ORIGINAL ARTICLE

Frequency of Reactions Due to Blood Transfusion With Whole Blood in Obstetrical and Gynecological Population

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ABSTRACT

Background: Blood transfusion is one of the key interventions in emergency obstetrics care and is known to save lives, however complications do occur.

Aim: To determine the frequency of patients who develop reactions due to whole blood transfusion with in obstetrical and gynaecological population between 20 to 55 yrs of age.

Methodology: Total 150 patients were included in the study. Patients were counselled regarding need, advantages and disadvantages of blood transfusion. Informed consent was taken. Pre-requisites for blood transfusion were fulfilled i.e., checking the patient blood group from card (Donor, Recipient), verifying the blood group from chart; bag number mentioned on the card was matched with that mentioned on the blood bag, date of collection of blood and expiry date was confirmed from the card, emergency tray was ready and duty doctor was informed . Blood to be transfused was taken from Services hospital blood bank and private blood bank, screened for HbSAg, Anti HCV,HIV and Syphilis and bleed with in 7 days. Blood transfusion was completed within 4 hours. Pre transfusion vitals were noted. Vitals were recorded again 15 minutes after starting transfusion and at the end of transfusion. Patients were kept under observation for 6 hours after transfusion and symptoms/signs of transfusion reaction were noted half hourly to determine frequency of transfusion reactions.

Results: Mean age of all women was 28.07±4.59 years. Pregnancy status of women showed that there were 87(58%) women who were pregnant and 63(42%) women were non pregnant. Early transfusion reaction were seen in 12(8%) women. The most frequent symptom observed in patients after early transfusion reaction was fever (6.67%) followed by shortness of breath (2.67%), hypotension (2%), rash (1.33%) and itching (0.67%).

Conclusion: Results of this study showed low frequency of early transfusion reaction. i.e., 8%. So it is very much important that type of blood component transfused should be appropriate to the clinical situation and whole blood therapy should be avoided or restricted to specific situations.

Keywords: Adverse reaction, blood transfusion, whole blood, Obstetrical and gynecological population

INTRODUCTION

The decision of choosing transfusion blood products should be made prudently and with caution. Where the importance of blood transfusion as a life saver is established, the associated risks are also undeniable, that could in extreme situation also be fatal. Due to this a continuous argument in medical literature is going on focusing particularly on its necessity and proper usage[1]. The transfusion reaction during or in first 24 hours of transfusion are considered as an adverse sign and constitute upto 10% among all the transfused components[2]. The commonest symptoms of reaction include fever, pruritis, urticaria and chills and mostly requires no specific medication or treatment, as they subside spontanously after an unspecified period of time. However, if the reaction is severe, signs such as red urine, high grade fever, unconsciousness and shortness of breath occur which basically have a direct relationship with blood transfusion[3,4,5].

Additionally, after blood trnafusion other hemolytic, non-hemolytic reactions, anaphylactic reactions, fluid overload and blood transmitted infections such as HBV, HCV, HIV etc. can also develop in patient recieving blood[6].

SHOT (Serious Hazards Of Transfusion) in UK reported the incidence of ETR (Early Transfusion Reaction) in 29% patients, haemolytic transfusion reaction (HTR) in 5%, transfusion related lung injury (TRLI) in 2%, incidence of circulatory overload (TACO) in 2%, post transfusion infection (TTI) in 0.2% and transfusion associated dyspnea (TAD in 0.1% patient[6]. Pre operative blood transfusion is done among anaemic patients to raise their hemoglobin level before surgery, however, it can cause more risks of pre-operative infection as well as increase the hospital stay of patient as well[7].

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One Nigerian study reported the incidence of acute transfusion infections of 26.3% in their sample. Among these, the incidence of Non haemolytic febrile reaction was 47.7% and of allergic urticaria was 24.5%[8].. One local study done at DHQ Rawalpindi reported the incidence of Haemolytic reactions among pregnant patients was 4.9%, of non-haemolytic reactions was 4.2% and of febrile reactions was 11.7%[8].

Spinella has concluded that fresh blood is the most efficatious choice and that screening and proper maintaince of blood from collection to storage and transfusion decreases the risk of infectious reactions. However the non-infectious complications have remarkedly increased.[10] Most of the times an already prevailing disease in patients getting the blood transfusion makes it difficult to identidy problems/ reaction associated specifically with blood transfusion alone[11].

The rationale of this study is to determine the exacts percentage of acute blood transfusion reaction at local level as there is a huge difference among the percentages of international and local studies and if the percentage of this study comes as much high as in international study, we can discourage unnecessary blood transfusion with solid proof and can prevent morbidity and mortality related to blood transfusion. Moreover only one local study is available to address this issue, and in country like our where most people belong poor socioeconomic class and a large number of patients are anemic both pregnant and non pregnant and to build up there is Hb is mandatory before the patients under went for surgery and in our setup blood transfusion is method of choice to build up desired Hb even knowing hazard, associated with it. The objective of this study wa to determine the frequency of patients who develop reactions due to blood transfusion with whole blood in obstetrical and gynaecological population.

MATERIALS AND METHODS

This descriptive case series was conducted in the Department of Obstetrics and Gynaecology, Hameed Latif Hospital, Lahore. Sampling technique was non-Probability, consecutive sampling. Sample size of 150 cases is calculated with 95% confidence level, 5 % margin of error and taking expected percentage of blood transfusion reactions i.e. 10%[2] in obstetrical and gynaecological patients.

Inclusion criteria

- All Preoperative and postoperative obstetrical patients of 20 to 55 years of age planned to undergo blood transfusion with whole blood.
- Screened and cross matched blood.

Exclusion criteria

- Coagulation disorder determined by history and confirmed by platelet count <150,000mm^3 i.e. idiopathic thrombocytopenic purpura, thrombocytopenia.
- Blood transfusion during surgery.
- Patient having fever of 100^{0}F or more taken orally by a thermometer before transfusion.
- Blood stored for >7 days as indicated by collection date mentioned on blood bag.

Data collection procedure: All obstetrical and gynaecological patients admitted in ward were included in the study after fulfilling the inclusion and exclusion criteria and all information was entered in a pre designed proforma. Informed consent was taken. Blood transfusion reactions were determined in terms of early transfusion reactions, that was considered within 6 hours of completion of transfusion. Patients showing any one or more of the following symptoms/signs were considered to have transfusion reactions. Other symptoms/signs of blood transfusion reaction were taken as fever (rise in temperature of 1.5^0 centigrade or more from pre transfusion temperature taken orally). Data was entered into SPSS version 20 and analyzed. The quantitative variable like age was presented as mean±SD and qualitative variables like early blood transfusion reaction was presented as percentage and frequency.

RESULTS

Mean age of all women was 28.07±4.59 years. Minimum and maximum age of women in the study was 20 years and 55 years respectively. There were 29 women whose blood group was A^+ while 5 women blood group was A^-. There were 40 women whose blood group was B^+ and 5 women's blood group was B^-. There were 17 women with AB^+ and 4 women with 4 AB^- blood group. There were 33 women whose blood group was O^+ and 18 women's blood group was O^-. Pregnancy status of women showed that there were 87(58%) women who were pregnant and 63(42%) women were non pregnant. Early transfusion reaction was seen in 12(8%) women while the remaining 138(92%) women did not suffer any transfusion reaction. There were 10(6.67%) women who suffered from fever after blood transfusion. There were only 2(1.33%) who suffered from rash after blood transfusion. There were 4(2.67%) who complained of shortness of breath after blood transfusion. There were 3(2%) women who suffered from hypotension after blood transfusion. Only 1(0.67%) woman reported itching after blood transfusion.

Table 1: Pregnancy status of women and frequency of reactions

	Frequency	Percentage
Pregnancy status		
Yes	87	58%
No	63	42%
Early transfusion reaction		
Yes	12	8%
No	138	92%
Fever		
Yes	10	6.67%
No	140	93.33%
Rash		
Yes	2	1.33%
No	148	98.67%
Shortness of breath		
Yes	4	2.67%
No	146	97.34%
Hypotension		
Yes	3	2%
No	147	98%
Itching		
Yes	1	0.67%
No	149	99.33%

DISCUSSION

Approximately 1.2-1.5 million units of blood have been reported to be transfused per year in Pakistan. Among these, 50% transfusions are being done in private sector. WHO reports the average requirement of 11 units, ranging from 6 to 16 units per bed in hospitals. Currently, the shortage of 40% has been observed. The problem aggravates with improper usage of blood that constitutes 25% for without separating into its components and 80-85% is being used as a whole blood. The Red Cross states that the frequency of blood transfusions could be brought down by 30% if the blood was used appropriately[12,13,14]. The complications associated with blood transfusion are also very common that may either be categorized on basis of time of onset, which is either acute or delayed or on basis of its etiology which is either immunological or non immunological. Statistics of 20% are reported to have some kind of transfusion related complication[4].

As blood is an essential need to obtain good feto-maternal outcomes and reduce maternal morbidity and mortality, it is imperative to treat emergencies related to obstetric problems which will also reduce the transfusion rates and eventually risks of associated complications. Because it is unavoidable to have blood transfusions, best way is to choose blood carefully, and only when necessary, and through proper haemovigilance in order to prevent any reactions and if they occur, timely identify, report and manage them accordingly[15].

The acute transfusion reactions are not uncommon and are estimated to occur in every 1 per 250,000 people with an incidence rate of 0.2-10% around the globe[16]. These may either be febrile, hemolytic or non-hemolytic .

Different reports have shown different incidences of ATR. In Europe the incidence of ATR has been reported to be 0.2% and in South America it is 0.34% [17,18], whereas, in North East Nigeria the immune-mediated transfusion reactions have been stated to be 11.8% among which Acute hemolytic transfusion reaction (AHTR) constituted of 0.01%, febrile non-hemolytic transfusion reaction (FNHTR) were in 9.8% and allergic transfusion reactions were in 2%[19].

One study showed early transfusion reaction among 12 (8%) females. They also reported common symptoms after early transfusion that included fever in 6.67% being commonest, proceeded by shortness of breath in 2.67% patients, hypotension in 2%, rash in 1.33% and itching in 0.67% women. Variable incidence of blood transfusion related reactions have been observed in different Pakistani studies ranging from 5-26.6%[9,20,21].

Another study conducted at DHQ Rawalpindi reported the incidence of reaction due to blood transfusion to be 20.8%. However this frequency of 20.8% was very high as compared to the frequency of this study. i.e., 8% only. The difference might be due to the difference in protocol for blood transfusion, strict monitoring protocol and facilities present in the hospital in current study.

However in another study from Nigeria reported acute blood transfusion reaction in 26.3% pregnant patients. The justification of this increased risk among pregnant women can be however, due to attributes associated with this condition such as change in immunity due to physiological alterations in pregnant women's body, previous history of blood transfusions as well as the effect on body due to blood loss that made it mandatory to have current blood transfusion.

Yet one more study from Nigeria on general population showed the incidence of ATR of 3.6% among which 3.3% were febrile non-hemolytic transfusion reaction (FNHTR) and 0.3% were acute allergic reaction (AAR). Most frequent symptoms among almost all patients having the reaction in this study included fever with associated rigor in 2(18.2%) cases and chills in 5(45.5%) cases, while 3(27.3%) cases had associated chills and rigors[22].

However in this study fever was seen in 83.33% (10/12) patients which is consistent with the results of above mentioned Nigerian study. However the incidence of acute transfusion reaction in that study was low which might be due to the difference in population.

SHOT (Serious Hazards Of Transfusion) in UK reported the incidence of ETR (Early Transfusion Reaction) in 29% patients, haemolytic transfusion reaction (HTR) in 5%, transfusion related lung injury (TRLI) in 2%, incidence of circulatory overload (TACO) in 2%, post transfusion infection (TTI) in 0.2% and transfusion associated dyspnea (TAD in 0.1% patient[6].

It is therefore important to note that not only reducing the blood transfusion can solve the problem, but cautions during blood transfusion procedure for unavoidable transfusions should be undertaken. It is imperative to properly identify blood groups, cross match and screen the blood as well as take aseptic precautions during the collection, storage, maintainance and transfusion of blood.

CONCLUSION

Results of this study showed low frequency of early transfusion reaction. i.e. 8%. So it is very much important that type of blood component transfused should be appropriate to the clinical situation and whole blood therapy should be avoided or restricted to specific situations. However launch of a haemovigilance system of monitoring, collating, and analyzing data on adverse effects of blood transfusion will be helpful in reducing the incidence of acute transfusion reactions.

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