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Assessment of feto-maternal outcomes in preeclampsia and HELLP cases

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Abstract

Objective: In this study, our aim was to analyze the feto-maternal outcomes in pregnancies with preeclampsia and HELLP syndrome followed up at our clinic.

Methods: The data files of the cases with preeclampsia and HELLP syndrome who admitted to our clinic during 2011 and 2013 were evaluated retrospectively.

Results: The mean maternal age was 30.08±5.33 in the preeclamptic group and 31.46±5.95 in the HELLP syndrome group, respectively (p=0.432). There was no significant difference between two groups regarding the gestational week during labor and fetal birth weight (p=0.185 and p=0.060 respectively). Intrauterine growth retardation was significantly more common in HELLP group (p=0.033) in terms of gestational complications. The transfusion of blood products was needed more commonly in HELLP group (p=0.023). Platelet levels were significantly lower and serum transaminases were significantly higher in HELLP group (p=0.001 and p=0.038, respectively).

Conclusion: Preeclampsia and HELLP syndrome are still severe obstetric complications leading to maternal and fetal morbidity and mortality. It would be reasonable to transport these cases to multidisciplinary centers having intensive care units.

Keywords: Preeclampsia, HELLP syndrome, maternal morbidity-mortality.

Özet: Preeklampsi ve HELLP olgularında feto-maternal sonuçların değerlendirilmesi

Amaç: Bu çalışmada, kliniğimizde takip edilen preeklamptik ve hemoliz, yüksek karaciğer enzimleri, düşük trombosit (HELLP) sendromlu gebeliklerin fetal ve maternal sonuçlarının değerlendirilmesi amaçlanmıştır.

Yöntem: 2011-2013 yılları arasında kliniğimizde takip edilen preeklampsi ve HELLP sendromlu olgular dosya kayıtlarından retrospektif olarak incelenerek gebelik sonuçları değerlendirildi.

Bulgular: Preeklampsi olgularımızın ortalama maternal yaşı 30.08±5.33 iken HELLP sendromu olgularımızın maternal yaşı 31.46±5.95 olarak tespit edildi (p=0.432). Her iki grup arasında doğum haftaları ve doğum kiloları açısından istatistiksel anlamlı fark saptanmadı (sırası ile p=0.185 ve p=0.060). Gebelik komplikasyonları açısından incelendiğinde, intrauterin gelişme geriliği (IUGR) bulgusu HELLP sendromu olgularında anlamlı olarak daha sık izlendi (p=0.033). Kan transfüzyon gerekliliği HELLP sendromu grubunda anlamlı olarak daha sık izlendi (p=0.023). HELLP grubunda trombosit değerleri anlamlı derecede düşük ve serum transaminazları anlamlı derecede yüksekti (sırası ile p=0.001 ve p=0.038).

Sonuç: Preeklampsi ve HELLP sendromu günümüzde halen maternal ve fetal morbidite ve mortaliteye neden olan ciddi bir obstetrik komplikasyondur. Bu gebeliklerin yoğun bakım üniteleri bulunan multidisipliner merkezlere sevki uygun yaklaşım olacaktır.

Anahtar sözcükler: Preeklampsi, HELLP, maternal morbidite-mortalite.

Introduction

Preeclampsia is a clinical spectrum appearing after 20 weeks of gestation and characterized with hypertension and concomitant proteinuria. Proteinuria is defined 300 mg or above in the urine for 24 hours, or as ≥30 mg or ≥1+ in the spot urine sample taken at least twice within maximum 7 days at 4-6 hours of intervals. Hypertension defines tension values over 140/90 mmHg in at least two measurements within maximum 7 days at 4-6 hours of intervals.[1] The values become

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normal within postpartum 6 weeks. Its incidence rate varies according to population examined, but it approximately ranges between 2 to 7%.[2] It may cause maternal morbidity and mortality associated with complications such as pulmonary edema, intraventricular bleeding, intraventricular hemorrhage, and disseminated intravascular coagulation (DIC), as well as neonatal morbidity and mortality due to complications such as intrauterine growth retardation and premature labor.[3] Neonatal and maternal mortality rates may reach up to 25% especially in early-onset severe cases.[4]

The syndrome of hemolysis, elevated liver enzymes, and low platelet count (HELLP) is a variant of preeclampsia according to some authors while another group of authors believe that it is completely a different pathology.[5] HELLP syndrome is characterized with hemolysis, elevated liver enzymes and low platelet count, and it may appear at any week of gestation. The risk of fetal loss may reach up to 15%.[6] In this study, we aimed to analyze in the fetal and maternal outcomes in pregnancies followed up at our clinic with the diagnosis of preeclampsia and HELLP syndrome, and to evaluate in the light of the literature

Methods

The medical files of 40 cases with preeclampsia and 13 cases with HELLP syndrome who were followed at our clinic between January 2011 and December 2013 were evaluated in terms of fetal and maternal outcomes. Proteinuria (300 mg or above in the urine for 24 hours, or as ≥30 mg or ≥1+ in the spot urine sample taken at least twice within maximum 7 days at 4-6 hours of intervals) and hypertension (over 140/90 mmHg in at least two measurements within maximum 7 days at 4-6 hours of intervals) occurring after 20 weeks of gestation were considered as the criteria for preeclampsia diagnosis. In the diagnosis of HELLP syndrome, the findings of elevated liver enzymes, thrombocytopenia and hemolysis confirmed by peripheral smear were used. Data such as maternal age, gravida, parity were reviewed from medical records and week of gestation, maternal complications and fetal complications during diagnosis were evaluated. The approval of local ethics committee was obtained for the study.

Results

A total of 40 cases with preeclampsia and 13 cases with HELLP syndrome were included to our study. Mean maternal age of the cases with preeclampsia was 30.08±5.33 while it was 31.46±5.95 in the cases with HELLP syndrome (p=0.432). There was statistically no difference between the groups in terms of gravida and parity (Table 1). Weeks of gestation during labor was 34.45±4.05 in the preeclampsia group and 32.77±3.44 in the HELLP syndrome group, and the difference was statistically not significant (p=0.185). While mean birth weight was 1737.50±679.19 g in the preeclampsia group, it was found as 2210.95±761.06 g in the HELLP syndrome group (p=0.060). In terms of gestational complications, the finding of intrauterine growth retardation (IUGR) was significantly more common in the cases with HELLP syndrome (p=0.033). The transfusion of blood products was needed significantly more commonly in HELLP group (p=0.023) (Table 2). All of the cases gave cesarean delivery. In terms of the previous cesarean rates, 12 cases in the preeclampsia group and 3 cases in the HELLP syndrome undergone cesarean delivery previously; in other words, 70% of the cases in preeclampsia group and approximately 77% of the cases in HELLP syndrome group had cesarean due to the primary indications of preeclampsia and HELLP syndrome. In terms of laboratory values, platelet values of

Table 1. Demographic characteristics of the cases.

	Preeclampsia	HELLP	p value
Maternal age (mean±SD)	30.08±5.33	31.46±5.95	0.432
Gravida (mean±SD)	2.33±1.24	2.30±1.38	0.950
Parity (mean±SD)	1.07±0.93	1.0±0.28	0.801
Weeks of gestation (mean±SD)	34.45±4.05	32.77±3.44	0.185

Table 2. Preeclampsia cases vs. cases with HELLP syndrome in terms of antenatal complications.

	Preeclampsia n=40	HELLP n=13	p value
GDM	2	-	0.559
Anemia	22	7	0.962
Oligohydramnios	8	7	0.061
IUGR	5	6	**0.033**
Blood transfusion	18	11	**0.023**
Ablatio placentae	4	4	0.185
IFD	1	2	0.063

GDM: Gestational diabetes mellitus, **IUGR:** Intrauterine growth retardation, **IFD:** Intrauterine fetal death

the cases in HELLP group were significantly higher (p=0.001) and liver enzymes were significantly higher (p=0.038) (Table 3).

Discussion

Preeclampsia is frequently seen in primigravida cases. However, in our study, it was found out that only about 27.5% (n=11) of the cases in preeclampsia group was primigravida. In multipara patients being preeclampsia in their previous pregnancy, partner change or the duration between two pregnancies being short (less than 2 years) are the major factors increasing the risk.[7] However, since our study was retrospective, we could not obtain detailed data from the medical records of multipara patient group. Another misleading condition about the rates is that our clinic is a tertiary center, and there may be admissions from surrounding cities and counties. In the cases with HELLP, we found that 38.5% (n=5) of the cases were primigravida pregnancies. Although the pathophysiology of HELLP syndrome is not clear, it is frequently seen in multipara pregnancies.[6] The mean age tends to be higher than preeclamptic pregnants (usually >25 years old).[6] While mean maternal age was 30.08±5.33 for preeclampsia cases in our study, it was found as a little higher in the cases with HELLP syndrome which was 31.46±5.95. However, this difference was statistically not significant (p=0.432).

HELLP syndrome complicates about 0.2-0.7% of pregnancies. Superimposed HELLP syndrome is observed in about 4-12% of cases with preeclampsia or eclampsia.[5] Another issue that should be considered is that there may be no hypertension in approximately 10-15% of the patients, so this condition may cause latency in diagnosis and intervention.[8] In the diagnosis of the cases especially presented out of the ordinary, most specific indicator for HELLP syndrome is platelet count. Therefore, if any decrease is detected in the platelet count during antenatal follow-up, HELLP syndrome should be considered certainly.[9] In our study, platelet values were significantly lower in HELLP group (p=0.001). Serum transaminase values may reach up to 4000 U/L.[6] As long as DIC does not develop as well, coagulation profile (prothrombin time) progresses at normal levels. However, in cases where fibrinogen levels are less than 300 mg/dl, DIC development should be suspected.[6] Also, in the studies performed, it was seen that positive D-dimer test shown the development of HELLP syndrome even there was no deterioration in other coagulation parameters.[6]

HELLP syndrome and preeclampsia are associated with maternal and fetal morbidity and mortality.[10] Also, its clinical progress is rapid and disseminated intravascular coagulation may be seen within hours.[11] In a compilation study arranged by Haram et al., it was found that eclampsia was between 4 and 9%, ablatio placentae between 9 and 20%, DIC up to 56% as the maternal complications associated with HELLP syndrome.[10] In our study, ablatio placentae rate was 30% (n=4) in the HELLP group while it was 10% (n=4) in the preeclampsia group. However, this difference was statistically not significant (Table 2). DIC developed in 2 cases in the HELLP group. There was no DIC in preeclamptic group (p=0.002). It was reported the rate of IUGR in the cases with HELLP syndrome reached up to 60% (10,12). In line with the studies performed, we found IUGR rate as 50% (n=6) in the HELLP group. This rate was significantly different than the rate found in preeclampsia group (p=0.033). It was emphasized that HELLP syndrome accompanied perinatal mortality up to the rates of 35%.[10] In Turkey, in a study performed by Gezginc et al., intrauterine fetal mortality was found as 10.4%.[3] In our study, in utero fetal loss was found as 15% (n=2) in HELLP syndrome. Maternal mortality rate associated with HELLP syndrome is reported between 1 and 24%.[10] Acute renal failure (ARF), DIC, and cerebral hemorrhage are major mortality reasons. In case of acute renal failure associated with pregnancy, the most common underlying reason is HELLP syndrome.[10] In the study performed by Sibai et al., it was highlighted that ARF was observed at a rate of 7.3% with HELLP.[13] In a study carried out on 14 cases with HELLP syndrome, ARF developed in a case.[14] Similar to these rates, one of our cases with HELLP syndrome developed ARF (7%).

Table 3. Comparison of laboratory findings of cases with preeclampsia and HELLP syndrome.

	Preeclampsia n=40	HELLP n=13	p value
Platelet	85459±30321	53153±18636	**0.001**
Hemoglobin	12.07±1.18	10.58±2.32	0.656
Hematocrit	29.08±5.83	30.30±6.19	0.526
AST	143.22±333.41	406.08±495.33	**0.038**
ALT	75.94±187.10	223.31±277.70	**0.039**
Creatinine	0.81±0.386	1.01±0.485	0.142
Uric acid	6.08±1.40	6.10±1.23	0.968

Also, preeclampsia and HELLP syndrome increase neonatal morbidity and mortality associated with prematurity due to delivery requirements. In a study, it was reported that premature labors are observed at a rate of 70% in HELLP syndrome.[15] In our study, premature labor rate was found as 72% in the preeclampsia group. This rate was found as 90% in the HELLP group. While delivery occurred at an early week in the HELLP group, the week of gestation during delivery was not statistically significant between two groups.

There are no certain limits related with the delivery type in preeclampsia and HELLP syndrome cases. The week of gestation that the disease is detected, general condition of patient and the progress of disease, availability of experienced personnel for delivery and anesthesia are the major parameters impacting the delivery type.[10] In cases where maternal hypertension cannot be controlled, the findings of ablation develop, fetal distress findings appear and maternal laboratory findings deteriorate, cesarean would be a reasonable preference.[12] Cesarean should be preferred also in the presence of HELLP syndrome before 30 weeks of gestation, oligohydramnios, IUGR and in the presence of non-conforming Bishop score.[15] What matters here is to apply platelet suspension support to patients who have platelet values of 50.000/mm^3 and planned for cesarean, and to patients who have platelet values of 25.000/mm^3.[16]

Conclusion

In our study, the case group with HELLP syndrome is relatively higher than the preeclampsia group screened in the same duration. We believe that the reason is the admissions from nearby regions. No matter how early and proper is the diagnosis, HELLP syndrome and severe preeclampsia are still gestational complications causing maternal and fetal mortality.

Conflicts of Interest: No conflicts declared.

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