

# Obstetric Cases in Intensive Care Unit

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## Abstract

**Objective:** Aim of this study is to evaluate retrospectively obstetric cases to determine the causes and outcomes of intensive care unit.

**Methods:** Total 6000 patients referred to ICU from 2005 to 2010 21 patients were referred to ICU because of obstetric diseases. 11 patients (52%) were delivered to university hospital from other hospital, 10 patient (48%) were also transferred to ICU from obstetric and gynecologic department. 62% were pregnant, 38% postpartum period were received to ICU because of obstetrics diseases. Mean age of 21 patients is 34.7±7.9 years. Mean age of survivors is 34.9±8, Mean age of non-survivors 32.0. ICU stay is 2.3±2.5 days. There were differences ICU stay between survivors and non-survivors (p<0.05). While ICU stay of survivors is 2.1±2.4 days, ICU stay of non-survivors is 6 days. Most common reasons about obstetric of ICU admittance were postpartum hemorrhage (57%) and hypertension related to eclampsia/preeclampsia (10%). One of patients died and mortality rate was found as 5%.

**Results:** In this study; 21 obstetric patients referred to ICU (intensive care unit) from 2005 to 2010 in pregnancy and/or postpartum period, were evaluated by observing demographic data, admittance reasons, interventions in ICU and clinical outcomes.

**Conclusion:** ICU requirement for obstetric cases was seen mostly because of obstetric hemorrhage and uncontrolled hypertension. Strategies improved for solving these problems and regular antenatal care would significantly decrease major maternal morbidity and mortality.

**Keywords:** Intensive care, maternal mortality, morbidity.

## Yoğun bakım ünitesinde obstetrik olgular

**Amaç:** Bu çalışmanın amacı yoğun bakım ünitesine (YBÜ) alınan obstetrik olguları retrospektif olarak değerlendirmek, YBÜ'ne kabul sıklığını, nedenlerini ve klinik sonuçlarını araştırmaktır.

**Yöntem:** Gaziantep Üniversitesi Şahinbey Uygulama ve Araştırma Hastanesi yoğun bakım ünitesine (YBÜ) 2005-2010 yılları arasında gebe ve/veya postpartum dönemde yatırılan 21 obstetrik olgunun retrospektif demografik verileri, kabul nedenleri, yoğun bakımda yapılan girişimleri ve klinik sonuçları incelenerek değerlendirilmeye alınmıştır.

**Bulgular:** 2005-2010 yılları arasında yoğun bakım ünitesine toplam 6000 hasta kabul edilmiş olup bu hastalar içinde 21 olgu obstetrik nedenlerden kabul edilmiştir. Obstetrik olguların 11'i (%52) diğer hastanelerden üniversiteye sevk edilen, 10'u (%48) ise üniversitemizin kadın doğum servisinde yoğun bakım ünitesine transfer edilen hastalardan oluşmaktadır. Yoğun bakım ünitesine kabul edilen hastaların %62'si gebe, %38'i postpartum dönemde olup, obstetrik nedenlerden dolayı kabul edilmiştir. 21 olgunun ortalama yaşı 34.7±7.9'dur (22-54). Yaşayan olguların ortalama yaşı 34.9±8, yaşamayan olguların ise ortalama yaşı 32.0'dir. Obstetrik olguların ortalama gestasyonel yaşları 36±4.9 haftadır. Yaşayan olguların ortalama gestasyonel yaşları 36.1±4.9 hafta, yaşamayan olguların ise ortalama gestasyonel yaşları 35.0 haftadır. Olguların yoğun bakımda yatış süreleri ortalama 2.3±2.5 gündür. Yaşayan olgular ile yaşamayan olguların yoğun bakım ünitesinde yatış süreleri karşılaştırıldığında, yaşamayan olguların yoğun bakımda yatış süreleri anlamlı derecede yüksek bulunmuştur (P<0.05). Yaşayan olguların yoğun bakımda yatış süreleri ortalama 2.1±2.4 gün iken yaşamayan olguların yoğun bakımda yatış süreleri ortalama 6 gündür. Olguların yoğun bakım ünitesine kabul edilmelerinin en sık nedeni postpartum dönemde görülen kanamadır (%57). İkinci en sık neden ise preeklampsi ve HELLP sendromudur (%10). Olguların 1'i mortalite ile sonuçlandı. Mortalite oranı %5 olarak saptandı.

**Sonuç:** Obstetrik olgular için YBÜ'ne gereksinim en sık obstetrik kanama ve kontrol edilemeyen hipertansiyon nedeniyle olmaktadır. Bu sorunların çözülmesi için geliştirilen stratejiler ve düzenli antenatal bakım maternal morbidite ve mortaliteyi belirgin derecede azaltacaktır.

**Anahtar Sözcükler:** Yoğun bakım, maternal mortalite, morbidite.

## Introduction

Obstetric cases are generally young and healthy individuals. Severe and dramatic problems may be seen due to complications related with procedures applied to subjects, or due to an intensified preexisting disease or conditions related with pregnancy. Therefore they may be in need of intensive care.<sup>[1]</sup>

Intensive care units are special treatment units with high technological equipment and with high "nurse per patient ratio" due to the close observation and rapid intervention, also in which life threatening organ failures induced by prognosis of acute or chronic conditions are treated and monitored.<sup>[2]</sup>

Pregnancy is accepted as a natural process generally without complications. However, in approximately 0.1-0.9% of the pregnant women, critical conditions or diseases requiring intensive care may occur. There are many differences between intensive care of a pregnant patient and a non-pregnant one. Pregnancy-specific diseases, physiologic changes related with pregnancy and existence of fetus should be taken into consideration in monitoring of this kind of a patient.<sup>[3]</sup>

Admission of obstetric cases to intensive care units is 0.7 in 1,000 deliveries in Canada while it is 1 in 540 deliveries in India.<sup>[1]</sup> Maternal mortality has become a more rarely seen pregnancy complication in Western countries.<sup>[1,4]</sup> In the most recent national study conducted in Canada (1997-2000), maternal mortality rate was found to be 64 in 1,054,828 live births (44 was direct, 20 were indirect),<sup>[4]</sup> while it was determined as 1 in 12,000 live births in USA and even lower in England.<sup>[1]</sup> According to the last research conducted by Health Ministry of Turkish Republic; maternal mortality is 1 in 2,140 live births based on data obtained from 615 hospitals located in 53 cities. Majority of these deaths are induced by direct obstetric reasons and can be prevented with a prenatal care given by health professionals.<sup>[1]</sup>

## Methods

In the present study, medical records of the obstetric cases admitted to Anesthesiology Intensive Care Unit of Şahinbey Application and Research Hospital (University Hospital) were retrospectively investigated in Gaziantep University between the years of 2005-2010. Totally 6,000 patients had been

admitted to intensive care unit between the years of 2005-2010 among which 21 obstetric patients (pregnant women and/or postpartum patients) were recruited to the study. Data of the patients regarding age, gestational age (week), unit transferred from (gynecology or external unit), reason for admission to the intensive care unit, invasive intervention (intubation, central venous catheterization, tracheostomy, hemodialysis), blood transfusion, duration of hospitalization in intensive care unit and clinical parameters which were developed accompanied with maternal mortality were obtained by researching patient record system of intensive care unit.

## Statistical Analysis

Descriptive statistics were expressed as mean±standard deviation and in percentages. Mann-Whitney U Test was performed in order to compare living and non-living cases. Chi-square test was used in categorical variables. Data were analyzed with SPSS 13.0 computer program. *p* value lower than 0.05 (*p*<0.05) was set as statistically significant.

## Results

Totally 6,000 patients had been admitted to intensive care unit between the years of 2005-2010 among which 21 cases had been admitted with obstetric causes.

Eleven (52%) and 10 (48%) of the 21 obstetric cases had been transferred to intensive care unit from external hospitals and gynecology unit of the university hospital, respectively. Among the patients admitted to intensive care unit, 62% were pregnant while 38% were in postpartum period.

Mean age of 21 recruited cases was 34.7±7.9 years (2,254 years old). Mean age of the living cases was 34.9±8.0 years while it was 32.0 years for nonliving cases. Mean gestational age of the obstetric cases was 36±4.9 weeks. Mean gestational age for living cases was 36.1±4.9 weeks besides 35.0 weeks of non-living cases (Table 1).

Mean duration of hospitalization in intensive care unit was 2.3±2.5 days. In non-living cases, mean duration of hospitalization was statistically significantly longer than in living cases (*p*<0.05). Mean duration of hospitalization in intensive care unit was 2.1±2.4 days in living cases while it was 6.0 days in non-living cases.

**Table 1.** Characteristics of patients in intensive care unit.

	Living (n= 20)	Nonliving (n= 1)	Total ( n= 21)
Age (mean±standard deviation)	34.9±8	32.0	34.7±7.9
Gestational age (mean±standard deviation)	36.1±4.9 (week)	35 (week)	36±4.9 (week)
*Duration of Hospitalization in Intensive care unit (mean±standard deviation)	2.1±2.4 (day)	6 (day)	2.3 ±2.5 (day)
Unit patient transferred from	(n, %)		
Gynecology unit (University Hospital)	10 (48)		
External unit	11 (52)		

p<0.05: compared with living cases

All of the cases had been applied non-invasive monitorization techniques. Central venous catheterization was the most applied intervention in terms of intubation (9.5%) and hemodialysis (9.5%), (Table 2). In addition, 62% of the cases had been infused blood or blood product (n=13 cases).

The most frequent cause of admission to intensive care unit was bleeding seen in postpartum period (57%, n=12 cases). Of these cases, 8 had bleeding after caesarean section and 4 had atony bleeding after normal vaginal delivery.

Preeclampsia and HELLP syndrome were second causes of admission to intensive care unit. Other causes included eclampsia, intrauterine loss, DIC, sepsis, pulmonary embolism and anemia accompanied with fetal distress (Table 3). One of the 21 obstetric cases admitted to intensive care unit had ended up with mortality. Mortality rate was 5% and HELLP syndrome was the reason for mortality. Neonatal mortality rate was 11.1% (n=3 cases) and inuteromort fetalis was the reason for all neonatal mortality cases.

There was a significant association between invasive intervention and duration of hospitalization in intensive care unit ( $p<0.05$ ). It was determined that patients who had been applied invasive intervention stayed longer in the intensive care unit compared with patients who had not been applied any invasive interventions. Similarly there was a significant relation between cause of or diagnosis for admission to intensive care unit and duration of hospitalization in the unit ( $p<0.05$ ). Duration of hospitalization in the intensive care unit ranged from 6 to 10 days in the cases of preeclampsia, HELLP Syndrome, DIC and intrauterine loss ( $p<0.05$ ) while it was 1-3 days for other cases.

**Table 2.** Interventions and treatment in intensive care unit (n=21).

Central venous catheterization	14.3%
Reintubation	9.5%
Hemodialysis	9.5%

**Table 3.** Reasons for admission of obstetric cases to intensive care unit.

Diagnosis	n	%
Eclampsia	1	4.8
HELLP syndrome	1	4.8
Preeclampsia and HELLP syndrome	2	9.5
Intrauterine loss	1	4.8
Postoperative bleeding	12	57.1
DIC + Iuex + Sepsis	1	4.8
Postoperative bleeding + DIC	1	4.8
Anemia + Fetal distress	1	4.8
Pulmonary embolism + Postoperative bleeding	1	4.8
Total	21	100.0

## Discussion

The most serious adverse effect in healthy pregnant women is loss of mother. There may be life threatening conditions during pregnancy or in postpartum period and requirement of intensive care.<sup>5,6</sup> Close observation and monitorization in intensive care unit help early recognition of the problems, earlier discharge of the patients and prevention of possible complications.

In the present study, obstetric and gynecologic cases admitted to intensive care unit of Gaziantep University Hospital were retrospectively investigated. Of the cases admitted to intensive care unit,

**Table 4.** Factors affecting duration of hospitalization in intensive care unit.

	p
Invasive intervention	0.00
Diagnosis	0.013
Transfer	0.420

52% had been transferred from external clinics differently from the study of Keleş et al.<sup>[1]</sup> in which this ratio was 72% while Bibi et al.<sup>[7]</sup> and Uysal et al.<sup>[2]</sup> had found as 22% and 8%, respectively.

Postpartum hemorrhage and hypertensive conditions were the leading causes of admission to intensive care unit in the present study which is similar with many other studies.<sup>[1,5,7-9]</sup> Among the admitted patients, 62% (n=13) were pregnant and 38% (n=8) were in postpartum period which was found to be different from other studies. In the study of Baskett et al.<sup>[8]</sup> 16 of the admitted patients were pregnant and 101 were in postpartum period while in the study of Souza et al.<sup>[10]</sup> 99 patients were in antepartum and 25 patients were in postpartum periods. In the studies of Bibi et al.<sup>[7]</sup> and Okafor et al.<sup>[9]</sup> all of the patients who had been admitted to the intensive care unit were in postpartum period.

In our study, 5 cases had been performed hysterectomy, 4 patients had been operated due to postpartum atony and 1 patient due to placenta praevia which is similar with the findings of the study of Erdemoğlu et al.<sup>[11]</sup> In the study of Erdemoğlu et al.<sup>[11]</sup> emergency peripartum hysterectomy was applied mostly because of postpartum uterine atony induced bleeding. Uterus rupture, pelvic infections and placentation-related reasons were other causes. Hysterectomy was performed due to uterine atony bleeding (in 18 patients), placenta praevia (in 1 patient) and myoma uteri (in 1 patient) in the study of Yalçınkaya et al.<sup>[12]</sup> The most frequent hysterectomy indication was found to be postpartum uterine atony induced bleeding in another study.<sup>[13]</sup> In the study of Akdeniz et al.<sup>[14]</sup> 2 cases were applied hysterectomy because of excessive bleeding resulting from placenta praevia.<sup>[14]</sup>

Duration of hospitalization in intensive care unit varied from 1 to 10 days while mean was

2.3±2.5 days. Similarly with other studies, longer hospitalization was found to result from mostly preeclampsia and HELLP syndrome.<sup>[7,8]</sup> Bibi et al. had determined that duration of hospitalization was 1-8 days (mean 2 days) and longer hospitalization had resulted from hypertensive conditions such as preeclampsia.<sup>[7]</sup>

In the present study there was a statistically significant association between invasive intervention and duration of stay in the intensive care unit (p<0.05). Patients who had been applied invasive intervention were found to stay longer in the intensive care unit compared with the non-applied patients. Cases with preeclampsia, HELLP syndrome, DIC and intrauterine loss had a duration of hospitalization for 6-10 days in our study (p<0.05) while other cases had 1-3 days.

Maternal mortality rate was 5% in the present study differently from other researchers' studies like Bibi et al.<sup>[7]</sup>, Olufemi et al.<sup>[15]</sup> and Baskett et al.<sup>[5]</sup> who had found 33%, 28.6% and 0.96%, respectively. HELLP syndrome was the main cause of mortality in our study. Several authors had defined eclampsia, severe preeclampsia, postpartum bleeding, septic abortus, HIV infections and DIC as the causes of maternal mortality.<sup>[1,5,7,9,10,15]</sup> Neonatal mortality rate was 11.1% (n=3 cases) all of which were lost due to inuteromort fetalis.

## Conclusion

Consequently, requirement of intensive care for obstetric cases is mostly because of obstetric bleeding and uncontrolled hypertension. Strategies developed to solve these problems and regular antenatal care will prominently reduce morbidity and mortality.

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