EFFECT OF RHESUS ANTIGEN NEGATIVE IN PREGNANCY.

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ABSTRACT

BACKGROUND-Rhesus incompatibility refers to the discordant pairing of maternal and fetal Rh type.It is associated with the development of maternal Rh sensitization and hemolytic disease of the neonate.(HDN).This phenomenon becomes clinically significant if a mother is Rh –negative becomes sensitized to the D antigen and subsequently produces anti-D antibodies that can bind to and potentially lead to the destruction of Rh-positive erythrocytes.[4]

OBJECTIVES-To study the maternal and fetal outcome in Rh negative mothers.

METHODS-This study was a hospital based study prospective cross sectional study carried out for a period of one year in the department of Obstetrics and Gynaecology from January 2022-December 2022

RESULTS AND INTERPRETATIONS-There were 62 cases of Rh negative pregnancy in our study meeting the inclusion and exclusion criteria.56 of them delivered Rh positive babies.The ICT positive cases had antibody titres less than 1:32 with normal fetal MCA Doppler. In our study 33.87% of patients are O negative,27.42% are B negative ,24.19% are A negative..In our study 29.03% developed maternal complications with majority being PIH and anemia with 8.06%.. Out of 56 Rh positive delivered babies 82.14 % were healthy babies and 17.6 % developed complications and most common complication being neonatal hyperbilirubinemia 12.5% followed by neonatal anemia 3.57% .

CONCLUSION-Rhesus isoimmunization causing erythroblastosisfetalis is a distressing obstetric problem.Although Rh isoimmunization and erythroblastosisfetalis due to Rh incompatibility has now become a preventable disease ,yet the problem still remains in developing countries like India.The main cause of sensitization in present day practice is lack of awareness in many places in India.

Keywords-Hyperbilirubinemia,Isoimmunization,maternaloutcome,neonataloutcome,Rh Incompatibility.

Conflict of interest –None.

INTRODUCTION

Rhesus factor was discovered by Landsteiner and Weiner in 1940.Levine et al in 1941 confirmed that erythroblastosisfetalis was due to maternal Rh isoimmunisation.The incidence of Rh negative blood group is highest among Basques that is 34%.In India the incidence varies between 3% and 5.7%.[1-3] Rhesusincompatibility refers to the discordant pairing of maternal and fetal Rh type.It is associated with the development of maternal Rh sensitization and hemolytic disease of the neonate.(HDN).This phenomenon becomes clinically significant if a mother is Rh –negative becomes sensitized to the D antigen and subsequently produces anti-D antibodies that can bind to and potentially lead to the destruction of Rh-positive erythrocytes.[4]

Red cell destruction by hemolysis is caused by specific antibodies entering the fetal circulation during pregnancy.These antibodies are produced by mother in response to antigenic stimulation of fetal red cell entering the maternal circulation by the way of placenta.These antigen possess antigenic factor not present normally in the mother and therefore are capable of initiating antibody production.[5,6]

Rhesus isoimmunisation may occur after fetomaternal haemorrhage during an abortion ,trauma, invasive obstetric procedure or delivery and the fetal complications range from mild haemolytic anemia to hydropsfetalis.Once the mother has been sensitized ,future pregnancies are at more risk for the development of the haemolytic disease of a newborn if the fetus is Rh-positive.[9]First pregnancy is rarely affected ,and as a rule the degree of sensitization increases with subsequent pregnancies .Once sensitization has occurred,the clinical and laboratory approach to evaluate and treat the disorder is difficult.[10,11]

The incidence of Rh incompatibility in Rh negative women carrying a Rh positive foetus 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 and 1-15 Rh negative pregnancies [12,13]

First pregnancy is rarely effected,and as a rule the degree of sensitization increases with subsequent pregnancies.Rh disease accounts for 97% of haemolytic disease of the newborn (HDN),remaining 3% is caused by isoimmunisation against other fetal antigenic groups such as Kell ,non-D Rh,Kidd,and MNS[14].HDN is preventable disease when measures to prevent fetomaternal haemorrhage in Rh negative pregnancy and antenatal and post-natal immunoprophylaxis with anti-D immunoglobulin (Ig) are practiced correctly.HDN due to Rh isoimmunisation is yet a significant health problem in India.The incidence of Rh sensitization during pregnancy is 1-9% and perinatal loss due to Rh alloimmunization has been reported to be between 1% and 2.5%.[15]Risk of isoimmunisation decreased 1.5% by postnatal anti-D prophylaxis and to 0.18% by additional routine antenatal anti-D prophylaxis.(RAADP).[16]

This study was undertaken to evaluate the outcome of pregnancy in Rh negative women .It is preventable .Primary prevention of isoimmunization by giving combined antenatal and postnatal prophylaxis.

AIM-To study the effect of Rhesus antigen negative in pregnancy

OBJECTIVES-

1.To study the maternal outcome with Rh negative pregnancy.

2.To study the fetal outcome born to Rh negative mothers.

METHODS-

This study was a hospital based study prospective cross sectional study carried out for a period of one year in the department of Obstetrics and Gynaecology from January 2022-December 2022.

INCLUSION CRITERIA-

1All pregnant women with Rh negative blood group .

2.Singelton pregnancy.

3.Case with intact membranes.

4.Presence of live foetus.

5.Husband's blood group Rh positive

EXCLUSION CRITERIA

1.Severeanemia.

2.Multiple gestation .

3.Hydramnios

4.Premature rupture of membranes.

5.Failure to give consent.

6.Husband's blood group Rh negative.

STUDY PROCEDURE-

Ethical approval from ethical committee was taken.Informed consent was taken from all the patients regarding the necessity of follow-up and compliance.

A proper history of patients was taken,and all the antenatal records were reviewed .Thorough general and obstetrical examination was done and all the routine antenatal investigations along with indirect coombs test were sent.The maternal chart was reviewed for parity index ,gestational age,blood group and history of anti-D administration in previous pregnancies.Thelabor was monitored carefully and outcome of labor was studied in details.The placenta was examined for hyperplacentosis and cord blood was collected and was sent for ABO/Rh typing,Hb%,serum bilirubin and direct Coomb's test to know the neonatal status.If neonate was Rh positive,mother was given post

partumimmunoprophylaxis within 24 hours of delivery. Neonatal outcome was assessed for weight ,APGARscore,anemia ,hyperbilirubinemia,need for phototherapy and exchange transfusion .

RESULTS

TABLE 1-DISTRIBUTION ACCORDING TO FETAL OUTCOME

	Number	Percentage
Term	53	85.48%
Preterm	3	4.83%
Jaundice	7	12.5%
Neonatal anemia	2	3.57%
Hydropsfetalis	0	0
Neonatal death	1	1.7%
Healthy babies	46	82.14%
ENDHD	0	0

TABLE 2-DISTRIBUTION ACCORDING TO MATERNAL COMPLICATION

Complications	Number	Percentage
PIH/Preclampsia	5	8.06%
Abruptio placentae	2	3.23%
Oligohydramios	4	6.45%
Polydramnios	2	3.22%
Anaemia	5	8.06%

TABLE 3-MODE OF TERMINATION OF PREGNANCY

Mode	Multigravida	Primigravida
Spontaneous abortion	2	0
Spontaneous vaginal delivery	11	8
Assisted vaginal delivery	5	2
LSCS	20	14

TABLE 4-INDICATION OF LSCS

INDICATION	NUMBER	PERCENTAGE
Previous LSCS	16	25.81%
Fetal distress	7	11.29%
Induction failure	5	8.06%
Placenta Previa	1	1.6%
Oligohydramnios	5	8.06%

CHART 1-Anti D IMMUNIZATION WITH RESPECT TO BOOKED/UNBOOKED STATUS OF MOTHER.

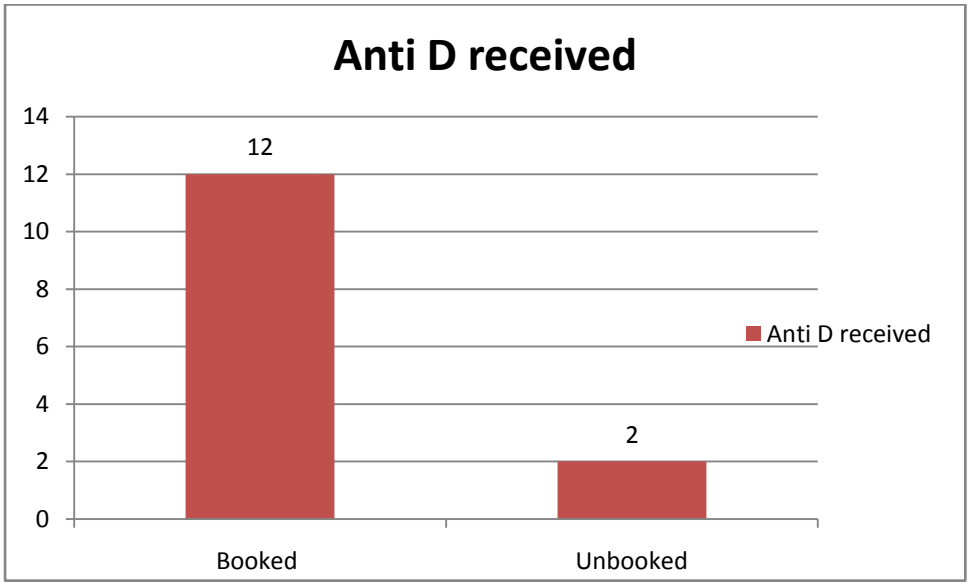
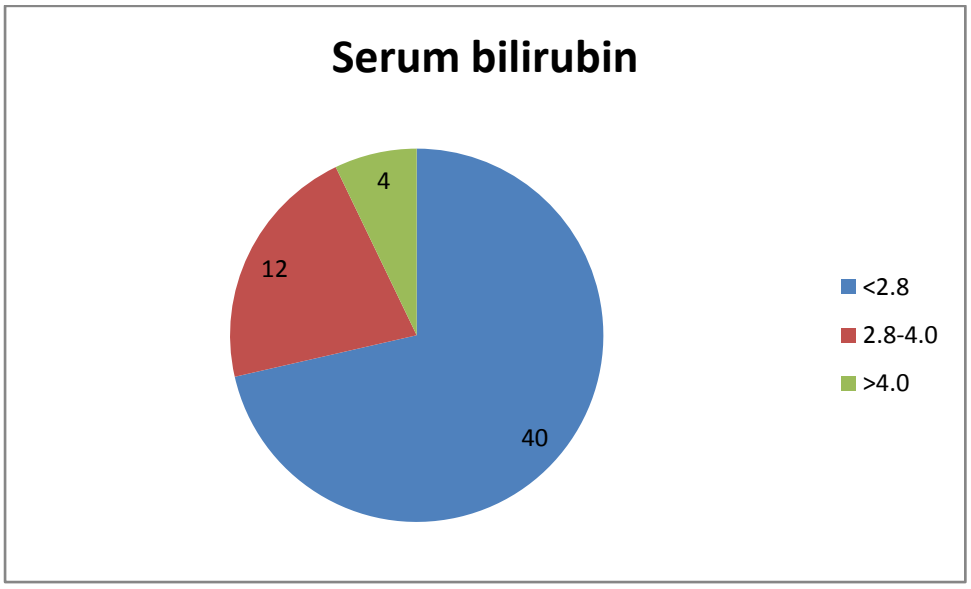


CHART 2- DISTRIBUTION ACCORDING TO SERUM BILIRUBIN LEVEL OF BABY



DISCUSSION-

There were 62 cases of Rh negative pregnancy in our study meeting the inclusion and exclusion criteria.56 of them delivered Rh positive babies.In our study majority of women belong to age group between 21-30 years 38(61.29%)similar to the study byShardha et al [17]where 44% belong to age group 20-25 years followed by 38% in 26-30 years age group.Predominantly being multigravida 38 (61.29%). In the present study only 4(6.40%) of multigravida were indirect coomb's test positive and all primigravidas are ICT negative which is comparable to the study conducted by Shradha , B Moitra et all[17] where ICT positive patients constitute 16% [17].The ICT positive cases had antibody titres less than 1:32 with normal fetal MCA Doppler.In our study 33.87% of patients are O negative,27.42%

are B negative ,24.19% are A negativesimilar to the study by Shardha et al[17]where most of the patients belong to O negative 36%.Majority of the patients were delivered by LSCS with 20 (58.82%) in multigravida and 14(58.33%) in cases with primigravida.This findings were similar to the study done by Sreelatha et al [19] in 2017 and Yadav M et al[18] where caesarean section rate was 53.7% and 43.5% respectively.Most common indication of LSCS was previous LSCS 16(25.81) ,followed by fetal distress 7(11.29%),followed by induction failure and oligohydramnios both being 8.06%. which is comparable to the study by MunjalYadav and GehanathBaral[18] .In our study 29.03% developed maternal complications with majority being PIH and anemia with 8.06% which is comparable to the study conducted by RashmiTripathi ,Neelamsingh et al[4] .No maternal death observed in our study.Majority of women were unbooked 38(61.29%) out of which only 2 received anti D immunoglobulin .And Out of 24 (38.71%) booked cases only 12 (50%) received anti D immunoglobulin.Most of the women delivered term babies 53 (85.48%) .Male babies were 24 and female babies were 32.In the present study majority of babies 31(55.35%) are born with the birth weight between 2.5-3.5 kg.In our study only 7.1% of babies had APGAR score <7 whereas 92.86 % of babies had APGAR score >7 at 5 minutes of birth. Out of 56 Rh positive delivered babies 82.14 % were healthy babies and 17.6 % developed complications and most common complication being neonatal hyperbilirubinemia 12.5% followed by neonatal anemia 3.57%.Out of 7 babies with neonatal jaundice 5 received phototherapy and 2 required exchange transfusion and none of the babies with anemia required blood transfusion.There was no still birth or early neonatal delivery due to Rh hemolytic disease but one neonatal death was observed in our study due to severe hyperbilirubinemia,so neonatal death in our study constitute 1.7%.Neonatal death in the study by Sharda ,B Moitra et al[17] and khatun J and Begum R [20]was 3.3% and 4 % respectively.Out of 62 patients 41 received post delivery anti D prophylaxis,5 delivered Rh negative babies,4 didn't received as they underwent sterilization and 2 patients refused to take due to cost factor.

CONCLUSION

Rhesus isoimmunization causing erythroblastosisfetalis is a distressing obstetric problem.Although Rh isoimmunization and erythroblastosisfetalis due to Rh incompatibility has now become a preventable disease ,yet the problem still remains in developing countries like India.The main cause of sensitization in present day practice is lack of awareness in many places in India.No prenatal care,non availability of Rh testing in many health centres specially in the peripheries,inadequate or no anti D prophylaxis antenatally specially after medical termination,ectopic pregnancy ,threatened abortion or even post natally .All pregnant women at their first antenatal visit should be tested for blood groups.Rh negative mothers should be counseled about the importance of Rh immunoprophylaxis and HDN.While the public health system should guarantee the constant and adequate supply of Ig ,physicians are also responsible for the correct prescription to ensure the prevention of Rh disease.Family planning should be encouraged for immunized women as severity of the disease increases with subsequent pregnancies.

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