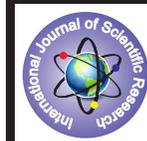


Emergency Transfusion of Blood and Blood Products in Obstetrics



Medical Science

KEYWORDS : Transfusions, blood transfusions, blood products.

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ABSTRACT

Objective: To study the incidence of emergency transfusions of blood and blood products in obstetrics in a tertiary care hospital.

Methods: A study of 100 women who received blood and its components during pregnancy and postpartum period was conducted over a period of 1 year at OBGY department from July 2015 to June 2016.

Results: Incidence of transfusions during pregnancy and postpartum period was 20 % in this study. Out of 100 women, 60 % of cases were unbooked, 56 % cases were in age group 21-30 years. 26 % of women were multiparous and had at least two previous viable births. 76 % women underwent caesarean delivery. 54 % women received transfusions during postpartum period.

Conclusion: Risk factors for transfusion during pregnancy and postpartum period were poor antenatal care resulting in Anemia, multiparity, caesarean delivery, antepartum haemorrhage including placenta previa, postpartum hemorrhage.

I. Introduction

Blood transfusion is recognised as one of the eight essential components of the Comprehensive Emergency Obstetric Care module, which has been designed to reduce maternal morbidity and mortality rates. Postpartum haemorrhage is a major contributor of maternal mortality¹.

1. Indications for blood transfusions in obstetrics include anaemia of pregnancy, hemoglobinopathies, obstetric haemorrhage, surgeries where significant blood loss is expected. Anaemia during pregnancy is responsible for 15% of maternal mortality. Obstetric haemorrhage continues to be the leading cause of maternal mortality, ranging from 13% in developed countries to 34% . Blood loss results in hypoxia, metabolic acidosis, ischaemia and tissue damage, resulting in eventual global organ dysfunction. Massive blood loss results in consumptive coagulopathy and this is difficult to distinguish from dilutional coagulopathy, caused by transfusion with packed red cells and crystalloids, which in turn is difficult to differentiate in the acute setting from DIC. Dilution impairs coagulation and leads to further blood loss. All soluble clotting factors are absent in packed red blood cells (PRBCs) and stored whole blood is deficient in platelets and factors V, VII and XI. Thrombocytopenia is the most common defect found in women with blood loss and multiple transfusions³. Role of blood transfusion in acute haemorrhage is to maintain tissue oxygenation and reversal or prevention of coagulopathy using appropriate blood components. Simultaneously, the cause of the bleeding should be identified and controlled, by medical means, surgery or invasive radiography. The conclusive consensus from various protocols and guidelines suggest that the transfusion is rarely indicated in Hb >10 g/dl. If Hb is <6 g/dl transfusion is indicated irrespective of cause and condition of the patient. If Hb is between 6 and 10 g/dl, the indication will depend upon whether patients is actively bleeding or having history of previous excessive haemorrhage or having some medical condition where optimal Hb is >7 g/dl is required^{4,5}.

II. Aims & Objectives

The aim of the study is

1) To study incidence of transfusions during pregnancy and postpartum period.

2) To study the risk factors associated with transfusions

3) To assess the indications for emergency blood transfusion

4) To study maternal and perinatal outcome of women receiving emergency blood transfusions.

III. Materials & Methods An observational study of 100 women who received blood and blood components during pregnancy and postpartum period was conducted over a period of 1 year in tertiary care Hospital, OBGY department from July, 2015 to June, 2016. In the situation of obstetric hemorrhage early resuscitation was done with crystalloids and/or colloids with oxygenation while simultaneously, all steps were done to control bleeding and reduce the transfusion requirement. The decision to transfuse blood and its components was based on both clinical assessment and hematological parameters. Consent for blood transfusion was taken. The goals for transfusion in the obstetric patient was to achieve hemoglobin >8 g/dl, Platelet count >75000/cumm, Prothrombin time (PT) <1.5 × mean control, Activated PT <1.5 × mean control and Fibrinogen >1.0 g/l. To avoid dilutional coagulopathy, concurrent replacement with coagulation factors and platelets was done. Blood was transfused within 1 hours of leaving the storage unit. Patients were closely observed for 1st 15minutes after commencement of each unit and were closely observed from start of each individual blood component pack throughout the transfusion, to detect any adverse effects. Blood transfusion reactions, minor and major, if any were recorded. Prescription of blood and its components was retained within a patient's medical record following completion of a transfusion. Different parameters like age, parity, booking status, mode of delivery, indication for transfusion, time of transfusion in relation to delivery, type of blood component transfused, maternal and perinatal outcome were studied.

IV. Results Out of 100 women received transfusions of blood and its components due to various reasons ,60 % were unbooked and 56 % were belonging to age group of 21 – 30 years.

Table 1: Distribution in relation to parity

Parity	No. of cases	Percentage
Nullipara (G1)	16	16
Para 1(G2)	28	28
≥Para2(≥G3)	56	56

56 % of women who received transfusions were multiparous and had at least two previous viable births.

Table 2: Distribution in relation to mode of delivery

Mode of delivery		No. of cases	Percentage
Vaginal	Normal	22	22
	Instrumental(forceps/ Ventouse)	2	2
Caesarean	Elective	27	27
	Emergency	49	49

Majority of the patients in present series (49%) underwent emergency caesarean section, 24% had vaginal delivery out of which 2% had instrumental vaginal delivery. Caesarean section compared to vaginal poses increase risk of transfusion.

Table 3: Distribution in relation to time of transfusion

Time of transfusion	No. of cases	Percentage
Antepartum	31	31
Intrapartum or intra operative	15	15
Postpartum or postoperative	54	54

31% of cases received transfusions during antepartum period, 15% of women received transfusions during intrapartum or intraoperative period and 54% received transfusions during postpartum or postoperative period.

Table 4: Distribution in relation to type of blood component transfused

Blood component	No. of transfusions(n=326)	Percentage
Whole blood	196	60.1
Cryoprecipitate	026	7.9
Platelet rich concentrate	056	17.17
Fresh frozen plasma	048	14.7

Out of 326 transfusions done in 100 women, 60.1% of transfusions were of whole blood, 14.7% of transfusions were of fresh frozen plasma, 17.17% were of Platelet rich concentrate and 7.9% transfusions were of cryoprecipitate.

Table 5: Distribution in relation to no. of units transfused

No. of whole blood	No. of transfusions(n=860)	Percentage
≤ 2 units	148	75.5
3- 4 units	48	24.5

Table 6: Distribution in relation to indication for transfusion

Indication for transfusion		No. of cases	Percentage
Anaemia of pregnancy		48	48
Antepartum hemorrhage	Accidental haemorrhage	10	10
	Placenta previa	8	8
	Thrombocytopenia/HELLP	2	2
Post partum haemorrhage	Atonic	20	20
	Traumatic(including rupture uterus)	6	6
	Retained placenta	4	4
DIC/coagulopathy		2	2

Most common indication for transfusion of blood and blood products was anemia of pregnancy (48%) followed by PPH (32%).

Table 7: Distribution in relation to transfusion reactions

Clinical type of transfusion reaction	No. of women reactions(n=15)	with transfusion	Percentage
Mild	12		80
Moderate	2		13.3
Severe/Life threatening	1		6.6

Out of 100 women who received transfusions, 15 women had transfusion reactions (15%). Most of the transfusion reactions were mild reactions (80%).

There were a total of 4 maternal deaths (4%). Out of which hemorrhagic shock is the most common cause.

Table 9: Perinatal outcome

Perinatal outcome	No. of cases	Percentage
Intrauterine deaths	4	4
Live births	96	96

4% of cases had IUDs and 96% of cases had live births.

V. Discussion

This study consists of analysis of 100 women, who received blood and its components during pregnancy and postpartum period, at tertiary care hospital, obstetric and gynecology department from July 2015 to June 2016. Different parameters like age, parity, booking status, mode of delivery, indication for transfusion, time of transfusion in relation to delivery, type of blood component transfused, transfusion reactions, maternal and perinatal outcome were studied and their relation to risk of transfusion were studied. In this study, incidence of transfusion was found to be 25%. Majority of transfusions of blood and its components were done in unbooked cases (60%). This indicates the importance of regular antenatal visits in providing iron prophylaxis which prevents anaemia of pregnancy, early detection and treatment of anemia with both oral or parental iron therapy and screening for high risk cases at earlier stage. So that blood transfusions and risks of blood transfusions can be avoided. Most of the women who received transfusions were in age group 21-30 years and most of them were multiparous. In this study, out of 100 women who received transfusions, 22% of women had normal vaginal delivery, 2% of women had instrumental assisted vaginal delivery, 27% of cases underwent elective caesarean delivery and 49% cases underwent emergency caesarean delivery. This indicates caesarean delivery is associated with more number of transfusions as compared to vaginal delivery. So, vaginal delivery should be encouraged in all cases when there is no contraindication to vaginal delivery. 31% of cases received transfusions during antepartum period, 15% of women received transfusions during intrapartum or intraoperative period and 54% received transfusions during postpartum or postoperative period. Majority of transfusions were done in postpartum or postoperative period indicating the importance of preventing PPH by active management of 3rd stage labour. Out of 326 transfusions done in 100 women, 60.1% of transfusions were of whole blood, 14.7% of transfusions were of fresh frozen plasma, 17.17% were of PRCs, 7.9% cryoprecipitate. Most common indication for blood transfusion was anaemia of pregnancy followed by PPH. Early correction of anaemia avoids the need for transfusion and reduces maternal mortality. Active management of 3rd stage labour should be employed to prevent PPH. 15% of women had transfusion reactions. 80% of transfusion reactions were minor. There were a total of 4 maternal deaths (4%). We compare our study with other studies⁶⁷⁸.

VI. Conclusion The study evidently shows that anaemia is the main contributing factor for maternal morbidity and mortality which could have been prevented by antenatal care, which includes iron prophylaxis and routine antenatal care.

The risk factors for transfusion during pregnancy and postpartum period were poor antenatal care resulting in anaemia, multiparity, caesarean delivery, ante partum haemorrhage including placenta previa, postpartum haemorrhage.

References

- [1]. Obaid TA. No woman should die giving life. *Lancet*. 2007;370:1287–8.
- [2]. Schantz-Dunn J, M N. The use of blood in obstetrics and gynecology in the developing world. *Rev Obstet Gynecol*. 2011;4:86–91.
- [3]. Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY, et al. Obstetrical haemorrhage. In: Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY, et al., editors. *Williams Obstetrics*. 23rd ed. New York: McGraw-Hill; 2010. pp. 757–95.
- [4]. Thomas D, Wee M, Clyburn P, Walker I, Brohi K, et al. Association of Anaesthetists of Great Britain and Ireland. Blood transfusion and the anaesthetist: Management of massive haemorrhage. *Anaesthesia*. 2010;65:1153–61.
- [5]. Shander A, Gross I, Hill S, Javidroozi M, Sledge S. College of American Pathologists. A new perspective on best transfusion practices. *Blood Transfus*. 2013;11:193–202.
- [6]. Patterson JA, Roberts CL, Bowen JR, Irving DO, Isbister JP, Morris JM, Ford JB. Blood transfusion during pregnancy, birth, and the postnatal period. *Obstet Gynecol*. 2014 Jan;123(1):126-33.
- [7]. Jou HJ, Hung HW, Yan YH, Wu SC. Risk factors for blood transfusion in singleton pregnancy deliveries in Taiwan. *Int J Gynaecol Obstet*. 2012 May;117(2):124-7.
- [8]. Hebert PC, Wells G, Blajchman MA, Marshall J, Martin C, Pagliarello G, et al. A multicenter, 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.