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Clinical and Epidemiological Aspects of Determining the Effectiveness of Drugs in Primary and Secondary Pulmonary Tuberculosis

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Abstract. A third of the world's population is infected with Mycobacterium tuberculosis (MTB) and more than 9 million cases of tuberculosis (TB) are diagnosed annually, resulting in almost 2 million deaths each year (WHO., 2015). TB accounts for more than a quarter of all preventable deaths among adults in TB-endemic countries and a third of deaths among people with HIV infection. These facts make it possible to classify TB as a disease with a high mortality rate in the adult population. The scale of the TB problem is further aggravated by the evolution and global spread of Mycobacterium tuberculosis strains that are resistant to primary and reserve anti-TB drugs. Of particular concern are cases of drug resistance, increasing from multidrug resistance and extensive drug resistance to variants of infection for which no effective therapeutics remain.

Keywords: Koch bacillus, primary tuberculosis, infection, tuberculosis, morbidity, anti-tuberculosis drugs, chronic.

Tuberculosis is a socially significant infection and is one of the ten leading causes of death in the world. In this regard, the World Health Organization (WHO) has developed a strategy to eliminate tuberculosis for the period 2016-2035. The implementation of this strategy involves a thorough epidemiological assessment of the situation to identify regions and subpopulations with a high burden of disease in order to achieve targets for reducing morbidity and mortality from this infection.

Drug-resistant tuberculosis (TB) is a growing global threat. Approximately 450,000 people developed multidrug-resistant TB worldwide in 2012 and an estimated 170,000 people died from the disease. This paper describes the sociodemographic, clinical-epidemiological and bacteriological aspects of TB and correlates these features with the distribution of anti-TB drug resistance. Mycobacterium tuberculosis (MT) cultures and drug susceptibility testing were performed according to the BACTEC MGIT 960 method. The results demonstrated that MT strains from individuals who received treatment for TB and people who were infected with human immunodeficiency virus were more resistant to TB drugs compared to other individuals ($p < 0.05$). Approximately half of the individuals received supervised treatment, but most drug-resistant cases were positive for pulmonary TB and exhibited positive acid-fast bacilli smears, which are complicating factors for TB control programs. Primary healthcare is the ideal level for early disease detection, but tertiary healthcare is the most common entry point for patients into the system. These factors require special attention from healthcare managers and professionals to effectively control and monitor the spread of TB drug-resistant cases.

Tuberculosis (TB) is one of the pressing problems of practical health care throughout the world. The causative agent of tuberculosis infection, M. tuberculosis, as an infectious agent, has killed more people than any other microbial pathogen (Daniel T.M., 2006). According to WHO, in 2012, 8.7 million new cases were registered in the world, the incidence rate was 125 per 100 thousand population (WHO, 2012). At the same time, the rise in incidence, characteristic of the last two decades, took place not only in economically backward countries, but also in developed countries of Western Europe, as well as in the USA (Onischenko G.G., 2008). This unfavorable trend is still observed today, despite the availability of effective treatment regimens and diagnostic methods (Ernst J. D. et al., 2007

Purpose of the study: to identify the features of the epidemiological manifestations of tuberculosis and drug resistance of the pathogen to determine the possibility of eliminating the infection in the territories of the Republic of Uzbekistan.

Research objectives:

1. To study the manifestations of the epidemic process of tuberculosis in the territories of the Republic of Uzbekistan.

2. To analyze indicators of multidrug resistance of M. tuberculosis strains in newly diagnosed patients with respiratory tuberculosis and patients treated with anti-tuberculosis drugs in the territories of the Republic of Uzbekistan.

3. Determine the molecular genetic characteristics of M. tuberculosis in patients with ineffective therapy using the example of the Bukhara region.

4. To forecast the incidence of tuberculosis in the territories of the Republic of Uzbekistan to determine the prospects for eliminating the infection.

Conclusions

1. The socio-epidemiological significance of tuberculosis is currently determined by the following features: stabilization of the incidence rate at a high level (53.4 - 42.3 per 100 thousand in 2001 - 2005) with a simultaneous continued increase in mortality (from 6.4 per 100 thousand in 1999 to 11.9 per 100 thousand in 2005), an increase in the proportion of bacillary patients (from 36.2% in 1999 to 56.4% in 2005), an increase in the infection rate of children in all groups (from 20 .7% in 1999 to 48.5% in 2005 in the age group up to 14 years, and, accordingly, from 50.8% to 83.6% in the age group from 15 to 18 years).

2. When studying the main factors and risk groups, it was found that men suffer from tuberculosis more often than women, accounting for 62.8% of the total number of patients. Among newly diagnosed patients, both men and women, there is a large proportion of representatives of the economically and socially active age group - from 30 to 49 years (45.6%). In the structure of patients based on social characteristics, the largest share (43.3%) is unemployed of working age. However, among women who contracted tuberculosis in the last five years, the proportion of employees (43.8%) became higher than the proportion of non-working women (35.0%)

3. In the modern structure of foci of tuberculosis infection, foci with single diseases predominate (97.8%), formed by patients with newly diagnosed tuberculosis (72.8%), living in communal apartments (67.2%), group I epidemic burden: educated bacteria-transmitting patients living with children in unfavorable sanitary and hygienic conditions (51.3%) and under the supervision of a dispensary for one year (53.2%).

4. During the observation period from 1999 to 2005. the share of foci of drug-resistant tuberculosis increased from 17.1% to 26.7%, amounting to an average of 20.7%.

5. In the structure of outbreaks based on social characteristics, the share of outbreaks formed by persons without a fixed place of residence averaged 1999-2005. 5.4%, and the share of outbreaks formed by persons permanently residing without official registration is 3.6%. During this period,

the proportion of outbreaks of these types increased: from 2.3% to 10.7%, and from 1.6% to 9.9%. respectively.

6. The most important method for detecting tuberculosis in current conditions continues to be a fluorographic examination of the population. Preventive examinations for tuberculosis should be concentrated in social groups at risk. Such groups are homeless people (detection rate is 44.4±24.22 per 1000), unemployed people of working age (detection rate - 1.91±0.51) and employees of private enterprises (detection rate - 1.39±0. 64).

7. The quality of bacterioscopic examination for tuberculosis in the general medical network was unsatisfactory. Isolation of mycobacteria by patients could only be detected in specialized anti-tuberculosis institutions and never in the general medical network. It is necessary to take urgent measures to improve the quality of bacterioscopic diagnostics in medical institutions of the general medical network.

8. Disinfection measures in the foci of tuberculosis were not carried out in full: chamber disinfection of personal belongings and bedding of patients was not carried out, which significantly reduced the value of the final disinfection.

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