Maternal and Perinatal Outcomes of Cases With Eclampsia: Review of 113 Cases

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Abstract

Objective: To evaluate the maternal, neonatal and perinatal outcomes in eclampsia cases.

Methods: Patients who were diagnosed as eclampsia and treated in our clinic between January - December 2006 have been evaluated retrospectively, according to maternal, perinatal and neonatal outcomes.

Results: Eclampsia was diagnosed in 113 cases of 90702 patients. The incidence of eclampsia is 1.2 per 1000 deliveries. Mean gestational weeks was 34.04±3.81. Rates of eclampsia during antepartum, intrapartum, and postpartum period were 71.7%, 19.5%, and 8.8% respectively. Nulliparity rate of cases was 63.7%. Convulsion rate was 52.7% out of hospital, mean convulsion number was 1.42±0.83 and convulsion rate under magnesium sulphate treatment was found to be 19.8%. Major maternal morbidity rate was 46.4% and most common reason of morbidity was HELLP syndrome (39.1%). Rate of maternal morbidity cases who were treated in intensive care unit was 8.8%. There were no maternal mortality case related to eclampsai. Neonatal morbidity rate was found to be 24.8%. Perinatal and neonatal mortality rates were 8%, 5.3% respectively.

Conclusion: Eclampsia continues to be the most important cause of maternal, fetal morbidity and mortality. To prevent eclampsia and its complications, antenatal care of all pregnant women is important.

Keywords: Eclampsia, perinatal and maternal outcomes.

Eklampside maternal ve perinatal sonuçlar: 113 olgunun değerlendirilmesi

Amaç: Eklampsi olgularında maternal, neonatal ve perinatal sonuçları değerlendirmek.

Yöntem: Eklampsi tanısı alarak Ocak 2002 - Aralık 2006 tarihleri arasında kliniğimizde tedavi edilen olguların maternal, perinatal ve neonatal sonuçları retrospektif olarak değerlendirildi.

Bulgular: 90702 doğumda 113 olgu eklampsi tanısı aldı. Eklampsi insidansı 1.2/1000 olarak bulundu. Ortalama gebelik haftası 34.04±3.81 haftaydı. Eklampsi, antepartum, intrapartum ve postpartum dönemde sırası ile %71.7, %19.5 ve %8.8 oranlarındaydı. Olguların %63.7'si nullipardı. Hastane dışında konvülziyon geçirme oranı %52.7, ortalama konvülziyon sayısı 1.42±0.83 ve magnezyum sülfat tedavisi altında konvülziyon oranı %19.8 bulundu. Major maternal morbidite oranı %46.4 ve en sık morbidite nedeni HELLP (%39.1) sendromuydu. Maternal morbidite bulunan olguların %8.8'i yoğun bakım ünitesinde tedavi edildi. Eklampsiye bağlı maternal mortalite olgusu tespit edilmedi. Neonatal morbidite oranı %24.8, perinatal ve neonatal mortalite oranları %8 ve %5.3 bulundu.

Sonuç: Eklampsi, önemli bir maternal morbidite, fetal morbidite ve mortalite nedeni olarak önem taşımaya devam etmektedir. Eklampsi ve komplikasyonlarını önlemede, tüm gebelerin antenatal izlemlerinin yapılması önemlidir.

Anahtar Sözcükler: Eklampsi, perinatal ve maternal sonuçlar.

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Introduction

Eclampsia is described as development of unexplained of convulsion or coma during pregnancy or postpartum period at patients with symptoms or signs of preeclampsia.[1] The incidence of eclampsia is between 1/2000 and 1/3448. Eclampsia is more prevalent at woman with multiple gestation and low socio-economical level with no prenatal care.[2-6]

Hypertension is the foundation finding for the diagnosis of eclampsia but hypertension may be absent.[7] Proteinuria usually with eclampsia but it not necessary for the diagnosis. The beginning of convulsion may be prepartum, intrapartum or postpartum.[7] The incidence of convulsions antenatal and postnatal is reported as 38-53%, 11-44% respectively.[4,7-9]

Eclampsia has an increased risk of maternal and fetal mortality and morbidity. Maternal mortality rates have been determined as 0–14%.[3,4,10] In eclampsia cases the risks of placental abruption, dissemine intravascular coagulation, pulmonary edema, acute renal failure and HELLP (Haemolysis, elevated liver enzyme, low platelet) are higher.[4,7,10] Perinatal mortality rates have been determined as 5.6 – 11.8% in the recent years and prematurity, abruption placentae, IUGR have been determined as the fundamental reason of perinatal mortality.[4,6,11]

In our study we aimed to evaluate maternal and perinatal outcomes by determining eclampsia incidence in our hospital.

Method

Patients who diagnosed as eclampsia in our obstetric clinic between January 2002 and December 2006 have been evaluated retrospectively. All cases with eclampsia seizure have been treated with 2gr/hr IV MgSO4 infusion after 4.5 mg bolus dose in 10 minutes. To maintain the diastolic blood pressure between 90-100 mmHg, we used Nifedipine and alfa-metildopa fort the treatment.

LMP have been used for the evaluation of gestational age and first or second trimester ultrasound findings have been used instead of LMP in patients who did not know their LMP. In all cases total urine evaluation, protein and creatinin counts in 24 hour urine collection specimens have been. Proteinuria have been described as 300 mg protein in 24 hour urine collection or protein >+1 in spot urine.[1,12] Blood counts and biochemical results have been repeated every two days. Fetal heart rate monitoring have been performed at least 2 or 3 times a day. 12 mg betamethasone has been injected within 12 hour interval for the maturation of lungs in cases whose gestational age is below 34 week.

Diagnosis of HELLP syndrome have been made when there was haemolysis (LDH>600 IU/L), increase in liver function testes (AST > 40 IU/L, ALT > 40 IU/L) and decrease in number of platelet (<150000/mm^3).[13]

Eclampsia cases have been evaluated according to demographic features, beginning time of eclampsia, way of delivery, indication of caesarean section, major maternal mortality, admission to neonatal intensive care unit, Perinatal mortality (intrauterine fetal death and early neonatal death < postnatal 7 days), neonatal deaths (postnatal 0-28 days) neonatal morbidity (RDS, NEC, IVH, Sepsis).

MedCalc program for Windows 9.2 (Belgium, www.medcalc.be) have been used for statistics analysis. Student t test have been used for independent parametric values when

statistic analysis were appropriate and for the categorical tests, chi-square have been used P values < 0.05 have been evaluated as statistically significant.

Results

One hundred thirteen cases have been diagnosed as eclampsia between January 2002 and December 2006 in 90702 total delivery cases. The incidence of eclampsia have been determined as 1.2/1000. Demographic features of eclampsia cases have been demonstrated in Table 1.

Table 1. The demographic characteristics of eclampsia cases.

Characteristics	
Age (mean ± SD)	25.22±5.23
Gravity (mean ± SD)	1.73±1.09
Parity (mean ± SD)	0.50±0.79
Gestational week (mean ± SD)	34.04±3.81
Nulliparity (n, %)	72 (63.7%)
Previous eclampsia (n, %)	5 (4.5%)

Eclampsia have been diagnosed in antepartum period in 81 cases (17.7%), intrapartum period in 22 cases (19.5%) and postpartum period in 10 cases (8.8%). Eclampsia has been diagnosed between 21 – 27 gestational week in 3.5% of all cases and the remaining 96.5% cases were 28 gestational weeks or higher. There were no difference between age, gravidity, parity, nulliparity case groups according to beginning time of eclampsia [p=0.64, p=0.60, p=0.40, p=0.90). In 59 cases of eclampsia first seizure number were 1.42±0.83. Twenty two eclampsia cases have had seizure under MgSO4 infusion. There was proteinuria in 94 of cases (87.9%). Three maternal mortality cases have been documented between January 2002 and December 2006 and none of them were related to eclampsia. Maternal morbidity related to eclampsia has been documented in 53 (46.4%) cases. HELLP syndrome have been diagnosed in 43 cases and 4 cases of acute renal failure, 3 cases of placental absorption, 1 cases of neurological deficit, 2 cases of cortical blindness have been reported. Ten cases have been treated in invasive care units as a result of eclampsia and mean hospitalization have been reported as 11.40±6.76 days. Reasons and rates of maternal mortality have been shown in Table 2. Ninety three cases delivered by caesarean section (82.3%) and 20 cases delivered by vaginally. Caesarean section indications have been reported as fetal distress in 68 cases (73.1%), caesarean section in other deliveries in 10 cases (10.8%), breech or transverse presentation in 4 cases (4.4%), cephalopelvic disproportion in 6 cases (6.5%), placental abruption in 2 cases (2.2%) and multifetal pregnancies in 3 cases (3.2%). Mean birth weight were 1942.61±786.89 g. In caesarean section cases mean birth weight were 1928.46±743.45 and in vaginal delivery cases, mean birth weight were 2007.00 ± 980.49 there were no significant difference between two groups (p=0.68).

Table 2. Maternal morbidity.

Maternal morbidity	n	%
HELLP syndrome	43	39.1
Acute renal failure	4	3.6
Abruptio placentae	9	8.1
Cortical blindness	4	3.6
Neurological deficit	2	1.
Need for intensive care unit	10	8.8

Neonatal morbidity has been reported in 8 cases. Gestational age at delivery has been determined as 32.56 ± 3.16 at the cases with neonatal morbidity and 34.86±3.95 at the cases without neonatal morbidity and there were a significant difference between 2 groups. Birth weight has been reported as 1482.43±587.64 in the newborn group with morbidity whereas it has been reported as 2172.30±778.72 in the newborn group without morbidity. There was statistically significance between 2 groups according to birth weight. 34 cases needed intensive care units and even hospitalization time was 17.6±13.03 days. RDS were the most common neonatal morbidity factor. Table 3 shows the reasons of neonatal morbidity.

Table 3. Causes of Neonatal Morbidity.

Morbidite nedeni	n (%)
Asphyxia	1 (0.9%)
Intraventricular Haemorrhage	3 (2.7%)
Necrotizing Enterocolitis	2 (1.8%)
Pneumothorax	1 (0.9%)
Respiratory Distress Syndrome	13 (3.5%)
Jaundice	4 (3.5%)
Sepsis	4 (3.5%)

Total perinatal mortality was reported as 9 (8.1%) and neonatal mortality was 6.2 (5.3%) of the perinatal mortality cases have been lost in early neonatal period. Mean gestational week perinatal morbidity were 28.66±25.04 and mean gestational age of neonatal morbidity cases were 32.56 ±3.16.

Discussion

Eclampsia is one of the most important factors determining maternal and fetal prognosis. Its incidence is 4-5/10 000 births in developing countries and incidence is higher in multifetal gestations, patients without prenatal care, 3rd degree health canters.[4,5,6,12,14] In our country the rates of incidence of eclampsia varies. Serin et al.[15] reported eclampsia incidence as 90/10.000 after researching 161 eclampsia cases in 15 years, and Taner et al.[16] reported incidence as 7.7%. İngeç et al.[12] evaluated 381 eclampsia cases and reported incidence as 120/10000. Our eclampsia incidence was 1.2/1000 because our hospital was reference center. These results are appropriate with our country dates.

Seizures may develop in antenatal, intrapartum or postpartum period. The rates have been reported as 3.8-5% in antepartum period, 11- 44% in postpartum period.[1] Differential diagnosis of antepartum and intrapartum eclampsia may be clinically difficult. When this distinction has been determined the incidence of eclampsia reported in different studies varies.[12,17] Eclampsia becomes evident after4 28th week in 91% of cases, between 21th and 27th weeks in 7.5% of cases and before 20 weeks in 1.5% of cases.[7] Eclampsia has been diagnosed in antepartum period in 71.7% of cases, in intrapartum period in 19.5% of cases and in intrapartum period in 8.8% of cases. Convulsions have been reported in 28th gestational week or later in 96.5% of cases.

Eclampsia becomes evident at home when there is no access to a health service and becomes evident at hospital during the treatment of gestational hypertension. In countries where health services are insufficient like our country, convulsions usually become evident at home and convulsions become evident under medical care in countries with adequate health services.[6,12,16–18]. In 70.4% of our cases first con-

vulsions happened at home and mean convulsion number were 1.42±0.83. This high convulsion rates at home determines that although there is easy access to medical care services at big cities, insufficient antenatal care continues to become a great problem. Insufficient antenatal care services cause an increase in number of convulsions and as a result helps poor prognosis to become evident.

In management of eclampsia the first step must be to prevent harm and supply cardiovascular and respiratory aid. Second step must be the prevention of new convulsions and significant hypertension to maintain blood pressure within normal limits. Magnesium sulphate is the drug of choice for prevention of convulsions and also prevents formation of new convulsions in eclampsia.[19] In 10% of cases convulsions may become evident again under magnesium sulphate treatment.[11,19] In our study convulsion rates under magnesium sulphate treatment have been reported as 19.8% which is much higher than literature rates. In most of the cases these high rates have been related to supplying treatment doses of magnesium sulphate in a long period as a result of having more than one convulsion out of hospital.

Perinatal morbidity and mortality rates are still high in eclampsia. Perinatal mortality rates have been reported as 5.6–11.8% in literature.[4,6,11] These high rates in mortality are related to prematurity, placental abruption, IUGR.[4,6] The rate of preterm delivery is 50% in eclampsia cases and 25% of these cases gives birth before 32th weeks.[4,6,9] Prenatal mortality rates are higher in cases with birth weights under 1500g.[4,12] In our country the perinatal mortality rates are higher when compared with literature and reported between 20–60%.[12,15,16,20] In our study perinatal mortality has been reported as 8.1%, neonatal mortality has been reported as 5.4%. Mean gestational week for the cases were 28.66±846.75 and it were 32.56±3.16 for the cases with neonatal mortality. Birth weights have been reported as 1270.00±846.75 in cases with perinatal mortality. Neonatal morbidity rates were 24.8% and RDS (11.7%) was the most common reason of morbidity.

Eclampsia usually accompanies the life-threatening complications as cardiopulmonary failure, pulmonary edema, acute renal failure, liver failure, DIC, abruptio placentae and HELLP syndrome. In recent studies abruptio placentae have been reported as 7-10%, pulmonary edema as 3-5%, DIC as 7-11%, acute renal failure as 5-9% and cardiopulmonary failure as 2-5% and HELLP syndrome as 10-15%.[1,4,7,10] Maternal complications are higher for patients who have had antepartum eclampsia before term.[4,7,10] Ocular symptoms have been reported as 50-75%, hepatic and renal failure as 3-10%, DIC as 2-8%, and HELLP syndrome as 6.5-29% in studies that are published in our country.[12,20-22] In our study 39.1% HELLP syndrome, %3.6 acute renal failure, %8.1 abruptio placentae, %3.6 cortical blindness , %1.8 neurologic deficit, %8.8 intensive care unit requirement have been reported. The high number of cases with HELLP syndrome is atrituble to the usage of definitions of Martin et al.[13] This definition HELLP syndrome is classified into 3 groups according to laboratory measurements. And in our study we evaluated all cases as HELLP syndrome which is appropriate to the definition without any classification.

Maternal mortality related to eclampsia has been reported as 0–14%.[3,4,10] Eclampsia cases are more common in developing countries and it is

related to having multiple convulsions out of hospital and having no antenatal follow – up.[8,10] In our country maternal mortality rates have been reported as 0–14.6% in eclampsia cases.[12,16,21] We couldn't determine maternal mortality related to eclampsia.

Conclusion

In developing countries like our country eclampsia remains to carry importance as the most important cause of maternal and fetal mortality and morbidity although obstetrical practices and newborn intensive care unit conditions are developed. Giving Access to antenatal care for all patients, determination of high-risk pregnancies, increasing the number and quality of newborn intensive care unit will help to decrease maternal morbidity and fetal mortality and morbidity.

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