

Prevalence of Acute Blood Transfusion Reactions in Mazandaran Heart Center, Sari, Iran, 2010-2012

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ABSTRACT

Introduction: Although blood transfusion is life saving for patients, it is responsible for a series of complications and exposes the patients to a variety of risks. Therefore knowing different adverse effects of blood transfusion represents a great issue in managing recipient patients. **Aim:** The aim of the present work was to study the prevalence of blood transfusion complications among patients in the Mazandaran Heart Center, Sari, Iran, during a period of 2 years. **Material and Methods:** A retrospective review of all reported and evaluated acute transfusion reactions during a 2 years period in Mazandaran Heart Center was performed. Associated clinical signs and symptoms were evaluated. **Results:** In 9193 transfused blood products, there was 34 (0.4%) acute transfusion reactions. The commonest were discomfort and restlessness(0.16%),dyspnea(0.16%), rigors (0.13%), fever (0.08%),chest pain(0.06%), rash or urticaria (0.04%), nausea and vomiting(0.03%),palpitation(0.03%),hypertension(0.03%)flashing(0.02%),hypotension(0.02%). **Conclusion:** Acute transfusion reaction is seen in %0.4 of transfused patients therefore, we recommend a well-structured program for monitoring adverse reactions associated with blood transfusion and blood product administration (Hemovigilance program).

Key words: Blood transfusion, acute transfusion reactions, hemovigilance.

1. INTRODUCTION

Acute blood transfusion reaction is a group of adverse reactions which occur at the time of transfusion until 24 hours after that (1, 2, 3). They stand in two groups: none hemolytic reactions that include allergies, febrile none hemolytic transfusion reaction (FNHTR) and anaphylaxis and hemolytic reactions (4, 5, 6). The most common reaction following transfusion is FNHTR with prevalence of 1-2 %. Allergies occurs 1-3%, for TRALI (transfusion related acute lung injury) it is 0.014-0.08 and anaphylaxis due to IgA deficiency captures 1 in 800 Caucasians (7, 8, 9). Base on censuses of NIH (National institute of health) distribution of ATRs (Acute Transfusion Reactions) has been reported 1 in 1000 numbers of transfusions and ABO incompatibility is the most common of them which leads to death in 50% of cases. Today using filter and transfusion of washed red cells are in progress to reduce numbers of reactions (10, 11, 12, 13). Patricia M. Kopko and her colleagues (14) in a clinical look back investigation about Transfusion Related Acute Lung Injury reported that of the 36 patient charts that could be reviewed, 7 mild/moderate reactions were reported in 6 patients (16.7%) and 8 severe reactions were reported in 8 patients (22.2%). Of 5 patients who received multiple transfusions from the same donor, 2 experienced 2

reactions: one had 2 mild/moderate reactions and the other had both a mild/moderate and a severe reaction. While 5 of the 7 mild/moderate reactions were reported to the hospital transfusion service, only 2 of the 8 severe reactions were reported. Only 2 reactions (1 mild/moderate and 1 severe) were reported to the regional blood collection facility. They also found out that TRALI was frequently underdiagnosed and underreported in recipients of blood products from a donor whose blood products may have caused TRALI in several transfusion recipients. Clinical education and awareness of this often-overlooked diagnosis are imperative for appropriate prevention and treatment. S. Salimi and his assistants (15) had a study on the incidence rate of acute reactions in transfusion of blood and its products prepared by Urumia Blood Refinery Center. 3880 blood product units were transfused to 1261 patients. They found out that 604 were female and 657 were male. The most frequent complaints of patients were coldness (22.5%), pruritus (20.1%) and chills (18.1%). The prevalence of acute hemolytic reaction, febrile reaction and allergic reactions were 0.52, 6.2 and 11.1 per 1000 transfusions respectively. They concluded that In spite of improved blood refinement techniques, acute transfusion reactions can lead to significant morbidity and mortality. Therefore, physicians, nurs-

es' and midwives' meticulous attention to early symptoms and signs of acute reactions to transfusion of blood and its products have an important role in preventing adverse outcomes of this life-saving remedy.

J. Bux (16) in a study about TRALI (a serious adverse event of blood transfusion) figured out that TRALI is characterized by acute respiratory distress and non-cardiogenic lung edema developing during, or within 6 h of, transfusion. In atypical cases, TRALI can become symptomatic much later. TRALI must be carefully differentiated from transfusion-associated circulatory overload. In its fulminant presentation, TRALI can be clinically indistinguishable from acute respiratory distress syndrome occurring as a result of other causes. The severity of TRALI depends upon the susceptibility of the patient to develop a more clinically significant reaction as a result of an underlying disease process, and upon the nature of triggers in the transfused blood components, including granulocyte-binding alloantibodies (immune TRALI) or neutrophil-priming substances such as biologically active lipids (non-immune TRALI). Immune TRALI, which occurs mainly after the transfusion of fresh-frozen plasma and platelet concentrates, is a rare event (about one incidence per 5000 transfusions) but frequently ($\approx 70\%$) requires mechanical ventilation (severe TRALI) and is not uncommonly fatal (6–9% of cases). Non-immune TRALI, which occurs mainly after the transfusion of stored platelet and erythrocyte concentrates, seems to be characterized by a more benign clinical course, with oxygen support sufficient as a form of therapy in most cases, and a lower mortality than immune TRALI. They concluded that By virtue of its morbidity and mortality, TRALI has become one of the most serious current complications of transfusion. To prevent further antibody-mediated cases, the evaluation of TRALI should include leucocyte antibody testing of implicated donors. However, further studies are necessary for the prevention of this serious transfusion complication.

According to the enhancement of using blood components and their following reactions, this search has been accomplished to study prevalence of ATRs in Mazandaran Heart Center, Sari, Iran and results can be used for preventative plans in many patient groups.

2. PATIENTS AND METHODS

Among 9193 transfused blood products in Fatemeh–Zahra hospital from 2010 till 2012, 34 (0.4%) cases of acute transfusion reaction were reported. Our data collection tool was a check list including 8 titles and patient's age, sex, blood group, transfusion history, type of received blood component and kind of ATRs were studied in it.

3. STATISTICAL ANALYSIS

Chi square test used for data analysis, and results registered using SPSS software and tables and charts were drawn.

4. RESULTS

In this study 35 persons were scrutinized. 18 (51.4%) were female and 17 (48.6%) were male. The age range was 28-92. 19 (54.3%) had history of blood transfusion and 11 (34.1%) didn't have any history. 5 (14.3%) didn't have

any data about this. There was no relationship between transfusion history and AHTRs. 16(45.7%) of all reactions were found in males and 17(48.5%) were found in females. There were 2 missed data. So there was no statistical relationship between sex and occurrence of ATRs. Results about blood groups (BGs) is shown in Table 1.

	Frequency	Percent
A	10	28.6
B	5	14.3
AB	5	14.3
O	12	34.3
Missed data	3	8.6
Total	35	100.0

Table 1. Frequency of BGs in persons attacked by ATRs

There was no meaningful relationship between type of blood component and ATRs (Table 2).

Blood component	Frequency	Percent
whole blood	4	11.11
packed cell	25	69.44
Leucko reduced packed cell	1	2.77
Ffp	5	13.88
Random platelet	1	2.77

Table 2. Frequency of each component in whom attacked by ATRs following blood transfusion

The most common reaction following transfusion was feeling discomfort and restlessness. Breathing stricture with 0.14 prevalence and chills with 0.13, were other common ATRs (Table 3, Diagram 1).

	Frequency	Percent
Fever	8	0.087
chills	12	0.13
hives	2	0.02
Cutaneous rash	2	0.02
flushing	2	0.02
Breathing stricture	13	0.14
Nausea & vomiting	3	0.03
Cold & chills	9	0.09
Feeling discomfort & restlessness	15	0.16
Heart throb	3	0.03
Chess pain	6	0.06
hypotension	2	0.02
hypertension	3	0.03
Respiratory distress	2	0.02
Loss of consciousness	1	0.01
	Total 83	

Table 3. Acute blood transfusion reactions

5. DISCUSSION

Because a lot of transfusion reactions are hidden in clinical symptoms, estimating their numbers will be with errors (1). Results of this study showed that ATRs occurred in 0.38% of all transfusions. Majority of reactions were slight and transient and included feeling discomfort and

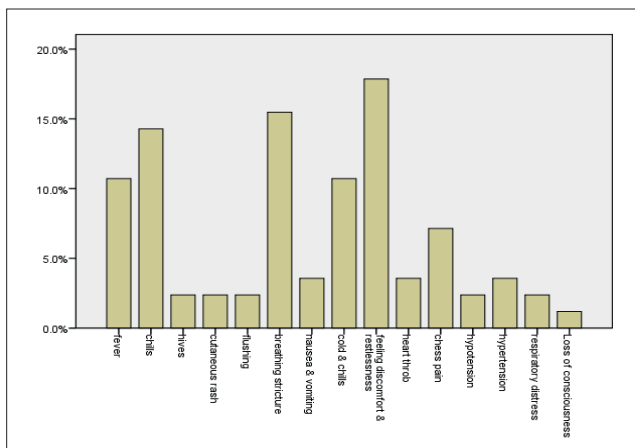


Diagram 1. Acute blood transfusion reactions

restlessness (0.16%) and constriction of breath (0.14%). There were no relations between any reaction and any special component. Also there was no statistical relationship between sex and occurrence of ATRs. Overall, reactions due to receiving packed cells are more severe than reactions that occur after receiving platelets. Also in this study most of acute transfusion reactions were related to receiving packed cells.

6. CONCLUSION

Results of this study shows that occurrence of ATRs is rare and this guides can be useful to reduce available cases: a) be careful about any symptoms of patient during blood and blood components transfusion. b) having standard instructions in related sections (2).

CONFLICT OF INTEREST: NONE DECLARED

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