

Prevalence and Correlates of Anal Incontinence among Urogynecologic Patients

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Objective: To investigate the prevalence of anal incontinence [AI] in women attending a urogynecology clinic, and to identify factors associated with AI in the urogynecologic patients.

Materials and Methods: Medical records of women with pelvic floor symptoms attending a urogynecology clinic between January 2011 and December 2015 were reviewed. Demographic data including age, parity, menopausal status, medical history, history of vaginal delivery, and hysterectomy were collected. Selected pelvic floor symptoms (stress urinary incontinence [SUI], urgency urinary incontinence [UII], pelvic organ prolapse [POP], and AI) evaluated by the validated, self-administered Thai version of Pelvic Floor Bother Questionnaire [PFBQ] were recorded. Demographic data and pelvic floor symptoms between the patients with or without AI were analysed.

Results: The mean age of the 1,068 subjects was 62.9±11.5 years. Nine hundred twenty-five (86.6%) were menopause. According to PFBQ, 451 (42.2%) women reported AI. The prevalence of combined AI with SUI only, UII, mixed UI, and POP were 33.1, 28.0, 24.7, and 25.7%, respectively. Multivariate analysis demonstrated history of vaginal delivery, previous hysterectomy, presence of SUI, and UII symptoms as the risk factors for AI.

Conclusion: AI is a prevalent condition in women attending a urogynecology clinic. Combined AI with other pelvic floor symptoms is also common. Women with previous vaginal delivery, hysterectomy, symptom of SUI, and UII should be evaluated for AI.

Keywords: Anal incontinence, Pelvic floor symptoms

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Anal incontinence [AI] is defined as complaint of involuntary loss of feces or flatus⁽¹⁾ and negatively affects patient's quality of life⁽²⁾. The diagnosis of AI is based on patient's perception without a simple tool to assess the severity and its impact on quality of life⁽³⁾. Moreover, it is considered as an embarrassing subject among women especially in Asian countries. Many patients are reluctant to report their symptoms or seek appropriate treatment. As a result, information regarding true prevalence and correlates of AI is scarce and AI is frequently neglected by caregivers. However, previous studies reported high prevalence of AI among population of pelvic floor dysfunction, which comprises of urinary incontinence [UI] and pelvic organ prolapse [POP]^(2,4). Basically, UI, AI, and POP share similar pathophysiologic mechanisms, and so, a

relationship would be expected. In Thailand, there was one report regarding the association between anorectal dysfunction and UI⁽⁵⁾. Therefore, it is worthwhile to conduct an AI-related study in a population who seek treatment for pelvic floor dysfunction. The objectives were to explore the prevalence of AI in women attending urogynecology clinic, and to investigate correlates of AI in the urogynecologic patients.

Materials and Methods

After approval by the Ethical Clearance Committee on Human Rights related to Researches involving Human Subjects, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, a retrospective chart review study was conducted. Between January 2011 and December 2015, 1,068 women with symptoms of pelvic floor dysfunction were evaluated at the urogynecology clinic of the Department of Obstetrics and Gynecology. Initial evaluation records included age, parity, menopausal status, medical history, history of vaginal delivery, and hysterectomy. Pelvic

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floor symptoms were evaluated using the validated, self-administered Pelvic Floor Bother Questionnaire [PFBQ]⁽⁶⁾. The Thai PFBQ was developed by translation and back translation the original version and was validated by three gynecologists with special interest in urogynecology for cross-cultural research. The Thai version questionnaire was tested for reliability and used in a recent study (reliability coefficient 0.95)⁽⁷⁾. The pelvic floor symptom items used in the analysis included stress UI [SUI], urgency UI [UUI], POP, and AI. Each symptom in the last month was considered as positive when the answer was “present”, no matter if it bothered or not. Terminology of pelvic floor symptoms used was according to the International Urogynecological Association [IUGA]/International Continence Society [ICS] joint report on the terminology for female pelvic floor dysfunction⁽¹⁾.

The Statistical Package for Social Sciences [SPSS] version 17.0 was used for data analysis. Data are presented as mean ± standard deviation or percentage, depending on the variables. Student’s t-test and Chi-square tests were used to compare the possible risk factors between women with or without AI. All variables significantly associated with AI in univariate analysis were entered in multivariate logistic regression analysis. Data are reported as odds ratios [OR] with 95% confidence intervals [CI] and *p*-value. The *p*-value smaller than 0.05 was considered statistically significant.

Results

The mean age of 1,068 women with pelvic floor symptoms attending the urogynecology clinic in that period was 62.9±11.5 years old. Most of them were parous (89.9%) and postmenopausal (86.6%). Concerning medical diseases, 622 women (58.2%) had underlying diseases with ongoing medications, the leading one was hypertension. According to the PFBQ, 451 (42.2%) women reported AI in the last month. The prevalence of combined AI with other pelvic floor symptoms varied from 25.7% to 33.1% (Table 1).

Table 2 demonstrates the prevalence of AI in women with each pelvic floor symptom. The highest prevalence of AI was found among women suffered from mixed UI (53.9%). Out of the 224 women with SUI only and 635 women with POP only, 90 (40.2%) and 275 (43.3%) also had AI. Interestingly, up to 59.0% of women who reported combined mixed UI and vaginal bulge symptoms also reported high prevalence of AI.

In univariate analysis (Table 3), AI was significantly associated with history of vaginal delivery, previous hysterectomy, SUI, UUI, and mixed UI symptom (*p*<0.05). Age, parity, menopausal status, and vaginal bulge symptom were not significantly associated with AI symptom (*p*>0.05).

In a multivariate analysis, history of vaginal delivery, previous hysterectomy, presence of SUI and UUI symptoms were associated with reporting AI whereas presence of mixed UI symptom did not correlate with AI (Table 4). Women with experience

Table 1. Demographic characteristics and pelvic floor symptoms

	n = 1,068
Age, mean ± SD (range)	62.9±11.5 (19 to 95)
Parity, n (%)	
Nulliparity	108 (10.1)
Multiparity	960 (89.9)
History of vaginal delivery, n (%)	845 (79.1)
Menopausal status, n (%)	
Premenopausal	143 (13.4)
Postmenopausal	925 (86.6)
Previous hysterectomy, n (%)	111 (10.4)
Underlying disease, n (%)	
Hypertension	529 (49.5)
Diabetes	255 (23.9)
Respiratory disease	14 (1.3)
Neurologic disease	14 (1.3)
Pelvic floor symptoms, n (%)	
SUI only	224 (21.0)
UUI only	88 (8.2)
Mixed UI	490 (45.9)
POP	635 (59.5)
AI	451 (42.2)
• AI and SUI	354 (33.1)
• AI and UUI	299 (28.0)
• AI and mixed UI	264 (24.7)
• AI and POP	275 (25.7)

SUI = stress urinary incontinence; UUI = urgency urinary incontinence; Mixed UI = mixed urinary incontinence; AI = anal incontinence; POP = pelvic organ prolapse

Table 2. Prevalence of AI in UI and POP symptoms

Pelvic floor symptoms	AI, n (%)
SUI only (n = 224)	90 (40.2)
UUI only (n = 88)	35 (39.8)
Mixed UI (n = 490)	264 (53.9)
POP (n = 635)	275 (43.3)
SUI only plus POP (n = 134)	55 (41.0)
UUI only plus POP (n = 61)	23 (37.7)
Mixed UI plus POP (n = 271)	160 (59.0)

SUI = stress urinary incontinence; UUI = urgency urinary incontinence; Mixed UI = mixed urinary incontinence; AI = anal incontinence; POP = pelvic organ prolapse

of vaginal delivery had a higher risk of AI (OR 1.44, 95% CI 1.08 to 1.98) than women who had no experience of vaginal delivery. Women with history of hysterectomy also had an increased likelihood of having AI (OR 1.59, 95% CI 1.06 to 2.41) compared with women without history of hysterectomy. Symptoms of SUI and UUI significantly increased probability of AI with OR 2.04 (95% CI 1.51 to 2.76) and OR 1.78 (95% CI 1.35 to 2.34), respectively.

Table 3. Demographic and pelvic floor symptoms in women with and without AI

Variables	Anal incontinence (n = 451)	No anal incontinence (n = 617)	p-value
Age, mean ± SD	62.47±11.60	63.17±11.34	0.329 ^a
Parity, n (%)			0.268 ^b
Nulliparity	51 (11.3)	57 (9.2)	
Multiparity	400 (88.7)	560 (90.8)	
History of vaginal delivery, n (%)			0.009 ^b
Yes	374 (82.9)	471 (76.3)	
No	77 (17.1)	146 (23.7)	
Hysterectomy, n (%)			0.024 ^b
Yes	58 (12.9)	53 (8.6)	
No	393 (87.1)	564 (91.4)	
Menopausal status, n (%)			0.769 ^b
Premenopausal	62 (13.7)	81 (13.1)	
Postmenopausal	389 (86.3)	536 (86.9)	
SUI symptom, n (%)			0.000 ^b
Yes	354 (78.5)	360 (58.3)	
No	97 (21.5)	257 (41.7)	
UUI symptom, n (%)			0.000 ^b
Yes	299 (66.3)	279 (45.2)	
No	152 (33.7)	338 (54.8)	
Mixed UI symptom, n (%)			0.000 ^b
Yes	264 (58.5)	226 (36.6)	
No	187 (41.5)	391 (63.4)	
POP symptom, n (%)			0.387 ^b
Yes	275 (61.0)	360 (58.3)	
No	176 (39.0)	257 (41.7)	

SUI = stress urinary incontinence; UUI = urgency urinary incontinence; Mixed UI = mixed urinary incontinence; AI = anal incontinence; POP = pelvic organ prolapse

^a Student's t-test; ^b Chi-square test

Table 4. Factors associated with AI based on multivariate analysis

Variables	Adjusted OR (95% CI)	p-value
History of vaginal delivery	1.44 (1.04 to 1.98)	0.027
Previous hysterectomy	1.58 (1.05 to 2.39)	0.029
Presence of SUI symptoms	2.20 (1.49 to 3.26)	0.000
Presence of UUI symptoms	2.03 (1.21 to 3.41)	0.007
Presence of mixed UI symptoms	0.83 (0.45 to 1.52)	0.546

SUI = stress urinary incontinence; UUI = urgency urinary incontinence; Mixed UI = mixed urinary incontinence; AI = anal incontinence

Discussion

The findings of this study confirms that AI is a common pelvic floor symptom among women with pelvic floor dysfunction all over the world^(2,4,5,8). In urogynecologic population, the rate of AI obtained from different questionnaires ranges between 8% and 54%^(4,5). Women with mixed UI were most likely to suffer from AI. Because of the silent and embarrassing nature of the AI symptom, affected women generally do not report symptoms to their nurses or physicians leading to under-diagnosis and under-treatment. In addition, there are no objective examinations or special tools for the assessment of AI. There is only a symptom-based approach. Therefore, awareness of these association would prompt care givers to ask about AI symptom in women who report pelvic floor symptoms. Therefore, these women would be managed appropriately, and their quality of life would increase consequently.

Considering correlates of AI, the findings from this study demonstrate that women with UI both stress and urgency types evenly increase likelihood of having concomitant AI. In addition, these results are confirmed with both univariate and multivariate analysis. Furthermore, they are also comparable to previous studies in Brazil⁽²⁾, Italy⁽⁴⁾, Australia⁽⁹⁾, South Korea⁽⁸⁾, Thailand⁽⁵⁾, and south American region⁽¹⁰⁾ that report high association between urinary-related problems, pelvic organ prolapse, and bowel-related problems. Apparently, women with any symptoms of pelvic floor dysfunction are more likely to have concurrent other pelvic floor symptoms⁽²⁾. Basically, damage to the pelvic support mechanism is thought to be the fundamental cause of pelvic floor dysfunction including urinary-, bowel-, and reproductive tract-related symptoms. It is not surprising that women who experienced three pelvic floor symptoms had the highest probability (59.0%) of having concomitant AI in the present study. Such information allows a better understanding of AI in terms of prevalence, correlates, as well as highlight opportunities for better quality of care. Women who present with vaginal bulge symptom or UI should routinely be queried about symptoms of AI.

Regarding associated or risk factors for AI, advancing age, menopause, obesity, vaginal delivery, episiotomy and third- or fourth-degree perineal laceration, hysterectomy, and diarrhea are found to be significant risk factors⁽¹¹⁻¹⁴⁾. Correspondingly, the present study found statistically significant associations between AI and vaginal delivery and

hysterectomy. Vaginal delivery and pelvic surgery are considered as conditions that were harmful for pelvic support mechanisms, which lead to pelvic floor symptoms^(14,15). It is evidenced that some women may suffer from anal/fecal incontinence as a consequence of vaginal delivery and obstetric trauma^(16,17). One study demonstrates that late anal and fecal incontinence are more common after vaginal delivery than caesarean section⁽¹⁸⁾. However, due to the retrospective design of this study, the associations between AI and other obstetric-related factors, for example episiotomy, operative obstetric procedure, infant birth weight, or anal sphincter tear were not determined. Considering the effect of hysterectomy procedure on AI, dissection of pelvic floor supportive tissues may negatively affect with anorectal innervation and lead to impairment of anal sphincter control system. Previous longitudinal studies report increased long-term incidence of AI after abdominal hysterectomy^(19,20) and vaginal hysterectomy⁽¹⁹⁾. Previous studies confirmed that advancing age is a significant risk factors for AI, especially in women above 70 years^(12,21). The effect of such risk factor was not found in the present study.

The strengths of this study include the report of a large number of urogynecologic patients using the validated questionnaire. To the authors' knowledge, this is the first study in Thai women to determine the prevalence of AI and its correlates. Nevertheless, the present study carries several limitations that should be considered. Firstly, it was a retrospective chart review. Some important information including types of AI or factors contributing to degree of bother from pelvic floor symptoms could not be evaluated. Secondly, it was not a community- or population-based survey. Thus, the generalizability is compromised. Thirdly, some clinically significant risk factors for example perineal tear or body mass index were not studied. Further cross-sectional or longitudinal studies among general population are required.

Generally, the findings of the present study convey the potential to contribute directly to the improvement of quality of care in urogynecology clinic and general gynecology clinic. Awareness of AI in women with pelvic floor symptoms, early detection, timely referral to specialists, and appropriate treatment are warranted to improve quality of life in women with AI.

Conclusion

AI is prevalent in women attending the urogynecology clinic and correlated with the presence of mixed UI, vaginal bulge, SUI, and UUI symptoms.

The significant associated factors were vaginal delivery and hysterectomy. The strong association between AI and UI probably suggests a common pathophysiologic pathway rather than either being a risk factor for the other.

What is already known on this topic?

AI is not an uncommon troublesome problem occurs with other pelvic floor symptoms among women with pelvic floor dysfunction.

What this study adds?

Concurrent AI was found in about half of women having UI and prolapse symptoms. The strong identifiable associates for AI were presence of either stress or UUI.

Potential conflicts of interest

The authors declare no conflict of interest.

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