



Obstetric Admissions to The Intensive Care Unit: A Retrospective Study

KEYWORDS

Pregnancy, Intensive care unit, Hypertension, Postpartum hemorrhage

Dr. Sameer V. Kulkarni

Associate Professor, Department of Anesthesia, S.K.N. Medical College, Narhe, Pune

Dr. Khalid I. Khatib

Associate Professor, Department of Medicine, S.K.N. Medical College, Narhe, Pune.

ABSTRACT

Seriously ill pregnant and postpartum patients are admitted to the intensive care unit either postoperatively, due to organ dysfunction related to the pregnant state or due to medical problems presenting during pregnancy. Whatever the reason for their entry into the intensive care unit, they constitute only a small percentage of patients admitted to the ICU. Hypertension related to pregnancy, peripartum bleeding and decompensated pre-existing medical diseases have been reported to be the leading causes of hospitalization to the intensive care unit. We conducted a retrospective study to analyze the reasons for intensive care unit admission of obstetric patients and to study the outcome. Obstetric patients admitted to ICU were 0.65% of all deliveries and 2.3% of all ICU admissions. The commonest causes of ICU admission in our study were pregnancy induced hypertension, eclampsia, and postpartum hemorrhage. Though morbidity was high, mortality was limited in our study.

Introduction: Critically ill obstetric patients pose challenges to the intensive care unit team as these patients are young, usually healthy but may become critical during pregnancy & delivery leading to maternal mortality & morbidity. Management of these patients requires close coordination between the obstetrician, the ICU team and the anesthetist. These patients are unique due to their altered physiology as well as due the presence of the fetus and safety of both the mother and the fetus is of paramount importance. Critically ill obstetric patients constitute a small proportion of ICU patients and morbidity and mortality has been reported to be variable, quite high in some reports and reasonable in others. We conducted this study with the following aims: i) to describe clinical characteristics and causes of obstetric admission to ICU, ii) to determine outcome of critically ill obstetric patients admitted to ICU.

Materials & Methods: All obstetric patients (pregnant and < 42-days postpartum) admitted to SICU at SKN Medical College & General hospital, Pune, from December 1, 2013 to November 30, 2014 were included in the study. This retrospective study took place in 8-bed, surgical ICU of a 700-bed, general hospital. For each patient, the following data were recorded: age, admission diagnosis, preexisting medical conditions (presence of underlying diseases such as chronic hypertension, diabetes, HIV infection, asthma, others), obstetric history (gestational age in weeks at hospital admission or at delivery, gravidity), indications for ICU admission, outcome, and ICU length of stay (LOS). Obstetric disorders were defined as specific pregnancy related conditions, which occurred during pregnancy or within 42 days in the postpartum period. The data was analyzed statistically.

Observations & Results:

The total number of obstetric admissions was 5133 and the total number of deliveries was 3837. The total number of ICU admissions was 1090, while the total number of obstetric patients admitted to ICU was 25. The 25 obstetric admissions to ICU represented 0.65% of all deliveries and 2.3% of all ICU admissions. Of the 25 patients admitted to ICU, Cesarean section was done in 17 patients. The median age of the patients was 23 years (range 19-31 years).

Five patients were in the first trimester of pregnancy, 15 patients were in the third trimester and 5 patients were postpartum on admission to the ICU. The causes of ICU admission were: pregnancy induced hypertension (8 cases), eclampsia (5cases), post-partum hemorrhage (4 cases), ectopic pregnancy (3 cases), pregnancy with preexisting medical disorder (3 cases), and vesicular mole with complications (2 cases). The average length of ICU stay was 3.44 days. All the patients survived.

Discussion:

Pregnancy, delivery and puerperium can be complicated by severe maternal morbidity necessitating ICU admission. Complications arising during the antepartum period, those during labor and in the postpartum period can lead the patient into the ICU. Altered physiology complicated with organ disturbance and/or failure can land a patient into the ICU. Monitoring, support and treatment of this disturbed physiology will lead to successful outcome for both the mother and child. Elevated blood pressure, convulsions, abnormal bleeding and its consequences and decompensation of pre-existing medical diseases are some of the common causes for obstetric patients to enter the ICU.

In our study conducted over period of 1 year, all patients were young, ranging from 19 years to 31 years, with median age of 23 years, being similar to another study conducted in Western India. (1) In another study done in Netherland, however elderly pregnant patients (age >35 years), comprised 29.3% of such patients. (2)

In our study, 5 patients (20%) were in early pregnancy, 15 patients (60%) were ante-partum, while 5 patients (20%) were postpartum. In one European study patients in early pregnancy comprised 3.1%, while 22.8% were ante-partum and 74.1% were postpartum (2). In an Indian study, 19.1% were patients in early pregnancy, while 68.1% were ante-partum and 12.8% were postpartum (1). Thus there were lesser patients admitted in early pregnancy and ante-partum period in developed country compared to studies in developing country. This may reflect the state of affairs of antenatal care in the respective countries.

ICU admission rate of obstetric patients was 6.5 per1000

deliveries and 2.3% of all ICU admissions. This rate is more than the study done by American Academy of Family Physicians (4 per1000 deliveries) (3) and the study done in United Arab Emirates (2.6 per1000 deliveries) (4), but less than another Indian study (10.4 per1000 deliveries) (1). These 25 obstetric patients admitted to ICU comprised 2.3% of all ICU patients admitted during the study period, similar to the study conducted in the UAE. (4)

Pregnancy related hypertensive disorders (32%) and eclampsia (20%) were the 2 most common indications for admission in ICU. Blood pressure control improved after delivery of fetus & treatment with anti hypertensive drugs. Obstetric hemorrhage (12%), ectopic pregnancy (12%), and medical disorders complicating pregnancy were the other frequent causes of ICU admission. These findings are similar to another Indian study where pregnancy related hypertensive disorder was the leading cause of ICU admission. (1) This may be due to poor control of pregnancy induced hypertension due the lack of antenatal care or poor patient education regarding control of blood pressure in pregnancy. Also it confirms the epidemic of lifestyle diseases (diabetes mellitus, hypertension, ischemic heart diseases) in the Indian population. (5,6) Hemorrhage and sepsis were the leading causes of ICU admission in studies conducted in Europe and the United States, while eclampsia and hemorrhage were the leading cause in the Middle East. (2,4,7) In Nigeria, the leading cause was eclampsia. (8)

The three patients who had medical disease complicating pregnancy and needing ICU care included a congenital heart disease with fluid overload causing respiratory failure, pregnancy with severe hypocalcemia & pregnancy with septicemia.

Out of the total 25 admissions over last 1 year, none of the patients died. There were no fatalities in the study reported from the United States over a 2year period. (7)

Maternal mortality has been reported to be high in some studies ranging from 31% to 41%. (1,8)

This study has certain limitations. First, it has a retrospective design. There were no deaths in the study population. Hence maternal mortality cannot be studied. Finally, this is a single-center study.

CONCLUSION:

In our study, the two most common indications for admitting obstetric patients to ICU were pregnancy related hypertension and eclampsia. Improving the quality of care before and after admission to ICU may reduce maternal morbidity.

Table no. 1 Cause of ICU admission

Cause of ICU admission	Number of patients (%)
Obstetric hemorrhage	3 (12)
Pregnancy related hypertension	8 (32)
Pre-eclampsia and eclampsia	5 (20)
Medical disease	3 (12)
Ectopic pregnancy	3 (12)

Table No. 2 Gestational age at ICU admission

Gestational age	Number of patients (%)
First Trimester	5 (20)
Second Trimester	0 (0)
Third Trimester	15 (60)
Post-partum	5 (20)

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