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FETOMATERNAL OUTCOME IN OBSTETRIC PATIENTS REQUIRING CRITICAL CARE IN A TERTIARY CARE HOSPITAL.

Obstetrics & Gynaecology

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ABSTRACT

This retrospective observational study was conducted at the Department of Obstetrics & Gynecology at LTMMC & LTMGH Sion, Mumbai for a duration of 12 months (from January 2020 till December 2020). Aim: To study fetomaternal outcome in obstetric patients requiring critical care in tertiary care hospitals. Inclusion criteria: All the patients admitted and delivered or operated and transferred to the surgical ICU ward. Methodology: Data collected from case records and medical record books of hospitals. Result: In this study, a total of 139 obstetric patients were admitted in ICU which constituted 1.98 % of total deliveries and 1.1 % of ICU admissions. Major obstetric causes of ICU admission were hypertensive disorder of pregnancy(35.9%), haemorrhage(28%), ectopic pregnancy(11.5%). There were 11 maternal deaths.

KEYWORDS

fetomaternal outcome, ICU, obstetric patients, tertiary hospital

INTRODUCTION

The government of India has adopted many health schemes and policies for increased awareness about antenatal care and safe pregnancy outcomes, still management of pregnancy complications remains a big challenge for obstetricians as well as society. In developing countries obstetric morbidity and mortality is a serious public health issue. To prevent such mortalities and manage morbidities multidisciplinary team approach including well-equipped intensive care units with medicine and obstetric expertise is required.

Emergency and essential obstetric care is the right of every pregnant women.The need of obstetric ICU depends upon socio economic status, education, quality of antenatal care, training of health care providers. A favourable obstetric outcome depends upon availability and accessibility of critical care services and medical expert team. The requirement of ICU among obstetric patients in developing countries like ours is 0.84 – 0.87 while in developed countries it is as low as 0.08 (1,2,3,4).

The purpose of our study is to evaluate maternal and fetal outcomes of obstetric patients requiring critical care in a tertiary level hospital in India.

MATERIALS AND METHODS

This retrospective observational study was conducted at the Department of Obstetrics & Gynecology at LTMMC & LTMGH Sion, Mumbai for a duration of 12 months (from January 2020 till December 2020).

Aim:

To study fetomaternal outcome in obstetric patients requiring critical care in tertiary care hospitals.

Inclusion And Exclusion Criteria :

All the patients coming to the inpatient department and delivered or operated and transferred to surgical ICU ward. Antenatal patients requiring ICU setup are excluded from the study.

METHODOLOGY:

Data collected from case records and medical record books of hospitals. The cases were analysed with respect to obstetric profile, indication of ICU admission, need for blood and blood products, ventilator and inotropic support, maternal complications, maternal and fetal morbidity and mortality. Data were entered in google sheets and results were subjected to statistical analysis using SPSS software version 22 and conclusions were drawn.

RESULT:

During the study period of 1 year, a total of 139 obstetric patients were admitted in ICU which constituted 1.98 % of total deliveries and 1.1 % of ICU admissions in the study period.

Table 1: Obstetric profile

Obstetric profile	
Age group (years)	Number 139 (%)
<20	4(2.88)
20 - 30	104(74.82)
> 30	31(22.30)
Parity	
Primipara	53 (38.13)
Multipara	86(68.17)
Gestational age (weeks)	
<20	21(15.1)
20-28	7(5.04)
29-37	62(44.6)
38-41	49 (35.25)
Booking status	
Registered	128 (92.09)
Unregistered	11 (7.91)
Referred	66 (47.4)
Timing of admission	
Postpartum	120 (86.33)
Ectopic	16 (11.51)
Abortion	3(2.15)

Most of the patients admitted to ICU were young with 104(74.8%) in the age group of 20-30 yrs . Majority 128 (92%) were registered/ booked out of which 66(47.4%) were referred to our hospital due complications or lack of facilities. Our hospital is a tertiary care hospital with all super speciality services readily available. This is why many patients from peripheral government hospitals and private hospitals are referred for emergency obstetrics and non-obstetrics

complications. 86(61.8%) were multigravida and 53(38 %) were primigravida. 62(44.6%) were delivered preterm at gestational age of 29 – 37 weeks because of complications while 49(35.2%) delivered at term. Majority 120(86.3%) were admitted in ICU in the postpartum period.

Table no.2 Major obstetric and medical conditions requiring ICU admission

Obstetric cause of ICU Admission	
Anemia	10 (7.19)
Hypertensive disorder	14 (10.07)
Sepsis	3 (2.15)
Heart disease	5 (3.59)
Medical condition	1 (0.71)
Eclampsia	36 (25.89)
PPH	15 (10.79)
APH	24 (17.26)
Poor pre-op condition	15 (10.79)
Surgeries done	
LSCS	105 (75.3)
Vaginal exploration	2 (1.43)
exploratory laparotomy	24 (17.26)
Check curettage	3 (2.15)
Hysterotomy	1 (0.71)
obstetric hysterectomy	10 (7.19)
B lynch sutures	6 (4.31)
uterine artery ligation	14 (10)

During the study 108(77.69%) were the obstetric causes of ICU admission while the remaining 31(22.3%) were non obstetric causes of ICU admission. Major obstetric causes of ICU admission were hypertensive disorder of pregnancy(35.9%), haemorrhage(28%), ectopic pregnancy(11.5%) and sepsis (2.1%). Among the non obstetric conditions, Anemia (7.1%), heart disease(3.59%), significant renal disease requiring dialysis (2.1%) and remaining 13(9.3%) were admitted in ICU for monitoring because of poor pre-operative or intraoperative condition. Most patients came to ICU after emergency LSCS 105(75.3%).

Table no.3 Therapy in ICU and maternal outcome

Therapy in ICU n(%)	
Ventilation	126 (90.64)
Inotropes	28(20.14)
Blood & Blood products	84(60.43)
Dialysis	5(3.59)
Anticonvulsant	36(25.89)
Antihypertensives	50(35.97)
Maternal outcome	
Improved	128 (92)
Expired	11 (7.91)

Mechanical ventilation was needed by almost 2/3 rd (90.6%) in ICU while only 28 (20%) required inotropic support. Majority 60% of patients were given different blood and blood products to maintain the haemodynamic balance and 3.5% of patients had significant renal disease requiring hemodialysis. After giving all the life-saving treatment and best possible muilti-disciplinary care in ICU 128(92%) lives were saved and patients were shifted to ward while 11 patients succumbed to death.

Table no. 4 Causes of maternal mortality

Cause of Maternal Mortality	
Hemorrhagic shock	1(9)
Cardiorespiratory Failure	6 (54.54)
Sepsis	4 (36.36)
Pul Thromboembolism	1 (9)
MODS	1 (9)
Covid 19	3 (27.27)

In analysing the causes of maternal mortality, about half of patients (54%) died due to cardiorespiratory failure in our hospital setting while Covid-19 infection was a contributing cause in 3 patients. Other causes of maternal mortality were haemorrhagic shock, sepsis, pulmonary thromboembolism and MODS.

Table no.5 Neonatal outcome

Neonatal outcome	
Total no. of live birth	89(64)
Total no. of IUFD	21()
NICU admission	33()

Regarding neonatal outcomes, 89 women(64%) had live birth and 21 women had IUFD. Out of 89, there were 33 NICU admission ivo prematurity, low birth weight etc.

DISCUSSION:

In this study 1.98% of obstetric patients required ICU admission compared to 0.87% in the study by Saha R et al and 0.8% by Verma et al.**2,5**. Most of our patients requiring critical care were young in the age group of 20-30 years and multigravida with postpartum status. Our findings co-relate with studies done by Verma et al, Chawala et al and Saha R et al **2,6**. In the postpartum period many patients required ICU management because of acute changes which occur just before, during and after delivery which include acute blood loss, surgery and other sudden physiological changes that tends to cope and adapt to new physiological condition.**7**. Of all admissions, 128 patients were booked out of which 66(47.4%) were referred from periphery where there is poor technical or manpower support. These results were comparable to a study conducted by Asraf et al where 60% cases are referred.Causes of referral to higher centres could be lack of equipment and manpower to manage obstetric emergencies, non-availability of blood bank and ventilator support.**8**. Timely referral to tertiary hospital is an important predictor of maternal morbidity and mortality of patients admitted to ICU for further management & stabilization.

Majority of cases admitted to ICU were post LSCS(86.3%) done for maternal or fetal indication and then transferred to ICU for some intraoperative or postoperative complication. The LSCS rate in other studies by Asraf N et al(63.3%), Saha R et al(70%) was similar to our studies.**2,9**. In our study obstetric causes were significant causes of maternal morbidity and reason for transfer to ICU as compared with non-obstetric causes. Among the obstetric conditions, major reasons for admission to ICU were hypertensive disorder(35%), Obstetric haemorrhage(28%), ectopic pregnancy(11%) and sepsis(2.1%). Hypertensive disorder and obstetric haemorrhage were most common causes of ICU admission in other studies done by Verma et al,Chawla et al, Asraf et al, Gupta et al.**6,8,9,10**. Among the non obstetric conditions, Anemia (7.1%), heart disease(3.59%), significant renal disease requiring dialysis (2.1%) and remaining 13(9.3%) were admitted in ICU for monitoring because of poor pre-operative or intraoperative condition. In contrast to this, according to a study conducted by Saha R et al, Verma et al, cardiac disease was the most common medical cause of ICU admission.**2,5**. Postpartum haemorrhage related to atonic uterus was common. Among 15 cases of post-partum haemorrhage 6 patients were managed conservatively by taking hemostatic B Lynch sutures, 2 patients were managed by ballon tamponade and remaining 7 patients required a radical approach that is obstetric hysterectomy. Obstetric hysterectomy was also done in 3 cases of ruptured uterus. We do a combined approach in managing our patients in ICU by multidisciplinary team approach consulting various specialities like medicine, pulmonary medicine, neurology, surgery, urology and intensivist. in our study, the primary indications of ICU admission were haemodynamic instability and respiratory insufficiency. 126(90.6%) patients required ventilator support in the form of continuous positive pressure ventilation while 84 patients(60.4%) required blood and blood products to maintain haemodynamic balance. Inotropes were used in 20% patients to maintain blood circulation to all vital organs. These results were similar to studies done by Verma et al, Gupta et al, Ashraf et al.**5,9,10** 5 patients required renal replacement therapy in form of haemodialysis out of 1 patient had medical renal disease and 4 patients developed acute kidney injury as complication of placental abruption. Of all the 139 patients, they were able to save the lives of 128 patients which were eventually transferred to post-natal ward after a few days of ICU stay while despite all the efforts 11(7.91%) patients succumbed to death. The incidence of maternal mortality has significantly decreased in developed countries as compared to developing countries. The increased rate of maternal mortality in developing countries like India can be attributed to low socio-economic status, poor antenatal care and nutrition, lower hemoglobin levels and lack of emergency and advanced obstetric facilities in rural areas of india. The major causes of maternal mortality in our study were cardiorespiratory failure, haemorrhagic shock,sepsis, pulmonary thromboembolism and MODS. The maternal mortality in our study was 7% which was comparable to the study conducted by Ashraf et al(13%) and Verma et al(19.1%)**5,9**. In other studies, the major cause of maternal mortality was postpartum hemorrhage. The incidence of live birth in our study

was 64% which is comparable to study done by Khan(40%) et al but less as compared to study done by Verma et al(83.5%). Out of 89 live births, 33 babies required NICU admission.**5,11**

CONCLUSION:

On the part of the healthcare system, regular ante-natal check ups, early anticipation, systematic referral system and timely detection and management of complications plays a crucial role. Optimum care of breathing, circulation, and blood pressure in a critical care set-up could minimize the prevalence of multi-organ failure and mortality in critically ill obstetric patients admitted to ICU. To achieve this, there should be a multidisciplinary team approach and all the residents of OBGY should have a short mandatory training phase in critical care to manage the obstetric patients more efficiently. After all there is a famous quote by Dr. A. P. J. Abdul Kalam "when mother is happy, family is happy & when family is happy, nation is happy."

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