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Type of Delivery and Length of Stay in Hypertension Patients Syahriana^{1,2}, Nasrudin Andi

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Introduction: The length of stay (LOS) for pregnant mothers with vaginal delivery is

different from that of caesarean delivery. Hypertension during pregnancy may be an

indication to conduct caesarean delivery that affects length of stay in hospitals. Material

and Methods: The total collected samples were 108 pregnant mothers and they were

divided into 2 groups, 54 pregnant mothers with normal blood pressure and 54 pregnant

mothers with hypertension. Maternal characteristics, routine hematology, blood pressure

(BP) status, type of delivery and length of stay were analyzed. Results: Type of delivery,

maternal age, height, weight, body mass index (BMI), systolic blood pressure, diastolic

blood pressure, length of stay, and routine hematologic profile except leukocytes showed

statistically significant correlations with hypertension for the total 108 pregnant mothers.

Pregnant mothers with caesarean delivery due to pregnancy induced hypertension (PIH)

was threefold than those of normal blood pressure (95% confidence interval, 1.343-6.563).

Statistical analyses indicated significant correlations between type of delivery and length of

stay for pregnant mothers with hypertension after delivery (p-value = 0.000). Conclusion: On average, pregnant mothers who had hypertension with caesarean delivery spent at least 49-72 hours in the hospital after delivery. Indeed, the Royal College of Obstetricians and Gynecologists recommended that pregnant mothers with vaginal delivery should stay in a hospital for 1 or 2 days and those with caesarean section were suggested to stay 3 or 4 days after delivery. However, some pregnant mothers in this study spent shorter time to stay at the hospital after delivery. Therefore, it is suggested for pregnant mothers to stay at a hospital in a more sufficient period of time after delivery to give an adequate time for physicians to classify, to diagnose, or to treat complications after delivery. Keywords: pregnancy induced hypertension, type of delivery, length of stay 1. Introduction Pregnancy induced hypertension is a complication that contributes significantly to maternal and perinatal morbidity and mortality (Uzan et al., 2011; MacDonald-Wallis et al., 2012; Kazemian et al., 2014; Kattah & Garovic, 2014; Mccarthy et al., 2015). Pregnancy induced hypertension, preeclampsia and complications occur at gestational age more than 20 weeks with maternal blood pressure at $\geq 140 / 90$ mmHg (American College of Obstetricians and Gynecologists, 2013; Kattach & Garovic, 2014; Melamed et al., 2014; Magee et al., 2016; Zhang et al., 2017). Preeclampsia and eclampsia contribute to maternal death for every 3 minutes worldwide (Mammaro et al., 2009; Meshram et al., 2014). Pregnancy induced hypertension (PIH) is one of the most common pregnancy complications (Durst et al., 2016) that calls for consideration to conduct a certain type of delivery gjhs.ccsenet.org Global Journal of Health Science Vol. 10, No. 6; 2018 159 (Haroush et al., 2005). Fetal distress caused by preeclampsia and eclampsia requires doctors physicians to perform cesarean section (Alanis et al., 2008). Length of stay after delivery at a health facility is vary among pregnant mothers (Campbell et al., 2016). Some pregnant mothers spend either shorter time or longer time compared with the actual needs. Specifically, length of stay (LOS) in a shorter period of time leads to insufficient time for physicians to detect, to diagnose, or treat complications of delivery that will in turn increase the possibility of morbidity and mortality (MD et al., 2016; Plough et al., 2017). Length of

stay at a hospital for pregnant mothers with vaginal delivery is different from that of caesarean section (SC), hypertension in pregnancy may be an indication to conduct caesarean section that affects length of stay in hospitals. Therefore, this study aims to determine correlations between type of delivery and length of stay in pregnant mothers with PIH and to compare length of stay in the hospital between pregnant mothers with vaginal delivery and those with caesarean section with PIH.

2. Materials and Methods

2.1 Study Design and Setting

A prospective cross-sectional study was conducted at the Sitti Khadijah I Mother and Child Hospital Makassar, South Sulawesi, Indonesia during June until December 2017. The total 108 samples of pregnant mothers were collected in the study which divided into two groups, 54 pregnant mothers who gave birth with hypertension and 54 pregnant mothers who gave birth with normal tension. Purposive sampling technique was used in accordance with the inclusion and exclusion criteria.

2.2 Variables and Data Collection

Data of samples were screened by medical officers for enrollment with maternal inclusion criteria both with hypertension and normal tension together with independent variables that include age, duration of stay, type of delivery, systolic blood pressure, diastolic blood pressure, body mass index (BMI), and routine hematology. The exclusion criteria in this study were mothers who had multiple gestation, history of heart disease, diabetes and renal disease.

2.3 Ethical Considerations

This study received ethical clearance from the Research and Ethics Committee, Faculty of Medicine of Hasanuddin University and was registered in 1073/H4.8.4.5.31/PP36-KOMETIK/2017.

2.4 Data Processing and Analysis

All collected data were encoded, and then they were entered and analyzed. We performed the statistical analyses by comparing maternal characteristics with blood pressure status which presented as mean \pm standard deviation and frequencies for categorical variables, correlations between type of delivery with blood pressure status, and correlations between type of delivery and length of stay in hypertension patients. The variables were compared by using chi-square test, T-test and Mann-Whitney test.

3. Results

3.1 Socio-Demographic, Maternal Anthropometric Profile, and Routine Hematologic

In this study, maternal characteristic data with the total 108 mothers showed that type of delivery, maternal age,

height, weight, BMI, systolic blood pressure (BP), diastolic blood pressure (BP), length of stay, and routine hematologic profile except leukocytes showed statistically significant correlations with maternal hypertension. Level of education, employment status, gravidity and gestational age showed no statistically significant differences between the two groups. gjhs.ccsenet.org Global Journal of Health Science Vol. 10, No. 6; 2018 160 Table 1.

Comparison of socio-demographic and anthropometric profile

Variable	Normal Tension Group (n=54)	PIH Group (n = 54)	p- value
Level of Education, n (%)			
High	25	30	0.441
Low	29	24	
Status of Employment, n (%)			
Employed	29	26	0.700
Unemployed	25	28	
Gravidity, n (%)			
Primiparous	20	22	0.844
Multiparous	34	32	
Age (mean ± SD)	28.87(1.2)	32.04(5.7)	0.007
Height (mean ± SD)	153.87(5.9)	156.31(5.6)	0.030
Weight (mean ± SD)	61.89(1.5)	73.52(1.4)	0.000
BMI (mean ± SD)	26.22(3.7)	29.97(5.2)	0.000
GA (mean ± SD)	38.44(1.7)	38.06 (2.0)	0.088
Systolic BP (mean ± SD)	114.81(9.1)	156.48 (18.5)	0.000
Diastolic BP (mean ± SD)	74.48 (6.5)	101.67 (11.3)	0.000
LOS (mean ± SD)	1.94 (1.0)	2.44 (1.0)	0.019
Routine Hematology (mean ± SD)			
Hemoglobin	10.95 (1.5)	11.51 (1.4)	0.050
Leukocytes	10.73 (2.6)	11.65 (3.5)	0.124
Erythrocytes	4.13 (0.9)	4.35 (0.5)	0.000
Hematocrit	31.58 (4.0)	35.55(4.4)	0.000
Platelets	294.41(67.3)	247.46 (64.2)	0.000
Glucose	95.81 (14.1)	103.81 (17.3)	0.007

Type Of Delivery Table 2 shows that hypertension significantly affects the type of delivery (p-value=0.011). Pregnant mothers with caesarean delivery due to pregnancy induced hypertension (PIH) was threefold than those of normal blood pressure (95% confidence interval, 1.343-6.563). Table 2. Types of delivery with different blood pressures

Delivery	Normal Tension Group (n=54)	PIH Group (n = 54)	OR (95% CI)	p- value
Vaginal	30	16	2.969	(1.343-6.563)
Caesarean	24	38	3.3	0.011

Length of Stay: Correlation And Association The percentage of normal blood pressure with vaginal delivery was higher than that of caesarean delivery of 55.6% with LOS ranging from 24-47 hours (56.7%) for vaginal and 48-72 hours (54.2%) for cesarean. The percentage of gjhs.ccsenet.org Global Journal of Health Science Vol. 10, No. 6; 2018 161 pregnant mothers who had hypertension with caesarean delivery was higher than that of vaginal delivery (70.4%) with the length of stay (LOS) ranging from 48 to 72 hours (50%), whereas normal delivery was <24 hours (50%).

These data showed that there were correlations between type of delivery and blood pressure status with length of stay in the hospital. Table 3. Correlations between types of delivery and lengths of stay by four categories

Category	Percentage woman by category	Leght Of Stay < 24 h	P Value	Count (%) 24-47 h	Count (%) 48-72 h	Count (%) > 72 h
Normal Tension + Vaginal Delivery	55.6%	6 (20%)	0.000	17 (56.7%)	6 (20%)	1 (3.3%)
Normal Tension + Secarean	44.4%	0 (0%)	0.000	2 (8.3%)	13 (54.2%)	9 (37.5%)
PIH + Vaginal Delivery	29.6%	8 (50%)	0.000	5 (3.2%)	3 (18.8%)	0 (0%)
PIH + secarean	70.4%	0 (0%)	0.000	19 (50%)	6 (15.8%)	4 (10%)

4. Discuccion Our findings indicated that the average length of stay in the hospital for mothers who had normal blood pressure with vaginal delivery was 24-47 h. This is considerably longer than those with hypertension who have shorter treatment (<24 h) with a proportion of 55.6% versus 29.6%. However, length of stay was statistically predicted longer for pregnant mothers who underwent caesarean section (NICE, 2011). Referring to risk factors, there are differences in terms of age, height, weight, body mass index of pregnant mothers. Blood pressure status (diastolic blood pressure and systolic blood pressure) also affect both groups and routine hematology profiles were different for both groups except leukocytes. Pregnant women with hypertension had the average age of 32.02 years old with the body mass index of 29.97, whereas pregnant women with normal blood pressure had the average age of 28.87 years old with the body mass index of 26.22. Overweight or obesity is a risk factor for the occurrence of preeclampsia (Sohlberg et al., 2009; Knight, Kurinczuk, & Spark, 2010; Kazemian et al., 2014) and reveals an ascending pattern with the increase of BMI (Reyes et al., 2012; Bilano et al., 2014; Gudnadóttir et al., 2016; Li et al., 2016). In terms of maternal age, mothers within the range of 30-34 years old are 2 times more likely experience preeclampsia (Choudhury et al., 2014; Chan et al., 2015). Our findings showed that women with PIH treated by caesarean delivery up to threefold (Table 2). In this study, most pregnant mothers with hypertension had caesarean delivery with the length of stay at 48-72 hours. This is in line with pregnant mothers who have preeclampsia and eclampsia in which they should be treated with caesarean delivery (NICE, 2010; NICE, 2011; Mylonas and Friese, 2015). with the length of

stay is 48-72 hours (Moroy et al., 2007), as recommended by the Royal College of Obstetricians and Gynaecologists that pregnant mothers with vaginal delivery should spend 1 or 2 days at hospitals and those with caesarean section ought to spend 3 or 4 days at hospitals (NICE, 2011). Although some pregnant women in this study with hypertension treated by vaginal delivery had shorter time to stay in hospitals with the average of length of stay was <24 h, this could lead to potential hemorrhage (WHO, 2013), since the first 24 hours of postpartum is the highest risk period for the mother and newborn. This study bears some limitations that include samples were collected in small number.

5. Conclusion

This study showed that women with PIH mostly gave birth to caesarean section with the average length of stay was 48-72 hours. This is in accordance with the recommendations of NICE that pregnant mothers with hypertension complications such as preeclampsia and eclampsia should be treated with caesarean section. Although pregnant mothers with caesarean section should stay for 48-72 hours after delivery as stated in the recommendations, some pregnant mothers in this study spent shorter time to stay at the hospital after delivery that could lead hemorrhage. Therefore, it is suggested for pregnant mothers to stay at a hospital in a more sufficient period of time after delivery to give an adequate time for physicians to classify, to diagnose, or to treat complications.

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Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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