WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 5, Issue 11, November - 2024

ASSESSMENT CRITERIA AND ECONOMIC EFFICIENCY INDICATORS OF INFANTS BORN FROM HIV-INFECTED PREGNANT WOMEN

Kalniyazova Inobatxon Bayramovna,
Sobirov Ogabek Gulomovich,
Abdusattorova Xadicha Abdulaziz qizi
Tashkent Medical Academy, Tashkent, Uzbekistan

Abstract:
The article presents an analysis of the negative impact of HIV infection on the baby's adaptation mechanisms as a result of long-term communication with the assessment of the condition of babies born from HIV-infected pregnant women using the Apgar scale. Obstetrical risk factors related to pregnancy were comparatively studied in the results of the survey conducted by the author among HIV-infected and non-infected pregnant women. In the article, the cost-effectiveness of antiretroviral treatment for HIV-infected mother and her newborn baby is scientifically based.

Keywords: HIV-infection, pregnancy, risk factors, preeclampsia, anemia, viral load, Apgar scale, antiretroviral treatment (ART), economic efficiency.

Introduction

Relevance: Protecting the reproductive health of pregnant women is one of the important directions of the state demographic policy. Epidemiologist, obstetrician-gynecologist and neonatologists have always been concerned with the issue of giving birth to a healthy newborn child from a mother infected with HIV while preventing perinatal risk factors.

The study of perinatal risk factors includes the analysis of the state of health of parents, pregnancy and childbirth. It helps to determine the morphofunctional maturity of the newborn [9]. The choice of delivery method in HIV-infected pregnant women is important in terms of reducing the risk of perinatal transmission and addressing existing obstetric conditions. That's why the Apgar scale method has been widely used in obstetric practice all over the world for more than 70 years. Virginia Apgar was the first in 1952 to propose systematic methods for assessing the condition of a newborn baby. She was the first female professor of anesthesiology at Columbia University. His scale is recognized worldwide and has been widely used for almost 70 years [7]. Almost 10 years after Virginia Apgar proposed her scale, in 1961, doctor J. Butterfield of the University of Colorado created a mnemonic (mnemonics, derived from the Greek word "mnemonikos - the art of remembering") to remember the first

letters of the APGAR family by his student (ordinator). means, i.e., a method that makes it easier to remember by creating artificial associations). suggested using it as a rule, and Virginia Apgar supported it. In this case, A- appearance (appearance); R – pulse (pulsi); G – grimace (facial expression); A- activity (activity); R- means respiration (breathing) [5].

Obstetric and postpartum complications in HIV-infected pregnant women Recommendation for elective caesarean section at 38 weeks' gestation for all HIV-infected women with a serum viral load >1000 copies/ml based on a meta-analysis of fifteen studies in 6 European countries 1999 was also supported by the US Congress of Obstetricians and Gynecologists [11]. In the course of research, HIV-infection was found in 8.8% of children born by caesarean section after rupture of the membranes from the birth canal, 10.2% during vaginal delivery and 2.4% during planned caesarean section. After that, scientists concluded that a planned cesarean section can reduce the risk of HIV infection of the fetus by 50% [8].

Anemia during pregnancy is in most cases due to spontaneous abortion, bleeding during previous births, pathological changes in the body's iron depot, reduction of iron in the body, folic acid, group B vitamins, protein deficiency, chronic diseases of the gastrointestinal system, severe obstetric history (in the anamnesis occurs after complications of frequent childbirth, multiple pregnancies, bleeding during pregnancy of various localizations before the placenta). Among HIV-infected pregnant women, chronic viral inflammation of the bone marrow, taking a number of antiretroviral drugs (zidovudine, phosphazid) can be added to the listed reasons [4]. Anemia is a common complication of pregnancy, with rates ranging from 15% to 50% in HIV-uninfected pregnant women [6]. It is 1.5 times more common among HIV-infected pregnant women [10]. Since iron deficiency is a factor that increases the risk of perinatal transmission of HIV, it adversely affects pregnancy, childbirth and the postpartum period. As a result, preterm and low birth weight may increase the risk of HIV transmission to newborns [2]. Intravenous zidovudine is recommended for all HIV-positive pregnant women, regardless of whether or not they received an antiretroviral regimen during labor. If the patient has been taking an antiretroviral treatment regimen since pregnancy, the same process will continue (zidovudine is given intravenously, and other antiretroviral drugs are given orally). If the patient's HIV status is unknown, then a quick test to determine HIV antibodies will be performed. If the test results are positive, intravenous zidovudine should be administered to the mother and antiretroviral prophylaxis to the newborn should be started immediately without a confirmatory HIV test. It is also important to start HIV prevention for babies. The maximum intake of zidovudine occurs within 12 hours after

birth [3]. Research data on the high risk of developing severe preeclampsia and obstetric bleeding in HIV-positive pregnant women did not reveal statistically significant differences in the level of preeclampsia in healthy and HIV-infected pregnant women [1].

Purpose of the study:

It consists in the study of criteria and cost-effectiveness indicators for assessing the condition of babies born from HIV-infected pregnant women.

Materials and methods:

For the prepare this study was used analysis of the results of the epidemiological process of HIV - infection among pregnant women for 2011-2021. in the Republic of Karakalpakstan and also official statistical, reporting data of the AIDS Control Center of the Republic of Karakalpakstan.

Results and Discussion

Taking into account the state of the fetus, the condition of newborns born from 75 HIV-infected pregnant women was analyzed according to the obstetric Apgar scale. According to the results of the analysis, within 5 minutes after birth, there were no babies with a clinical status (status) of "8-10 points", that is, there were no absolutely healthy babies, "7-6 points" were of moderate severity, mild asphyxia 66.7±5.5 %, "5-4 score" 10.7±3.6% born with moderate asphyxia in severe condition, "3-1 score" extremely severe condition, 5.3±2.6% with severe asphyxia, "0-score" stillbirth and in 12.0±3.8% of cases there is no information about the fetus in the medical records (see Figure 1).

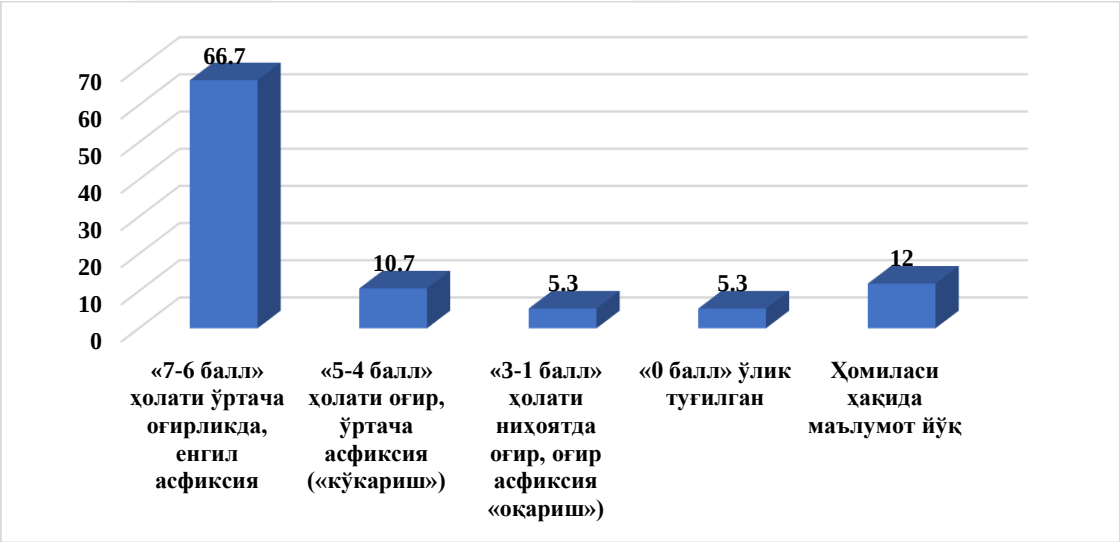

Figure 1. Distribution of fetuses according to obstetric indicators (Apgar scale) in HIV-infected pregnant women (n=75)

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 5, Issue 11, November - 2024

It has been noted that infection during pregnancy has a negative effect on the child's adaptation mechanisms. Also, 5.3±2.6% of children did not live up to 18 months, which is also alarming and prompts to think about the impact of HIV infection not only on the pregnant woman, but also on the health of the newborn. As a result of the effective coverage of HIV-infected pregnant women with antiretroviral treatment, the case of vertical transmission of HIV in newborns has not been detected. As a result of a special individual approach to the risk factors for each HIV-infected pregnant woman and babies born by caesarean section, the Center for the fight against AIDS of the Republic of Karakalpakstan effectively carried out preventive measures, carried out medical examinations in a timely manner in full and step by step, cases of perinatal transmission of HIV-infection from mother to child were not observed as a result of providing babies with artificial nutrients up to 6 months.

Since 2015, according to WHO recommendations, all pregnant women infected with HIV, regardless of the number of CD4 lymphocytes, are receiving antiretroviral treatment (ART), regardless of the number of viral loads.Reference laboratories equipped with high-quality test systems for HIV diagnosis in AIDS centersBy determining the number of SD4-lymphocytes and checking the amount of viral load, the level of HIV RNA is determined. According to the results of serological examination of pregnant women in reference laboratories at the Center for the fight against AIDS of the Republic of Karakalpakstaninitialanalyzes of virological and immunological parameters at visit and after antiretroviral treatment were performed (see Table 1).

Table 1. Analysis of CD4-lymphocytes and HIV RNA level at the first and post-ART visit of HIV-infected pregnant women in 2011-2021 (n=75)

Groups	Indicators	Number of HIV-infected pregnant women, n=75				r
		Initial visit		After ART		
		m.r.	% (M±m)	m.r.	% (M±m)	
1. CD4-lymphocyte level, cells/ml						
I	≤200	20	26.7±5.1	2	2.7±1.9	<0.001
II	201-350	32	42.7±5.7	4	5.3±2.6	<0.001
III	351-500	18	24.0±5.0	26	34.7±5.5	>0.05
IV	> 500	5	6.7±2.0	43	57.3±5.7	<0.001

2. HIV RNA level, copies/ml						
I	≤40	16	21.3±4.8	25	33.3±5.5	>0.05
II	41-1000	31	41.3±5.7	39	52.0±5.8	>0.05
III	1001–10,000	5	6.7±2.9	6	8.0±3.2	>0.05
IV	10 00–100 000	17	22.7±4.9	4	5.3±2.6	<0.01
V	> 100,000	6	8.0±3.2	1	1.3±1.3	<0.05

At the first visit of HIV-infected pregnant women, it was found that the number of CD4 lymphocytes was less than ≤200 in 20, 201-350 in 32, 351-500 in 18, and after ART it was more than 500 in 43 pregnant women, it was 351-500 in 26. .

At the initial visit of HIV-infected pregnant women, the level of HIV RNA was 41-1000 in 31, 10,000-100,000 in 17, 41-1,000 in 39, 10,000-100,000 in 4 after ART, i.e. reduction of concomitant diseases after ART compared to the initial visit found that 6 pregnant women were in the terminal stage of AIDS at the initial visit (>100,000), and effective results were observed after ART.

Table 2 shows the results of the questionnaire analysis on the clinical course of pregnancy in 150 pregnant women treated at the regional perinatal center of the Republic of Karakalpakstan. The questionnaire was specially developed, and an expert opinion was given by the Ethics Committee under the Ministry of Health of the Republic of Uzbekistan No. 5/10-1677 dated July 5, 2022. In 2011-2021, 50 HIV-infected pregnant women registered at the dispensary at the AIDS Center of the Republic of Karakalpakstan and 150 pregnant women without HIV infection registered at the Perinatal Center of the Republic of Karakalpakstan in 2021 voluntarily participated in the survey. Women aged 17-45 participated in this survey. Each age group was included in each group, but in the control group, 1 woman was 41-45 years old, but in the main group, an HIV-positive woman in this age group did not agree to participate, the ratio of the main group to the control group was 1:3, which is in line with international recommendations will come The average age of women in both groups participating in the survey is 21-30 years. The sample shows the quintessence, is representative, that is, it gives an idea about the attitude of the population to the issue under study. A statistically significant result was obtained using the studied factors.

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 5, Issue 11, November - 2024

Table 2. Questionnaire of HIV-positive respondents in the main group and HIV-negative respondents in the control groupanalysis

Obstetrical instructions related to pregnancy	Main group (n=50)		Control group (n=150)	
	m.r.	% (M±m)	m.r.	% (M±m)
Vaginal bleeding	6	12.0±4.6	1	0.67±0.67*
Pain in the lower abdomen	2	4.0±2.8	8	5.3±1.8
Lower back pain	2	4.0±2.8	3	2.0±1.1
Bleeding (rarely)	1	2.0±2.0	-	-
Blood pressure	25	50.0±7.1	36	24.0±3.5**
There is a high probability of miscarriage	6	12.0±4.6	45	30.7±3.8**
There is a high probability of miscarriage and preeclampsia	2	4.0±2.8	-	-
Pain in the kidneys	2	4.0±2.8	-	-
Abortion	2	4.0±2.8	-	-
Preeclampsia	2	4.0±2.8	57	38.0±4.0***

Note: *-HIV-infected pregnant womendifferences in comparison with their indicators are reliable (*-P<0.05; **-P<0.01; ***-P<0.001).

According to the results of the analysis, the highest rate is 50.0 in pregnant women in the main groupAnemia was detected in ±7.1% (probably due to the limited resources of ART for perinatal prevention of HIV), vaginal bleeding and a high probability of miscarriage (vykydysh) in 12.0±4.6%, while in the control group 38.0±4.0% have preeclampsia, 30.7±3.8% have a high probability of miscarriage (vykidysh), anemia was detected in 24.0±3.5%.4.0±2.8% of pregnant women in the main group had an abortion due to fear of perinatal risk of HIV infection. Medical observations were made in comparison groups.

By economic efficiency, we understand the reduction of costs compared to the level achieved to achieve the desired result. Economic efficiency reflects the ratio of "result" and "cost". As an example, we can calculate the economic damage, taking into account the cost of antiretroviral drugs (ART) given from the state budget to HIV-infected pregnant women registered at the AIDS Center of the Republic of Karakalpakstan.

According to the Law of the Republic of Uzbekistan "On combating the spread of diseases caused by the human immunodeficiency virus (HIV infection)" special treatment is provided to all patients infected with HIV free of charge.

In recent years, the number of patients in need of HIV/AIDS treatment in the Republic of Uzbekistan is increasing year by year, and this need is causing great damage to the state's economic budget.

We calculated the economic efficiency of the antiretroviral drug (ART) 3TC 150mg +AZT 300mg 60, which is the most widely prescribed antiretroviral treatment for HIV-infected pregnant women at the AIDS Center of the Republic of Karakalpakstan. Table 3 shows the estimated cost of ART provided by the AIDS Center to 1 HIV-infected pregnant woman.

Table 3 Results of evaluation of the price of RVQP (in soums) provided by the State budget for HIV-infected pregnant women

ART names	The cost of one month of ART for one HIV-infected pregnant woman	The cost of a one-year course of ART for one HIV-infected pregnant woman	Number of HIV-infected pregnant women	To every new born baby Price of juices provided for ART for 28 days
3TC 150mg +AZT 300mg 60	418,560 soums	418 560*12= 5,022,720	418,560*75= 31,392,000	3TC(juice) + AZT(juice) + NVP (juice)
Total cost	418,560 soums	5 022 720 com	31,392,000 soums	83,838 soums

The price is 418,560 soums, the average price of one-year RVQP is 5,022,720 soums. It should be noted that ART provided to HIV-infected patients is covered by the State budget and prescribed for life. 3TC+AZT+NVP anti-retroviral prophylactic drugs will be given to every baby born from a mother infected with HIV-infection for 83 thousand 838 soums for 28 days. The monthly course of ART for a total of 75 HIV-infected pregnant women is 31 million 392 thousand 000 soums.This indicator of economic efficiency is based on the conclusion of the scientific and technical council under the Ministry of Health of the Republic of Uzbekistan dated July 8, 2024 No. 02/34.

Therefore, budget funds of 5,022,720 soums spent on antiretroviral treatment for each pregnant woman with HIV infection and 83,838 soums spent on juices for prevention against retroviruses for each newborn baby will be saved as a result of preventing the spread of HIV infection among pregnant women.

Conclusions:

Assessment of the condition of babies born from HIV-infected pregnant women using the Apgar scale method shows that HIV-infection has a negative effect on the baby's

adaptation mechanisms as a result of long-term communication. The clinical, epidemiological and immunological condition of HIV-infected pregnant women allows timely prevention of vertical transmission of infection and possible obstetric complications.

REFERENCES:

1. Arzhanova O.N., Kosheleva N.G., Gromyko G.L. Placental deficiency: diagnosis and treatment: treatment. - SPb. - LLC "Izdatelstvo N-L". – 2001. – S.32.
2. Belokoneva T.S., Tezikov Yu.V., Lipatov I.S., Agafonova O.V. Retrospective analysis of techeniya beremennosti i ee iskhodov u genshchin s HIV - infectious // Tavrichesky mediko - biologichesky vestnik. - 21 (2 - 2). – 2018. – P.14 – 19.
3. Belotserkovtseva L.D., Kovalenko L.V., Tefnants N.A., Kasparova A.E. Morfofunktsionalnye changes in the placenta in patients with HIV pri virusnom porajenii detey infektsiey // Vestnik Novgorodskogo gosudarstvennogo universiteta. - 2018. - 6 (112). - S.4-8.
4. Krugova L.V., Vartanov V.Ya., Khutorskaya N.N., Lapteva I.V., Shifman E.M. Corrective anemia and HIV - infected pregnant women, receiving antiretroviral drugs // Anesthesiology and resuscitation. - 2012. 6. P. 17-21.
5. Kuznetsov P.A., Knyazev S.A., Kataeva O.A. The Apgar scale is a rabochic instrument or «perevod strelok?» Status Praesens. Gynecology, obstetrics, infertility. 2015; 6 (29): 18-25.
6. Korotkova N.A., Prilepskaya V.N. Anemia beremennyx. Principles of modern therapy. Medicinsky Soviet. – 2015. P.58-63.
7. Apgar V. A proposal for a new method of evaluation of the newborn infant. Curr. Res Anest. Anal. 1953; 2 (4): 260-267.
8. European Mode of Delivery Collaboration. Elective caesarean section versus vaginal delivery in prevention of vertical HIV-1 transmission: a randomized clinical // Lancet. – 1999. – 353. – P.1035 – 1039.
9. INTERGROWTH-21st. Standard and tools.https://intergrowth21.tghn.org/standards-tools/
10. Phillips UK, Rosenberg MG, Dobroszycki J., Karz M., Sansary J., Gollatt MA, Wiznia AA, Abadi J. Pregnancy in women with perinatally acquired HIV infection: outcomes and challenges. AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV. - 2011. - 23(9). – P.1076 – 1082.
11. Townsend CL, Tookey PA, Newell ML, Cortina – Borja M. Antiretrovital therapy in pregnancy: balancing the risk of preterm delivery with prevention of mother – to – child HIV transmission // Antivirther. – 2010 – 15 (5). -P.775 - 783.