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OBSTETRIC ADMISSION TO THE INTENSIVE CARE UNIT: A ONE YEAR REVIEW

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ABSTRACT

Objective: To review all critically ill obstetric patients transferred to intensive care unit(ICU), its frequency, indication for admission, intervention required and outcomes and factors which contribute the maternal mortality.

Methdology: This descriptive study was conducted in department of Obstetrics and Gynaecology Unit II of Liaquat University Of Medical and Health Sciences Hospital, Hyderabad From 1st July 2011 to 30th June 2012. All pregnant women up to 6 week postpartum admitted in our department and subsequently shifted to ICU were included in our study. Data collected includes maternal age, parity, gestational age, booking status, indication for ICU transfer, intervention after admission in ward and in ICU, length of stay, and mortality during hospitalization and cause of death were recorded in predesigned proforma and data was analysed by using SPSS version and frequency and percentages were caculated.

Results: Total 3800 deliveries occurred in 1 year duration. Out of which 83 women were admitted in our department and then shifted to ICU thus representing the frequency of 2.1% or 1 in 46 deliveries. Majority 63(76%) women were young and belong to age group between 21-30 years of age and most of them 41(49.4%) were multigravida. Sixty four (77%) were un-booked. The most common indication for admission were hypertensive disorders of pregnancy (52%), obstetrical haemorrhage(22.8%), sepsis (10%), liver disorders of pregnancy (7%), anesthesia complications(2.4%) and Dissiminated intravascular coagulation(2.4%).The most common mode of delivery was caesarean section in 49.4% women while 37.4% women delivered vaginally. 71% women required mechanical ventilation and 53% required inotropic support. There were 38(46%) maternal deaths and causes were multiorgan failure, intracerebral haemorrhage, dissiminated intravascular coagulation and septic shock syndrome.

Conclusion: The need for maternal intensive care should be one of most important measure considered in the quality of maternal care. Early admission and management of critically ill obstetric patients in ICU may decrease the maternal morbidity and mortality.

Keywords: Intensive care unit, Hypertensive disorders of pregnancy, Mechanical ventilation, Multi-organ failure

INTRODUCTION

To become a mother and to have a baby is the dream of every married woman. The quality of obstetric care in a country or a region can be measured by studying the maternal mortality rate. All pregnant women are at risk of obstetric complications and most of these occur during labour and delivery. Critically ill obstetrical patients are usually young and healthy.[1] Critically ill obstetrical patients accounts for as much as 7% of intensive care unit admissions in developing countries, while they account for small proportion between 0.1 and 0.9% in developed countries.[1,2,3]

There is growing evidence that admission of high risk patients to the intensive care unit is associated with a fall in maternal mortality. [3] Some centres have a obstetrical ICU but most use general ICU to manage critically ill obstetric patients.

Various indicators are used to asses severe acute maternal morbidity (SAMM), in the literature. In the recent World Health Organization Systemic review of maternal morbidity and mortality, transfer to ICU was taken as a indicator for assessing the prevalence of SAMM World wide.[4] ICU facilities were needed in approximately 1 in 3 of all the maternal deaths in United Kingdom.[5]

Maternal death has become an extremely rare event in the developed countries with rates between 5-10 per 100000 deliveries, [6] which has weaken its value as a quality assurance indicator for maternity care. Current maternal mortality rate in developed countries were 9.5 per 100000 in Japan to 2.4per 100000 in Canada.[7]

Care of critical ill parturients is a unique challenge in obstetrics because of its un-predictability. Hypertensive disorders of pregnancy, haemorrhage and sepsis are the leading cause of maternal morbidity and as well as ICU admission in Western World and Asia.[7,8] . Pregnancy, delivery and puerperium can be complicated by severe maternal morbidity necessitating ICU admission. Management of critically ill obstetric patient is very complex and require the co operation of Obstetrician, Intensivisits and Anesthestist.[9]

The aim of our study was to evaluate all the critically ill obstetric patients who needed ICU admission, its frequency, indication for admission, intervention required and their outcome and also to identify the factors which contribute the maternal mortality in order to identify failures and priorities in the maternal health care provision in our setup.

MATERIAL AND METHODS

A prospective study was conducted in department of Gynaecology and Obstetrics Unit-II of Liaquat University of Medical And Health Sciences Hospital Hyderabad in collaboration with general ICU of Liaquat University Hospital Hyderabad from 1st July 2011 to 30th June 2012. All pregnant women up to six weeks postpartum who were admitted in our department and subsequently shifted to ICU were included in our study. During study period there were 3800 deliveries, out of them 83 patients were shifted to ICU thus representing the frequency of 2.1% or 1 in 46 deliveries.

Data retrieved contained age, parity, gestational age, booking status, mode of delivery, indication for ICU admission, intervention in ICU, length of ICU stay and outcome. These patients were followed up until discharge from hospital or until death, which ever occurred first. Lastly data were thoroughly reviewed after entered in predesigned proforma and then compiled data was

TABLE # 01:
DEMOGRAPHIC CHARACTERISTICS OF PATIENTS (N=83)

Characteristics	Number	Percentage
Age (years)		
<20	5	6
21-30	63	76
31-40	15	18
Parity		
Primipara	26	31.3
Multipara	41	49.4
Grand multipara	16	19.3
Booking status		
Booked	19	23
Unbooked	64	77

TABLE # 2:
INDICATIONS FOR ICU ADMISSION (N=83)

Indication	Number	Percentage
Hypertensive disorders of pregnancy	43	52
Obstetrical haemorrhage	19	22.8
Sepsis	8	10
Liver disorders of pregnancy	6	7
Anesthesia related complication	2	2.4
Dessiminated intravascular coagulation	2	2.4
Blood transfusion reaction	2	2.4
Mitral Valve prolapse	1	1

analysed on SPSS version 11 to interpret the results in terms of frequency and percentages.

RESULTS

In the one year period from 1st July 2011 to 30th June 2012, 3800 women delivered in the hospital, out of them 83 obstetrical patients were transferred to general ICU thus representing the frequency of 2.1% or 1 in 46 deliveries, Out of 83 obstetric patient shifted to ICU 45 (54%) were survivors and shifted back to ward after stabilization while 38 (46%) were non survivors. Most of our patients 64 (77%) were un-booked none of them received antenatal care at all. Majority of patients 63(76%) were young between 21-30 years of age and mostly 41(49.4%) women were multigravida, 26(31.3%) were primiparae while 16 (19.3%) women were grandmultiparae (Table#1). Antepartum admission 65(78%) were significantly more as compared to postpartum period admission 18(22%).

The most common underlying disorder for admission to ICU was hypertensive disorder of pregnancy seen in 43(52%) of women followed by Haemorrhage in 19(22.8%) women . Sepsis accountes in 8(10%) of patients which was preceded by history of prolonged and neglected labour in most cases. Liver disorder of pregnancy accounts for 6 (7%) women who got admitted in ICU. Other reasons were blood transfusion reaction, dessiminated intravascular coagulation, spinal shock and mitral valve prolapse (Table#2)

The most common mode of delivery was emergency caesarean section done in 41 (49.4%) while 31(37.4%) women delivered vaginally. 5(6%) women had a laparotomy due to puerperal sepsis. Hysterectomy were carried out in 2 (2%) patients, Modified B-Lynch sutures applied in 2 (2%) due to the uncontrolled bleeding because of postpartum heamorrhage. 2 (2%) patients required dilatation and curettage due to retained products of conception following induced abortion (Table#3).

Airway protection became necessary in 59(71%) women who were intubated and subsequently given mechanical ventilation .A large number 44(53%) of patients did require the ionotropic support along with blood transfusion for maintainace of haemodynamics.

Total period of stay in ICU varied from 1 to 20 days.

38(46%) women out of 83 expired in ICU, the reason for death were multiorgan failure, intracerebral haemorrhage , dessiminated intravascular coagulation and septic shock syndrome seen in 29 (76.4 %), 5(13.2%) , 2(5.2%),2(5.2%) respectively.

DISCUSSION

Pregnancy is a natural physiological process and in the majority of women proceeds un-eventually. However, physiological and anatomical changes can cause severe morbidity and mortality in few women.[7] Complications during pregnancy or in a postpartum period can be life threatening and require intensive care.[10] Intensive care unit offers the opportunity to improve patients care. Close observation in the ICU allows problem to be detected and in some cases, complications may be prevented so that patients can recover more quickly. Care of critically ill patients can be managed more easily in ICU.[10]

We observed that 83 i.e 2.1% of obstetric patients were transferred to general ICU while its frequency was 1.34% and 1.4% in developing countries reports.[11,12] In other studies the frequency of ICU admission of obstetric patient varied from 0.10-0.9%.[7,10,13] Although our most of patients admitted in ward in antepartum period but 92% of women shifted in ICU in postpartum period, which was similar with the study of Freda Richa,which revealed that 94% of obstetric admission in postpartum period.[7] Okafor and Aniebue also reported a preponderance of postpartum admission in their study.[3]

Obstetrical patients are usually young as in our study about 63(76%) were between 21-30 years of age and most of them were multiparous it was matched with the study of Bibi S.[11] Most of our parturients at term (37 weeks of gestation), which was similar with study done in India,14 while it contradict with study of Bibi S.[11]

Lack of antanatal care was associated as a risk factor for ICU admission as majority 77% of our patients were unbooked, as observed in other study .[11]

It has been reported that most common reasons for ICU admission for obstetric patients were hypertensive disorders and massive obstetric haemorrhage.[6,15,].In our study hypertensive disorder of pregnancy was the first leading cause of ICU admission and accounts about 52% of admission,out of 52% ,26% were due to eclampsia, it matches with the study of Freda Richa and others .[3,7,8] As eclampsia is the leading cause of maternal morbidity and mortality, and the morbities including intracerebral haemorrhage , and acute renal failure were usually causes of death as reflected in our study . So early detection, prompt referral to tertiary centres and aggressive management of these patients particularly in labour and postpartum period along with provision of intensive care facilities to provide the optimum care of circulation, blood pressure and ventilation could minimize the prevelance of multiorgan failure and mortality of critically ill patients.

Obstetrical haemorrhage was the second most common indication for ICU admission and representing 22.8% of obstetric admission which is closer to the studies from Nigeria , France and Turkey.[3,7,10] while it was the third leading cause of ICU admission (13%) in

TABLE # 3:
Intervention done before shifting to ICU (n=83)

Intervention	Number	Percentage
Caesarean Section	41	49.4
Vaginal delivery	31	37.4
Laparotomy	5	6
Hysterectomy	2	2.4
B- Lynch Suture	2	2.4
Dilatation & curettage	2	2.4

the study conducted in Pakistan.[11]

Sepsis accounted for 10% of ICU admission, it was comparable with the study of Demirkiran et al .[10] while Freda Richa and Bibi S reported 26.7% and 17% of infections respectively.[7,11] In most of patients sepsis followed by prolonged and neglected labour.Majority of them developed multiorgan failure and died .which is also reported by Afessa B,et all .[16] Provision of clean and safe delivery services will decrease infection related morbidity and mortality. Liver disorders of pregnancy needed 7% of ICU admission which was not found in any other study.

In our study 2.4% women had anesthesia related complication leading to ICU admission , it was higher in the studies of Panchal et al and Tripathi et al who reported 4.4%,26 % admission rate from anesthesia related causes respectively. [17,18]Dessiminated intravascular coagulation was observed in 2.4% of women,it was higher about 11.18% in the study done in Karachi.[19]

The majority (49.4%)of obstetrical patients were transferred after Casearean section and 37.4% after vaginal delivery while in the study at France 73.3% of patients were transferred to ICU after Caesarean section.[7] Hysterectomy due to haemorrhage was carried out in two patients while it was carried out in 10 patients in the study done in Karachi .[19] Two patients required Modified B- Lynch due to uncontrolled bleeding and two patients required dilatation and currattage due to retained products of conception. 59 (71%) critically ill patients required mechanical ventilation during their stay in ICU, the rate similar to that reported by Gupta S .[14] while the rate was lower in the other study .[7,20]

Mean length of ICU stay was higher in our study (varied between 1 to 20 days) then the reported length in the previous study.[6,7]. In our study this more prolonged stay may be attributed to more severe cases.

There were 38 (46%) maternal deaths ,while the rate varies between 1.3- 41.2% in different studies.[3,7,8,11,18,21,22] and was quite high i.e 68.4% in the study done in Karachi. [19] The first leading cause of maternal mortality was multiorgan failure occurred in 76.4% of cases ,it is closer to the study done in India in which it was 80% .[14] other cause of death was Intracereberal haemorrhage secondary to eclampsia occurred in 13.2% of women, while it was 50% in the study done in SaudiArabia.[23] The intracerebral haemorrhage can be prevented by controlling the hypertension. Other causes of maternal death were dessiminated intravascular coagulation and Septic shock syndrome seen in 5.2%, 5.2% respectively while the rate was doubled i.e 10% in India.[14] Optimum care of circulation ,respiration at an early stage can clearly minimize the incidence of multiorgan failure and late mortality in all critically ill obstetric patients.

CONCLUSION

The most common indications for admitting obstetric patients to ICU were Hypertensive disorders of pregnancy, Haemorrhage and Sepsis. A close follow-up of high risk patients and an optimal stabilization of their condition before intervention are well known to improve the outcome of these patients and decrease the morbidity and mortality. The admission rate to the intensive care and the problems faced by critically ill parturients may be reduced by providing optimal prenatal care , improving the management of hypertensive disease during pregnancy and reducing the incidence of hemorrhagic complications. The pattern of obstetric admission to our ICU is similar to that in Europe and Asia , but the mortality rate is generally higher. Early admission of patients and availability of intensive monitors will help in reducing the mortality rate. The multidisciplinary approach has been recommended by the reports to improve patient outcome and maternal mortality.

Of course, the need for maternal intensive care should not be the only criteria considered in the quality of maternal care but it must be one of the most important ones.

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