



## RED BLOOD CELLS ALLOIMMUNIZATION AMONG MULTITRANSFUSED PATIENTS IN ALMAK NIMER UNIVERSITY HOSPITAL

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### ABSTRACT

**Background:** Alloimmunization consist of the induction of immunity in response to foreign antigens encountered through exposure to cells or tissues from a generally different member of the same species. It is one of the major complications of regular blood transfusions, particularly in patients who are chronically transfused.<sup>[1]</sup> In order for blood components to be safely issued and transfused to recipients, a series of laboratory tests are performed to ensure immunological compatibility, involves typing patient RBCs, screening patient sera for the presence of unexpected RBC-reactive antibodies, and cross matching as a final check to verify compatibility between donor RBCs and patient sera.<sup>[2]</sup> **Methods:** This descriptive analytical prospective cross sectional study was conducted in Almak Nimer University Hospital, and aimed to detect the presence of irregular antibody Multitransfused Patients. The patient's serum was tested for the presence of clinically significant antibodies using an indirect antiglobulin method. The serum was tested against un pooled Group O cells selected to possess the relevant blood group antigens. **Results:** The results revealed that the frequency of RBCs alloimmunization was detected in (5) patients which represented (7.7%). (40%) of them suffered from cancer, while (40%) on dialysis due to renal failure, and remaining (20%) was anaemic patients **Conclusion:** Red blood cells alloimmunization in multitransfused patient was (7.7%), most of was male more than female, and red blood cells immunization was seen in patients with cancer and renal failure more than those with anemia.

**KEYWORDS:** Red blood cells alloimmunization, Multitransfused patients, Sudan.

### INTRODUCTION

Alloimmunization consist of the induction of immunity in response to foreign antigens encountered through exposure to cells or tissues from a generally different member of the same species. It is one of the major complications of regular blood transfusions, particularly in patients who are chronically transfused.<sup>[1]</sup>

Red blood cell alloantibodies also can known as unexpected immune- antibodies, found other than the naturally occurring antibodies in the body, produced in response to the entering of red blood cells possessing antigens that the subject lacks, in cases of pregnancy, blood transfusion and transplantation or injection of any immunogenic material.<sup>[3]</sup>

### METHODS

This descriptive analytical prospective cross sectional study was conducted in Shendi hospital, and aimed to detect the presence of irregular antibody in multitransfused patients. A total of 65 venous blood

samples were collected from patients with multiple blood transfusions male and female with age from (1 to above 60) years in Almek Nimer university hospital. Ten milliliters (10 ml) of blood were withdrawn from antecubital vein of each patient after cleaning the patient skin with 70% alcohol and applying of the tourniquet above the vein a puncture site, using sterile non biogenic disposable syringe in a red tope blood container (No anticoagulant), then the serum was separated immediately by centrifugation after clot formation.

The patient's serum was tested for the presence of clinically significant antibodies using an indirect antiglobulin method. The serum was tested against un pooled Group O cells selected to possess the relevant blood group antigens.

### RESULTS

According to table (1) regarding to sex the distribution of patients show there was (44%) female, while (46%) was male.

**Table (1): Show distribution of patients according to gender.**

Gender	Frequency	Percentage
Male	35	46%
Female	30	44%

Also regarding to the age (18.5%) of patients in age between (1-19 years), while (24.6%) in age of (20-39 years), while (26.3%) in age between (40-59 years), and (30.6%) above (60 years) as described in table (4 - 2).

**Table (2): Show distribution of age of study group.**

Age	Frequency	Percentage
1 – 19	12	18.5
20 – 39	16	24.6
40 – 59	17	26.3
More than 60	20	30.6

The frequency of RBCs alloimmunization was detected in (5) patients which represented (7.7%) and (60) patients show negative result with frequency of (92.3%) as demonstrated in table (3).

**Table (3): Show the frequency of RBCs alloimmunization.**

RBCs alloimmunization	Frequency	Percentage
Negative	60	92.3
Positive	5.0	7.7
Total	65	100

About (21.5%) of patients was transfused with blood (3 to 5 times), while (27.6%) of patients transfused with blood (6 to 8 times), and (50.9%) of patients transfused with blood more than (8 times) as noted in table (4).

**Table (4): Show distribution of patients according to the number of transfusion.**

Number of transfusion	Frequency of patients	Percentage
3 – 5	14	21.5
6 – 8	18	27.6
More than 10	33	50.9

The patients that show presence of RBCs alloimmunization, (60%) of them was male, and (40%) was female as referred in table (5).

**Table (5): Show the distribution of presence RBCs alloimmunization according to the the sex.**

Sex	Frequency	Percentage
Male	3	60
Female	2	40

There was (7.7%) of the test group show presence of RBCs alloimmunization, (40%) of them suffered from cancer, while (40%) on dialysis due to renal failure, and (20%) was anaemic patients as seen in table (6).

**Tables (6): Show the distribution of presence RBCs alloimmunization according to the type of disease.**

Disease	Frequency	Percentage
Cancer	2	40%
Renal failure	2	40%
Anemia	1	20%

## DISCUSSION

This descriptive analytical prospective study was conducted in Shendi University in Elmak Nimer universal hospital in the period between May to July 2018 and aimed to determine the frequency of RBCs alloimmunization in multi -transfused patients.

The results of this study revealed that (7.7%) of patient with multitransfusion show RBCs alloimmunization, while (92.3%) of patient show negative result. This result was not similar to the result of study which done in hospital of north India, which revealed that RBCs alloimmunization represent (3.4%).<sup>[4]</sup>

The distribution of patients show there was (44%) female while the (46%) was male.

About (18.5%) of patients in age between (1-19 years), (24.6%) between age of (20-39years), (26.3%) in age between (40-59 years) and (30.6%) above (60 years) in this study.

Also about (21.5%) of patients transfused blood (3 to 5 times), (27.6%) of patients transfused blood (6 to 8) time and (50.9%) of patients transfused blood more than (8) times.

In the positive RBCs alloimmunization there was (60%) male and (40%) was female.

There was (7.7%) of the test group were positive and the distribution of them according to the type of disease there was (40%) suffered from cancer, (40%) on dialysis as renal failure and (20%) as anaemic patient.

## CONCLUSION

From this study we conclude that:

Red blood cells alloimmunization in multitransfused patient was (7.7%), it was more seen in male more than female, and also red blood cells immunization was seen in patients with cancer and renal failure more than those with anemia.

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