Original

Crit Care Shock (2017) 20:4-9

Characteristics of the obstetric patients admitted to the Intensive Care Unit of Sanglah General Hospital in 2013-2016

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Abstract

***Background*: High risk pregnancy and complication during pregnancy or labor may need multidisciplinary management in the Intensive Care Unit (ICU). This study shows the characteristics of obstetric patients who were admitted to the ICU of Sanglah General Hospital Denpasar, Bali, Indonesia in 2013 to 2016.**

***Objective*: Our study was performed to provide database in Sanglah General Hospital regarding to the intensive care management of obstetric patients in the ICU of Sanglah General Hospital. This data may be beneficial to provide better management in the ICU, and also to reduce maternal mortality and morbidity.**

***Design*: This was a descriptive study using the secondary data from the medical records of obstetric patients who were admitted to the ICU of Sanglah General Hospital in 2013 to 2016.**

***Setting*: This study was performed in the ICU of Sanglah General Hospital, Denpasar, Bali, Indonesia.**

***Patients and participants*: All obstetric patients who were admitted or transferred to ICU of Sanglah General Hospital in August 1, 2013 to August 31, 2016. There were 245 obstetric patients transferred to ICU of Sanglah General Hospital.**

***Result*: Over the 3 years study period, there were 245 obstetric patients who were admitted to the ICU out of the total of 3089 deliveries during that period. Based on the gestational age during admission, there were 7.7% cases below 28 weeks (n=19), 36.3% were between 28-36 weeks gestational age (n=89), and 55.9% cases were 37 weeks and above (n=137). The indication of the admission can be categorized into the obstetrics indication, which were 75.1% out of 245 cases (n=184) and the non-obstetric indication such as the medical problem underlying during the pregnancy, which were about 24.9% out of 245 cases (n=61). The major indication of obstetric problem was the hypertensive disease in pregnancy, while the major indication of non-obstetric reason was the heart disease. The maternal mortality rate in the ICU during this study was 10.2% out of the 245 cases who were admitted to the ICU.**

***Conclusion*: As the major tertiary referral hospital in Bali, Sanglah General Hospital were having high number of complicated pregnancy cases. The characteristics of the obstetric patients who were admitted to the ICU can be used to plan better management and appropriate care, especially in the ICU, in order to reduce the maternal mortality rate.**

Key words: Obstetric, Intensive Care Unit, pregnancy.

Introduction

Morbidity in the obstetric cases is related to or aggravated by the pregnancy, labor or 42 days after delivery period. Maternal near miss incidence is defined as the case when a woman is survived from mortality after a complication that occurs during pregnancy, labor or 42 days after delivery period. (1) In general, maternal mortality can be categorized into no or limited morbidity, severe morbidity, near miss, and maternal mortality. (2) Women who are succesfully survived the severe maternal complication can suffer series of disability and it is categorized as the severe maternal morbidity. (1)

The prevalence of severe maternal morbidity is almost the same with the maternal mortality rate, with various results throughout the world. The study that was conducted in the developed countries, the severe maternal morbidity rate is various about 0.05-1.7%, while the rate in the limited resources countries is about 0.6-8.5% out of all obstetric cases. (1) The complication or the severe maternal morbidity case needs special management

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in the Intensive Care Unit (ICU). One study reporting the rate of obstetric cases transfer care into ICU about 0.5-7.6 out of 1000 deliveries. (1) The maternal mortality rate was found less in the developed countries compared to the undeveloped or the countries with such limited resources. The study of maternal mortality rate in UK reported the decreasing tendency of maternal mortality rate from 13.95 out of 100,000 deliveries in 2003-2006 to 11.39 out of 100,000 deliveries in 2006-2008. (3)

Further management in the ICU is performed in order to monitor the condition of the patient intensively and provide comprehensive management between the obstetricians and the other multidisciplinary clinicians. In general, two major obstetric cases that need transfer care to ICU are cases that related to hemorrhage and hypertension in pregnancy. The severe maternal morbidity rate was estimated to increase in the developing countries, due to the demographic changes of pregnant women characteristics such as the increasing maternal pregnancy age, rate of caesarean section and obesity. (1)

Study of obstetric patients that were admitted to the ICU can illustrate the high demand of intensive management or admission into ICU for obstetric cases. Early assessment toward the anatomy and physiologic changes during pregnancy is important to be aware of in the first place when we are dealing with obstetric cases that need intensive care. Moreover, there are considerations such as the termination of pregnancy for those who are still pregnant, or the decision for the choice of drugs that should be avoided during pregnancy or lactation.

This descriptive study result can describe the demographic status of obstetric patients who were admitted to the ICU of Sanglah General Hospital, the majority of obstetric cases that were transferred to ICU, and also the outcome for those cases. This study can help obstetricians and the other multidisciplinary clinicians who are together providing intensive care for obstetric cases in order to provide better management in the future.

Methods

This study was a descriptive retrospective study using the secondary data from the obstetric patients' medical records who were admitted to the ICU of Sanglah General Hospital. This study collected data for the patients who were admitted in August 1, 2013 until August 31, 2016. Data was gathered and tabulated to finally analyzed and shown in the Tables below. This study collected the number of total deliveries, number of obstetric cases that were admitted to the ICU, and also other demography data such as maternal age, status of pregnancy or parity, gestational age, mode of delivery, diagnosis prior to ICU admissions, management that was performed, length of stay, and the outcome.

Results

Based on the medical record in Sanglah General Hospital during August 1, 2013 to August 31, 2016, there were 245 obstetric cases that were transferred to ICU out of 3089 total deliveries during that period, which was 7.9% out of all deliveries. Based on the gestational age, there were 19 obstetric cases that were admitted less than 28 weeks (7.7%) including miscarriage and ectopic pregnancy cases, 89 cases of 28-36 weeks (36.3%), and 137 cases were 37 weeks and above (55.9%).

The indication of obstetric cases admitted to the ICU could be caused by obstetric indication, or related to the medical problem that was not related to the pregnancy itself. Based on that category, there were 75.1% cases of obstetric indication (184 cases) that were transferred to the ICU, while the non-obstetric indication were only 24.9% (61 cases). The major obstetric indication that needed transfer to the ICU was hypertension in pregnancy, while the major non-obstetric indication was related to the heart disease that was acquired by the patient before or during the pregnancy.

Discussion

The descriptive study of obstetric cases that were admitted to an ICU in India reported about 0.1-0.9% cases out of all total deliveries. (4) This was a bit different compared to the data in ICU Sanglah General Hospital, which was 7.9% out of total deliveries for the last 3 years (245 obstetric cases out of 3089 all deliveries). High number of ICU transfer rate in Sanglah General Hospital may be related to the decreasing number of normal obstetric cases that were admitted to Sanglah General Hospital. On the other hand, the complicated obstetric cases increased due to the status of Sanglah General Hospital as the tertiary referral hospital in Bali and surrounding area. The other study that was conducted in the ICU of tertiary referral hospital in India, there were 11.6% obstetric cases that were transferred to ICU. (5) Based on this study, the number of ICU admission for obstetric cases in the tertiary referral hospital was almost similar.

The mortality rate of obstetric cases that were admitted to the ICU was 10.2% out of 245 cases for the last 3 years. This data was similar with the data

from the European Society of Intensive Care Medicine, where the mean mortality rate of critical obstetric cases was between 12-20%. (3) The prognosis for those patients increased if the labor was finally commenced or if there was any termination of pregnancy. Few studies showed that APACHE II scoring (Acute Physiology and Chronic Health Evaluation) and SAPS II scoring (Simplified Acute Physiology Score) can be used to predict the mortality or prognosis for patients who are admitted to the ICU, even to non-obstetric cases. (3) The mortality rate of obstetric cases in ICU itself was only 45.4% out of all maternal mortality rate in Sanglah General Hospital. The other maternal death was occured in the other ward such as Intensive Cardiac Care Unit (ICCU) or labor ward.

Based on the phase of pregnancy when the patients were transferred to the ICU could be divided into during pregnancy or antepartum period and the postpartum period. In this study there were 24 antepartum cases that were transferred to the ICU (9.8%) and 221 postpartum cases that were transferred to the ICU (90.2%). This data was almost similar with a previous study, which also found about 70.8% postpartum cases, with two major obstetric indications that were postpartum hemorrhage (51%) and hypertension in pregnancy (18%). (5) Postpartum hemorrhage and hypertension in pregnancy sequelae can cause hemodynamic imbalance and need further intensive management in the ICU. In this descriptive study, there were about 44 eclampsia cases, which is the most severe form of hypertension in pregnancy, that needed intensive management in the ICU.

Hypertension and hemorrhage were the two major indications of obstetric cases that needed ICU transfers in Sanglah General Hospital for the last 3 years. Semi-intensive care unit such as OHDU (Obstetrics High Dependency Unit) is also important for the management after the ICU management in order to maintain adequate management, especially in the tertiary referral hospital with high number of complication cases. This has been applied in the Obstetric Department of Sanglah General Hospital, where all obstetric patients were transferred to OHDU first after they were dismissed from the ICU, which finally stepped down to the general obstetric ward.

Based on the maternal age, the majority of the obstetric patients who were admitted to the ICU were between 20-34 year-old as many as 158 cases (64.5%), which was similar to the study by Leung NYW et al. (2010) in a hospital in Hong Kong with mean maternal age of 31 year-old. (6) The second most common maternal age was ≥35 year-old, which were 65 cases (26.5%) and only 22 cases (8.9%), which were below 20 year-old. It is supported by the Poedji Rochyati classification of high-risk pregnancy for those pregnant women ≥35 year-old, who are having tendency of obstetric emergency. The maternal age category ≥35 year-old is related to hypertension, diabetes mellitus, and also the risk of hemorrhage.

Summary

This descriptive study concludes that there were 245 obstetric cases, which needed transfer to the ICU in Sanglah General Hospital out of 3089 total deliveries from August 1, 2013 until August 31, 2016. The majority of obstetric patients' characteristics who were admitted to the ICU of Sanglah General Hospital were between 20-34 year-old (64.5%), 154 cases of multigravida (62.8%), 137 cases with gestational age ≥37 weeks (55.9%), 175 cases needed length of stay ≤2 days (71.4%), and 220 cases came out alive after intensive care in the ICU (89.8%). There was 75.1% cases admitted to the ICU related to the obstetric indications (184 cases), which were the hypertension in pregnancy and postpartum hemorrhage. Cardiac disease was the majority of non-obstetric cases that needed transfer to the ICU.

The result of this descriptive study is having similar result compared to other descriptive studies throughout the world, especially in the tertiary referral hospitals. It shows that there are various obstetric cases that need intensive management, and it brings challenge toward obstetricians, intensivists, and the other multidisciplinary clinicians. This descriptive study can help obstetricians and other clinicians to provide better obstetric management and reduce maternal morbidity and maternal rate.

Table 1. Characteristics of obstetric patients that were admitted to the ICU of Sanglah General Hospital (n=245)

Characteristics	Total patients	Percentage
Age		
- 16-19 year-old	22	8.9
- 20-34 year-old	158	64.5
- ≥35 year-old	65	26.5
Gestational age		
- <28 weeks	19	7.8
- 28-36 weeks	89	36.3
- ≥37 weeks	137	55.9
Gravida		
- Primigravida	84	34.3
- Multigravida	154	62.8
- Grand multigravida	7	2.9
Phase of pregnancy		
- Before labor (antepartum)	24	9.8
- Post labor (postpartum)	221	90.2
Obstetric management		
- Conservative care	12	4.9
- Spontaneous labor	21	8.6
- Vacuum extraction	0	0
- Forceps extraction	6	2.4
- Caesarean section	193	78.8
- Laparotomy	7	2.9
- Curettage	6	2.4
Length of stay in ICU		
- ≤2 days	175	71.4
- >2 days	70	28.6
Outcome		
- Alive	220	89.8
- Dead	25	10.2

Table 2. Indication of ICU admission (n=245)

Indication of ICU admission	Total patients	Percentage
Obstetric	184	75.1
- Post CS+severe preeclampsia/superimposed preeclampsia	107	43.7
- Post CS+eclampsia	40	16.3
- Post forceps extraction+eclampsia	3	1.2
- Post forceps extraction+severe preeclampsia	3	1.2
- Post spontaneous labor+eclampsia	1	0.4
- Post spontaneous labor+decrease of consciousness due to sepsis	1	0.4
- Post spontaneous labor+post partum hemorrhage+hypovolemic shock	9	3.6
- Post CS+post partum hemorrhage+hypovolemic shock	8	3.2
- Post CS+laparotomy+sepsis	1	0.4
- Post CS+laparotomy+uterine rupture repair	1	0.4
- Post laparotomy due to extrauterine pregnancy+shock	1	0.4
- Ruptured of ectopic pregnancy+hypovolemic shock	6	2.4
- Miscarriage+hypovolemic/septic shock	3	1.2
Non-obstetric problem	61	24.9
- Dengue shock syndrome	2	0.8
- Cardiac arrest	2	0.8
- Impending respiratory failure	6	2.4
- Post CS+acute decompensated heart failure	10	4.1
- Post CS+valvular heart disease	4	1.6
- Post CS+acute lung edema	6	2.4
- Post partum (CS/spontaneous labor)+acute kidney injury/acute on chronic kidney disease	10	4.1
- Miscarriage+decrease of consciousness due to metabolic	1	0.4
- Post CS+peripartum cardiomyopathy	2	0.8
- Post CS+dengue shock syndrome	1	0.4
- Thyroid crisis	1	0.4
- Post partum+congenital syringomyelia	1	0.4
- Post partum+status asthmaticus	1	0.4
- Diabetic ketoacidosis	1	0.4
- Miscarriage+cholangitis	1	0.4
- Miscarriage+meningoencephalitis	1	0.4
- Post partum (CS/spontaneous labor)+pneumonia	5	2.0
- Post CS+intracranial hemorrhage (ICH, EDH, SAH, SDH)	6	2.4

Legend: CS=Caesarean section; ICH=intracranial hemorrhage; EDH=epidural hemorrhage; SAH=subarachnoid hemorrhage, SDH=subdural hemorrhage.

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