



A successful RH ISO immunization in pregnancy and perinatal outcome

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ABSTRACT

RH ISO immunization is a major cause of severe hemolytic Anemia in newborns and poor perinatal outcomes. Nowadays, the rate of isoimmunization is rising so careful monitoring and follow up is required in the mother to improve the perinatal mortality. A case of multigravida, Rh iso immunized with titre value of 1:8 ago; this case defines how the perinatal outcome with this level of titre value and the events of a baby after immediate delivery. Rh isoimmunization is diagnosed with Doppler ultrasound to calculate the MOM VALUE, if >1.5, then it needs an immediate termination, exchange transfusion, IVIG and double light phototherapy are the options in the treatment in Fetal Anemia. Advantages of IVIG use before transfusion case reports show a reduction in the transfusion rate and phototherapy. This case report showed the successful RH isoimmunization in pregnancy with an ICT titre of 1:8 and the related perinatal outcome. PSV AND MSV Doppler which is a noninvasive test which is used to benefit the Rh isoimmunization patient; however, if the mom is within normal limits, we can be able to prolong the pregnancy, or we might know when the ideal time is to terminate the pregnancy along with Doppler nowadays if titre of more than 1:32, IVIG is also one good option to eliminate the repeated exchange transfusions and phototherapy for the baby.

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INTRODUCTION

Rh isoimmunization is disastrous for a pregnant woman, and she often presents with repeated fresh stillbirths and recurrent pregnancy losses [1]. Diagnosis of severe indirect hyperbilirubinemia in the neonatal period is usually made by the presence of blood group incompatibility along with a positive

direct antibody test (DAT) [2]. The rate of bilirubin rises and the drop in hemoglobin level is used to detect the presence of hemolysis and to guide treatment modalities. Phototherapy alters the solubility of the indirect bilirubin by isomerization of the bilirubin compound to make it water-soluble [3].

The administration of intravenous immunoglobulin (IVIG) is an adjunctive treatment by blocking the reticuloendothelial Fc receptor sites and prevents the extravascular destruction of neonatal red blood cells (RBCs) sensitized by maternal antibodies. It decreases the need for blood exchange transfusion. If an Rh-negative woman reveals an indirect Coombs test (ICT) positive that is more than 1:32 titer, amniocentesis is performed, and the optical density of an amniotic fluid is determined by spectrophotometry. Cordo centesis and fetal exchange transfusion are performed if the bilirubin level is in the danger zone by plotting in Liley's or Queenan's curve in order to manage and improve neonatal outcomes. By the introduction of Doppler ultrasonogra-

phy, these patients can be managed in a secondary care center with their affordability. This case report defines the RH isoimmunization and perinatal outcome with an ICT titre of 1:8

CASE REPORT

A 27 years old, Gravida 4 para 2 live 2 abortion 1, admitted at 35 weeks 2 days, she was booked a case and immunized outside, she is RH negative, ICT Positive at 32 weeks, with a titre of 1:8, MCA PSV mom value of 1.4, she is a known case of hypothyroidism diagnosed since conception and was taking Tab.thyronorm 50mcg, she was admitted at 33 weeks with ICT titre of 1:8 and INJ.Dexamethasone 6mg four doses covered at the time of hospital stay, she admitted with no complaints, she conceived spontaneously, all three trimesters were uneventful, with normal glucose challenge test, she had previous 2 normal vaginal delivery, on her first pregnancy- she delivered an alive, boy baby, full-term with the baby blood group of B Positive, anti D given to the mother on pod2, on her second pregnancy, she delivered girl baby, full-term with baby blood group - B NEGATIVE so anti D not given, on her third pregnancy, she had a spontaneous abortion at 45 days of amenorrhea, UPT positive done at home, she didn't visit any hospital during that time.

All investigations were sent and found to be within normal limits, and the doppler was repeated after two days of admission MCA PSV MOM -0.99 / earlier it was 1.48 (Figure 1 & Figure 2). Neonatology counselling was obtained. The patient was induced with PGE2 gel after explaining the condition. She progressed well, delivered vaginally, and alive preterm girl baby, 3.1kg with Apgar of 6/10, 7/10 IN 1 min and 5 mins, with baby blood group - O POSITIVE, DIRECT COOMBS TEST POSITIVE.

Course of Baby

Baby was shifted to NICU for respiratory distress and was started on NIV mode pc with settings of 25x15 / 5x30. Respiratory distress settled over the next 24 hours. In view of severe pallor and icterus, routine blood investigations were sent on admission, which revealed peak SBR at birth was 8.65, which was the range for exchange transfusion as the mother was B negative and DCT was positive.

Hence Umbilical catheter was secured and double volume exchange transfusion is done with O POSITIVE blood and AB plasma, post-transfusion serum bilirubin was 7.55, double light phototherapy was started and was given for 5 days. Repeat SBR was below cut off Baby, was shifted to mother's side, on discharge on day 10 of life, the baby is gaining weight

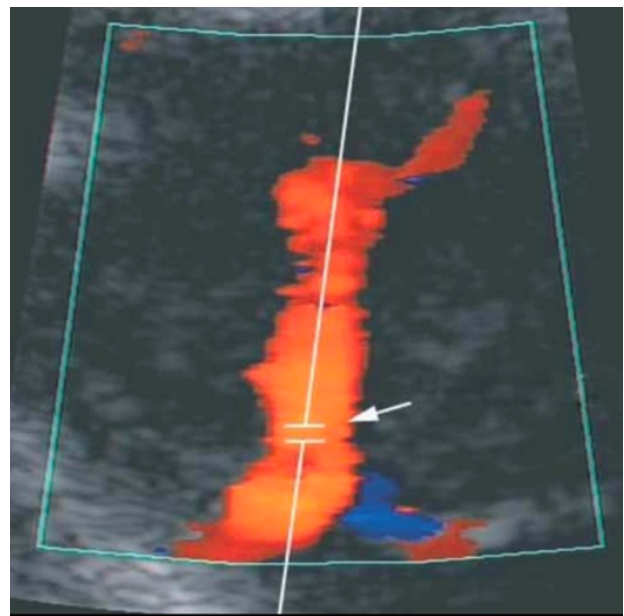


Figure 1: MCA -PSV

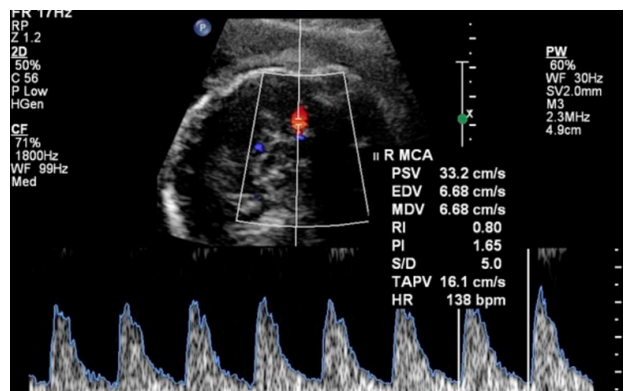


Figure 2: Doppler measuring MCA-PSV value

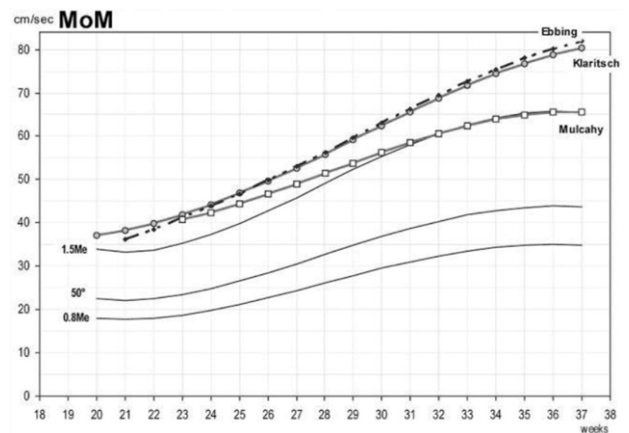


Figure 3: MCA Doppler Graph

Table 1: Values during pre-transfusion and post-transfusion in the post-natal period

Test	25.09.21		26.09.21	28.09.21
	Pre-transfusion	Post-transfusion		
Hb	8.1 g/dl	12.2 g/dl	10 g/dl	8 g/dl
PCV	27.3%	36.1%	29.9%	23.1%
Platelet count	2.12 Lakhs	1.09 Lakhs	1.12 Lakhs	1.82 Lakhs
TLC	14630 Cells	6970 Cells	7680 Cells	9760 Cells
Total bilirubin	8.65 Mg/dl	7.55 Mg/dl	11.50/16.62 Mg/dl	12.89 Mg/dl
Direct bilirubin	0.22 Mg/dl	0.28 Mg/dl	1.78 Mg/dl	2.41 Mg/dl
Free t3				2.71 Pg/ml
Free t4				1.33 Ng/dl
Tsh				15.9 Mlu/ml
Blood group	O positive			
Dct	Positive			
Peripheral smear study	Normocytic normochromic RBCs with few elliptocytes, polychromatophilic macrocytic RBCs and target cells seen. Nucleated RBCs-52 percentage, platelet-adequate.			
Reticulocyte count	9%			

well with adequate feeds and pre-discharge CB of 7.9mg/dL.

DISCUSSION

RH isoimmunization is in decreasing trend because of the wise use of ANTI D still it is an important cause of neonatal mortality and jaundice. Introduction of Doppler to determine serum bilirubin level found to be the standard procedure, which is now followed in Rh iso immunized pregnancies. Doppler measurement of PSV of MCA to detect fetal anemia succeeded in detecting anemia in only 50% of pregnancies [4].

In one of the studies, MCA Doppler assessment is superior to detection of fetal anemia with spectrophotometry of amniotic fluid using both Liley's and Queenan's curves, and middle cerebral peak systolic velocity is effective for diagnosis of moderate to severe fetal anaemia and superior to amniocentesis for detection of fetal anaemia in case of red cell alloimmunization. MCA Doppler graph is used to determine the degree of fetal anemia which is based on gestational age (Figure 3).

Depending on the PSV of MCA at different gestational ages, three different zones C, B, A have been created corresponding to normal hematocrit, mild anemia, and moderate to severe Anemia, respectively on Liley's 1963 case of severe fetal anemia detected with PSV of MCA > 1.5 MOM or by amniocentesis, intra peritoneal transfusion was the mainstay of fetal therapy. Intravascular transfusion with O Rh-negative red cells is the preferred option of

treatment. Another modality is IVIG is an expensive formulation and the patients in the above study declined IVIG because of its high cost. The dose of IVIG used varies in different studies, and till date, no dose pattern has been decided upon. In the study conducted with high dose of IVIG [5], 5-15 g was used depending upon the degree of Haemolysis. IVIG is a lasted modality, it increases the production of pro-inflammatory cytokines which in turn inhibits erythropoietin production. Late anemia in isoimmune hemolytic disease is hypo regenerative anemia. Several mechanisms have been proposed, including intra medullary destruction of RBC precursors by RBC antibodies, and erythropoietin production that is inappropriately low for the degree of anemia [6]. IVIG also leads to necrotizing fasciitis. In our case, even when the titre is 1:8 with a mom value of 1.45, the perinatal outcome is comparatively poor. IVIG was not given in the postnatal period, so the need of exchange transfusion and repeated phototherapy was given (Table 1).

CONCLUSION

PSV AND MSV Doppler is a noninvasive test which is used to benefit the Rh isoimmunization patient. However, if the mom is within normal limits, we can be able to prolong the pregnancy or we might know when the ideal time is to terminate the pregnancy along with Doppler nowadays, if the titre of more than 1:32, IVIG is also one good option to eliminate the repeated exchange transfusions and photother-

apy for the baby.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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