

## Original Article

### Evaluation of Blood Transfusion Reactions in Recipients- A Clinical Study

Amrish Kumar

Consultant Pathologist, Dr SPM (Civil) Hospital , Lucknow, Uttar Pradesh, India

#### ABSTRACT:

**Background:** The most common adverse sequelae to transfusion of blood and blood components are fever, chills, and urticaria. The present study was conducted to evaluate acute transfusion reactions occurring in patients. **Materials & Methods:** This study was conducted on 340 patients of both genders (males- 140, females- 200). A transfusion reaction and blood products, name of the ICU, ABO-Rh group of the patient, type of blood product and blood unit registration number was recorded. **Results:** Out of 340 subjects, males were 140 and females were 200. In 135 acute transfusion reactions was seen due to packed red cells, fresh frozen plasma in 110 and platelet concentrate in 95. Febrile non hemolytic transfusion reactions occurring due to packed red cell (35), fresh frozen plasma (25) and platelet concentrate (20). Allergic reactions (60), hemolytic reactions (50), transfusion related acute lung injury (TRALI) (45), transfusion related sepsis (85) and non specific reactions (20) were other reactions. The difference was significant ( $P < 0.05$ ). **Conclusion:** Transfusion reactions should be dealt carefully. Blood transfusion should be done under physician supervision. Acute transfusion reactions were seen due to packed red cells, fresh frozen plasma and platelet concentrate.

**Key words:** Acute transfusion, Blood, Platelet.

Received: 16 September 2018

Revised: 17 November 2018

Accepted: 19 November 2018

**Corresponding Author:** Dr. Amrish Kumar, Consultant Pathologist, Dr SPM (Civil ) Hospital , Lucknow, Uttar Pradesh, India

**This article may be cited as:** Kumar A. Evaluation of Blood Transfusion Reactions in Recipients- A Clinical Study. J Adv Med Dent Scie Res 2018;6(12):51-53.

#### INTRODUCTION

Transfusion is a frequently administered therapy among the critically ill patients, to treat a condition leading to significant morbidity or mortality that cannot be prevented or managed effectively by other means. Any unfavorable event occurring in a patient during or after transfusion of blood and blood components and for which no other reason is known as a transfusion reaction.<sup>1</sup>

The most common adverse sequelae to transfusion of blood and blood components are fever, chills, and urticaria. The most potentially significant reactions include acute and delayed hemolytic transfusion reactions. Less common severe reactions, such as anaphylaxis due to anti-IgA, transfusion-related volume overload, acute lung injury, shock due to bacterially contaminated blood (rare) or post-transfusion purpura, should be diagnosed and managed in consultation with the Transfusion Service.<sup>2</sup>

These untoward effects vary from being relatively mild to severe. Improved donor selection and antibody screening

has definitely guaranteed a safe blood supply, still a variety of transfusion reactions are encountered. Depending on their severity and appropriate clinical response acute reactions can be mild, moderate and severe or life threatening.<sup>3</sup>

Febrile, or chill-fever, reactions to blood transfusion are common and are thought to be caused, in some cases, by recipient antibodies to leukocyte antigens reacting with leukocytes or leukocyte fragments contained by the transfused blood. Such reactions are most commonly encountered in patients with a history of leukocyte antibodies. Approximately one out of eight patients who have such reactions will have similar reactions to subsequent transfusions.<sup>4</sup> The present study was conducted to evaluate acute transfusion reactions occurring in patients.

#### MATERIALS & METHODS

This study was conducted on 340 patients of both genders (males- 140, females- 200). All were informed regarding

the study and written consent was obtained. The study was approved from institutional ethical committee. General information such as name, age, gender etc. was recorded. A transfusion reaction and blood products, name of the ICU, ABO-Rh group of the patient, type of blood

product and blood unit registration number was recorded. All the reactions were evaluated by the blood bank physician. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

| Total- 340 |       |         |
|------------|-------|---------|
| Gender     | Males | Females |
| Number     | 140   | 200     |

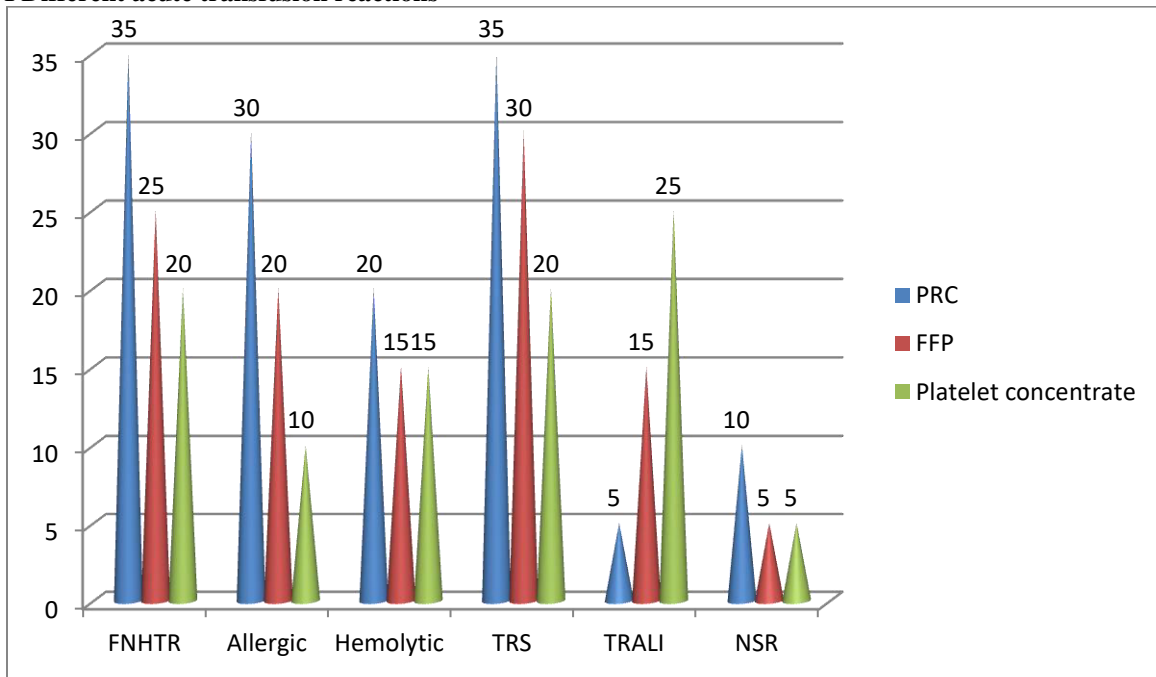
Table I shows that out of 340 subjects, males were 140 and females were 200.

**Table II Number of transfusion reactions**

| Components           | No of reactions |
|----------------------|-----------------|
| Packed red cells     | 135             |
| Fresh frozen plasma  | 110             |
| Platelet concentrate | 95              |
| <b>Total</b>         | <b>340</b>      |

Table II shows that in 135 acute transfusion reactions was seen due to packed red cells, fresh frozen plasma in 110 and platelet concentrate in 95.

**Graph I Different acute transfusion reactions**



Graph I shows that febrile non hemolytic transfusion reactions occurring due to packed red cell (35), fresh frozen plasma (25) and platelet concentrate (20). Allergic reactions (60), hemolytic reactions (50), transfusion related acute lung injury (TRALI) (45), transfusion related sepsis (85) and non specific reactions (20) were other reactions. The difference was significant (P< 0.05).

## DISCUSSION

The most dreaded complication of blood transfusion is the acute hemolytic reaction in which transfused red cells react with circulating antibody in the recipient with resultant intravascular hemolysis. Such a reaction is most likely to occur when a group O patient is mistakenly transfused with group A, B, or AB blood. Most hemolytic reactions are the result of human error, such as the transfusion of properly labeled blood to the wrong person, improper identification of pretransfusion blood samples, or clerical errors occurring within the Transfusion Service.<sup>5</sup>

Acute transfusion reactions present as adverse signs or symptoms during or within 24 hours of a blood transfusion. The most frequent reactions are fever, chills, pruritus, or urticaria, which typically resolve promptly without specific treatment or complications. Other signs occurring in temporal relationship with a blood transfusion, such as severe shortness of breath, red urine (see image below), high fever, or loss of consciousness may be the first indication of a more severe potentially fatal reaction.<sup>6</sup> The present study was conducted to evaluate acute transfusion reactions occurring in patients.

In present study, out of 340 subjects, males were 140 and females were 200. Hebert et al<sup>7</sup> found that a total of 18,745 transfusions were administered to 11,718 patients during a 3-year period. Adverse reactions including at least one sign or symptom were collected through a report system in 143 of 2,478 (5.7%) platelet concentrate transfusions, 105 of 6,629 (1.6%) red blood cell component transfusions and 51 of 2,307 (2.2%) fresh frozen plasma transfusions. Allergic signs and symptoms accounted for 70% of all adverse events. Severe signs and symptoms were observed in 7.1% of patients.

We found that in 135 acute transfusion reactions was seen due to packed red cells, fresh frozen plasma in 110 and platelet concentrate in 95. In this, febrile non hemolytic transfusion reactions occurring due to packed red cell (35), fresh frozen plasma (25) and platelet concentrate (20). Allergic reactions (60), hemolytic reactions (50), transfusion related acute lung injury (TRALI) (45), transfusion related sepsis (85) and non specific reactions (20) were other reactions. Our results are in agreement with Callera et al.<sup>8</sup>

Blood transfusion therapy is an effective and indispensable treatment, but adverse events such as infectious diseases and immune reactions cannot be completely avoided. The risk factors of severe transfusion-related diseases including TRALI and anaphylactic shock depend on patient's disease, number of transfusions, and history of adverse events. Thus, it is necessary to list the patients who have ever had signs and symptoms after transfusion.<sup>9</sup>

If a transfusion reaction is suspected, stop the transfusion immediately. Disconnect the intravenous line from the needle. Attach a new IV set and prime with saline, or flush the line with the normal saline used to initiate the transfusion and reconnect the line. Open the line to a slow drip. In certain cases, such as a mild urticarial reaction or the presence of repeated chill-fever reactions, it may be possible to restart the blood transfusion after evaluation and treatment of the patient. To reinitiate the transfusion using a new IV tubing set, enter the second port to reduce the chance of bacterial contamination.<sup>10</sup>

## CONCLUSION

Transfusion reactions should be dealt carefully. Blood transfusion should be done under physician supervision. Acute transfusion reactions were seen due to packed red cells, fresh frozen plasma and platelet concentrate.

## REFERENCES

1. Callum JL, Pinkerton PH. Transfusion reactions. In *Bloody easy: Blood transfusions, blood alternatives and transfusion reactions. A guide to transfusion medicine.* 2<sup>nd</sup> ed. Ontario. 2006: 34-65.
2. Chisakuta A, Lackritz E, McClelland B. Appropriate use of blood and blood products. In *The Clinical Use of Blood.* World Health Organisation. 2001: 7-19.
3. Mazzezi CA, Popovsky MA, Kopko PM. Noninfectious complications of blood transfusion. In *Technical manual.* American Association of Blood Banks. 16th ed. Maryland. 2008: 5-51.
4. Vincent JL, Baron JF, Reinhart K, Gattinoni, Thijs L, Webb A, et al. Anemia and blood transfusion in critically ill patients. *JAMA.* 2002; 288: 1499-507.
5. Payandeh M, Zare ME, Kansestanil AN. Descriptions of acute transfusion reactions in the teaching hospitals of Kermanshah University of Medical Sciences. *Int J of Hematology Oncology and Stem Cell Research.* 2013; 7: 11-16.
6. Kuriyan M, Carson JL. Blood transfusion risks in the intensive care unit. *Crit Care Clin.* 2004; 20: 237-53.
7. Hebert PC, Wells G, Blajchman MA, Marshall J, Martin C, Pagliarello G, et al. A multicentre, randomized, controlled clinical trial of transfusion requirements in critical care. Transfusion requirements in critical care investigators, Canadian Critical Care Trials Group. *N Engl J Med.* 1999; 340: 409-17.
8. Callera F, Silva CO, Moura AF, Melo DB, Melo CM. Description of acute transfusion reactions in a Brazilian transfusion service. *Bras Hematol Hemoter.* 2004; 26: 78-83.
9. Sharma KP, Boralessa H, Morgan C, Soni N, Goldhill DR, Brett SJ, et al. North Thames Blood Interest Group. *Anesthesia.* 2002; 57: 527-9.
10. Demirkol D, Karabocuoglu M, Citak A, Uysel R, Uzel N. Acute transfusion reactions in critically ill pediatric patients. *Critical Care.* 2008; 12: 239.

**Source of support:** Nil

**Conflict of interest:** None declared

This work is licensed under CC BY: **Creative Commons Attribution 3.0 License.**