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LIPIDS IN ESTIMATION OF TUBERCULOSIS TREATMENT VARIOUS MODES TOXIC ACTION AT THE PATIENTS WITH HIV- INFECTION

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Russian Federation concerns to number of the countries with high worsening tuberculosis epidemiological situation on HIV-infection. At the patients with HIV-infection of tuberculosis mortality reaches 43-89 %. The tuberculosis morbidity at the patients with HIV-infection were at 21-37 of time is higher, than at the people without HIV-infection, and in separate researches speak about risk of tuberculosis development at early stages of HIV-infection in 113 times.

The purpose of work - to determine importance of blood lipid changes in an estimation of toxic action of various modes of tuberculosis treatment at the patients with HIV-infection. Totally 100 persons with a tuberculosis and HIV infection with a various mode of tuberculosis treatment were surveyed. The parameters of the routine biochemical tests and relative contents total lipids and phospholipids were investigated.

The analysis of biochemical tests routine parameters has found out absence of level increase total bilirubin, creatinine, alaninaminotransferase (ALT), aspartaminotransferase (AST) activity. However there is increased level of activity alkaline phosphatase (173,2 ЕД/л) and lactatedehydrogenase (379,4 ЕД/л) at the patients with the first mode tuberculosis chemotherapy.

The first standard mode of tuberculosis treatment was rendered more expressed toxic effect on the patients, which was shown more by high level fry fatty acid, trigliceriges and low level of free cholesterol and ethers of cholesterol were established.

The increase of a phosphatidiletanolamine level can be considered as not only the proved marker of the first standard regime toxic tuberculosis treatment action, but also efficiency of application antiretroviral therapy at the patients with tuberculosis/HIV-infection.

Key words: *tuberculosis, HIV-infection, chemotherapy*

According to conclusions of the World Health organization (WHO), tuberculosis (TB) is still one of the basic global problems of public health services [1, 2]. More than third of globe population were infected with tuberculosis bacteria [3]. On the data the WHO for 2009 in the world was totaled of 9,4 million patients with tuberculosis and 1,7 mln were lost as a result of diagnostic and medical mistakes [4].

Russian Federation concerns to number of the countries with high burden of a tuberculosis and worsening epidemiological situation at HIV-infection. The tuberculosis mortality at patients with HIV- infection in 21-37 time is higher, than at the people without HIV-infection, and in separate researches speak about risk of tuberculosis development at early stages of HIV-infection in 113 times [5].

The mortality of TB patients with a HIV-infection is extremely high and is equal 15,5 %, that in 2,2 times it is more, than mortality of all TB patients (7,2 %), consisting on the account in antituberculosis institutions [6]. At the patients with HIV-infection mortality from TB reaches 43-89 % [7, 8].

The purpose of the work - to determine the importance of blood lipid changes in an estimation of toxic action of various modes of tuberculosis treatment at the patients with HIV-infection.

MATERIALS AND METHODS

Criteria of inclusion of the patients in research were: primary diagnostics of infiltrative tuberculosis without distraction, presence of HIV-infection (supervision inspection and treatment in conditions of the HIV-center).

Totally 100 persons were surveyed. In their structure: group I - 50 primary patients with drug sensitive infiltrative lung tuberculosis (receiving treatment on I standard mode with rifampicine, HRZE) without distraction and HIV-infection the 4B stage at the persons receiving antiretroviral therapy; group II - primary 50 patients with proved drug resistant infiltrative lung tuberculosis without distraction (multiple medicinal stability HRS) and HIV-infection in 4B stage at the persons receiving antiretroviral therapy.

The abundance of the following fractions of lipids – total phospholipids (FL), free cholesterol (FC), free fatty acids (FFA), triglycerids (TG), cholesterol ethers (CE), total lipophospholipids (LPL), sphingomyelin (SM), phosphatidylcholin (PH), phosphatidylethanolamin (PE) were investigated.

The tuberculosis chemotherapy regime is formed according to the Federal clinical recommendations on the basis of information on medicinal stability of the bacteria. The clinical and laboratory data estimated in one month from a beginning of tuberculosis treatment.

The patients with a HIV-infection in stage 4B and disseminated tuberculosis, and also patients with a heavy accompanying pathology (sugar diabetes, renal and hepatic insufficiency, oncologic processes) and chronic inflammation diseases in a phase of an aggravation were excluded from research.

RESULTS AND THEIR DISCUSSION

The analysis of parameters routine biochemical tests has found out absence of total bilirubin, creatinine level increase, alaninaminotransferase

(ALT), aspartaminotransferase (AST) activity. However there is increased level of activity alkaline phosphatase (173,2 ЕД/л) and lactatedehydrogenase (379,4 ЕД/л) at the patients with the first mode tuberculosis chemotherapy.

Alkaline фосфатаза provides a normal exchange of substances in all tissues of human been. From here at a defeat of cells of any bodies mechanical, inflammation, degenerative or neoplastic character the part of ferments from the damaged tissues gets in bloods channel, thus the increase of activity alkaline phosphatase in plasma of blood is determined. In the given situation the increase of activity alkaline phosphatase can be connected as with the inflammation process in lung tubercular etiology, and with degenerative processes of destruction immunocompetent cells, inducted with HIV virus.

The level of lactatedehydrogenase activity (LDG) is increased practically at any pathological processes, which the inflammation and destruction of cells structures accompanies. Therefore as reasons of the given parameter increase at the patients with tuberculosis/HIV it is possible to consider as alteration of lung tissues in process of cazeonic inflammation, defeat of immunocompetent cells and hepatocytes owing to HIV-infection.

That is the therapy of tuberculosis on the first standard regime renders the greater damaging action on cells membranes and is more toxic.

The research of lipid spectrum parameters had the purpose to reveal influence of different chemotherapy regimes on blood lipid spectrum at the patients with tuberculosis/HIV co- infection.

The study of ratio lipid spectrum fractions has the special importance in understanding of development lung destructive process, as it is known, that membranes of all cells, including alveocytes, consist of lipids (tab. 1) and, that it is more important, from phospholipids (tab. 2).

In groups of the tuberculosis/HIV patients were present the large similarity under the relative contents common phospholipids, but at the patients receiving 1-st standard regime treatment (group 1), was available authentically more high level FFA, TG and low free cholesterol and cholesterol ethers.

That is, the first chemotherapy regime rendered more expressed toxic effect on the relative contents as free, and cholesterol ethers, probably, at the expense of increase of cholinesterase activity. The high relative triglycerid contents can be connected with inhibiting of triglyceridlipase activity with more toxic preparations used at tuberculosis chemotherapy the first standard regime.

Tabl. 1.

Blood lipid structure at the patients with tuberculosis/HIV on groups depending of the tuberculosis chemotherapy regime

Fraction of common lipids	Lipid parameters (M ± m) in %	P
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	Tub/HIV group 1 (n =50)	Tub/HIV group 2 (n =50)	
PL (% to common lipids)	17,7±0,8	18,2±0,5	>0,05
FC (% to common lipids)	12,4±0,6	15,1±0,6	<0,01
FFA(% to common lipids)	7,3±0,4	6,0±0,3	<0,02
TG (% to common lipids)	36,5±0,5	26,6±0,6	<0,001
CE (% to common lipids)	26,1±0,5	34,1±1,0	<0,001

The note: P - reliability of distinctions of parameters at the patients with tuberculosis/HIV, depending of the tuberculosis chemotherapy regime

Is marked, that the patients with tuberculosis/HIV co - infection receiving treatment on the 1-st standard regime had a level LPL coming nearer to norm and lower, than have patients of 2 group with MGR, and PE higher (tab. 2). The sphingomielin contents and phosphatidilholin has not found out authentic distinctions in the patients with a tuberculosis/HIV in groups 1 and 2.

Tabl. 1.

Blood phospholipid structure at the patients with tuberculosis/HIV on groups depending of the tuberculosis chemotherapy regime

PHOSPHOLIPIDS	Phospholipid parameters (M ± m) in %		P
	ВИЧ/туб-з группа 1 (n =50)	ВИЧ/туб-з группа 2 (n =50)	
Lisophospholipids (LPL)	25,3±0,9	30,5±1,1	<0,001
Sphingomielin (SM)	22,5±0,7	23,3±0,4	<0,01
Phosphatidilholn (PH)	35,4±1,0	33,7±1,2	<0,001
Phosphatidiletanolamin (PE)	16,8±0,6	12,5±0,4	<0,001

The note: P - reliability of distinctions of parameters at the patients with tuberculosis/HIV receiving treatment on the first standard regime (group 1) and patients with multiple medicinal stability (group 2).

The lowered relative blood contents LPL, SM at the patients with tuberculosis/HIV co-infection then the tuberculosis treatment was on the first standard regime can be a consequence inhibiting endogenic phospholipase activity, infringements of recilliring processes, that leads to accumulation these lipids on membranes and reduction of them contents in blood.

The rather low relative contents PH revealed at the patients with tuberculosis/HIV co-infection with treatment on 2 regime can be connected that the given kind tuberculosis chemotherapy results in preservation of the certain quantity tuberculosis micobacterium, which reduce phosphatidiletanolamine-metiltransferase activity. It, in turn, results in decrease of the relative contents phosphatidilholin [9].

CONCLUSIONS

Thus, 1 standard regime of tuberculosis/HIV treatment rendered more expressed toxic effect on the patients, in comparison with a regime of multiple medicinal stability of tuberculosis/HIV. The first standard mode of tuberculosis treatment was rendered more expressed toxic effect on the patients, which was shown more by high level fry fatty acid, trigliceriges and low level of free cholesterol and ethers of cholesterol were established.

The increase of a phosphstidiletanolamine level can be considered as not only the proved marker of the first standard regime toxic tuberculosis treatment action, but also efficiency of application antiretroviral therapy at the patients with tuberculosis/HIV-infection.

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