CHARACTERISTICS OF HELLP SYNDROME IN SEVERE PREECLAMPSIA PATIENTS IN DR. SOETOMO HOSPITAL SURABAYA

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ABSTRAK

*Hemolysis, elevated liver enzyme, low platelet count (HELLP) syndrome merupakan komplikasi yang menyertai preeklampsia berat yang merupakan salah satu penyebab utama kematian ibu hamil di Indonesia. Tujuan dari penelitian ini untuk mengetahui prevalensi, karakteristik, dan keadaan pasca bersalin pasien HELLPs yang melahirkan di Dr. Soetomo Hospital pada Juli 2012-Juni 2013. Penelitian ini adalah deskriptif observasional dengan rancangan studi cross sectional. Populasi yang diteliti adalah pasien preeklampsia berat yang melahirkan di Dr. Soetomo Hospital dan memiliki data rekam medis yang lengkap pada periode Juli 2012-Juni 2013. Pengambilan sampel dilakukan dengan total sampling. HELLP syndrome menyertai 7% pasien preeklampsia berat. Rata-rata usia pasien HELLPs adalah 30,2 (19-43), sedangkan pada non-HELLPs adalah 30,8 (17-46). Kehamilan pertama dan kedua banyak didapatkan pada pasien HELLPs. Rata-rata usia gestasi saat persalinan pasien HELLPs adalah 33-34 minggu. Pasien HELLPs dan non-HELLPs sebagian besar melaksanakan persalinan cesarean section. Tidak ada kematian maternal tercatat pada kelompok HELLPs. Bayi kelompok HELLPs sebanyak 25% lahir mati. Rata-rata berat badan lahir (BBL) kelompok HELLPs sebesar 1994,4 g. Nilai Apgar ≥7 didapatkan pada 33,3% bayi kelompok HELLPs. Sebagai simpulan, kehamilan pertama dan kedua banyak didapatkan pada HELLPs, dan kehamilan pertama pada non-HELLPs. Rata-rata usia gestasi saat persalinan lebih rendah pada kelompok HELLPs. Angka kejadian lahir mati pada pasien HELLPs lebih tinggi. Bayi kelompok HELLPs memiliki rata-rata BBL lebih rendah. Bayi dengan nilai Apgar ≥7 lebih tinggi pada kelompok non-HELLPs.**(FMI 2015;51:272-276)***

Kata kunci: *HELLP syndrome, prevalensi, usia ibu, usia gestasi, paritas, cara persalinan, post-partum outcome, berat badan lahir, nilai Apgar*

ABSTRACT

*Hemolysis, elevated liver enzyme, and low platelet count syndrome (HELLPs) is complication following severe preeclampsia which is one of the three leading causes of maternal mortality in Indonesia. The purpose of this study was to understand the prevalence, characteristics, and post-partum outcome of HELLPs patients who deliver in Dr. Soetomo Hospital in July 2012-June 2013. This study was observational-descriptive, cross sectional study. The population observed was the severe preeclampsia patients who deliver in Dr. Soetomo Hospital and have complete medical data in July 2012-June 2013. study subject taken by total sampling. HELLPs follow the 7% of severe preeclampsia patients. The maternal average age of HELLPs group was 30.2 (19-43), while in non-HELLPs was 30.8 (17-46). Most HELLPs patients were in the first and second pregnancy. The average of gestational age at labor in HELLPs was 33-34 weeks. Both in HELLPs and non-HELLPs most performed Cesarean Section delivery. No post-partum maternal mortality found in HELLPs, but 25% had stillbirth. The average of birth weight in HELLPs was 1994.4 g. First minute Apgar score ≥7 was 33.3% in HELLPs group. In conclusion, Most HELLPs patients were in the first and second pregnancy, while non-HELLPs were in first pregnancy. The average of gestational age at labor was lower in HELLPs group. Neonates mortality were higher in HELLPs group. The average of birth weight was lower in HELLPs group. First minute Apgar score ≥ 7 was higher in non-HELLP group.**(FMI 2015;51:272-276)***

Keywords: *HELLP syndrome, prevalence, maternal age, gestational age, parity, mode of delivery, post-partum outcome, birth weight, Apgar score*

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INTRODUCTION

Preeclampsia is complication following pregnancy, signed by hypertension and proteinuria, and differed from pregnancy induced hypertension (PIH). Pre-eclampsia occurred in 2-8% pregnancy and increase maternal mortality and morbidity. According to The National Institute of Health (2010), preeclampsia signed by systolic pressure >140 mmHg, dyastolic pressure >90 mmHg, and proteinuria >300 mg. Severe pre-eclampsia diagnosed if systolic pressure >160 mmHg, dyastolic pressure >110 mmHg, proteinuria ≥ 5000 mg, oliguria (<500 ml in 24 hours), cerebral and visual disturbances, epigastric pain, liver dysfunction, lung

oedema, cyanosis, thrombocytopenia, or found intra-uterine growth restriction.

Hemolysis, elevated liver enzyme, and low platelet count syndrome (HELLPs) is complication following severe preeclampsia. HELLP syndrome occur in 0.2-0.6% from all pregnancies, whether 10-12% in severe preeclampsia (Benedetto et al 2011). Hanumanthappa (2011) states possible patophysiology that might underlie HELLP syndrome. Vascular repair mechanism deficiency added vasospasme will develop into endothelial dysfunction. This dysfuction will promote platelet aggregation and fibrin activation. These aggregation and activation then leads into manifestation occurrence. Platelet over-aggregation leads to thrombo-cytopenia, while fibrin activation cause hemolysis of the erythrocyte passing through the dysfunctioned endothelial. The elevation of liver enzyme caused by ischemic of the liver. The three main manifestations of HELLP syndrome caused by endothelial dysfunction.

Satpathy et al (2009) made diagnostic criteria for each HELLPs manifestations. Hemolysis, diagnosed if at least have 2 of these 4 criterias: abnormal peripheral blood smear (found schistocyte, burr cells, and echinocyte), increased indirect bilirubin (>1.2 mg/dl), decreased blood haptoglobin, and decreased in hemoglobin – not by haemorrhage. Elevated liver enzymes marked by increased in transaminase (AST and ALT >70 IU/L or twice from the normal), lactate dehydrogenase (>600 IU/L), and increased of total bilirubin (>1.2 mg/dl). Thrombocytopenia defined as platelet count <150,000.

HELLP syndrome had been classified, and one of the common used was Mississippi classification that divide HELLPs into three classes. The difference of each class were in transmaminase and platelet count while LDH >600 IU/L in all classes. Class I marked by AST or ALT >70 IU/L and platelet count <50,000/ µL. Class II marked by AST atau ALT >70 IU/L, and platelet count 50,000-100,000/ µL, while in class III AST or ALT >40 IU/L, and platelet count 100,000-150,000/ µL (Hanu-manthappa 2011).

Suportive treatment could be given to HELLPs patients such as anti-convulsion and anti-hypertension (Padden 1999). Conservative management done in HELLP patients with gestational age <34 weeks, while pregnancy termination done in patients with gestational age >34 weeks. Corticosteroid could be given in gestational age 24-34 weeks to promote lung maturity (Haram et al 2009).

MATERIALS AND METHODS

This study was an observational descriptive, with cross sectional study. The population observed was severe preeclampsia patients who deliver in Dr. Soetomo Hospital in July 2012-June 2013. The subject of study taken by total sampling, using study materials such as medical records. The inclusion criteria were maternal age, gestational age, parity, mode of delivery, birth weight, and first minute Apgar score. study instrument used was observational sheet to collect data.

RESULTS

This study using severe preeclampsia patients medical records who deliver in Dr. Soetomo Hospital in July 2012-June 2013. The total of severe preeclampsia patients was 461 patients, but only 352 samples which pass the inclusion criterias. Twenty four (7%) patients had HELLP syndrome complication.

Table 1 shows that the average of maternal age in HELLPs group was 30.2 (19-43), while in non-HELLPs group was 30.8 (17-46). Most patients of HELLPs group were in the first and second pregnancy, while non-HELLPs most in the first pregnancy. HELLPs group averagely performed labor in 33-34 weeks of gestational age, while non-HELLPs performed in 36-37 weeks. Most patients from both both group HELLPs and non-HELLPs performed cesarean section delivery. This is showed at table 2.

Post-partum outcome of the mother and neonates showed in table 3. No mortality noted in HELLPs group. Twenty five percents neonates from HELLPs group were stillbirth. The average of birth weight of the living neonates from HELLPs group was 1994.4 g, while in non-HELLPs was 2656.3 g. Thirthy three percents of HELLPs babies had Apgar score ≥7 and 70.4% for non-HELLPs group.

Table 1. Characteristics of HELLPs and non-HELLPs in Dr. Soetomo Hospital in July 2012-June 2013

Subject characteristics	HELLP syndrome			
	(+)		(-)	
Maternal age				
<20	2	(8.3)	15	(4.6)
20 - <35	16	(66.7)	207	(63.1)
≥35	6	(25)	106	(32.3)
Parity				
Primigravid (1st pregnancy)	8	(33.3)	113	(34.5)
Multigravid (2nd to 5th pregnancy)	14	(58.3)	202	(61.6)
Grandemultigravid (more than 5th pregnancy)	2	(8.3)	13	(4)
Gestational age				
<34 weeks (very preterm)	10	(41.7)	71	(21.6)
≥34 - <37 weeks (moderate preterm)	6	(25)	58	(17.7)
≥37 weeks (aterm)	8	(33.3)	199	(60.7)

Table 2. Mode of delivery in HELLPs and non-HELLPs group in Dr. Soetomo Hospital in July 2012-June 2013

Mode of delivery	HELLP syndrome			
	(+)		(-)	
Cesarean section (CS)	15	(62.5)	159	(48.5)
Spontaneous	7	(29.2)	152	(46.3)
Extraction	1	(4.2)	17	(5.2)
Abortion	1	(4.2)	-	-
Total	24	(100)	328	(100)

Table 3. Post-partum outcome in patients HELLPs and non-HELLPs group in Dr. Soetomo Hospital July 2012-June 2013

Post-partum Outcome	HELLP syndrome			
	(+)		(-)	
Maternal outcome				
Alive	24	(100)	327	(99.7)
Dead	-	-	1	(0.3)
Neonatal outcome				
Alive	18	(75)	321	(94.1)
Stillbirth	6	(25)	20	(5.9)
BBL				
<1000 (extremely low birth weight)	2	(11.1)	4	(1.2)
1000-<2500 (low birth weight)	11	(61.1)	109	(34.0)
≥2500 (normal birth weight)	5	(27.8)	208	(64.8)
Apgar score 1'				
0-3	6	(33.3)	50	(15.6)
4-6	6	(33.3)	45	(14.0)
7-10	6	(33.3)	226	(70.4)

DISCUSSION

In this study, HELLP syndrome occur in 7% of severe preeclampsia patients. Khumsat et al (2008) had a study also in severe preeclampsia patients and had a result that HELLP syndrome occurs in 12.5%. The prevalence of HELLP syndrome in this study was lower than in Khumsat, could be caused by the period of time for taking samples no long enough, this study take the samples in one year while Khumsat's in 2 years. This lower result also could be caused by the difference of samples-taking location.

Audibert et al (1996) and Martin & Conrad (2000) in their study found that maternal age in HELLPs commonly older that the non.HELLPs. In this study, the average of maternal age in HELLPs group was 30.2 (19-43), while in non-HELLPs group was 30.8 (17-46). This was because the composition of maternal deliver in Dr. Soetomo Hospital most were 30 years old. Had been reported by Ahmed et al (2007) that 62.5% patients in HELLP syndrome were multigravid, and 71.7% patients in non-HELLPs were primigravid. In this study most of HELLPs patients were in the first and second pregnancy, while non-HELLPs patients were in the first pregnancy. No exact explanation for this result.

Commonly (64%), babies from HELLPs delivered in 32 weeks of gestational age (Roelofsen et al 2003). Supported by Singhal et al (2004), the average of gestational age when labor performed was 32,6 in HELLPs group. In this study, HELLPs group had the average 33-34 weeks of gestational age when labor performed, while in non-HELLPs group the average was 36-37 weeks of gestational age. The explanation would be the longer the pregnancy maintained, the higher risk of mortality of the mother, even would decrease the morbidity of the babies. Portis et al (1997) states that the management of HELLP syndrome was principally to optimalize maternal condition with preventing perinatal risk that might occur as the result of premature birth. Theoritically, HELLP syndrome cause the damage of microvascular endothelial that then promote the activation of intravascular platelet. This activation then promote thromboxan A secretion and serotonin that will lead to vasopsasm, aggregation, and agglutination process that will further worsen the endothelial damage, and so on. This process will only be cured by pregnancy termination (Sibai et al 1993).

Wang et al (2010) in their study found that from 59 patients from HELLPs group that were observed, 15.4% had intauterine fetal death (IUFD). In this study, 20.8% patients of HELLPs group had IUFD, while in non-HELLPs group there was 4.6%. This might be caused by the endothelial damage in severe preeclampsia worsen by hemolysis as one of three manifestations in HELLP syndrome, causing the lack of nutrition and oxygen transport through the placenta.

Osmanagaoglu (2006) observed 36 patients of HELLPs, 75% among them performed cesarean section (CS) delivery. In this study found that most of HELLPs patients (64%) performed CS delivery, so did non-HELLPs group with 46.16% for CS delivery. This caused by the need of emergency CS delivery associate with maternal and fetal condition, or because the history of CS delivery before. The mode of delivery chosen according to cervical status, history of delivery, and maternal-fetal condition (Baxter et al 2004). Emergency labor indicated if maternal blood pressure >160/110 mmHg and wouldn't get better with anti-hypertensive, worsen symptoms, decreasing renal function, severe ascites, placental abruption, oligouria, lung oedema, and eclampsia (Gul et al 2005). No agreement yet made about the best delivery time and mode for HELLPs case (Haram et al 2009).

HELLP syndrome cause 0-24% of maternal mortality (Weinstein 1982, Sibai et al 1993). In the opinion of Turgut et al (2010), HELLPs patients experience the increasing of morbidity and mortality. Liu et al (2006) stated that the maternal mortality rate between the HELLPs and non-HELLPs group show no difference. In this study, no mortality found in the HELLPs group, while one patient in non-HELLPs. This indicate an aggressive management of HELLP syndrome so that mother had decreased risk of mortality.

The neonates born in this study were 365 babies. Stillbirth found in 25% percents of neonates born from HELLPs group, while 6.2% found in non-HELLPs. This could be caused by the management of HELLP syndrome principally to optimize maternal condition and prevents mother from death, so that termination performed if pregnancy had been in the 34 weeks of gestation, or if the maternal condition worsen. While the perinatal morbidity and mortality rate associate with the gestational age when labor performed (Abramovici et al 1999).

In the study of Erkilinc & Eyi (2013) that observed neonatal outcome in HELLP syndrome, show that 19% neonates born with birth weight <1500 g, 41.8% with 1500-<2500 g, and 39.2% with ≥2500 g. In this study, neonates born from HELPs had the average of birth weight 1994.4 g, while non-HELLPs group had 2656.3 g. This could be explained because in coomon, neonates from HELLPs born in the age of gestation <34 weeks, that leads to low birth weight. The outcome of neonates associates with the occurrence of placental abruption, intrauterine asphyxia, and prematurity. In Khumsat et al (2008) study, the first minute Apgar score ≥7 was 50% in HELLPs group. In this study, the first minute Apgar score ≥7 was 33.3% in HELLPs group, while 70.4% in non-HELLPs group. The prematurity would once again explain this, because in the gestational age <34 weeks, the maturity of lung not yet completed, that would lead to low Apgar score.

CONCLUSION

The HELLPs group average maternal age was 30.2 (19-43), while in non-HELLPs was 30.8 (17-46). Most

HELLPs patients were in the first and second pregnancy, while non-HELLPs were in first pregnancy. The average of gestational age at labor was lower in HELLPs group. Neonates mortality were higher in HELLPs group. The average of birth weight was lower in HELLPs group. First minute Apgar score ≥7 was higher in non-HELLP group.

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