Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2016; 4(3A):704-707 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublisher.com

Original Research Article

Evaluation of obstetric admissions to intensive care unit of a tertiary care center at Govt. medical college in Haldwani, India

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Abstract: Care of the critically ill parturients is a unique challenge in obstetrics particularly because of its unpredictability. Haemorrhage, toxaemia, anaemia and septicaemia are common causes of mortality and morbidity in these patients. This study aims to evaluate the occurrence, indications, course, interventions, and outcome of obstetric patients admitted to the intensive care unit (ICU).It was a Retrospective observational study conducted in ICU of Government Medical College, Haldwani, and Nainital. The data collected were age, parity, obstetric status, primary diagnosis, interventions, and outcome of obstetric patients admitted to the ICU from May 2014 to May 2015. Total deliveries were 2560 in 1 years. Obstetric admissions to the ICU were (n = 38) which constitutes 1.48% of deliveries. Majority of the admissions were in the postpartum period (n = 29, 76.2%). The two common indications for admission were Eclampsia (n = 11, 28.9%) and obstetric hemorrhage (n = 9, 23.6%). The most common intervention was artificial ventilation (n = 34, 89.5%). The statistical analysis was done by fractional percentage and Chi-square test.
Keywords: Intensive care unit, obstetrics, postpartum haemorrhage, ventilation, MMR.

INTRODUCTION

Care of the critically ill parturients is a unique challenge in obstetrics particularly because of its unpredictability. Admission of obstetric patients occur approximately at 0.1-0.9% of the deliveries. Overall maternal death rate in the ICU varies from 3.4-21%[1-4]. WHO states that, "there is a story behind every maternal death or life-threatening complication". 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.

MATERIALS AND METHOD

The study was a record based Retrospective observational study. All the patients admitted to ICU of Susheela Tiwari Hospital & Government Medical College, Haldwani, and Nainital during pregnancy or within six weeks of delivery were reviewed.

The data collected were age, parity, obstetric status, primary diagnosis, interventions, and outcome of critically ill obstetric patients requiring ventilatory support or major organ supportive therapy admitted to the ICU from May 2014 to May 2015. The statistical analysis was done by using fractional percentage and Chi-square test.

RESULTS

Total deliveries were 2560 in one year. The total admissions to the ICU were 2166. Obstetric patients represented 1.75% of all ICU admissions. The mean maternal age was 28 ± 5.7 years. Majority of the patients were Primipara (n = 25, 65.79%).The total admissions in postpartum period were 29 (76.32%). Most of our patients were from the lower socioeconomic background (n = 30, 78.95%), while the remaining were from the lower middle class (n = 8, 21.05%). Obstetric indications for ICU admissions were present in 29 (76.31%) of those patients and nonobstetric indications were present in 9 (23.68%) of them. Overall the most common indication of ICU admission was eclampsia (28.9%) followed by major hemorrhage (23.7%). Two patients were hypertensive. One patient of developed HELLP syndrome. Hysterectomy was performed in three patients of obstetric haemorrhage as a lifesaving method where bleeding could not be controlled. Puerperal sepsis accounted for 7.9% of the cases. 89.4% patients admitted to the ICU required mechanical ventilation. (n= 34). Transfusion of Blood and blood products was needed in 86.8% of patients (n=33). There were nine maternal deaths during the study period (23.7%), four

of which were due to Hypovolemic shock and three were due to Respiratory failure.

Table 1: Primary diagnosis at the time of admission (n=38)

	Diagnosis	**Number**	**Percentage**
S No.	**Obstetric causes**	29	76.31
1	Major hemorrhage	9	23.68
2	Hypertensive disease	2	5.26
3	Preeclampsia	2	5.26
4	Eclampsia	11	28.94
5	Hellp syndrome	1	2.63
6	Cerebrovascular accident	1	2.63
7	Sepsis of pelvic origin	3	7.89
	Nonobstretic causes	9	23.68
1	Cardiac	1	2.63
2	Liver	1	2.63
3	Respiratory failure	2	5.26
4	Anaesthetic complication	3	7.89
5	Hypovolemic shock	2	5.26

Table 2: Indications for mechanical ventilation (n=34)

S No.	**Indications for mechanical ventilation**	**Number(%)**
1	Acute respiratory failure	20(58.82)
2	Hemodynamic failure	7(20.59)
3	Impaired consciousness	2(5.88)
4	Postoperative ventilation	5(14.7)

Table 3: ICU interventions

S No.	**Interventions**	**Frequency**	**Percentage**
1	Mechanical ventilation	34	89.47
2	Blood and blood products	33	86.84
3	Inotropes	22	57.89
4	Antihypertensives	15	39.47
5	Anticonvulsants	7	18.42
6	Dialysis	9	23.68
7	Obstetric hysterectomy	6	15.79
8	Dilation and curettage	2	5.26
9	Laparotomy	4	10.52

Table 4: Cause of Maternal Death

Primary cause of death	**9**	**Primary diagnosis**	**9**
Hypovolemic shock	4	Obstetric hemorrhage	3
Multiorgan dysfunction syndrome	1	Eclampsia	2
Respiratory failure	3	Sepsis of pelvic origin	2
Cardiac failure	1	Pulmonary embolism	2

DISCUSSION:

Obstetric patients are usually young but the gestational age of critically ill parturients shows a variance in different studies [5-7]. In our study the total admissions in postpartum period were 29 (76.32%) and most of the patients were admitted for Eclampsia while in the studies from developed countries, they were admitted for Pre- eclampsia 5, 6, 7] Studies done by, Niyaz *et al.;* [8] Ghike *et al.;* [9] and Lataifeh *et al.;* [10] found that hypertensive spectrum of diseases were the most common indications for ICU admissions. Pre-eclampsia was the major reason for ICU admission in a study done by Chawla *et al.;* [13] and Keizer *et al.;* [14]. In present study Obstetric patients represented 1.75% of all ICU admissions whileObstetric indications for ICU admissions were present in 29 (76.31%) of

those patients and nonobstetric indications were present in 9 (23.68%) of them. A study conducted by Ghike *et al.;* [9] found that the total obstetric patients who needed ICU admissions were 1.04% of all deliveries but in a study by Niyaz [8] obstetric admissions represented 11.6% of total admissions which is quite high as compared to our study.

It has been observed that hemodynamic and respiratory complications needing inotropic or ventilator support remain the most common reasons for ICU admissions [6, 7] and the need for support may predict poor outcome [18]. In our study, 57.89% patients required inotropic support and 89.47% required ventilatory support. Although not statistically significant, the association of mortality with both these supports was considerable. Similar to our study Niyaz *et al*[8] in their study also showed a higher rate of mechanical ventilation (85%).Blood and blood products transfusion was one of themajor components of ICU care. 56% patients (n=12)needed between five to ten units.

There were nine maternal deaths during the study period (23.7%). Four of them were due to hypovolemic shock, three due to respiratory failure & hemorrhage and two due to sepsis. The major cause of higher mortality due to sepsis in developing countries is higher prevalence of septic abortions. Maternal mortality has been reported to be high in some studies [9, 11]. Lataief *et al.;* [10] showed a maternal death rate of 6.9% and 13% in a study by Niyaz *et al.;* [8] Maternal mortality rate is significantly higher in developing countries (40%), compared to that in developed countries (0.1-3.4%)[12]. A systematic review conducted by WHO found that postpartum haemorrhage is the leading cause of maternal mortality in Africa and Asia [15]. On the whole postpartum haemorrhage accounts for 25% of maternal mortality worldwide [16]. It is found that about 72% of maternal deaths can be prevented through effective antenatal care. Since most obstetric emergencies are not predictable and 15% of all pregnant women develop life-threatening complications, antenatal care will not prevent all the maternal deaths. Thus, it is the combination of antenatal care and intensive obstetric care that is essential for reducing maternal mortality [17].

CONCLUSION:

Hemorrhage and pregnancy-related hypertension with its complications are the two common indications for ICU admissions. Also the outcome of intubated patients in our ICU was good.Low socioeconomic status, lack of education and poor antenatal care have been found to have a considerable effect on obstetric complications and outcome. It was emphasized that early detection and prompt referral to tertiary centers with intensive care facilities to provide optimum care of circulation, blood pressure and ventilation could minimize the prevalence of multiple organ failure and mortality in critically ill obstetric patients. In future multicentric studies, focusing on audit of obstetric ICUs in India will help to validate such observations as found in our study. It will also improve patient care and stimulate education in the management of such patients among the resident doctors, consultants and nursing staff. A better scoring system especially applicable to the critically ill obstetric patients in the Indian scenario could lead to accurate monitoring of quality care and risk stratification for clinical and therapeutic trials.

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