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RED BLOOD CELL ALLOIMMUNIZATION IN MULTI-TRANSFUSED PATIENTS IN A TERTIARY CARE HOSPITAL

DR.SINDHUJA KRISHNAMURTHY, DR. NIDHI BHATNAGAR, DR. MAMTA SHAH, DR. SANGITA SHAH, DR. RAHUL RAJVANSHI, DR. KAMINI GUPTA.
DEPARTMENT OF IHBT, B.J.MEDICAL COLLEGE, AHMEDABAD.

BACKGROUND:

- Alloimmunization of red cells is a common and potentially serious consequence of blood transfusion.
- The risk of alloimmunization is also especially high in patients who receive multiple transfusion, such as patients with thalassemia, sickle cell anemia and chronic renal failure apart from pregnancy.
- The frequency of alloimmunization is not uniform among all multi transfused patients and it depends on the age, sex, gender, genetic makeup of the patients as well as number and frequency of transfusion.
- The development of RBC alloantibodies complicates their long-term transfusion therapy.
- However the incidence of ABO and Rh-D alloimmunization is reduced due to weak D testing and transfusing group “O” red blood cell in patients with ABO blood group discrepancy. Apart from these RBC antigens there are many other antigens which pose a risk for alloimmunization.

AIM:

To investigate the seroprevalence and specificity of RBC alloantibodies in multi-transfused patients.

OBJECTIVE:

- Improve transfusion safety and management in patient with RBC alloimmunization.

METHOD:

A retrospective study was conducted for 6 months from February to July 2024 on blood specimens of 800 multi-transfused patients excluding alloimmunization caused via pregnancy, abortion and autoimmune hemolytic anemia. All specimens were evaluated for antibody screening & identification test via the erythrocyte magnetized technology and commercially available cell panels (3 and 11 cell panels) by column agglutination technique.

RESULTS:

Overall prevalence of RBC alloantibodies was 5.4%. 10 specific types of alloantibodies were identified. The most common alloantibody was Rh blood group system(70.3%)especially E and c, followed by MNS(7.4%)and then KELL and Lewis blood group system(3.7% each).
Total number of muti-transfused patient:800
Total number of patients have alloimmunization:43

Blood group system	Number of patients with alloantibody	Prevalence
Rh (E > C>c)	30	70.3%
MNS	3	7.4%
Kell	2	3.7%
Lewis	2	3.7%

CONCLUTION:

Most alloantibodies were of the Rh blood group specificity. To improve the quality of blood supplied, especially in multi-transfused patients, it is recommended that fresh, phenotype matched, crossmatch compatible and leukocyte reduced red blood cell should be issued to prevent blood transfusion reaction.

REFERANCE:

Yazdanbakhsh K, Ware RE, Noizat- Pirenne F. 2012. Red blood cell alloimmunization in sickle cell disease: pathophysiology, risk factors, and transfusion management. Blood 120:528–37