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Obstetric Hemorrhage during the Third Trimester of Pregnancy: Experience in a University Hospital in Guinea

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Abstract

Aims: Obstetric hemorrhage, especially during the 3rd trimester of pregnancy, causes maternal, fetal and neonatal mortality and morbidity. We attempted to characterize its clinical features in Guinea. The objectives of this study were to describe the socio-demographic characteristics of the patients, identify the causes and contributing factors, describe the management and evaluate the maternal-fetal prognosis in such patients. **Methods:** We retrieved and analyzed patients with 3rd trimester hemorrhage whom we managed at Ignace Deen National Hospital, Guinea during 1-year period (1st of December 2019-30th of November 2020). **Results:** We experienced recorded 401 patients with 3rd trimester obstetric hemorrhage out of 5468 deliveries during the corresponding period; the rate being 7.33%. The main causes were as follows: placental hematoma (65.33%), placenta previa (27.68%) and uterine rupture (6.99%). The socio-demographic profiles were as follows: the age group of 25 - 29 years (28.42%), married (94.51%), uneducated (50.12%), and with a liberal profession. (43.64%) and pauciparous (30.42%). The conditions were considered to be preventable by managing risk factors during the prenatal consultation (PNC): 7.73% underwent no PNC. Cesarean accounted for 84.78% of patients. Prognosis was as follows: 14 maternal deaths (3.45% of a fatality), 34.66% of anemia, and 16.95% of hemorrhagic shock. Fetal/neonatal prognoses were poor. **Conclusion:** Obstetric hemorrhage during 3rd trimester remains the main cause of poor outcomes in Guinea. This study identified that this type of hemorrhage still represents an important cause of maternal and fetal morbidity and mortality in developing countries.

Keywords

Obstetric Hemorrhage in the Third Trimester, Etiologies, Management and

Prognosis, Ignace Deen, Guinea

1. Introduction

Obstetric hemorrhage during the third trimester corresponds to external bleeding through the vagina during the third trimester of pregnancy from 28 WA, and constitutes an obstetric emergency with a risk of maternal and fetal morbidity and mortality. They complicate 2% to 5% of pregnancies [1]. Whatever their etiologies, hemorrhages prenatal can have deplorable consequences. Indeed, for Mercier *et al*., antenatal hemorrhages, with a low incidence (about 5 to 6%), constitute an important cause of maternal and perinatal mortality [2].

In the 21st century, the drama of maternal mortality still remains the same. It is a scourge that strikes hard in developing countries and particularly in Africa where socio-economic, environmental and health conditions expose women to dreadful complications of pregnancy and childbirth [3].

According to WHO statistics between 1990 and 2015, the global maternal mortality rate decreased by only 2.5%. Approximately 500,000 women die each year worldwide during pregnancy or in the immediate postpartum period and 99% of these deaths occur in developing countries [2].

In developed countries, maternal mortality linked to hemorrhages has become rare, even in severe forms, thanks to rapid and appropriate treatment. Thus in France, severe obstetric hemorrhage accounted for 19% of intensive care admissions [4].

In Africa, obstetric hemorrhage remains the leading cause of maternal death today [5]. Among them, those of the third trimester constitute a daily concern in current practice, encompassing a range of obstetric pathologies whose delay in management could be detrimental to the mother and the fetus [6].

In Cameroon, according to Fumulu, placenta previa, abruption placenta and uterine rupture represent 40.9% of the causes of maternal death related to hemorrhage [7].

In Senegal, Biaye B *et al*. reported that PRH represents 7% of the causes of maternal death linked to hemorrhage [8].

In Guinea, Barry KM had found a 2.2% frequency of hemorrhage in the last trimester of pregnancy at the Ignace Deen National Hospital with maternal and fetal mortality rates, which were 7.62% and 61.90%. [9].

The scarcity of previous data on this subject at the Ignace Deen National Hospital and the seriousness of maternal and fetal complications related to obstetric hemorrhage during the third trimester of pregnancy motivated the realization of this study. Thus, we set ourselves the following objectives: to determine the frequency of obstetric hemorrhage during the third trimester, to describe the socio-demographic characteristics of the patients, to identify the causes and contributing factors, to describe the management and to evaluate the maternal-fetal

prognosis.

2. Patients and Methods

This was a descriptive and analytical cross-sectional prospective study lasting twelve (12) months from December 1, 2019 to November 30, 2020 carried out at the maternity ward of the Ignace Deen National Hospital, CHU of Conakry on a continuous series of 401 cases of obstetric hemorrhage during the third trimester of pregnancy. The study population consisted of all pregnant women admitted to the maternity ward of the Ignace DEEN National Hospital for obstetric hemorrhage during the third trimester of pregnancy, whether or not in labor, during the period of the study. Were included in the study, all pregnant women admitted for bleeding of intrauterine origin occurring from 28 weeks until delivery and who agreed to participate in the study. Were excluded from the study, all pregnant women who were admitted for an obstetric hemorrhage during the third trimester of pregnancy who did not agree to participate in the study. The sampling was exhaustive. The variables studied were socio-demographic (age, marital status, level of education, profession and parity), clinical (mode of admission, gestational age, number of prenatal consultations, the existence or not of a history of previous bleeding, abundance hemorrhage, associated clinical signs, ultrasound data and definitive diagnosis), therapeutics (mode of delivery) and prognosis (morbidity and maternal mortality, condition of the newborn and birth weight). The data was collected prospectively from data from the clinical examination of pregnant women, childbirth, and clinical examination of newborns, direct interview of patients and verification of PNC notebooks. These data were recorded in an electronic form, on a smartphone using the KoboCollect v1.25.1 application. The data were analyzed using SPSS software in version 25. The tables and word processing were carried out on Excel and Word 2019 software and compared with data from the literature. Paerson's Chi 2 test was used to compare qualitative variables, with a significance level of 5% (p value = 0.05). Where appropriate, Filer's exact test was used. The research protocol was approved by the national ethics committee with informed consent. During the realization of this work we encountered some difficulties namely: the absence of an ultrasound in the delivery room, the difficulty in estimating the blood losses, the difficult access to blood products, the ignorance of the date of the last menstrual period and not performing of an early ultrasound.

3. Results

3.1. Frequency

During the study period, we recorded 401 cases of obstetric hemorrhage during the third trimester of pregnancy out of 5468 deliveries, *i.e.* a frequency of 7.33%.

The main etiologies responsible for bleeding in the third trimester of pregnancy were retro placental hematoma (65.33%), placenta previa (27.68%) and

uterine rupture (6.99%).

3.2. Sociodemographic Characteristics

The socio-demographic characteristics of the patients were dominated by women whose age is between 25 - 29 years old (28.42%), married (94.51%), uneducated (50.12%), with a liberal profession (43.64%) and pauciparous (30.42%) (Table 1).

3.3. Clinical Appearance

Mode of admission: More than half of the patients were evacuated for all etiologies with an average of 66.33%.

Gestational age: In our series 56.66% of our patients bled between 37 and 42 weeks for all etiologies with specifically 49.61% for RPH; 63.96% for placenta previa and 92.85% for uterine rupture.

Number of prenatal consultations: The number of PNCs was < 4 for most patients (70.82%).

The existence or not of a history of previous bleeding: The majority of patients (88.52%) had not presented previous bleeding against 11.48% of patients who had previous bleeding.

Abundance of bleeding: The abundance of bleeding was assessed during the clinical examination and not quantified. The bleeding was very abundant with obnubilation and unstable blood pressure in 27.43% for all etiologies with specifically 30.53% for retro-placental hematoma, 18.91% for placenta previa and 32.14% for uterine rupture.

Associated clinical signs: The most frequently found sign was abdominal and pelvic pain with 94.27% in retroplacental hematoma and 100% in cases of uterine rupture. Metrorrhagia considered as the main functional sign was present in all the patients.

Ultrasound data: In general, for all etiologies combined, patients underwent at least one obstetric ultrasound in 15.96% of cases with specifically 10.68% for RPH; 30.63% for placenta previa and 7.14% for uterine rupture.

Definitive diagnosis retained: Analysis of this parameter reveals that of all etiologies, the diagnosis most frequently retained was retro-placental hematoma, *i.e.* 65.33% followed by placenta previa and uterine rupture with respective frequencies of 27.68% and 6.99%.

Retroplacental hematoma was dominated by Sher grade IIIa (37.40%) followed by Sher grade II with 24.43%. Overlying placenta previa was more represented with 23.19%. Uterine rupture was frank in 4.98%.

Therapeutic aspect: Faced with this obstetric emergency, the most commonly practiced therapeutic attitude was caesarean section with 84.78% on average and specifically. This surgical act was performed in 90.45% of patients with PRH and 92.79% in case of placenta previa. All cases of uterine rupture benefited from laparotomy and hysterorrhaphy.

Table 1. Sociodemographic characteristics of patients.

Socio-demographic characteristics	Cause of bleedings N = 401						Total	
	RPH		Placenta previa		Uterine rupture			
	Eff.	%	Eff.	%	Eff.	%	Eff.	%
Age								
≤19	59	22.51	9	8.10	4	14.28	72	17.95
20 - 24	49	18.70	21	18.91	7	25.00	77	19.20
25 - 29	**65**	**24.80**	**41**	**36.93**	**8**	**28.57**	**114**	**28.42**
30 - 34	53	20.22	27	24.32	6	21.42	86	21.44
≥35	36	13.74	13	11.71	3	10.71	52	12.96
Marital status								
Single	16	6.10	4	3.60	1	3.57	21	5.23
Married	**245**	**93.51**	**107**	**96.39**	**27**	**96.42**	**379**	**94.51**
Widow	1	0.38	0	0.0	0	0.0	1	0.24
Educational level								
No schooling	**133**	**50.76**	**50**	**45.04**	**18**	**64.28**	**201**	**50.12**
Primary	33	12.59	18	16.21	4	14.28	55	13.71
Secondary	57	21.75	23	20.72	3	10.71	83	20.69
Superior	39	14.88	20	18.01	3	10.71	62	15.46
Profession								
Pupil/student	29	11.06	6	5.40	2	7.14	37	9.22
Housewife	94	35.87	39	35.13	7	25.00	140	34.91
Liberal	**110**	**41.98**	**48**	**43.24**	**17**	**60.71**	**175**	**43.64**
Employee	29	11.06	18	16.21	2	7.14	49	12.21
Parity								
Nulliparous	63	24.04	17	15.31	2	7.14	82	20.44
Primiparous	47	17.93	25	22.52	8	28.57	80	19.95
Pauciparous	**75**	**28.62**	**39**	**35.13**	**8**	**28.57**	**122**	**30.42**
Multipara	54	20.61	23	20.72	**10**	**35.71**	87	21.69
Grand multiparous	23	8.77	7	6.30	0	0.00	30	7.48

3.4. Prognostic Aspect

3.4.1. Maternal Prognosis

The most frequently encountered maternal complications were anemia in all clinical forms with an average of 34.66% followed by hemorrhagic shock with a frequency of 16.95%. DIC accounted for 2.24%; we recorded only one case of bladder injury, puerperal psychosis and intestinal obstruction with a frequency of 0.24%. There were no complications in 45.38% of cases (Table 2).

Table 2. Maternal morbidity.

Maternal complications	Cause of bleedings						Total N = 401	
	RPH N = 262		Placenta previa N = 111		Uterine rupture N = 28			
	Eff.	%	Eff.	%	Eff.	%	Eff.	%
Hemorrhagic shock	**44**	**16.79**	**9**	**8.10**	**15**	**53.57**	**68**	**16.95**
Anemia	**109**	**41.60**	**27**	**24.32**	**3**	**10.71**	**139**	**34.66**
CIVD	8	3.05	1	0.00	0	0.00	**9**	**2.24**
Bladder injury	0	0.00	0	0.00	1	3.57	**1**	**0.24**
Postpartum psychosis	1	0.38	0	0.00	0	0.00	**1**	**0.24**
Bowel obstruction	0	0.00	0	0.00	1	3.57	**1**	**0.24**
Without complications	**100**	**38.16**	**74**	**66.66**	**8**	**28.57**	**182**	**45.38**

3.4.2. Maternal Mortality

In our series, we recorded 14 cases of maternal death, *i.e.* a lethality of 3.5% for all etiologies and a ratio of 291.7/100,000 live births. These maternal deaths were related to retroplacental hematoma in 10 cases (9 cases of hemorrhagic shock and 1 case of eclamptic coma) and to uterine rupture in 4 cases (3 cases of hemorrhagic shock and 1 case of septic shock).

3.5. Fetal Prognosis

3.5.1. State of the Newborn

On average we recorded a rate of 47.6% of stillbirths for all etiologies with specifically 59.5% of stillbirths in RPH and 67.9% in rupture uterine. In placenta previa, the newborn was alive in the majority of cases.

3.5.2. Birth Weight

We recorded 52.4% of newborns with a birth weight of <2500 g for all etiologies. This low birth weight was more frequent in RPH (60.7%). Birth weight ≥2500 g was more frequently found in cases of placenta previa and uterine rupture with respective frequencies of 57.0% and 89.3%.

4. Discussion

4.1. Frequency

Our study reveals a higher frequency than that reported 10 years ago in the same department (2.2%) by Barry K.M [9]. In 2016, Mbongo J A reported to the Brazzaville University Hospital a 1.27% frequency of bleeding in the last trimester of pregnancy [10]. Our high frequency could be explained by the fact that our service is the only level 3 reference center receiving all obstetric emergencies from level 2 health structures in the city of Conakry and those of the neighboring prefectures, since the closure of the Donka's maternity for renovation reasons.

4.2. Etiologies

Retro-placental hematoma is the leading cause of bleeding in the third trimester (65.3%) in our study. Result contrary to that of Mbongo JF at the University Hospital of Brazzaville and Lankoande M in Burkina Faso who had reported that retro-placental hematoma was the second cause of bleeding with respective proportions of 37.5% and 32.8% [10] [11]. This rate is significantly higher than that of Sépou A. *et al.* in Central Africa (20.3%) [12]. These relatively significant differences can be explained by the existence of early prevention of this pathology, which is often secondary to vascular-renal syndromes, namely research and management of its main risk factors during prenatal follow-up.

Placenta previa is the second cause (27.7%) after RPH. Our frequency is lower than those of Mbongo JF and Lankoande M who reported that placenta previa was the primary cause of bleeding in the last trimester of pregnancy with respective frequencies of 56.1% and 42.6% [10] [11].

Regarding uterine rupture, our frequency (7%) is significantly lower than that of Lankoande M in Burkina Faso (24.6%) [11], and much higher than that of Mbongo JF in Brazzaville (5.1%) [10]. Our frequency could be explained by multiparity, obstructed labor in these parturient, and the unfavorable socio-economic status of the patients.

4.3. Sociodemographic Characteristics

Bleeding in the third trimester of pregnancy occurs at any age. Pregnant women in the 25 - 29 age group were the most affected overall with 28.4%. Our result is comparable to that of Nisar S *et al.* who found 54.1% for the age group of 20 - 30 years [13].

The incidence in relation to age also reveals that the 25 - 29 and 30 - 34 age groups are age groups at high risk of bleeding in the third trimester with respectively 8.79% and 8.84% of incidence compared to patients who did not experience bleeding (91.21% and 91.16%). These observed differences were statistically significant ($P < 0.001$).

This result could be explained by the frequent association of these age groups with multiparity, which is also a proven risk factor.

The majority of patients were married (94.5%) in our series. Results identical to those of Lankoande M who found that more than half of the patients were housewives (67.2%) [11]. This high frequency of married women would be explained by socio-cultural and religious reasons in our society that do not allow procreation outside the marital home. Unschooled women paid the highest price for all etiologies with an average of 50.1%. This result could be explained by the level of education of the Guinean population with 57% illiterate, 69% of whom are female, with an enrollment rate of 31% against 55% among boys according to EDS Guinea 2018 [14].

Women with a liberal profession were the most affected (43.6%). Reaching this socio-professional category could be linked to illiteracy and the effect of a

low socio-economic level, as Rabarikoto HFF *et al.* in Madagascar [15]. Retroplacental hematoma and placenta previa more frequently concerned pauciparae with respectively 28.7% and 35.1%; and as for uterine rupture, multiparous women were the most represented (35.7%). It follows from the study that the incidence of bleeding in the third trimester increases with parity. The most exposed patients were multiparous and grand multiparous with respectively 10.9% and 13.2% for those who presented bleeding and 89.1% for those who did not present bleeding. These observed differences were statistically significant ($P < 0.001$). Multiparity is a factor of procreation ingrained in our societies with low levels of education and information and the difficulty of accessing family planning care. This predominance of uterine rupture in multiparas has been reported by various authors [16] [17].

4.4. Clinical Aspect

Regarding the mode of admission, the majority of patients were evacuated (66.3%). Our result is significantly lower than that of Lankoande M in Burkina Faso who reported 91.8% of evacuees [11].

The management of patients with peripheral third trimester obstetric hemorrhages often poses problems. Our rate could be explained by the fact that our service is a center of last resort receiving obstetrical evacuations from peripheral maternities in the city of Conakry and certain neighboring prefectures.

In our series, 56.6% of patients bled between 37 and 42 weeks. Results contrary to those of Samal SK *et al.* reporting 73% occurrence of bleeding in the third trimester between 34 - 36 weeks and 6 days [18]. Our result could be explained by the fact that most of these hemorrhages were triggered by uterine contractions at the end of pregnancy.

Regarding the number of prenatal consultations, the follow-up was not of good quality. The required number of prenatal consultations according to the WHO was only reached in a proportion of 21.5% for all the pathologies in question. A well-monitored pregnancy could reduce the risk of bleeding during the third trimester of pregnancy. It also allows rapid treatment before any dramatic complications, in order to reduce the maternal-fetal death rate and to provide advice on family planning [19].

In our series 11.5% of patients had had previous bleeding. This rate is lower than that of Sépou A et Coll. in Central Africa which reported 20.5% [12].

The abundance of bleeding was assessed during the clinical examination and not quantified. The bleeding was very abundant with obnubilation and unstable blood pressure in 27.4% for all etiologies. Our result corroborates with that of Nada I in Morocco, which had reported 20.00% of heavy bleeding [20].

The functional and physical signs made it possible in the majority of cases to make the clinical diagnosis. Metrorrhagia associated with abdominopelvic pain were the most frequent clinical signs. Mbongo JF in his study found the same results [10].

In general, for all etiologies combined, patients benefited from at least one obstetric ultrasound in 16% of cases. Unfortunately in our developing countries, performing ultrasound is very difficult due to the lack of equipment and the average cost of an obstetric ultrasound, which is approximately 100,000 GNF (*i.e.* 10 US dollars), while 50% of Guineans live below the minimum poverty line with a national income per capita of less than US$1/day [21].

The most frequently retained diagnosis was retroplacental hematoma (65.3%) followed by placenta previa (27.7%). The retroplacental hematoma was dominated by grade IIIa of Sher (37.4%). Our result corroborates with that of Nisar S et al at the maternity ward of Skim Soura Hospital in India [13]. But contrary to those of Mbongo J F at the Brazzaville University Hospital and Lankoande M in Burkina Faso [10] [11].

Faced with this obstetric emergency, the most commonly practiced therapeutic attitude was caesarean section with 84.8%. All cases of uterine rupture benefited from laparotomy and hysterorrhaphy. A single case of hysterectomy for hemostasis had been performed for uterine atony. Our caesarean rate is similar to data reported by Mbongo JF in 2016 (80.6%) and Samal SK in 2017 (85.3%) [10] [18]. In Guinea, a study carried out by Baldé IS on the evolution of uterine ruptures reports conservative surgical treatment with hysterorrhaphy in 88.10% of cases [17]. Two (2) cases of hysterectomy were performed by Lankoande M after failure of conservative treatment [11]. In the study by Bambara M in Burkina Faso, a haemostat hysterectomy was performed for most cases of uterine rupture (67%) [22].

Our result could be explained by the fact that the caesarean performed in time prevents complications. Furthermore, our caesarean section rate could be explained by the fact that this operation is free and the availability of emergency kits, the introduction of which into our practice had enabled rapid management of cases of hemorrhage in the third trimester before hemodynamic complications do not set in.

4.5. Aspect Prognosis

Maternal prognosis: The major morbidity was anemia (34.6%) in our study as described in the literature by various authors [10] [11] [23].

The problem of maternal mortality arises mainly in developing countries. Ignorance, illiteracy and poverty are implicated factors [24].

In our series, we recorded 14 cases of maternal death, *i.e.* a lethality of 3.5% and a ratio of 291.7/100,000 live births. Our case fatality rate is significantly lower than those reported by Lankoande M (15.6%) and Say L (27.1%) [3] [11].

Almost all of our deaths are linked to the difficulties to compensate for significant blood spoliation due to a shortage of blood products and derivatives, but also the conditions and time for admission of patients, and the delay in treatment with insufficient technical platform.

Fetal prognosis: In our series we recorded a rate of 47.6% of stillbirths for all

etiologies. This rate is higher than that of Lankoande M at the Brazzaville University Hospital who reported that despite resuscitation and the practice of caesarean section, the fetal outcome remained severe with 15 premature births (12.3%) and 22 perinatal deaths (18.1%) [11]. Bleeding in the third trimester of pregnancy remains very feticidal. This very high mortality is mainly linked to the delay in treatment but also to the etiology.

We recorded 52.4% of newborns with a birth weight of <2500 g for all etiologies. This could be explained on the one hand by the abundance of hemorrhage which may require urgent uterine evacuation whatever the gestational age and on the other hand by the action of arterial hypertension and anemia on fetal development means that third trimester hemorrhages are pathologies that cause a high rate of prematurity and intrauterine growth retardation.

Limits: Sonogo SD in its study in Mali had reported the same difficulties with the absence of an ultrasound scanner in the delivery room as well as the problem of providing emergency products and blood which were a serious handicap for the management rapid and adequate charging [25]. As for Nayama M in Niger, the technical platform leaves something to be desired with insufficient availability of blood products [26].

5. Conclusion

Bleeding in the third trimester of pregnancy remains one of the main emergencies in obstetric practice with 7.3% of deliveries in the department. It is a serious and dreadful accident, especially since it is unpredictable and represents a major cause of maternal mortality and morbidity in the absence of rapid and adequate treatment. Among the different causes of these hemorrhages, retroplacental hematoma remains the most feticidal cause. They therefore require precise and rapid diagnosis, early, multidisciplinary management and close collaboration among obstetricians, neonatologists, anesthetist-resuscitator and biologists, to improve the maternal-fetal prognosis. Reducing maternal mortality would go through the availability of blood products, the central barometer for care in our context.

Conflicts of Interest

The authors declare that they have no conflict of interest.

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