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ORIGINAL ARTICLE

Frequency and Nature of Near Miss Obstetric Complications in tertiary care Hospital South Punjab

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ABSTRACT

Objective: To analyze the nature of near miss obstetrical events in a tertiary care hospital of South Punjab.
Study design: A Case Series.
Settings: This study was carried out in labour room and intensive care unit (ICU) at Nishtar Hospital Multan.
Material & Methods: Study consists of near miss cases between January 1, 2020 to January 1, 2021. Near miss cases definition was based on validated disease specific criteria, including five diagnostic categories: hemorrhage, hypertensive disorders in pregnancy, dystocia, sepsis and anemia. SPSS version 23 was used for data analysis. Test of significance were applied and p value ≤0.05 was considered as significant.
Results: A total of 166 patients were included in this case series. The most common surgical procedure performed was emergency hysterectomy, n=64 (60.3%). While the most common complications included sepsis and anemia, n=34 (32.1%) and n=31 (29.2%), respectively. The mean hospital stay of the patients was 5.51±2.11 days. Majority of the patients stayed for 3-5 days in hospital.
Conclusions: Majority of near miss cases reported from rural areas of Punjab where socioeconomic status and literacy rate are also contributors. Anemia and sepsis were leading complications of near miss events and maternal deaths. Underlying disease process of our observation is almost same as in previous Pakistani reports.
Keywords: Near miss, Obstetrical events, Anemia, Sepsis, Hemorrhage

INTRODUCTION

Maternal near miss case is defined as "a woman who nearly died but survived a complication that occurred during pregnancy childbirth or within 42 days of termination of pregnancy"[1]. Near miss obstetric cases involve woman who survived a life threatening medical condition, organ failure or complication with respect to the pregnancy or childbirth[2]. WHO recommended investigating near miss as a benchmark practice for monitoring for maternal care and has standardized the criteria for diagnosis including cardiovascular dysfunction, respiratory dysfunction, renal dysfunction, coagulation/hematological dysfunction, hepatic dysfunction, and neurological dysfunction.[3]

Fifth goal of Millennium Development Goals (MDG) of World Health Organization was designed to improve maternal health and health related issues. The goal set forth to reduce maternal mortality ratio by 75% was however not achieved and remains an ongoing target.[4]

Severe acute maternal morbidity indicators (SAMM) were implemented extensively to complement maternal mortality and obstetrical care quality in some institutions. Quality of health care information can be estimated by reviewing maternal near miss cases and ratio of maternal mortality.[5] More potentially life-threatening conditions end up in near miss events. In such cases some of women end up with maternal mortality and some escaped narrowly. Maternal outcomes include near miss cases and maternal deaths[6].

Usually there are three main delays which are responsible for maternal deaths and complications; first one is seeking health care by women and lack awareness about warning signs and lack of family support[7],[8]. Second one is inaccessibility to health care facility due to socioeconomic problems. Third delay occurs at health care facility due to delay in diagnosis, deficiency of medical professionals and decision making[9]. In developing countries like Pakistan and India 75% of women with obstetrical complications are already in critical condition before arriving at tertiary care center. Medical staff at rural health centers and peripheral health care facilities should be trained about obstetrical emergencies and near miss issues[10].

METHODOLOGY

This prospective case series was conducted at Nishtar Hospital, Multan from January 1, 2020 to January 1, 2021, for one year duration. Patients who were included were informed about objective of the study and informed consent was obtained. Ethical approval of study was obtained from ethical board of institution . This study enrolled women who presented with maternal life threatening complications and who fulfilled WHO near miss criteria. WHO recommends three different criteria (clinical, management based and laboratory) for identification of near miss cases. Baseline demographic and clinical parameters including number of live births, complications and risk factors leading to maternal near miss were collected.

Clinical criteria; include acute cyanosis, respiratory rate above 40 and below 6, gasping, oliguria, shock, clotting failure, loss of conscious ness, stroke, jaundice and pre-eclampsia and uncontrolled fits. Laboratory criteria; include serum bilirubin ≥6.0mg/dl, Oxygen saturation <90% for ≥ 60 minutes, acute thrombocytopenia (platelet count ≤50,000 per microliter) and serum creatinine ≥3.5mg/dl. Management criteria; include acute renal failure and need for renal dialysis, hysterectomy for infection and postpartum hemorrhage, vasoactive drug use, intubation for mechanical ventilation and transfusion of ≥5 units of PRBCs.

Maternal near miss (MNM) was defined as women presenting with near miss events including acute life-threatening obstetric complications and they survived due to hospital care or by chance. Patients who developed such type of complications but they were not pregnant were excluded from study. Obstetrical indices including women's socioeconomic status, gestational age at the time of event, type of obstetrical complications and hospital stay were calculated. MNM incidence ratio was defined as number of near miss cases/1000 live births.

SPSS version 23 was used for statistical analyses. Mean and standard deviation was calculated for numerical variables including age, gestational age and duration of hospitalization. Frequencies and percentages were calculated for categorical variables like type of complication. Tests of significance were applied including Student's t-test and chi-square test for continuous and categorical variables respectively. P value ≤0.05 was considered to be significant.

RESULTS

One hundred and six patients were included . The mean age of the patients was 28.17±4.91 years. Majority of the patients (n=79, 74.5%) were referred from rural areas. The most common diagnoses were eclampsia, Ante-partum hemorrhage (APH) and post-partum hemorrhage (PPH) n=38 (35.8%), n=20 (18.9%) and n=15 (14.2%), respectively. Emergent hysterectomy, n=64 (60.3%) was the most commonly performed surgical procedure. Sepsis and anemia were most commonly observed complications encountered in 34 (32.1%) and 31 (29.2%) patients respectively. The mean hospital stay of the patients was 5.51±2.11 days. Majority of the patients stayed 3-5 days in hospital. (Table. I).

Diagnosis and surgical procedure were the effect modifiers for complications, (p=0.000) and (p=0.003), respectively. (Table. II).

Table. I

Variable	Frequency	Percentage
Area of residence		
Urban	27	25.5
Rural	79	74.5
Diagnosis		
Premature Rupture of membranes (PROM)	11	10.4
Eclempsia	38	35.8
APH	20	18.9
PPH	15	14.2
Sepsis	6	5.7
Ectopic Pregnancy	8	7.5
Medical Disorders	5	4.7
Labor related complications	3	2.8
Surgical procedure		
Emergency caesarean section	64	60.3
Laparotomy	11	10.4
Obstetrical Hysterectomy	20	18.9
EUA (Examination under anesthesia)	5	4.7
SVD (Spontaneous Vaginal Delivery)	6	5.7
Complications		
Anemia	31	29.2
Sepsis	34	32.1
CVA	10	9.4
Aspiration	7	6.6
Liver damage	8	7.5
Bladder injury	9	8.5
Acute renal failure	7	6.6
Hospital stay		
2-3 days	17	16.0
3-5 days	43	40.6
5-7 days	25	23.6
>7 days	21	19.8

Table II: Association of complications with effect modifiers

Effect modifier		Complications							Total	P-value
		Anemia	Sepsis	CVA	Aspiration	Liver damage	Bladder injury	Antennal failure		
Area	Urban	11	7	2	1	2	1	3	27	0.573
	Rural	20	27	8	6	6	8	4	79	
Diagnosis	Rapture membrane	11	0	0	0	0	0	0	11	0.000
	Eclempsia	12	18	8	0	0	0	0	38	
	APH	0	4	2	3	6	5	0	20	
	PPH	2	4	0	2	0	2	5	15	
	Sepsis	3	3	0	0	0	0	0	6	
	Ectopic	1	4	0	1	0	1	1	8	
	Medical problem	0	0	0	1	2	1	1	5	
	Labor related problem	2	1	0	0	0	0	0	0	
Surgical Procedure	Emergency Hysterectomy	16	15	10	5	6	7	5	64	0.003
	Laparotomy	10	1	0	0	0	0	0	11	
	Obstetrical Hysterectomy	4	8	0	2	2	2	2	20	
	EUA	1	4	0	0	0	0	0	5	
	SVD	0	6	0	0	0	0	0	6	
Hospital stay	2-3 days	5	7	2	2	1	0	0	17	0.715
	3-5 days	11	13	5	3	3	5	3	43	
	5-7 days	11	5	1	1	3	3	1	25	
	>7 days	4	9	2	1	1	1	3	21	

DISCUSSION

This study was conducted in South Punjab region of Pakistan where access to health care is limited and literacy rates are low.. Quality of care in this study was estimated by calculating complications and incidence of near miss cases. This study was conducted in a tertiary care hospital where high risk ward and ICU are well managed. Usually, <10% of near miss cases require high dependence or intensive care unit[11]. Criteria of ICU admission is available according to recommended guidelines or by hospital policy.

In our study sepsis (34%) and anemia (31%) are two leading complications associated with maternal near miss (MNM). A study was conducted by Naik et al[12] and reported hemorrhage and hypertensive disorders as main complications of near miss. Early identification, remedial therapy and timely treatment are main factors that can help a patient to get through potentially fatal complications. Leading complication of our study from a third world tertiary care center is different compared to what has been reported by Naik et al.[12]

Another study conducted by Jayarathnam et al[13] reported PPH, pre-eclampsia and sepsis as main complications that can lead to MNM in the developed world. Comparison of this study with our results shows that Australian population have three time less near miss cases as compare to Pakistani population. This difference may be related to easier access and better health care facilities, antenatal care awareness and improved socioeconomic status.

Another study by Shrestha et al[14] reported prevalence of near miss as 2.3%. MNM was attributed to hemorrhage in 41. 6%, dystocia in 2.7% and sepsis was responsible for 19.4% of maternal near miss cases. This study recommended effective audit systems to reduce both near miss events, maternal morbidity and mortality.

Oladapo et al[15] completed a study on this topic in a developing country and concluded that near miss cases decreased in incidencefrom 2002 to 2004. Complications responsible for near miss events were hypertensive disorder (61.1%) and hemorrhage (50.0%). Uterine rupture and sepsis were third and fourth leading complication. Demographic characteristics of this study population were comparable to our study.

Similarly Ali et al[16] conducted a study in Sudan and concluded that limited access to health care facility, poor level of care, lack of awareness about antenatal care and lack of follow up were the main problems. In this study hemorrhage was the main complication associated with 40.8% near miss cases followed by

sepsis or infection which affected 21.55% of the cases respectively. Adisasmita et al[17] also conducted a study on Indonesian population and reported similar findings about patients care and availability of health care facility.

Worldwide, a paradigm shift about maternal health care strategy was observed. WHO conducted a survey in 1990's and than in 2011 and issued a report that shows an increase in professional and skilled health personnel from 58% to 68%[18]. Mustafa R et al[19] conducted a study in 2006 on Pakistani population and reported that one out of every 7 women who were facing life threatening conditions died. Most common events were hemorrhage, anemia and dystocia with 51%, 21.1% and 14.8% respectively.

CONCLUSION

The near miss idea is important in finding out the similarities and relationships between characteristics of women who survived life threatening pregnancies related complications. Majority of near miss cases reported from rural areas of Punjab where socioeconomic status and literacy rate are also contributors. Anemia and infections were leading complications of near miss events and maternal deaths.

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