FOETAL PROGNOSIS IN RH INCOMPATIBILITY

by

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Haemolytic disease of the new born is perplexing, involving two haematologic systems and being freely influenced by a third factor, the genotype of the father.

The foetal outcome and prognosis in Rh negative mothers delivered at Government Erskine Hospital, Madurai, for a period of one year from June 1976 to May 1977 was studied. In Government Erskine Hospital, Rh typing of patients with bad obstetric history was done from 1973, and from 1975 all booked primigravidas had their Rh typing. Though ideal, even today, facilities for Rh typing of every pregnant woman is not available.

Observations and Discussion

The total Rh typing done in the study period for antenatal women was 1420 of which 57 were found to be Rh negative giving an incidence of 3.6%. Indian workers from various parts of India have reported incidence varying from 2.7—10% (Bhalgotra and Madan, 1974).

The incidence of sensitisation studied in this series was 22.8% (13 cases). This is high compared to that of Eastman (1966) 4.72%; Sheth and Purandare (1964) 6.2%; Bhalgotra and Madan (1974) 12.5%. As all complicated cases within a radius of 150 Km are being referred to Erskine Hospital, the incidence of sensitisation is probably high.

Seventy-four per cent of cases had attended the antenatal clinic and registered themselves. Only 7.1% were sensitised among the booked cases. Of the unbooked, 66.7% were affected. These cases were either admitted directly in labour or were ascertained as Rh negative retrospectively owing to the affection of the infant. The low incidence of sensitivity in the booked cases may be due to the fact that most of the booked cases were primigravida and a few booked multigravida had received immuno-prophylaxis.

The maximum number of patients fall into para 2-4 (49.1%) but the incidence of immunisation is more in para 5 and above (61.6%). This is comparable with the figures of Sheth and Purandare (1964) and Trivedi *et al* (1968).

TABLE I
Parity and Immunization

Gravida	No. of cases	Incidence	Not immunised	Incidence
Primigravida	17	29.9	Nil	—
2-4	28	49.1	5	38.4
5 and above	12	21.1	8	61.6

Maternal age varies between 18-40 years. Two thirds of the cases studied fall into the 20-29 age group but sensitisation increases with advancement of age (31.2%) which reflects again on the parity. All patients belonged to the low socioeconomic group.

Pre-eclampsia was noted in 19.3% of which 36.3% was in sensitised women. All 3 patients who delivered a hydrops had associated pre-eclampsia. Anklesaria (1964) and Knox and Walker (1961)

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have shown that transplacental haemorrhage is increased in toxaemia while Zipursky *et al* (1963), Zilliacus (1965) did not find any increase. As far as our figures go, pre-eclampsia in sensitised women carry a bad prognosis for the foetus. The incidence of hydramnios was 3.2%. Krishna *et al* (1973) state that immunised cases show a high incidence of complications during pregnancy and labour.

The tendency of the severity of the disease to repeat is well known especially if the father is homozygous. Very severely affected and stillborn infants are likely to be followed by stillbirths. In this series, in 7 cases where a previous child was affected, foetal mortality was 100%. All 6 women who gave history of blood transfusion were sensitised. Four out of 9 women who had a previous caesarean section, (44.4%) and 33% of women who gave history of abortions, were sensitised.

Antibody titres were done in 9 cases. It helped in some cases to predict the outcome (Table II).

TABLE II
Antibody Titres in Immunised Women (9) cases)

Titre	No. of cases	Foetal salvage rate
1:16	2	100%
1:32	2	50%
1:64	2	33%
1:128	1	Nil
1:256	2	Nil

The critical titre in this study is 1:64. When the titre was 1:128 and above the baby could not be saved though termination was done at 34 week and exchange transfusion given. The salvage rate in titres of 1:64 was 33%. When the titre was less than 1:32 the prognosis was good. Krishna *et al* (1966) noted most of normal infants with the titre less than 1:16. Sheth (1964) concurs with this. Dutta and Ghosh (1970) state that stillbirth is frequent with titre of 1:64 and above. Malhotra *et al* (1975) state that determination of anti-body titre has only a limited prognostic value in women who have had previously an immunised pregnancy.

Termination of pregnancy:

Seventy-three per cent delivered at term, 20% delivered at 36-38 weeks and 7% between 32 to 36 weeks. Though in 7% of patients pregnancy was terminated, only in 2 instances it was done for Rh sensitisation.

TABLE III
Mode of Termination of Pregnancy

	No. of cases	Percentage
Caesarean section	23	40.4
Spontaneous Vaginal	21	36.8
Low mid cavity forceps	5	8.8
Outlet forceps	7	12.3
Craniotomy	1	1.8

TABLE IV
Foetal Outcome

Outcome	No. of cases	Incidence
1. Well babies	45	78.8
2. Immunised but well	5	8.8
3. Died of immunisation (hydrops)	3	5.2
4. Stillborn due to sensitisation	2	3.5
5. Other causes of death (cord prolapse in one)	2	3.5

The incidence of male babies was 63.2%. Of the immunised infants 77% were male. It seems that the male infants are more susceptible to haemolytic disease than female.

TABLE V
Weight of Babies

Weight of the baby	No. of cases	Immunisation
Below 2 kg	7	nil
2—2.5	7	1
2.6—3	24	2
3.1—4	19	7

The birth weights of sensitised babies were high ranging from 3-4 kg compared to non-sensitised.

In infants showing mild or no symptoms at birth, placenta was generally normal. In severe forms, the placenta was enlarged and instead of the normal weight ration of 1:6 the ratio was 1:3 to 1:5. (Table VI). Placenta shows both increased thickness and surface area. The cotyledons are well demarcated and of lighter hue.

TABLE VI
Weight of Placenta and Birth Weight

Ratio of weight of placenta to birth weight of baby	No. of cases	sensitised	
		No.	%
1:3	5	4	80%
1:4	3	1	66%
1:5	4	2	50%
1:6	42	3	7.1%
Macerated baby & placenta	3	—	

Thirty babies belonged to B group, 15 to A, 10 to O and 1 to AB. Eighty-four per cent of babies were Rh positive. No striking distribution was apparent when blood groups in the offspring of sensitised and non-sensitised were compared. Eighty-three per cent were ABO compatible. No ABO incompatibility was seen in immunised cases. The protection offered by ABO incompatible groups is well known. Once the mother was immunised to Rh, ABO incompatibility of the infant has no protective effect.

TABLE VII
Cord Blood Hb in Immunised Babies

Cord Hb in Gms/100 ml	No. of babies	Immunised	Salvage rate
17.5	8	Nil	100%
14.5—17.5	13	Nil	100%
10.5—14.4	29	5	60%
6.5—10.4	4	3	66.6%
5—6.4	1	1	Nil

The cord Hb concentration varied from 5 to 14 gms in immunised 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 a Hb of 13-14 gm%. They did well immediately after birth and later without any specific treatment (Table VII). Daswani (1972) stresses the importance of cord Hb. in the assessment of haemolytic disease.

Cord bilirubin varied from 3.5 to 23 mg% in affected infants. All the 3 cases with a bilirubin of 19-23 mg% required exchange transfusion and there was no mortality. Allen *et al* (1950), Sheth and Purandare (1964) and Trivedi *et al* (1968) reported that exchange transfusion was necessary when cord bilirubin was over 3 mgm%.

TABLE VIII
Treatment in Sensitised Babies

Single exchange transfusion	3
Exchange transfusion twice	1
Simple transfusion following exchange	1
Exchange with phototherapy	3
Phenobarb with phototherapy	2
Non-sensitised	
Simple transfusion to combat septicaemia	1
Phototherapy	4
Some of the babies had more than one form of therapy	

The perinatal mortality in this study was 11.4%. Among the 5 deaths, 3 were frank hydrops and 2 were intrauterine deaths due to sensitization.

Immunoprophylaxis—Anti D gamma-globulin was given to 38 mothers (66.7%) when the foetus was Rh positive. Anti-globulin was given within 24 hours in 50% of women and within 72 hours in the rest.

Summary

The incidence of Rh negative pregnancy in Government Erskine Hospital, Madurai, was 3.6% and the incidence of sensitisation 22.8%. No sensitisation was seen in primigravida. When there was a previous history of an affected child foetal mortality was 100%. Antibody titre, cord haemoglobin and bilirubin correlated well with the severity of the disease. The perinatal mortality was 11.4%.

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