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Antiretroviral therapy, immunoreactivity and level of virus loading at the patients with co-infection HIV/Tuberculosis

Abstract

Tuberculosis is one of the most often secondary diseases at the patients with HIV-infection causing a heavy defeat of various localization and being the basic reason of letal outcome at the patients with AIDS.1,2 The patients having simultaneously a tuberculosis and a HIV-infection, concern to the most difficult contingent, both among the patients with HIV-infection, and among the patients with tuberculosis.3 Presence of a HIV-infection - highest risk of tuberculosis development.

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Introduction

Tuberculosis is one of the most often secondary diseases at the patients with HIV-infection causing a heavy defeat of various localization and being the basic reason of letal outcome at the patients with AIDS.[1,2] The patients having simultaneously a tuberculosis and a HIV-infection, concern to the most difficult contingent, both among the patients with HIV-infection, and among the patients with tuberculosis.[3] Presence of a HIV-infection - highest risk of tuberculosis development.

Mortality from tuberculosis for patients with HIV-infection is more, than at the constant population of Russia consisting on the account, in 28 times. The influence of HIV-infection on epidemic process at tuberculosis will be increased. By 2020 among the first time registered tuberculosis patients, HIV-infection can have up to 30% of the patients as a whole on Russia, and in the separate subjects of Russian Federation-till 40-50%. The tuberculosis morbility of HIV-infected, in comparison with average parameters on Russia, among the constant population in 2012 was in 35 times more.[4] The purpose of research-definition of antiretroviral therapy influence on immunoreactivety condition and level of virus loading at the patients with co-infection HIV/tuberculosis.

Materials and methods

In total 300 men were inspected. Group I-100 patients with co-infection of lung tuberculosis and HIV, not receiving antiretroviral therapy (ARVT); group II - 100 patients with co-infection of lung tuberculosis and HIV, receiving antiretroviral therapy; group III-100 patients with co-infection of drug resistant lung tuberculosis and HIV, receiving antiretroviral therapy.

Results and their arguing

The standard procedure of inspection HIV-infected patients is the definition of the immune status, in particular of CD4 lymphocytes level.

The note:

P1 - reliability of distinctions of parameters at the patients with HIV/tuberculosis 1-й and 2 groups;

P2 - reliability of distinctions of parameters at the patients with HIV/tuberculosis 1-й and 3-rd groups;

P3 - reliability of distinctions of parameters at the patients with HIV/tuberculosis 2-й and 3-rd groups.

Under of ARVT influence (Table 1) the CD4 lymphocytes level increased on 34,5 % (patients of 3-rd group) and 37,5 % (patients of 2 group) in comparison with the patients, which did not received ARVT (1-я group). For the 2 group patients the CD4 contents has made 373,8±13,6 and 356,3±11,5 cells / mm3 for the 3-rd group patients. The different is uncertain (P >0,05).Taking into account that the absolute metrics of the immune status can considerably vary during even of day, the definition of CD4 lymphocytes level in percentage was carried out. In this case metrics considerably differed with a high degree of reliability for the patients of 1-st group on the one hand and patients of 2 and 3-rd groups, from other (Table 2). The antiretroviral therapy resulted to rise of CD4 lymphocytes percentage almost on 40 %. However contents CD4 cells did not depend on the mode of antituberculosis therapy. The difference in percentage CD4 lymphocytes in group 2 and 3 has appeared statistically uncertain (P>0,05).

Table 1 Immune status parameters at the patients with HIV/tuberculosis on groups in absolute units

CD4-lymphocytes parameters	Groups of the inspected persons					
	HIV/tuberculosis group 1 (n =100)	HIV/tuberculosis group 2 (n =100)	HIV/tuberculosis group 3 (n =100)	P1 1-2	P2 1-3	P3 2-3
CD4- lymphocytes parameters cells/mm³	233,3±13,9	373,8±13,6	356,3±11,5	<0,001	<0,001	>0,05

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Table 2 Immune status parameters at the patients with HIV/tuberculosis on groups in %

CD4-lymphocytes parameters	Groups of the inspected persons					
	HIV/tuberculosis group 1 (n =100)	HIV/tuberculosis group 2 (n =100)	HIV/tuberculosis group 3 (n =100)	P1 1-2	P2 1-3	P3 2-3
CD4- lymphocytes parameters in %	13,1±1,5	21,3±1,3	20,3±1,20	<0,001	<0,001	>0,05

The note

P1-reliability of distinctions of parameters at the patients with HIV/tuberculosis 1-й and 2 groups;

P2-reliability of distinctions of parameters at the patients with HIV/tuberculosis 1-й and 3-rd groups;

P3-reliability of distinctions of parameters at the patients with HIV/tuberculosis 2-й and 3-rd groups.

One of main laboratory markers of HIV progressing now is the definition of HIV virus load (concentration of HIV RNA in blood). We pars metrics for the patients with a co- infection a HIV/tuberculosis in dependence of the antituberculosis therapy mode from spent or not spent ARVT (Table 3).

Table 3 Parameters of virus loading at the patients with co-infection HIV/tuberculosis on groups in absolute units

Parameters of virus loading	Groups of the inspected persons					
	HIV/tuberculosis group 1 (n =100)	HIV/tuberculosis group 2 (n =100)	HIV/tuberculosis group 3 (n =100)	P1 1-2	P2 1-3	P3 2-3
Virus loading, copy/мл	12000000±72000	68000±1200	71000±1100	<0,001	<0,001	>0,05

The note

P1-reliability of distinctions of parameters at the patients with HIV/tuberculosis 1-й and 2 groups;

P2-reliability of distinctions of parameters at the patients with HIV/tuberculosis 1-й and 3-rd groups;

P3-reliability of distinctions of parameters at the patients with HIV/tuberculosis 2-й and 3-rd groups.

The essential decrease of virus loading under influence of antiretroviral therapy at the patients with lung tuberculosis, as receiving treatment on 1-st standard mode, and at the patients with drug resistant was established. Virus loading between the patients with 2 and 3 groups differed unsignificantly (P>0,05).

Conclusion

Antiretroviral therapy resulted to increase absolute and percentage CD4-lymphosites, that is to activation of immune responses, which outcome was the difference in a level of HIV virus load for patients receiving ARVT comparison with not receiving ones practically in 176 time.

Acknowledgments

None.

Conflict of interest

The author declares that there is no conflict of interest.

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