

OUTCOME OF OBSTETRIC ADMISSIONS IN THE INTENSIVE CARE UNIT OF JOS UNIVERSITY TEACHING HOSPITAL: A SIX YEAR REVIEW

ABSTRACT:

ENOKELA MA, OCHEKE AN

Department of Obstetrics and Gynaecology, Jos University Teaching Hospital, Jos, Plateau State, Nigeria.

Correspondence email Address: enoks100@yahoo.co.uk

Mobile phone +2340833255676

Background: Pregnancy a natural physiologic process, in proceeds uneventfully in most women. However, physiologic and anatomical changes can cause severe morbidity and mortality in few women. This is why a certain percentage of women (0.1-0.9% of deliveries) develop complications in pregnancy that requires admission to the intensive care unit (ICU).

The purpose of this study was to review retrospectively all obstetric patients admitted to the ICU over a six year period to determine the pattern of cases, possible causes and outcomes of these admissions as well as their duration of stay.

Methodology: This retrospective study was based on all obstetric patients admitted to the ICU at the Jos University Teaching Hospital, JUTH from January 2006 – December 2011.

Results: A total of 131 obstetric patients were admitted during the 6 year period. The frequency of admission was 0.80% of deliveries and obstetric patients represented 16.09% of all ICU admissions. The mean duration of stay in ICU was 2 ± 0.8 days, mean age of the patients was 26.45 years. The indications for admissions were preeclampsia/eclampsia (69.47%), obstetric haemorrhage (13.7%), Puerperal (3.82%), Ruptured uterus (3.82%), cerebral malaria (3.06%), cardiac disease (3.06%), other pre-existing medical conditions constituted (3.06%). The total obstetric admissions that died was 11.45% while 87.77% were discharged.

Conclusion: Preeclampsia/eclampsia and obstetric haemorrhage were the commonest causes of admissions. The need for adequate antenatal care services and maternal intensive care should be considered importantly in the quality of maternal care. Early admission and qualify management of critically ill obstetric patients in the ICU will decrease maternal morbidity and mortality.

Key Words: Obstetric admissions, Intensive Care unit, JUTH

INTRODUCTION

Pregnancy is a natural physiologic process and in most women proceeds uneventfully. However, physiological and anatomical changes can cause severe morbidity and mortality in few women^(1,2,4).

Obstetric patients are different from the usual patients admitted to Intensive Care Unit (ICU).

They have unique physiology and specific medical problems that present a special challenge to intensive care physicians. Advances have been made in antenatal, intrapartum, and postpartum monitoring, and improvement in socio-economic conditions. The indications for admission of obstetric patients into ICU may differ from place to place, but do include severe preeclampsia/eclampsia, obstetric haemorrhage, sepsis, anaesthetic complications, cerebral encephalopathy, amniotic fluid embolism etc.

these complications could be life threatening and may require intensive care^(1,5-7).

Maternal death is a particularly tragic event because pregnant women are usually young and healthy. Despite medical advances, deaths of pregnant women remain an important public health problem⁽²⁾. Maternal death especially in the developed world has become an extremely rare event with rates between 5 to 10 per 100,000 deliveries, which has awakened its value as a quality assurance indicator for maternity care^(1,3). Intensive care admission of these critically ill persons offer better patient outcome^(5,7)

Preeclampsia/eclampsia and obstetric haemorrhage are the leading causes of obstetric admissions to the ICU in the western world and Asia^(4,6). There is a growing evidence that admission of high risk obstetrics patients to the ICU is associated with a fall in maternal mortality⁽⁵⁾. Some centres have

obstetric ICUs but most centres uses general ICUs to manage critically ill obstetric patients⁽⁴²⁾.

Relatively few studies concerning obstetric ICU patients have been published. This was why Scarpinato et al identified a serious lack of knowledge on obstetric critical care and called for increased reporting of data⁽⁹⁾. In most of the data reviewed, indications for admission in ICU of obstetric patients in antenatal or peuperal period were similar. These include severe preeclampsia, eclampsia, obstetric haemorrhage, sepsis, anaesthetic complications, amniotic fluid embolism, adult respiratory distress syndrome, etc.

At the Hotel-Dieu de France Hospital, 0.16% of all deliveries needed to be transferred to the ICU⁽¹¹⁾. The rate varied in other studies between 0.10% and 0.9% as reported by demirkiran et al⁽⁶⁾ and attributed centres with higher rates to the poor antenatal care. There was a general preponderance of patients admitted into ICU after delivery than in the antepartum period up to 92% of the obstetric patients as reported by Czop et al and Wheatley et al^(16,17). Recha F et al reported that 94% of the obstetric patients admitted into the ICU were cases of post partum complications. Okafor and Aniebue in Enugu Nigeria also reported a preponderance of post partum admission in their study⁽⁶⁾.

METHODOLOGY

The retrospective study was carried out based on all obstetric patients admitted to ICU during pregnancy or up to 42 days after delivery between January 1, 2006 and December 31, 2011.

Following the ethics committee approval, medical records were obtained for all such admissions. Extracted data includes demographics such as maternal age and parity, past medical and obstetric history, delivery data, indications for ICU admissions, length of stay and death during hospitalization. Data was analysed using simple percentages and duly presented.

RESULTS

There were 16,360 deliveries at the Jos University Teaching Hospital over the six years of the study. 131 pregnant and post partum women were admitted to the ICU. This constitutes 16.09% of all ICU admissions and 0.80% of deliveries. One obstetric admission was referred to another centre on the request of the next of kin.

Table 1a Obstetric ICU Admissions 2006 - 2011

Outcome	Frequency	Percent
Discharges	115	87.78
Deaths	15	11.45%
Referral	1	0.76%
Total	131	100.0%

Table 1b Total ICU Admissions

Outcome	Frequency	Percent
Discharges	554	68.10%
Deaths	260	31.90%
Total	814	100.0%

TABLE 2 - PATTERN OF DIAGNOSIS OF OBSTETRIC ADMISSION TO ICU BETWEEN 2006-2011

DIAGNOSIS	FREQUENCY	PERCENT
PREECLAMPSIA/ECLAMPSIA	91	69.47%
RUPTURED UTERUS	5	3.82%
CEREBRAL SEVERE MALARIA	4	3.06%
CARDIAC DISEASE	4	3.06%
SEPSIS	3	2.30%
OBSTETRIC HAEMORRHAGE	18	13.7%
OTHERS (severe asthma, diabetic ketoacidosis in pregnancy, var in vent, epilepsy in pregnancy)	4	3.06%
TOTAL	131	100.0%

Fig 1. Deaths in ICU Admissions between 2006-2011

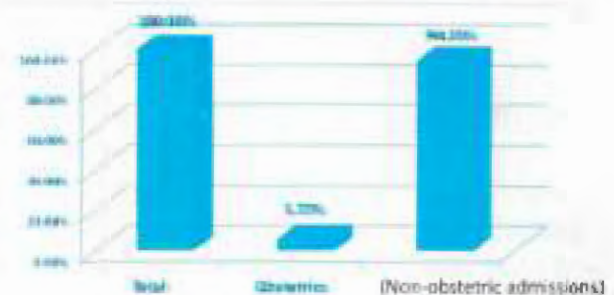


Table 3 NUMBER OF DAYS SPENT BY OBSTETRIC PATIENTS IN ICU

DAYS	FREQUENCY	PERCENT
1	18	13.7
2	59	45.0
3	30	22.9
4	12	9.2
5	1	8
6	0	4.6
7	1	8
8	1	8
9	1	8
10	1	8
11	1	8
Total	131	100.0
Mean days spent in ICU	0.82 ± 2.032	

DISCUSSION:-

Maternal mortality is the most extreme adverse effect on the health of pregnant women. Complications during pregnancy or in the post partum period can be life threatening and require intensive care^(6,11-13). An intensive care unit offers the opportunity to improve patient's care.

In this work, 0.80% of all deliveries were admitted in the ICU. In other studies, this rate varied between 0.10% and 0.90%^(8,16,17). Higher rates according to Demirkiran et al⁽⁸⁾ was attributed to poor antenatal care.

From our institution, just like in other studies, the most common indications for ICU admission were preeclampsia/eclampsia and obstetric haemorrhage^(8,11-17). Patients with preeclampsia/eclampsia accounted for 69.47% of all obstetric admissions in the ICU in this study. Studies done in Enugu Nigeria by Okafor UV et al in 2004⁽⁶⁾ showed that preeclampsia/eclampsia and obstetric haemorrhage constitutes the majority of obstetric ICU admissions. Our result is comparable to the finding of preeclapsia/eclampsia causing 39.5% of obstetric ICU admissions as reported by Hazelgrove's series⁽¹⁵⁾, 50.0% by quah's report⁽¹⁶⁾, 53.8% was reported by Estrada Altamirano et al⁽¹⁷⁾. It is also in keeping with admission pattern reported by Kilpatrick and Mathay from USA⁽¹³⁾.

Obstetric haemorrhage was the second most common indication for ICU admission in this study representing 13.7% of obstetric admissions. This trend/pattern as the second most common indication for ICU admission was in agreement with the report by Hazelgrove's series of 33.3%⁽¹⁵⁾, 24.0% was reported by quah⁽¹⁶⁾, and 10.2% reported by Estrada Altamirano et al⁽¹⁷⁾. Also, from an eight year review in a 350 bed hospital in Lebanon 2008, Richa F et al reported 20% of obstetric admissions in the ICU to be due to obstetric haemorrhage⁽¹¹⁾. However, Mahutte et al.⁽⁹⁾ from Canada, Okafor and Aniebue⁽⁶⁾ from Nigeria and Demirkiran et al⁽⁸⁾ from Turkey, reported that obstetric haemorrhage was the commonest obstetric admission diagnosis to their ICU at 26%, 22% and 30.3%, respectively.

Patients with sepsis accounted for 3.82% of obstetric admissions in our study while Richa F.etal⁽¹¹⁾, in Lebanon reported 26.7%. This finding in Lebanon was particularly high due to severe immunosuppressive illnesses reported in the

patients as at the time of that study. Demirkiran et al⁽⁸⁾ and Umo-Etuk et al⁽¹¹⁾ reported sepsis ICU admission diagnosis of 9.6% and 13% respectively, the relative low rate of sepsis as a cause for the ICU obstetric admissions in our study could be attributed to prompt and empirical use of antibiotics in our environment. In Cuban National studies, Rodriguez Iglesias et al⁽¹⁸⁾ reported sepsis and haemorrhage as the most common ICU admission diagnosis with rates as high as 33.3% of cases. Urbay et al⁽¹⁹⁾ observed post partum sepsis as the second most commonly diagnosed illness in their ICU accounting for 22.5% of their obstetric admissions which was rather striking. In our study, 3.82% were admitted in the ICU as a result of ruptured uterus. These were cases of vaginal birth after ceaserean section that were poorly managed at peripheral centres before referral to JUTH. This is not a common finding in most developed countries of the world.

Cerebral/severe malaria accounted for 3.06% of obstetric admissions in the ICU from our study. Most other studies reviewed had no report on ICU admission from cerebral malaria. Our study was done in a tropical region of the world, a malaria endemic zone with relatively poor compliance to antenatal visits as well as intermittent malaria preventive therapy and use of insecticide treated nets etc. In other regions of the world, diagnosis such as respiratory insufficiency was responsible for some admissions in ICU as reported by quah⁽¹⁶⁾ (10.0%)

Pre-existing illness was a significant variable in the analysis. Cardiac disease in pregnancy alone accounted for 3.06% of ICU obstetric admissions while the combinations of other medical conditions such as severe asthma, diabetes mellitus, sickle cell disease and epilepsy in pregnancy contributed 3.06% with each of them responsible for one ICU admission in our own study. In other study, Estrada Altamirano et al⁽¹⁷⁾ reported 10.2% from critical heart disease in pregnancy. There were no admissions resulting from deep venous thrombosis or pulmonary embolism in this study unlike findings from the developed parts of the world, this could be due to the differences in dietary and behavioural differences.

Mean length of ICU stay was lower than the reported length of stay in many other previous studies^(1,12). This could be due to the relative cost of long stay in the ICU hence the patients are

discharged from ICU to the regular post-natal wards whenever they become much stable clinically.

There were (fifteen) maternal deaths in this study accounting for mortality rate of 11.45%. This is lower than 33.3% reported by Richa F. et al⁽⁴⁾ and Okafor and Aniebue⁽⁶⁾. It is also lower than other reports from some parts of Europe and Asia as reported by Kilpatrick and Matthay⁽¹³⁾, Umo-Etuk et al⁽¹¹⁾ to be 25% and 26% respectively but higher than 2.3% reported by Mahutte et al⁽⁵⁾. The finding was similar to that of Jenkins et al.⁽⁷⁾ and Lapinsky et al⁽¹²⁾ that reported 14% and 11% respectively. Majority of our patients were admitted on account of preeclampsia/eclampsia in the post partum period. This disease is said to resolve spontaneously after delivery, this may explain the reason for the medium level of mortality rate experienced at the centre. However, deaths from complicated HELLP syndrome, DIC and acute renal failure may have been prevented if there were enough of fresh whole blood, fresh frozen plasma products, prompt dialysis and other specialized care.

RECOMMENDATION

- The study should be extended to other centres in the state and nation at large.
- Computerized data base of patients admitted in the ICU should be created.
- There is need for maternal intensive care unit with specially trained intensivist on maternal conditions and its management.
- Early admission of patients, provision of more invasive monitors and multidisciplinary approach of management will improve patient outcome and reduce maternal mortality.

CONCLUSION

The pattern of obstetric admission to our ICU is similar to that in most parts of the world. Preeclampsia/eclampsia is the commonest indication for ICU admission, the associated morbidity and mortality can be further reduced by early and regular antenatal care services, early ICU admission, optimal stabilization of their condition before intervention, prompt multidisciplinary approach as well as provision of maternal intensive care with adequately trained intensivist on maternal care.

REFERENCES

1. Richa F, Karim N, Yazbeck P. Obstetric admissions to the Intensive Care Unit: An eight year review-. *J Med. Liban* 2008; 56 (4): 215-219.
2. Martin SR, Foley MR. Intensive care in obstetrics: An evidence-based review. *Am J Obstet Gynecol* 2006; 195:673-89.
3. Zeeman GG. Obstetric critical care: A blueprint for improved outcomes. *Crit Care Med* 2006; 34: S208-S214.
4. Nagaya K, Fetters MD, Ishikawa M: Causes of maternal mortality in Japan. *JAMA* 2000; 283:2661-7.
5. Mahutte NG, Murphy-Kaulbeck L, Le Q, Solomon J, Benjamin A, Boyd ME: Obstetric admissions to the intensive care unit. *Obstet Gynecol* 1999; 94: 263-6.
6. Okafor UV, Aniebue U. Admission pattern and outcome in critical care obstetric patients. *Int J Obstet Anesth* 2004; 13 164-6.
7. Jenkins TM, Troiano NH, Graves CR, Baird SM, BoehmFH: Mechanical ventilation in an obstetric population: characteristics and delivery rates. *Am J Obstet Gynecol* 2003;188:549-52.
8. Demirkiran O, Dikmen Y, Utku T, Urkmez S: Critically ill obstetric patients in the intensive care unit. *Int J Obstet Anesth* 2003 Oct; 12 (2): 266-70.
9. Scarpinato L: Obstetric critical care. *Crit Care Med* 1998; 26:433.
10. Czop M, Herr D: Green skin discoloration associated with multiple organ failure. *Crit Care Med* 2002; 30:598-601.
11. Umo-Etuk J, Lumley J, Holdcroft A: Critically ill parturient women and admission to intensive care: a 5-year review. *Int J Obstet Anesth* 1996; 5: 79-84.
12. Wheatley E, Farkas A, Watson D. Obstetric admissions to an intensive therapy unit. *Int J Obstet Anesth* 1996; 5: 221-4.
13. Kilpatrick SJ, Matthay MA. Obstetric patients requiring critical care. A five-year review. *Chest* 1992; 101: 1407-12.
14. Lataifeh I, Amarin Z, Zayed F et al. Indications and outcome of obstetric admissions in ICU: a 7year review *J. Obstet Gynecol.* 2010 May; 30 (4): 378-
15. Hazelgrove JF, Price C, Pappacham VJ, Smith GB. Multicenter study of obstetrics admissions to 14 intensive care units to southern England. *Crit Care Med.* 2001; 29(4):770-5

16. Quah TC, Chiu JW, Tan KH, Yeo SW, Tan HM. Obstetric admissions to the intensive therapy unit of a tertiary care institution. *Ann Acad Med Singapore*. 2001;30(3):250-3
17. Estrada Altamirano A, Hernandez Pacheco JA, Cisneros Castelo M, Quesnel Garcia C. Intensive obstetric care. *Perinatal reprod HUM*. 2002;16(2):88-95
18. Rodriguez Iglesias G, Delgado Calzado J, Perez Riverio L. Adolescent obstetric critical care. *Rev Cub Obstet Ginecol*. 1999;25(30):141-145
19. Urbay Ruiz AA, Cruz Martinez H, Fong Seuc L, Santos Perez LA, Valledo Trista R, Molerio Saez LE. Obstetric grave consequences. *Medicentro*. 2002;6:1-8
20. Jenkins TM, Troiano NH, Graves CR, Baird SM, Boehm FH. Mechanical ventilation in an obstetric population: Characteristics and delivery rates. *Am J Obstet Gynecol* 2003;188:549-52
21. Lapinsky SE, Kruczynski K, Seaward GR, Farine D, Grossman RF. Critical care management of the obstetric patient. *Can J Anaesth* 1997;44:325-9