

STUDY OF INCIDENCE OF SENSITISATION AND FOETAL OUTCOME IN Rh-NEGATIVE MOTHERS

by

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SUMMARY

To reduce the Rh Sensitisation and foetal loss due to this, genetic counselling is as important as matching horoscope of bride and bridegroom. The incidence of Rh negative mothers found in 9986 deliveries at Nagpur is 1.5%. The incidence of sensitisation found to be 13.88%. 12.5% marriages were in between Rh negative girl and heterozygous Rh positive boy. And 4% marriages in between Rh negative—Rh negative couple. In all immunized cases serum billirubin at birth was more than 2 mg%. Perinatal mortality in affected babies found to be 80%. Two babies expired with treatment. Perinatal mortality in non immunized cases were 4.75%.

Introduction

Even after the introduction of anti-D, the problems of haemolytic diseases of the newborn is not completely solved. This study was undertaken to find out the incidence of sensitisation and foetal outcome in Rh-ve mothers. The incidence given by various workers in India varied from 1.5 to 10% (Mujumdar 1958, 1.50%; Anand 1962, 2.70%; Sheth and Purandare 1964, 3.66%; Bhalgotra 8.60%). In the present study it was 1.5% (150 out of 9986).

The incidence of sensitisation given by different workers varied from 1% to 22.8% (Donhue 1954, 5.60%; Mujumdar 1958, 1.0%; Sheth and Purandare 1964, 6.20%; Eastman and Hellman 1966, 4.72%; Trivedi 1968, 1.40%; Bhalgotra

1974, 12.50%; Logambell 22.8%). In the present study the incidence was 3.47%.

All the patients attending antenatal clinic and admitted for confinement in Government Medical College and Hospital, Nagpur were screened for ABO blood group and Rh typing irrespective of their parity. Those found Rh negative, detailed obstetric history was taken including the history of Anti-D received after delivery or abortion, blood group and Rh typing of husband and living children were also done. The indirect Coomb's test was done at 20, 28, 32, 36th weeks of gestation and more frequently whenever indicated. Those patients showing indirect Coomb's test positive were admitted in hospital for further management.

The cord blood of the baby was collected for the study of blood grouping and Rh typing; serum billirubin estimation;

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direct Coomb's test; haemoglobin percentage and peripheral smear study.

The follow-up study of neonates was done specially for development of jaundice. The management of baby was done with co-ordination with neonatologist and managed with vitamin 'C', antibiotics, phenobarb, exchange transfusion and phototherapy by Brequo baby care phototherapy lamp (6 blue tube-lights). Serum bilirubin level and haemoglobin percentage were estimated repeatedly whenever indicated.

Injection of Anti-D 350 microgram was given intramuscularly to the mothers who were not immunised within 72 hours of delivery.

The Rh negative mothers included in this study are selected from the patients delivered at Government Medical College and Hospital from September 1981 to November 1982. The total number of deliveries were 9986. The incidence of Rh negative mothers found to be 1.50% which is quite low as compared to other workers in India but is same as it was found by (Mujumdar 1958).

The incidence of Rh sensitisation has been reduced considerably after the discovery of Anti-D and further reduced after the implimentation of family planning programme and small family norm as the parity is reduced. The other factors for reduction are good health care, health education. Maximum incidence quoted were in para 5 and above (Sheth and Purandare, 1964). Against this Trivedi (1968) observed 55% of the total cases were between para 2 and 4 and 45% were from para 5 and above. Antibodies were not detected in any of the primigravida. In this study, out of 150 Rh negative mothers (out of 9986 deli-

varies) 6 were married with Rh negative husband and hence not included.

These 5 cases were found sensitised out of 144, 3 are para 2 to 4 and 2 para 5 and above i.e. 60% and 40% respectively. Sixty-three patients received Anti-D after previous delivery or abortion i.e. 63.64% and 36 patients (36.36%) did not receive anti-D. Out of 36, only 5 were sensitised, giving the incidence of 13.88%.

In 6 cases (4%) the husband of Rh-negative women were Rh negative i.e. 4% marriages were in Rh negative—Rh negative couple.

Eighteen babies were Rh negative where father was Rh positive and mother Rh negative showing 12.50% marriages in Nagpur and nearby area were between Rh negative and heterozygous Rh positive man.

In the present study, out of 150 deliveries 82 were male i.e. 54% and 68 were female i.e. 44.33% and in immunised group, 80% were male and 20% were female. 82% i.e. 123 babies were in between 2.01 to 3 kg at birth.

The serum bilirubin level in 50.82% cases were between 0.01 to 0.9 mg% and in 37.70% it was between 1 to 2 mg%. In 9.02% cases it was above 2 mg% at the time of birth. In all immunised cases it was more than 2 mg%.

In the affected cases where baby survived with 2 exchange transfusion it was 6.2 mg%. In the 2nd and 3rd case it was 13 and 11.4 mg% where both babies expired after 2 exchange transfusion and in the remaining 2 cases the cord blood could not be squeezed out because of maceration.

The average haemoglobin was 13.01% to 15 gm%. In 62 cases out of 122 the haemoglobin was between 10.01 gm% to 13 gm%.

TABLE I
Details of the 5 Sensitised Rh Negative Mothers and Foetal Outcome

Sr. No.	Obstetrics history	Blood group of mother	Blood group of father	Blood group of baby	Blood grouping of living children	Titre of indirect Coomb's test	Mode of delivery	Sex
1.	4th Gravida	B-ve	B+ve	B+ve	B+ve	1:64	FTCS	M
	i. FTCS—F—5 yrs. A & W—prolong labour						Pre. 2 CS	
	ii. FTCS—M—still birth—prolong labour							
	iii. FTND—still birth—macerated							
2.	2nd gravida	B-ve	O+ve	O+ve	O+ve	1:64	Induction pre. ND	F
	i. Premature ND 7 months died after birth							
3.	10th gravida	O-ve	O+ve	O+ve	O+ve	1:8	FTND MRP done	M
	i. FTND—F—12 yrs. A & W							
	ii. FTND—M—died 3rd day							
	iii. abor. 3 month compl.							
	iv. abor. 3 month compl.							
	v. FTND—F—7 yrs. A & W							
	vi. FTND—F—5 yrs. A & W							
	vii. FTND—M—died imm. after birth H/o. jaundis present							
	viii. FTND—F—died 2 days after birth rec. exchange trans.							
	ix. FTND still birth. fresh							
4.	5th gravida	B-ve	B+ve	B+ve	B+ve B+ve	1:32	Indu. ND	M
	i. FTND—F—10 yrs. A & W Daga Hosp.							
	ii. FTND—F—7 yrs. A & W Home							
	iii. FTND—M—died 4 days H/o. icteres Home							
	iv. FTND—F—died 3 days direct Coombs test +ve (1:36) Exch. transfusion given							
5.	3rd gravida	B-ve	B+ve	B+ve	B+ve	—	FTND	M
	i. FTND—M—3 yrs. A & W							
	ii. FTND—F—1½ yrs. A & W							

TABLE I (Contd.)

Sr. No.	Obstetrics history	Wt. in kg.	Serum bilirubin mg%	Hb% in gms	Direct Coombs test	Periferal smear	Foetal outcome treatment given
1.	4th Gravida i. FTCS—F—5 yrs. A & W—prolong labour ii. FTCS—M—still birth—prolong labour iii. FTND—still birth—macerated	2.700	13.0	6.0	+ve	Haemolytic disease	Two exchange transfusion Baby expired
2.	2nd gravida i. Premature ND 7 months died after birth	1.800	11.4	10.4	+ve	-do-	Baby expired on 4th day after 2nd exchange transfusion
3.	10th gravida i. FTND—F—12 yrs. A & W ii. FTND—M—died 3rd day iii. abor. 3 month compl. iv. abor. 3 month compl. v. FTND—F—7 yrs. A & W vi. FTND—F—5 yrs. A & W vii. FTND—M—died imm. after birth H/o. jaundis present viii. FTND—F—died 2 days after birth rec. exchange trans. ix. FTND still birth. fresh	1.950	—	—	—	—	FTND macerated still birth hydrops foetalis cord blood could not be squized out could thick oedematous placenta wt. 1.500 kg.
4.	5th gravida i. FTND—F—10 yrs. A & W Daga Hosp. ii. FTND—F—7 yrs. A & W Home iii. FTND—M—died 4 days H/o. icteres Home iv. FTND—F—died 3 days direct Coombs test +ve (1:36), Exch. tranfusion given.	1.550	—	—	—	—	IUD macerated still birth 32 wks. M. cord blood could not be squized out
5.	3rd gravida i. FTND—M—3 yrs. A & W ii. FTND—F—1½ yrs. A & W	2.750	6.2	9.8	+ve	Haemolytic disease	Good Phototherapy phenobarb exchange transfusion twice

TABLE II
Sensitisation and Foetal Outcome

Sr. No.	Gravida	Period of gestation in wks.	Titre of indirect Coomb's	Previous affected babies	Foetal outcome with treatment	Salvage rate
1.	4th	Full term	1:64	SB Mac.	Baby expired after 2nd exchange transfusion	0%
2.	2nd	34 wks.	1:64	Nil	Baby expired after 2nd exchange transfusion	0%
3.	10th	32 wks.	1:8	2 affected 1 SB	Macarated SB	0%
4.	5th	34 wks.	1:32	2 affected babies	-do-	0%
5.	3rd	Full term	—	Nil	Required exchange transfusion with photo therapy. Result good	20%

Haemoglobin below 10 gm% was found in 6 cases, 2 were immunised. One case had haemoglobin 6 gm% and baby expired after 2nd blood transfusion and the second case had haemoglobin 9.8 gm% who survived with 2 exchange transfusions. The 3rd case was 2nd gravida born by LSCS for prolonged labour and Hb% was 6 gms, baby had intracranial haemorrhage and expired after 7 days due to septicemia. The remaining 3 mothers were anaemic.

The peripheral smear showed hypochromia anisocytosis with poikilocytosis, marked polychromasia, early, intermediate and late normoblasts were seen.

Out of 150 babies, 16 developed physiological jaundice on 3rd and 4th day and responded well to the treatment. One baby required exxchange transfusion and expired due to septicemia.

TABLE III
Foetal Outcome in Rh Negative Mothers

Foetal outcome	No. of cases	Percentage
Well babies	136	90.67
Immunised but well babies	1	00.66
Hydrops foetalis	2	1.33
Still births	4	2.67
Other causes of death than Rh sensitisation	7	4.67

ABO incompatibility was found in 1 case.

The perinatal mortality in the affected babies 80%, 2 babies expired with treatment. The perinatal mortality in non-immunised cases was 4.75%, out of 142 live births. In this study 9 babies expired including one tw'n.

TABLE IV
Perinatal Mortality in Rh Negative Mothers due to Various Causes

Sr. No.	Cause	No. of cases	Perinatal mortality
1.	Rh incompatibility	2	1.39%
2.	Prematurity	3	2.08%
3.	Dysmaturity	1	0.06%
4.	Asphyxia	1	0.06%
5.	Septicaemia	2	1.39%

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The genetic counselling is a must before marriage as the matching of horoscope, and specially the blood grouping and Rh typing of bride and husband.