Prevalence and Risk Factors of Urinary Incontinence in Khon Kaen Menopausal Women

Chuanchom Sakondhavat MD*,
Chalermkwuan Choosuwan MD*, Srinaree Kaewrudee MD*,
Sukree Soontrapa MD*, Kesorn Louanka MSc*

** Department of Obstetrics and Gynecology, Faculty of Medicine, Khon Kaen University, Khon Kaen*

Objective: *To determine the prevalence and risk factors of urinary incontinence in menopausal women.*
Study design: *Prospective Descriptive study.*
Setting: *Menopausal clinic and gynecological outpatient unit, Department of Obstetrics and Gynecology, Srinagarind Hospital, Faculty of Medicine Khon Kaen University.*
Study population: *Menopausal women attending the menopausal clinic and gynecological outpatient unit.*
Material and Method: *Between April 23 and July 15, 2004, 229 menopausal women were interviewed by pre-validated questionnaire and in-depth interview to determine the prevalence and risk factors of urinary incontinence.*
Results: *The average age of the study group was 55.8 years. The prevalence of urinary incontinence was 38.86%, the most common type was mixed urinary incontinence (82.02%) followed by stress urinary incontinence (12.36%), and urge urinary incontinence (5.62%). The risk factors of urinary incontinence were vaginal delivery, menopause before 50 years old, and postmenopausal women who had never used hormone therapy.*
Conclusion: *The prevalence of urinary incontinence in menopausal women was 38.86%. Mixed urinary incontinence was the most common type. Associated risk factors were vaginal delivery, menopause before 50 years old, and postmenopausal women who had never used hormone therapy.*

Keywords: *Menopause, Urinary incontinence, Risk factors*

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At present, the life-span of human has increased. In the years 2005-2010 B.E, the life expectancy of Thai women is estimated to be 73 years[1]. The age of menopause, however, is stable at 46-50 years old[2]. This means that Thai women have to spend approximately 30 years of their life in the menopausal period.

Menopause is the period of life after complete cessation of ovarian function[3]. In this period, many physiologic changes occur as a process of aging. Some, however, are consequences of the decreased ovarian function, and the resultant estrogen deficiency. In addition to vasomotor symptoms, bone changes, changes in the vascular system, genito-urinary system is known to be affected by estrogen deficiency. Not only hormonal changes but also somatic changes in the vagina such as thinning of the urethral mucosa, loss of urethral closure pressure and alteration of the normal urethrovesical angle cause urinary incontinence in these women. The prevalence of urinary incontinence in menopausal women varies between 32-73 percent[4-17]. The risk factors associated with urinary incontinence include age, parity, obesity, vaginal delivery, post hysterectomy and heavy lifting at work[4-17]. Urinary incontinence is one of the most distressing and debilitating conditions among this population. It is not only psychological, social and hygienic problem but also has an effect on the quality of life. The objective of the present study was to

Correspondence to : Sakondhavat C, Department of Obstetrics and Gynecology, Faculty of Medicine, Khon Kaen University, Khon Kaen 40002, Thailand. Phone: 043-363-030, Fax: 043-348-395, E-mail: chuanchom@kku.ac.th

determine the prevalence and risk factors of urinary incontinence in menopausal women.

Material and Method

The present study was approved by the Human Ethical Committee of Faculty of Medicine, Khon Kaen University. It is a prospective descriptive study. The authors enrolled 229 healthy postmenopausal women, both surgical and natural menopause (natural menopause was defined as the women who did not have menstruation for at least 1 year. Surgical menopause was defined as menopause after bilateral oophorectomy with or without hysterectomy), who received service at menopausal clinic and gynecological outpatient unit, Department of Obstetrics and Gynecology, Srinagarind Hospital, Faculty of Medicine Khon Kaen University, during April 23 - July 15, 2004.

A signed informed consent was obtained before taking demographic data. All the study women were interviewed by pre-validated questionnaire and in-depth interview to assess their baseline characteristics, the prevalence and risk factors of urinary incontinence. The questionnaire comprised of two parts. The first part was demographic data including age, height, weight, route of delivery, age at menopause, hormone therapy usage. The second part included types of urinary incontinence, which was classified into three types: 1) stress incontinence, defined as an involuntary urethral loss of urine associated with coughing, laughing, sneezing or physical exercise. 2) urge urinary incontinence, defined as an involuntary urethral loss of urine that proceeded by a sensation of urgency or by rapid and uncontrollable voiding with little or no warning and 3) mixed urinary incontinence was the combination of stress and urge urinary incontinence. Urinary incontinence assessed by in-depth interview using a series of detailed questions modified from Titapant V et al[6] and Panugthong P et al[7] studies. The relationship between urinary incontinence and associated risk factors, Odds Ratio (OR) with 95% confidence interval (CI) were analyzed by using both univariate and multivariate logistic regression. All data was analyzed using a computerized program (SPSS 10.0) and presented as mean $\pm$ SD or percentage. Chi-square test was used to compare proportion of various categorical variables, with a significance level of $p < 0.05$.

Results

Characteristics of the study population (229 menopausal women) are shown in Table 1. The average age was 55.8 years. The average age at menopause was 48.2 years. The mean BMI was 24.4 kg/m^2 and the mean parity was 2.8. About 85% had vaginal delivery, 70.7% were natural menopause and 58.1% were the women with hormone therapy. Eighty-nine menopausal women had urinary incontinence resulting in an

Table 1. Demographic characteristics of the study participants

Characteristics	Incontinent group (n = 89) (Mean $\pm$ SD)	Continent group (n = 140) (Mean $\pm$ SD)	Overall (n = 229) (Mean $\pm$ SD)
Age (years)	55.8 $\pm$ 7.04	55.8 $\pm$ 7.7	55.8 $\pm$ 7.4
Age at menopause (years)	47.5 $\pm$ 5.7	48.6 $\pm$ 5.2	48.2 $\pm$ 5.4
BMI (kg/m2)	24.2 $\pm$ 3.5	24.6 $\pm$ 3.6	24.4 $\pm$ 3.6
Parity	2.9 $\pm$ 1.8	2.8 $\pm$ 1.8	2.8 $\pm$ 1.8
Characteristics	N (%)	N (%)	N (%)
Route of delivery			
Vaginal delivery	80 (89.9%)	115 (82.1%)	195 (85.1%)
Non vaginal delivery*	9 (10.1%)	25 (17.9%)	34 (14.9%)
Type of Menopause			
Natural	64 (71.9%)	98 (70.0%)	162 (70.7%)
Surgical	25 (28.1%)	42 (30.0%)	67 (29.3%)
Hormone therapy usage			
User	62 (69.7%)	71 (50.7%)	133 (58.1%)
Non-user	27 (30.3%)	69 (49.3%)	96 (41.9)

* Nullipara and caesarean section

overall prevalence of 38.86% (95%CI 32.50-45.23). Mixed urinary incontinence was the predominant type (82.02%, 95%CI 73.89-90.16), followed by stress urinary incontinence (12.36%, 95%CI 5.39-19.33) and urge urinary incontinence (5.62%, 95%CI 0.74-10.50) as shown in Fig. 1.

The detailed analysis of baseline demographic data in the continent groups compared with incontinent groups did not show any difference (Table 1). According to the univariate analysis, the women without hormone therapy showed statistical significance of increasing risk of urinary incontinence with OR 2.23 (95%CI 1.28-3.90) as shown in Table 2. Nevertheless, multivariate logistic regression was used for the assessment, the women without hormone therapy still showed an increasing risk of urinary incontinence. When all factors were adjusted, it was found that vaginal delivery and menopause before 50 years old also significantly increased the risk of urinary incontinence (Table 3).

Discussion

The prevalence of urinary incontinence among menopausal women in the present study (38.86%) was similar to that of an earlier report (32-73%)[4-17]. Moreover, it was similar to Titapant V et al[6] which conducted in natural menopausal women at Siriraj Hospital, Mahidol University, showing the prevalence

Table 2. Urinary incontinence and risk factors by using univariate analysis (n = 89)

Risk factors		Incontinence group	OR	95%CI	p-value
Age at menopause (years)	< 50	59.55%	1.56	0.90-2.70	0.11
	≥ 50	40.45%	1.00		
BMI (kg/m^2)	< 25	65.17%	1.29	0.74-2.27	0.37
	≥ 25	34.83%	1.00		
Parity (n)	< 3	44.94%	1.00		
	≥ 3	55.06%	1.06	0.60-1.80	0.82
Route of delivery	Vaginal delivery	89.89%	1.93	0.87-4.23	0.10
	Non vaginal delivery*	10.11%	1.00		
Type of menopause	Natural	71.90%	1.00		
	Surgical	28.10%	1.10	0.60-1.96	0.76
Hormone therapy usage	Yes	69.66%	1.00		
	No	30.34%	2.23	1.28-3.90	0.005**

* Nullipara and caesarean section
** Showed statistical significance

Table 3. Urinary incontinence and risk factors by using multivariate analysis (n = 89)

Risk factors	Crude OR	Adjusted OR	95%CI	p-value
Age at menopause (years)				
< 50	1.60	1.80	1.03-3.30	0.04**
≥ 50	1		1	
Route of delivery				
Vaginal	1.90	2.40	1.02-5.60	0.04**
Non vaginal*	1		1	
Hormone therapy usage				
Yes	1		1	
No	2.23	2.68	1.47-4.85	0.005**

* Nullipara and cesarean section
** Showed statistical significance

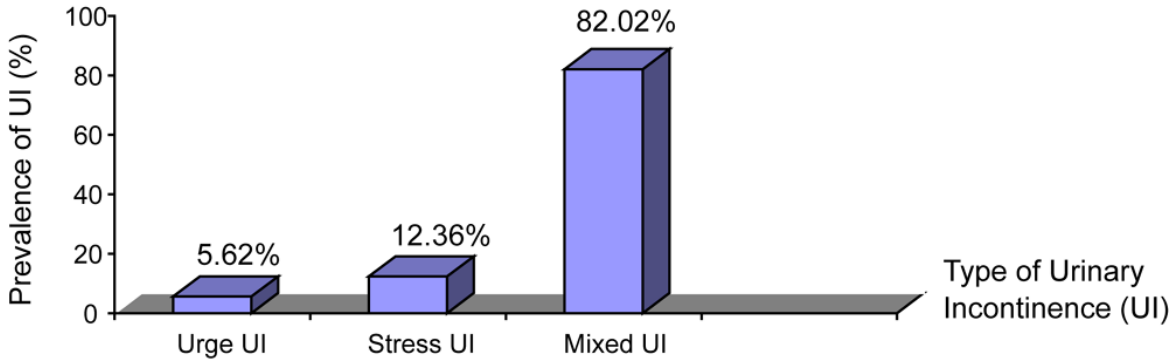

Fig. 1 Types and percentage of urinary incontinence (n = 89)

rate of 47%. However, the prevalence rate was different from Jitapunkul S et al[7] which was 12.7%. This may partly be because the study conducted was community-based.

In the present study, mixed urinary incontinence predominated at 82.02%, followed by stress urinary incontinence and urge urinary incontinence, which was similar to Buchsbaum GM et al[13] and Panugthong P et al [7] but different from Titapant V et al[6] which showed stress urinary incontinence was the predominate type at 28.50%. The difference of prevalence rate between studies could be explained by different methodology of research, classification of urinary incontinence and the questions used.

The etiology of urinary incontinence in menopausal women was not well understood. Factors that were identified as possibly being associated with urinary incontinence in menopausal women were advancing age, obesity, high parity, vaginal delivery, age at menopause, weight lifting work, post-hysterectomy and hormone therapy usage[6,8,10,12-14]. In the present study, vaginal delivery and menopause before 50 years old were significant risk factors. In addition, both the univariate analysis and multivariate analysis of the risk factors in the present study showed that hormone therapy nonuser was also a significant risk factor.

Genital organs and lower urinary tract of woman have generalized estrogen receptors[18]. Estrogens have been found to increase urethral closure pressure[19], potentiate the contractile response of muscarinic agonists[20], and increase sensory threshold of bladder[21], so the hypoestrogenic stage in menopause might be a cause of urinary incontinence. These possibly contribute to the continence mechanism of hormone therapy in reducing risk of urinary incontinence. Menopause at an early age caused them enter to earlier hypoestrogenic stage. Thus, menopausal women without hormone therapy might be one of the risk factors. The results from the present study also confirm this hypothesis. Obstetric events are often regarded as risk factors due to perineal trauma during delivery. The present study showed that vaginal delivery increased the risk of urinary incontinence similar to other studies[6,8,10,12,13,]. Moreover, urinary incontinence increased in a linear fashion with increasing age, which will enhance the possibility of increasing the prevalence in postmenopausal women, which will be a major public health problem in the future.

Although the present study was a descriptive study, data was collected not only from a pre-validated questionnaire but also from in-depth interviews; the study women were able to ask questions from the interviewers, so lead to the overall response rate for the total questions. However, the limitation of the present study was classified the type of urinary incontinence by using a series of detailed questions and assess the patients by clinical symptoms without any clinical examination and urodynamic validated investigations. The present study was designed to be used as baseline for further studies. Further study is necessary to confirm etiology and risk factors of urinary incontinence in menopausal women.

Conclusion

The prevalence of urinary incontinence in menopausal women at Srinagarind Hospital was 38.86%; mixed urinary incontinence was the most common type. Associated risk factors were vaginal delivery, menopause before 50 years old and postmenopause who

had never used hormone therapy. Medical personnel who take care of menopausal women should pay more attention to these problems and establish strategies for prevention and treatment. Greater efforts to identify risk factors influencing urinary incontinence and correct them might improve menopausal women's quality of life.

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ความชุกและปัจจัยเสี่ยงของภาวะปัสสาวะเล็ดในสตรีวัยหมดประจำเดือน

ชวนชม สกนธวัฒน์, เฉลิมขวัญ ชูสุวรรณ, ศรีนารี แก้วฤดี, สุกรี สุนทราภา, เกสร เหล่าอรรคะ

วัตถุประสงค์: *เพื่อหาความชุก และปัจจัยเสี่ยงของภาวะปัสสาวะเล็ดในสตรีวัยหมดประจำเดือน*
การออกแบบการศึกษา: *เป็นการวิจัยเชิงพรรณนาแบบไปข้างหน้า*
สถานที่ทำการศึกษา: *คลินิกวัยหมดประจำเดือนและห้องตรวจนรีเวช แผนกผู้ป่วยนอก โรงพยาบาลศรีนครินทร์ คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น*
กลุ่มประชากร: *สตรีวัยหมดประจำเดือน ที่เข้าร่วมการศึกษา ที่คลินิกวัยหมดประจำเดือน และห้องตรวจนรีเวช แผนกผู้ป่วยนอก*
วัสดุและวิธีการ: *โดยการสัมภาษณ์ เพื่อบันทึกข้อมูลลงในแบบสอบถาม ที่ได้รับการทดสอบแล้ว และการสัมภาษณ์เชิงลึกเป็นรายบุคคล จำนวน 229 คน ระหว่างวันที่ 23 เมษายน พ.ศ. 2547 ถึง วันที่ 15 กรกฎาคม พ.ศ. 2547 เพื่อหาความชุกและปัจจัยเสี่ยงของภาวะปัสสาวะเล็ดในสตรีวัยหมดประจำเดือน*
ผลการศึกษา: *สตรีวัยหมดประจำเดือนที่เข้าร่วมโครงการศึกษา มีอายุเฉลี่ย 55.8 ปี พบความชุกของภาวะปัสสาวะเล็ด ร้อยละ 38.86 เป็นชนิด mixed urinary incontinence มากที่สุด คือ ร้อยละ 82.02 รองลงมาเป็นชนิด stress urinary incontinence ร้อยละ 12.36 และพบชนิด urge urinary incontinence เป็นอันดับสาม คิดเป็นร้อยละ 5.62 ผลการศึกษานี้ยังพบว่าการคลอดทางช่องคลอด ภาวะหมดประจำเดือนก่อนอายุ 50 ปี และการไม่ได้รับฮอร์โมนรักษาในสตรีวัยหมดประจำเดือน เป็นปัจจัยที่ทำให้เพิ่มความเสี่ยงต่อการเกิดภาวะปัสสาวะเล็ด*
สรุป: *พบความชุกของภาวะปัสสาวะเล็ด ในสตรีวัยหมดประจำเดือน ร้อยละ 38.86 เป็นชนิด mixed urinary incontinence มากที่สุด โดยมีปัจจัยเสี่ยง คือ การคลอดทางช่องคลอด ภาวะหมดประจำเดือนก่อนอายุ 50 ปี และการไม่ได้รับฮอร์โมนรักษาในวัยหมดประจำเดือน*