Research Article

The Prevalence and Risk Factors of Stress Urinary Incontinence in Postpartum

Prevalensi dan Faktor Risiko Inkontinensia Urin Tipe Tekanan Pascasalin

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Abstract

Objective: To know the incidence of stress urinary incontinence in postpartum and determine the relationship among age, parity, infant birth weight, mode of delivery, episiotomy and perineum rupture.

Method: This study used cross sectional analytic design. Qualified subjects from inclusion criteria were interviewed by researchers using pre-defined MESA questioner. Subjects with stress urinary incontinence were found from the questionnaire result. The acquired data was measured and analyzed using SPSS v. 22.0 software and discussed using available literature.

Result: From 162 subjects, 36 cases (22.22%) had stress urinary incontinence, 47.22% aging ≥ 35 years old, 72.22% had multiple pregnancies, 88.89% had per vaginal delivery. Using multivariate logistic regression test, we found there was a relationship between stress urinary incontinence with age and parity ($p<0.05$).

Conclusion: There is a relationship between stress urinary incontinence with women aging > 35 years old and multiple parities.

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Keywords: multiple parities, post-partum, stress urinary incontinence

Abstrak

***Tujuan**: Mengetahui prevalensi stres inkontinensia urin pascapersalinan, mengetahui apakah terdapat hubungan antara faktor usia, paritas, berat lahir bayi, cara melahirkan, episiotomi dan ruptur perineum dengan kejadian stres inkontinensia urin pascapersalinan.*

***Metode**: Penelitian ini menggunakan desain penelitian potong lintang analitik. Sampel yang memenuhi kriteria inklusi dilakukan wawancara oleh peneliti dengan menggunakan kuesioner MESA yang telah ditetapkan. Dari hasil MESA Questionnaire Incontinence didapatkan sampel menderita stres inkontinensia urin. Data yang diperoleh diolah dengan menggunakan perangkat lunak SPSS versi 22.0 dan dilakukan pembahasan menggunakan teori kepustakaan yang ada.*

***Hasil**: Seratus enam puluh dua responden yang memenuhi kriteria sebanyak 36 kasus (22,22%) mengalami SIU. usia ≥35 tahun 47,22%, multigravida (72,22%), partus pervaginam (88,89%). Hasil uji regresi logistik multivariate ($p<0,05$) terdapat hubungan antara stres inkontinensia urin dengan usia dan paritas.*

***Kesimpulan**: Terdapat hubungan antara stres inkontinensia urin dengan usia 35 tahun dan multiparitas.*

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***Kata kunci**: multiparitas, pascasalin,stres inkontinensia urin*

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INTRODUCTION

Stress Urinary Incontinence (SUI) is an involuntary outflow of the urine which causes social and hygiene problem.[1] This problem is more common in postpartum women and it will affect their physical and quality of life because the symptoms may change their body image and confidence due to the unpleasant odor. Apart from that, it causes the limitation to their daily activities, such as shopping, dancing, playing with their children, laughing, and sneezing.[1,2]

In 2006, World Health Organization (WHO) stated that 200 million people globally had urinary incontinence. In North America, the number of it reached 13 million whereas it attacked to 85% women and 18-21% of them had SUI at 6 week-postpartum period. It was related to the prolonged active labor period, macrosomia, and assisted vaginal delivery.[1,2]

Urinary incontinence is a medical condition problem for women which the prevalence is twice higher than men. Several studies reported the prevalence of it was around 20-30% and actually, this number was too small compared to the reality of unreported cases.[3] According to Yunizaf, et al. in 2002, these cases were alike iceberg phenomenon in Indonesia because it was difficult to accept the stigma of urinary incontinence in women, particularly after laboring. Besides, the women are usually ashamed to get this condition.[4]

Stress urinary incontinence is a common problem in postpartum period. In USA, 18-21% of stress urinary incontinence was found at 6 week-postpartum women. In cases of vaginal delivery, SUI happens due to the excess stretch to the anterior levator ani muscles group causing the weakness and the damage to muscles which finally, it cannot maintain their function properly in closing the urethra from bladder pressure.

Muscle and nerve tissue damage in vaginal delivery is the main contributing factor to the urinary incontinence. In addition, pregnancy itself is a source of mechanical and hormonal change contributing to this symptom.[5] In vaginal delivery, the stretch stress occurs not only to the anterior levator muscle group, but also to the neck of bladder, urethra sphincter muscle, and its ligament.[4] Several risk factors were found to increase the incidence of SUI in postpartum, such as age, parity, delivery, birth weight, episiotomy, spontaneous perineum rupture, assisted vaginal delivery by vacuum or forceps. Some studies concluded that SUI in postpartum was contributed to 40-60% from the total incidence of incontinence.[4,5]

Pregnancy and delivery are the predisposition to urinary incontinence and is the risk will be higher in multiple parities.[1] The weakness of muscle group from the first pregnancy is untreated and the pressure from the sequential pregnancies causes the stress to endure.[6,7] Stainton, Strahle and Fethney in 2005 confirmed that women with urinary incontinence in their first pregnancy had 4.14 times higher risk to have urinary incontinence in their sequential pregnancies.[8]

The first delivery, macrosomia baby, and parities are some causes of becoming complication in delivery.[2,3] Daneshgari, et al. found that the length of delivery time could cause damage to nerve and levator ani muscle group.[3]

Several studies concluded that urinary incontinence was a serious health problem in postpartum period and it could easily disrupt the daily activity.[9-11] Therefore, this study aims to know the incidence of SUI in postpartum and determine the relationship among age, parity, infant birth weight, mode of delivery, episiotomy and perineum rupture.

METHODS

This study used analytical cross-sectional design for 162 subjects who were postpartum with vaginal and abdominal delivery for more than 42 days in Prof. Dr. R.D. Kandou General Hospital and other affiliated hospitals from December 2015 to May 2016. Data was collected using interview and Medical, Epidemiological, and Social aspects of Aging (MESA) questionnaire.

We included all 15-45-year-old postpartum women using vaginal or abdominal delivery who came to Prof. Dr. R.D. Kandou General Hospital and affiliated hospitals and they would like to participate in this study. Subjects qualifying through inclusion criteria were interviewed and asked to fill out the questionnaire. From the MESA questionnaire, we sorted the samples showing SUI. We excluded the patients having complications on their pregnancy (chronic hypertension, pregnancy-induced hypertension, diabetes, IUFD), a history of pelvic abnormalities and urinary tract diseases, undergoing major surgery (hysterectomy, myomectomy, cystectomy, or salpingectomy) after childbirth and 3-month postpartum, also they had history of urinary incontinence complaint.

The MESA Incontinence Questionnaire consists of 15 questions including 9 questions for the SUI type and 6 others for the urge urinary incontinence (UUI) type. We give the score for each question. The maximum score was 27 of 9 questions for the SUI and 18 of 6 questions for UUI. To determine the predominant type of SUI, the percentage score obtained divides into the maximum possible total score. The SUI is considered predominant when the score as a percentage of the stress is greater than the urge (SUI $\geq$ 25% UUI).

Each patient enrolled in this study was adjusted to the research ethic principles. Patients who were willing to participate in the study after giving the counseling had to sign on the informed consent. As the compensation of the willingness to join our study, we gave Kegel tutorial video for 8 minutes in CD to practice at home. This education and practice were considered as the first-line treatment of SUI.

RESULTS

This study was held from December 2015 to May 2016 by involving 162 subjects and 36 of them

were diagnosed with SUI (22.22%) in postpartum. Other obtained risk factors were age, parity, infant birth weight, delivery method, episiotomy, and perineum rupture.

From the data based on subjects' characteristics, we found that SUI happened in less than 35 years old age group was 52.78% and 47.22% for more than 35 years old. Most of subjects (72.22%) were multiparity. Based on educational level, 4 (11.11%), 12 (33.33%), 3 (8.33%), 12 (33.33%), and 5 (13.89%) subjects were uneducated, elementary school, junior high school senior high school, and undergraduate graduate; respectively. Based on occupation, most of subjects (75%) were housewives.

Stress urinary incontinence was happened in <35-year-old postpartum women (19 subjects, 52.78%) and 17 subjects (47.22%) for ≥ 35-year-old postpartum women. According to the number of parities, 26 subjects (72.22%) had multiple parities. The educational level of subjects was mainly elementary and high school graduate (33.33% for each). Most subjects were also housewives (75%).

Table 2. The Distribution of SUI

	Category	Stress Urinary Incontinence	
		N	%
Age (years)			
	<35	19	52.8
	≥35	17	47.2
Parities			
	Single	10	27.8
	Multiple	26	72.2
Infant Birth Weight (grams)			
	< 4000	33	91.67
	≥ 4000	3	8.33
Mode of Delivery			
	Vaginal birth	32	88.89
	SC	4	11.11
Episiotomy			
	Yes	8	22.22
	No	28	77.78
Perineum Rupture			
	Yes	12	33.33
	No	24	66.67

Table 1. Subjects' Characteristics

	Characteristics	Stress Urinary Incontinence		Normal	
		N	%	N	%
Age	<35 years old	19	52.78	101	80.16
	≥ 35 years old	17	47.22	25	19.84
Parity	Single parity	10	27.78	57	45.23
	Multiple parities	26	72.22	69	54.77
Education	Uneducated	4	11.11	4	3.17
	Elementary School	12	33.33	16	12.69
	Junior high School	3	8.33	27	21.43
	Senior High School	12	33.33	56	44.44
	Undergraduate	5	13.89	23	18.25
Occupation	Housewives	27	75.00	88	69.84
	Entrepreneur	6	16.67	23	18.25
	Housemaid	3	8.33	15	11.90

Table 3. The Bivariate Analysis for the Relationship among Age, Parity, Mode of Delivery, Episiotomy to SUI

Independent Factors	OR	95% C.I.		p-value
		Lower	Upper	
Age	3.509	1.389	8.868	0.008
Parity	3.014	1.036	8.775	0.043
Mode of delivery	2.664	.886	8.014	0.081
Episiotomy	0.354	.113	1.108	0.075

Table 3 pointed out the relationship between several associated factors and SUI. Of the several factors, only age and parity had the influence to the occurrence of SUI. More than 35-year-old women had 3.509 (95% CI 1.389-8.868) times to be SUI. Apart from that, multiparity had 3.014 time to have SUI.

DISCUSSION

We measured the relationship between SUI and patients' age. Stress urinary incontinence was found in 17 cases in ≥ 35-year-old age group (47.22%). There was 3.5 times higher risk of more than 35-year-old women to have SUI. In this study, we concluded that SUI incidence would raise as the increase of age.

Thomason, et al. reported that many women aging from 35-50 years old had SUI symptoms.[1] The notion was supported by Glazener in 2006 reporting that older women had higher chance to acquire SUI compared with younger women (OR 2.02, 95% CI, 1.35-3.02).[12] Meanwhile, Kondon, et al. found that SUI was more prevalent in > 40-year-old women.[3,5] In this study, we also found that more incidence of SUI were occurred in those with advance age. Lower urinary tract may decrease the endurance as the increase of age. The muscle strength to close the urethra decrease as people grow older.[1,2]

Based on their babies' birth weight, SUI was found higher in babies born with <4000 grams (91.67%) compared to ≥ 4000 grams (8.33%). Multivariate logistic regression test showed that birth weight (p>0.25) had no significant relationship with the SUI. In this study, we indicated more SUI incidence in women with history of delivery <4000 grams. Susanto, et al. study in Palembang and Santy in Jakarta also pointed out the same result. Statistical analysis could not find a significant relationship between birth weight and SUI.[13-15] From the literature, pressure and stretching of the hip muscles by the fetus during vaginal delivery is one of the causes for the damage muscle; thus, bigger babies create higher pressure to the structure. This study had more samples of <4000 gram of birth weight; hence, it was unable to find a significant relationship between SUI and birth weight.

Glazener in 2006 concluded that birth weight had no significant relationship with incontinence either in labor or after delivery.[12] The same study was conducted by Ali HS, et al. in Pakistan which found that the SUI mostly happened in 3-month postpartum (53.3%) and there was no significant result (p=0.946) between incontinence and birth weight.[13]

Based on parities, multiple parities group had more incidence of SUI compared with single parity. The multivariate logistic regression test showed a significant relationship between multiparity and SUI. Pregnancy and delivery are the predisposition factors for urinary incontinence and it is found higher in women with multiple parities compared with single parity.[1] The reason is the weakness of muscle group in the first pregnancy went untreated and the recurrent pressure for the sequential pregnancy causes more injury to the muscles.[6,7]

In this study, we found that those with multiple parities had 3 times higher risk for SUI compared with first parity. Nygaard in 2006 concluded that after their first delivery, women had twice risk for incontinence in their next.[16] Chaandini in Michigan also found that SUI was found mainly in women with multiple parities (23 subjects from 131 total).[17] Delivery causes the stretching of auxiliary muscle tissue during labor and disrupts the function of urethra sphincter in contraction.[3]

Vaginal delivery group had 32 cases (88.89%) of SUI. Multivariate logistic regression test did not indicate the relationship between mode of delivery and SUI. This result was supported by previous finding by Mason in Liverpool which found that SUI in postpartum was 31%.[6] The more parity rate, the higher the SUI incidence. There was no difference in SUI prevalence in vaginal delivery and assisted vaginal delivery. The incidence of SUI in caesarean section was lower compared with vaginal spontaneous delivery.[3,18]

In study held in Pakistan, they examined a total of 141 women in their 3-month postpartum and

they did not found the significant result between SUI and mode of delivery. Similar study by Glazener in 2006 identified other factors related to incontinence in pregnancy and postpartum. The study was conducted in 3,405 women with single parity and 29% of them had urinary incontinence. Vaginal delivery method might cause higher incontinence incidence compared with those with caesarean section (OR 0.28, 95% CI 0.19-0.41) and there was no significant relationship between vaginal delivery and caesarean section.[12]

Eight subjects (22.22%) from those who underwent episiotomy had SUI, whereas 28 subjects (77.78%) who did not undergo episiotomy had SUI. Using multivariate logistic regression test, we found no significant relationship between SUI and episiotomy. According to DeLancey, the hip can be divided into 4 levels namely level 1 consists of endopelvic fascia, level 2 consists of hip diaphragm muscles, level 3 consists of urogenital diaphragm muscles, and level 4 consists of external anal sphincter and perineal bodies.[6,18] Hargrove, el al. in 2011 reported that episiotomy increased the risk of three of four degree perineal tear, wound infection, and postpartum hemorrhage without decreasing the long term complication, such as perineal pain or SUI. In this study, we found no relationship between SUI and episiotomy ($p>0.05$) due to the lack of rupture degree data caused by episiotomy.

Based on perineum rupture, SUI was found mostly in those without rupture (66.67%). Perineum rupture causes damage to several muscles group in the hip region, particularly transversal perineum muscle.[5] Multivariate logistic regression test showed no significant relationship between SUI and perineum rupture. This finding was supported by Eason, et al, study which found no statistical significance between SUI and spontaneous perineum rupture.[19] Similarly, Ali HS, et al. found no significant relationship between SUI and perineum rupture in 3-month postpartum in a total of 141 women ($p = 0.197$).[13]

CONCLUSION

There is a relationship between stress urinary incontinence with women aging ≥ 35 years old and multiple parities.

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