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Research Article

Indications of Intrapartum Blood Transfusion among Sudanese Women

Awadalla Abdelwahid Suliman[1*]; Hajar Suliman Ibrahim Ahmed[1]; Abdelgadir Suliman Ibrahim[2]; Omer Mandar[3]; Siddig Omer M Handady[4]; A Wad Ali M Alawd[5]

[1]Assistant Professor of Obstetrics and Gynecology, Faculty of Medicine, Al Neelain University, Sudan

[2]General Practitioner Christchurch Medical Centre, Ardington Rd, Northampton NN1 5LT, Abington Park Surgery, Sudan

[3]Assistant Professor of Obstetrics & Gynecology, Prince Sattam bin Abdulaziz University, Saudia Arabia

[4]Associated Professor of Obstetrics & Gynecology, Faculty Medicine, Al Nahda University, Ibrahim Malik Teaching Hospital, Sudan

[5]Faculty of Medicine, University of Medical Sciences and Technology, Sudan

***Corresponding author: Awadalla Abdelwahid Suliman**
Assistant Professor of Obstetrics and Gynecology, Faculty of Medicine, Al Neelain University, Khartoum-Sudan.
Email: awad336@yahoo.com

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Abstract

Background: little attention has been given in the literature to the problems of intra partum blood transfusion, but many hospitals note that they make a substantial contribution to good maternal outcome. Intrapartum blood transfusion is life saving and reduce maternal mortality.

Objective: The main objective of the study was to determine indications, incidence and risk factors of intra partum blood transfusion among Sudanese women.

Methodology: It was a descriptive prospective cross-sectional hospital-based study conducted in Khartoum teaching hospital during period May 2012 - October 2012.

An interview questionnaire was used for data collection. The data was collected by trained doctors in the labour room. Two hundred and forty (240) pregnant women received blood intra partum were included in the study after an informed consent.

Data was collected by structure questionnaire. Demographic and clinical data concerning personal history, risk of blood transfusion, type of blood and preparation of were recorded

Results: Total the deliveries during period of the study were 6813, and 240 of the women received a blood transfusion so the rate of blood transfusion was 4%. The mean age and parity of the women who received blood transfusions were 27.6 years, and two respectively.

Un booked were 27.1%, study found antenatal complications 40%, such as preterm labour 2.5%, postdates 14.2%, pre-eclampsia 0.4%, anemia 10%, placenta previa 10%, sickle cell 1.7% and ITP 1.3%. The indications of blood transfusions were EMC/S 40.8%, PPH 23.3% of which 80% due to atonic uterus, 11% bleeding due to Retained Products of Conception (RPOC) and 9% extensive vaginal lacerations-related bleeding P-value.01, APH 17.1%, anemia 10.0%, medical illness were 4.6% and sepsis 4.2% and 13% has previous transfusion history.

Conclusions: The finding in this study showed (4%) prevalence rate of intra partum blood transfusion. The most risk factors for transfusion were EMC/S, PPH, APH, anemia and sepsis. Most of the women received whole blood followed by FFP and packed cell. There is an urgent need for protocol of blood transfusion intrapartum and postpartum.

Keywords: Indication; Intrapartum; Blood transfusion; Sudanese women

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Introduction

Major obstetric hemorrhage remains the leading cause of maternal morbidity and mortality worldwide [1]. Even though blood transfusion may be a life-saving procedure, an inappropriate usage of blood products in obstetric emergencies especially in cases of massive bleeding is associated with increased morbidity and risk of death [2]. There are evidence-based data about some risks related with transfusion of blood components: acute or delayed hemolytic, febrile, allergic reactions, transfusion-related acute lung injury, and negative immune modularize effect, transmission of infectious diseases, and dissemination of cancer [3-4].

There is evidence of very significant variation in the use of blood products (red cells, platelets, fresh frozen plasma, or cryoprecipitate) among clinicians in various medical institutions, and sometimes indications for transfusion are not correctly motivated [5-6]. The transfusion of each single blood product must be performed only in case of evaluation of expected effect. The need for blood products and for their combination is necessary to estimate for each patient individually in case of obstetric emergencies either [7].

Indications for transfusion of blood components in obstetrics are presented in order to improve the skills of doctors and to optimize therapeutic options in obstetric emergencies [8].

A blood transfusion involves the transfer of blood or blood components. It is often done to replace blood that has been lost due to severe bleeding or in some cases for the treatment of severe anaemia [9]. Therefore, the decision to transfuse must be based on both the hematologic and the clinical status of the patient. Studies have also shown that blood transfusion improves survival only if given immediately at the time that it is needed [10-11].

Red cell transfusion is rarely indicated when haemoglobin levels are greater than 10g/dL, and is usually indicated when haemoglobin concentrations are less than 5g/dL. However, even severely anaemic patients (Hb less than 5g/dL) who are clinically stable may not require transfusion [12].

Effective transfusion requires a minimum of 2 units of blood for an adult or 20ml whole blood (10-15ml packed cells) per kilogram body weight for a child [13].

Material and Methods

This was a Prospective descriptive, cross sectional and hospital-based study. It was conducted in Khartoum Teaching Hospital in a period from May 2012 up to October 2012 at Khartoum Teaching hospital.

The Study population that was included all pregnant women presented in labour to the out patients or labour room and received blood transfusion and they were agree to participate in the study. The study excluded pregnant women planned for elective C/S not in labour. About 240 women presented in labour to the out patients or labour room agrees to participate in the study and required intra partum blood.

Data was collected by direct interview by using well-structured questioner. The participants were interviewed about age, education, occupation, gestational age, parity, booked and un booked mode of delivery, PPH, APH, VBAC, medical problem, PIH, indication for blood transfusion, type of blood preparation, number of units of blood received and Hb level.

Statistical analysis was performed via SPSS software (SPSS, Chicago, IL, USA). Continuous variables were compared using student's t test (for paired data) or Mann–Whitney U test for nonparametric data. For categorical data, comparison was done using Chi-square test (X^2) or Fisher's exact test when appropriate. P-value of <0.05 was considered statistically significant.

Ethical Considerations

Ethical consideration was taken, it presented to the ethics review committee and approved, permission to conduct study was requested from authorities of health care in study area, data was handled with high degree of confidentiality throughout the study, and written informed Consent was taken from all participants in the study.

Results

During the study period, a total of 240 pregnant women, out of 6813, attending the labour room of Khartoum teaching Hospital and receive blood transfusion were included into the study. The demographical parameters, their delivery outcomes and associated complications were analyzed and shown in table [1]. The mean age and parity of the women who received blood transfusions were 27.6 years, and two respectively, the level of education, the primary school level was 30.4% of the mothers, regarding occupation, most women were housewives 62.9%. Most of women were booked 72.9%. Blood transfusion was common in multipara 42.5% compared with 30.4% primigravidae.

Table 1: Sociodemographic distribution (N=240).

Sociodemographic	Frequency	Percent %
Age		
<20	13	5.4
20 - 24	43	17.9
25 - 29	83	34.6
30 - 34	29	12.8
35 - 39	65	27.8
40 - 44	7	2.9
Education level		
No formal education	34	14.2
Primary	73	30.4
Secondary	70	29.2
Graduate	63	26.2
Occupation		
House wife	151	62.9
Employer	64	64
Laborer	20	8.3
Professional	5	2.1
Antenatal care		
Booked	175	72.9
Un booked	65	27.1
Total	240	100

Table 2: Parity Distribution [N=240].

Parity	Frequency	Percent %
PG	73	30.4
MP	102	42.5
GM	65	27.1
Total	240	100

P-value 02.

Table 3: Gestational Age Distribution [N=240].

GA in weeks	Frequency	Percent (%)
<24-27 weeks	6	2.5
28-31 weeks	24	10
32-36 weeks	30	12.5
37-41 weeks	146	60.8
>41 weeks	34	14.2
Total	240	100

P-value 02.

Most women delivered at 37-41 weeks (Table 3) and only 2.5% were at GA (24-27) weeks.

52.5% of the patients had spontaneous vaginal deliveries, 40.8% of the patients underwent emergency caesarian sections and 6.7% of the patients delivered by instrumental vaginal delivery P-value.01 (Table 4).

Risk factors of transfusion, 40.8% of the patients underwent EMC/S, 23.3% of the patients had postpartum hemorrhaged, 17.1% of the patients had APH, 10.0% of the patients presented with anemia, 4.6% of the patients were with obvious medical complications 4.2% of the patients presented with sepsis (Table 5).

Table 4: Mode of Delivery Distribution [N=240].

Mode of delivery	Frequency	Percent %
NVD	126	52.5
AVD	16	6.7
C/S	98	40.8
Total	240	100

P-value .01

Table 5: Blood transfusion Risk factors [N=240].

Risk factors	Frequency	Percent %
Anemia	24	10
Sepsis	10	4.2
EM C/S	98	40.8
APH	41	17.1
PPH	56	23.3
Medical illness	11	4.6
Total	240	100

Type of blood received, whole blood was given in 34.2% of the patients, whole blood FFP and platelets was given in 23.3% of the patient, packed cells FFP and PLTS was given in 19.2%, packed cells and platelets was given in 5.4% of the patients, packed red cells was given in 13.3% of patients, and platelets was given in 4.6% of the patients.

Blood was prepared in 89.6 % emergency, while 10.4% of the blood were prepared elective (Table 7), P- value .03.

Table 6: Type of Blood Component Distribution [N=240].

Blood Component	Frequency	Percentage %
Whole blood	82	34.2
Whole blood + FFP + PLT	56	23.3
Packed red cells + FFP + PLT	46	19.2
Packed red cells + PLT	13	5.4
Packed red cells	32	13.3
Platelets	11	4.6
Total	240	100

Table 7: State of Blood Preparation Distribution [N=240].

Blood preparation	Frequency	Percent (%)
Emergency	215	89.6
Elective	25	10.4
Total	240	100

P-value .03

APH is major because for Blood transfusion (Figure 1) type of APH, 58.5% of APH were due to placenta previa while 41.5% were due to placental abruption.

And causes of PPH, 80% of the patients were due to atonia, 11% were due to retained tissue. And 9% were due to tears (Figure 2 & 3) causes of PPH secondary to c/s, 48% were due to atonia 24.5% were due to tears 18.3% were due to massive adhesions and 9.2%) were due ruptured uterus.

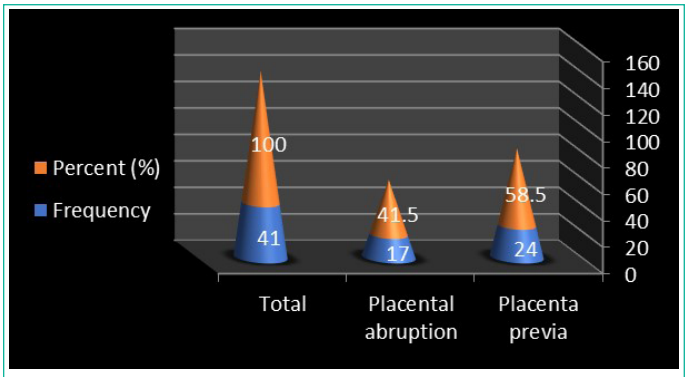

Figure 1: Type of APH.

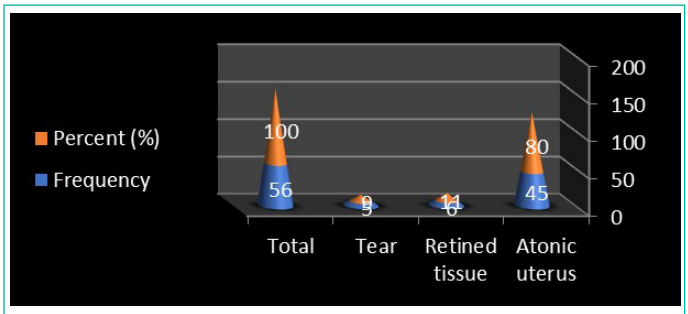

Figure 2: Causes of PPH.

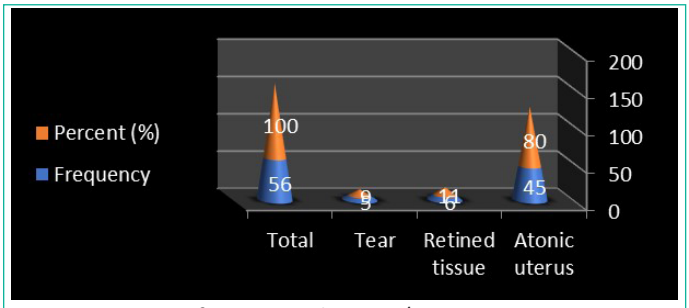

Figure 3: Causes of PPH Secondary to C/S.

Discussion

The results of this study found that the rate of intrapartum blood transfusion was 4% of the total deliveries (240/6813), which it shows that determinant for blood transfusion were preventable in compare with 12.1% in study that conducted in Lagos, Nigeria 2003, in study conducted in United Kingdom 2010 which it found 3.8% and in South Africa study found the rate of transfusion was 26% [14-16]. The most common cause of blood transfusion in our study was found to be emergency C/S, 98 (40.8%) of the patients underwent (EM C/S), 63 of them had repeated C/S and 35 had primary C/S which is similar to the result of study conducted in Nigeria 2010 [14,17], This makes C/S is the most determinant factor for blood transfusion. The caesarean section rate in this study was 40.8% which is compared to 30.5% in the United States [18] and 5-15% reported in Sub-Saharan Africa However, the WHO suggested a caesarian section rate of 5-15% in any facility [19]. this high incidence has been an issue of international health concern although most cases in this study were emergencies with genuine indications. Our facility also serves as one of three tertiary referral hospitals.

The transfusion rate among the patients who had caesarean delivery was 13.3%. Out of (1811) emergency caesarian section, this is consistent with transfusion rate of 1-14% as suggested by literature review of blood transfusion following caesarean section. Blood transfusion rate in this study is higher than 4.9% and 5.4% reported by Duthie et al and Rouseet albut significantly and lower than 23.5% and 25.2% reported by Rainaldi et al and Ozumba et al.

Considering the demographic characteristic of patients who had blood transfusion and those who did not, the age, parity and booking status were not significantly associated with increased risk of blood transfusion. This is contrary to the findings of Imarengiaye et al who reported a sixfold risk of blood transfusion in Unbooked cases and might be a reflection of some degree of antenatal care even in the 'Unbooked' patients [20].

However, emergency caesarean section was found to increase the risk of transfusion as 13.5% of patients in this category were transfused compared to 9.8% of those that had elective surgery. This finding is inconsistent with the report by Rouse, Dwight J who found a statistically significant risk of blood transfusion in patients who had primary caesarean section 2.2% were transfused compared to 3.2% of the 65 subjects that had repeated surgery [21].

Our finding is similar to that of Imarengiaye who found significant risk of transfusion with repeated caesarean section. In these cases, there is usually postoperative uterine atony due to muscle fatigue in addition to low preoperative haematocrit among the Unbooked emergencies. As noted in this study, failure of progression was found to be the most common indication for primary emergency caesarian section.

The second indication is PPH 23.3% of the patients of which (45, 80%) due to atonic uterus, bleeding due to retained placenta 11%, and extensive vaginal lacerations-related bleeding 9% which similar to study conduct in South Africa may 2010. These complications during delivery might also be indicative of inadequate management of the third stage of labour.

The third indication for blood transfusion in our study is APH 41cases Pregnancies complicated by placenta previa are noted for increased blood loss and transfusion at surgery. Factors responsible include repeated antepartum hemorrhage which may lower the hematocrit, thus putting the patient at a point close to transfusion trigger. Similarly, the low-lying placenta may provoke increased and uncontrollable intraoperative hemorrhage necessitating blood transfusion.

The fourth risk factor in our study is anemia 10.0% the role of anemia is associated with significant risk of blood transfusion, it evaluated by pre and post transfusion hematocrit level. This association was reported in other works. The fifth risk factor for intrapartum blood transfusion in our study is medical illness that represents 4.6%, which include sickle cell anemia, ITP, HTN and DIC.

Finally, sepsis has increased risk of intrapartum blood transfusion 4.2% of cases were transfused. The mode of delivery might have some influence on blood transfusion, in this study, 52.5% of the patients had spontaneous vaginal deliveries, 40.8% of the patients underwent emergency caesarian sections and 6.7% of the patients delivered by instrumental vaginal delivery in contrast with the study carried out in the United Kingdom among 202 pregnant women, the rate of transfusion was 3.8%. The most common mode of delivery among the women who required transfusion was assisted vaginal deliveries 35%, followed by emergency Caesarean section deliveries 28%, Normal Vaginal Deliveries (NVDs) 25% [22-23].

Conclusion

The study found that rate of blood transfusion was four per cent of total deliveries, it is concluded in our study that the main indication for blood transfusion is EMC/S 40.8%, increasing number of caesarean sections, PPH 23.3%, APH were 17.1% of total transfusion, though a large number of units of blood was reserved and made available in the theatre at the time of caesarean section. It is obviously that anemia was 10.0% of patients has major role in blood transfusion so testing the Hb level twice, and providing iron supplementation to all anemic women during pregnancy should be made mandatory. Women received blood transfusion intrapartum 31.7% was carried out due to placental abruption, Anemia, medical illness. Women required transfusion during the postpartum period 68.3% carried out due to PP. Most of the women received whole blood, packed red cells FFP, and platelet, which it reflects direction towards blood components transfusion rather than whole blood.

References

1. Lewis G, editor. Why mothers Die 2000-2002. The sixth report of the confidential enquiries into maternal deaths in the United Kingdom. London: Royal College of Obstetricians and Gynaecologists Press. 2004.
2. British Committee for Standards in Haematology, Stainsby D, MacLennan S, Thomas D, Isaac J, Hamilton PJ. Guidelines on the management of massive blood loss. Br J Haematol. 2006; 135: 634-41.
3. Hardy JF, De Moerloose P, Samama M, Groupe d'intérêt en Hémostase Périopératoire. Massive transfusion and coagulopathy: pathophysiology and implications for clinical management. Can J Anaesth. 2004; 51: 293-310.
4. Bhandal N, Russell R. Intravenous versus oral therapy for postpartum anaemia. BJOG. 2006; 113: 1248-52.
5. Br J. Haematol British Committee for Standards in Haematology, Blood Transfusion Task Force. Guidelines for the clinical use of red cell transfusions. 2001; 113: 24-31.
6. Anorlu RI, Orakwe CO, Abudu OO, Akanmu AS. Use and miss use of blood transfusion in Obstetrics in Lagos, Nigeria. W Afr. J Med. 2003; 22: 124-7.
7. Matot I, Einav S, Goodman S, Zeldin A, Weissman C, Elchalal U. A survey of physician's attitude towards blood transfusion in patients undergoing caesarean section. Am J Obstet Gynecol. 2004; 190: 462-7.
8. Prendiville WJ, Elbourne D, McDonald S. Active versus expectant management in the third stage of labour. Cochrane Database Syst Rev. 2000: CD000007.
9. Gai MY, Wu LF, Su QF, Tatsumoto K. Clinical observation of blood loss reduced by tranexamic acid during and after caesarean section: a multi-centre, randomised trial. Eur J Obstet Gynecol Reprod Biol. 2004; 112: 154-7.
10. Zimmermann R, Breymann C, Huch R, Huch A. RHuEPO in the treatment of postpartum anemia: subcutaneous versus intravenous administration. Clin Investig. 1994; 72: S25-30.
11. Rogers J, Wood J, McCandlish R, Ayers S, Truesdale A, Elbourne D. Active versus expectant management of the third stage of labour: the Hinchingbrooke randomised controlled trial. Lancet. 1998; 351: 693-9.
12. British Committee for Standards in Haematology. Guideline for blood grouping and antibody testing in pregnancy. London: BCSH; 2006. Available from: http://www.bcshguidelines.com/pdf/pregnancy_070606. pdf].
13. National Collaborating Centre for Women's and Children's Health. Antenatal care. Clinical Guideline No. 6. London: Royal College of Obstetricians and Gynaecologists Press; 2003.

14. OK Ogedengbe, OO Akinyanju. The hemoglobinopathies and pregnancy in Lagos. 2010.

15. Basu J. The use of blood transfusions in the obstetric unit of an academic hospital in South Africa. 2015.

16. Caesarean delivery-related blood transfusion: correlates in a tertiary hospitalin Southwest Nigeria Fatimat M. 2018.

17. National Collaborating Centre for Women's and Children's Health. Caesarean section. Clinical Guideline No. 13. London: Royal College of Obstetricians and Gynaecologists Press. 2004.

18. Zhang J, Troendle J, Reddy UM, Laughon SK, Branch DW, Burkman R et al. Contemporary cesarean delivery practice in the United States. Am J Obstet Gynecol. 2010; 203: 326.e1-326.e10.

19. Chu K, Cortier H, Maldonado F, Mashant T, Ford N, Trelles M. Cesarean section rates and indications in sub-Saharan Africa: A multi-country study from medecins sans Frontieres. PLoS One. 2012; 7: e44484.

20. Imarengiaye CO, Ande AB. Risk factors for blood transfusion during C – section in a tertiary hospital Nigeria. Med Sci Monit. 2006; 12: CR269-72.

21. Rouse DJ, MacPherson C, Landon M, Varner MW, Leveno KJ, Moawad AH, et al. Blood transfusion and Cesarean delivery. Obstet Gynecol. 2006; 108: 891-7.

22. National Institute for Clinical Excellence. Caesarean section. London: Royal College of Obstetricians and Gynaecologists Press. 2004.

23. Allen VM, O'Connell CM, Liston RM, Baskett TF. Maternal morbidity associated with caesarean delivery without labor compared with spontaneous onset of labor at term. Obstet Gynecol. 2003; 102: 477-82.