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A Study of Obstetric Admission in Intensive Care Unit - One Year Study at Umaid Hospital

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Abstract: ***Obstetric patients with these complications are better served by early admission and optimal management in the intensive care unit (ICU). The admission of obstetric patients to the ICU is a challenging task for an intensivist as these patients are young and recover in a short period of time if their management is carried out at the earliest. ICU admission of obstetric patients occur approximately at 0.1-0.9 % of the deliveries.[2, 3, 4, 5] Overall maternal death rate in the ICU varies from 3.4-21 %.[6, 7, 8, 9] Inadequate knowledge about the illness and infrequent admission of the obstetric patients results in high mortality and morbidity. This study was on the prevalence pattern, clinical characteristics, reasons for admission to the ICU and the interventions required in ICU with their subsequent outcome. The most common time of admission to our ICU was during the third trimester (46.79 %) followed by postpartum period (40.37 %). Out of 560 patients, 481 (85.8 %) patient were referred and 336 (60 %) patients were booked. In our study the most common diagnoses on admission were antepartum eclampsia (29.28 %).During the ICU stay, complications like disseminated intravascular coagulation (DIC) in 100 (17.8 %) patients, acute renal failure in 94 (16.7 %), acute respiratory distress syndrome (ARDS) in 77 (13.8 %), pulmonary embolism in 8 (1.53 %) patient were observed. The ICU maternal mortality rate was 4.1 %, most common cause is irreversible hemorrhagic shock (65.2 %), cardiopulmonary arrest (8.69 %).***

Keywords: obstetric, intensive care, outcomes

1. Introduction

Life threatening complications may arise during pregnancy, labour or in the postpartum period which may require intensive care. Obstetric patients with these complications are better served by early admission and optimal management in the intensive care unit (ICU). The admission of obstetric patients to the ICU is a challenging task for an intensivist as these patients are young and recover in a short period of time if their management is carried out at the earliest. Thus, it is of utmost importance to keep a continuous vigilance so as to ensure maternal safety. The number of obstetric care admissions to an ICU is more in a developing nation when compared with the developed nation, and often this demand is not adequately met. This is attributed to various reasons such as differences in the healthcare system, socio-cultural background and ethnicity.[1] ICU admission of obstetric patients occur approximately at 0.1-0.9% of the deliveries.[2,3,4,5] Overall maternal death rate in the ICU varies from 3.4-21%.[6,7,8,9] Inadequate knowledge about the illness and infrequent admission of the obstetric patients results in high mortality and morbidity.

WHO states that, “there is a story behind every maternal death or life-threatening complication”.[10] So a better knowledge of the spectrum, characteristics, and outcomes of the disease involving this group of patients is the first step towards achieving prevention and hence, reduction of both maternal morbidity and mortality.[11] This study was on the prevalence pattern, clinical characteristics, reasons for admission to the ICU and the interventions required in ICU with their subsequent outcome.

2. Material and Method

This was a retrospective study conducted in the Gynae and Obstetric ICU of Umaid Hospital, Dr. S. N. Medical College Jodhpur, from Jan2019 to Dec2019. Data were collected from medical record of patient admitted in ICU. The data collected were based on the age of patient, obstetric status at the time of admission, the primary diagnosis, complications, the mode of delivery, intervention, maternal outcome.

3. Results

In our study of one year, total 581 patients were admitted in gynae and obstetric ICU in year 2019. Among these 560 patients were admitted due to obstetric causes and 21 patients admitted due to non obstetric causes. The mean maternal age was 28 ± 5.7 years. The most common time of admission to our ICU was during the third trimester (46.79%) followed by postpartum period (40.37%). Out of 560 patients, 481(85.8%) patient were referred and 336 (60%) patients were booked. The most common mode of delivery among the obstetric patients admitted to our ICU was cesarean section (77.4%).

Table 1: Baseline characteristics of patients

		Number
Age (in years)	18-20	56
	21-30	392
	30-40	112
Admission Time	First trimester	35
	Second trimester	27
	Third trimester	262
	Post partum	225
	Post abortion	11

Table 2: Provisional diagnosis on admission

In our study the most common diagnoses on admission were antepartum eclampsia (29.28%), post partum eclampsia (12.8%) followed by post partum hemorrhage (9.6%).

	Number	*Percentage*
Antepartum Eclampsia	164	29.2
Postpartum Eclampsia	72	12.8
Antepartum Hemorrhage	20	3.5
PPH	54	9.64
Heart Disease	11	1.96
Ectopic Pregnancy	30	5.3
Abortion	20	3.57

Ruptured Uterus	10	1.78
Preeclampsia	27	4.8
Others	152	27.14

Table 3: Complications in ICU

During the ICU stay, complications like disseminated intravascular coagulation (DIC) in 100 (17.8%) patients, acute renal failure in 94 (16.7%), acute respiratory distress syndrome (ARDS) in 77 (13.8%), pulmonary embolism in 8 (1.53%) patient were observed.

	Number	Percentage
DIC	100	17.8
Acute kidney injury	94	16.7
ARDS	77	13.8
Pulmonary embolism	8	1.53
Hepatic encephalopathy	3	0.53

Table 4: Intervention in ICU

ICU interventions included mechanical ventilation in 94 (16.7%) patients, transfusion of blood and blood products in 258 (46.2%), inotropes in 90 (16.07%), antihypertensives in 197 (35.3%), anticonvulsants in 77 (13.8%).

	Number	Percentage
Ventilation	94	16.7
Transfusion	258	46.2
Ionotrops	90	16.07
Antihypertensive	197	35.3
Anticonvulsant	77	13.8
Obstetric hystrectomy	17	3.03

Table 5: Causes of maternal deaths

The ICU maternal mortality rate was 4.1%, most common cause is irreversible hemorrhagic shock (65.2%), cardiopulmonary arrest (8.69%).

Causes	Number	Percentage
Hemorrhagic shock	15	65.21
Cardiopulmonary arrest	2	8.69
MODS	3	13.04
Intracranial hemorrhage	3	13.04

4. Discussion

The 560 obstetric patients admitted in the ICU also represent 2.59 percent of the 21540 deliveries which occurred in the hospital during that period.

The characteristics of patients admitted to ICU are a useful tool to help us in determining their clinical course. In our study 70.64% of the obstetric patients admitted were in the age group of 21–30 years. Bhadade et al. and Cleary Goldman et al. found that increased maternal age is associated with hypertensive disorders of pregnancy, eclampsia, placental problems and maternal mortality [12, 13]

The maximum number of admissions was seen during the third trimester (46.79%) and the postpartum period (40.37%). This finding highlights the importance of early detection and treatment of life-threatening conditions during the third trimester and postpartum period.

The importance of antenatal checkups cannot be overemphasised as they help us detect any abnormal conditions at the earliest. The patients who are referred are at an increased risk of complications as precious time is lost in their transport.

We observed from our study that the most prevalent provisional diagnoses on admission to the hospital were eclampsia, postpartum haemorrhage, antepartum haemorrhage, severe preeclampsia. The study done by Karnad et al. reported that 24% of their admissions to ICU were in view of obstetric haemorrhage.

As we live in developing country, the primary reason for ICU admission was in view of the anemia and subsequent need for transfusion (46.2%). Rathod et al. in their study observed that 40.5% of their patients required invasive ventilator support, admitted with reason of respiratory insufficiency.

In our study the primary cause of maternal mortality was hemorrhagic shock followed by multiorgan dysfunction syndrome (MODS).

5. Conclusion

Hemorrhage and pregnancy-related hypertension with its complications are the two common indications for ICU admissions in this study. Studying the near miss cases may help to modify the hospital processes for timely and better obstetric or medical interventions.

Obstetric morbidity and mortality continues to be an important predictor of the healthcare system in a country, and a continuous vigilance is required to assess the drawbacks and rectify them at the earliest.

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