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Clinical Course of Anemia in HIV-Infected Patients

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Abstract: The incidence of HIV infection (HIV - human immunodeficiency virus) continues to grow steadily. The number of patients with late stages of HIV infection and the presence of various opportunistic diseases has significantly increased, in addition, the high incidence of anemia. The article presents the features of the clinic and diagnosis of anemia in HIV-infected patients, clinical cases of diagnosis verification in patients with severe anemia: a description of the clinical picture and diagnosis of cases of the development of the disease

Keywords: HIV infection, anemia, human immunodeficiency virus, ART.

Relevance. HIV infection in the 21st century is one of the most serious threats to social progress and human development. Due to the emergence of highly active antiretroviral therapy (ARVT) in the late 90s of the twentieth century, Human Immunodeficiency Virus (HIV) infection is a chronic progressive anthroponotic disease with a blood-borne infection mechanism, which leads to specific damage to the immune system and the development of severe immunodeficiency [Pokrovsky V.I. ... 1987, 1988; Pokrovsky V.V., 2000; Gashnikova N.M., Astakhova E.M. et al., 2016]. Opportunistic infections, malignant neoplasms, damage to the central nervous system (CNS) are the main clinical manifestations of the progression of HIV-mediated immunosuppression. The progression of HIV infection without antiretroviral therapy (ART) leads to the development of a serious condition in patients, disability and disability, an increase in the frequency of deaths [Rakhmanova AG, 2004; Yakovlev A.A., 2005]. HIV infection has fully acquired the status of a common chronic disease [Hoffmann C.J., Fielding K.L., Charalambous S. et al., 2008; Pokrovsky V.V., Yurin O.G., Belyaeva V.V. et al., 2001]. Therefore, it became fundamentally important to take into account the clinical and laboratory symptoms associated with both the effect of the treatment and the overall prognosis of the disease [Hoffmann C.J., Fielding K.L., Charalambous S. et al., 2008; Moore, R. D., 2000]. Separate attention should be paid to a completely independent and specific for HIV infection mechanism of defeat - virus infection of stem cells (CD34 +) with their subsequent lysis [Andrews, N. C., 2002; Mocroft A., Kirk O., Barton S. E. et al., 1999; Louache F., Debili N., Narandin A. et al., 1994; Intalaporn P., Poovorawan Y., Suankratay C., 2006]. In our region, the situation with anemia among HIV-infected remains poorly understood.

Purpose of the study. To assess the clinical and laboratory features of anemia in HIV-infected patients.

Research methods. The study was carried out from 2019 to 2020 on the basis of the infectious diseases hospital of Andijan region. To conduct the study, 102 potential study participants were selected from among all patients admitted to patients with HIV infection. The conditions for inclusion in the study were: patients diagnosed with HIV infection; the presence of clinical and / or laboratory signs of immunodeficiency: over 14 years of age. In addition to this study, an assessment was made of the possible effect of ARVT on hemoglobin levels in HIV-infected patients with anemia. All laboratory tests were carried out in the laboratory of the infectious diseases hospital in Andijan region. Patients were examined in accordance with the standards of dispensary observation of patients registered with a diagnosis of HIV infection.

Research results and discussion. The study made it possible to establish a high probability of developing anemia in patients with clinical (presence of opportunistic diseases) and laboratory (CD4 cell count less than 200 in 1 μ l) signs of severe immunosuppression. The study showed that anemia in HIV-infected patients in these phases of the disease develops quite early: the median was only 517 days (1 year 152 days). After 6 months, anemia developed in 32.8% of patients, after a year in 46.1%, and after 2 months - in 55.4%.

60.1% of patients from the study group had no anemia at the time of initiation of therapy. While taking antiretroviral drugs, it developed in 32.1% of patients. Only in 6.9% in the first 3 months from the start of therapy, in the remaining 33 cases, the causes of anemia were most likely not associated with the appointment of ART. Among patients who developed anemia in the first 3 months from the start of treatment (9 people), in three of them the viral load was determined after 3 months of ART.



90.4% of patients received therapy regimens that included azidothymidine and stavudine. The most commonly prescribed regimens were combivir + stocrin 38.5% and combivir + kaletra 21.1%. Among patients with persistent anemia, 88.5% of patients received similar regimens. When comparing the frequency of prescribing these treatment regimens, there is no significant difference $p = 0.78$. When analyzing clinical data, it was found that patients most often complain of weakness (37.4%) and drowsiness (12.1%). Evaluation of the sensitivity of such a diagnostic sign as "typical complaints" (weakness, fatigue, headaches, shortness of breath, rapid heartbeat, drowsiness, perverted taste, jaundice, brittle nails) in the study group among patients showed that although the sensitivity in the general group was low (39, 3%) and did not differ in individual diseases, the specificity of the test was 79%, and the likelihood ratio of a positive result was 1.8. Thus, the presence of complaints characteristic of anemia has a rather high value in its diagnosis: such a clinical situation occurs 1.8 times more often than in the comparison group. We observed a similar picture when assessing the sensitivity of such a test as "the presence of clinical symptoms" (84.1%) - pallor of the skin and mucous membranes, hepatomegaly, hemorrhagic syndrome, tachycardia.

The overwhelming majority of patients in the study group (82.3%) had grade 1 anemia; grade 2 and 3 anemia was established in 9.3% and 8.4% of patients, respectively.

To assess the possible relationship between the severity of anemia and the levels of immunosuppression and viral load of the observed patients, we performed a correlation analysis of the results. A statistically significant positive correlation was found between the number of CD4 lymphocytes and hemoglobin values ($r = 0.20$; $p = 0.038$). In contrast, the level of HIV RNA with the level of Hb was weakly associated ($r = -0.007$; $p = 0.94$). During the subsequent stage of statistical processing, statistically significant differences in the level of hemoglobin were revealed in patients with different degrees of immunosuppression ($p = 0.014$). The comparison showed that when the level of CD4 + cells was below 200, the hemoglobin values were the lowest, which is apparently associated with the addition of secondary diseases against the background of severe immunodeficiency. The difference in hemoglobin values in patients with high (more than 100,000 cop / ml) and low (less than 100,000 cop / ml) viral load levels was not statistically significant.

The number of men (57.2%) and women (42.8%) in the group was approximately the same, their average age was 32.5 ± 5.8 years. The number of patients with clinical and laboratory signs of immunodeficiency and without them was also approximately the same. Mild anemia (Hb level 90 g / l or more) was detected in 76.2%, moderate (Hb level from 70 to 89 g / l) - in 3, severe form (Hb less than 70 g / l) - in 2 patients.

Anemia of chronic disease was the most common type of anemia that develops regardless of the gender of the patients. It is also relevant for patients with varying degrees of severity of anemia; while the most severe forms develop with concomitant iron deficiency.

Conclusions. The presence of complaints characteristic of anemia has a high value in its diagnosis: such a clinical situation occurs 1.8 times more often than in the comparison group ($p < 0.05$). The sensitivity of the test "presence of clinical symptoms" in the study group was 84.1%, which indicates that anemia at this stage of HIV infection forms clinically manifest variants of the disease. In HIV-infected patients with laboratory signs of functional iron deficiency, the dominant variant of anemia is anemia of chronic disease.

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