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CURRENT APPROACHES TO INTERPRETATION OF LABORATORY CRITERIA OF SEVERITY AND PROGNOSIS OF PATIENTS WITH HIV/AIDS

Ключові слова: *HIV/AIDS, the
criteria of severity, prognosis.*

Резюме. *Lately more and more crucial diagnostic methods of the functional state of endothelium in liver disease, chronic obstructive pulmonary diseases, coronary heart disease, diabetes, hypertension and others assume ever greater topicality. The data obtained are useful for assessing the degree of severity of disease and to monitor therapeutic measures. However, there are no information in the literature devoted to studying the functional state of endothelium in HIV-infection/AIDS. So far, the search for fundamentally new approaches to integrated diagnosis of endothelial dysfunction in patients with HIV/AIDS and investigation of their relationship with severity, presence of opportunistic infections is continued. We know that it is quite different from the traditional approach to studying the functional state of endothelial vascular wall - definition of blood substances that are synthesized in endothelial cells and secreted them in the lumen, and consequently in circulating blood. Thus the questions of diagnosis and prognosis of HIV/AIDS remain urgent and require further research.*

Ukraine in development of the epidemic process of HIV infection is one of the leading countries of Eastern Europe at present time. Almost 78% of HIV-positive citizens of Ukraine are young, reproductive people aged from 15 to 49 years old. The spread of this disease in Ukraine is due to social factors - economic instability, poverty and unemployment. Difficult economic situation prevents the conduct of effective response to the increasingly growing threat of HIV infection in the country. Urgent issue is the search for prognostic markers of progression of HIV infection and their relationship with clinical manifestations of disease, presence of opportunistic infections.

HIV infection is characterized by slow but steady damage of all systems and organs of human body [1, 2]. Lesions of the cardiovascular system in HIV infection is accompanied by changes in central hemodynamics and microcirculation disturbance, accompanied by the development of various pathological conditions such as coronary heart disease, cerebrovascular pathology, hypertension and so on.

Hemorrhagic syndrome, indicating the presence of dysfunction of the vascular wall is often in the clinical symptoms of HIV infection. Important direct vascular endothelial damage and pathogens of HIV opportunistic infections, which are characterized with cytotoxic effect on cells of the vascular wall (cytomegalovirus infection, hepatitis viruses B

and C, etc.) are among the pathogenetic mechanisms that lead to changes of hemostasis in HIV infection.

Laboratory criteria of severity and prognosis of HIV infection at the present stage include determining the level of CD4 lymphocytes and the number of nucleic acids in the blood (viral load) [3]. Rate of CD4 lymphocytes is traditionally regarded as the most reliable indicator of prognosis of HIV infection. The number of CD4+ T-lymphocytes reflects the degree of damage already developed immune system.

Changes in CD4 levels can assess the severity of immunodeficiency, which emerged in the patient, to determine the likelihood of opportunistic infections, the plan of treatment and evaluate its effectiveness, to determine prognosis. There is a correlation of complications with the level of CD4+ T-lymphocytes. Determination of CD4+ T-lymphocytes, conducted in dynamics, makes it possible to accurately assess the risk of opportunistic infections and other conditions caused by HIV infection, to assess the effectiveness of HAART.

The level of viral load speeds the destruction, or the rate at which the disease progresses. In turn, the rate of progression reflecting the replication rate of HIV in the body. viral load, which correlates with the rate of decline of CD4 +, is an important prognostic indicator and the performance criterion HAART. The effectiveness of many drugs HAART

depends on the initial viral load. The probability of HIV transmission in any form of contact is directly correlated with viral load.

Factors that increase viral load: progression of disease, antiretroviral treatment failure, active infection (eg, active tuberculosis increases in viral load 5-160 times) immunizations (eg flu shot).

Concurrent research content CD4+ T-lymphocytes and the level of viral load, as well as in dynamics, enables most accurately to predict the course of HIV infection and evaluate the effectiveness of HAART.

Determination of the concentration of virus in blood by PCR is currently considered one of the most important criteria for disease course. The high rate of viral load is an early sign of early disease progression and poor prognostic sign [4]. However, economic inaccessibility of these methods do not allow to use them widely.

Today it is the actual search for reliable prognostic markers of progression of HIV infection and their relationship to clinical manifestations of disease, presence of opportunistic infections, antiretroviral treatment efficacy and more. Thus the main goal of scientists is not a replacement for determination of the number of CD4 lymphocytes or content of nucleic acids of the virus and the possibility of obtaining additional information to create predictive models of the progression of HIV infection.

It is known that on the basis of indirect markers one can judge the state of the immune system in patients with HIV/AIDS. They include the contents of β 2-microglobulin (β 2M) in serum and neopterin in serum or urine. β 2-low-protein, which form the light chain of antigen and major histocompatibility complex, appearance on the surface of the most somatic cells, including T-, B-lymphocytes and macrophages. Increased content β 2M occurs during non-specific stimulation of lymphoid tissue that occurs in various pathological conditions, with infectious diseases of viral origin. Neopterin - guanosine triphosphate produced by macrophages in response to stimulation of γ -interferon and in large quantities, in its turn, produced by activated T-lymphocytes. A number of studies was to clarify the correlation of the above figures the number of CD4-lymphocyte count and disease progression. Most researchers agree that there is a connection between them and these parameters can be taken into account in predictive models of the progression of HIV infection [4]. Quantitative determination of p24 antigen is of value in early detection of HIV infection and monitoring the effectiveness of antiretroviral therapy [5].

It is known that the clinical picture of HIV infection is often hemorrhagic syndrome, in addition

to 62.3% of patients at the stage of secondary diseases 3B - 4 (AIDS) is the direct cause of death appeared thrombohemorrhagic syndrome, indicating the presence of dysfunction of the vascular wall. This gives reason to believe that among the pathogenetic mechanisms that lead to changes of hemostasis in HIV infection has important direct vascular endothelial damage by infection with HIV and opportunistic infections, characterized cytotoxic effect against cells of the vascular wall, such as cytomegalovirus, hepatitis B virus and C and others. Another important mechanism of endothelial damage in HIV infection are changes in the immune system. Activation and/or endothelial damage are fundamental in the development of a wide range of pathological processes. Lately crucial diagnostic methods of the functional state of endothelium in liver disease, chronic obstructive pulmonary diseases, coronary heart disease, diabetes, hypertension and others assume ever greater topicality. The data obtained are useful for assessing the degree of severity of disease and to monitor therapeutic measures. However, there are no literature information devoted to studying the functional state of endothelium in HIV/AIDS. So far, the search for fundamentally new approaches to integrated diagnosis of endothelial dysfunction in patients with HIV/AIDS and investigation of their relationship with severity, presence of opportunistic infections is continued.

We know that it is quite different from the traditional approach to studying the functional state of endothelial vascular wall - definition of blood substances that are synthesized in endothelial cells and secreted them in the lumen, and consequently in circulating blood. It is shown that among these substances, are: von Willebrand factor, E-selectin and thrombomodulin [7, 8, 9]. Among the numerous studies of various aspects of HIV infection the study of free radical oxidation, including lipid peroxidation play an important role. In patients with HIV infection it has been a significant intensification of lipid peroxidation against a background of inhibition of antioxidant protection. It shows the accumulation of highly toxic peroxidation products and decreased activity of catalase, ceruloplasmin concentration in the blood. Therefore, determining the level of malondialdehyde, catalase and ceruloplasmin can be used to diagnose the severity and prognosis of HIV infection [10, 11]. Thus the questions of diagnosis and prognosis of HIV/AIDS remain urgent and require further research.

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СУЧАСНІ ПІДХОДИ ДО ІНТЕРПРЕТАЦІЇ ЛАБОРАТОРНИХ КРИТЕРІЇВ ТЯЖКОСТІ ПЕРЕБІГУ І ПРОГНОЗУ У ХВОРИХ НА ВІЛ/СНІД

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Резюме. В останній час все більшої актуальності набувають методи діагностики функціонального стану ендотелію при захворюваннях печінки, хронічних обструктивних захворюваннях легень, ішемічній хворобі серця, цукровому діабеті, гіпертонічній хворобі та ін. Отримані дані є корисними для оцінки ступеня тяжкості перебігу захворювань, а також для контролю за лікувальними заходами. Однак в літературі не знайдено робіт, присвячених вивченню функціонального стану ендотелію при ВІЛ-інфекції/СНІДі. Досі триває пошук принципово нових підходів до комплексної діагностики ендотеліальної дисфункції у хворих на ВІЛ-інфекцію/СНІД та дослідження їх зв'язку з ступенем тяжкості, наявністю опортуністичних інфекцій. Відомо, що кардинально відрізняється від традиційних

підхід до вивчення функціонального стану ендотелію судинної стінки – визначення вмісту в крові речовин, що синтезуються в клітинах ендотелію і секретуються ними в просвіт судини, і, відповідно, в циркулюючу кров. Таким чином питання діагностики та прогнозування перебігу ВІЛ-інфекції/СНІД залишається актуальним і потребує подальших наукових досліджень.

Ключові слова: ВІЛ/СНІД, критерії тяжкості перебігу, прогноз.

СОВРЕМЕННЫЕ ПОДХОДЫ К ИНТЕРПРЕТАЦИИ ЛАБОРАТОРНЫХ КРИТЕРИЕВ ТЯЖЕСТИ ТЕЧЕНИЯ И ПРОГНОЗА У БОЛЬНЫХ НА ВИЧ/СПИД

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Резюме. В последнее время все большую актуальность приобретают методы диагностики функционального состояния эндотелия при заболеваниях печени, хронических обструктивных заболеваниях легких, ишемической болезни сердца, сахарном диабете, гипертонической болезни и др. Полученные данные являются полезными для оценки степени тяжести течения заболеваний, а также для контроля лечебных мероприятий. Однако в литературе не найдено работ, посвященных изучению функционального состояния эндотелия при ВИЧ-инфекции/СПИДа. До сих пор продолжается поиск принципиально новых подходов к комплексной диагностике эндотелиальной дисфункции у больных ВИЧ-инфекцией/СПИДом и исследование их связи со степенью тяжести, наличием опортуністических инфекций. Известно, что кардинально отличается от традиционных подход к изучению функционального состояния эндотелия сосудистой стенки - определение содержания в крови веществ, синтезируемых в клетках эндотелия и секретируемых ими в просвет сосуда, и, соответственно, в циркулирующую кровь. Таким образом, вопросы диагностики и прогнозирования течения ВИЧ-инфекции/СПИДа остаются актуальными и требует дальнейших научных исследований.

Ключевые слова: ВИЧ/СПИД, критерии тяжести течения, прогноз.

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