Factors Related to the Preeclampsia Incidence in the Delivery Room of General Hospital Ulin Banjarmasin 2017

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Abstract

Based on maternal mortality data in South Kalimantan on years 2017 shown that the preeclampsia and eclampsia are leading causes of maternal and perinatal morbidity and mortality in South Kalimantan. From totals data of 75 death cases, preeclampsia and eclampsia have 19 cases, followed by pregnancy bleeding with 18 cases, 5 cases of infection and another causes 33 cases. The General Hospital Ulin Banjarmasin data about maternal mortality in the year 2017 showed that from a total of 13 cases, 6 cases were caused by preeclampsia and eclampsia. The total number of delivery in the General Hospital Ulin Banjarmasin 2017 was 1.505, founded about 251 incidences of preeclampsia with characteristics of 60% at term pregnancy, 32% over 35 years, primipara 24%, 9% obese. This research aim to analyze factors related to preeclampsia at Delivery Rooms in the General Hospital Ulin Banjarmasin on years 2017. This research is a quantitative study with a case-control research design to examine the factors that are related (independent variables) to preeclampsia cases in General Hospital Ulin Banjarmasin (dependent variable). The number of samples in this study was 95 cases and 95 controls with sampling techniques by simple random sampling. The results showed that there was a relationship between mother ages (p=0.011), gestational age (p=0.000), obesity (p=0.001), meanwhile parity factor showed no relationship (p=0.862). Whereas the dominant factor related to the incidence of preeclampsia in the delivery room at The General Hospital Ulin Banjarmasin was obese with OR=2.835. There is a relationship between mothers ages, gestational age, and obesity to the incidence of preeclampsia at Delivery Rooms in the General Hospital Ulin Banjarmasin in the years 2017. Nevertheless, the parity found no relationship. The dominant factor to the incidence of preeclampsia at Delivery Rooms in the General Hospital Ulin Banjarmasin in the years 2017 related to the obesity.

Keywords: *Mothers ages, gestational age, obesity, parity, preeclampsia.*

Introduction

Preeclampsia is the occurrence of specific hypertension in pregnancy, which involves various multi-organs in the body. It usually occurs in the week above 20 weeks' gestation, sometimes appearing near the end of pregnancy and can also occur as superimposed pre-eclampsia due to a pre-existing state of hypertension.[1] The frequency of preeclampsia in Indonesia around 3-10%, South Kalimantan in 2017 found data of pregnant women as much as 90,386 people with a high risk of 20%, namely people with a risk of pre-eclampsia as much as 47% of total risk pregnancies so that it ranks first of all risk factors there.[2]

The proportion of maternal deaths in Indonesia, namely bleeding reached 28%, pre-eclampsia by 24%, infection by 11%, complications of preeclampsia by 8%, long parturition of 5%, and abortion by 5%. Data from the South Kalimantan Provincial Health Office in 2017 The maternal mortality rate of 75 people with the highest cause was preeclampsia with 19 people, bleeding 18 people, infection with 5 people.[3] General Hospital Ulin Banjarmasin in 2017 found maternal mortality rates of

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13 cases, 6 of which were caused by pre-eclampsia and eclampsia or by 56% of 1,484 live births. So if converted into scale per 100,000 births, the maternal mortality rate is 600/100,000 live births.[4]

Risk factors for the incidence of preeclampsia include primipara (first pregnancy), previous history of preeclampsia, history of thrombophilia, systemic lupus erythematosus, age >40 years, parity (number of deliveries), gestational age (gestational age), obesity, diabetes mellitus, multiple pregnancies (multiple pregnancy) in vitro fertilization (IVF), chronic hypertension, kidney failure or both, a history of preeclampsia in the family.[1]

Data of The General Hospital Ulin Banjarmasin in 2017 total patients in the VK maternity numbered 2387, childbirth 1.505 cases with preeclampsia of 251 (9.5%) of all patients in obstetrics and gynecology. The cases of preeclampsia ranked highest in ten obstetric cases, which were around 42%. Data on cases of preeclampsia in the General Hospital Ulin Banjarmasin, gestational age in aterm pregnancies (36 weeks to 42 weeks) is 60%, in preterm pregnancies (20 weeks to 35 weeks) is 40%, in women over 35 years of age is 32%, occurs in pregnancy first (primipara) is 24% in pregnancies that are more than two (multi-para) are only 14%, and obesity is 9%.[4] Based on the data above, researchers need to research the risk factors for preeclampsia at the General Hospital Ulin Banjarmasin.

Materials and Method

This study used an analytic observational approach with case-control study design.[6] The place of research was the delivery room of the General Hospital Ulin Banjarmasin. Time of study from March to May 2019. The population in the study were all pregnant, and childbirth mothers in the delivery room in General Hospital Ulin Banjarmasin in 2017 as many as 1,484 people, pregnancy and childbirth in preeclampsia were 251 people. Samples taken from the existing population are determined by purposive sampling, ie the research is determined by certain criteria determined based on the research objectives.[7]

Findings and Discussion

Table 1. Distribution and Frequency of Age, Parity, Age of Gestation, and Obesity

Parameter	Frequency	Percentage (%)
Age		
<20 and> 35 years	49	28.5
20-35 years	123	71.5
Parity		
Primigravida	46	26.7
Multipara	126	73.3
Age of Gestation		
<37 weeks	25	14.5
≥37 weeks	147	85.5
Obesity		
Obesity	103	59.9
Not	69	40.1

Table 2. Bivariate Analysis Relationship Age, Parity, Age of Gestation, and Obesity with Pre-Eclampsia in Ulin Banjarmasin Hospital

Variable	PE		Nor mall		Total		Chi-square	
	f	%	f	%	N	%	p	OR
Mother's age								
<20 and >35 years	32	37.2	17	19.8	49	28.5	0.0 11	2.405
20-35 years	54	62.8	69	80.2	123	71.5		
Parity								
Primigravida	23	26.7	23	26.7	46	26.7	0.862	-
Multigravida	63	73.3	63	73.3	126	73.3		
Age of Gestation								
<37 weeks	25	29.1	0	0	25	14.5	0,000	2.410
≥37 weeks	61	70.9	100	100	147	85.5		
Obesity								
BMI >25	62	72,1	41	47.7	103	59.9	0.001	2.835
BMI ≤25	24	27.9	45	52.3	69	40.1		

Relationship between Age of Mother and Preeclampsia in VK Ulin Hospital Banjarmasin: The blood circulation system is related to the elasticity of blood vessels where changes in blood volume will require good adaptation to blood vessels. Young people under 20 years old, children or adolescents up to 18 years the level of elasticity of blood vessels is still not mature or optimal. If at this age, a pregnancy occurs, efforts to adapt to changes in blood volume will have an impact on cardiac output. This event can be at risk of a failure of adaptation to the cardiovascular system so that as far as possible this age, pregnancy is prevented.[7]

Women aged >35 years are susceptible to the risk of chronic hypertension. Older women who show an increased incidence of chronic hypertension as they age, are at greater risk of developing preeclampsia. The incidence of preeclampsia can occur at all ages during pregnancy, but most are found at the age of ≥35 years because at this age with increasing age, degenerative diseases begin to appear.[5,8] In hypertension, there is muscle tension near the spiral arteries and lumen spinal arteries, causing vasoconstriction; this fails arterispiral remodeling. Blood flow to the uteroplacenta will decrease and cause hypoxia and ischemia.[5,9]

Women at the optimal age of 20-35 years have an optimal circulation system in the heart so that they can carry out the pregnancy process properly and be able to adapt to changes in the blood circulation system. The risk of preeclampsia is almost doubled in pregnant women aged 40 years or more, both in the first pregnancy and in more than one pregnancy.[10]

Relationship of Parity (Number of Labor) Mothers with Preeclampsia in VK Ulin Hospital Banjarmasin: Primigravida pregnancy is a process of adaptation to the results of conception, in the normal state of the body there is a fetomaternal tolerance process so that the pregnancy can proceed well. The immune system has the task of recognizing and reacting to all foreign proteins that enter the body that is considered as foreign objects including the results of conception, then the reaction of fetomaternal intolerance has a high likelihood due to the incidence of preeclampsia in primigravida.

Primiparous pregnancy has an increased risk of preeclampsia, three times more likely than higher parity, whereas for multiparity only has a 1% chance of preeclampsia. It is estimated that the incidence of preeclampsia increases in nulliparity because the mother's immune system still considers paternal cells to be antigenic and trigger the occurrence of desensitization resulting in preeclampsia. For newly married women with new husbands, the incidence of preeclampsia can increase, in addition to frequent sexual intercourse before pregnancy can reduce the incidence of preeclampsia.[12]

The immune system will recognize the results of conception in subsequent pregnancies so that paternal proteins that enter the trophoblast-shaped body are well tolerated. This fetomaternal tolerance will take place if the woman does not change partners, but if a new partner is present, the risk of the occurrence of preeclampsia persists even though it is more than one pregnancy.

Relationship between Gestation Age (Age of Pregnancy) and Preeclampsia in VK Ulin Hospital Banjarmasin: Preeclampsia cases of early preeclampsia are more dominant than late preeclampsia because gestational age associated with the incidence of preeclampsia is below 37 weeks, which means patients may have shown clinical symptoms since under 34 weeks (early onset).[13,14] The last few years the distribution of preeclampsia is determined by a new concept, which is based on gestational age or gestational age, where this concept holds to gestational age when the clinical symptoms of preeclampsia occur. This classification is based on the onset of preeclampsia, namely early onset and late onset. Early onset is preeclampsia in pregnancy before or during gestation to 34 weeks, while late onset occurs in pregnancies over 34 weeks. This classification has been widely accepted that these two things are forms of preeclampsia that have different etiologies.[15,16]

The abnormal placenta is one that is thought to be the main pathophysiology in early preeclampsia while predisposing to cardiovascular or metabolic risk that causes endothelial damage and overreacting acts as pathophysiology in late preeclampsia. This difference has been supported by an analysis of pathological findings in the placenta and maternal factors that circulate.[7,17]

Relationship between Obesity and Preeclampsia in VK Ulin Hospital Banjarmasin: Obesity is closely related to insulin resistance, which is also a risk factor for preeclampsia. Obesity is one sign that leads to diabetes in pregnancy, where fibroblast growth levels correlate with fetal growth which is characterized by the presence of macrosomia and hyperplasentosis which increases the risk of preeclampsia.[18] Increased blood and plasma cells

in pregnancy require increased cardiac output, as is the case with increasing BMI in obesity. Body compensation in obese pregnant women through hypervascularity for the fulfillment of placental blood circulation and hyperplasentosis is possible due to increased needs.[19]

Women who are overweight, obese, and unhealthy have a higher risk of developing slow-onset preeclampsia with severe conditions. When grouped according to gestational age at delivery, there is a statistically significant increased risk for the potential for late-onset preeclampsia at 34 weeks' gestation. In obese women, twice the risk of preeclampsia compared to women with normal weight.[20]

The results of the study found a significant association between obesity and the incidence of preeclampsia (p <0.05) along with the results of the study, obesity is a risk factor for preeclampsia, the risk increases with higher maternal BMI.[21] This increase the risk of preeclampsia by 2.47 fold, while women with a BMI >35 before becoming pregnant compared to BMI 19-27 had a fourfold risk.

Table 3. The Most Dominant Relationship Between Independent Variables and Dependent Variables in VK Maternity Ulin Hospital Banjarmasin

Variable	P	OR	95% CI	
			Upper limit	Lower limit
Age	0.011	2.405	1.209	4.784
Parity	1.000	-	-	-
Age of Gestation	0.000	2.410	1.989	2.920
Obesity	0.001	2.835	1.505	5.341

Table 4. The Result of Exponent B on Age of Mother, Age of Gestasion, Parity, and Obesity in Preeclampsia in VK Maternity Ulin Hospital Banjarmasin

		B	SE	Wald	df	Sig.	Exp (B)	95.0% CI for EXP (B)	
								Lower limit	Upper limit
Step 1[a]	Age	.754	.366	4.240	1	.039	2.126	1.037	4.360
	Parity	.063	.368	.029	1	.865	1.065	.518	2.190
	Gestation	.898	.408	4.854	1	.028	2.455	1.104	5.457
	Obesity	.961	.334	8.262	1	.004	2.614	1.357	5.032
	Constant	-4.356	1.264	11.872	1	.001	.013		
Step 2[a]	Age	.749	.365	4.209	1	.040	2.115	1.034	4.326
	Gestation	.903	.407	4.925	1	.026	2.466	1.111	5.473
	Obesity	.958	.334	8.239	1	.004	2.607	1.355	5.016
	Constant	-4.243	1.075	15.573	1	.000	.014		

a. Variable (s) entered on step 1: Age, Parity, Gestation, obesity

Conclusion

Based on the results of the study, there was a relationship between the age of the mother and the incidence of preeclampsia in the delivery room at Ulin Hospital Banjarmasin. There was no relationship between parity (number of deliveries) and the incidence of preeclampsia in the delivery room at Ulin Banjarmasin Hospital. There is a relationship between gestational age (gestational age) and the incidence of preeclampsia in the delivery room at Ulin Hospital Banjarmasin. There is a relationship between obesity and the incidence of preeclampsia in the delivery room at Ulin Hospital Banjarmasin. The most dominant factor associated with the incidence of preeclampsia in the maternity room at Ulin Hospital Banjarmasin is obesity

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