



Maternal and Neonatal Outcomes of Women with Preeclampsia and Eclampsia at a Tertiary Care Center

Tersiyer Bir Merkezdeki Eklampsi ve Preeklampsi Olgularının Anne ve Bebek Sonuçları

Hediye Dağdeviren, Atilla Çankaya, Hüseyin Cengiz, Tuba Tombul, Ammar Kanawati, Sema Süzen Çaypınar, Murat Ekin

Bakırköy Dr. Sadi Konuk Teaching and Research Hospital, İstanbul, Turkey

Abstract

Aim: Preeclampsia is a multisystem disorder of unknown etiology and one of the leading causes of maternal, fetal and neonatal mortality and morbidity. Adverse outcomes can be improved by early identification of the disease and timely referral to a tertiary center. The aims of this study were to evaluate the outcomes of preeclampsia-eclampsia cases and share our experiences in a tertiary center.

Methods: The study conducted by retrospectively analyzing the data of 350 women who gave birth between 2008 and 2013 at a tertiary care center.

Results: The mean age of the enrolled women was 35 years, the mean gestational age at delivery-36 weeks, the mean birth weight-2.73 kg, and the mean platelet count was 204.000/mm³. The incidence of preterm deliveries was 66.6%. Severe preeclampsia was noted in 29.4% of cases. Neonatal intensive care unit admissions were seen in 10.6% of cases. A total of 22.9% of these women had vaginal deliveries, while the other 77.1% underwent cesarean section. High systolic blood pressure and elevated serum alanine and aspartate aminotransferase values had significant independent effects of differentiating between mild and severe preeclampsia.

Conclusion: Fetomaternal morbidity and mortality rates associated with hypertensive disorders are alarming, especially in developing countries. As such, the high-risk obstetric population should be screened earlier in pregnancy. A system allowing early referral in these cases should be created. (*The Medical Bulletin of Haseki 2015; 53:143-6*)

Key Words: Fetomaternal mortality, pregnancy, preeclampsia, perinatal outcomes

Özet

Amaç: Preeklampsi etyolojisi bilinmeyen maternal ve fetal mortalite ve morbiditeyi arttıran birden fazla organı tutan bir hastalıktır. Hastalığın erken tanısı ve hastaları üçüncü basamak tedavi merkezine doğru zamanda yönlendirmek kötü sonuçları önlemekte önemlidir. Bu çalışmanın amacı preeklampsi ve eklampsi olgularının gebelik ve perinatal sonuçlarını aktarmaktır.

Yöntemler: Çalışmada geriye dönük olarak 2008-2013 yılları arasında hastanemizde doğurmuş 350 preeklampsi ve eklampsi olgusunun verilerini inceledik.

Bulgular: Çalışmada yer alan hastaların ortalama yaşları 35; ortalama doğumda gebelik haftaları 36; ortalama doğum kiloları 2,73 kg; ortalama trombosit sayıları 204,000 mm³ idi. Preterm doğum oranı %66,6 idi. Hastaların %29,4'ü ağır preeklampsi idi. Olguların %10,6'sı yenidoğan yoğun bakım ünitesine ihtiyaç duymuştu. Olguların %22,9'u vajinal doğum yaparken, %77,1'i sezeryan ile doğurmuştu. Sistolik kan basıncı, serum alanin ve aspartat transaminaz yüksekliği hafif ve ağır preeklampsi ayırımında belirgin bağımsız etkiye sahipti.

Sonuç: Özellikle gelişmekte olan ülkelerde hipertansif hastalıklar ve buna bağlı fetomaternal mortalite ve morbidite oranları belirgin olarak artmaktadır. Bu nedenle yüksek riskli gebeler gebeliğin erken haftalarında taranmalıdır. Bu hastaları gebeliğin erken haftalarında tanıyıp tersiyer merkeze yönlendirecek bir sistem oluşturulmalıdır. (*Haseki Tıp Bülteni 2015; 53:143-6*)

Anahtar Sözcükler: Fetomaternal mortalite, gebelik, preeklampsi, perinatal sonuçlar

Introduction

Hypertensive disorders, the most common medical complication of pregnancy, affect 6-8% of all pregnancies (1). Among the types of gestational hypertension, preeclampsia is the most dangerous form. Preeclampsia is a multisystem disorder of unknown etiology (2) that can be observed as eclampsia or hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome (3). Preeclampsia and other hypertensive diseases of pregnancy comprise one of the leading causes of maternal, fetal, and neonatal mortality and morbidity (4,5). Early detection is very important and its management includes antihypertensive treatment, seizure prophylaxis, and rapid delivery in severe cases (6). Adverse maternal and perinatal outcomes can be improved by regular antenatal checkups, early identification of the disease, timely referral to a tertiary care center, timely decision on the mode of delivery, and the availability of specialist care during labor and after delivery.

There are many publications on this subject in the world, but very few from Turkey. The aims of this study were to evaluate perinatal and obstetric outcomes of preeclampsia-eclampsia cases and to share our experiences in a tertiary care center.

Methods

The study conducted by retrospectively analyzing the records of 350 women with preeclampsia-eclampsia who gave birth between 2008 and 2013 at a tertiary care center. Preeclampsia was defined according to the International Society for Study of Hypertension in Pregnancy (7). This definition requires two recordings of diastolic blood pressure (DBP) of ≥ 90 mmHg at least 4 hours apart or one recording of DBP of 120 mmHg in a previously normotensive woman, and urine protein excretion of ≥ 300 mg in 24 hours or two readings $\geq 2+$ on a dipstick analysis of midstream or catheter urine specimens, if no 24-hour collections are available. Preeclampsia severity was graded as:

1. Severe-DBP >110 mmHg with persistent albuminuria (2+) in addition to headache, visual disturbance, oliguria, and upper abdominal pain.
2. Mild-DBP <100 mmHg with albuminuria (trace or 1+) without the above symptoms (8).

Eclampsia was defined as the presence of seizures in women with preeclampsia in whom the seizures could not be attributed to other causes. Gestational age of the cases was calculated according to the last menstrual period, fetal biometric measurements including crown-rump length in the first trimester and biparietal diameter, abdominal circumference, and femur length in pregnancy weeks 16-20. Fetal mortality was defined as fetal death >22 weeks'

gestation in the womb, while neonatal morbidity was defined as newborns needs for neonatal intensive care unit (NICU) admission. Preterm delivery was defined as delivery prior to gestational week 37.

Mean, standard deviation, median, minimum-maximum, ratio, and frequency values were used for the statistical analyses. Distribution of the variables was checked using the Kolmogorov-Smirnov test. Quantitative data were analyzed by the Mann-Whitney U test. In the analysis of qualitative data, chi-square test and Fisher's exact test were used when the chi-square test conditions were not provided. Effect level was investigated by logistic regression. Data were entered in Microsoft Excel and analyzed using the Statistical Package of the Social Sciences (SPSS Inc., Chicago, IL, USA) version 22.0.

Results

The mean age of the enrolled women was 35 years (range: 17-54 years); the mean gestational age at delivery-36 weeks (range: 20-41 weeks), the mean infant birth weight-2.73 kg (range: 0.3-4.88 kg), and the mean platelet count was 204.000/mm³ (range: 13.000-458.000/mm³). The incidence of preterm deliveries was 66.6%. Severe preeclampsia (>110 mmHg DBP) was noted in 29.4% of cases. NICU admissions were seen in 10.6% of cases mainly due to prematurity, birth asphyxia and intrauterine growth restriction (IUGR).

A total of 80 (22.9%) women had vaginal deliveries, while the other 270 (77.1%) underwent cesarean section due to HELLP syndrome (61), placental abruption (35), prematurity (31), history of cesarean section (72), breech presentation (10), fetal distress (50). Approximately 10% of the women had placental abruption. Basic patient demographic and obstetric data are shown in Table 1.

Among the 350 women with preeclampsia, 231 (66%) were diagnosed with mild preeclampsia and 119 (34%) had severe preeclampsia. There were no significant differences in patient age between the two groups. Systolic blood pressure (SBP), DBP, serum aspartate aminotransferase (AST), and serum alanine aminotransferase (ALT) levels in patients in the severe preeclampsia group were significantly higher than those in the mild preeclampsia group ($p<0.05$). In addition, the mean thrombocyte count and infant birth weight in patients with severe preeclampsia were significantly lower than in patients in the mild preeclampsia group ($p<0.05$). When we compared the patients according to the delivery type, we found that the cesarean section rate was significantly higher in the severe preeclampsia group ($p<0.05$). There were no differences about fetal mortality between the two groups ($p>0.05$). The incidence of HELLP syndrome, urinary albumin levels, magnesium sulfate

(MgSO₄) prophylaxis and neonatal morbidity rates were significantly higher in the severe preeclampsia group than in the mild preeclampsia group ($p < 0.05$). The incidence of preterm delivery (<34 weeks' gestation) was significantly higher in the severe preeclampsia group than in the mild preeclampsia group (Table 2). In the severe preeclampsia group, there was no difference in fetal mortality rates between patients who delivered at <32 and <37 weeks' gestation. The neonatal morbidity rate was significantly higher in patients with severe preeclampsia who delivered at <32 or <37 weeks' gestation ($p < 0.05$) (Table 3).

Univariate logistic regression analysis of the data revealed that high SBP, elevated serum ALT and AST values, thrombocytopenia, HELLP syndrome, delivery type, gestational age, and positive serum urine albumin had significantly predictive effects for differentiating between severe and mild preeclampsia. Multivariate logistic regression revealed that SBP and elevated ALT and AST values had significant independent effects of differentiating between mild and severe preeclampsia (Table 4).

Discussion

Hypertensive disorder of pregnancy is considered a major worldwide health problem that carries an increased risk of perinatal and maternal morbidity and mortality (8). Advanced maternal age is one of the risk factors for preeclampsia (9). To support this information, in this study, the mean age of the enrolled women was 35 years (range: 17-54 years). Although it has been shown that younger maternal age was an independent risk factor for preeclampsia (10-12), our data confirm that a maternal age of <17 years seems not be a risk factor for preeclampsia.

Cesarean delivery rates are reportedly increased in patients with hypertensive disorder of pregnancy (13). Vaginal delivery is recommended for women with severe preeclampsia in the absence of obstetric indications for cesarean section. The cesarean rate was significantly higher in the severe preeclampsia group in the current study. Similarly, increased cesarean rates were reported in some studies (14,15). In contrast to our results, Tavassoli et al. have reported that severe preeclampsia was not associated with increased cesarean rates (16). Vaginal delivery may be feasible in the absence of emergency obstetric indications for cesarean section.

Hypertensive disorder of pregnancy is responsible for significant maternal/perinatal morbidity and mortality. Yucesoy et al. have reported that IUGR, low APGAR scores, and fetal death during labor were significantly more frequent in patients with severe preeclampsia (3). According to neonatal morbidity rates, similar to this report, we found that the morbidity rate was significantly higher in the severe preeclampsia group than in the mild

preeclampsia group ($p < 0.05$). Similarly, there were no maternal deaths in our study or difference between the two groups in fetal mortality rates.

Preterm delivery is one of the most important complications of hypertensive disorder of pregnancy, and preterm babies are more likely to be admitted to the NICU (17) than term infants. In our study, gestational age of <34 weeks at delivery was significantly more common in the severe preeclampsia group and the neonatal morbidity rate was significantly higher in patients with severe preeclampsia who delivered at <32 and <37 weeks' gestation. Similar to our results, Buchibinder and colleagues reported that the perinatal mortality rate in women with severe preeclampsia was 8.9% and that the neonatal morbidity rate was high (18). Khashu and colleagues (19) studied perinatal outcomes associated with preterm birth at 33-36 weeks' gestation and found that the perinatal mortality rate was 8 times higher and the neonatal mortality rate was 5.5 times higher in preterm babies than in term babies. Similarly, Young et al. (20) studied mortality in late preterm newborn babies and found that the neonatal mortality rate was higher in preterm babies than in term babies.

In our study, the mean thrombocyte count in patients with severe preeclampsia was significantly lower than that in the mild preeclampsia group. Mohaptra concluded that there is an inverse relationship between preeclampsia severity and platelet count (21). In our study, magnesium sulfate was given to 52.1% of patients with severe preeclampsia who presented with the signs of imminent eclampsia; among them, six (9.6%) developed seizures before receiving magnesium sulfate, while two (3.2%) developed seizures despite being given magnesium sulfate prophylaxis. The MAGPIE trial (22) reported a 0.8% incidence of seizures in patients who received the prophylaxis.

In conclusion, fetomaternal morbidity and mortality rates associated with hypertensive disorders are alarming, especially in developing countries. As such, the high-risk obstetric population should be screened earlier in pregnancy. There should be a system of early referral and better transport facilities for the referral of these cases. Regular fetomaternal monitoring of high-risk cases should be performed by specialist doctors, while deliveries of such cases should be conducted in well-equipped hospitals to minimize adverse maternal and perinatal outcomes.

Conflict of interest: The authors reported no conflict of interest to this article.

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