A STUDY OF INCIDENCE OF RHESUS BLOOD GROUP IN PREGNANT WOMEN

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ABSTRACT

BACKGROUND

The incidence of Rhesus blood group is mainly dependent on shifting of population from time to time, change in structure of ethnic group and also of patient's awareness to attend medical centres and increased consciousness in the medical profession for the Rhesus blood group. The importance of Rhesus blood group incidence study lies in the detection of Rh-ve females giving birth to the new born which may suffer from haemolytic disease and to prevent its dreadful complications. The main objective was to study the incidence of Rhesus blood group in pregnant women.

METHODS

The study was carried out at Late Baliram Kashyap Memorial Hospital, Jagdalpur, Chhattisgarh, for a period of one year. Patients admitted in Obstetrics and Gynaecology department were included in the study. The study was carried out for a period of one year. Data was collected in questionnaire. Detailed history of each patient was taken on admission. Permission from Institutional Ethics Committee was obtained. Initially, informed individual consent was taken from all the patients included in the study. Total number of antenatal patients screened was 40.

RESULTS

In our series, foetal outcome was studied in 39 patients. Out of them, only in one case, sensitization was present. Maximum number of patients belonged to Group O; next in order is Blood Group B, with 15 patients, followed by Group A with 7 patients. Least number of patients, only 1 belonged to Group AB. Total numbers of cases is 23, out of which 6 cases of still-birth and 4 cases of neonatal death and 10 cases of foetal loss were present.

CONCLUSIONS

The present study was carried out in 40 cases that were Rh negative and were examined for sensitization, in Gynaecology & Obstetrics Department of Medical College, Jagdalpur. In the present study, because of regular antenatal care, routine and special investigations done as per protocol, and timing the delivery at optimum period of gestation, the perinatal mortality was considerably low.

KEYWORDS

Incidence, Rh-ve blood group, Pregnant women.

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BACKGROUND

There is a great variation in the prevalence of Rh- antigen in different populations. The reported incidence of Rh-negative population in India varies from 0.6% to 10%.

The incidence of Rhesus blood group is mainly dependent on shifting of population from time to time, change in structure of ethnic group and also of patient's awareness to attend medical centres and increased consciousness in the medical profession for the Rhesus blood group.

The main objective was to study the incidence of Rhesus blood group in pregnant women. The importance of Rhesus blood group incidence study lies in the detection of Rh-ve females giving birth to the new born which may be suffering from haemolytic disease and to prevent its dreadful complication.

The incidences of Rhesus negative among Chinese were studied. They investigated 150 cases, for the presence of Rh blood factor and found only one Rh-ve amongst them.[1]

6 patients who were immunized with titre of 1:16 or 1:128 and have observed good co- relation between higher level of antibody titre and optical density difference at 400 micro meters. Out of 6, one patient had still birth and rest of new born babies had jaundice, two hours after birth and required blood transfusion.[2]

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Approximately 15% of whites, 7% of Blacks and 1% of Chinese do not have 'D' antigen and also described the incidence of Rh –ve in 15% of European population.[3]

METHODS

The study was carried out at Late Baliram Kashyap Memorial Hospital Jagdalpur, Chhattisgarh for a period of one year. The patients admitted in Obstetrics and Gynaecology department were included in the study. The study was carried out for a period of one year. Total number of antenatal patients was screened 40.

Data was collected in questionnaire. Detailed history of patient was taken on admission. Detailed history included age, socioeconomic status, address, education and occupation of the patient. Educations of the patient were included. Obstetric history including gravida, parity, number of preterm labours, number of abortion.

Number of still births, history of bleeding per vaginum, and history of caesarean section was taken. General examination of patient was done to note maternal pulse, pallor, oedema, signs of dehydration, icterus, blood pressure, respiratory rate, cardiovascular and respiratory system was examined.

Local examination included position and status of presenting part of foetus and P/V done in patients presenting with labour pains. Laboratory studies was done included complete blood count, urine, blood grouping and Rh – typing. Permission from Institutional Ethics Committee was obtained. Initially informed individual consent was taken from all the patients included in the study.

RESULTS

Amount of Foetal RBC in Maternal Circulation	Incidence of Anti-Rh at Six Months	
	Series 'A'	Series 'B'
NIL	3.3%	2.1%
0.1 ml	7.6%	7.1%
0.1 -1 ml	20.8%	15.7%
1 – 10 ml	22.2%	62.5%

Table 1. Incidence of Anti Rh Within 6 Months of First Pregnancy, in Relation to The Amount of Foetal Red Cells in Maternal Circulation at the Time of Delivery Studied by Woodrow and Donohoe

Series" A" represents Percentage of Rh-positive patients and Series" B "represents percentage of Rh weak positive patients.

Incidence of anti Rh within 6 months of first pregnancy, in relation to the amount of foetal red cells in maternal circulation in case of series 'A' is 7.6% for 0.1 ml, 20.8% for 0.1-1 mL and 22.2% for 1-10 mL. In case of series 'B' is 7.1% for 0.1 mL, 15.7% for 0.1-1 mL and 62.5% for 1-10 mL.

Foetal Outcome	Number of Cases	Incidence
Well babies	45	78.8
Immunized but well	5	8.8
Died of immunization (hydrops)	3	5.2
Still born due to sensitization	2	3.5
Other causes of death (cord prolapse in one)	2	3.5

Table 2. Foetal Prognosis as Recorded by Logombal, in His Study of 57 Rh Negative Patients

Sensitized means antibodies are produced in so low level that not detected during or after that pregnancy but identified early in next pregnancy.

Iso-immunized means immune response to foreign antigen from the same species. In 16 percent 2 percent will be immunized by time of delivery, 7 percent will have Anti D antibodies by 6 months of postpartum and another 7 percent will be sensitized.

In our series, foetal outcome was studied in 39 patients. Out of them, only in one case, sensitization was present.

Foetal prognosis is as follows: Number of cases of well babies were 45, Immunized but well were 5, Died of immunization were 3, Still born due to sensitization were 2, other causes of death were 2.

Women having co- morbidities to explain still births are Preeclampsia, polyhydramnios, hypofibrinogenemia, postpartum haemorrhage due to big placenta, blood coagulopathy, Maternal Syndrome (Mirror Syndrome) is generalized oedema, proteinuria, pruritis due to cholestasis indicates fetal death or still birth.

ABO Group	Number of Cases	%
A	7	17.5
B	15	37.5
AB	1	2.5
O	17	42.5

Table 3. Distribution of Cases According to ABO Blood Group Systems

According to the above table, maximum number of patients belongs to Group O; next in order is Blood Group B, with 15 patients, followed by Group A with 7 patients. Least number of patients only 1 belongs to Group AB.

Weight	Number of Cases	Still Birth	Neonatal Death	Foetal Loss
Below 2 Kg.	5	1	3	4
2.0 - 2.5 Kg	11	5	-	5
2.5 - 3.0 Kg	5	-	-	-
3.1 - 4.0 kg	2	-	1	1
Total	23	6(26.08%)	4(17.39%)	10(43.47%)

Table 4. Shows Number of Cases of Still Births and Neonatal Deaths According to Weight of The Baby

Total numbers of cases are 23. Out of which 6 cases of still birth and 4 cases of neonatal death and 10 cases of foetal loss were present. Out of 6 cases of stillbirth 1 case is below 2 Kg and 5 cases are of 2.0-2.5 kg. Out of 4 cases 0f neonatal death 3 cases are below 2 kg and 1 case is of weight 3.1-4 kg. Out of 10 cases of foetal loss, 4 cases of below 2 Kg, 5 cases of weight 2.0 -2.5 Kg and 1 case of weight 3.1- 4 Kg.

Weight of Baby	Number of Cases	Immunization
Below 2 Kg	7	-
2.0 – 2.5 Kg	7	1
2.6 -3 Kg	24	2
3.1 – 4 Kg	19	7

Table 5. Number of Cases Immunized According to Weight of The Baby

In Rh isoimmunization there is a chance of big size baby. Numbers of cases immunized according to the weight of baby: below 2 kg, total numbers of cases are 7 but immunization was nil. 2.0-2.5 kg number of cases were 7 but only one case was immunized. 2.6-3 kg number of cases were 24 but only 2 cases were immunized. 3.1- 4 Kg number of cases were 19 but only 7 were immunized.

DISCUSSION

Logombal has shown that Hb concentration of cord blood varied from 5 to 15 gm. % in immunized infants. Where Hb was less than 10.4 gm% there was severe affection necessitating exchange transfusion and the salvage rate was 66.6%. Most of the babies showed an Hb of 13-14 gm%. They did well immediately after birth and later without any specific treatment.[4]

According to Murray, A incompatibility gave 90% protection and B incompatibility 55% protection against Rh-immunization.[5]

Allen et al felt that kernicterus could be eliminated by exchange transfusion.[6] According to Mollison et al 25% of women have raised level of Hb. F. starting at 8- 10 weeks of gestation.[7]

Fisher's Terminology	Wiener's Terminology	Approximate % Frequency
Anti D	Anti Rh^0	40-70
Anti C	Anti rh^1	1-2
Anti E	Anti rh^{11}	1-10
Anti d	Anti rh_o	7

Table 6. Mollison Tabulated the Rh Antibody

Number of cases, with a TPH of 0.1ml red blood cells or more, according to various authors is as follows:

According to Jogerson et al NIL for spontaneous abortion and 2% for induced abortion.[8]

1.5% for vaginal termination of pregnancy according to Mathews & Mathews.[9]

Davis et al concluded that an interval between sites of 0.25 micrometre corresponded to approximately 10, 000 antigenic sites per cell.[10]

Women is Rh negative and has no antibodies should have one dose of 300 microgram Rh immunoglobulin as prophylaxis at around 28 wks. According to ACOG and again after birth with in 72 hrs. to prevent Rh immunization. It action antibody mediated immunosuppression.

CONCLUSIONS

The present study was carried out in 40 cases that were Rh negative and were examined for sensitization, in Gynaecology & Obstetrics Department of Medical College, Jagdalpur. Foetal outcome was studied in 39 patients. Out of them, only in one case, sensitization was present. 6 cases of still birth and 4 cases of neonatal death and 10 cases of foetal loss were present. Majority of cases belonged to blood group '0' and only 2.5% to group 'AB'. 37.5% were from group 'B' and the rest from blood group 'A'. Below 2 kg, total numbers of cases are 7 but immunization was nil. 2.0-2.5 kg number of cases were 7 but only one case was immunized. 2.6 -3 Kg number of cases were 24 but only 2 cases were immunized. 3.1- 4 Kg number of cases were 19 but only 7 were immunized. Immunization was found in only 2.5%. Majority of the neonates were of birth weight ranging from 2.1 to 2.5 kg. In the present study, because of regular antenatal care, routine and special investigations being done as per protocol, and timing the delivery at optimum period of gestation, the perinatal mortality is considerably low.

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