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Original Research

Assessment of Various Transmitted Infections among Blood Recipients: An Observational Study

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ABSTRACT
Background: 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. The present study was conducted to evaluate acute transfusion reactions occurring in patients admitted to hospital. **Materials & Methods:** This study was conducted on 200 patients who had acute transfusion reactions admitted to ICU. A transfusion reaction form with all the blood products, containing patient's name, age, identification number, name of the ICU, ABO-Rh group of the patient, type of blood product and blood unit registration number was issued. **Results:** Maximum reactions were febrile non hemolytic transfusion reactions (112) occurring due to packed red cell (60), fresh frozen plasma (30) and platelet concentrate (22) followed by allergic reactions (40), non specific reactions (18), transfusion related acute lung injury (TRALI) (6), transfusion related sepsis (5) and hemolytic reactions (4). The difference was significant (P< 0.05). Out of 10201 numbers of various units transfused, 200 patients developed ATRs. It included 4170 units of packed red cells, 2820 units of fresh frozen plasma and 3210 platelet concentration. **Conclusion:** A well knowledge about these transfusion reactions can only prevent their occurrence. Blood transfusion is a vital therapeutic procedure and there is need to monitor each transfusion carefully with prompt recognition and treatment of ATRs.

Key words: Acute Transfusion, Blood, Platelet Concentrate

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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.[1] 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. However transfusion is an irreversible event which carries potential benefits as well as risks to the recipient. 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. These reactions are mainly non-infectious in nature and may be acute or delayed in onset. Depending on their severity and appropriate clinical response acute reactions can be mild, moderate and severe or life threatening.[2]

Acute transfusion reactions (ATRs) occur within 24 hours of transfusion administration, although majority occurs during or within four hours of transfusion. ATRs occur in 0.2-10% of blood transfusions and are responsible for death in approximately 1/ 250,000 units. They can be immunologic reactions and non-immunologic reactions. Acute immunologic reactions are associated with an immune response to antigens on red cells, white cells, platelets or plasma proteins and include anaphylactic, acute hemolytic transfusion reaction (AHTR), allergic, febrile non hemolytic transfusion reaction (FNHTR), while non immunologic reactions include transfusion related sepsis, circulatory overload, non immune hemolysis, hypocalcemia and hypothermia.[3]

Patients in ICUs are critically ill and it has been estimated that one-third of these patients and 50% of the mechanically ventilated patients receive at least one transfusion. The present study was conducted to evaluate acute transfusion reactions occurring in patients admitted to hospital.

MATERIALS & METHODS

This study was conducted on 200 patients of both genders who had acute transfusion reactions admitted to ICU. All were informed regarding the study and written consent was obtained. A transfusion reaction form with all the blood products, containing patient's name, age, identification number, name of the ICU, ABO-Rh group of the patient, type of blood product and blood unit registration number was issued. All the reactions were evaluated by the blood bank physician. Plasma in the post reaction blood sample was inspected for evidence of hemolysis. ABO-Rh grouping, re-cross matching and Direct Antiglobulin Test (DAT) of pre and post reaction samples and donor's bag were done. In case of a reaction like TRALI, chest X-ray report was cross checked. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

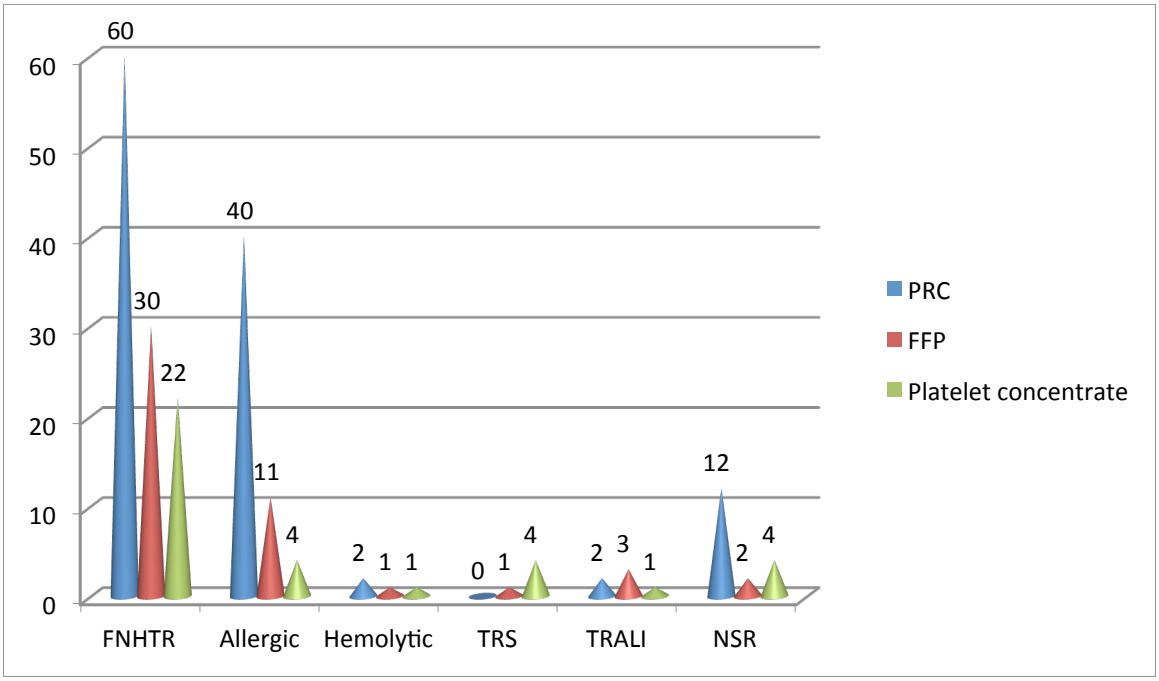
RESULTS

Table I shows that out of 10201 numbers of various units transfused, 200 patients developed ATRs. It included 4170 units of packed red cells, 2820 units of fresh frozen plasma and 3210 platelet concentration. Graph I shows that maximum reactions were febrile non hemolytic transfusion reactions (112) occurring due to packed red cell (60), fresh frozen plasma (30) and platelet concentrate (22) followed by allergic reactions (40), non specific reactions (18), transfusion related acute lung injury (TRALI) (6), transfusion related sepsis (5) and hemolytic reactions (4). The difference was significant (P< 0.05).

Table I: Number of transfusions and transfusion reactions

Components	No. of units transfused	No of reactions
Packed red cells	4170	135
Fresh frozen plasma	2820	45
Platelet concentrate	3210	20
Total	10201	200

Graph I: Distribution of Acute transfusion reactions according to the type of blood components



DISCUSSION

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.[4] The present study was conducted to evaluate acute transfusion reactions occurring in patients admitted to hospital. It included 200 patients who had acute transfusion reactions admitted to ICU. In this study, out of 200 patients, 100 were males and 100 were females. Similar results were seen in study by Hebert PC et al.[5] We found that out of 10201 numbers of various units transfused, 200 patients developed ATRs. It included 4170 units of packed red cells, 2820 units of fresh frozen plasma and 3210 platelet concentration. A study conducted by Callera F[6] reported a prevalence rate of 2.9% in her study. Our results are comparable to her results. We found that maximum reactions were febrile non hemolytic transfusion reactions (112) occurring due to packed red cell (60), fresh frozen plasma (30) and platelet concentrate (22) followed by allergic reactions (40), non specific reactions (18), transfusion related acute lung injury (TRALI) (6), transfusion related sepsis (5) and hemolytic reactions (4). A study conducted by Payendeh[8] found that most of reactions in his study were non - specific reactions. However, our results are in agreement with Sharma KP et al.[9] Transfusion reactions require immediate recognition, laboratory investigation, and clinical management. If a transfusion reaction is suspected during blood administration, the safest practice is to stop the transfusion and keep the intravenous line open with 0.9% sodium chloride. A clerical check of the information on the blood unit label and the patient's identification should be performed to ensure that the "right" blood unit was administered to the "right" patient. In most cases, the residual contents of the blood component container should be returned the blood bank, together with a freshly collected blood sample from the patient, and a transfusion reaction investigation should be initiated.[10] Arshad A et al determined the prevalence of transfusion-transmitted infections in blood donors and to evaluate the demographic characteristics of reactive and non-reactive blood donors. A prospective cohort study was conducted at our institute in Karachi, Pakistan. Donors were required to fill a detailed questionnaire and were screened for Hepatitis B, Hepatitis C, Human immunodeficiency viruses, Syphilis and Malaria by ELISA and thick film (malaria). Of the 16,602 blood donors, 16,557 were males and 45 females (mean age 28.6 ± 2). Nine hundred and seventy three (5.8%) donations were reactive in any screening assay, with 58 (0.35%) donations reacting in more than one assay. The prevalence of Hepatitis B, Hepatitis C, Human immunodeficiency viruses, Syphilis and Malaria was found to be 1.84, 1.7, 0.04, 2.1 and 0.07% respectively. Characteristics among the infections were evaluated and it was found that unmarried donors had a higher chance to be infected by Hepatitis B virus and Syphilis as compared to the other infections. On the other hand, construction workers and married donors were at more risk to be infected by Syphilis rather than the other infections. In case of co-infections, personnel with different occupations and marital status were infected by more than one pathogen. A substantial percentage of the blood donor's harbored transfusion-transmitted infections. Prevention of TTIs should be the main goal right now.[11]

CONCLUSION

Blood transfusion is a vital therapeutic procedure and there is need to monitored each transfusion carefully with prompt recognition and treatment of ATRs. A well knowledge about these reactions can only prevent their occurrence.

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