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Antibody identification in general Asian population at tertiary care hospital

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INTRODUCTION

- Ensuring the safety of blood transfusions involves not only the exclusion of infectious agents but also the prevention of hemolytic reactions caused by alloimmunization against erythrocyte antigens. there is always a risk of RBC Alloimmunization in patient receiving RBC transfusion , alloimmunization occurs because of red cell antigenic difference between donor and recipient. its implementation in India remains limited. This study aims to bridge this gap by determining the prevalence and frequency of alloimmunization in the general patient population, moving beyond the existing data that primarily focuses on multiply transfused individuals. Through a retrospective analysis conducted at a tertiary care center in North India, this research seeks to provide comprehensive insights into the alloimmunization patterns among a diverse patient cohort.

AIM & OBJECTIVE

1. To determine the prevalence and frequency of alloimmunization in the general patient population in a North Indian tertiary care center.
2. To determine Influence of transfusion history and impact of Pregnancy.
3. To identify the specific alloantibodies and its prevalence in patients with a positive indirect antiglobulin test (IAT).

MATERIALS & METHODS

- This is a retrospective study conducted at a tertiary care center in North India over a time period of 3 year from January 2021 to December 2023.
- Blood grouping , DAT & IAT were performed for all cases with incompatible crossmatch and blood group discrepancy.
- All patients with a positive indirect antiglobulin test (IAT) regardless of age, gender, and number of prior transfusions were included.
- Positive IAT samples were further tested to identify specific alloantibodies.
- Antibodies from different blood group systems were categorized (e.g., Rh, MNS, Lewis, Kidd, Kell).

RESULTS

Category	Result
Total Patients	1936
Antibody Positive	148 (7.6%), Male=61(41.2%), Female=87(58.8%)
Alloimmunized with Prior Transfusions	141 (95.3%)
Alloimmunized Women with Pregnancy History	66 (75.9%) of 87
Rh System Antibodies	118 (79.7%)
Anti-D	68 (45.9%)
Anti-E	20 (13.5%)
Anti-C	14 (9.5%)
MNS System Antibodies	16 (10.8%)

CONCLUSION

- Alloimmunization is strongly correlated with transfusion history and prior pregnancies.
- Rh system antibodies, particularly anti-D, were the most prevalent.
- MNS system antibodies, predominantly anti-M, were the next most common.

REFERENCE

- **Understanding Red Blood Cell Alloimmunization Triggers** - Jeanne E. Hendrickson, Christopher A. Tormey