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Profile of ICU Admissions of Obstetric Patients, Indications for Transfer to a Tertiary Care Centre and Maternal Outcomes: A Single Centre Experience

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Abstract
Sometimes complications arise during pregnancy or in the postpartum period warranting intensive care which leads to ICU admission of such patients. This was a prospective study carried out to determine the profile of maternal admissions to intensive care unit and requirement of referral to a tertiary care hospital along with maternal outcomes. The percentage of ICU admission of obstetric patients was 0.65% of total deliveries. Total mortality was 20.68%. Multi-step interventions are needed to reduce mortality of ICU admitted obstetric patients.
Key words: *HELLP syndrome, ICU admissions, Mortality, Tertiary care hospital*.

Introduction

Admission of an obstetric patient to intensive care unit (ICU) is a rare occurrence, but the critical circumstances requiring ICU admissions are often unpredictable, sudden, may be catastrophic with very high morbidity and mortality. Admission of obstetric patients to ICU occur approximately in 0.1-0.9% of the deliveries.[1-3] Timely recognition of these complications is of utmost importance to prevent feto-maternal mortality. Most of the studies on ICU admissions of obstetric patients are carried out at tertiary care hospitals whereas most of the deliveries as well as maternal mortality occurs at peripheral hospitals. The maternal mortality in ICU has been shown to vary from 3.4-21%.[4-6] Timely identification and risk stratification of high risk pregnancies at a peripheral care centre is very important to decide further management of these patients. The decision making that which patients can be managed at a peripheral hospital and which require referral to a tertiary care centre will enable better patient care and optimal utilisation of resources. This study presents a profile of maternal admissions to ICU in a peripheral hospital and the indications for referral of patients to a tertiary care centre.

Materials and Methods

This study was carried out for a period of 3 years from June 2012 to May 2015. All obstetric and post partum cases requiring ICU admissions were included in the study. The study was approved by the institutional ethics committee. The details of the indication of ICU admissions were recorded. All patients were investigated with complete blood count, renal functions, liver functions, electrolytes, coagulation parameters and electro-

cardiography. All other investigations were done as per the obstetric indications for admission to ICU. Requirement of blood transfusion/ component support was also noted. Duration of ICU stay, hospital course and maternal mortality was noted. Indications of referral to a tertiary care were also assessed along with mortality in referred patients. The data was collected and analysed.

Results

A total of 29 patients were admitted to ICU during 3 year period. The total number of deliveries in the study period was 4476. Thus the percentage of ICU admission of obstetric patients was 0.65% of total deliveries. The mean age of patients was 27 years and mean duration of stay in the ICU was 3.8 days. Majority of the patients were multipara 16(55.1%) whereas, 13(44.9%) were primipara. The number of patients admitted to ICU in antepartum period was 11(37.93%) and in postpartum period it was 18(62.07%) patients (Table 1).

Of the total ICU admissions, obstetric causes were responsible for 22 (75.86%) patients whereas 7 (24.14%) patients were admitted due to non-obstetric causes. The commonest obstetric indication for ICU admission was haemorrhage which occurred in 8(36.36%) patients followed by HELLP syndrome in 6(27.27%) and an equal number was due to ruptured ectopic pregnancies. Antepartum haemorrhage was seen in 2(9.09%) patients and postpartum haemorrhage in 6 (27.27%) of patients. Puerperal sepsis accounted for 2(9.09%) ICU admissions. Commonest non-obstetric indication was heart failure in 3(42.86%) patients followed by respiratory failure in 2 (28.57%) patients, extensive DVT of lower limbs 1 (14.29%) and CVT in 1(14.29%) patients(Table 2).

Commonest indication for referral to a tertiary care centre was requirement of renal replacement therapy (RRT) and blood component support. Total mortality was 6(20.68%) out of which 2(33.33%) died in the peripheral hospital and 4(66.67%) died in the tertiary care hospital. Multi-organ dysfunction with probably HELLP syndrome carried the worst prognosis with mortality in 5(83%) patients and puerperal sepsis was responsible for 1(16.67%) death. Most of the patients with ectopic pregnancy and PPH/APH survived and were managed with fresh blood transfusion. Number of patients requiring urgent hysterectomy for PPH was 2(33.33%).

Table 1: Baseline Characteristics

Baseline parameters	Value	Percentage
Total number of obstetric admissions	29/4476	0.65%
Mean age	27 years	
Average duration of ICU stay	3.8 days	
Multipara	16	55.17%
Primipara	13	44.83%
Antepartum admissions	11	37.93%
Postpartum admissions	18	62.07%

Table 2: Indication for ICU admissions

Causes	Indication/Diagnosis	Number	Percentage
Obstetric			
1	Antepartum Haemorrhage	2	9.09%
2	Postpartum Haemorrhage	6	27.27%
3	HELLP	6	27.27%
4	Ruptured ectopic	6	27.27%
5	Puerperal sepsis	2	9.09%
	Total	22	75.86%
Non-Obstetric			
1	Heart Failure	3	42.86%
2	DVT (Lower leg)	1	14.29%
3	Respiratory failure	2	28.57%
4	CVT	1	14.29%
	Total	7	24.14%

Discussion

Although pregnancy is an altered physiological state, it terminates uneventfully in majority of cases. But sometimes complications arise leading to patient being admitted to ICU for further management. This study was carried over a 3 year period during which a total of 29 patients were admitted to ICU which is 0.65% of the total number of deliveries occurring in the hospital. This percentage is comparable to results shown by other studies(0.1-0.9%).[1-3] This study showed that 62.07% admissions to ICU were postpartum in nature which is in concordance with earlier observations showing a range of 22.1-62.4%.[7] Majority of admissions to ICU were due to obstetric causes(75.86%) as compared to non-obstetric causes(24.14%). Similar results have been shown in a study by Vasquez DN et al.[8]

Haemorrhage accounted for 36.36% of ICU admissions. Similar findings have been elucidated in other studies as well.[7,9] Majority of patients had

postpartum haemorrhage(27.27%) necessitating surgical interventions like emergency hysterectomy in 33.33% patients.

The mortality in this study was 20.68% which is within the range of 3.4-21% seen in other studies.[4-6,10] Multiorgan dysfunction probably as a consequence of HELLP syndrome was the leading cause of mortality (83%). A total of 66.67% of patients died in the tertiary care hospital as compared to 33.33% in the peripheral hospital. The reason for this could be delay in referring the patient to tertiary care hospital or delay in initiation of treatment. In present study 16.67% mortality was due to puerperal sepsis indicating that infection still is a major mortality contributor in our country. This high mortality requires multi-step interventions to bring down the rate. This could be established by timely diagnosis, early institution of treatment and risk stratification leading to early referral of patients needing tertiary care facilities.

Conclusion

Improvement in techniques leading to prompt diagnosis, early treatment institution and timely referral to tertiary care hospital will lead to better outcomes in obstetric patients admitted to ICU in a peripheral hospital. This would lead to a significant decrease in ICU admitted maternal mortality rate.

Conflict of interest: None

Ethical approval: Ethical approval granted by the institution

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