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Risk factors and Maternity complications of Primary Postpartum Hemorrhage (one year study)

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Abstract

Primary PPH is defined as excessive bleeding that occurs in the first 24 hours after delivery. The complications may vary from disturbance of organ functions to hysterectomy to even ICU admission or massive blood transfusion. When we come to mortality of primary postpartum hemorrhage, it is responsible for around 25% of maternal mortality worldwide. Egypt maternal mortality rate for 2017 was 37/100000 as a 2.63%. There is a significant reduction compared to 174/100,000 in 1990 so Egypt was close to achieving the targets in MDG 5 (Millennium Development Goals). The most common etiology of PPH is uterine atony. Atony may be related to overdistention of the uterus, infection, placental abnormalities, or bladder distention. Clinical factors associated with uterine atony, such as multiple gestation, polyhydramnios, high parity, and prolonged labor, may lead to a higher index of suspicion. Other causes of PPH include retained placenta or clots, lacerations, uterine rupture or inversion, and inherited or acquired coagulation abnormalities. Various prophylactic strategies have been used to prevent this potential life-threatening emergency. Systematic reviews have concluded that active management of third stage of labor, particularly the prophylactic use of uterotonic agents can significantly decrease the incidence of postpartum hemorrhage compared with that of expectant management. This one-year study had been conducted at Minia University hospital including around 158 cases.

Keywords: PPH; Labor; Obstetric

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1. Introduction

Obstetric hemorrhage is one of the leading causes of maternal mortality worldwide, responsible for an estimated 127, 000 deaths annually. Postpartum hemorrhage (PPH) is the most common type of obstetric hemorrhage and accounts for the majority of the 14 million cases that occur each year [1]. Postpartum hemorrhage is associated with one-quarter of all maternal deaths and severe maternal morbidities in the world [2].

2. Aim of the study

The aim of this study was to estimate maternal morbidity and mortality and identification of risks in patients with primary postpartum hemorrhage

3.Patients and Methods

- ***Setting***: The present study was carried out at Minia maternity and children university hospital, during the period from 1st of May 2020 until 30 April 2021
- ***Study design****:* This was a prospective case series study.
- ***Participants****:* The study included the all patients who admitted with or developed primary postpartum hemorrhage in Minia maternity & children university hospital during one year study (from 1stMay 2020 – 30 April 2021)
- ***Inclusion criteria***: All women who were admitted with or developed primary PPH in hospital after vaginal delivery and/or cesarean section.
- ***Exclusion criteria:*** All women who were admitted with history of secondary postpartum hemorrhage
-***Ethical issues****:* Ethical **permission** was sought from a Local Research Ethics Committee (REC) of the department. The potential benefits and inconveniences of all aspects of the study were clearly stated to the patients and written files. Informed consent was obtained for participants in the study.
- ***Plan of the study:*** 1. collection of cases 2. Data analysis3. Report writing 4. Dissemination of results
- ***Equipment:*** - ***Clinical history tools,** General examination, Abdominal examination, Local Examination

***Delivery Data of the participants**. (Cause of PPH (Atonic, traumatic, coagulopathy, retained placental fragments). Management and interventions done to control PPH: including different line of medical and surgical management).

***Laboratory tools:** (e.g. to assess -Hemoglobin (Hb) concentration, coagulation profile

*** Research equipment:** -Data collection tool in the form of Excel sheet in which all patient data were entered by the researcher.

-***Intervention****:* This was a case series study

-***Outcome measures****:* **Details of pregnancy complications** in the form of**:**

. Drop in Hb level

. Morbidity in form of (coagulopathy, renal failure, hepatic failure, massive blood transfusion, ICU admission, hysterectomy)
. **Mortality**
. Details of risk factors
Data analysis: SPSS (Statistical package for social sciences) version 19 was used during analysis. - Endnote X: reference manage

4. Results:
The study tried to focus on risk factors and complications. Risks mainly range from the socioeconomic state of patient, personal risks, antenatal risks and even medical risks. Table 1 summarizes the risks of primary postpartum hemorrhage. Table 1 shows that the most common antenatal risk of primary Postpartum hemorrhage is prolonged labor by 31.7 % of cases. Table 2 shows the most common cause of primary postpartum hemorrhage is atonic.

5. Discussion
From the above-mentioned results, we can see the There are numerous risk factors of primary PPH explained in this study. This study showed that the main risk factor is the prolonged labor with a prevalence of 31.7% from all participants. However, the second most common risk factor is anemia with pregnancy which accounted about 27.8% from all participants. (2.5%). This may be different from other studies which suggested that the most common risk factor is anemia with pregnancy. For example, a two – year – retrospective study was conducted at the same hospital (2015 to 2016) [3-6]. When we come to the causes of PPH during this study, we can find that the most common cause is atonic PPH with a prevalence of 53.9%. However, the traumatic PPH accounts for 38% of all participants in this study. Retained placenta is the least common cause by 3.1 %. These results appear to be agreeing with the previous studies on PPH for example, the cross-sectional study conducted at [7]. that Prime Gravida (PG) cases are at a higher risk of PPH. According to this study, PG cases accounts for about 36% of the participants. The Grand multigravida (more than previous 5 deliveries), accounts for about 21 % of the participants. These results are coordinated with the previous published studies e,g [8].Regarding morbidity and mortality in this study: we notice. The participants at this study developed several types of morbidity in form of coagulopathy 8.8%, elevated kidney functions 2.5%, elevated liver enzymes 1.9%. We should take in consideration that 25% of cases needed ICU admission [9]. Around 10.7% of cases underwent hysterectomy. Mortality represented 2.5% of the study cases. This may show a little difference of previous studies carried out in the same topic. In 2015 the prevalence of mortality cases of PPH at the same hospital was 8.5%. However, it was 3.2% in 2016 at the same hospital. A study which was done in [10], showed that maternal mortality prevalence of PPH was 4.8%. When we discuss the mortality cases of our study, we can find that the main cause of death is DIC and irreversible shock.

Table 1: Risk factors of PPH in the studied participants

ANC		**Descriptive statistics (N=158)**
Previous history of PPH	***No***	***125(79.1%)***
	Yes	***33(20.9%)***
Placenta previa	***No***	***151(95.6%)***
	Yes	***7(4.4%)***
Abruptio placenta	***No***	***146(92.4%)***
	Yes	***12(7.6%)***
Preeclampsia	***No***	***136(80.5%)***
	Yes	***15(9.5%)***
Anemia	***No***	***114(72.2%)***
	Yes	***44(27.8%)***
Macrosomia	***No***	***147(93%)***
	Yes	***11(7%)***
Chorioamnionitis	***NO***	***142(90%)***
	YES	***16(10%)***
Polyhydramnios	***No***	***150(94.9%)***
	Yes	***8(5.1%)***
Prolonged Labor	***NO***	***108(68.3%)***
	Yes	***50(31.7%)***
Precipitate Labor	***No***	***137(87.7%)***
	Yes	***21(13.3%)***
Instrumental Delivery	***NO***	***154(97.5%)***
	Yes	***4 (2.5%)***

Table 2: Causes of PPH of the studied participants

	Number of cases	Descriptive statistics
Atonic cause	*85*	*53.9%*
Traumatic cause	*60* *Cervical tear 10* *Vaginal tear 22* *Perineal tear 21* *Rupture uterus 7*	*38%* *10 (6.3%)* *22(14%)* *21(13.3%)* *7(4.4%)*
Coagulopathy	*8*	*5%*
Retained placental fragments	*5*	*3.1%*

Table 3: Morbidity and Mortality among the studied participants

Morbidity	*No* *Yes*	*105(66.5%)* *53(33.5%)*
Type of Morbidity	*No* *Massive blood transfusion* *Coagulopathy* *Hysterectomy* *Renal failure* *Hepatic failure*	*105(66.5%)* *22(13.9%)* *14(8.8%)* *10(6.3%)* *4(2.5%)* *3(1.9%)*
ICU admission	*No* *Yes*	*118(74.7%)* *40(25.3%)*
Duration of admission	*Range* *Mean ± SD*	*(1-14)* *2.8±1.7*
Mortality	*No* *Yes*	*154(97.5%)* *4(2.5%)*

Table 4: Details of Mortality case among the studied participants

cases	Age	parity	Distance	Place of delivery	Mode of delivery	Cause of PPH	Procedure done	Cause of death	Period of stay
1	22years	P3+0	>50 km	Private clinic	NVD	Atonic	Supravaginal hysterectomy	Irreversible Hypovolemic shock	At the same day
2	32 years	P4+0	>50 km	Private clinic	NVD	Traumatic (extending cervical tear)	Supravaginal hysterectomy	DIC	At the same day
3	23 years	P1+0	>50 km	Private clinic	NVD	Coagulopathy	Supravaginal hysterectomy	Irreversible Hypovolemic shock	2days
4	29 years	P1+0	>50	MUH	CS	Atonic	Supravaginal hysterectomy	DIC	4 days

6. Conclusions

Postpartum hemorrhage is still a challenging problem in the developing countries. The most common cause of maternal mortality in Egypt is post-partum hemorrhage (19.7%), whereas the most common indirect cause is cardiovascular disease (16%). It is very important to note that the attending clinicians must always be well prepared to deal with this condition that can cost so many precious lives.

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