Risk factor of severe preeclampsia in Dr. Soetomo Hospital Surabaya in 2015

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ABSTRAK

Tujuan: mengetahui faktor risiko mana yang terkait dengan terjadinya preeklampsia berat di Dr. Soetomo Hospital, selama tahun 2015.
Bahan dan Metode: Jenis dan desain penelitian bersifat analitik dan retrospektif. Penelitian ini dilakukan di Dr. Soetomo Hospital, dari bulan April sampai November 2016. Instrumen penelitian adalah rekam medis yang kemudian diberi kode dan dianalisis. Sampelnya adalah 134 wanita hamil, terdiri dari 67 wanita hamil dengan preeklamsia berat sebagai kelompok kasus dan 67 wanita hamil sebagai kelompok kontrol.
Hasil: obesitas ibu (OR=5,786; 95% CI: 2,300-14,555), riwayat hipertensi (OR=6,693; 95% CI: 1,848-24,237) dan primi tua sekunder (OR=6,384; 95% CI: 1,357-30,031) Dikaitkan dengan perkembangan preeklamsia berat.
Simpulan: Sebagai kesimpulan, faktor risiko signifikan pre-eklamsia berat di Dr. Soetomo Hospital, Surabaya selama tahun 2015 adalah obesitas, riwayat hipertensi dan prima tua sekunder. **(MOG 2017;25:6-9)**

Kata kunci: preeklampsia berat; faktor risiko.

ABSTRACT

Objectives: to determine which of the risk factors above associated with the occurrence of severe preeclampsia at dr. Soetomo Hospital, Surabaya during 2015.
Materials and Methods: The type and design of the study were analytic and retrospective. This study was held in the dr. Soetomo Hospital from April until November 2016. The instrument of the study was the medical records then being coded and analysed. The samples were 134 pregnant women, consisting of 67 pregnant women with severe preeclampsia as cases and 67 pregnant women as controls.
Results: Maternal obesity (OR= 5,786; 95% CI: 2,300–14,555), history of hypertension (OR= 6,693; 95% CI: 1,848–24,237) and secondary elderly primi (OR= 6,384; 95% CI: 1,357–30,031) are associated with the development of severe preeclampsia.
Conclusion: In conclusion, the significant risk factors of severe preeclampsia in dr. Soetomo Hospital Surabaya during 2015 are obesity, history of hypertension and secondary elderly primi variables. **(MOG 2017;25:6-9)**

Keywords: severe pre-eclampsia; risk factors.

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INTRODUCTION

About 830 women die from pregnancy or complications related to childbirth every day around the world, an amount of which is still considered high1. One of the problems experienced by pregnant women is preeclampsia. The incidence of preeclampsia is seven times higher in developing countries than in developed countries1. In Indonesia, the incidence of preeclampsia is 7-10%. This large incidence number is enhanced by the various risk factors of severe preeclampsia such as family history, multifetal gestation, IVF, age, parity, obesity, history of diabetes mellitus, history of hypertension, history of preeclampsia/eclampsia, autoimmune disease, mariage to pregnant interval, secondary elderly primi, and infection. These risk factors should be well identified in order to prevent the occurrence of severe preeclampsia in preg-nant women.

Severe preeclampsia can result in maternal and fetal death. According to World Health Organization (WHO), severe preeclampsia is one of the causes of maternal and fetal morbidity and mortality, as the second highest cause of maternal mortality. In Indonesia, severe preeclampsia and eclampsia account for 30-40% of maternal deaths. In Dr. Soetomo Hospital Surabaya, maternal deaths due to severe preeclampsia still occur, therefore risk factors of severe preeclampsia at Dr. Soetomo Hospital Surabaya during 2015 need to be investigated in order to prevent the occurrence of severe preeclampsia which will lead to maternal death in the following years.

MATERIALS AND METHODS

The type of research used was analytical with retrospective research design. The study was conducted at the medical record center of Dr. Soetomo Surabaya during January-December 2015. The amount of samples in this study were 67 samples for cases and 67 samples controls. Subjects were pregnant women, both with severe preeclampsia and without severe preeclampsia. The dependent variable was severe preeclampsia, the independent variables were the risk factors for the occurrence of severe preeclampsia including family history, age, parity, obesity, multifetal gestations, history of diabetes mellitus, history of hypertension, history of

preeclampsia/eclampsia, autoimmune diseases, marriage to pregnant interval, IVF, secondary elderly primi, and infection.

The instruments used in this study were medical records of pregnant patients at Hospital Dr. Soetomo, Surabaya (secondary data). Simple random sampling was used as the sampling technique. The data obtained was processed and analyzed by SPSS program. Data analysis could reveal the frequency distribution and the percentage of each variable, as well as the association or correlation between variables using Chi Square test, with significance level of p <0.05 and confidence interval (CI) of 95%.

RESULTS AND DISCUSSION

This research was conducted on April 5 to June 28, 2016 in medical record center room of Dr. Soetomo Hospital Surabaya. The researchers collected data based on the medical records of Dr. Soetomo Hospital Surabaya during 2015.

The samples of this study were taken from Dr. Soetomo Hospital's medical record center year 2015. The sample was chosen by random sampling using the sample number formula which resulted as many as 134 pregnant women.

Characteristics of research subjects

Table 1 shows that there is no significant difference on age, parity, obesity, history of diabetes mellitus, history of hypertension, marriage to pregnancy interval, secondary primi and infection, between mother with severe preeclampsia and mother without severe preeclampsia, Family, multifetal gestational, history of preeclampsia/eclampsia and autoimmune disease were only found in mothers with SPE, whereas in IVF infants are not found in both groups

Table 1. Frequency distribution of research subjects' characters

Characters		SPE (Severe PE)		No SPE		Total	
		N	%	N	%	N	%
Family History	Yes	1	1,5	0	0	1	0,7
	No	66	98,5	67	100	133	99,3
	Total	67	100	67	100	134	100
Multi- fetal Gesta-sions	Yes	1	1,5	0	0	1	0,7
	No	66	98,5	67	100	133	99,3
	Total	67	100	67	100	134	100
IVF	Yes	0	0	0	0	0	0
	No	67	100	67	100	134	100
	Total	67	100	67	100	134	100
Age	<20 and >35 years old	16	23,9	14	20,9	30	22,4
	20-35 years old	51	76,1	53	79,1	104	77,6
	Total	67	100	67	100	134	100
Parity	Primigravida	23	34,3	21	31,3	44	32,8
	Multigravida	44	65,7	46	68,7	90	67,2
	Total	67	100	67	100	134	100
Obesity	Yes	27	40,3	7	10,4	34	25,4
	No	40	59,7	60	89,6	100	74,6
	Total	67	100	67	100	134	100
Diabetes History	Yes	4	6	1	1,5	5	3,7
	No	63	94	66	98,5	129	96,3
	Total	67	100	67	100	134	100
Hyperten-sion History	Yes	16	23,9	3	4,5	19	14,2
	No	51	76,1	64	95,5	115	85,8
	Total	67	100	67	100	134	100
PE/Ecla-mpsia	Yes	2	3	0	0	2	1,5
	No	65	97	67	100	132	98,5
	Total	67	100	67	100	134	100
Autoimmune Disease	Yes	3	4,5	0	0	3	3,2
	No	64	95,5	67	100	131	97,8
	Total	67	100	67	100	134	100
Married to pregnant interval	Positive	18	78,3	15	71,4	33	75,0
	Negative	5	21,7	6	28,6	11	25,0
	Total	23	100	21	100	44	100
Secondary erlderly Primi	Yes	11	16,4	2	3	13	9,7
	No	56	83,6	65	97	121	90,3
	Total	67	100	67	100	134	100
Infection	Yes	7	10,4	2	3	9	6,7
	No	60	89,6	65	97	125	93,3
	Totak	67	100	67	100	134	100

Risk factors analysis

Table 2. Risk Factor Analysis Result on age, parity, obesity, history of DM, history of hypertension, marriage to pregnancy interval, secondary elderly primi and secondary infection.

Variables	SPE				p	95%CI
	Yes		No			
	N	%	N	%		
Ages						
<20 and >35 years old	16	23.9	14	20.9	0.836	1.188 (0.526-2.680)
20-35 yo	51	76.1	53	79.1		
Parity						
Primi	23	34.3	21	31.3	0.854	1.145 (0.556-2.356)
Multi	44	65.7	46	68.7		
Obesity						
Yes	27	40.3	7	10.4	0.000	5.786 (2.300-14.555)
No	40	59.7	60	89.6		
History of Diabetes Mellitus						
Yes	4	6	1	1.5	0.365	4.190 (0.456-38.519)
No	63	94	66	98.5		
History of Hypertension						
Yes	16	23.9	3	4.5	0.003	6.693 (1.848-24.237)
No	51	76.1	64	95.5		
Marry to Pregnant Interval						
Positive	18	78.3	15	71.4	0.862	1.440 (0.366-5.669)
Negative	5	21.7	6	28.6		
Secondary Elderly Primi						
Yes	11	16.4	2	3	0.02	6.384 (1.357-30.031)
No	56	83.6	65	97		
Infection						
Yes	7	10.4	2	3	0.165	3.792 (0.758-18.972)
No	60	89.6	65	97		

Table 2 shows the analysis results using chi-square test. p=0.836, (mean p value is <0.05), means that there is no significant correlation between age and SPE inci-dence. Similarly, the value of OR=1,188 (95% CI: 0,526 - 2,680) (Although OR is more than 1, but since the confidence interval covers 1, age is not a risk factor. This result is not in accordance with the literature which

states that age is a risk factor for severe preeclampsia8. The incidence of preeclampsia in pregnant women younger than 20 is more than 3-fold compared with women aged 20-35 years. In pregnant women older than 35 years, latent hypertension5 may occur. The cause of it is the decreased quality of the eggs, which results in decreased quality of the offspring.

The analysis result of parity was p=0.854 which means that there is no significant correlation between age and SPE incidence, while OR=1,145 (95% CI: 0,556 - 2,356) which means that parity is not a risk factor. This result is not in accordance with the results of previous studies which state that pregnant women with nulliparity have a 2 times greater risk for experiencing severe preeclampsia than pregnant women with multipara6.

The analysis result for obesity was p=0,000 which means that there is a significant correlation between age and SPE incidence, while OR=5,786 (95% CI: 2,300 - 14,555) (indicating that the OR value exceeds 1 and the confidence interval does not Include the number 1), which means that obesity is a risk factor. Obese pregnant patients were 5.8 times more likely to have severe preeclampsia. This result is in accordance with the literature that states that obesity is a risk factor for severe preeclampsia.[10] In obese mothers, severe preeclampsia may occur through the mechanisms of hyperleptemia, metabolic syndrome, inflammatory reactions and increased oxidative stress whch lead to endothelial damage and dysfunction[2].

The analysis result for the history of hypertension was p=0.003 which means that there is a significant correlation between hypertension history and SPE incidence, while OR=6,693 (95% CI: 1,848 - 24,237), which means that history of hypertension can be considered a risk factor. Pregnant patients with a history of hypertension were 6.7 times more likely to have severe preeclampsia. This result is consistent with the literature which states that a history of hypertension is a risk factor for severe preeclampsia8. In another previous study, analysis of pregnant women with a history of previous chronic hypertension had a 13-fold greater risk (OR 13.06, 95% CI: 11.39-14.97) to suffer from severe preeclampsia than women without hypertension history[13]. One predisposing factor for severe preeclam-psia is a history of hypertension, previous vascular hypertensive disease, or essential hypertension[2]. Hypertension which is already suffered before pregnancy has resulted in disturbance/damage to the important organs of the body. The pregnancy itself makes a rising in the bodyweight so that it can lead to more severe interference/damage, which is shown by odem and proteinuria[7].

The analysis result for marriage to pregnancy interval was p=0,862 which means that there is no significant correlation between married to pregnancy interval and SPE incident, while OR=1,440 (95% CI: 0,366 - 5,669), that means that married to pregnancy interval is not a risk factor. In a previous study, the results showed that pregnant women with married to pregnancy interval of less than 1 year had a 1.8 times greater risk of severe preeclampsia than did pregnant women not married to less than 1 year[4].

The analysis results for the secondary elderly primi was p=0.02 which means that there is a significant relationship between the secondary elderly primi status and the incidence of SPE, while the OR=6.384 (95% CI: 1.357-30.031) which means that the secondary secondary elderly primi can be considered a risk factor. Pregnant patients with secondary elderly primi are 6.4 times more likely to have severe preeclampsia. This result is consistent with the literature that states that secondary elderly primi is a risk factor for severe preeclampsia4. In the results of previous studies, pregnant women with secondary elderly primi status had an 8-fold greater risk (OR 8.08, 95% CI: 6.59-9.56) to experience severe preeclampsia than non-secondary elderly primi preg-nant women.[9] Women who are pregnant within 10 or more years after the previous pregnancy are at risk for severe preeclampsia.[9]

The analysis results for the infection is p=0.165, which means that there is no significant relationship between the infection and the incidence of SPE, while the value OR=3.792 (95% CI: 0.758 - 18.972) which means that infection is not a risk factors for SPE. According to the results of previous research, pregnant women with urinary tract infections has a 3.6 times greater risk for SPE, asymptomatic infections of bacteriuria have 3.6 times greater risk, vaginal/bacterial vaginosis infection have 4.4 times greater risk of SPE, compared to non-infected pregnant women4.

CONCLUSION

Obesity, history of hypertension and secondary elderly primi are the risk factors of severe preeclampsia incidence.

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