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IMPACT OF MULTIPLE ALLOANTIBODIES BEYOND ANTI-D IN PREGNANCY - A CASE REPORT ON NEWBORN OUTCOME

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ISBTI (GUJARAT CHAPTER)

INTRODUCTION

- Accurate detection of red blood cell (RBC) antibodies is crucial for ensuring pre-transfusion compatibility and preventing hemolytic transfusion reactions.
- Alloantibodies, produced in response to exposure to foreign RBC antigens through transfusion, transplantation, or pregnancy, can pose a significant risk.

AIMS AND OBJECTIVES

AIM:

- To determine the significance of red cell alloantibodies other than anti-D during pregnancy and their effect on newborn

OBJECTIVES:

- To identify the allo-antibodies present in the patient.
- To assess the effect of these maternal alloantibodies on newborn.

MATERIALS AND METHODS

- A 19 yr old G2A1 with a previous history of abortion at POG 2 months, delivered a male baby at 37w + 5 days via Emerg. LSCS in view of Gr- III MSL.
- Baby was admitted in the NICU due to clinical icterus ill legs.
- Hematological workup was done and the total bilirubin was 13.45 and phototheraphy was done.
- Sample was sent to blood centre in view of Hemolytic Disease of the Newborn (HDFN).
- Baby was discharged after 8 days.
- Tests done were:
  - Blood group of mother and baby
  - DCT
  - ICT
  - Antibody identification
  - Acid elution of the baby red cells
  - Phenotype of mother and baby

RESULTS

Blood group & ICT for both mother & baby

	BABY	MOTHER
Blood Group	B Positive	B Positive
ICT	Negative	2+

Antibody screening

- Done with commercially available 3- cell panel [DIA – I,II,III BIORAD (Lot no. – 45330.60.x)]
Interpretation – Positive
Posssible antibodies – Anti - E/ c/ Fyb/ Jkb/ M/ N/ S

Screen cell I	Screen cell II	Screen cell III
0	4+	0

Antibody Identification

- Done with 11 cell panel [BIORAD (Lot no. - 45161.95.x)]
Interpretation – Positive
Most probable antibodies – Anti - E , S

1	2	3	4	5	6	7	8	9	10	11
0	0	4+	0	4+	1+	0	0	1+	0	0

Phenotype for both mother & baby

Phenotype	K	E	C	e	c	ctrl
Baby	-	+	+	+	+	-
Mother	-	-	+	+	-	-

DCT:

Baby – Positive (4+)
Mother – Negative

Acid elution for baby Red Blood Cells

- By commercially available elution kit [BIORAD (Lot no- 45630 38 02)]

Testing of eluate-

Antibody screening

- Done with commercially available 3- cell panel [DIA – I,II,III BIORAD (Lot no. – 45330.60.x)]
Interpretation – Positive
Posssible antibodies – Anti - E/ c/ Fyb/ Jkb/ M/ N/ S

Screen cell I	Screen cell II	Screen cell III
0	4+	0

Antibody Identification

- Done with 11 cell panel [BIORAD (Lot no. - 45161.95.x)]
Interpretation – Positive
Antibody detected – Anti - E

1	2	3	4	5	6	7	8	9	10	11
0	0	4+	0	4+	0	0	0	0	0	0

DISCUSSION

- Alloimmunization to non-ABO red blood cell (RBC) antigens remains a significant clinical challenge for patients with a history of transfusion, transplantation, or pregnancy.
- In India, antenatal antibody screening predominantly centers on the detection of anti-D antibodies in Rh-D negative pregnancies.
- However, it is imperative to recognize that other RBC antigens, such as E and S, are also highly antigenic and can lead to the formation of antibodies that pose a substantial risk to the fetus, potentially resulting in HDFN.

CONCLUSION

- The presence of multiple alloantibodies, even beyond anti-D, can significantly impact newborn outcomes.
- As per the Royal College of Obstetricians and Gynaecologists (RCOG), antibody screening should be mandatory in all pregnant women to prevent HDFN.
- Routine antenatal antibody screening should include the detection of a broader range of RBC antigens to minimize the risk of HDFN.

REFERENCE

- Harmening D, editor. Modern blood banking & transfusion practices. Seventh edition. Philadelphia: F.A. Davis Company; 2019. 232-255 p