

A REVIEW OF EXPERIENCES OF RH ISO-IMMUNIZATION AND ALLIED PROBLEMS

(At the K.E.M. Hospital, Bombay).

by

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A centre to deal with patients with bad obstetric history and problems of Rh iso-immunization and allied conditions has been instituted at the K.E.M. Hospital since January 1964. The experiences of the specialised clinic are presented.

Material and Method

A routine ABO and Rh grouping of 6660 patients was carried out and 251 Rh negative patients detected in one year. Genotype studies were performed in every couple. Patients showing evidences of iso-immunization were closely observed. Certain other cases of neonatal jaundice were also investigated and treated.

Results and Discussion

Incidence: Of the 6,600 patients investigated, 251 cases were Rh negative, giving an incidence of 3.8%. Of these Rh negative women, 13 patients showed active immunization, giving an incidence of iso-immunization of 0.2% in the general population and 5% in Rh negative group.

"Paper read at the 13th All-India Obstetric & Gynaecological Congress held at Patna in January 1966".

TABLE 1

Total number of antenatal cases	6,600
Rhesus negative	251 or 3.8%
Immunization occurred in 13 cases	
Incidence of immunization—	
In general population	0.2%
In Rh negative patients	5.0%

Past Obstetric history

The past obstetric history of the 13 patients with iso-immunization revealed significant factors in 10 cases. In eight cases obstetric factors possibly influenced the occurrence of foeto-maternal haemorrhage, leading to iso-immunization whereas in two cases a Rh positive blood transfusion was responsible as shown in Table II.

TABLE 2

Predisposing factors	Number of cases
Rh positive transfusion ..	2
Manual removal of placenta ..	2
Curettage after abortion ..	2
Caesarean section ..	2
Antepartum haemorrhage ..	1
Prolonged labour + Pitocin ..	1

A review of 474 Rh negative cases at Nowrosjee Wadia Maternity Hospital revealed that abnormal obstetric procedures (such as attempts to

express the placenta prior to manual removal, intra-uterine manipulation, prolonged labours, curettage of abortions and caesarean sections) contribute to immunization. Of Rh negative women who had undergone ab-

test positive. Micro-estimation of bilirubin by the heel prick method was done every six hours and timely exchange transfusions undertaken to keep the bilirubin within the safe limits of 20mg.% and to prevent anaemia. In the present case two transfusions sufficed (Fig. 1).

A REVIEW OF EXPERIENCES

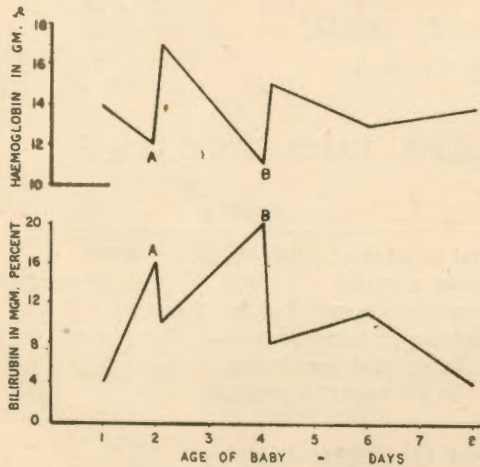


Fig. 1

The graphs show the rise and fall of bilirubin and haemoglobin.

Exchange transfusions were done at points A and B to prevent kernicterus.

normal obstetrics, 50% developed immunization, while of those who had normal deliveries, only 9% developed Rh antibodies. Modifications in obstetric technique to consciously avoid placental trauma will therefore reduce possible foeto-maternal haemorrhage and reduce chances of immunization.

I. Illustrative cases of Rh iso-immunization:

Case 1

Mrs. B. A. aged 32, para VII with a flawless obstetric history was transfused with Rh positive blood to treat antenatal anaemia during her last pregnancy. At 38 weeks her antibody titre was 1:512, and spectrophotometric studies on liquor amnii indicated active haemolysis. Induction of labour was undertaken. Cord blood investigations revealed bilirubin of 5 mg.%, haemoglobin 12 gms.% and direct Coomb's

Although incompatible blood transfusion is a totally avoidable catastrophe, we still come across a number of cases immunized on account of this negligence. It is very rare that a patient receiving incompatible blood escapes immunization. From our study at Nowrosjee Wadia Maternity Hospital, we find that of 29 pregnancies in women who were given incompatible blood, only 1 baby was unaffected and only because it was Rh negative.

The afore-mentioned case also demonstrates how spectrophotometric analysis of liquor amnii helps to decide on early induction of labour before the onset of hydrops foetalis. Induction of labour followed by timely exchange transfusion could reduce chances of still-birth in suitable cases.

Case 2

Mrs. A. K., aged 22, para V, gave a history of 1st F.T.N.D., followed by 2 babies who died of neonatal jaundice, and then a premature still-birth.

Antenatal studies revealed the husband to be homozygous Rh positive. Antibody titre of 1:512 and spectrophotometric studies warranted immediate interference. A caesarean section was undertaken at 36 weeks. Cord blood investigations revealed a bilirubin of 5 mg% and haemoglobin of 7 gms%. The direct Coomb's test was strongly positive. An exchange transfusion was given within 2 hours of birth and repeated twice thereafter to keep the bilirubin from rising to dangerous levels.

Here is a case in which the past obstetric history was the principle guiding factor in the decision for induction of labour. An analysis of Nowrosjee Wadia Maternity Hospital cases showed that of 26 women that had history of affected babies, 6 suffered foetal losses, 18 had babies requiring exchange transfusion, and only 2 babies survived without any treatment.

The afore-mentioned case also shows that the bilirubin and haemoglobin estimation of cord blood and the direct Coomb's test are very important indicators of the babies' condition. Of 24 babies whose cord blood bilirubin was more than 3.5 mg. per cent and haemoglobin less than 12 gm. per cent, 5 died, 17 were saved by exchange transfusion and only 2 survived without any treatment.

II Abo Incompability

When the mother is 0 group Rh positive and the husband A or B group positive, problems of ABO incompatibility may arise. The jaundice accruing from such an incompatibility rarely reaches levels necessi-

tating exchange transfusion. One case is illustrated here.

Mrs. R. M., para I, aged 21, was 0 Rh positive. Her baby born at term manifested a rapidly deepening jaundice from the second day onwards.

Investigations on the baby revealed a bilirubin of 12 mg% and a haemoglobin of 15 Gms%. The baby's blood was B Rh positive. Mother's blood showed an Anti-B titre of 1:256. An exchange transfusion was given after which the baby showed clinical improvement and fully recovered (Fig. 2).

As most cases of ABO incompatibility develop only moderate jaundice a few which need close attention may be overlooked. Besides it is not possible to predict which babies are likely to develop jaundice due to this factor. The only way to look after these babies is by watching the bilirubin closely. The serial bilirubin estimation would give an idea of the rate of rise and indicate the need for an exchange transfusion in good time. An exchange transfusion done early enough has much better prognosis for the baby and reduces the need for repeat exchange transfusions.

III. Glucose 6 phosphate dehydrogenase deficiency

Doxidios from Greece first demonstrated the enzyme deficiency G. 6 P. D. which causes increased fragility of red blood cells leading to haemolysis. Swarup has shown an incidence of G. 6 P. D. deficiency of 5% in Indian population.

The babies who develop jaundice on account of Glucose 6-phosphate dehydrogenase deficiency very often have a precipitating factor, such as administration of vitamin K or administration of long acting sulphas to

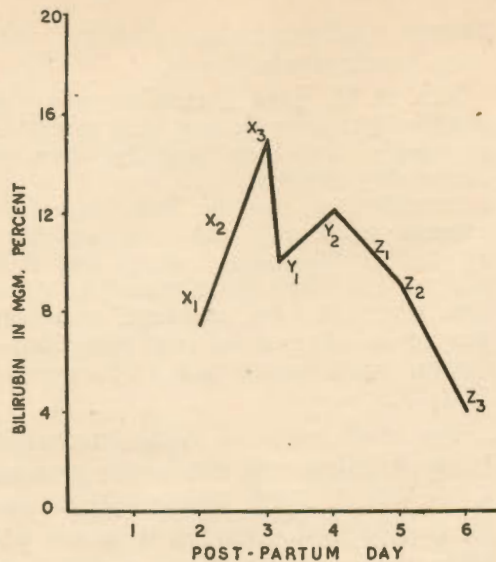


Fig. 2

the mother. In our limited experience of these cases, we find that the jaundice may have its onset any time within the first ten days and it may necessitate an exchange transfusion as late as the 8th day.

Illustrative case

Mrs. S., aged 20, para I was delivered of twins in an outside hospital. One baby fared well whereas the other developed increasing jaundice, and was transferred to our care on the 5th post-partum day. Laboratory investigations excluded ABO and Rh iso-immunization but, indicated G. 6 P. D. deficiency. The bilirubin was found to be 24 mg%. Hence an exchange transfusion was given. The baby showed clinical improvement thereafter.

The above study bring out very clearly the various problems involved in the causation of neonatal jaundice and outlines the principles of management.

Conclusions

(1) Operative and intra-uterine manipulations during delivery signi-

Points X₁, X₂, X₃ indicate that the rate of rise of bilirubin is fast enough to surely exceed the critical level of 20 mg. per cent. Therefore an exchange transfusion was done at X₃.

Y₁, Y₂ indicate that the rate of rise of bilirubin is slowed down and a second exchange transfusion may not be required.

Z₁, Z₂, Z₃ indicate how bilirubin is observed till it has fallen to safe levels.

ificantly increase chances of antibody formation. Obstetricians should exercise care to minimise this in the case of Rh negative women.

(2) In neonatal jaundice of any aetiology, bilirubin estimations should be done regularly—6 to 12 hourly—to assess the rate of rise and prevent the bilirubin from exceeding the safe level of 20 mg. per cent to avoid the danger of kernicterus. Collection of blood by heel-prick and estimation of bilirubin by micro-method can make repeated bilirubin estimation practical.

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