Risk Factors for Stress Urinary Incontinence in Middle Aged and Elderly Thai Women

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Abstract

Objective : To determine risk factors of stress urinary incontinence in middle aged and elderly Thai women.

Material and Method : Between March 1999 and January 2000, 46 women with stress urinary incontinence (SUI) with the mean age of 49.05 years old and 168 continent women with the mean age of 49.05 years old were interviewed. The risk factors (e.g. cigarette smoking, childbirth, menopausal status, family history, previous abdominal hysterectomy, transvaginal surgery and body mass index) were studied. The Chi Square or Fisher exact test were used for statistical analysis and $p<0.05$ was considered as a level of statistical significance. Odds Ratio (O.R.) and its 95 per cent confidence of interval was calculated.

Results : The study suggested that menopausal status, childbirth, previous abdominal hysterectomy, transvaginal surgery and family history had no correlation with SUI. The risk factor of body mass index (BMI) $\geq Kg/m^2$ had statistical correlation with SUI. ($p=0.000$, O.R.=3.570, 95% C.I. of O.R.=1.779 to 7.163). No smokers were found among the studied group so this factor could not be evaluated.

Conclusions : Body mass index was the only identified risk factor of SUI in middle aged and elderly Thai women.

Key word : Stress Urinary Incontinence, Risk Factors, Thai Women

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Stress urinary incontinence (SUI) is a common condition in young adults and elderly women (1). It continues to be a major cause of suffering in many patients. The identification of risk factors for developing stress urinary incontinence by means of epidemiological research is inconclusive. Generally, these risk factors are obesity, age (elderly), hysterectomy, menopausal status, smoking and birth trauma (2). Despite increasing interest in the medical literature, the analytic study of risk factors for women with stress urinary incontinence is still poorly understood. The aim of this study was to investigate more fully the risk factors of stress urinary incontinence in middle aged and elderly Thai women.

MATERIAL AND METHOD

An unmatched case control study was done. A total of 214 female patients, aged more than 40 years old, who came to the Urological service, Department of Surgery, Ramathibodi Hospital during March 1999 and January 2000 were enrolled in this study. They were 46 cases of stress urinary incontinence (group 1) and a control group of 168 cases with no stress urinary incontinence (group 2). There was no statistical significant of age difference between the two groups. (48.52±5.93 years old in group 1 and 49.05±7.73 years old in group 2). (Table 1) The diagnosis of stress incontinence was proved by Marshall stress test. Detrusor instability proven by cystometry was excluded from this study. All of the patients who had transient incontinence or prior anti-incontinence surgery performed were also excluded from this study. All of the risk factors that have been mentioned in the literature (e.g. smoking, delivery history, menopausal status, family history of SUI and surgical history were noted. Body mass index (Kg/m^2) of all patients was calculated in both groups. Body mass index (BMI) was determined by weight (Kg)/height $(meter)^2$ BMI 25-29.99 Kg/m^2 was classified as over-weight and BMI ≥30 Kg/m^2 was obesity(3).

For statistical analysis, the student's *t* test was used for continuous variables, Pearson Chi-square test or Fisher exact test was used for discrete variables. Statistical significance was considered at a level of $p < 0.05$. In order to compare the risk of all factors, an odd ratio (O.R.) and its 95 per cent confidence interval (95% C.I. of O.R.) was calculated.

RESULTS

Only high body mass index (BMI) had statistically significant correlation as the risk factor of SUI. (p=0.000, O.R.=3.570, 95% C.I. of O.R. 1.779 to 7.163) Other factors studied had no statistical significance. (Table 2) We could not study smoking as a risk factor of SUI because there were no smokers among the patients.

DISCUSSION

Stress incontinence (SUI) is the most common form of female urinary incontinence(1). Although it is known that SUI affects women of all ages, it is more common in women who have had children, and is found in combination with urge incontinence in older women, findings related to etiology and risk factors reported in the literature were inconclusive(2).

Research on the risk for SUI has focused on factors that directly or indirectly affect the

Table 1. Shows age, weight and height.

Patients	SUI N=46	No SUI (control) N=168	p value *t* test
Age (years)			
Mean ± SD	48.52 ± 5.93	49.05 ± 6.49	0.624
Range	40-60	40-66	
Weight (KG)			
Mean ± SD	59.32 ± 8.84	55.04 ± 7.73	0.002
Range	44-77	40-98	
Height (cm)			
Mean ± SD	153.50 ± 6.01	154.28 ± 5.89	0.436
Range	144-168	140-167	

Table 2. Risk factors of SUI.

Factors	SUI		No SUI (control)		p value	Odd Ratio (O.R.)	95% C.I. of O.R.
	N	%	N	%			
Child birth					0.791*	1.260	0.405 to 3.925
Yes	42	91.30	150	89.29			
No	4	8.70	18	10.71			
Menopausal status	#		#		0.230**	0.661	0.335 to 1.303
Pre	17	38.64	81	48.80			
Post	27	61.36	85	51.20			
Family history	##		##		0.085**	2.026	0.898 to 4.568
Yes	11	31.43	31	18.45			
No	24	68.57	137	81.55			
Abdoninal hysterectomy					0.061*	3.393	0.957 to 11.325
Yes	5	10.87	6	3.57			
No	41	89.13	162	96.43			
Transvaginal surgery					0.102*	3.105	0.799 to 12.070
Yes	5	10.87	6	3.57			
No	41	89.13	162	96.81			
BMI≥25Kg/m^2					0.000*	3.570	1.779 to 7.163
Yes	21	45.65	32	19.05			
No	25	54.35	136	80.95			

* Fisher's exact test
** Pearson Chi Square
\# Two cases of prior hysterectomy in each group were excluded
\## Eleven cases of unknown family history were excluded

bladder and the urethra, particularly factors associated with labor and delivery. Specific obstetrical factors studied included number of vaginal births, duration of second- stage labor, birth weight of heaviest baby, use of forceps or vacuum extraction, perineal tear, pudendal block anesthesia, and the possible protective effect of episiotomy[4]. Damage to the urethral sphincter and pelvic floor had been supposed to occur with all vaginal deliveries, causing some loss of urethral and pelvic muscle strength and subsequent risk for SUI[5]. Sommer reported the significant correlation of SUI and child birth (p=0.0005)[6] but Burgio et al showed no correlation of SUI and child birth[7]. Nygaard studied this factor and he found that SUI can occur in healthy young women without a history of childbirth[8]. Our study confirmed the finding that there was no correlation of SUI with childbirth. Some researchers have contended that this damage to the pelvic floor is time limited[9]. Others believe that the condition of the pelvic muscle worsens over time[10]. On the other hand, some researchers have suggested that changes associated with pregnancy rather than with labor and delivery, put women at risk for developing stress incontinence[11].

Nonobstetrical factors found some association with SUI including age, menopause, urinary tract infection, smoking, obesity, hysterectomy, and connective tissue deficiency[1]. Smith et al reported evidence for familial aggregation of this condition [12]. Karram and Folconer et al reported a collgen metabolism abnormality in the post-menopausal period which cause SUI[13-15]. Bump in 1992 reported the significant correlation between smoking and SUI (p=0.000009)[16]. Radical hysterectomy has been reported in correlation with SUI due to sympathetic denervation and decreased bladder neck support[17]. Marana et al reported 25 per cent of SUI with transvaginal hysterectomy[18]. Burgio et al reported the correlation between high BMI and SUI with statistical significance (p<0.001)[7].

Although a great deal is known about its pathophysiology, the etiology of SUI in women is not well understood. In this case-control study, an attempt has been made to examine any factors identified in the literature as possibly being associated with the risk of SUI in women. We found that only high body mass index (BMI) has statistically significant correlation with the risk for SUI development in females. Therefore, weight control might

be one important factor for higher success rates of SUI treatment as well as reduction in the incidence of SUI in women.

SUMMARY

The results of this study revealed the correlation between high body mass index and the occurrence of stress urinary incontinence in middle aged and elderly Thai women.

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ปัจจัยเสี่ยงต่อการเกิด Stress Urinary Incontinence ในหญิงไทยวัยกลางคนและวัยสูงอายุ

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วัตถุประสงค์ : เพื่อศึกษาถึงปัจจัยเสี่ยงที่มีผลต่อการเกิด Stress incontinence (SUI) ในหญิงไทยวัยกลางคนและวัยสูงอายุ

ผู้ป่วยและวิธีการ : ระหว่างเดือนมีนาคม 2542 ถึง มกราคม 2543 มีผู้ป่วยอยู่ในกลุ่มศึกษาทั้งสิ้น 214 ราย โดยแบ่งผู้ป่วยเป็น 2 กลุ่มคือ ผู้ป่วยที่มี SUI จำนวน 46 ราย อายุเฉลี่ย 48.52 ปี (40–60) และกลุ่มที่ 2 เป็นผู้ไม่มี SUI จำนวน 168 ราย อายุเฉลี่ย 49.05 ปี (40–60) ผู้ป่วยทั้งหมดได้รับการสัมภาษณ์ถึงปัจจัยต่าง ๆ ที่น่าจะทำให้เกิด SUI เช่น การสูบบุหรี่, การคลอดบุตร, ภาวะหมดประจำเดือน, ประวัติครอบครัว, ผ่าตัดมดลูกทางหน้าท้อง, ผ่าตัดทางช่องคลอด, ภาวะน้ำหนักเกิน (BMI≥25 กก./ม^2) ปัจจัยเหล่านี้ได้นำมาศึกษาถึงความสัมพันธ์กับการเกิด SUI อย่างมีนัยสำคัญ โดยใช้ Student's *t* test, Chi Square หรือ Fisher's exact test, Oods Ratio (O.R.), 95% Confidence interval of Odds Ratio (95% C.I. of O.R.)

ผลการศึกษา : ภาวะน้ำหนักเกิน (BMI≥25 กก./ม^2) เป็นปัจจัยเดียวที่มีความสัมพันธ์อย่างมีนัยสำคัญกับการเกิด SUI โดย p=0.000, O.R.=3.570, 95% C.I. of O.R.=1.779 to 7.163 ส่วนภาวะอื่น ๆ เช่น การหมดประจำเดือน, การผ่าตัดมดลูกทางหน้าท้อง, การผ่าตัดทางช่องคลอด, การคลอดบุตร, ประวัติครอบครัว ต่างไม่มีความสัมพันธ์อย่างมีนัยสำคัญต่อการเกิด SUI

สรุป : ภาวะน้ำหนักเกิน (BMI≥25 กก./ม^2) เป็นปัจจัยเสี่ยงอย่างมีนัยสำคัญต่อการมี stress incontinence ในหญิงไทยวัยกลางคนและสูงอายุ

คำสำคัญ : ภาวะปัสสาวะราด, ไอ จาม ปัสสาวะเล็ด, ปัจจัยเสี่ยง, ผู้หญิงไทย

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