Experimental
&
Clinical Article

Outcome of Obstetric Patients Admitted to a Medical Intensive Care Unit in Southeastern Turkey

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OBJECTIVE: Obstetric patients represent <2 % of intensive care unit (ICU) admissions with a corresponding ICU utilization rate of 0.17-0.4% of deliveries. There is no data about the rate of ICU utilization by obstetrical patients or the outcome of these patients admitted to ICU in Turkey. The purpose of this study was to look at the outcomes of obstetric patients admitted to a medical ICU at a major referral center in southeastern Turkey.

MATERIAL AND METHOD: Prospectively entered ICU database and patient charts were reviewed for obstetric admissions between February 2007 and May 2008.

RESULTS: Forty-two obstetric patients were admitted to the ICU representing 4.4% of ICU admissions and 5.1 % of deliveries. Seventy-six percent was admitted in the postpartum period. Main reasons for ICU admission were hemodynamic instability (43%) and mental status change (36%). Fifty-five percent of the admission were due to obstetrical reasons. Hypertensive states of pregnancy (38%) and postpartum bleeding (14%) were the most common obstetrical reasons.

CONCLUSION: Maternal mortality was 4.8% in our all patients.Two observed mortalities were due to neurological complications: hemorrhagic CVA in the setting of eclampsia and uncal herniation secondary to cavernous sinus thrombosis.

Key Words: Obstetric patients, ICU admission, Maternal mortality, Critical care

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Introduction

In developed countries, only a minority of pregnant women require ICU admission representing 0.17-0.4% of deliveries[1-4] and less than 2% of ICU admissions.[1] Maternal ICU mortality is reported to be 0-5%.[1-3,5] There is no data about the rate of ICU utilization by obstetrical patients or the outcome of these patients admitted to ICU in Turkey.

The purpose of this study was to look at the outcomes of all obstetric patients admitted to a 28-bed medical intensive care unit of a 850-bed major teaching hospital and a referral center in southeastern Turkey and compare our results to those previously reported. We reviewed our obstetric admissions for ICU utilization rates, severity of illness, need for invazive procedures, and fetal and maternal outcome.

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Material and Method

The obstetric patients who were admitted to our medical intensive care unit between February 2007 and May 2008 were identified using the prospectively entered ICU database. The following data were extracted: demographics, APACHE-II scores at admission, comorbidities, indication for ICU admission, primary ICU admission diagnosis, origin of admission (transfer from an outside center, admission from ER vs. flor), need for mechanical ventilation, tracheostomy, arterial and central venous catheterization mechanical ventilation days, need for dialysis, plasmapheresis and blood products, nosocomial infections, length of ICU stay and ICU mortality. In addition, patients' charts were reviewed for the obstetric history. Obstetric data included gestational age at the time of ICU admission and at the time of delivery, and type of delivery. The study protocol was approved by the ethical committe of Gaziantep University, Medical Faculty.

Continuous variables which were distributed normally were expressed as mean ± SD, whereas, those which were not distributed normally were expressed as median (interquartile range, IQR). Categorical variables were compared between the groups using the chi-square test; continuous variables

were compared between the groups using the student t test and Mann-Whitney-U test when appropriate. The results were stated as statistically significant when the p value was < 0.05. SPSS 13.0 statistical package was used for analyses.

Gaziantep University Medical Intensive Care Unit is a 28-bed medical intensive care unit, established in February 2007. There is an ICU team consisting of an intensivist and rotating residents from various departments including internal medicine, pulmonary, infectious diseases, emergency medicine and anesthesiology providing patient care in a closed ICU system. All potential ICU admissions are screened by an intensivist. Because of ICU admitting policy, all patients with ICU admission criteria from the floors are accepted to the medical ICU, whereas patients from outside centers may be refused based on bed availability. Obstetrical team consisting of an attending and several obstetrical residents perform daily rounds and provide input on the obstetrical problems. The Obstetrics and Gynecology Department of Gaziantep University is the major referral center for the southeastern region of Turkey.

Results

Between February 2007 and May 2008, of the 948 patients who were admitted to the medical intensive care unit, 42 were obstetric patients representing 4.4% of ICU admissions and 5.1% of the 822 deliveries in the same period. Baseline clinical characteristics of the patients were demonstrated in Table I. At the time of ICU admission, majority of the patients were postpartum as opposed to antepartum (76% vs. 26%). Main reasons for ICU admission were hemodynamic instability and mental status change (43% and 36% respectively).

Obstetrical patients were younger and had lower APACHE-II scores than the general ICU patients admitted during the same period (mean age 29±6.4 vs. 56±18, p<0.01; APACHE-II score 12±7.1 vs. 20±9.6, p< 0.01). There was no difference in APACHE-II scores between the patients with obstetrical and nonobstetrical admitting diagnoses (10.4±5.5 vs. 14.3±8.4, p=0.08), or between antepartum and postpartum patients (11.1±7.2 vs. 12.5±7.2, p=0.6).

Primary ICU admitting diagnosis was obstetrical in the majority of patients (Table II); hemolysis, elevated liver enzymes, low platelet count (HELLP) syndrome and eclampsia were the leading diagnoses (19% each). Patients in the postpartum period were more often admitted to the ICU with a nonobstetrical primary ICU diagnosis (65% vs. 27%, p=0.03). Six patients were admitted with postpartum bleeding, 5 cases were due to uterine atony and 1 was postpartum DIC due to ablatio placenta. Hypogastric artery ligation was performed in these 6 patients, and hysterectomy was carried out in 5 of them after the ligation procedure. Median number of units of blood products were as follows in these patients: 5.5 (IQR, 2.8-9) packed red cells, 5 (IQR,2-11.8) fresh frozen plasma.

Rates of various ICU procedures including arterial and central venous catheterizations were shown in Table III. Three patients (7%); required dialysis for acute renal failure secondary to HELLP (2 patients) and microscopic polyangiitis (1 patient). Five patients with HELLP received daily plasmapheresis until the platelet count was more than 100,000/μL with a median plasmapheresis sessions of 3 (IQR, 2-6). Thirteen patients (31%) required mechanical ventilation, majority were successfully extubated after short-term mechanical ventilation. Reintubation rate after a spontaneous breathing trial (8%) was low, 4 patients (31%) required tracheostomy due to low Glascow Coma Score (GCS).

Two patients expired in the ICU resulting in a maternal ICU mortality of 4.8%. First patient developed hypoxic encephalopathy as a result of sudden cardiac arrest at an outside center, and the second patient developed uncal herniation as a result of cavernous sinus thrombosis. These patients expired secondary to sepsis after staying in the ICU for 97 and 45 days respectively. One patient developed hypoxic encephalopathy after a short period of hypotension during dialysis, she remains in the ICU as a ventilator-dependent patient with a GCS of 4. One patient remained significantly disabled with a GCS of 4 after developing thalamic hemorrhage in the setting of eclampsia. The remaining 38 patients (90%) were discharged to the floor in good condition, and were discharged from the hospital eventually. One patient developed catheter-associated urinary tract infection, two patients with tracheostomy developed nosocomial pneumonia. There were no cases of catheter-related blood stream infection.

Discussion

This is the first study from Turkey looking at the outcome of obstetrical patients admitted to ICU. Our results indicate that ICU utilization rate of obstetrical patients was quite high (5.1%, 42 out 822 deliveries during the study period). There are three reasons for this finding. First, majority of our patients did not receive proper prenatal care. Second, resources of the outside centers in southeastern Turkey for supporting complicated obstetrical patients, such as having a properly functioning blood bank or available ICU beds, are very limited. Therefore, we end up with a high number of referrals from other centers. Finally, our institution is the major referral center of the region.

Another important finding of this study was that our mortality rate of 4.8% was within the range of what was reported from developed countries (0-5%).[1-3,5] Mean age, APACHE-II scores, indications for ICU admission and rates of utilization for various ICU interventions such as mechanical ventilation, arterial and central venous catheterization were similar to

what was reported in these studies indicating that the low mortality rate was not due to the possibility that we admitted less sicker patients.This favorable finding indicates that our institution is able to support the needs of complicated obstetrical patients. Specifically, we believe that accepting admissions from outside centers or the emergency department in a timely manner, having a well functioning blood bank and aggresive treatment of organ dysfunctions such as respiratory and renal failure in the ICU are responsible for the low mortality rate.

This study shares many common findings with the previous similar studies. Majority of patients were admitted in the postpartum period (76%), as opposed to in the antepartum period (24%) (postpartum patients 55-93%, antepartum patients 7-45%).[1-9] HELLP, eclampsia and postpartum bleeding were the most common obstetrical diagnoses. Indications for ICU admission are also similar to what was reported from both developed and developing countries However, the percentage of obstetric patients that were admitted with a medical diagnosis (45%) was higher than what was reported (20-43%).[1-6,8,10] We believe that this finding is due to lack of proper prenatal care.

Conclusions

The results of this study showed that the ICU utilization rates of obstetrical patients in a referral center in southeastern Turkey is high. Leading obstetrical diagnoses were HELLP, eclampsia and postpartum bleeding. The mortality rate of 4.8% is within the range of data from developed countries. Two observed mortalities were due to neurological complications: hemorrhagic CVA in the setting of eclampsia and uncal herniation secondary to cavernous sinus thrombosis.

Güneydoğu Anadolu Bölgesi'nde Dahili Yoğun Bakım Ünitesine Yatırılan Obstetrik Hastaların Sonuçları

AMAÇ: Obstetrik hastalarda %2'den az yoğum bakıma başvuru görülür ve bunların %0.17-0.4'ü doğum olayına bağlıdır. Obstetrik hastaların yoğun bakıma alınma oranı ve sonuçlarını gösteren Türkiye'de yapılmış bir çalışma yoktur. Bu çalışmanın amacı Güneydoğu Anadulu'da yoğun bakıma alınan obstetrik hastaların sonuçlarını incelemekti.

GEREÇ ve YÖNTEM: Şubat 2007-Mayıs 2008 tarihlerinde yoğun bakıma alınan hastaların bilgileri prospektif olarak kaydedildi ve sonra bu kayıtlar incelendi. Yoğun bakıma alınanların %4.4'ünü 42 obstetrik hasta oluşturmaktaydı ve bunların %5.1' i doğum ile ilişkiliydi. %76'sı postpartum dönemde alınmıştı.

BULGULAR: Yoğun bakıma alınmanın esas nedenleri %43 hemodinamik bozukluk, %36'sı mental durum değişikliği idi. Başvuruların %55'i obstetrik nedenliydi. Gebelerde %38 hipertansiyon ve %14'ü postpartum kanama en sık iki nedendi. **SONUÇ:** Maternal mortalite oranımız %4.8 idi.Eklampsi zemininde serebrovasküler atak ve kavernöz sinus trombozuna sekonder unkal herniasyon ise görülen iki nörolojik mortalite nedeniydi.

Anahtar Kelimeler: Gebe hastalar, Yoğun bakıma alınma, Anne mortalitesi, Yoğun bakım

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