RESEARCH

Obstetric Near Miss Events in a Tertiary Level Teaching Hospital

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ABSTRACT

Background: Objective of the study was to identify the important causes of near miss cases and to evaluate the key interventions for the management and ultimate maternal outcome.

Material and methods: In this case series study, critically ill pregnant, laboring or postpartum women who were admitted either directly or through referral to the National Medical College, Birgunj, Nepal, formed the study group. The women who escaped death due to medical or surgical interventions were categorized as Near Miss. These cases were defined based on WHO Criteria 2009.

Results: There were 2424 births during this year and 33 were near miss cases. The bulk of these were directly admitted to our hospital (23 cases). The most common condition leading to this dreadful condition was hemorrhage, acute severe hypertensive disorder (preeclampsia/eclampsia) and sepsis. Disseminated Intravascular Coagulation was found to be the most common organ dysfunction. Emergency hysterectomy was the most frequent surgical intervention used to prevent mortality.

Conclusion: Maternal Near Miss review is a viable review as it has potential to highlight the deficiency as well as positive elements of obstetric services in any health system. Hemorrhage followed by hypertensive disorders are the leading causes of near miss events.

Keywords: Eclampsia, Hemorrhage, Maternal Near Miss

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INTRODUCTION

Maternal near miss is defined as women who nearly died but survived the complication that occur during pregnancy, child birth or within 42 days of termination of pregnancy.[1] This review is superior to maternal death because near miss cases are more frequent than maternal death; the latter has fallen to single digit in developed countries. Moreover, the survivors live to tell stories and less threatening to service providers.[2] There were no set criteria for identification of these cases but in 2009, World Health Organization (WHO) has come up with clinical, laboratory and management criteria for identification of this cases.[3] The prevalence of near miss is higher in developing countries and causes are similar to those of maternal mortality namely hemorrhage, hypertensive disorders and sepsis.

Reviewing near miss cases provide significant information about the three delays in health seeking, so that appropriate action is taken.[4] The first delay is in deciding to seek care by the woman and/or her family as they are unaware

of the need for care. The second delay is in reaching an adequate health care facility as the services may not exist or may be inaccessible for reasons such as distance, lack of support, socio -economic barriers. The third delay occurs in receiving adequate care at that facility resulting from errors in diagnosis and clinical decision making or lack of medical supplies or medical skills in management of obstetric care.

This study will raise awareness about the course of events leading to unfortunate maternal outcomes and will improve clinical practices to lessen preventable morbidities and mortalities. We also hope that it will provide a basis for new researches and planning to improve women's health.

MATERIAL AND METHODS

The study was conducted at Department of Obstetrics & Gynaecology, National Medical College & Teaching Hospital, Birgunj (Nepal) for a period of one year (June, 2015 to May, 2016). The total births in one year were 2424.

The inclusion criteria for near miss cases are:

- Management based admission to ICU
- Use of major interventions – Emergency hysterectomy, need of multiple blood transfusions and Ventilator Support.
- Organ system based dysfunctions – Renal dysfunction, cardiac problems, liver dysfunction, coagulation dysfunction, metabolic dysfunction and cerebral dysfunction.

All these near miss cases were admitted; detailed history taken and course of events were noted. The duration of stay, whether referred ill from other public or private hospitals or became critically ill at our hospital during the course of treatment or admitted directly as critically ill were defined. The obstetric causes leading to near miss, management modalities and outcomes were recorded.

RESULTS

During the study period we observed 33 near miss cases. Total live birth cases were 2388. Incidence of near miss case was 13.8 per 1000 live births.

Table 1: Primary Obstetrical factor of Near Miss Cases

Primary obstetrical factor	Near Miss Cases	
	Number	Percentage %
Hemorrhage (Ante partum Hemorrhage/ Post Partum Hemorrhage)	10	30
Hypertensive disorder (Preeclampsia/Eclampsia)	7	21.2
Ruptured Uterus/ Neglected Obstructed Labor	3	9.09
Septic Abortion and Puerperal Sepsis	3	9.09
Ruptured Ectopic Pregnancy	5	15
Perforated Hydatidiform mole	1	3
Uterine Inversion	1	3
Maternal Medical disease	3	9.09

Table 2: Maternal Near Miss Category

Admitted in hospital with severe illness	15	45.4
Admitted with disorder and became near miss	12	36.3
Admitted with no disorder and became near miss	6	18.1

Table 3: Referred/Direct Admissions

Referred as critically ill from other hospitals	10	30.3
Admitted directly to hospital	23	69.6

Table 4.Complications noted in near miss cases

Pulmonary Edema	4	12
Pulmonary Embolism	1	3
Sepsis	4	12
Renal failure	3	9
Disseminated Intravascular Coagulation (DIC)	5	15
Third degree perineal Tear	1	3
Persistent Trophoblastic disease	2	6

Table 5: Emergency Life Saving Management

Blood Transfusion needed > 3 units + other blood products	11	33.3
Emergency hysterectomy	4	12.1
Ventilatory care	5	15
Haemodialysis	3	9.09
ICU care with Inotropic drugs	7	21.2

Hemorrhage (n=10) was the leading cause of near miss in our study as depicted in Table 1, with APH (n=3) and PPH (n=7) both contributing most to it. Ectopic pregnancy leading to massive hemorrhage contributed to five near miss cases. The second important cause was Pre-eclampsia and eclampsia leading to organ dysfunction. Disseminated Intravascular Coagulation (n=5) was the most fatal cascade arising from massive hemorrhage and severe hypertension in our study as seen in Table 4. Multiple blood and blood products transfusion (more than 3 units) was used as life saving in 11 patients.

Emergency Hysterectomy was performed in four cases and it proved to be the major surgical life -saving intervention performed in our study. These patients were mostly delayed referrals from other hospital or delay in seeking health care facility with the diagnosis of ruptured uterus and neglected obstructed labor. Ventilatory support which becomes inevitable in few near miss cases was used in five patients. Patients with massive hemorrhage (n=3) went into renal failure and needed heamodialysis. Sepsis and pulmonary edema was the third leading cause of near miss in our study.

All these patients received appropriate treatment and recovered almost completely. They stayed in ICU/HDU till they become stable. On subsequent follow-up they showed optimum recovery.

DISCUSSION

Incidence of Near miss case 13.8 per 1000 live birth which was comparable to prevalence varied from 0.6 and 14.9% studied by Tuncalp et al in 2012.[5]

The first and most common delay identified was at the patient level. Lack of seeking proper antenatal, intrapartum or postnatal care, delay in transferring serious cases to health centre and lack of money were major factor responsible for maternal near miss and mortality.[6]

Primary obstetrical factors or complications leading to women to near miss are almost same all over the word with hemorrhage and hypertensive complications contributing higher percentages.[7] The most common initiating obstetrics condition leading to maternal near miss was hemorrhage 54% which include ante partum hemorrhage, post partum hemorrhage, ruptured ectopic pregnancy and rupture uterus. It appears to be the constant finding in most of the studies performed in other developed and developing countries.[8] Hypertensive disorders were the second most frequently found (21.2%) complication. Its contribution in maternal near miss cases is almost the same as hemorrhage[9] sometimes even more serious than hemorrhage.[10]

A major advantage of studying near miss cases is that because the woman survives, she can be interviewed after that event to find out the cause. This allows proper assessment of missed opportunities, especially with respect to health administration and patient oriented factors, and to develop a maternal audit system.[11]

Identifying the cause of near miss gives us an indication of the most prevalent factor which if not identified and treated properly lead to unfavourable outcome. In this study, the most common initiating obstetric condition leading to near miss was hemorrhage (42.8%), followed by acute severe hypertension and then sepsis. Our results were in accordance with many other studies.[12]

Ruptured uterus and neglected obstructed labor in our study leading to Cesarean Hysterectomy were mostly delayed referral from other hospital due to lack of senior doctor residing there. Overall delayed referral from other hospital was found to be an important factor leading to near miss. This is in accordance with the study done on Maternal Near Miss review by K. Lavanya et al. Reports from Nigeria[13], Ghana, Ethopia[14] and Bangladesh indicated that about 75% of cases of uterine rupture were due to obstructed labor. These patients were referred late to the tertiary hospital and most of them landed in caesarean hysterectomy. Rozna Mustafa et.al Study on Near Miss in Obstetrics at Fatima Hospital, Baqai Medical University, Pakistan, showed obstructed labor as an important cause of emergency hysterectomy.[15] The main reason for these patients landing in hysterectomy was delayed referral. However ignorance, reluctance on the part of patient/ relatives, delay in transferring serious cases to the hospital and lack of money were other factors responsible.

Every obstetric unit should be able provide initial critical evaluation for obstetric dying emergencies and management should be prompt and team work is required to save the maternal lives.

CONCLUSION

Maternal Near Miss Study is a tool to identify and intensely manage these women in high dependency care. This categorization is helpful in optimally utilizing the available resource

for providing best of care. It also gives idea of the three delays either at patient level due to ignorance or at referral hospital level or due to transport and socio-economic reason. It further enables the institution to coordinate with the referring facilities as to the proper obstetric first aid that needs to be provided to the woman prior to referral. The important causes of maternal near miss-hemorrhage, severe hypertension and sepsis leading to organ dysfunction or failure need special attention and aggressive management.

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