# NEONATAL OUTCOME IN Rh NEGATIVE PREGNANT WOMEN

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## SUMMARY

**Of 10,332 pregnant women screened for their Rho D type, 2.26% were Rh negative. The neonatal outcome of 154 Rh negative pregnant women with Rh positive partners, 5.4% were sensitized. No sensitized primigravida was detected and incidence of sensitization went on increasing with increasing party. There was one neonatal death due to Rh HDN amongst 8 affected babies. The severity of HDN in affected neonates correlated well with maternal antibody titres as well as history of HDN and its severity in previous pregnancies.**

*Introduction*

The incidence of Rh negative type, which is quite high in the West, is reported to be considerably low in Indian population. Also as the other factors responsible for perinatal mortality are not as yet effectively treated as are in the West, Rh problem has not been given much attention so far. Thus screening for Rh type is not yet considered as an essenial part of antenatal care in many clinics in India. Hence, little information is available regarding the incidence and degree of sensitization and its correlation with the perinatal outcome.

In the present study, an attempt is therefore made to find out the incidence and severity of Rh immunization and outcome of pregnancies in Rho D negative women at our hospital.

*Material and Methods*

All pregnancy women attending antenatal clinic at Sassoon General Hospitals, Pune, during 1981 and 1982 were screaned for their Rho D type at their first visit in order to find out the incidence of Rho D negative pregnant women. Rh typing of their husbands was done and couples Indirect coomb's test was done in Rh negative women at their first visit, at 24 weeks and every 4 weeks therafter, and antibody titre was estimated in them. Unregisteretd patients admitted in labour and detected to be Rh negative as well as cases of Rh hemolytic disease referred for neonatal jaundice from outside centres were also recorded. Thus, 154 Rh negative pregnant women were included in the study, whose neonatal outcome could be recorded and correlated with the maternal status as regards their sensitization.

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*Observation*

A total of 10,332 pregnant women were screened for their Rho D type in these 2 years and 235 of them (2.26%) were Rh negative.

A group of 154 women was included in the study of which 58 were primigravidas and 96 were multigravidae.

Nine patients out of 154 (5.9%) were detected to be sensitized. None of the primigravidas was senisitized, 5.4% of second gravidae and 11.5% of multigravidae were sensitized.

The history of anti D protection at all indicated times in the study group and its influence on the incidence of sensitization was noted in multigravidae. One out of 49 protected women was sensitized as against 8 out of 47 unprotected women (16.5%). The only sensitized patient in the protected group had previous transfusion of Rh positive blood. Thus, there was no genuine case of 'failure of Anti D' to protect against immunisation.

Evidence of factors known to sensitize Rh negative pregnant women was seen in 4/47 (8.5%) of sensitized women as against 5/107 (4.7%) of nonsensitized group.

The antibody titres in sensitized women ranged from 1:4 to 1:32.

*Neonatal Outcome*

Eleven babies were Rh negative. Thirty-two (20.7%) neonates were ABO incompatible with their mothers.

Of the 9 neonates born to sensitized mothers, 8 suffered from Rh HDN, while 1 escaped from getting affected.

The choice of treatment modality for affected neonates depends upon the severity of hemolytic disease. Severity of HDN expressed in terms of type of treatment given to the neonate showed definite correlation with the maternal antibody titre. (Table I).

Previous obesteric history of sensitized women was analysed for knowing severity of HDN in their previous pregnancies. Five patients did not have any history suggestive of Rh HDN in previous babies. Three patients gave history of Rh HDN in previous babies all of which survived. One patient gave history of neonatal death due to Rh HDN in her past obstetric career who had antibody titre of 1:32 in present pregnancy. The only neonatal death that occurred in the present study was in this patient. The others had antibody titres of 1:16 or less. No patient in present study had previous fetal death.

The details of sensitied cases are shown in Table II. Sensitisation was detected

TABLE I

*Maternal Antibody Titre and Severity of HDN*

| Neonatal Status | Antibody titre | | | | | Total |
|---|---|---|---|---|---|---|
| | 1:4 | 1:8 | 1:16 | 1:32 | 1:64 & above | |
| No Jaundice | 1 | — | — | — | — | 1 |
| Jaundice treated with phototherapy | — | 2 | 1 | — | — | 3 |
| One exchange transfusion | — | 2 | 1 | — | — | 3 |
| More than one exchange transfusion | — | — | 1 | 1* | — | 2 |
| Neonatal death | — | — | — | 1* | — | 1* |
| Hydrops/IUD | — | — | — | — | — | — |

* The case with titre 1:32 had severely affected baby which died on 5th day in spite of 3 exchange transfusion.

TABLE II

*Neonatal Outcome in Sensitized Cases*

| Patient | Antibody titre | Cause of Sensitization | Blood group | | Birth wt. in grams. | Bilirubin | | Hb% | Treatment and outcome |
|---|---|---|---|---|---|---|---|---|---|
| | | | Mother | Baby | | T | D | | |
| JB | 1:4 | Previous Rh +ve baby | O | B | 2650 | 0.8 | 0.6 | 17.0 | Nil, unaffected |
| MC | 1:8 | -do- | O | A | 2000 | 5.8 | 3.0 | 13.2 | Phototherapy + Barbiturates |
| SG | 1:8 | -do- | A | A | 1950 | 9.0 | 5.0 | 15.0 | -do- |
| HN | 1:8 | MTP | O | O | 2700 | 30.0 | 12.5 | 13.2 | Ex-transfusion 1st day |
| SK | 1:8 | Previous Rh +ve baby | A | A | 2800 | 14.3 | 7.0 | 14.0 | Ex-transfusion 2nd day, Kernicterus |
| BK | 1:16 | Rh +ve blood transfusion | O | B | 2050 | 3.0 | 2.0 | 13.8 | Phototherapy + Barbiturates |
| HS | 1:16 | Rh +ve baby | B | B | 2150 | 27.0 | 14.0 | 12.0 | Ex-transfusion 2nd day |
| AB | 1:16 | -do- | O | O | 2850 | 26.0 | 12.0 | 13.0 | Ex-transfusion 2nd, 5th day kernicterus |
| MK | 1:32 | -do- | AB | A | 2500 | 32.0 | 15.0 | 10.8 | Ex-transfusion 1st, 2nd, 4th day died on 5th day |

quite late in pregnancy in all the cases. All sensitised women were multiparous. In 7 out of 9 cases previous Rh positive baby was the probable cause for sensitisation.

Eight neonates from this group developed severe jaundice within 24 hours of birth. One baby however was not affected at all. Seven out of these 8 neonates had Hb concentration less than 15 gm% on first day. The only baby who had Hb less than 11 gm% on first day later died on 5th day. This baby was referred from a PHC on first day with deep neonatal jaundice (serum bilirubin 32 mg%). The maternal antibody titre was 1:32. The baby succumbed inspite of three exchange transfusions. All other babies survived.

Two babies showed signs of kernicterus. They were treated with exchange transfusions. They survived and were discharged.

Of 145 nonsensitized cases, 23 babies had jaundice during their early neonatal period. Two developed jaundice within first 24 hours due to ABO incompatibility, but in no case the bilirubin rose above 11 mg% and exchange transfusion was not required. Of the remaining, 16 had physiological jaundice, 4 had jaundice due to prematurity and 1 due to septicemia following umbilical sepsis. There were 6 neonatal deaths in nonsensitised group. Two babies died due to prematurity, 3 due to neonatal asphyxia and 1 due to septicemia following umbilical sepsis.

*Discussion*

The review of different reports from Indian Population shows about 2 to 7% incidence of Rh negative persons (Arvind Kumar 1982). The incidence of 2.26% at our antenatal clinic is quite similar to these reports.

The incidence of sensitization has been observed to increase with increasing party which is similar to Freda's observation (1971). No sensitized primigravida was detected in the present study. Also there was no genuine case of 'failure of anti—D prophylaxis' detected, although many series have reported 0.7 to 1.8% incidence of such failures (Bowman 1978).

The incidence of sensitization in unprotected group was 16.5%. Bowman (1978) had reported 7.8% after first and 16% after second Rh positive pregnancy.

Severity of HDN correlated well with the maternal anti-body titre and the only neonatal death occurred in a women having titre of 1:32.

Previous history of Rh HDN is associated with severe Rh HDN in subsequent pregnancy (Goplerud 1961). In present study 1 senstitized patient had previous neonatal death due to Rh HDN who in present pregnancy had a neonatal death again.

Hyperbilirubinemia is one of the major problems in a baby with HDN. Signs of Kernicterus usually appear when serum bilirubin rises above 18-20 mg%. In present study, 4 babies had serum bilirubin above 20 mg% of which 3 showed signs of Kernicterus. One of these 3 died inspite of three exchange transfusions.

Cord blood hemoglobin concentrations is an important factor indicating the severity of HDN. The perinatal mortality is 36-40% with cord hemoglobin below 8 gm%, 13-22% with cord Hb between 8 to to 11.9 gm% and 3.6 to 4% with cord Hb above 12 gm% (Goplerud 1962, Allen and Diamond 1954, Dique and Wrench 1959). In present study only 1 baby had Hb of 10.8 gm% which died in neonatal period.

Thus, the high neonatal mortality and morbidity observed in sensitized Rh negative pregnant woman in present study definitely indicates a need for routine

screening of all pregnant women for Rho D type and efforts to protect them against immunisation by timely administered anti D prophylaxis. This can certainly eliminate the problem of Rh HDN in our population also.

*References*

1. Allen, F. H., Diamond, L. D. and Jones, A. R.: N. Engl. J. Med. 251: 453, 1954.
2. Arvind Kumar, Mangal, D. K., Jain, T. P. and Jain, Prabha: J. Obstet. Gynec. India. 32: 112, 1982.
3. Bowman, J. M.: Obstet. Gynec. 52: 1, 385, 1978.
4. Dique, J. C. and Wrench, D. L.: J. Obstet. Gynec. Brit. Emp. 66: 251, 1959.
5. Freda, V. J.: Clinical Obstet. Gynec. 14: 594, 1971.
6. Goplerud, C. P.: Obstet. Gynec. 17: 355, 1961.