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PERINATAL OBSTETRIC OUTCOMES IN WOMEN WITH RHESUS-NEGATIVE BLOOD.

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Objective: The research focuses on the analysis of perinatal outcomes in women with rhesus-negative blood at the Republican Perinatal Centre in one year.

Materials and methods: The analysis was carried out on 341 women with rhesus-negative blood who were delivered at the perinatal center in one year. The women were divided into 4 groups. Group 1: 71 women who delivered baby with rhesus-negative blood. The 2nd group 225 women who delivered baby with rhesus-positive blood without increasing the titer of antibodies, the 3rd group 28 women who delivered baby with hemolytic disease of a newborn and the 4th group 18 women with rhesus immunization, but who underwent antenatal operation "Intrauterine intravascular blood transfusion to the fetus".

Research results: During the year it was revealed that the incidence of HDN was only 0.84% of all women born in the perinatal center, while the rate of HDN development in Rhesus-negative pregnant women was 14.0%.

Conclusion: The conducted antenatal "intrauterine intravascular blood transfusion to the fetus" in the 4th group (where 85.4% of newborns with low body weight) contributed to the decrease in the birth of newborns with severe asphyxia by more than 2.5 times.

Keywords: blood group, rhesus factor, rhesus antibodies, rhesus immunization, intrauterine, intravascular blood transfusion, hemolytic disease of the newborn, replacement blood transfusion.

Introduction:

According to foreign sources, incompatibility between Rh-negative mother and Rh-positive father and child is on average 10-13%. Mothers are immunized by 5-8% of women. Sometimes sensitization occurs during the first pregnancy, and in some cases after 4-5 pregnancy [1].

At the same time, the problem of this disease remains actual, as its frequency has remained at the same level in recent years and is 0.6-0.8%. In the structure of perinatal mortality, a hemolytic disease in newborns ranks 5th-2.5% [2].

In developed countries, the problem of rhesus-sensitization rarely occurs and only in emigrants. In our country, the number of pregnant women with rhesus-sensitization is growing from year to year and, unfortunately, there is a tendency to increase. According to the statistics of the Ministry of Health of the Republic of Uzbekistan, in the last 3 years, the frequency of hemolytic disease in newborns has increased. In 2016 1238 (0,17%) newborns, in 2017 1616 (0,23%) newborns, and in 2018 2044 (0,28%) newborns registered this disease. Both as a percentage and in absolute figures speak for themselves. In the structure of perinatal morbidity, the figures are also increasing. In 2016 HBN occupied 1.6% of the total nosology, in 2017 - 2.1%, in 2018 this figure reached 2.6%.

The reason is high birth rate, high birth rate parity, insufficient level of anti-rhesus immunoglobulin administration, absence of the state program on immunoprophylaxis, not development of fetal surgery in our country and lack of new scientific information from doctors about new achievements of science and medicine in the sphere of rhesus immunization.

Conducting intrauterine intravascular hemotransfusion reduces the frequency of replacement blood transfusions (RBT) in newborns by 10-15% and improves perinatal outcomes [3].

This method of operation was first introduced into medical practice in our republic in 2019 at the republican Perinatal Center.

This study aims to analyze the perinatal outcomes of pregnancy and childbirth in women with rhesus-negative blood delivered in the RPC in 2019.

The research materials and characteristics of the examined patients:

In the Republican Perinatal Center, 5,683 births took place in 2019. Of these, 341 women (6.0%) were pregnant with rhesus-negative blood. The consequences of childbirth in these women were analyzed. There were 171 (50.1 %) urban women and 170 (49.8 %) provincial women. The majority of provincial women were 125 (73.5%), while the remaining 45 (26.5%) were from other regions of the country. The age of pregnant women was between 19 and 44 years. The average age of women was 28.5 years. Of all negative women admitted to the perinatal center, 92 (27.0%) were premature.

All 341 women with negative blood rhesus were divided into 4 groups. Group 1 included 71 (20.8 per cent) women who had newborns with Rh-negative blood. Group 2 was represented by 225 (65.6%) women who gave birth to RHN-positive newborns without RHN. Group 3 included 28 (8.2%) women with RHN who whodelivered babywith RHN-positive. The 4th group was also represented

by 18 (5,3%) women with Rhesus immunization, but who had their first antenatal operation "Intrauterine intravascular blood transfusion to the fetus".

The World Health Organization (WHO) now recommends delayed umbilical cord transplantation for newborns after birth within the first minute, the benefits of which have been demonstrated in both preterm and premature infants with respect to their hemoglobin levels at birth, the need for transfusions, and other treatments for infants with delayed physical and mental development [4]. It has been shown that delayed umbilical cord compression in newborns with NDN increases hemoglobin levels at birth and reduces postnatal metabolic transfusions in the infant, and no increase in phototherapy is required [5].

Based on this, we used delayed umbilical cord compression for all babies with NDN in the 3rd and 4th groups after birth.

Results and discussion:

Group 1 included 71 (20.8%) women who gave birth to newborns with rhesus-negative blood. The average age of women was 28.1. Only one woman (1.4%) paradoxically increased the rhesus antibody titer. At parity, 23 women (32.3%) were prematurely pregnant, while the remaining 48 (67.6%) repeated pregnancies. In this group, there were 62 (87.3%) emergency births and 9 (12.7%) premature births. There were 2 twins and 1 triplet. Almost half of 35 women delivered babynaturally (49.2%). By weight category, 2 newborns (2.8 %) were born between 1,000 and 1,499 grams and 6 newborns (8.4 %) between 1,500 and 2,499 grams. Asphyxia of severe degree was observed in 2 newborns (2.8 %). 2-perinatal death due to respiratory distress syndrome (RDS) of a fetus. There was no hemolytic disease among newborns in this group.

The 2nd largest group included 225 women who gave birth to newborns with rhesus-positive blood but without rhesus immunization. Of these, 68 (30.2%) women were firstborn. The average age of women was 28.2. Curiously, only 7 (3.1%) women had antibody titers increased during pregnancy. In 31 (13.8%) women delivered prematurely, while the remaining 194 (86.2%) had an emergency delivery. In this group, 6 twins and 1 triplet were recorded. By weight category 2 newborns (0.88%) were born under 1000.0 grams. 4 newborns (1.77 per cent) were born weighing from 1000 to 1499 grams, 16 newborns (7.1 %) were born weighing from 1500 to 2499 grams. 5 newborns (2.22 %) were born in asphyxia. 2-perinatal deaths due to fetal respiratory distress syndrome (RDS) and congenital fetal malformation (CFM). There was no HDN among newborns in this group.

Group 3 included 28 women with rhesus immunization and who had the hemolytic neonatal disease (HDN) after childbirth. By age, the women were between 23 and 44 years old. The average age of women was 31.2. 13 women (46.4%) were from different regions of our Republic, 12 women (42.8%) from Tashkent region, and the rest 3 women (10.8%) from Tashkent city. At parity, all women were re-births. The parity of births ranged from two to nine births.

Twenty women (71.4 %) had various reproductive losses in their history. The gestation period ranged from 25 to 40 weeks. The frequency of premature births in this group was (67.8%), i.e. 19 women. The other 9 women (32.1%) gave birth on time. It is noteworthy that 4 women (14.3%) paradoxically did not have an increase in rhesus antibody titers in the antenatal period. The range of rhesus antibodies growth in pregnant women ranged from 1/8 to 1/256. Delivery in 17 women (60,7%) ended naturally. The other 11 women (39.3%) had operative deliveries. By weight category, the newborns were distributed as follows. 1 child (3.5%) weighing up to 1000.0 grams. 6 newborns (21.4 %) weighing 1,000 to 1,499 grams, 4 newborns (14.3 %) weighing 1,500 to 2,499 grams, and the remaining 17 newborns (60.7 %) weighing over 2,500.0 grams.

6 newborns (21.4 %) had perinatal deaths in this group. One of them was antenatal fetal death due to immune dropsy, while the other 5 cases were early neonatal deaths in newborns. On the Apgar scale, 4 newborns (14.3%) were born in severe asphyxia and received less than 4 points on the first minute. 2 newborns (7.15%) were born in moderate asphyxiation and received less than 6 points in the first minute of life. The remaining 21 women (75.0%) gave birth to newborns without signs of asphyxiation. All 28 newborns had HDN (hemolytic disease of a newborn). Of these, in 4 cases (14.3 %) the jaundiced form of HDN was noted, in 14 cases (50 %) the anaemic form of MMBN was noted, and the rest in 10 cases (35.7 %) the swelling form of HDN was noted, all newborns after birth had undergone RBT (replacement blood transfusion) and phototherapy. If after birth 15 (53.5 %) newborns received inpatient treatment in the neonatal intensive care unit, the remaining 12 newborns (42.8 per cent) received treatment in the ICU (intensive care unit) of the RPC newborns's ward.

Group 4 included 18 women with rhesus immunization, but who underwent intrauterine vascular blood transfusion to the fetus in the antenatal period. In this group, all newborns after childbirth had HDN (hemolytic disease of the newborn).

The age of the women was from 24 to 38 years. The average age of women was 30.9. 12 women (66.6 %) were from different regions of our Republic, 3 women (16.6 %) from Tashkent region and the remaining 3 women (16.6 %) were from Tashkent city. At parity, all women, as in the third group, repeated births. Births ranged from two to seven births was parity. Fifteen women (83.3 %) had various reproductive losses in their history. The gestation period ranged from 23 to 35 weeks. An increase in the titer of rhesus antibodies was observed in all women of this group in the antenatal period. The range of rhesus antibodies level increase in pregnant women ranged from 1/16 to 1/512.

Transabdominal cordocentesis was performed on all women of this group in the antenatal period. Hematological and biochemical data revealed the hemolytic disease of both oedema and anemic form. In 5 cases (27.7%) the oedematous form of HDN was detected, in 10 cases (55.5%) the anemic form of severe HBP was found, and in the remaining 3 cases (16.6%) the anemic form of

HDN was found to be of medium degree. All pregnant women underwent the operation "Intrauterine intravascular blood transfusion to the fetus". Of these, 3 (16.6%) women underwent the operation twice.

In case of severe fetal anemia, swollen form of HDN, as well as after intrauterine blood transfusion, and up to 32 weeks, operative delivery is preferable, as Caesarean section allows avoiding additional traumatization and hypoxia of the sick fetus during delivery [6]. The frequency of premature births in this group was (100%), i.e. all 18 women. The delivery in 5 women (27.7%) ended naturally. And the remaining 13 women (72.3%) had surgical deliveries.

By weight category, the newborns were categorized as follows. 2 newborns (11.1%) weighing up to 1000.0 g. 3 newborns (16,6%) weighing from 1000 to 1499g, 10 newborns (55,5%) weighing from 1500 to 2499g, and the remaining 3 newborns (16,6%) weighing over 2500,0g. Perinatal death was recorded in 5 newborns (27,7%) in this group. One of them had intra-uterine fetal death and another one had antenatal fetal death due to immune dropsy, while the remaining 3 cases were early neonatal deaths in newborns. On the Apgar 1 scale, the newborn (5.5%) was born in a state of severe asphyxia and received less than 4 points on the first minute. 5 newborns (27.7%) were born in moderate asphyxia and received less than 6 points in the first minute of life. The other 10 newborns (55.5%) were born with no signs of asphyxiation.

All of the 18 newborns had HDN (hemolytic disease of the newborn). Jaundiced form of HDN was not noted, only in 6 cases (33.3%) anemic form of HDN, and the rest in 12 cases (35.7%) oedema form of HDN was noted, 16 newborns (88.8%) after birth had undergone RBT (replacement blood transfusion) and phototherapy. If after birth 13 newborns (72.2 %) received inpatient treatment in the neonatal intensive care unit, only 3 newborns (16.6 per cent) received inpatient treatment in the ICU (intensive care unit) of the RPCs' newborns's ward.

Conclusions:

1. In the last 3 years, the HDN morbidity and mortality rate has increased in the Republic. And this problem should remain actual for perinatologists of our country.
2. The frequency of HDN from all born in the perinatal center for the year was only 0.84%, and the frequency of HDN in rhesus-sensitized patients was 14.0%.
3. The highest rate of reproductive losses (83.3%) in the history and premature births (100%) was in the last 4th group in comparison with the others, which was the main reason for high perinatal mortality rate in this group.
4. The conducted antenatal "intrauterine intravascular blood transfusion to the fetus" in the last group (where 85.4% of newborns with low body weight)

contributed to the decrease in the birth of newborns with signs of severe asphyxia by more than 2.5 times.

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Groups	Reproductive loss	Gestation period	Increase in antibody rhesus titre	premature delivery	Surgical delivery
RBT3group	71,3%	25-40 weeks	85,7%	67,8%	39,3%
FIIT 4 group	83,3%	23-35 weeks	100%	100%	72,3%

Groups	500-999g	1000-1499g	1500-2499g	above 2500g	Asphyxiation to of a severe degree	Asphyxiation to of a med. degree	Dead birth	Perinatal mortality
RBT 3group	1 (3,5%)	6 (21,4%)	4 (14,3%)	17 (60,7%)	4 (14,3%)	2 (7,1%)	1 (3,5%)	6 (21,4%)
FIIT 4 group	2 (11,1%)	3 (16,6%)	10 (55,5%)	3 (16,6%)	1 (5,5%)	5 (27,7%)	2 (11,1%)	5 (27,7%)

The modern introduction of antenatal care for pregnant women with rhesus immunization includes a timely diagnosis of rhesus belonging to the fetus by the mother's blood, detection of fetal anaemic

syndrome and determination of severity, the use of a minimum number of diagnostic, invasive procedures, as well as prevention of immunization in unsensitized pregnant women.