

Blood Transfusion Practices at the Gynecology-Obstetrics Department of the Sylvanus Olympio University Hospital in Lomé: A Study of 254 Cases

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Abstract

Objective: To describe blood transfusion practices in obstetric at the Sylvanus Olympio University Hospital in Lomé. **Patients and method:** Prospective, cross-sectional and descriptive study, conducted from 1 June 2017 to 31 May 2018 at the gynecology-obstetrics department. The study focused on transfused pregnant, parturient and delivered women. Study parameters were sociodemographic, clinical, therapeutic and prognostic. **Results:** 252 patients, aged 16 to 49 with an average age of 30.4 years, referred in 74% of cases. Hemorrhage was observed in 238 cases (94.4%) and anemia in 14 cases (5.6%). Blood transfusion was urgently used in 89.7% of cases and hemorrhagic abortion was the main indication. Blood group O+ (34.5%) was the most used and blood products were obtained after two hours in 81% of cases. **Conclusion:** Blood transfusion is often performed urgently and for bleeding. But the Gynecology-Obstetrics department does not have any blood in reserve, whereas the Sylvanus Olympio University Hospital collection and distribution station covers less than 10% of the needs.

Keywords

Blood Transfusion, Indications, Gynecology-Obstetric Departement, Togo

1. Introduction

Maternal mortality remains a major public health problem in sub-Saharan Afri-

ca, despite the preventability of most maternal deaths. Sub-Saharan Africa is the most affected region with 62% of maternal deaths in 2013. The main cause remains bleeding [1] [2]. Peripartum haemorrhage (PPH) accounts for about one-quarter to one-third of all maternal deaths. Worldwide, 7 women die of PPH every hour and developing regions account for the vast majority of maternal deaths [3] [4].

Blood transfusion is one of the functions of comprehensive emergency obstetric and neonatal care. It is essential for the management of severe bleeding and severe anemia during pregnancy, childbirth and postpartum. To respond to the hemorrhagic emergency, blood transfusion remains the cornerstone of the management strategy. It is essential, on the one hand, to compensate for the loss of blood and to maintain the oxygenation of the tissues and, on the other hand, to correct the coagulopathy of consumption or dilution which aggravates the obstetric hemorrhages [5]. The shortage of blood, which is common in African hospitals, is often associated with maternal mortality. Lack of blood transfusion contributes to a quarter of maternal deaths in sub-Saharan Africa. It is associated with 14.5% of maternal deaths at the Kara University Hospital in Togo [6] [7]. To alleviate this shortage, African countries, like Togo, have set up national blood transfusion centers. Transfusion practices vary from country to country partly due to differences in clinical practice between physicians and facilities [8]. There is no data available on transfusion practices in gynecology and obstetrics services in Togo. We undertook this study to describe transfusion practices in obstetrics at Sylvanus Olympio University Hospital in Lomé. The goal was to determine patient profiles, indications and factors associated with blood transfusion and maternal prognosis.

2. Patient and Method

The Department of Obstetrics and Gynecology at Sylvanus Olympio University Hospital served as a study site. This hospital was the largest referral hospital at the national level and the setting of the study was the largest obstetrics and gynecology department in Togo.

Our study was prospective, transversal and descriptive, conducted from June 1, 2017 to May 31, 2018, a period of 12 months. The study involved patients transfused for severe bleeding or anemia during pregnancy, delivery, and within 48 hours postpartum. Non-transfused patients, patients transfused for gynecological indications or for obstetrical indications beyond 48 hours after delivery were not included. The parameters of the study were:

- socio-demographic data (age, occupation, level of education),
- clinical data (pregnancy, parity, admission method, blood transfusion indications),
- therapeutic data (prescribed volume of blood, volume of blood received, blood groups used),
- prognostic data (maternal death associated).

Data collection was manual by interviewing patients and reviewing medical records. These data were collected on pre-established survey sheets and then processed using the Epi Info 3.5 software. The study was approved by the head of the department of gynecology-obstetrics and verbal informed consent of the patients was obtained.

Definition of concepts

Postpartum haemorrhage (PPH) is defined in this study as blood loss greater than 500 milliliters (ml) for vaginal delivery and greater than 1000 ml for cesarean section. Anemia is severe when the plasma hemoglobin level is less than 8 g/dl.

3. Results

3.1. Sociodemographic Data

The study involved 252 patients aged 16 to 49 years with an average age of 30.4 years. The majority of patients were 30 to 39 years old (**Table 1**).

The patients were housewives in 93 cases (36.9%), traders in 57 cases (22.6%) and learners (apprentices, students, pupils) in 50 cases (19.8%). They had primary education level in 67 cases (26.6%) and secondary education level in 114 cases (45.2%).

3.2. Clinical Data

Patients were mainly paucigest (63%) and pauciparous (48.4%). They were referred in 74% of cases. Hemorrhage was observed in 238 cases (94.4%) and anemia in 14 cases (5.6%). Blood transfusion was used urgently in 226 cases, or 89.7% of cases. Haemorrhagic abortion and postpartum haemorrhage were the main indications for blood transfusion (**Table 2**).

3.3. Therapeutic Data

All blood groups and Rh factors were needed, but the O+ group was the most used (**Table 3**).

Red blood cell concentrates and fresh frozen plasma were prescribed to all patients. More than two bags of Red blood cell concentrates were prescribed in 162 cases (64.3%) but were only obtained in 47 cases (18.7%). Demand for a single bag of Fresh frozen plasma was less emitted but more received (**Table 4**).

No blood bag was available at the Department of Gynecology and Obstetrics. In 236 cases, or 93.7% of the cases, blood products came from out-of-hospital collection and distribution stations (**Table 5**).

Table 1. Distribution of patients by age group (years).

	N = 252	%
<20	23	9.1
20 - 29	97	38.5
30 - 39	116	46
40 - 49	16	6.4

Table 2. Distribution of patients according to indications of blood transfusion.

	N = 252	%
Hemorrhagic abortion	67	26.6
Postpartum haemorrhage	52	20.6
Retroplacentalhematoma	35	13.9
Intrapartum uterine rupture	31	12.3
Hemorrhagic placenta previa	27	10.7
Ruptured ectopic pregnancy	26	10.3
Other (Sickle Cell Disease, Malaria)	14	5.6

Table 3. Distribution of patients by blood group.

	N = 252	%
O+	87	34.5
A+	47	18.7
B+	36	14.3
A-	24	9.5
O-	22	8.6
AB-	15	6
B-	12	4.8
AB+	9	3.6

Table 4. Distribution of patients by prescribed amounts and quantities received according to the type of blood product.

Number of bags	Redbloodcellconcentrates		Freshfrozen plasma	
	Prescribed	Received	Prescribed	Received
1	0 (0%)	135 (53.6%)	50 (19.8%)	134 (53.2%)
2	90 (35.7%)	70 (27.8%)	140 (55.6%)	96 (38.1%)
>2	162 (64.3%)	47 (18.6%)	62 (24.6%)	22 (8.7%)

Table 5. Distribution of patients by blood product supply center.

	N = 252	%
Blood Supply Center of Sylvanus Olympio University Hospital	16	6.3
National Blood Supply Center	205	81.3
Others' Blood Supply Center in Lomé	14	5.6
Blood Supply Center outside of Lomé but in Togo	15	6
Blood Supply Center in Ghana	2	0.8

The delay in obtaining blood products ranged from 30 minutes to more than 24 hours. These blood products were obtained after two hours in 81% of cases (Table 6).

3.4. Maternal Prognostic Data

Ten (10) maternal deaths, all by haemorrhage, were recorded, or 4% of cases. Postpartum haemorrhage was the leading cause with 4 cases, followed by retroplacental hematoma, intrapartum uterine rupture, and haemorrhagic abortion with 2 cases each.

Table 6. Distribution of patients by time to obtain blood products.

	N = 252	%
<1 hour	5	2
1 - 2 hours	43	17
>2 hours	204	81

4. Discussion

We conducted a prospective, transversal and descriptive study on transfusion practices. This was a one-year hospital study in a national referral service. This study, while providing lessons for improving transfusion practices in the Department of Obstetrics and Gynecology at Sylvanus Olympio University Hospital, is neither exhaustive nor extrapolated at the national level. It is limited in time and space and has not examined all aspects of the problem of blood transfusion in developing countries like ours. Broader studies are needed to reinforce the lessons learned from this study.

Blood transfusion is a common medical procedure. It is observed in 1% to 3% of pregnancy [9]. Transfused patients are between 16 and 49 years old in our study and that of Andriamandranto [10]. Patients aged 20 to 39, the usual period of reproductive life, are the most common in our study. The mean age of the patients was 30.4 years in our study, 30.2 years in the Kouakou *et al.* study and 31.53 years in the Andriamandranto study [10] [11]. Paucigestes and pauciparas are the most at risk. Patients were pauciparous in 48.4% of cases in our study and 67.6% of cases in the Andriamandranto study [10]. Hemorrhage requires more blood transfusion than anemia. The main indications for blood transfusion are often postpartum haemorrhage and retroplacental hematoma [11]. In contrast, hemorrhagic abortion was the main indication of blood transfusion in our study, followed by postpartum haemorrhage and retroplacental hematoma. In Andriamandranto's study, the main indication of blood transfusion was placenta previa in 56.54% of cases, followed by postpartum haemorrhage in 25.5% of cases. Haemorrhagic abortion was observed in only 0.7% of cases [10]. Anemia during pregnancy required blood transfusion in 24% of cases in the Kouakou study, 20.5% in Ben Ayed and 5.6% in our study [11] [12]. Thus, the main indication of blood transfusion in obstetrics varies from one study to another. According to WHO, 61% of pregnant women in Africa are anemic. Anemia during pregnancy is often linked to malnutrition, sickle cell disease and malaria [13].

All blood and rhesus groups are needed for blood transfusion, but the O+ group was the most used in our study and in the Kouakou *et al.* study [11]. In the Andriamandranto study, the B+ group was the most transfused group with 39.31% of the cases, followed by the A+ and O+ groups with respectively 30.34% and 29.65% [10]. Red blood cell concentrates and fresh frozen plasma were prescribed in all cases in our study, 97.21% of cases in Boukooungou's study [14] and 79.5% of cases in Ben Ayed's study [12]. Wole blood was not administered in our study. In contrast, whole blood was used in 82.9% of the cases in Koua-

kou's *et al.* study and in 95.2% of the cases in Andriamandranto's *et al.* Blood products appear to be little used because of insufficient availability and ignorance of these products and their main indications [10] [11]. Alexander, comparing the effects of whole blood transfusion with those of red blood cell concentrates in obstetric hemorrhage, found that women transfused with whole blood more frequently had pulmonary edema by volume overload [15]. In acute bleeding situations, the most common obstetric situations, fresh frozen plasma is used to prevent or correct bleeding disorders. Coagulation disorders, such as consumption-related coagulopathy, are common and often life-threatening. Modern rules for managing massive bleeding also apply to obstetrics and should include the rapid and intensive administration of fresh frozen plasma. As a result, fresh frozen plasma should be a general indication for obstetrics given the presence of several cases of high-risk coagulation of CIVD [15] [16] [17]. Frozen fresh plasma was administered with Red blood cell concentrates in all cases of bleeding in our study, 94.4% of cases. It was administered in 11.7% of cases in the Kouakou study, 68.5% of cases in Ben Ayed. No transfusion of platelet concentrate was performed in our study, nor in that of Andriamandranto [10] [11] [12]. It is indicated in Obstetrics as prophylaxis during the HELLP Syndrome before labor, regardless of platelet count [18]. There is a real benefit in using a high ratio (fresh frozen plasma/red blood cell concentrates) close to 1/1, to reduce blood loss, use of an invasive management strategy and to improve maternal morbidity [19]. Blood transfusion is urgently performed in 89.7% of the cases in our study and 72% of cases in the Kouakou *et al.* The difference between these two studies is that the Kouakou *et al.* study focuses on practices in gynecology (36.4%) and obstetrics (63.6%), whereas our study focuses only on obstetric practices [11]. The amount of blood to be transfused is often insufficient. In our study, 64.3% of cases, more than two bags of packed red blood cells were prescribed, but both bags were provided in only 18.6% of cases. However, at least one bag is provided. Blood transfusion with two bags of red blood cells concentrates increases the hemoglobin level by 2.6 g/dl and the total blood volume by 1 liter [20]. It is therefore desirable to transfuse at least two blood product bags. Unfortunately, only one bag of red blood cell concentrates was available in 53.6% in our study and in 16.7% of cases in Kouakou's *et al.* study [11]. This situation is due to the chronic shortage of blood in many hospitals in Africa [21]. Blood transfusion is also often given late. In our study, blood transfusion was provided two hours after prescription in 81% of cases. Blood is often not available in clinical services, ready to be used when needed. None blood bag was available in our department and in more than 93.7% of the cases the blood not came from the Sylvanus Olympio university hospital. Even national blood transfusion center do not cover the quantitative needs in a short time. In addition, socio-economic problems most often prevent the acquisition of sufficient blood [11]. Maternal death can occur despite a blood transfusion. It occurred in 4% of cases in our study, 9.65% of cases in Andriamandranto's *et al.* study and 2.91% of cases in Bonkougou's *et al.* study [10] [14]. Postpartum haemorrhage

was the leading cause of maternal death in our study and in those of Andriamandranto *et al.* and Adjoby *et al.* Chronic blood shortage, inadequate use of blood products, difficulty in preventing massive bleeding or chronic anemia, and late management are all factors that can lead to maternal mortality in obstetrical environment [10] [22].

5. Conclusion

All blood groups are useful, but the O+ group is the most used. More than two bags of red blood cells concentrates are needed but not often covered. There is no blood available in the gynecology-obstetrics department, while less than 10% of patients are served at the blood collection and distribution center of the Sylvanus Olympio university hospital. It is essential to make the blood products available permanently in this service, otherwise in the Sylvanus Olympio University Hospital Center in order to improve the quality of the management of severe bleeding and anemia.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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