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RESEARCH ARTICLE

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## MATERNAL DEATHS BY HAEMORRHAGE IN THE GYNAECOLOGY AND OBSTETRICS DEPARTMENT AT THE TEACHING HOSPITAL OF COCODY

\*Effoh Ndrin Denis, Adjoby Roland, Gbary-Lagaud Eleonore, Koffi Soh Victor, Akobe Privat, Kouakou-Kouraogo Ramata, Diomande Fatoumata Alice and Koffi Kouadio Achille

Gynecology and Obstetrics Department at the Teaching Hospital of Angré

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#### \*Corresponding author:

Effoh Ndrin Denis

### ABSTRACT

**Objective:** To improve the management of hemorrhagic complications during gravido-puerperium in order to reduce its lethality in the gynaecology and obstetrics department of Cocody's Teaching Hospital. **Patients and methods:** This was a retrospective and descriptive study that involved women who died of hemorrhagic causes in the service during the period of gravido-puerperium as defined by the WHO. It covered a period from 1 January 2014 to 31 December 2017 at the Gynaecology and Obstetrics Department of Cocody's Teaching Hospital. **Results:** We selected 74 deaths due to hemorrhage, a mortality ratio of 275 deaths/100,000 live births. The peak of deaths of 19 (25, 6%) was observed in 25-30 years. Multiparous accounted for 57.6% of cases. Patients were evacuated to Cocody's Teaching Hospital in 100% of cases. Patients were evacuated no later than the hour following the decision to evacuate in 17.5% of cases. Patients were admitted to a precarious state in 82.4% of cases (hypovolemia shock, severe anemia, coagulopathy). There were 64.9% of patients with immediate postpartum hemorrhage (IPPH), followed by 21.6% retroplacental hematoma (RPH) and 13.5% uterine rupture (UR). In 58.1% of cases, the transfusion could not have taken place due to a lack of blood products. All deaths were preventable. **Conclusion:** Haemorrhage remains the leading cause of maternal death in our service. Although obstetric emergencies from peripheral maternity wards are not subject to optimal qualified assistance at delivery, the delay in transfusion was considered as a determining factor in the occurrence of deaths. Given the medico-legal risk associated with these deaths, prevention is the best response in developing countries.

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### INTRODUCTION

Obstetrical haemorrhages are formidable complications in the work room due to the morbidity and maternal mortality that accompany it. About 99% of maternal deaths occur in developing countries, of which more than 80% are preventable [1]. One of the targets of Sustainable Development Goal 3 (SDG 3) is to reduce the global maternal mortality rate to below 70 per 100,000 live births by 2030 [2]. The objective of our study was to improve the management of hemorrhagic complications during gravido-puerperium in order to reduce its lethality in the gynaecology and obstetrics department of Cocody's Teaching Hospital.

### PATIENTS AND METHOD

This was a retrospective and descriptive study that examined the medical records of maternal deaths due to haemorrhage

from January 1, 2014 to December 31, 2017 in the Department of Gynaecology and Obstetrics at Cocody's Teaching Hospital. This facility is a second referral service that receives patients evacuated from peripheral health centres. The study population involved women who died of haemorrhagic causes in the service during the period of gravido-puerperium as defined by the WHO. The inclusion criteria were for all cases of maternal haemorrhage deaths in the gynecological emergency room, delivery room, operating room or ICU at Cocody's Teaching Hospital during the study period.

Were not included in the study: maternal deaths occurred on transfer and/or prior to admission to the service. The data was entered from the EPI info 3.5.4 software. The quantitative variables were expressed, in percentage and on average with the extreme values. Qualitative variables were expressed as a percentage.

## RESULTS

**Frequencies :** During our study we recorded 185 maternal deaths over the four (04) years. Over the same period, we recorded 27,984 births for 27,799 live births. We collected 84 haemorrhagic deaths, or 45.4% of all deaths. According to our inclusion criteria, we selected 74 deaths due to haemorrhage (10 deaths occurring during transfer or upon admission) or a mortality ratio of 275 deaths/100,000 live births. Our sample accounted for 40% of all maternal deaths recorded in our study.

**Socio-demographic characteristics :** The average age of our patients was 33 years with extremes of 14 and 45 years. The peak of death of 19 (25, 6%) was observed in 25-30 years. Patients were illiterate in 62.2% of cases. Multiparous accounted for 57.6% of our study sample and 13.5% of patients did not receive prenatal follow-up. Only 31% of the women in our sample performed a prognostic obstetric ultrasound at the end of pregnancy.

### Circumstance of deaths

**Evacuation time and admission :** Patients were evacuated to Cocody's Teaching Hospital in 100% of cases, only 17.5% of patients were evacuated within one hour of the decision to evacuate. Approximately 21.6% of the patients arrived at Cocody's Teaching Hospital more than an hour after the maternity leave. Of the patients who died, 82.4% were in a precarious state on admission (hypovolemia shock, severe anemia, coagulopathy). The selected causes of maternal deaths are listed in Table 1.

**Table 1. Distribution of maternal deaths by diagnosis at admission**

Selected diagnosis	Size	Percentage (%)
Uterine rupture (UR)	10	13,5
Retroplacental hematoma (RPH)	16	21,6
Immediate postpartum haemorrhage (IPPH)	48	64,9
Total	74	100

There were 64.9% of patients with immediate postpartum haemorrhage. Surgical treatment of the haemorrhagic cause is recorded in Table 2

**Table 2. Distribution of surgical treatment of the haemorrhagic cause**

Surgical treatment	Size	Percentage (%)
hysterectomy	43	58,2
Vascular ligation	26	35,1
Hysterorrhaphy	5	6,7
Total	74	100

Hysterectomy was the most performed procedure (58.2%). Based on our sample (n=74); 41.9% were transfused. In 58.1% of cases the transfusion could not have taken place because of lack of blood products.

**Dysfunction and responsibilities :** The time of death is listed in Table 3.

**Table 3. Distribution of maternal deaths by time of occurrence**

Period	Size	Percentage
Per partum	5	6,8
Post partum	32	43,2
Per operative	14	19
Post operative	23	31,1
TOTAL	74	100

The patients died mainly in post-partum and all maternal deaths were considered preventable. Of the women who died, 81.1% (n=60) had late visits after the onset of the first signs. The delay in evacuating to Cocody's Teaching Hospital would be due to staff negligence (54.2%), financial constraints (20.2%) and lack of transportation (10.17%). Analysis of obstetric records showed that 60.8% of women who died from haemorrhage did not have a monitoring record.

## DISCUSSION

**Maternal mortality ratio and epidemiological characteristics :** The mortality ratio during our study period in the Obstetric Gynaecology Department is 665 cases/100,000 live births (Lb). This rate remains close to the national average in 2015, which was 645 deaths/100,000 Lbs according to the latest WHO estimates in 2015 [3]. In Ghana, Adedia and al recorded 380 deaths/100 000 Lb in 2013 [4]. Variations in maternal mortality ratios appear to be related to the mode of recruitment of different studies. Young maternal age is frequently found in relation to early unions and low contraceptive prevalence as a maternal mortality factor [5]. In our study, 62.2% were illiterate, 57.6% were multiparous and poor prenatal follow-up, especially the failure to perform prognostic ultrasound, are indeed risk factors for the occurrence of obstetrical complications. Multiparity is known to be a major risk factor for postpartum haemorrhage due to alteration in the quality of the uterine muscle fiber, which has its contractile power reduced. Ultrasound of the third trimester of pregnancy, allows to pronounce on the prognosis of delivery. This by detecting mechanical dystocia and placental insertion abnormalities which can lead to serious haemorrhage [6,7]. In Côte d'Ivoire the caesarean section rate is close to 3% (EDS 2012) while the WHO recommends a national rate of 5-15%. The epidemiological profile of our patients was typical (young, multiparous, illiterate, low resources) because found in many African studies where maternal mortality remains high [8,9,10]

**Admission conditions and evacuation times :** The management of large hemorrhagic syndromes must be done in a third level hospital with a resuscitation unit. When these are subject to surgical treatment, the reference should preferably be made before the onset of coagulation disorders, the management of which is a major problem in Black Africa [11,12,13]. Evacuation in obstetrics is recognized as a risk factor for maternal mortality in Africa, because practiced without reference system and against reference. Thus, the obstetrical reference was to be listed as a key function of basic obstetrical and neonatal emergency care (ONEC).

**Audit of maternal deaths :** In general, the haemorrhagic cause represents 42% of direct causes [14]. Our sample represented 40% of the deaths recorded during the study period. The vast majority of deaths in our observation were related to a failure and poor organization of the health system. In our series, 64.9% of patients had immediate postpartum haemorrhage (IPPH), followed by 21.6% retroplacental hematoma (RPH) and 13.5% uterine rupture (UR). Indeed the major reason why many patients die of postpartum haemorrhage worldwide, is due to the fact that once the bleeding begins, death can occur in about two (02) hours versus 10 hours for eclampsia and 72 hours for dystocic work. Our patients evacuated in 100% of cases from peripheral maternities, arrived most often (82.4%) in a precarious state as

shown in our figures. This is partly due to the long transfer time and delay in evacuation as described in the literature [15,16]. In India, a study by Khan shows that IPPH is a common complication of childbirth and its incidence is frequently reported between 2% and 4% after low birth [17]. The installation of RPH significantly increases the risk of maternal death and even more so when associated with a clotting disorder. RPH-related deaths were often the result of poor prenatal follow-up and delayed obstetrical decision-making. The uterine ruptures remain a good reflection of the under-medicalization, in the same department, Loué found an average time of surgery exceeding 2 hours [14]. Given the difficulties of management, hemostasis hysterectomy was often the first intervention to improve the maternal prognosis. In our series it was practiced in 58.2% of cases and was insufficient to save the lives of patients. In sub-Saharan Africa, delays, evacuation conditions, the installation of hemorrhagic shock and/or coagulopathy, the constant lack of blood products at the level of reference maternities and the absence of multidisciplinary management (midwife, doctor, anaesthetists) are key factors leading to maternal deaths [12,17].

**Dysfunction and responsibilities:** The high number of haemorrhagic deaths is due to a failure and poor organization of the system at the national level in general and at the Cocody's Teaching Hospital in particular. Indeed, knowledge of haemorrhagic risk factors should allow providers (doctors and midwives), an anticipation of the onset of these complications. In principle, the haemorrhagic causes should be those that best meet the policy of free care in Côte d'Ivoire since 2011.

**First delay or delay in the initial consultation:** In our study, the analysis of the records shows that 60 patients or 81.1% had consulted late. Our figures are close to those of Effoh, who noted 77.1% delay in the initial consultation [11]. The reasons mentioned were among others: the ignorance of the warning signs by the patient and her family (65%), the financial difficulties evoked by the family (30%) the absence of means of transport (5%). Moreover, our states must necessarily improve the geographical and financial accessibility of peripheral health centres in order to reduce the first delay.

**Second delay or delay in evacuation:** The delay in evacuating to Cocody's Teaching Hospital would be due to staff negligence (54.2%), financial constraints (20.2%) and the lack of means of transport (10.17%), which contributes to lengthening the transfer times. Delay in evacuation is a very important factor in the occurrence of maternal deaths especially of haemorrhagic causes. According to the WHO, a woman who bleeds in the postpartum has two (02) hours to die. The IPPH predominated in our study with 64.9% of cases, Issa in Burkina Faso, making the same findings with 48.8% of cases [18]. Hence the need to emphasize the training of health workers and the need to use ONEC and make blood products available to give these patients a better chance of survival.

**Third delay or delay in specific management:** The dysfunctions include the unavailability of blood components, the absence of place in intensive care, the occupied operating rooms, the rupture of emergency drugs, the congestion of emergency rooms. This contributes to a long delay in surgical and transfusion management [11,12,19]. In Gabon, a 10-year retrospective study evaluating transfusion practice in a Libreville maternity hospital finds an average transfusion time

of 04 hours and 22 minutes [20]. In our study, in 58.1% of cases the transfusion could not have taken place due to lack of blood products. In obstetrics, transfusion emergencies are vital, however in black Africa there is no real policy of dispensation and sustainability of blood products. Yet, despite the existence of statutory instruments, the analysis of the prescriptions for blood components, as well as the modalities of emergency distribution, show a great heterogeneity of practices [21]. The responsibilities attributed to health workers are dominated by poor follow-up either in the postpartum or post-operative. The development of a patient monitoring record is very important in order to improve the life expectancy. In our study, 60.8% of patients did not have a monitoring record. Proper patient management often requires a multidisciplinary approach. The ICU deficit caused a delay in the management of certain emergencies.

## Conclusion

Haemorrhages remain the leading cause of maternal deaths in our department. Although obstetric emergencies from peripheral maternities are not subject to optimal qualified assistance at delivery, the delay in transfusion was considered as a determining factor in the occurrence of deaths. Given the medico-legal risk associated with these deaths, all observed deaths were preventable, prevention is the best response in developing countries. Five years after the end of the Mdgs, maternal mortality remains high in our tropics. During the five years, the observation remains the same, maternal deaths from haemorrhagic causes did not decline despite the obstetrical and neonatal emergency care (ONEC) subsidy. Dysfunctions in health services contribute to worsening the patient's prognosis.

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