

Full Length Research Paper

Admissions of obstetric patients in the intensive care unit: A 5year review

***Ebirim, L. N., Ojum S**

Department of Anaesthesiology, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria

Abstract

Complications may arise during pregnancy, labour or in the postpartum period which may be life threatening and require intensive care. Obstetric patients with these complications are better served by early admission and optimal management in the intensive care unit (ICU). The objective of this study was to ascertain the prevalence, indications for admission, interventions and outcome of critically ill obstetric patients admitted in the intensive care unit. The study design was a retrospective collection of data and it was carried out at the ICU in the University of Port Harcourt Teaching Hospital (UPTH) from February 2007 to January 2012. The intensive care unit records and case files of all obstetric patients admitted to the ICU during the 5-year study period were used to extract the relevant data. Data collected included demographic characteristics of the patients, indications for admission, interventions and outcome. A total of 734 patients were admitted into the ICU during the study period and 108(14.71%) of these were obstetric patients. The obstetric admission to the ICU represented 0.73% of all 14779 deliveries which occurred in the hospital during the study period. Only 37(34.26%) of the obstetric patients received antenatal care. Their ages were between 17 and 44 years, (average =30.51years). Majority (86%) of the obstetric patients were admitted postpartum in the ICU. Obstetric haemorrhage (48) was the most frequent indication for admission (9 ante partum haemorrhage and 39 post partum haemorrhage). Pregnancy induced hypertension was the second most frequent indication for admission. Twenty of the patients had eclampsia, nine had severe pre eclampsia. Post-abortion sepsis (1 patient) was the least common indication for admission. Nineteen of the obstetric patients received mechanical ventilation, while the rest were given oxygen by nasal prongs. None of the patients had arterial blood gases (ABG) and end tidal carbon dioxide tension (ETCO₂) monitoring. There were forty four maternal deaths during the study period, a mortality rate of 40.74%. Seventeen, (35.41%) of the patients with obstetric haemorrhage and eleven (55%) of the eclamptic patients died. Obstetric haemorrhage was the most frequent obstetric indication for ICU admissions. Maternal mortality from this complication was quite high. Eclampsia, the next most common obstetric complication requiring management in the ICU, even had a higher mortality rate than that of post partum haemorrhage. Improved availability and utilization of antenatal and peripartum care services can reduce the frequency and severity of these obstetric complications necessitating ICU admission. Improved equipment can significantly reduce ICU maternal mortality rate.

Keywords: Obstetrics, intensive care, admissions, outcome.

INTRODUCTION

Complications may arise during pregnancy or in the postpartum period which can be life-threatening and require intensive care (Demirkiran et al., 2003). When

such complications arise in obstetric patients, early intervention and treatment on a multidisciplinary basis, in the ICU can alleviate progression of organ dysfunction and improve prognosis (Zeeman, 2006). Critical care management of obstetric patients in Nigeria is fraught with the problem of poor health care delivery, late presentation of patients and paucity of ICUs (Okafor and Effetie, 2008). Hypertensive disorders of pregnancy with its associated complications have been found to be the

*Corresponding Author Email: ginebirim@yahoo.com

most common reasons for ICU admissions (Okafor and Effetie, 2008; Osinaike et al., 2006).

Although the outcome of intensive care admissions for obstetric patients has been studied in some parts of Nigeria (Okafor and Effetie, 2008; Osinaike et al., 2006; Okafor and Aniebue 2004), none has been reported in the Niger delta region of the country. The purpose of this study was to determine the causes and outcomes of admissions of obstetric patients to the ICU in the University of Port Harcourt Teaching Hospital (UPTH).

MATERIALS AND METHOD

This was a retrospective descriptive study of consecutive obstetric patients admitted to the ICU in UPTH over a 5 year period from February 2007 to January 2012. The present 8-bedded multidisciplinary ICU in the hospital serves a population of about 9.5 million people⁶. It commenced admission of patients in February 2007. Prior to this date the hospital had an 8 bedded ward designated as ICU which had no facilities for mechanical ventilation and invasive patient monitoring (Mato et al., 2009). Mechanical ventilation is available in the present ICU but monitoring of respiratory function by arterial blood gases (ABG) and end tidal carbon dioxide tension (ETCO₂) is presently lacking. Data relevant to the obstetric patients were extracted from the admissions and discharges register of the ICU and the case files of the individual patients. Information retrieved contained age, parity, co-morbidities, obstetric history, pre-natal care status, mode of delivery, vital signs and Glasgow coma scores (GCS) on admission in the ICU. Other information retrieved for patients pertaining to ICU interventions were mechanical ventilation, oxygen therapy, blood products/transfusion, antihypertensive treatment and inotropic support. Other information retrieved were length of stay in the ICU and outcome for the patients. The data obtained were analyzed using descriptive statistics.

RESULTS

During the 5 year period, a total of 108 obstetric patients were admitted through referrals from the obstetrics and gynaecology department of UPTH. This represents 14.71% of total ICU admissions. The mean duration of ICU stay was 3.30 ± 2.07 days. The baseline characteristics of the admitted obstetric patients are shown in table 1. The average age of the patients was 30.51 years. Ninety three (86.11%) of the patients were admitted in the postpartum period. Table 2 shows the yearly increases in both obstetric deliveries and maternal ICU admissions from 2007 to 2011. Only 5 (4.6 %) of the patients had spontaneous vaginal delivery. The most common mode of delivery was emergency caesarean section.

Severe obstetric haemorrhage ($n = 48$, 44.4%) and pregnancy induced hypertension ($n=29$, 26.9%) were the most frequent causes of admission. Table 3 shows the diagnoses necessitating ICU admissions. Thirty nine of the patients had postpartum haemorrhage (PPH) while nine of them were admitted with antepartum haemorrhage (APH). The admission diagnosis for 18 of the patients was uterine atony. Uterine rupture which occurred in 21 of the patients was a more common cause of PPH than uterine atony. Emergency hysterectomies were carried out in 36 of the patients where bleeding could not be controlled. Pregnancy induced hypertension was seen in 29 patients. Twenty patients presented with eclampsia while nine patients presented with severe pre-eclampsia. One of the patients with severe pre-eclampsia also presented with haemolysis elevated liver enzymes and low platelet (HELLP) syndrome.

Nineteen of the patients were mechanically ventilated. Mean duration of mechanical ventilation was 3 days. Eighteen of the mechanically ventilated patients died. Inotropic support with dopamine was given to 33 (30.30%) of the patients. Outcome of admissions for the obstetric patients is shown in table 4. Forty four, (40.74%) of the obstetric patients died. This included 17 (35.41%) of the women admitted with obstetric haemorrhage and 11 (55%) of the patients with eclampsia.

DISCUSSION

A total of 108 obstetric patients were admitted in the ICU during the study period. This number represents 14.71% of all patients admitted in the ICU. A previous analysis of pattern of admissions in the same ICU showed that postoperative cases made up 62.1% of total admissions, with post caesarean section contributing 65.7% of these⁶. However, 41.5% of the patients admitted in the ICU then did not actually require ICU admissions as they were admitted in the ICU due to lack of space in the maternity wards (Mato et al., 2009). The situation has changed since 2007 and patients were admitted in the ICU only if it was believed that they needed it.

The 108 obstetric patients admitted in the ICU also represent 0.73 percent of the 14779 deliveries which occurred in the hospital during that period, an incidence of 7.3 obstetric ICU admissions per 1000 deliveries. Although this maternal ICU admission rate was lower than 0.97 percent from a study at Abuja (Okafor and Effetie, 2008) and 1.4 percent from a study in Ibadan Nigeria (Osinaike et al., 2006), there was a progressive yearly increase in the maternal ICU admission rate signifying a trend of increasing ICU utilization by obstetric patients. Majority (44.4%) of the parturients in this study were admitted with obstetric haemorrhage. Some previous studies have found that hypertensive disorders of pregnancy: eclampsia and severe

Table 1. Characteristics of Obstetric patients admitted

Total number	108
Mean duration of admissions	3.30±2.07 days
Age	17-44years (Average = 30.51)
Parity	primigravida 65
	Multigravida 43
ANC attendance	Yes 37
	No 71
Ante partum admissions	15
Postpartum admissions	93

Table 2. Frequency of obstetric ICU admissions

Year	Obstetric Deliveries	ICU Admissions	(%)
2007	2744	8	0.29
2008	2960	18	0.61
2009	3176	21	0.89
2010	3025	27	0.89
2011	2874	34	1.18
Total	14779	108	0.73

Table 3. Indications for admission in the ICU

Serial Number	Diagnosis	Number admitted	Percentage (%)
1	Obstetric Haemorrhage	48	44.4
2	Eclampsia	20	18.6
3	Severe PET	9	8.3
4	Obstructed Labour	8	7.4
5	Cephalopelvic Disproportion	7	6.5
6	Sickle cell anaemia	5	4.6
7	Postpartum anaemic heart failure	4	3.7
8	Post cardiopulmonary resuscitation	2	1.86
9	Hypertensive disorders of pregnancy	2	1.86
10	Ruptured ectopic pregnancy	2	1.86
11	Post-abortion sepsis	1	0.93
Total		108	100

Table 4. Outcome of admissions of the obstetric patients

S/N	Admission diagnosis	Number Admitted	Number Survived	Number Died	Percentage Mortality (%)
1	Obstetric haemorrhage	48	31	17	35.41
2	Eclampsia	20	9	11	55
3	Severe PET	9	6	3	33.33
4	Obstructed labour	8	5	3	37.5
5	Cephalopelvic disproportion	7	4	3	42.85
6	Sickle cell anaemia	5	3	2	40
7	Post-partum anaemic cardiac failure	4	3	1	25
8	Post cardiopulmonary resuscitation	2	1	1	50
9	Hypertensive disorders of pregnancy	2	1	1	50
10	Ruptured ectopic pregnancy	2	1	1	50
11	Post-abortion sepsis	1	-	1	100
Total		108	64	44	

preeclampsia were the most frequent reasons for admission of obstetric patients in the ICU (Okafor and Effetie, 2008; Osinaike et al., 2006). The change in the pattern of admissions as shown by this study may be due to regional variation in the prevalence of obstetric complications. Whereas eclampsia is regarded as the leading cause of maternal deaths in Northern Nigeria (Adamu et al., 2004; Wall, 1998), obstetric haemorrhage and sepsis are the leading causes in the south (Okaro et al., 2001; Ariba et al., 2004). Although eclampsia was the second most common reason for admissions of the obstetric patients to the ICU, maternal mortality rate from this complication was higher than that due to obstetric haemorrhage. The higher maternal morbidity and mortality due to eclampsia in developing countries has been ascribed to late referral, delay in hospitalization, late transportation, unbooked status of patients and multiple seizures prior to admission (Agida et al., 2010).

Majority of the obstetric patients admitted in the ICU in this series did not receive antenatal care and may not have had their labours supervised by skilled attendants. In Nigeria, only 31% of all deliveries take place in health care facilities. About 67% of deliveries occur at home and are unattended by doctors or midwives (Umezulike, 2006). Most of the women with obstetric haemorrhage were admitted after emergency hysterectomy following uncontrollable haemorrhage due to uterine atony or ruptured uterus. Emergency peripartum hysterectomy is one of the life-saving procedures performed after vaginal delivery or caesarean birth or in the immediate post partum period in cases of intractable haemorrhage due to uterine atony, ruptured uterus and placental disorders (Nusrat and Nisar, 2009).

Obstructed labour and cephalopelvic disproportion which accounted for (7.4%) and (6.5%) of the obstetric admissions respectively, were consequences of poor utilization of antenatal care services and non supervision of labour by skilled health personnel. Whereas 19 (17.59%) of the parturients were mechanically ventilated in the ICU, monitoring of respiratory function by arterial blood gases or ETCO_2 was not done due to non-availability.

Although reviews by Dao et al in Burkina Faso (Dao et al., 2003) and Osinaike et al at Ibadan Nigeria (Osinaike et al., 2006), have shown ICU maternal mortality rates of 60 percent and 50 percent respectively, the ICU maternal mortality rate of 40.74% shown by this study is quite high considering that other reviews: Okafor et al 28% (Okafor and Effetie, 2008), collop and sahn 20% (Collop and Sahn, 1993), Jenkins et al 14% (Jenkins et al., 2003) and Kilpatrick et al, 2.3% (Kilpatrick and Matthay, 1992), have shown lower ICU maternal mortality rates.

CONCLUSIONS

The incidence of obstetric ICU admission from this study

was 7.3 per 1,000 deliveries. Obstetric haemorrhage was the most frequent reason for admissions of the obstetric patients to the ICU and it had a high mortality rate. Eclampsia was the next most common obstetric complication requiring management in the ICU. Its mortality rate was even higher than that for obstetric haemorrhage. The maternal mortality rate of 40.76% found in this review was quite high. Although majority of the parturients received no antenatal care, may not have had their labours supervised by skilled health personnel, and may have presented late in the ICU, inadequate equipment of the ICU could have contributed to the high maternal mortality rate. Improvements in therapeutic and monitoring equipment in the ICU and improved access and utilization of prenatal and peripartum care by the parturients are recommended to reduce these high mortality rates.

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