

Management and Identification Features of Near Miss Cases - A Prospective Study

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ABSTRACT

Introduction: WHO maternal near miss approach is a standardized method which is implemented in 3 steps i.e. baseline assessment, situation analysis and interventions for improving health care. Hence, present study was undertaken to identify and evaluate the occurrence and causes of severe maternal morbidity i.e. near miss cases.

Material and Methods: The present study was conducted in the department of Obstetrics and Gynaecology, Rajindra Hospital, Patiala over a period of one and a half year. The study was conducted on the patients admitted in labour room including referred, emergency and booked admissions. Women with severe complications of pregnancy / labour/ puerperium irrespective of gestational age as per the WHO near miss criteria were identified and studied.

Results: Distribution of cases according to clinical criteria include maximum cases of loss of unconsciousness for more than 12 hours i.e. 18.7%, shock 13.8%, clotting failure 13%, respiratory rate <6/min or >40/min in 8.1%, oliguria in 7.3% and jaundice with severe preeclampsia in 5.7% cases. Distribution of near miss cases according to laboratory criteria, and oxygen saturation <90% for >60 min in 14.6% cases. 5.6% cases with acute thrombocytopenia and serum bilirubin >6 mg/dl and serum creatinine >3.5% in 0.8% cases.

Conclusion: The need for identifying the patient's condition and deciding for the referral on time and to the right centre is a critical step towards saving a maternal death. The core of the health system should emphasize on 'when to refer' and 'where to refer' policy. Referral should be on time so that any untoward incident can be averted and referring a patient to a tertiary care centre where all the emergency back up facilities are available like ICU, 24 hour Blood bank services, apex obstetrical intervention and inter departmental expertise and care. The problem of initial assessment, problem identification, management plan and follow-up of cases depends on a very crucial task of history taking.

Keyword: Maternal Health; Maternal Morbidity; Near Miss Cases

INTRODUCTION

In any setting women who develop severe acute morbidity during pregnancy share many pathological and circumstantial factors related to their condition. While some of them die, a proportion of women narrowly escape death which come under maternal near miss category. Many maternal deaths occur at home or in transit which makes it difficult to obtain complete information regarding maternal death and its cause, especially in developing countries. Near miss cases survive these complications and therefore can provide vital information. By evaluating these cases with severe maternal

outcome we can get to know about processes in health system (or lack of them) to deal with maternal morbidities.¹ The near miss criteria developed by WHO technical group have been tested and validated, as being able to provide robust and reliable data. The WHO working group has also developed a set of indicators for the assessment of quality of care within a health care facility or the health system.² These process indicators assess the gap, between the actual use and optimal use of high priority effective interventions, in prevention and management of severe complications related to pregnancy. WHO maternal near miss approach is a standardized method which is implemented in 3 steps i.e. baseline assessment, situation analysis and interventions for improving health care. In this context, WHO has recommended that all deliveries should be attended by a skilled health care worker so that effective intervention can be implemented to prevent and manage any complication that arise during childbirth.^{2,3} Hence, present study was undertaken to identify and evaluate the occurrence and causes of severe maternal morbidity i.e. near miss cases.

MATERIAL AND METHODS

The present study was conducted in the department of Obstetrics and Gynaecology, Rajindra Hospital, Patiala over a period of one and a half year. The study was conducted on the patients admitted in labour room including referred, emergency and booked admissions. Women with severe complications of pregnancy / labour/ puerperium irrespective of gestational age as per the WHO near miss criteria were identified and studied.

The first step in implementing the near-miss approach was to systematically identify women with severe complications

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of pregnancy.

The study is conducted based on WHO 2010 near miss criteria. The latest Near-miss operational guidelines are issued by Government of India in 2014. The salient features of 2014 guidelines are as follows-

For diagnosing a maternal near miss, minimum three criteria should be met. One from clinical criteria (symptoms or signs), secondly from investigations and thirdly, intervention done or any single criteria which signifies cardio respiratory collapse as indicated by a Heart symbol. The clinical criteria have been divided as

Pregnancy specific obstetric and medical disorders which includes hemorrhage, hypertension, sepsis, post partum collapse, cardio respiratory failure.

Pre-existing disorders aggravated during pregnancy like anaemia (includes iron deficiency anaemia, thalassemia, sickle cell anaemia, aplastic anaemia), respiratory dysfunction, hepatic dysfunction, cardiac dysfunction, endocrinal disorders like diabetic ketoacidosis, thyrotoxicosis, thyroid storm, pheochromocytoma, etc. and renal dysfunction.

Incidental and accidental causes in pregnancy like fall, violence, burns, accident, cancers, poisoning, suicide attempt, snake bite. Anaphylaxis like anaesthetic drugs, antibiotics, antimalarials, iron preparations, anticonvulsants, blood transfusions, etc. infections like malaria, tuberculosis, dengue, H1N1 infections, meningitis, encephalitis, HIV/AIDS, scrub typhus, etc.⁴

The eligibility was not restricted by gestational age at which complications occurred i.e. women having abortions or ectopic pregnancies as well as medical conditions and presenting with any of the inclusion criteria were eligible. Women that developed those conditions unrelated to pregnancy (i.e. not during pregnancy or 42 days after termination of pregnancy) were excluded.

An informed consent of the patient was obtained and the information was recorded on the proforma attached. The collected data was compiled and analysed.

RESULTS

Table 1 depicts various interventions done in near miss cases in present study, with massive blood transfusion given to 54.47% of cases, which included 15 cases of ruptured ectopic with hemoperitoneum, 17 cases of caesarean section, 2 cases of acute uterine inversion, 19 cases of atonic PPH and 2 cases of traumatic PPH and 12 cases of very severe anaemia with failure. ICU admission needed by 14.63% cases, ionotropic support (due to shock) in form of dopamine and noradrenaline needed by 12.19% cases, 18.69% cases underwent laparotomy (15 cases due to ruptured ectopic with hemoperitoneum, 4 cases due to rupture uterus followed by repair, 3 cases due to rectus sheath hematoma and 1 post LSCS case of ileal resection followed by ileostomy) and 3.25% underwent hysterectomy (1 case due to placenta praecreta, 2 cases due to placenta accreta and 1 case due to rupture uterus beyond repair.

(The total of this table does not sum upto 123 as one patient underwent more than one form of treatment.)

Table 2 shows distribution of cases according to clinical criteria include maximum cases of loss of unconsciousness for more than 12 hours i.e. 18.7%, shock 13.8%, clotting failure 13%, respiratory rate <6/min or >40/min in 8.1%,

Intervention	Number	Percentage (%)
Massive blood transfusion	67	54.47
Magnesium sulphate therapy	27	21.95
Laparotomy	23	18.69
ICU admission	18	14.63
Higher antibiotic use	17	13.82
Inotrope use	15	12.19
Peripartum Hysterectomy	4	3.25

Table-1: Management based identification of near miss cases and intervention performed

Clinical criteria	No. of cases	Percentage (%)
Loss of consciousness >12 hours	23	18.7
Shock	17	13.8
Clotting failure	16	13
Respiratory rate <6/min or > 40/min	10	8.1
Oliguria	09	7.3
Jaundice in presence of pre eclampsia	7	5.7

Table-2: Distribution of clinical criteria for identification of near miss cases

Laboratory findings	No of patients	Percentage (%)
Oxygen Saturation <90% for >60min	18	14.6
Acute thrombocytopenia <50,000	7	5.6
S.Bilirubin >6mg/dl	7	5.6
S. Creatinine >3.5 mg/dl	1	0.8

Table-3: Laboratory criteria for identification of Near miss cases

Type of admission	Number	Percentage (%)
Referred (unbooked)	90	73.1
Referred (Booked outside)	23	18.8
Self (came on their own)	10	8.1

Table-4: Type of admission at tertiary care centre

Anc Care	Number	Percentage (%)
No antenatal visit	90	73.1
3 or more antenatal visits	23	18.7
Less than 3 antenatal visits	10	8.1

Table-5: Level of Antenatal Care

Health facility	Number N=23 (booked)	Percentage (%)
Civil Hospital	11	47.8
CHC	5	21.7
Private hospital	4	17.39
PHC	2	8.6
Tertiary centre	1	4.3

Table-6: Antenatal visits at various health facilities among booked cases

Level of consciousness	No. of patients N=123	Percentage (%)
Conscious	86	69.9
Unconscious	24	19.5
Semiconscious, responding to painful stimuli	7	5.7
Semiconscious, responding to verbal commands	6	4.9

Table-7: Condition of patient on arrival at tertiary care centre

No of centres	No. of patients N=123	Percentage (%)
Visited 1 centre	119	96.7
Visited 2 centres	4	3.3
Visited >2 centres	0	-

Table-8: Number of referral centres patient visited before reporting to tertiary care centre

Time taken	No. of patients N=123	Percentage (%)
1 hour	54	43.9
Less than 3 hours	62	50.4
3 or more hours	7	5.69

Table-9a: Time taken to reach tertiary care centre

Distance travelled	Number of patients N=123	Percentage (%)
Less than 50km	54	43.9
51-100 km	66	53.6
More than 100km	3	2.43

Table-9b: Distance travelled in Kilometers to reach tertiary care centre

oliguria in 7.3% and jaundice with severe preeclampsia in 5.7% cases.

Table 3 shows distribution of near miss cases according to laboratory criteria, and oxygen saturation <90% for >60 min in 14.6% cases. 5.6% cases with acute thrombocytopenia and serum bilirubin >6 mg/dl and serum creatinine >3.5% in 0.8% cases.

Table 4 shows distribution of patients according to type of admission. 90 patients (73.1%) were referred as unbooked, 23 cases (18.7%) were booked and 10 cases (8.1%) came directly from home who had received irregular antenatal care.

Table 5 shows number of patients who received antenatal care. 90 cases (73.1%) had not received antenatal care (unbooked unsupervised pregnancies), 23 cases (18.7%) patients received antenatal care and were booked while 10 cases (8.1%) had less than 3 antenatal visits.

Distribution of antenatal visits at various levels of health facilities. Out of 23 booked cases, 21.7% patients had antenatal visits at CHC, 47.8% had ANC visits at Civil hospital, 17.39% in private hospital, 8.6% in PHC and 4.3% had ANC visits in tertiary center (table-6).

Table 7 shows distribution of patients according to their condition on arrival. 69.9% patients were conscious on

arrival, 19.5% were unconscious on arrival. 5.7% were responding to painful stimuli. 4.9% were responding to verbal commands on arrival.

Table 8 shows that 96.7% of patients visited 1 centre while 3.3% patients visited more than 2 centers before reaching our center.

Table 9a shows time taken to reach our center. 43.9% patients reached with 1 hour, 50.4% reached in less than 3 hours and 5.69% reached in more than 3 hours (4 patients went to more than 2 health care facilities before reaching our tertiary care centre).

Above table 9b shows distance travelled to reach tertiary care centre with 53.6% cases travelled 55-100km. 2.43% patients were referred from centre located at a distance of 110 km from our tertiary care centre.

DISCUSSION

When the cases were identified according to clinical criteria of maternal near miss cases, 18.7% cases had loss of consciousness for more than 12 hours, 13.8% cases were in shock, 13% cases had clotting failure, followed by respiratory distress in 8.1% cases and jaundice with severe preeclampsia in 5.7% cases. Study conducted by Taly et al⁵ reported 52% cases of shock, clotting failure in 1% cases, respiratory distress in 1% cases. Brace et al⁶ reported shock 3% cases, clotting failure in 7.74%, respiratory distress in 9% and loss of consciousness in 13% cases. Panday et al⁷ reported shock in 53% cases, respiratory distress 17.7%, clotting failure in 4% cases and loss of consciousness in 11.3% cases.

In our study, distribution of maternal near miss according to management based criteria showed 54.47% cases received massive blood transfusion i.e. 5 or more blood or products, 21.95% received magnesium sulphate therapy for either eclampsia or impending eclampsia. ICU admissions were 14.63% and 12.19% patients needed ionotropic support. 3.25% patients underwent peripartum hysterectomy in view of uncontrolled hemorrhage due to placenta accrete and percreta and/or rupture uterus beyond repair. Study by Rajakumari et al⁸ reported blood transfusion in 31% cases, ICU admissions in 73.49%, peripartum hysterectomy in 3.53% cases.

Study conducted by Roopa et al⁹ reported 56.4% primipara and 43.6% multipara. Bashour et al¹⁰ reported 25.8% primipara and 43.2% multipara cases. In present study primipara were 31.7% and 68.3% multipara cases. Our results matched with Bashour et al¹⁰ and Roopa et al.⁹ Roopa et al⁹ reported 12.9% cases in first trimester, 4.5% in second trimester and 57.2% in third trimester and 25.1% postnatal cases. In the present study 12.2% cases were reported in first trimester, 17.8% in second trimester, 42.4% in third trimester and 27.6% in postnatal period. Our results matched with Roopa et al⁹ except in second trimester gestational age which had 17.8% patients. Rathoud et al¹¹ had 67% cases in antenatal period and 32.9% in postnatal period. Results of present study matched with Rathod et al.¹¹

Study by Brace et al (2004) reported loss of consciousness >12 hours in 13% cases, shock in 3% cases, clotting failure

in 7.74%, gasping in 8%, respiratory rate <6/min or >40/min in 9% cases, oliguria in 10% and jaundice in presence of preeclampsia in 2.3% cases. Panday et al⁷ reported loss of consciousness in 11.3% cases, shock in 53%, clotting failure in 4%, respiratory rate problems in 17.7%, oliguria in 11.8% and jaundice in presence of preeclampsia in 3.6% cases. Present study concluded loss of consciousness in 18.7% cases, shock in 13.8%, clotting failure in 13%, gasping in 9.8% cases, respiratory rate <6/min or >40/min in 8.1%, oliguria in 7.3% and jaundice in presence of preeclampsia in 5.7% cases. Results of present study matched with Brace et al (2004) and Panday et al⁷ except shock was in 13.8% cases which is one fourth of the cases in Panday et al.⁷ Clotting failure in 13% cases which is almost 3 times the study by Panday et al⁷.

Study by Panday et al⁷ reported 8.21% cases with oxygen saturation <90% for >60 min, acute thrombocytopenia in 1.26%, serum bilirubin >6mg/dl in 13.7% and serum creatinine >3.5mg/dl in 11.8% cases. The present study reported oxygen saturation <90% for >60minutes in 14.6% cases, acute thrombocytopenia in 1.26% cases, Serum bilirubin >6mg/dl in 5.6% and Serum creatinine > 3.5mg/dl in 0.8% cases. Results matched with Panday et al⁷ with difference in Serum bilirubin parameter which was 13.7% in Panday et al⁷ and 5.6% in present study. Also serum creatinine parameter was much less in the present study 0.8% as compared to Panday et al⁷ which had reported 11.8% cases.

Study by Panday et al⁷ reported massive blood transfusion in 38% cases, magnesium sulphate therapy in 18% cases, ICU admission in 2.8% cases, higher antibiotic use in 10% cases, peripartum hysterectomy in 5.21% and dialysis in 1% cases. In the present study, massive blood transfusion was in 54.47% patients, magnesium sulphate therapy in 21.95%, ICU admission in 14.63%, higher antibiotic use in 13.82%, ionotrope use in 12.19%, peripartum hysterectomy in 3.25% and dialysis in 0.8% patients. The results of our study matched with Panday et al⁷ and differed in two parameters i.e. ICU admissions were 7 times more in our study and ionotrope use was one fourth of Panday et al.⁷ Rajakumari et al⁸ reported blood transfusion in 31%, ICU admission in 73.49%, higher antibiotic use in 8.48%, peripartum hysterectomy in 3.53% and dialysis in 1.06%.

In the present study 24.7% had vaginal delivery, 46.9% underwent caesarean section, laparotomy for ruptured ectopic done in 18.5% cases and laparotomy for rupture uterus done in 9.9% cases. Bashour et al¹⁰ reported that 9.4% patients had vaginal delivery, 65.6% patients underwent caesarean section which included both LSCS and classical caesarean and laparotomy was performed in 25% patients. In the present study results matched with Bashour et al⁷ in caesarean section and laparotomy.

A stratification of delays is the need of the hour to improve the maternal outcome and improve the maternal near-miss and maternal death ratio. The education and awareness needs to be created among the patients and their attendants by addressing their problems like- money, ignorance and

reluctance on the behalf of relatives to approach a health care facility. The problem of money and reluctance has been solved by Government programs like JSSK, JSY and PMSMA. In these programs, government is providing free of cost delivery, drugs and food for the antenatal and postnatal patients. The institutional delivery rate has increased since these implementations. In PMSMA the lady is given benefit of free ANC check up under one roof which includes registration of pregnancy, free blood and urine tests, free distribution of iron folic acid tablets and other drugs if required, free ultrasound facility and free institutional delivery. This camp is held on 9th of every month. If 9th is Sunday/holiday, the camp is held on 10th / next day. More and more private hospitals and practitioners are also encouraged to hold this camp and contribute to the society. Administrative delays like transport, has been addressed by 24 hour free of cost ambulance service started by Punjab government (commonly called as Dial 108) which transports an antenatal patient at any time (be it day or night) to a health care facility. The availability of a 24 hour blood bank service also solves the problems of taking up high risk cases for caesareans and other operative procedures.

CONCLUSION

The need for identifying the patient's condition and deciding for the referral on time and to the right centre is a critical step towards saving a maternal death. The core of the health system should emphasize on 'when to refer' and 'where to refer' policy. Referral should be on time so that any untoward incident can be averted and referring a patient to a tertiary care centre where all the emergency back up facilities are available like ICU, 24 hour Blood bank services, apex obstetrical intervention and inter departmental expertise and care. The problem of initial assessment, problem identification, management plan and follow-up of cases depends on a very crucial task of history taking. An in-depth detailed history extracted from the patient, her relatives and ASHA worker can provide an insight about missing and hidden information. Studying near miss in detail allows us proper assessment of opportunities that were missed, analyzing the gaps and patient care related factors, thereby helps to develop an audit system for maternal care. Managing a near miss case is a team work and prompt and objective intervention can avert a maternal death.

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