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Evaluation of Rh Negative Pregnancies at a Tertiary Care Hospital in Western Rajasthan

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Abstract: ***Background: The objective of this study is to Evaluation of Rh negative pregnancies at a tertiary care hospital in western Rajasthan. Methods: In this study, the labor was monitored carefully and the mode of delivery and the outcome of labor was studied in detail. Baby was thoroughly examined for any congenital anomaly, weight, sex and condition was also noted particularly for hydrops. If neonate was Rh positive, then the mother was given postpartum immunoprophylaxis within 24 hrs of delivery. The newborn were followed for 3 days and were watched for the development of jaundice. Mother advised to attend postnatal clinic for check-up after 6 weeks of delivery. Results: Blood group distribution of newborn: 22 were Rh negative and 226 were Rh positive .Raised antibody titre was found in one case. According to gestational age at delivery most women delivered at 37-40 weeks, 3 women delivered after 40 weeks and 15 delivered between 32-37 weeks. The baby has hyperbilirubinemia managed by phototherapy. The newborn who had anemia immediately after birth were carefully monitored and considered for exchange transfusion. Conclusion: Although Rh isoimmiminzation and erythroblastosis fetalis due to Rh incompatibility has now become a preventable disease. Yet the problem of Rh negative pregnant patients still remains as a major problem for developing countries. This is because most of our patients do not get any antenatal advice and facility for hospital delivery. There must be awareness about the problem of Rh negative blood group in the general population.***

Keywords: Rh Negative, Pregnancy, Tertiary Care Hospital, Western Rajasthan

1. Introduction

Rhesus incompatibility is a preventable cause for severe neonatal hyperbilirubinemia, hydrops fetalis and still births (1, 2). The prevalence of the Rh-negative blood group among Indian woman varies from 2% - 10%. The incidence of Rhesus incompatibility is declining, due to availability of anti-D immunoglobulin, and improved antenatal care of the Rh-negative pregnant woman, it still accounts for a significant proportion of neonatal hyperbilirubinemia and neonatal morbidity. The prevalence of Rh-negative women having Rh-positive neonates is 60% (3, 4).

Rh incompatibility is dependent on the prevalence of Rh-negative blood types, which varies among different populations. It is estimated that the frequency of the Rh-negativity occurs more frequently among Caucasians (15% to 17%) compared to Africans (4% to 8%) or of Asian descent (0.1% to 0.3%). Worldwide, the prevalence of Rh disease is estimated to be 276 per 100, 000 live births, which is significant considering that an estimated 50% of untreated cases of HDN will either die or develop brain damage due to the disease. In comparison, the prevalence of Rh disease in developed countries has been reduced to 2.5 per 100, 000 live births, which can be attributed to higher-quality perinatal-neonatal care [5, 6].

First pregnancy is rarely affected, and as a rule the degree of sensitization increase with subsequent pregnancies. Once sensitization has occurred, the clinical and laboratory approach to evaluate and treat the disorder is difficult(7, 8)Various studies have been conducted and several are going onto achieve zero incidence of this disease. With the introduction of techniques of color Doppler study, Amniocentesis and spectrophotometric analysis of Amniotic fluid, the pregnancy can well be followed up and timely terminated to have best perinatal outcome. The early detection of the disease with raised antibody titre is of utmost importance.

Administration of Rh immunoglobulin to Rh (D) negative women during antenatal period and soon after the birth of the Rh (D) positive infants has lead to reduction in the incidence of maternal D alloimmunization from 14% to 1%. With postpartum anti D administration the incidence can be brought down to 2% while with both ante and post partum anti D administration the incidence is reduced to 0.1%. However, this pathology continues to occur in 0.4 of 1, 000 births (0.04%) for multiple reasons like lack of anti-D immunization during the pregnancy (about 1%), ineffective immunoprophylaxis (insufficient dose of anti-D immunoglobulin for the degree of the fetal-maternal hemorrhage), and possible errors in Rh typing of the pregnant or postnatal woman or the neonate [9].

Present study is an effort to find out the incidence of Rh negative pregnancies, Rh incompatible pregnancies, the incidence of Rh Iso-immunization and the maternal and perinatal outcome at a tertiary care hospital, Jodhpur in Western Rajasthan.

2. Methods

This was a prospective observational study, conducted in in department of obstetrics and gynaecology in umaid hospital Jodhpur (Dr S. N. Medical College) over a period of 2 months Aug. 2019 and September 2019 on 258 Rh incompatible women Rh-negative mothers were enrolled after informed and written consent. Husband blood grouping and Rh typing done in each Rh negative woman. Neonatal gestational age, birth weight, age at admission, investigations and treatment given were taken from neonatal ward of paediatric department and maternal outcome /complications were observed in women delivered at our institute.

Routine policy of the department-mandatory blood grouping and Rh typing at first antenatal visit. Their husband blood group status confirmed followed by Rh antibody titre in women with Rh incompatibility as soon in their pregnancy

as possible. The Rh negative incompatible pregnancy closely followed during the rest of their pregnancy and postpartum period. All booked Rh incompatible women receive RAADP (single dose anti-d 300 microgram at28-34 weeks of pregnancy) and postnatal prophylaxis (within 72 hours of delivery) if their babies are Rh positive. All Rh positive babies were closely followed for their outcome.

3. Observation and results

3.1 Observation

During 2 months study period 3898 delivery occurred with 265 women were Rh negative and 258 women were Rh incompatible.

Incidence of Rh negative pregnancy was 6.79% and incidence of Rh incompatible pregnancy was 6.61%

Increased Rh antibody titre found in 1 women.

According to gestational age at delivery most women delivered at 37-40 weeks, 3 women delivered after 40 weeks and 15 delivered between 32-37 weeks.

208 women delivered vaginally and 50 were by caesarean.

Maternal complications including Hypertensive disorder of pregnancy found in 34 women (13.17%) followed by APH in 10 women (3.87%). Oligohydramnios in 13 (5%) and Polyhydramnios in 3 (1.16%) women. Rh isoimmunisation found in 1 women during our observation.

age	average	24year
	Most common age group	20-25year
	Least common age group	30-35year
Religion	Hindu	198
	Muslim	60
Area	Rural	146
	Urban	112
Parity	Primipara	127
	Multipara	131
Education status	Educated	96
	Uneducated	162

Foetal outcome/ complications

	No of patient	Percentage
Preterm	15	5.81
Term	240	93.02
Post dated	3	1.16
Still birth due to sensitisation	1	0.38
Still birth due to other cause	9	3.48
Early neonatal death	4	1.55
Neonatal anaemia	45	18.14
Neonatal jaundice	24	9.67
Hydrops foetalis	1	0.38
NICU admission	36	14.51
Blood transfusion	4	1.61

In this study 1 still birth occurred due to sensitization and 9 still birth due to other causes. 45 newborn had anaemia, 24 newborn had neonatal jaundice and 1 had hydrops fetalis.

Most of newborn (Table 2) had Hb between 14-16 gm% (47.98%), 33.87% newborn had Hb between 16-18 gm%. Only 4 newborn with severe anaemia and 16.53% newborn had Hb between 10-14 gm%

Table 2: Case distribution according Hb level

Haemoglobin in gm/dl	No. of patients	Percentage
<10	4	1.61
10-14	41	16.53
14-16	119	47.98
16-18	84	33.87

Table 3: Case distribution according to serum bilirubin level

s. bilirubin level in mg%	No. of patient	percentage
<2.8	221	89.11
2.8-4	4	1.61
>4	23	9.27

Serum bilirubin level in 221 newborn was <2.8mg% and in 4 newborn between 2.8-4mg% and 23 newborn had >4mg%.

Results

Maturity-240 newborn was full term, 15 preterm and 3 newborn was post term. Anaemia-4 newborn had severe anaemia and 41 newborn had mild to moderate anaemia. Incidence of anaemia was 18.14%. Neonatal hyperbilirubinemia-incidence of hyperbilirubinemia was 10.88% out of which 23 had mild and 4 had moderate to severe hyperbilirubinemia. Average birth weight of newborn was between 2.6kg. Total perinatal death 14 (10 stillbrth and 4 early neonatal death. Out of 258 women, 202 patient received antenatal immunoprophylaxis and 236 received postnatal Anti-D Rh IgG immunoprophylaxis. 22newborn had Rh negative blood group so not require immunoprophylaxis.

4. Discussion

Even with the availability of RhIg for the management of potential Rh incompatibility, the risks of alloimmunization have not been completely eliminated. Contributing factors include inappropriate RhIg administration (i.e. dosing, timeline according to recommendations) and occult fetomaternal bleeding that occurs before the advised RhIg dosing at 28 weeks.

Often, the potential source of bleeding cannot be determined.

Incidence of Rh negative pregnancy in this study was 6.61% which corresponds to incidence found in Indian women according other studies (1).Indirect coombs test positive was found in 1 women in our observation .Her baby had hydrops and was born still birth at 37 gestational age. All pregnant women at their first antenatal visit should have documentary proof of blood group; otherwise, a new test should be done. Rh negative mother should be counselled about the importance of Rh immunoprophylaxis and HDN.

Routine antenatal prophylaxis with 300 mcg between 28th and 34th weeks followed by 300 mcg within 72 h of delivery is recommended. 150 mcg of anti-D injection must be given

after any sensitizing event in the first trimester. There should be increased awareness among doctors for RAADP and prophylaxis after MTP, abortion, ectopic pregnancy, etc., which is still lacking. In our country, the high cost of anti-D Ig and lack of its supply by government facilities amounts for significant risk of isoimmunisation.

Neonatal hyperbilirubinemia was developed in 27 (10.88%) out of which 23 had mild and 4 had moderate to severe hyperbilirubinemia; 4 newborn had severe anaemia and 41 newborn had mild to moderate anaemia depicts Incidence of anaemia was 18.14%. Similar to study done by George et al where neonatal jaundice occurred in 21.3% of the babies. This could be due to the fact that during the course of Rh incompatibility, the fetus is primarily affected. The binding of maternal Rh antibodies produced after sensitization with fetal Rh-positive erythrocytes results in fetal autoimmune haemolysis. As a consequence, large amounts of bilirubin are produced from the breakdown of fetal haemoglobin (4).

In 2 months period 14 perinatal deaths (10 stillbrth and 4 early neonatal death) occurred with not a single mother received antenatal immunoprophylaxis. Unfortunately, the incidence of this disease is decreasing at a very slow pace in India, in part because of lack of medical information and in part because of the high cost of medication used to prevent it. Increased morbidity in term of congenital anemia and jaundice poses a great burden to medical professionals leading to increased NICU admissions, phototherapy and need for exchange transfusion. Anemia in newborn adversely affects the growth and development of the baby and increases the risk of neonatal sepsis. About 1/3rd of newborn of Rh negative mothers need treatment for hyperbilirubinemia. This risk is 3.8 times higher among multigravida [5].

5. Conclusion

Although Rh isoimmiminzation and erythroblastosis fetalis due to Rh incompatibility has now become a preventable disease. Yet the problem of Rh negative pregnant patients still remains as a major problem for developing countries. This is because most of our patients do not get any antenatal advice and facility for hospital delivery. there must be awareness about the problem of Rh negative blood group in the general population.

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