Despite various anti-tuberculosis measures in the setting of HIV infection, the epidemiological situation of tuberculosis in Russia is deteriorating. We have analyzed the data of statistical report form no.61 for years 2004-2014, surveillance data on individual TB cases with HIV coinfection for years 2004-2014 (personal data) and TB care arrangements for patients with HIV in 20 regions. The main causes of the deteriorating epidemiological situation are the growing immunodeficiency in patients with TB coinfection, unseparated epidemiologically dangerous patient flows (patients with tuberculosis and HIV-infected patients) and low quality preventative measures in special care medical facilities. Chemoprophylaxis can be an effective method of controlling the spread of tuberculosis among HIV-infected patients if it is recommended by a qualified tuberculosis therapist to patients adhering to regular drug intake under supervision of medical personnel. Otherwise a large scale chemoprophylaxis can result in an increased proportion of patients with drug-resistant tuberculosis. This works suggests criteria for the evaluation of tuberculosis care effectiveness considering the pathogenesis of the disease during late stages of HIV.

Keywords: tuberculosis, HIV-infection, tuberculosis care, tuberculosis chemoprophylaxis

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The World Health Organization defines the fight against tuberculosis among HIV-infected patients as one of the priorities in health care, while high-quality epidemiological surveillance is an important aspect here [1]. Russia is also developing a strategy for combating tuberculosis among persons with HIV infection [2]. Discussions on the epidemiological situation and approaches to tuberculosis care delivery to HIV-infected TB patients began in the late 1990s [3, 4].

Russia began in 1999 to keep records of TB patients with HIV infection according to report form No 61 of the Federal statistical surveillance “Information About HIV Patient Population”. In 2001, the first results of its analysis were published [5], while in 2002, the first doctor’s TB care manual for HIV patients was published [6]. Later, approaches developed by Russian researchers were approved by WHO experts and issued by joint recommendations [7, 8]. Russia became the first and still the only country that introduced a personalized monitoring system for TB patients with HIV infection [9]. In 2008, doctors in the regions started entering a number of information about cases of tuberculosis in HIV-infected patients into report form No 61 based on personalized monitoring data. In 2004, under the auspices of the Russian Ministry of Health, the country launched a training program for TB specialists and infectious disease experts working with HIV-infected patients. In 2014, Russian Society of Phthisiologists issued the Federal Guidelines for the Diagnosis and Treatment of Tuberculosis in HIV-Infected Patients. The Guidelines expanded and modernized the approaches to tuberculosis chemoprophylaxis [10]. A draft instruction on TB chemoprophylaxis in HIV-infected patients is currently being discussed. It has been sent to regional centers for prevention and control of AIDS. The authors of this article have a copy. However, despite the measures taken, the epidemic of tuberculosis chemoprophylaxis for HIV patients [11] is worrying because it can trigger increase in drug resistance in mycobacterium tuberculosis.

Efficacy of tuberculosis chemoprophylaxis

Tuberculosis chemoprophylaxis in HIV-infected persons is undoubtedly one of the most effective means of preventing the spread of the disease if drug administration is controlled by a doctor. However, ensuring such a control is extremely difficult because most of the patients with HIV infection are socially disadvantaged. For instance, in 2014, among HIV patients with tuberculosis, 75.5 % were of working age who were not working for a long time, 66.2 % were infected through drug injection, 42.1 % were currently or previously in prisons. In this connection, an indication to provide coverage of tuberculosis chemoprophylaxis for at least 50 % of HIV-infected patients [13] is worrying because it can trigger increase in drug resistance in mycobacterium tuberculosis.

The question now is whether uncontrolled TB chemoprophylaxis of HIV patients will be an additional reason for emergence and spread of mycobacterium strains that are resistant to anti-TB drugs. Will this uncontrolled TB chemoprophylaxis be effective even when drugs are taken regularly, if the draft instruction on TB chemoprophylaxis encourages HIV patients to take rifampicin to which there is primary drug resistance in many of the patients and which is not combined with antiretroviral drugs included in the basic HIV treatment scheme? In addition, there are doubts over whether it is possible to cover such a number of HIV-infected patients (at least 50 %) since, according to our data, about 30 % of them are not included in records at HIV/AIDS prevention and control centers (HAPCC). Moreover, over 12 % of patients on record do not undergo medical examination. At the same time, 9.8 % of them are not included in records at HIV/AIDS prevention and control centers (HAPCC). Moreover, over 12 % of patients on record do not undergo medical examination. At the same
time, requiring HIV-infected patients to visit a clinic without their consent has been prohibited by law since 1995 [14].

In our opinion, only a TB doctor can prescribe tuberculosis chemoprophylaxis to HIV patients. Such doctor must be trained on this problem and the patients must be only those who are committed to regular use of drugs. Drug administration itself should be under the supervision of an HAPCC medical staff or personnel of a unit providing such functions at the municipal level. Tuberculosis chemoprophylaxis of HIV-infected patients at TB facilities, that is, at the infection source, is unacceptable.

**Ways of improving the quality of TB care to HIV-infected patients**

It is necessary to deploy a procedure for TB care to HIV patients that would minimize the likelihood of contact with severely immunocompromised persons and TB patients.

Medical care to TB patients with HIV infection should be provided at different TB facilities, depending on whether the patient has bacterial excretion and there is drug resistance in mycobacterium tuberculosis. For their treatment at a TB clinic, the salaries of TB doctors and infectious disease physicians must be provided for. Doctors may be taken into these positions only after occupational retraining. Their number should be determined by load (number of patients). Both specialists must be staff of the entire clinic and not just of a single ward, and manage HIV-infected patients distributed in the wards.

To minimize the likelihood of contact with patients with advanced HIV infection and tuberculosis patients with bacterial excretion, only TB specialists should terminate a TB treatment in the continuation phase at persistent absence of bacterial excretion. But this should be done at facilities providing specialized care to HIV patients. The same is true of follow-up of patients from the third record group. Treatment of HIV-infected patients with chronic forms of tuberculosis with bacterial excretion should be done only at a TB clinic.

Thus, most of the work on prevention, detection and diagnosis of tuberculosis, as well as differential diagnosis of tuberculosis and other secondary diseases in HIV infection should be conducted by HIV care facilities.

**Criteria for assessing the efficiency of TB care in HIV-infected patients**

Some standard criteria in TB are not relevant in the later stages of HIV infection and may compromise the work of TB facilities. For example, it is not proper in cases where TB detection in infected patients is determined by load (number of patients). Both specialists must be staff of the entire clinic and not just of a single ward, and manage HIV-infected patients distributed in the wards.

To minimize the likelihood of contact with patients with advanced HIV infection and tuberculosis patients with bacterial excretion, only TB specialists should terminate a TB treatment in the continuation phase at persistent absence of bacterial excretion. But this should be done at facilities providing specialized care to HIV patients. The same is true of follow-up of patients from the third record group. Treatment of HIV-infected patients with chronic forms of tuberculosis with bacterial excretion should be done only at a TB clinic.

Thus, most of the work on prevention, detection and diagnosis of tuberculosis, as well as differential diagnosis of tuberculosis and other secondary diseases in HIV infection should be conducted by HIV care facilities.

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