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Is the possible toxic action of HIV infection on haematopoietic function of pregnant women?

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Abstract

The controversy about the effect of HIV infection or antiretroviral therapy on the haematopoietic function of infected women was the reason for the study, which was to determine the connection between the severity of anemia in HIV-infected pregnant women who received and did not receive specific prevention of vertical HIV transmission to the fetus 215 birth histories of HIV-infected women were analyzed to determine hemoglobin level. Women with kidney and gastrointestinal problems were excluded from the study. Of the studied 86 pregnant women received complete prophylaxis, 72 only during childbirth and 57 did not receive prophylaxis. Anemia was detected in 54.6% of women in the first group, in 86.1% of the second and in 78.4% of the third. At the same time, significantly low hemoglobin levels were observed in the group of women who did not receive prophylactic therapy.

Keywords: HIV, pregnancy, prevention, anemia, antiretroviral therapy, hemoglobin

Introduction

Anemia in HIV-infected women can have serious consequences, ranging from a decrease in the quality of life to the progression of disease, worsening prognosis and survival. To this day, the causal relationships of HIV infection and anemia remain unclear.[1]

The question of the resistance of haematopoietic stem cells to HIV infection to date is di skutabelnym. It has been proven that myeloid cell precursors can be infected with HIV, which dramatically reduces their functional activity. Tak happens HIV infection of T-cells and macrophages with subsequent decrease of haematopoietic factors and development of anemia. Some authors counting w t, anemia HIV infection develops in the secondary stage of disease with lesions of stem cells by a secondary infection and antiretroviral therapy undertaken has antianemic effect.[2,3] The same opinion is shared by M.V. Drozd, who attach great importance to opportunistic infection in the development of anemia in HIV-infected people. He points to the special role in the development of anemia, cytomegalovirus infection, Epstein-Bar virus and herpes zoster. At the same time, Shifman E.M. et al.[4] consider anemia in HIV-infected women as a toxic effect of ARVT on the haematopoietic function of the bone marrow through the blocking of the mitochondrial cell apparatus. The authors note a decrease in the production of erythrocytes in HIV-infected women with ART, especially when taking zidovudine, an inhibitor of reverse transcriptase, which inhibits bone marrow function and can lead to neutropenia and anemia. Shifman E.M. et al.[4] suggest that the specific manifestation of the inhibition of the haematopoietic function of the bone marrow by the use of antiretroviral drugs is macrocytosis of erythrocytes.

Regardless of the commitment to a particular theory of the development of anemia in HIV-infected women, all authors consider it advisable to use recombinant erythropoietin in HIV-infected women with anemia as the pathogenetic variant of the most rational therapy.

The aim of the study was to determine the relationship between the severity of anemia and the presence or absence of prevention of vertical transmission of HIV infection from mother to fetus.

Material and methods

A retrospective analysis of 215 birth histories of HIV-infected women over the past 2 years has been carried out. The selection of stories was conducted arbitrarily, that is, the study was randomized. The study excluded cases of kidney and gastrointestinal tract. The hemoglobin index before childbirth was taken into account. Birth stories were divided into 3 groups. The first group included women who received full prevention of vertical transmission of HIV infection from the mother to the fetus. This group (86 people) of women included pregnant women who received prophylaxis no later than 24 weeks of pregnancy and during childbirth. In the second group, women who received prophylaxis only during childbirth (72 people) and in the third group (57 people) women who did not receive prophylactic treatment for ART.

Repeated labor in the first group in 47 (54.6%) women in the second group in 55 (76.4%) women and in the third group 51 (89.5%) people. The reliability of differences in the results obtained was calculated by the student's criterion.[5-7]

Results and its discussion

The average age in the studied groups of women was not significantly different ($P \geq 0.01$) and was respectively 26.4±1.3 years, 27.3±1.4 and 26.8±1.8 years.

Premature birth in the first group occurred in 18 (20.9%) cases, in the second in 10 (13.9%) women and in the third in 14 (25%) pregnant women. Operational resolution in the first group was made in 18 (20.9%) women, in the second in 10 (13.9%) and in the third in 10 (17.8%).

There were no perinatal losses in the first two groups of women. All children were born in a satisfactory condition. In the third group of women in 4 cases marked antenatal fetal death

In the first group of women, prophylaxis during pregnancy was carried out by a three-component antiretroviral therapy using kaletra, epivir and zerita, in the delivery of retrovir. In the second group of women, 20 (27.8%) people received retrovir, viramune and lamivudine, the remaining 52 (72.2%) received only retrovir.

Anemia before childbirth was detected in 149 (69.4%). HIV-infected women in the analyzed birth histories. There were 118 (79.2%) pregnant women with the first degree of anemia, 22 (14.8%) with the second, and 9 (6%) with the third.

Among women who received complete prevention of vertical transmission of HIV infection, anemia was diagnosed in 47 (54.6%) people. Of these, grade 1 anemia was in 38 (80.8 %) women, grade 2 in 6 (12.8%) and grade 3 in 3 (6.4%). In the second group of women who received prevention of vertical HIV transmission from mother to fetus, anemia was diagnosed before delivery in 62 (86.1%) people, of which 50 (80.6%) women had the first degree, 9 (14.6%) had the second degree and the third 3 (4.8%) are pregnant. And in the third group of women who did not receive prophylactic treatment of anemia was diagnosed in 40 (78.4%) pregnant women. The first degree of anemia in this group of women is marked in 32 (80%) cases and the second in 8 (20%).

Thus, the frequency of anemia in the studied groups of women did not differ significantly from the presence or absence of complete or incomplete prevention of vertical HIV transmission from mother to fetus. The same pattern is preserved when considering the frequency of severity of anemia in the considered groups of women.

To confirm this conclusion, the average indicators in the considered groups of women were compared. It was noted that the average hemoglobin level in the first group of women who received full prophylaxis was 105.9±1.4 g/l, in the second group 98.4±1.6 g/l and in the third group - 94.4±1.8 g/l. The results obtained significantly ($P \leq 0.01$) differed in the compared groups. At the same time, such a pattern as a significant decrease in hemoglobin with a decrease or absence of ARVT attracted attention.

Findings

1. P Acquiring results indicate the probability of toxic effects of HIV infection on the haematopoietic function of bone marrow, which requires further research and scientific evidence.
2. ART does not reduce hemoglobin levels in HIV-infected pregnant women and does not affect the severity of anemia.
3. The highest percentage of preterm birth was noted in the group of women who did not receive prevention of vertical transmission of HIV infection from mother to fetus.
4. Antiretroviral therapy for HIV in pregnant women does not increase the level of anemia among them.
5. The occurrence of anemia in HIV-infected pregnant women does not exclude the effect of antiretroviral therapy on haematopoiesis.

References

1. Volberding PA, Levine AM, Dieterich D, et al. Anemia in HIV infection: clinical impact and evidence-based management strategies. *Clin Infect Dis*. 2004;38(10):1454-1463.
2. Abrosimova AA. Anemia in the stage of secondary diseases of HIV infection: *Author Dis Cand Honey sciences*. 2012;24c.
3. Afonina LYu, Voronin EE, Fomin Yu A, et al. Clinical guidelines for the prevention of HIV transmission from mother to child. *UNICEF*. 2009;52.
4. Shifman EM, Khramchenko NV, Tikhova GP. CHeart function changes during pregnancy. *Anesteziol Reanimatol*. 2012;6:4-9.
5. HIV infection and AIDS: National leadership. Short edition / ed. Acad. VV Pokrovsky M. *GEOTAR Media.* 2014;528c.
6. Pokrovsky VV, Yurin OG, Kravchenko AV. Protocols of follow-up and treatment of patients with HIV infection. National Scientific Society of Infectiologists. *Epidemiol Infection Diseases Actual Vopr*. 2013;6.31-37.
7. Order of the Ministry of Health of the Russian Federation of November 1, 2012 No 572n "On approval of the Procedure for rendering medical care in the profile" obstetrics and gynecology (except for the use of assisted reproductive technologies) "with changes and amendments dated January 17, 2014 of the Russian Federation health care dated November 15, 2012.
8. Kulikov AV, Shifman EM. Clinical recommendations and protocols of anesthesia, intensive care and resuscitation in obstetrics and gynecology. *Medicine*. 2016;471.