EVALUATION OF FETOMATERNAL RESULTS IN PREECLAMPSIA PATIENTS

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ÖZET

Amaç:Preeklampsi tanısıyla takip edilen olguların fetomaternal sonuçlarının retrospektif olarak değerlendirilmesi neticesinde hastaların tedavi ve yönetim protokollerine katkı sağlamaktır.

Materyal –Metod:Bu çalışma Ocak 2013- Aralık 2014 yılları arasında kendi bölgesinde en çok hasta refere edilen hastane olan Tepecik Eğitim Araştırma Hastanesinde retrospektif olarak yapıldı. Bilgisayar tabanlı hasta veri kayıtları çalışma için detaylı bir şekilde gözden geçirildi. Preeklempsi ve eklampsi tanı kodlu tüm hastaların obstetrik kayıtları incelenerek olgular ağır preeklampsi (AP) ve ağır olmayan preeklampsi (AOP) olarak iki gruba ayrıldı.Her iki grup, başvuru sırasında elde edilen klinik özellikler , serum belirteçleri maternal ve fetal komplikasyonlar açısından karşılaştırıldı.

Bulgular: Merkezimizde 20.994 doğumdan kriterlerimize uygun toplam 128; 32 (%25)'si AOP , 96 sı AP (%75) olgu çalışmaya dahil edilmiştir. Her iki grupta yaş, BMI, gravida ve parite açısından istatistiksel olarak anlamlı derecede fark yoktu. AP grubunda tansiyon arteryel ölçümleri,AST,ALT ve AOP grubunda ise trombosit ortalaması istatiksel olarak anlamlı derecede yüksekti. Diğer serum parametleri için her iki grup arasında istatistiksel olarak anlamlı derecede fark saptanmamıştır.AP grubunda preterm eylem istatistiksel olarak anlamlı yüsek çıksa da her iki grup arasında maternal ve fetal komplikasyonlar arasında istatiksel olarak anlamlı fark saptanmamıştır.

Sonuç:Etiyolojisi tam olarak bilinmeyen, önceden belirlenmesi tam olarak mümkün olmayan bu hastalık grubunun önlenmesi için kişilerin gebe kalmadan sağlık kontrolünden geçmeleri gerekir. Özellikle risk faktörleri bulunanların, antenatal gebelik takiplerinin düzenli yapılması, hastalık tespit edildiğinde doğumun mümkünse maternal ve yenidoğan yoğum bakım şartları iyi olan tersiyer merkezlerde yaptırılması hem perinatal hem de maternal mortalite ve morbiditeyi olumlu yönde etkileyecektir.

Anahtar Kelimeler: Preeklampsi; Eklampsi; Maternal ve fetal sonuçlar

ABSTRACT

The aim of this study is to evaluate retrospectively the fetomaternal results of the patients with preeclampsia and to contribute to the treatment and management protocols. This study was performed retrospectively in Tepecik Training and Research Hospital which is the most referral hospital in its region between January 2013 and December 2014. Computer-based patient data records were reviewed in detail for the study. The obstetric records of all patients with preeclampsia and eclampsia diagnostic code were examined and the cases were divided into two groups as severe preeclampsia (SP) and non-severe preeclampsia (NSP). Both groups were compared in terms of clinical features, serum markers maternal and fetal complications. In our center, a total of 128; 32 (25%) NSP and 96 SP (75%) cases were included in the study. There was no statistically significant difference in age, BMI, gravida and parity in both groups. In SP group, arterial blood pressure measurements, in Aspartat aminotransferaz (AST), alanin aminotransferaz (ALT) and NSP group thrombocyte average were significantly higher. There was no statistically significant difference between the two groups for other serum parameters. Although preterm labor was statistically significant in SP group, there was no statistically significant difference between maternal and fetal complications in both groups. In order to prevent this group from these kinds of diseases whose etiology is not known exactly which is not possible to be determined beforehand, the patient people must have a health check without being pregnant. Especially, those with risk factors, antenatal pregnancy follow-up period perıodical controls should be made regularly, when the disease is detected, delivery, if possible, in tertiary centers with maternal and neonatal intensive care conditions, will positively affect both perinatal and maternal mortality and morbidity. In this study,we believe that neonatal survival will be better with detailed fetal anomaly screening in the preeclamptic pregnant woman.

Keywords: *Preeclampsia; eclampsia; maternal and fetal outcomes*

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INTRODUCTION

The etiology of preeclampsia is unknown, and characterized by the arterial blood pressure is 140/90 mmHg and proteinuria is above 0.3 g/L (Brichant & Bonhomme, 2014). Although the incidence of preeclampsia varies according to race, region and countries, it is seen in approximately 5ans10% of pregnancies (Dymara-Konopka, Laskowska & Oleszczuk, 2018). Despite a marked decline in maternal mortality in developed countries, preeclampsia remains one of the most common causes of death during pregnancy. Fetal complications include intrauterine growth retardation, premature birth, perinatal asphyxia, and intrauterine death. Maternal complications may vary from placental detachment, uterine loss, intracranial hemorrhage, liver failure, and renal failure to death (Yücesoy, Özkan & Bodur, 2005).

In spite of many clinical, biophysical and biochemical studies performed for many years, the etiopathogenesis of preeclampsia is unknown. Therefore, there is no effective treatment of preeclampsia and termination of pregnancy is the only treatment option. However, there are many studies to treat the clinical signs of the disease before they occur (Sibai, 2013). Various drugs and diet regimens have been made to prevent preeclampsia, but their exact benefits have not been proven.

The aim of this study was to retrospectively evaluate maternal and fetal outcomes of patients with preeclampsia and eclampsia, to determine the complications seen and to contribute to the treatment and management protocols of the patients considering the most common complications.

MATERIAL VE METHOD

This study was performed retrospectively in Tepecik Training and Research Hospital, a tertiary center referred to as the most referred patient in its region between January 2013 and December 2014. Local ethics committee approval was obtained from our center and the study was conducted in accordance with the ethical standards set out in the 1964 Declaration of Helsinki. Ethics committee approval decision was on 13 July,2017 and the decision number given 28. The database of our perinatology and childbirth departments have been used to identify preeclampsia and eclampsia. Obstetric records of all patients with preeclampsia and eclampsia diagnosis code examined. The study included 128 patients who were diagnosed with preeclampsia and eclampsia out of 20994 patients who gave birth in our center. When multiple applications were made to our center with the diagnosis of preeclampsia and eclampsia, the gestational week at first admission was noted for analysis. In all of these pregnancies, preeclampsia and eclampsia diagnostic criteria were obtained by selecting the birth records of the patients who were fully provided. Computer-based patient data records were then reviewed in detail for the following information: age, gravida, parity, body mass index, fetal gender, gestational age at birth, type of delivery, intrauterine growth retardation, presence of preterm labor, convulsion, maternal serum markers (urea, creatinine, glucose, AST, ALT, hemoglobin, leukocyte, platelet, prothrombin time (PT), international normalized ratio (INR), activated partial thromboplastin time (APTT). According to our protocol, all patients with preeclampsia and eclampsia symptoms hospitalized for postpartum delivery were diagnosed. On admission, blood pressure measurements were made at least two times and serum biomarkers and urine proteinuria were not studied unless confirmed. Obstetric ultrasonography was performed in all patients and complete blood count and complete urine collection and biochemistry tests were obtained from all patients. All patients who did not perform labor or who did not give birth in our center were excluded from the study. The gestational age was calculated according to the last menstrual period and was confirmed by ultrasonography measurements in the first or early second trimester. Control tension arterial were measured hourly in both groups and the highest value was noted. The study included singleton pregnancies using parenteral MgSO4 with no systemic disease between 18 and 45 years of age in the hospital with the diagnosis of preeclampsia and eclampsia. Pregnant women not taking MgSO4 were not included in the study. These patients with significant obstetric or medical complications were compared in terms of clinical characteristics and serum markers in two groups.

For the diagnosis of preeclampsia; Blood pressure was measured at 140/90 mmHg at least twice with an interval of 6 hours in pregnant women over 20 weeks, and 300 gr / dl proteinuria with 100 mg / dl or 24 hour urine collected by spot urine analysis was accepted (ACOG practice bulletin, 2002). None of the patients in the preeclamptic group and in the eclampsia group had a history of systemic disease such as hypertension, renal disease and collagen tissue disease. Non-attendance criteria were multifetal pregnancy, those with a history of metabolic disease, thyroid diseases, uterine anomalies, and multiple pregnancies, pregnancies obtained by assisted reproductive techniques, pregestational and gestational diabetes, chorioamnionitis, fetal tachycardia or fever with unknown cause. Patients with unsafe patient record were also excluded from the study.

Preeclamptic pregnant women included in the study were accepted as severe preeclampsia if one or more of the globally accepted criteria of the American Obstetrics and Gynecology Committee. For the diagnosis of severe preeclampsia, the criteria of the NHBPEP (the National High Blood Pressure Education Program) high blood pressure study group report were used. According to these criteria, systolic blood pressure (SBP) ≥140 mmHg and diastolic blood pressure (DBP) ≥90 mmHg can be diagnosed with hypertension after 20 weeks of gestation (National High Blood Pressure Education Program, 2000). Thrombocytes <100.000 / mm^3, AST> 70 IU / L and LDH> 600 IU / L criteria were used for the diagnosis of HELLP syndrome (Kongwattanakul et al.,2018). Eclampsia was defined as a tonic-clonic seizure in preeclamptic pregnant women (Deak & Moskovitz, 2012).All patients with another cause of seizure preeclampsia were excluded from the study.

Age, gravida, previous gestational history, gestational week, systolic and diastolic blood pressure, severe preeclampsia symptoms, prepartum and postpartum laboratory findings, type of delivery, maternal and perinatal outcomes were evaluated for each patient.

Statistical analysis, SPSS 22.0 package program was used for statistical analysis and significance level was accepted as $p < 0.05$. Statistical variables were determined by means of mean, standard deviation, minimum and maximum values; categorical variables were presented with numbers

and percentages. Comparison of numerical variables between non-severe preeclampsia and severe preeclampsia groups was evaluated by t test in independent groups and Mann Whitney U test for nonparametric group. The comparison of the categorical variables between the two groups (32 weeks, 32 weeks and over), which were formed according to gestational week, was evaluated by Chi-square test.

RESULTS

There were a total of 20,994 births in our hospital from January 2013 to December 2014. A total of 65 patients had ablation placenta and 340 fetal ex. Of the 128 patients who met our criteria, 32 (25%) were NSP and 96 (75%) were SP (94.5%).

Of the SP group, 94 (73.5%) were severe preeclampsia and 2 (1.5%) were eclampsia.

There was no statistically significant difference in age, body mass index (BMI), gravida and parity in the SP group compared to the NSP group. In the SP group, the arterial measurements of control and arterial blood pressure were significantly higher than the NSP group (Table1).

Table 1 Comparison of demographic and clinical characteristics in non-severe (NSP) and severe preeclampsia (SP) groups

Variable	NSP (n=32)	SP (n=96)	P value
Maternal age	31.6± 6.92	29.90±6.51	0.190
BMI (kg/m2)	24.3± 3.43	25.4± 3.58	0.544
Gravidity	2.50± 1.43	2.38±1.63	0.725
Parity	1.25± 1.16	1.06±1.36	0.448
Gestational age at delivery (weeks)	35.93± 3.68	35.04±3.81	0.248
Patient initial SATP (mmHg)	143.2± 10.1	167.66±21.19	<0.001
Patient initial DATP (mmHg)	92.7± 6.30	105.73±14.24	<0.001
Patient control SATP (mmHg)	141.61± 9.60	156.41±20.66	<0.001
Patient control DATP (mmHg)	89.93± 4.29	98.42±13.20	<0.001

Data are presented as mean ± standard deviation, sd: standart deviation, min: minimum, max: maximum. A P value of <0.05 was considered as statistically significant.

Abbreviation: SP indicates severe preeclampsia,NSP, non-severe preeclampsia; BMI, body mass index; DATP,diastolic arterial blood pressure; SATP,Systolic arterial blood pressure.

In terms of laboratory characteristics of pregnant women compared to NSP and SP cases; hemoglobin, leukocyte, platelet, urea, creatinine, AST, ALT, glucose, PT, INR, APTT averages in terms of; platelet mean was higher in the NSP group, whereas AST and ALT were significantly higher in the SP group ($p = 0.052$, $p = 0.003$, $p = 0.018$, respectively). No statistically significant difference was found between the two groups for other parameters (Table 2).

Table 2 Comparison of mean levels of serum markers in SP and control group

	NSP (n:32)	SP(n:96)	P value
Hb (g/dl)	11.6± 1.10	13.01± 11.49	0.495
WBC (x10^3/Ul)	11.58± 3.18	12.09± 4.11	0.519
PLT t (x10^3/Ul)	246.68± 86.50	201.76± 74.05	*0.052*
Urea (mg/dl)	20.83±10.28	25.42±19.83	0.221
Creatinine (mg/dl)	0.68± 0.16	0.71± 0.16	0.479
AST (U/L)	25.0± 13.28	46.88± 65.02	*0.003*
ALT (U/L)	18.45± 15.2	29.05± 33.93	*0.018*
Glucose (mg/dl)	89.7± 19.89	92.52± 21.78	0.539
PT	13.7± 0.38	13.29± 1.42	0.220
INR	1.05± 0.19	0.99± 0.12	0.110
APTT	27.7± 4.69	37.32± 46.42	0.352

Data are presented as mean ± standard deviation, sd: standart deviation, min: minimum, max: maximum. A P value of <0.05 was considered as statistically significant.
Abbreviation: SP indicates severe preeclampsia, Hb, haemoglobin(g/dl); WBC,white blood cell(X103/Ul);PLT, platelet count (X103/L) ;AST ,aspartate aminotransferase; ALT,alanine aminotransferase;PT,prothrombin time, APTT,activated partial thromboplastin time; INR,international normalize ratio.

When the relationship between SP and NSP was compared with maternal complications, abruptio placentae was observed in 1 patient in the NSP group and in 1 patient in the SP group and these cases were over 32 weeks. No DIC was observed in any of the cases. HELLP syndrome was observed in only 3 cases, all in the SP group. Convulsion was seen only in 2 cases and these cases were in SP group. No maternal exitus was observed in our study. Thrombocytopenia was not observed in NSP, but it was observed in 9 cases in SP. Liver enzyme elevation was seen in 6 cases in NSP and in 23 cases in SP. The need for transfusion of blood products was seen in 3 cases of NSP group, and in 10 cases of SP. The need for intensive care unit was observed in almost all cases. No significant difference was found between the two groups in terms of maternal complications (Table 3).

Table 3. Maternal complications according to the groups

	NSP (n=32)	SP (n=96)	p value
Placental abruption	1 (%3.1)	1 (%1.0)	0.439
Need for NICU	31 (%96.9)	96 (%100.0)	0.250
The need for transfusion of blood products	3 (%9.4)	10 (%10.4)	1.000
DIC	-	-	-
HELLP syndrome	-	3 (%3.1)	0.573
Thrombocytopenia (<100 000)	-	9 (%8..7)	0.115
Increase in aminotransferase levels	6 (%19.4)	23 (%24.2)	0.577
Convulsion	-	2 (%2.08)	1.000

Data are presented as mean ± standard deviation. sd: standart deviation, A P value of <0.05 was considered as statistically significant.
Abbreviation: SP,severe preeclampsia ;NSP,non-severe preeclampsia; NICU, Neonatal Intensive Care Unit; DIC,disseminated intravascular coagulation.

According to SP and NSP groups, delivery and fetal characteristics and complications were compared in 70 of 128 fetuses (54.6%) premature exist and in 51 intrauterine growth retardation (IUGR) exists (39.8%). Although IUGR was not statistically significant in the SP group, it was more common than the NSP group. Respiratory Distress Syndrome was observed in 3 cases (2.3%) and Meconium Aspiration Syndrome was seen in 4 cases (3.1%) and all of them were in SP group. 40.6% of NSP cases and 59.4% of SP cases had preterm delivery. Preterm action was significantly higher in the SP group. There were no significant differences in the evaluation of the APGAR score at the first and fifth minutes. Fetal anomaly (chonal atresia, sacral teratoma, polydactyly, syndactyly) was seen in 18 (14%) cases when all 128 cases evaluated. Fetal anomaly was observed in 9.4% of the NSP group and in 15.6% of the SP group. Other complications (intraventricular hemorrhage, necrotizing enterocolitis and etc.) were not observed (Table 4).

Of the 128 cases in our study, cesarean operation (C/S) was carried out in 122 patients. This was 95%. In the same years the total number of cesarean section is 12.152,

which corresponds to a rate of 58%. The total number of normal births is 8,842 which corresponds to a rate of 42%. Out of 32 cases with NSP, 41 were female; 40.6% of NSP cases and 59.4% of SP cases had preterm delivery. 40.6% of NSP cases and 59.4% of SP cases had preterm delivery. Intrauterine growth retardation was more frequent in the SP group than in the NSP group, but this was not statistically significant.

In one of the NSP cases, fetal ex (3.9%) was observed in 4 of the SP cases. Two of the fetal ex cases were less than 32 weeks, one of which was in the NSP group and the other in the SP group. 3 cases of fetal ex are 32 weeks and over and all of them are in the SP group. When both groups were compared, no statistically significant difference was observed in terms of delivery type and fetal features and complications (Table 4).

Table 4 Clinical characteristics of the study and control population

		NSP n=32	**SP n=96**	***p value***
Type of delivery	CS	30 (%93.8)	92 (%95.8)	0.639
	VB	2 (%6.3)	4 (%4.2)	
Gender	Female	17 (%53.1)	41 (%42.7)	0.305
	Male	15 (%46.9)	55 (%57.3)	
Preterm birth	<37	13 (%40.6)	57 (%59.4)	0.065
	>37	19 (%59.4)	39 (%40.6)	
Fetal death		2 (%6.3)	3 (%4.2)	1.000
FGR		9 (%30)	42 (%43.7)	0.172
APGAR score at 1 min	0-3	4 (%12.5)	6 (%6.3)	0.310
	4-6	7 (%21.9)	32 (%33.3)	
	7-10	21 (%65.6)	58 (%60.4)	
	Toplam	32	96	
APGAR score at 5 min	0-3	2(%6.3)	4 (%4.2)	0.480
	4-6	1 (%3.1)	9 (%9.4)	
	7-10	29 (%90.6)	83 (%86.5)	
RDS		0 (%0.0)	3 (%3.1)	0.573
MAS		0 (%0.0)	4 (%4.2)	0.571
Fetal anomaly		3 (%9.4)	15 (%15.6)	0.559

Values are given as mean ± standard deviation, n (%) or median (range). A P value of <0.05 was considered as statistically significant.

Abbreviation: FGR indicates fetal growth retardation;CS, Caesarean section; VB, Vaginal birth; NICU: Neonatal Intensive Care Unit. Meconium Aspiration Syndrome, Respiratory Distress Syndrome. Fetal anomaly includes chonal atresia, sacral teratoma, polydactyly, syndactyly.

In our study, according to gestational week (32 weeks six to 32 weeks and above); There was no statistically significant difference in terms of diagnosis, cesarean section, maternal morbidity, abruptio placentae, intrauterine growth retardation and fetal anomaly frequency (Table 5).

Table 5 Comparison of clinical features according to gestational week

		<32week (n=20)	>32 week (n=108)	*p value*
Diagnosis	**NSP**	1 (%5.0)	29 (%26.9)	0.0423
	SP	19 (%95.0)	79 (%73.1)	0.343
Cesarean section		18 (%90.0)	104 (%96.2)	1.000
Maternal morbidity		3 (%13.6)	13 (%11.5)	0.725
Placental abruption		0 (%0.0)	2 (%1.9)	1.000
FGR		8 (%40.0)	43 (%39.8)	0.863
Fetal anomaly		3 (%15)	15 (%13.27)	0.737

Data are presented as mean ± standard deviation, sd: standart deviation, min: minimum, max: maximum. A P value of <0.05 was considered as statistically significant.

Abbreviation: FGR indicates fetal growth retardation; SP,severe preeclampsia ;NSP,non-severe preeclampsia;

DISCUSSION

Diseases with hypertension during pregnancy adversely affect both maternal and infant health. Preeclampsia is a hypertensive disease in 2-8% of pregnancies (Sibai, 2003). It is often mild and has no adverse effects. However, 0.5% of pregnancies develop severe preeclampsia, which threatens the life of the mother and the baby (Leeman & Fontaine, 2009). In preeclampsia, the main causes of morbidity and mortality for fetuses and neonates are uteroplacental insufficiency, ablatio placenta and premature (Jim & Karumanchi, 2017).

NSP; blood pressure> 140/90 mmHg or diastolic blood pressure of 100 mmHg at 2 or more measurements is <1 g proteinuria mild preeclampsia in 24 hour urine. Although NSP is associated with mild symptoms, it is very likely that it will suddenly turn into severe symptoms (Lo, Mission & Caughey, 2013). It is an obstetric emergency that threatens maternal life and requires intensive care (Olson-Chen & Seligman, 2016). Although the definitive treatment is birth, the birth itself does not correct the patient's general health. Although it is more common in the third trimester, it is the most difficult period 28-32. weeks.

In order to obtain positive results in terms of mother and child in preeclampsia patients, pregnant women of this type should be followed in a team understanding and in suitable centers (Jim & Karumanchi, 2017). While severe preeclampsia causes hematological, hepatic, cardiac, cerebrovascular and renal complications in the mother; It can cause complications such as growth retardation, premature birth, asphyxia and death in the fetus (Lo, Mission & Caughey, 2013).

Preeclampsia diagnosis can be important in the early stages of pregnancy in order to prevent negativity in pregnancy and the baby. Eclampsia is called as convulsion in preeclamptic patients without any other reason in the postpartum period. Preeclampsia causes effects on cardiovascular, renal, hematological, hepatic and central nervous systems and causes pathological changes in these systems and causes maternal morbidity and mortality. At the same time, these pathological changes disrupt fetoplacental circulation and the life of the fetus is in danger (Houlihan, Dennedy & Ravikumar, 2004).

When we compare severe preeclampsia with non-severe preeclampsia (age, gravida, parity, body mass index) in terms of demographic and clinical characteristics, there was no statistically significant difference in the SP group compared to the NSP group. As in our study, Abromovici et al. in their study (Abramovici, Friedman & Mercer, 1999), maternal age, Martin et al. reported no difference between the two groups in terms of gravida, parity and age (Martin, Rinehart & May, 1999). In another study of Kumru S et al., there was no difference between the two groups in terms of gravida, parity, and similar (Kumru, Şimşek & Gürateş, 2005).

In our hospital, between January 2013 and December 2014, 20994 births had a severe preeclampsia rate of 0.45%. The incidence of Hellp Syndrome is 0.015% (one in 7000 thousand cases) and the incidence of eclampsia is 1 in 10000 cases. Eclampsia is one of the major complications of maternal and fetal prognosis. The incidence is reported to be between 4 and 5 in 10000 births in developed countries and 6-100 in 10000 births in developing countries (Kumru et al., 2005;Sibai, 1990). The incidence is generally high in pregnant women who are not receiving prenatal care, in multiple pregnancies and in tertiary health centers (Bánhidy, Ács & Puhó, 2011; Bellizzi, Ali & Abalos, 2016; Lopez-Llera, 1992). The low rates of SP and eclampsia in our study may be due to the increase in pregnancy care services in the last 10 years, the more regular impression of pregnancy and the easier access to health services for individuals.

The C / S ratio in preeclampsia cases was increased by 1.5 times compared to the other cases. The reason for this is the referral hospital of our hospital; women's intensive care and neonatal intensive care because of the hospitals in our region because these patients are directed to us.

The number of studies investigating the relationship between preeclampsia and congenital malformations is only a few, one of which is the study of Banhidy et al. renal dysgenesis caused by pregnant women developing preeclampsia indicating increased risk of esophageal atresia / stenosis and rectal / anal stenosis (Bánhidy et al.,2011). Bellizi et al. in the maternal period of chronic hypertension, newborns, renal, extremity and lip / cleft / palate congenital malformations in terms of the development of the risk will cause the exposure and eclampsia superimposition will exacerbate the risks with superfet. The study included 1152 women with chronic

hypertension, 6163 women with preeclampsia, 765 women with eclampsia, and 294 women with chronic hypertension and preeclampsia. They found anomalies in various organs, from renal anomalies to extremity anomalies (Bellizzi et al., 2016). In our study, fetal anomalies (choanal atresia, sacral teratoma, polydactyly, syndactyly) were more common in SP (severe preeclampsia) group, but not statistically significant. We believe that our study will shed light on the literature.

The rate of ablatio placenta in our study was 1.6%. In the same years, there was a 0.3% rate of ablatio placenta in 20.994 cases. The rate of ablatio placenta in the cases of preeclampsia was increased by 5 times. The rate of placental detachment in the literature is 4.9-15% (Lopez-Llera, 1992). In our study, no maternal ex has occurred in 128 patients. The eclampsia-based maternal mortality rate differs from 0 to 14% (Lopez-Llera, 1992).

When all the patients in our study were evaluated, 7% of thrombocytopenia, 22% of liver enzymes, convulsion 1.6%, platelet detachment 1.6%, blood product transfusion requirement 10%, HELLP 2.3%, intensive care requirement 99%, aspiration pneumonia 0%, DIC 0%, cerebral hemorrhage is 0%, acute renal failure is 0%, pulmonary embolism is 0%, thromboembolism is 0%, maternal exitus is other studies may be due to the fact that the patients are admitted to the hospital in the early period or the health personnel and facilities in our hospital are adequate. As in our study, studies have shown that transfusion of blood and blood products is necessary in severe preeclampsia (Haddad, Barton & Livingston, 2000).

Severe preeclampsia is a serious threat for pregnant women and fetuses. The complications of severe preeclampsia greatly affect perinatal outcome. The complications for severe preeclampsia included preterm birth, fetal growth restriction (FGR). In the study reported by Zhang et al., preterm labor was observed in %53 of 792 preeclampsia incidences occuring between the years of 1998 and 2010 (Zhang, Li & Xiao, 2014). Prematurity was observed in 54.6% of our cases. Preterm delivery rates were 12.8% in 2006 and 11.7% in 2011. Prematurity rates increased 5-fold in preeclampsia cases. Among the factors leading to a higher rate of neonatal morbidity and mortality incidences are preeclampsia and IUGR separately however due to the lack of literature about the subject it has not been made clear yet if the risks are additive or not (Backes, Markham & Moorehead, 2011). İn the studies which were conducted by Carter et al. where 1905 patients diagnosed with IUGR were examined ,it was detected that IUGR increases 2,1 times more in SP incidences than the NSP ones (Carter, Conner & Cahill, 2017). IUGR was found in 39.8% of the cases. In 10% of the babies born in developed countries, IUGR and 23% in developing countries and IUGR ratios increased by 3 times in preeclampsia cases. Compared to the group with NSP, IUGR is seen 1,46 times more in the group with SP.

In preeclampsia cases, different information is given in literature in terms of type of delivery. Zhang et al. In his study, more than half of the patients with preeclampsia and eclampsia were delivered by cesarean section (Zhang et al., 2017). Kumru et al. In his study, the rate of caesarean section was found to be 51.5% in severe preeclamptic cases (Kumru et al., 2005). In the study of Taşın and his colleagues, cesarean rates were found to be 86% in patients with severe preeclampsia, 75% in severe preeclampsia cases and 35% in control group (Taşın, Yıldız & Ünlü, 2014).

0%. Sibai et al. In his study, they found 17% thrombocytopenia in severe preeclampsia cases. When all these complications were compared in both groups, no statistically significant difference was found. The reason for the high need for intensive care in our hospital is to continue postpartum MgSO4 infusion therapy in intensive care conditions after delivery. In the studies, 50 %75% of ocular signs, 30-45% hepatic and 32–62% renal dysfunction, 4.9–15% placental detachment, 10% aspiration pneumonia, 5-66% cerebral hemorrhage, 3-10% in patients with preeclampsia and eclampsia 10 cases of acute renal failure, 2-8% disseminated intravascular coagulopathy and 6.5-29% HELLP syndrome have been reported (Lopez-Llera, 1992, Gul, Cebeci & Aslan, 2005). These complications are less common in our literature than in these publications. This is because we are very selective in selecting study group patients. Murphy et al. 15 (21%) of 73 preeclamptic pregnant women had HELLP syndrome, 9 (13%) had acute renal failure and 11 (15%) had abruptio placenta. In 12 cases (16.4%) intrauterine fatal mortality was found (Murphy & Stirrat, 1999) Similarly, Gezginç et al. had intrauterine fatal mortality 10.4% and acute renal failure 5%. The fact that the complications in our hospital is less than

In our hospital, the non-severe preeclampsia C / S ratio was 93% in heavy preeclampsia, 95% in other pregnant women, 58%. This high rate of caesarean section is incompatible with the literature, and we believe that such cases should be reviewed for acceptable vaginal delivery. When compared to the gestational week (32 weeks gestation week or higher), 95% of cases with less than 32 weeks gestational week compared to gestational week are in severe preeclampsia group. This is statistically significant and shows that almost all of the preeclampsia requiring delivery under 32 weeks have been observed with severe clinical features. In our study, fetal ex rate is 3%. In the same years, fetal ex ratio was 20% in 20994 births. The rate of fetal ex in patients with preeclampsia increased by 2 times.

According to the week of pregnancy; there was no statistically significant difference in terms of diagnosis, caesarean section, maternal morbidity, ablation plate, intrauterine growth retardation and fetal anomaly frequency. In the literature, maternal complications and fetal complications were found to be higher among the patients with antepartum preeclampsia and eclampsia (Mattar & Sibai, 2000). In our study, no difference was found between maternal complications and fetal complications, near term and near term. Preeclampsia is rare before 32 weeks. However, most of the cases are severe preeclampsia. Increased experience in this obstetric practice may be due to the gradual improvement of newborn intensive care conditions

RESULT

Severe preeclampsia and eclampsia increase maternal-perinatal morbidity and mortality rates, especially in developing countries. Although many studies have been done to determine the etiology of the disease, the absence of a definite cause leaves us helpless in preventing this disease. However, early diagnosis of preeclampsia and timely

treatment required significantly reduce the risk of maternal - perinatal morbidity and mortality.

In our study, there was no statistically significant difference between maternal and fetal results in NSP and SP comparison. There was no statistically significant difference between maternal and fetal outcomes in the comparison of early-onset preeclampsia and late-onset preeclampsia. Although there is no statistical difference, maternal and fetal complications are higher in severe preeclampsia. The severity of complications is related to the severity of the disease rather than the early onset of preeclampsia. Most of the early-onset preeclampsia is severe preeclampsia, but the SP and NSP limits are still unclear with sharp lines because preeclampsia is a dynamic and progressive process, and NSP may suddenly deteriorate.

In order to prevent preeclampsia, health check of people without conception, especially those who have risk factors, antenatal pregnancy follow-up period, if the disease is detected in maternal and neonatal intensive care conditions in the tertiary care center with good conditions will affect both perinatal and maternal mortality and morbidity in a positive way.

REFERENCES

Abramovici, D., Friedman, S. A., Mercer, B. M., Audibert, F., Kao, L., & Sibai, B. M. (1999). Neonatal outcome in severe preeclampsia at 24 to 36 weeks' gestation: does the HELLP (hemolysis, elevated liver enzymes, and low platelet count) syndrome matter?. American journal of obstetrics and gynecology, 180(1), 221-225.

Abramovici D, Friedman SA, Mercer BM, Audibert F, Kao L, Sibai BM. Am J Neonatal outcome in severe preeclampsia at 24 to 36 weeks' gestation: does the HELLP (hemolysis, elevated liver enzymes, and low platelet count) syndrome matter? *Obstet Gynecol*,180(1 Pt 1):221-5

ACOG practice bulletin. (2002). Diagnosis and management of preeclampsia and eclampsia. Number 33, January 2002. American College of Obstetricians and Gynecologists. *International journal of gynaecology and obstetrics*, 77(1), 67.

Backes, C. H., Markham, K., Moorehead, P., Cordero, L., Nankervis, C. A., & Giannone, P. J. (2011). Maternal preeclampsia and neonatal outcomes. Journal of pregnancy, 2011.

Bánhidy, F., Ács, N., Puhó, E. H., & Czeizel, A. E. (2011). Chronic hypertension with related drug treatment of pregnant women and congenital abnormalities in their offspring: a population-based study. Hypertension Research, 34(2), 257.

Bellizzi, S., Ali, M. M., Abalos, E., Betran, A. P., Kapila, J., Pileggi-Castro, C., ... & Merialdi, M. (2016). Are hypertensive disorders in pregnancy associated with congenital malformations in offspring? Evidence from the WHO Multicountry cross sectional survey on maternal and newborn health. BMC pregnancy and childbirth, 16(1), 198.

Brichant, J. F., & Bonhomme, V. (2014). Preeclampsia: an update. *Acta anaesthesiologica Belgica*, *65*(4), 137-149.

Carter, E. B., Conner, S. N., Cahill, A. G., Rampersad, R., Macones, G. A., & Tuuli, M. G. (2017). Impact of fetal growth on pregnancy outcomes in women with severe preeclampsia. Pregnancy Hypertension: An International Journal of Women's Cardiovascular Health, 8, 21-25.

Deak, T. M., & Moskovitz, J. B. (2012). Hypertension and pregnancy. Emergency Medicine Clinics, 30(4), 903-917.

Dymara-Konopka, W., Laskowska, M., & Oleszczuk, J. (2018). Preeclampsia-Current Management and Future Approach. Current pharmaceutical biotechnology, 19(10), 786-796**.**

Gul, A., Cebeci, A., Aslan, H., Polat, I., Ozdemir, A., Ceylan, Y.(2005). Perinatal Outcomes in Severe Preeclampsia-Eclampsia with and without HELLP Syndrome. *Gynecol Obstet Invest*,59: 113-8.

Haddad, B., Barton, J.R., Livingston, J.C., Chahine, R., Sibai, B.M.(2000).HELLP (hemolysis, elevated liver enzymes, and low platelet count) syndrome versus severe preeclampsia: onset at < or=28.0 weeks' gestation. *Am J Obstet Gynecol*, 83:1475-9**.**

Houlihan, D. D., Dennedy, M. C., Ravikumar, N., & Morrison, J. J. (2004). Anti-hypertensive therapy and the feto-placental circulation: effects on umbilical artery resistance. Journal of perinatal medicine, 32(4), 315-319.

Jim, B., & Karumanchi, S. A. (2017). Preeclampsia: pathogenesis, prevention, and long-term complications. In Seminars in nephrology (Vol. 37, No. 4, pp. 386-397). WB Saunders.

Kongwattanakul, K., Saksiriwuttho, P., Chaiyarach, S., & Thepsuthammarat, K. (2018). Incidence, characteristics, maternal complications, and perinatal outcomes associated with preeclampsia with severe features and HELLP syndrome. International journal of women's health, 10, 371.

Kumru, S., Şimşek, M., & Gürateş, B. (2005). Comparison of maternal and perinatal outcomes of HELLP syndrome and severe preeclampsia cases. Perinatal Journal, 13(1), 9-14.

Leeman, L., & Fontaine, P. (2008). Hypertensive disorders of pregnancy. *American family physician*, *78*(1).

Lo, J. O., Mission, J. F., & Caughey, A. B. (2013). Hypertensive disease of pregnancy and maternal mortality. Current Opinion in Obstetrics and Gynecology, 25(2), 124-132.

Lopez-Llera, M.(1992). Main clinical types and subtypes of eclampsia. *Am J Obstet Gynecol*, 166, 4-9.

Martin Jr, J. N., Rinehart, B. K., May, W. L., Magann, E. F., Terrone, D. A., & Blake, P. G. (1999). The spectrum of severe preeclampsia: comparative analysis by HELLP (hemolysis, elevated liver enzyme levels, and low platelet count) syndrome classification. American journal of obstetrics and gynecology, 180(6), 1373-1384.

Mattar, F., Sibai, B.M.(2000). Eclampsia. VIII. Risk factors for maternal morbidity. *Am J Obstet Gynecol*, 182: 307–12.

Murphy, D.J., Stirrat, G.M.(1999). Mortality and morbidity associated with early-onset preeclampsia. Hypertens Pregnancy 19(2).221-31, 200032-

Olson-Chen, C., & Seligman, N. S. (2016). Hypertensive emergencies in pregnancy. Critical care clinics, 32(1), 29-41.

Program, N. H. B. P. E. (2000). Report of the national high blood pressure education program working group on high blood pressure in pregnancy. American Journal of Obstetrics and Gynecology, 183(1), s1-s22.

Sibai, B. M. (2003). Diagnosis and management of gestational hypertension and preeclampsia. Obstetrics & Gynecology, 102(1), 181-192.

Sibai, B. M. (1990). Eclampsia: VI. Maternal-perinatal outcome in 254 consecutive cases. American journal of obstetrics and gynecology, 163(3), 1049-1054.

Taşın, C., Yıldız, Y., Ünlü, BS, Energin H., & Ceylan, N. (2014). Evaluation of Maternal and Perinatal Findings in Mild and Severe Preeclampsia Cases. Kocatepe Medical Journal, 15(1):7-12

Yücesoy, G., Özkan, S., Bodur, H., Tan, T., Çalışkan, E., Vural, B., & Çorakçı, A. (2005). Maternal and perinatal outcome in pregnancies complicated with hypertensive disorder of pregnancy: a seven year experience of a tertiary care center. Archives of gynecology and obstetrics, 273(1), 43-49.

Zhang, Y., Li, W., Xiao, J., & Chen, S. (2014). The complication and mode of delivery in Chinese women with severe preeclampsia: a retrospective study. Hypertension in pregnancy, 33(3), 283-290.