Uses and misuse of blood transfusion in Obstetrics in Lagos, Nigeria

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Summary

The objectives of this study were to identify obstetric and medical conditions in transfused patients, appraise the justification for the transfusion and recommend measures for reducing transfusion in obstetrics in Nigeria.

Available case records of obstetric patients transfused at the Lagos University Teaching Hospital between the period 1st November 1995 and 31 October 1998 were reviewed retrospectively. Data collected included booking status, mode of delivery, amount of blood-transfused, post transfusion packed cell volume (PCV), and obstetric and medical conditions found in the patients. There were 4,159 cases out of which 503 were transfused. The overall transfusion rate was 12.1%, in booked and unbooked patients, it was 6.6% and 45.8% respectively. Only 231 cases were available for full analysis, mean age was 28.9 ± 5.2 years (range 16 – 43 years). Sixty-three (27.3%) had unit-transfusions. Mean post transfusion PCV was 28.4% ± 4.3% (range 17% –43%). In 63 (27.3%), the post transfusion PCV was above 30%. Some of the obstetric and medical conditions in the transfused patients were caesarean section (68.8%), previous caesarean section (20.4%), antepartum haemorrhage (16.9%), pregnancy induced hypertension (15.6%), anaemia and malaria (14.0%), induction of labour (13.0%), ruptured uterus (8.8%), and sickle cell anaemia (5.2%). Multi-unit transfusions were found in ruptured uterus (5.8 units), sickle cell anaemia (4.9 units), vaginal and cervical lacerations (4.0 units), forceps delivery (3.9 units) and malaria and anaemia (2.9 units).

Conclusion: **The study shows a high transfusion rate; an appreciable number were unnecessary transfusions. A number of the obstetric and medical factors for blood transfusion were avoidable. A reduction in blood transfusion rate can be achieved by the provision of adequate, available and affordable maternal health services in Nigeria.**

Keywords: ***Uses, Misuse, Blood, Transfusion, Obstetrics.***

Résumé

Les objectifs de cet étude étaient d'identifier des conditions des obstétriques et médicales chez des patients transfusés, évaluer la justification pour des transfusions et conseiller comment prendre des mesures pour la diminution de la transfusion dans des obstétriques au Nigeria. Dossiers médicaux des patientes tranfusées disponnibles au centre hospitalo-universitaire de Lagos entre la période du premier novembre 1995 et le 31 octobre 1998 été examinés rétrospectivement. Les données collectionnées comprend état de la cellule poste transfusion (PCV), et états d'obstétriques et médicaux trouvés chez des patients. Il y'avait 4,159 cas parmi lequels 503 ont été transfusés. Dans l'ensemble, le taux de la transfusion était 12,1%, chez des patients inscrit et non-inscrit, ils sont 6,6% et 45,8% respectivement. 231 cas seulement ont été disponibles pour une analyse détaillée, âge moyen était 28,9 ± 5,2 ans (tranche d'âge de 16 à 43 ans) soixante trois soit 27,3% avaient transfusion unitaire. Moyen de la poste tranfusion PCV était 28,4% ±4,3% (tranche 17% – 43%). Chez 63 soit 27,3%), la poste transfusion PCV était plus de 30%. Quelques états d'obstétriques et médicaux chez des patients transfusés étaient: césarienne 68,8%, césarienne précédente 20,4%, hémorragie antépartum (16,9%) hypertension provoquée par la grossesse (15,6%) paludisme et anémie (14,0%) déclenchement (13,0%) utérus hernie 8,8% et la drépanocytose (5,2%), transfusion multi-unitaire ont été notées dans l'utérus hernie (5,8 unités), drépanocytose (4,9 unités) la déchirure cervicale et vaginale (4,0 unités), accouchement au forceps (3,9 unités) et paludisme et anémie (2,9 unités).

Conclusion: Cet étude a indiqué un taux élevé de la transfusion, un certain nombre de transfusions n'étaient pas nécessaires. Un certain nombre de traits d'obstetriques et médicaux pour la transfusion sanguine ont été évités.

Une baisse dans le taux de la tranfusion sanguine pourrait être réalisée à l'aide de la prestation de service des soins maternels adéquats, disponibles et abordables au Nigeria.

Introduction

Blood transfusion though a beneficial intervention is not without its risks. Some of the risks include blood transfusion associated viral infections (HIV, HBV, and HBC)[1,2], bacteria infection[2], malaria[3], immune suppression[4] and transfusion reactions[1]. Up to 5% of HIV infections in the developing world may still be due to HIV contaminated blood[5]. Anaesthesia and blood transfusion were found to be the main iatrogenic causes of maternal mortality in Senegal[6]. In recent years, there has been a general trend towards reduced blood transfusion due to fear in both patients and clinicians of contacting the HIV virus through blood transfusion and also the realisation that blood transfusion was unnecessary in many cases so treated[1-7]. Despite mandatory screening of donor for HIV and HBV by various serologic screening tests, there is still a theoretical risk that the donor may be in the serologic latency period – "the window period"[8]. Unnecessary blood transfusion, besides the cost, may in places where blood is not readily available like in Nigeria, deny those who really need blood a life saving intervention.

Post partum haemorrhage, obstructed labour, ruptured uterus, sepsis, anaemia are the common causes of maternal deaths in Nigeria[9] and other Sub-Saharan African countries[6]. In these life threatening conditions blood transfusion could be a life saving intervention. The alarming rise in the prevalence of HIV in Nigeria (1.8% in 1991, 3.8% in 1993, 4.5% in 1995 and 5.4% in 1999)[10] and the increase in the number of people screened for blood donation who are HIV sero positive[10] put the obstetric patient, who because of the above mentioned complications may require a blood transfusion either in pregnancy or labour, in a very precarious position. Also it is reported that up to 13 million of blood donations are not tested for HIV, HBV and HCV and this occurs mainly in developing countries where there is a high number of infected persons in the donor population[5]. It has therefore become necessary to address the issue of blood

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transfusion in obstetrics in this country. This preliminary study was conducted (i) to identify some of the common obstetric and medical conditions in transfused patients (ii) to appraise the justification for such transfusions and (iii) to recommend measures for reducing blood transfusion in obstetric patients in Nigeria.

Subjects and methods

The case records of obstetrics patients who had blood transfusion at the Lagos University Teaching Hospital (LUTH) during the period 1st November 1995 and 31st October 1998 were abstracted and reviewed. Additional information was obtained from the Department of Haematology and Blood Transfusion, and records in prenatal, postnatal and labour wards.

Information abstracted included maternal age, parity, booking status, mode of delivery, number of units of blood transfused and post transfusion haemoglobin and haematocrit levels. Medical and obstetrics conditions found in the transfused patients were noted. "Booked" patients were those patients who received antenatal care from LUTH, and "unbooked" were those who had received no or some antenatal care in health care facilities other than LUTH. The Lagos University Teaching Hospital is a tertiary institution which also serves as a referral centre for the Lagos metropolis which has a population of about 10 million[12].

Data analysis were represented as percentages, and means with standard deviation.

Results

There were a total of 4159 obstetric cases during the 3-year period studied, 587 of them were unbooked. Five hundred and three patients received blood transfusion, giving a transfusion rate of 12.1% during the period. Among these 503 patients that were transfused 234 were booked and 269 unbooked giving transfusion rates of 6.6% and 45.8% in the booked and unbooked patients respectively. However only 231 case records of the transfused patients were available for comprehensive analysis.

The mean age of the 231 patients was 29.2 ± 5.2 years (range 16 – 43 years) with mean parity of 1.4 (range 0 – 10), 86 (37.2%) of them being primigravidae (Table 1). There were 107 booked and 124 unbooked patients. Table 2 shows the frequency distribution of units of blood transfused. Sixty three patients (27.3%) received single unit-transfusion. This made up 10.1% of the total number (623 units) of blood transfused in the 231 patients.

The mean post transfusion packed cell volume (PCV) was 28.4 ± 4.3% (range 17% – 43%) and 63 patients (27.3%) had a post transfusion PCV above 30.0% (Table 3). Some of the obstetric and medical conditions that were documented in the case notes were caesarean section (159), previous caesarean section (47), ante-partum haemorrhage (39) pregnancy induced hypertension 36, anaemia and malaria 34, induction of labour 30, ruptured uterus 18, and sickle cell anemia 12. Multi-unit transfusions were found in ruptured uterus (5.8 units), sickle cell anaemia (4.9 units), vaginal and cervical lacerations (4.0 units), forceps delivery (3.9 units) and malaria and anaemia (2.9 units) Table 4).

Table 1 Characteristics of patients transfused (n = 231)

Age (years)	n (%)
<19	4(1.7)
20 – 24	45 (19.5)
25 – 29	81 (35.1)
30 – 34	65 (28.1)
35 – 39	34 (14.7)
40 – 44	2 (0.9)
Parity	**(n(%)**
0	86 (37.2)
1	54(23.4)
2	36 (15.5)
3	27(11.7)
4	13 (5.6)
5	5 (2.2)
>5	5 (2.2)
Booking Status	**n(%)**
Booked	107 (46.3)
Unbooked	124 (53.7)

Table 2 Number of units of blood transfused

Unit of blood	Frequency (%)		Total no. of units transfused(%)	
			n	(%)
1.	63	(27.3)	63	(10.1)
2	80	(34.6)	60	(25.7)
3	38	(16.5)	114	(18.3)
4	16	(6.9)	64	(10.3)
5	13	(5.6)	65	(10.4)
6	7	(5.6)	42	(10.4)
8	7	(1.7)	56	(13.4)
9	0	(0.0)	9	(0.0)
10	2	(0.9)	20	(3.2)
14	1	(0.4)	14	(2.2)
Total no of units transfused			623	(100.0)

Table 3 Post transfusion packed cell volume (PCV)

Packed cell volume	Booked (n = 107)	Unbooked (n = 124)	Total (n = 231)
15 – 19	0	2	2 (0.9%)
20 – 24	9	15	24 (10.4%)
25 – 29	54	53	107 (46.3%)
30 – 34	24	24	48 (20.8%)
35 – 39	6	6	12 (5.2%)
40 – 44	0	3	3 (1.3%)
Not indicated	14	21	35 (15.1%)
Total	107	124	231

Discussion

The transfusion rate of 12.1% found in this study is unacceptably high compared with 0.16% – 2.60% reported from developed countries[13]. One of the reasons for this is because LUTH is a referral centre and thus receives many complicated cases, most of them unbooked. These unbooked patients due to lack of supervision usually suffer the consequences of antenatal and labour neglect; such as obstructed labour, ruptured uterus, puerperal sepsis; that often lead to blood loss and

Table 4 Obstetric and medical conditions in transfused patients and units of blood transfused (n = 231)

Factors	n	%	Units of blood transfused	Men units of blood transfused
Medical history				
1. Sickle cell disease	12	5.2	58.8	4.9
2. Malaria	12	5.2	36.0	3.0
3 Anaemia	22	9.5	61.6	2.8
4 Fibroids	6	2.6	14.0	2.8
Previous pregnancies				
1. Previous caesarean section	47	20.4	103.4	2.2
2. Previous post partum haemorrhage	6	2.6	13.8	2.3
Antepartum factors				
1. Pregnancy induced hypertension	36	15.6	93.6	2.6
2. Placenta praevia	23	10.0	62.0	2.7
3 Abruptio placenta	16	6.9	46.4	2.9
4 Multiple pregnancy	13	5.6	41.6	3.2
5 Preterm labour	9	3.9	28.8	3.2
Intrapartum factors				
1. Induction of labour	30	13.0	84.0	2.8
2 Forceps delivery	9	3.9	35.1	3.9
3 Vacuum delivery	5	2.2	11.0	2.2
Casearean section	159	68.8	349.8	2.2
Ruptured uterus	18	7.8	104.4	5.8
Post partum uterus				
1 Uterine atony	10	4.3	27.0	2.7
2 Vaginal and cervical	9	3.9	36.0	4.0
3 Peurperal sepsis	8	3.5	32.0	4.0

infection necessitating blood transfusion[14,15]. In this study more than half (53.1%) of the patients transfused were unbooked, and all those with ruptured uterus were also unbooked.

The question that needs to be asked is whether all the blood transfusions were really necessary. The practice of transfusing at a haemoglobing concentration of less than 10g/dl (haematocrit 30%) is no longer uniformly accepted[13]. A recent multi-centre clinical trial[7] on blood transfusion found that maintaining haemoglobin at 7–10g/dl (haematocrit 21% – 27%) and transfusing only when haemoglobin fell below 7g/dl (haematocrit 21%) was equally as effective as maintaining the haemoglobin at 10 – 12g/dl (haematocrit 30% – 36%)[7]. Sixty three (27.3%) of the patients in our study had a post transfusion haematocrit of 30% or more. Worse still in 61 (26.4%) of the patients only one unit of blood was transfused, an amount which may not have brought about any significant change in the haematocrit but was more than enough to cause all the complications of blood transfusion. In this circumstance one unit of crystalloid or colloid would have achieved the same effect without incurring the costs, risks and complications of blood transfusion. Furthermore, the 63 single unit-transfusions which, is considered unnecessary could have been saved for other uses, particularly in Nigeria, where acute shortage of blood is not unusual and voluntary blood donors are few. Adequate oxygen carrying capacity to maintain cardio-pulmonary function can be achieved by a haemoglobin level of 7g/dl (haematocrit 21%) when the intravascular volume is adequate for perfusion[16].

Multiple blood transfusion were found in ruptured uterus (5.8 units), sickle cell anaemia (4.9 units), forceps delivery (3.9 units), malaria (3.0 units) and anaemia (2.8 units). Similar observations were made in other studies[12,17]. Ruptured uterus, which was found in only 7.8% of cases, all of them unbooked, accounted for 104.4 units out of the 623 units of blood transfused i.e. 16.7%. Neglect and poor management of pregnancy and labour which are often associated with unbooked cases are causes of ruptured uterus[14,15]. Some recent studies have found that most of the transfusion for anaemia in pregnancy were unnecessary[13]. In pregnant women with sickle cell anaemia two studies have shown no decrease in the incidence of sickle cell crises among patients assigned to a liberal transfusion strategy. In addition there was no significant difference in either perinatal or maternal outcome between non-transfused and transfused patients[18,19].

About 159 (68.8%) of patients had caesarean section and 47 (20.3%) had a past history of caesarean section. This makes caesarean section the most common determinant for blood transfusion in this study. Blood transfusion in caesarean section is however on the decline in many places[13]. A recent study found that despite lowest post caesarean section haematocrit (mean 23%) in non transfused patients compared with transfused patients (mean 28%) the length of hospital stay, incidences of post operative, wound infection and wound complication did not differ in both groups[20].

Reduction in the number of caesarean deliveries, the commonest condition found in the transfused patients, would reduce the number of blood transfusions. Provision of haematenics, effective malaria chemoprophylaxis and treatment for helminthic infections at antenatal clinics would reduce the prevalence of anaemia in pregnancy. Referral of patient with sickle cell disease to tertiary centers for proper supervision in pregnancy would reduce the incidence of sickle cell crises and the accompanying anaemia. Finally the provision of available, accessible, affordable, and improved maternal health services would reduce the number of unbooked emergencies.

Conclusion

This study has shown a high transfusion rate in obstetric patients at the Lagos University Teaching hospital. An appreciable number of these transfusions (54.0%) could have been avoided as many of the determinants for blood transfusion were preventable. The full cooperation of all those involved in the delivery of health care services to obstetrics patients: General practitioners, residents and consultant obstestricians, haematologists, anaesthestists and policy makers is required in reducing blood transfusion in these women.

We suggest setting up a committee comprising obstetricians, anaesthetists and haematologists to audit blood transfusion in obstetrics and make recommendations for guidelines on blood transfusion in obstetrics patients in Nigeria.

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