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Received: April 15, 2021

Accepted: May 20, 2021

Citation:

Yadav M, Baral G. Maternal and perinatal outcome in Rh-Negative women. *Nep J Obstet Gynecol.* 2021;16(32):108-110. DOI: <https://doi.org/10.3126/njog.v16i1.37619>

Maternal and perinatal outcome in Rh-Negative women

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ABSTRACT

Aim: To find out the Maternal and perinatal outcomes in Rh-Negative mothers.

Methods: This is a cross sectional study of all Rhesus negative mothers giving childbirth at Department of Obstetrics and Gynecology, Nobel Medical College Teaching Hospital from March 2020 to February 2021. Maternal variables like age, parity, mode of delivery, and complications were recorded. Fetal variables like period of gestation, fetal outcomes, hemoglobin, indirect bilirubin, fetal weight were noted.

Results: There were 108 cases of Rh negative pregnancy and 95 of them delivered Rh positive fetuses. Prevalence of Rh negative pregnancy was 1.68%. Half of them (51; 53.6%) underwent caesarean section due to obstetric indications with 20 repeat cesarean sections and 9 (17.7%) cases for fetal distress. Gross perinatal death was 9; none of the patients received antepartum immunoprophylaxis; and 86 received postpartum Anti-D Rh IgG. There was only one case of proven isoimmunisation presented as hydrops fetalis in a grand multiparous woman with positive Indirect Coomb Test; and two newborn received exchanged transfusion.

Conclusion: Rhesus negative rate was 1.68% and proven isoimmunization rate was 1%.

Keywords: Alloimmunization, hydrops fetalis, immunoprophylaxis, rhesus negative

INTRODUCTION

Rhesus isoimmunization may occur after fetomaternal hemorrhage during an abortion, trauma, invasive obstetric procedures or delivery and the fetal complications range from mild hemolytic anemia to hydrops fetalis.^{1,2}

Once the mother has been sensitized, future pregnancies are at more risk for the development of the hemolytic disease of a newborn if the fetus is Rh-positive.³

The incidence of Rh incompatibility in Rh negative women carrying Rh-positive fetus is about 10% of all Rh-negative pregnancies. Sensitization however occurs only in about 5% of these cases giving an incidence of 6-7/1000 of all the pregnancies. Once sensitization has occurred, the clinical and laboratory approach to evaluate and treat the disorder is difficult.^{4,5} Prenatal screening can be done from blood grouping, maternal Rhesus

antibody (indirect Coomb's test), ultrasound-guided amniocentesis; and postnatal screening by blood grouping, indirect bilirubin, reticulocyte count and direct Coomb's test (DCT). Immunoprophylaxis with Rhesus immunoglobulin can be given at 28 weeks of gestation and within 72 hours of delivery or termination of pregnancy.^{6,7,8} Intrauterine transfusion and postnatal exchange transfusion may reduce perinatal mortality.^{9,10}

METHODS

This cross sectional study was conducted at the department of Obstetrics and Gynecology, Nobel Medical College Teaching Hospital from March 2020 to February 2021. All singleton Rhesus negative mothers were included and analysis was done only if neonate was Rhesus positive. Maternal variables like age, parity, mode of delivery, and complications were recorded. Fetal variables like period of gestation, fetal outcomes, hemoglobin, indirect bilirubin, fetal weight were noted.

RESULTS

There were 108 cases of Rh negative pregnancy and 95 of them delivered Rh positive fetuses. Only 3 patients had antenatal check ups at this institute. Mean age of women was 24years predominantly being multigravida 56(58.9%) and 16(16.8%) women had history of miscarriage in the past. Most of them delivered at term (85; 89.5%), six preterm and only four post term. Average birth weight was 2.8kg (range: 1.8-3.7); and 54 were male and 41 female baby. Apgar score of neonate were above 8 in 66 (69.5%) cases in first minute and in 75 (78.9%) in five minutes. Majority of newborn were mature and neonatal morbidity rate was 14.7% (N=14). [Table-1]

Table-1: Fetal outcome in Rhesus negative (N=95)

Fetal outcomes	N	%
Mature	73	76.8
Neonatal anemia	7	7.3
Stillbirth*	6	6.3
Neonatal Jaundice	3	3.2
Premature	3	3.2
Neonatal death	3	3.2

*NB. *One still birth was due to Hydrops fetalis*

Commonest Fetal complication was neonatal anemia (Hb <14gm/dl in first week of newborn) in 7 (7.3%) and 2 severe cases (Hb<7gm/dl) underwent exchange transfusion. Main indication of neonatal admission were for blood transfusion, meconium aspiration and for phototherapy; five cases had hyperbilirubinemia of >4mg/dl which was managed by sun exposure and phototherapy. These five cases were one each from vacuum delivery and Caesarean section for protracted labor, and prematurity; and two cases for neonatal sepsis. [Table-2]

Table-2: Indirect serum bilirubin of newborn (N=87)

Bilirubin (mg/dl)	Frequency
<2.8	62
2.8-4	20
>4	5

Gross perinatal death was 9 out of 95 with 6 stillbirths and 3 early neonatal deaths. None of the patients received antepartum immunoprophylaxis. Of the 95 patients who delivered Rh positive fetuses, 86 received postpartum Anti-D Rh IgG immunoprophylaxis. There was only one case of proven isoimmunisation found that presented as hydrops fetalis in grandmultiparous woman with positive Indirect Coomb Test. Direct Coombs Test performed in 87 live cases was negative. Rhesus status of fetus in perinatal death was unknown.

Among total 95 cases, there was one each case of abruptio placenta, severe preeclampsia and preg-

nancy induced hypertension. One case of placentomegaly and 7 cases of oligohydramnios were noted in obstetrical ultrasonography. Half of them (51; 53.6%) underwent caesarean section due to obstetric indications with 20 repeat cesarean section. Fetal distress contributed to 17.7% in 9 cases. [Table-3]

Table-3: Indication of caesarean section (N=51)

Indication	N	%
Previous CS	20	39.2
Failed Induction	11	21.6
Fetal distress	9	17.7
Malpresentation	5	9.8
Arrest in second SOL	3	5.9
Placenta previa	2	3.9
Anhydramnios	1	2

Among 95 cases, 24 patients had received postpartum Anti D prophylaxis in their previous pregnancy and no significant fetal complications were seen except one case of preterm delivery among them; and three patients had past history of stillbirths which were home deliveries. 86 patients who delivered Rh positive fetuses received postpartum Anti D immunoprophylaxis and rest refused to take.

DISCUSSION

Incidence of Rhesus negative pregnancy was 1.68% that was similar to the studies in Nepal (1.43%)¹¹ and Bangladesh (2.4%).¹²

Out of that 108 Rhesus negative pregnancies most common blood group was O (39; 36.1%) followed by A (35; 32.4%), B (28; 25.9%) and AB (6; 5.5%). It was not much different that the study of Nagamuthu et al in 2016 that reported as B (33.96%), O (32.62%), A (24.35%) and AB (9.05%).¹³

Study done by Sreelatha et al¹⁴ in 2017 showed 294 (56.4%) vaginal deliveries and 430 (43.5%) cases of caesarean section whereas there were 44 (46.3%) vaginal and 51 (53.7%) caesarean deliveries in our study; and O-negative was the most common blood group in this study similar to ours. Multigravida were predominant in our study 56 (58.9%) similar to the study performed by Bondagji et al.¹⁵

Isoimmunization was in one case (1.05%) only similar to a study conducted by Lurie et al (0.9%)¹⁶ in contrast to a report by Al-Ibrahim et al (7.1%).¹⁷

Immunoprophylaxis doesn't yield expected outcome if mother is already isoimmunized like in positive indirect Coomb's Test. American College of Obstetricians and Gynecologists advises routine antibody testing before administering Rh IG. However the possibilities of isoimmunization have not

been eliminated due to inadequate dosing of Rh Ig and occult fetomaternal hemorrhage before 28 weeks. The source of bleeding is often unrecognized.

In a study done by Tripathi R et al eight cases were associated with PIH/preeclampsia, one associated with polyhydramnios and three had abruptio placentae which is similar to our study but could not be an associated factor of isoimmunization.¹⁸

Indirect Coomb's test was positive in one grand multiparous woman with hydrops fetalis still birth at term similar to a study conducted by Bhati et al in western rajasthan.¹⁹ Nine cases in our study didn't receive postpartum Anti D prophylaxis which may be attributed to lack of implementation of standardized and universal Anti D immunoprophylaxis. Perinatal mortality could not be associated with nine perinatal deaths as there was no diagnostic test performed to them.

CONCLUSION

Rhesus negative rate was 1.68% and proven isoimmunization rate was 1%. Perinatal death could not be associated with isoimmunization due to lack of tests performed.

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