors of risk of HIV transmission from mother to child, and they form the low devotion to the following dispensary observation.

In this region enough high frequency of HIV infection transmission is kept. For 12 months in 2013, 64 children were born. Prophylaxis of the vertical way of transmission was conducted in 90.3 % cases (three-staged—in 46 cases,

in deliveries + child—5 cases, only to a child—11 cases, was not conducted at all—2 cases). The risk of perinatal HIV transmission for the whole period of observation made 8 %. For comparison, in the European countries this indicator does not exceed 1 % [9].

Because of these circumstances, it is required further intensification of complex measures and improvement of the work with HIV-infected women on the level of mass media, in youth welfare centers, in women welfare centers in the period of pregnancy and maternity hospitals with compulsory conduction of the necessary course of chemotherapy that prevent virus infecting of children.

Annually the number of persons with progressing stages of HIV infection frequently with severe secondary diseases and infection requiring more active clinical examination, hospitalization, proper diagnostics, prescription of the antiretroviral therapy and longer treatment is increased. Totally in Novgorod region 420 HIV infected patients died and of them 139 in the stage of AIDS.

For stopping the epidemic of HIV infection it is necessary to conduct immediate prophylactic measures, which give notable effect. Without application of modern methods of management of this work it will be impossible to achieve necessary results [10].

The world history of HIV infection prophylaxis shows that the epidemic can be stopped and even forced to step back if timely, adequate, and comprehensible prophylactic measures are performed. The prophylactic measures, directed on the groups of population that could probably be infected and which could distribute HIV must be of utmost priority. The detection of the infected people in the group of risk is an extremely important task for any national programme [11].

The distribution of HIV can be slowed down due to the changes in social behavior of population: reduction of the quantity of sexual partners and partners on intravenous drug injection, the usage of contraceptives during the sexual act, and application of sterilized instruments for intravenous injections. The most effective way of epidemic limitation in the conditions of vaccine absence is the reduction of risk behavior.

At organization of the work upon prophylaxis of HIV infection it is necessary to use principles of the public health system, directed on improvement of the health and prevention of the disease both on the local and national level, using the public health workers, specialists on the public health, sanitary-educational work, educators, teachers, scientific workers, representatives of public community and political figures.

All prophylactic programs must be based upon the objective estimation of situation according to the data of diseases and results of sociological studies, conducted in different social groups of population. It is very important to take into account the peculiarities of the Russian mentality, traditions with predominance of spiritual categories, specific relation to the high feelings, exclusive value of family relation with the aim of exclusion of the negative reaction of the part of society, giving response to the propaganda of safe sex as “corruption” of youth.

Acknowledgments The work is executed upon the financial support of the Russian Humanitarian Fund (project number—14-16-53001).

Conflict of interest The authors declare that they have no conflict of interest.

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