Research Article

Unraveling of Urinary Disorders to Adenomyosis and Dysmenorrhea

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Abstract

Objective: To explore the links between micturition disorders, adenomyosis, and dysmenorrhea and provide insight into the factors associated with the severity of LUTS symptoms in these conditions.

Methods: This study was a descriptive qualitative study. We retrospectively collected medical record data from the Obstetrics Gynecology Outpatient Ward of Dr. Moewardi Surakarta General Hospital from January 2021 to May 2023. This study used The Modified International Prostate Symptom (IPSS) Score questionnaire to assess urinary complaints. The results of this study were analyzed using the Pearson correlation or Mann-Whitney test.

Results: There is a significant relationship between adenomyosis and dysmenorrhea in urinary disorders (p-value of 0.016), where urinary disorders are found to be more severe in adenomyosis patients with dysmenorrhea.

Conclusion: Lower urinary tract phenomena often occur symptomatically in adenomyosis patients and impact the quality of life of sufferers. Dysmenorrhea can be the most acute risk factor that increases the appearance of moderate to severe LUTS.

Keywords: adenomyosis; dysmenorrhea; urinary disturbance.

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INTRODUCTION

Adenomyosis is characterized by endometrial tissue invading the myometrium, leading to the diffuse enlargement of the uterus. Microscopic examination shows non-neoplastic ectopic endometrial glands, stromal hyperplasia, and hypertrophy in myometrial tissue. The basic phenomena of female adenomyosis patients are severe pain during menstruation (dysmenorrhea), heavy bleeding, infertility, and miscarriage.[1,2] Dysmenorrhea, derived from Greek, refers to periodic painful bleeding.[3] Dysmenorrhea is categorized as primary and secondary. The primary type manifests as lower abdominal pain related to menstruation, independent of any other medical conditions. Meanwhile, secondary dysmenorrhea is frequently associated with problems in the uterus and nearby areas, such as adenomyosis. Dysmenorrhea has considerable psychological and functional health effects.[5,6] Causes of dysmenorrhea from the 1960s include many factors, such as anatomical, biochemical, and psychological.[7] Abnormalities of uterus position, shape, and cervix length are anatomical aspects. An elongated and thick cervix might present a mechanical obstruction which leads to more uterine contractions and ultimately dysmenorrhea. This is one potential mechanism explaining how the length of the uterine corpus and cervix affects the severity of dysmenorrhea.[8] Increased contractions in the muscle of the uterus may cause pain

during menstruation and sexual intercourse in the pubic region. This is indicated by higher levels of oxytocin receptor (OTR) and more muscular contractions in the uterine muscle cells in the adenomyotic uterus.[9,10]

Lower urinary tract phenomena (LUTS) include both urinary and obstructive phenomena, persistent urge to urinate, intermittent urination, a feeling of incomplete bladder emptying, storage phenomena or irritation such as frequency, urgency of urination, urge to urinate, incontinence, and nocturia. LUTS's severity level is best assessed using a quantitative phenomenon index. The instrument often accepted for evaluating the severity of a phenomenon is a phenomenon index compiled by the American Urological Association (AUA).[11] The most common LUTS is a sense of urinary urgency for women aged over 40 years. The most important factors for developing LUTS are recurrent urinary tract infections, followed by chronic illness, persistent constipation, higher body mass index (BMI), and parity.[12]

Lower urinary tract issues frequently occur in women who have uterine fibroids. Research indicates that greater fibroid size and increased uterine mass are linked to more severe LUTS symptoms and pelvic floor disorder symptoms. Urinary tract phenomena often appear in people with adenomyosis and affect their quality of life (QOL). Adenomyosis should indeed be considered when evaluating lower urinary tract symptoms (LUTS) in women with uterine fibroids, as there is a significant association between these conditions.[13] Prior research indicates a greater prevalence of micturition irritation symptoms associated with overactive bladder in patients diagnosed with adenomyosis in comparison to control subjects. However, the incidence of LUTS The phenomenon of adenomyosis in women is still uncertain.[14,15] This research examined this condition and the association of micturition disorders with adenomyosis and dysmenorrhea.

METHODS

This descriptive qualitative study uses a retrospective approach using secondary data from medical records taken at Dr. Moewardi Regional General Hospital, Surakarta. This study obtained ethical clearance from Dr. Moewardi Hospital. The population of this study was adenomyosis patients at Dr. Moewardi Surakarta Regional General Hospital from January 2021 to May 2023. The sample of this study was adenomyosis patients with complaints of urinary disorders at Dr. Moewardi Regional General Hospital Surakarta from January 2021 to May 2023, which fulfills the research inclusion and exclusion categories.

The independent variable of this study is the diagnosis of adenomyosis obtained from medical records, and the dependent variable is complaints of urinary disorders. Adenomyosis is a non-neoplastic condition characterized by the benign invasion of endometrial tissue into the myometrium, resulting in diffuse enlargement of the uterus. Microscopically, non-neoplastic ectopic endometrial glands and stroma are observed, surrounded by hyperplastic and hypertrophic myometrial tissue. Lower urinary tract phenomena include urinary and obstructive phenomena, including a constant urge to urinate, intermittent bladder emptying, and a sensation of incomplete bladder emptying. Additionally, storage and irritation phenomena such as increased frequency of urination, urgency, incontinence, and nocturia.

The modified International Prostate Symptom (IPSS) Score questionnaire was used to assess complaints of urinary disturbances in patients with adenomyosis and dysmenorrhea. The findings will be evaluated using Pearson correlation analysis under the condition of a normal distribution and Mann-Whitney analysis if that is not the case. The normality of the data will be assessed using the Kolmogorov-Smirnoff test. Data were analyzed using SPSS software.

RESULTS

This study included 47 female patients with adenomyosis, 29 patients with dysmenorrhea, and 18 patients without dysmenorrhea. The characteristics of the subjects are shown in Table 1. There was no significant difference in age between the two groups (20-30 years and 31-40 years, respectively, $p = 0.062$).

Urinary disorders had the same proportion between the dysmenorrhea and non-dysmenorrhea groups, specifically mild urinary disorders (73% and 100%, respectively). There was a significant difference in the level of urinary disorder between the two groups (p=0.022).

Table 3 shows that the correlation between age and urinary disorders was not statistically significant (p = 0.920). A significant correlation identified between adenomyosis and dysmenorrhea related urinary disorders (p = 0.016, Table 4).

DISCUSSION

Symptoms of LUTS often appear in patients with symptomatic adenomyosis and significantly impact the patient's QOL. Dysmenorrhea can be the most significant risk factor contributing to the development of LUTS of moderate to severe intensity.[16] In this study, there is a significant comparison of urinary disorders, including dysmenorrhea and the absence of dysmenorrhea (p=0.022). The group with dysmenorrhea had a higher chance of moderate and severe micturition, according to the theory. This study also found that adenomyosis and dysmenorrhea were significantly associated with micturition (p=0.016). These results show that the patient who has adenomyosis and dysmenorrhea has a greater chance of voiding than the same patient with no adenomyosis and dysmenorrhea and show that sufferers of adenomyosis and dysmenorrhea experience severe urinary problems. This study's findings are consistent with a previous study, which showed similar results in that lower urinary tract phenomena are prevalent in adenomyosis patients[16]. Another previous study also showed that urinary tract phenomena are common in adenomyosis patients and impact the patient's quality of life (QOL).[14]

Adenomyosis is a gynecological condition that causes the uterus to enlarge and the myometrial walls to thicken asymmetrically.[1,17] The larger uterus can increase pressure on the bladder, affecting its capacity and causing the sensation of needing to urinate at lower volumes.[17] Storage symptoms in LUTS are often due to the pressure exerted by an enlarged uterus on the bladder, reducing its capacity and increasing urinary frequency.[15] Also, adenomyotic nodules have been demonstrated to produce inflammatory and neurogenic substances like interleukin-1β, corticotropin-releasing hormone, neurodevelopmental factors, and synaptic proteins. These substances can impact the pelvic plexus neurons that supply the lower urinary tract layers, leading to urinary tract dysfunction. Abnormal contractility of uterine muscle in adenomyosis also indirectly contributes to LUTS or micturition disorders.[18]

Pelvic pain, abnormal uterine bleeding (AUB), pelvic pain, and infertility are common experiences for women with adenomyosis, and these symptoms significantly affect the patient's QOL. [5,14] Menstrual bleeding is generally caused by increased endometrial surface area, heightened vascularization, abnormal uterine contractions, and increased signaling molecules such as prostaglandins, eicosanoids, and estrogens.[5] In addition, dysmenorrhea and dyspareunia (pain that appears in the pubic region) can be explained by myometrial hypercontractility, which is indicated by higher oxytocin receptor (OTR) expression and increased uterine smooth muscle cell contractility.[9,10]

The LUTS phenomenon in women is categorized into storage phenomena, urinary phenomena, and post-urinary phenomena. The typical storage phenomena are frequency and urgency of urination, incontinence, and nocturia. Hesitation, reduced flow, interruption or spurting, intermittency, and effort are all urinary phenomena. Post-urination, it is common to experience sensations of incomplete emptying and drooling.[19] Due to the anatomy and physiology of the female urogenital system, women are more prone to developing certain lower urinary tract symptoms (LUTS) compared to men. Epidemiological studies have suggested a 40 to 70% prevalence of LUTS in women. Urinary symptoms may worsen due to hypertonicity or dysfunction of the pelvic floor muscles caused by the persistent pain associated with dysmenorrhea in adenomyosis. Storage symptoms like urgency and increased daytime frequency,

as well as voiding symptoms, are common in adenomyosis patients.[15] These urinary symptoms are associated with severe dysmenorrhea and significantly impact patients' quality of life.

CONCLUSIONS

This study showed a correlation between adenomyosis, dysmenorrhea, and LUTS. Uterine enlargement from adenomyosis may compress the bladder and surrounding tissues and frequently results in LUTS symptoms, which negatively affects the patient's quality of life. In cases of moderate to severe LUTS, dysmenorrhea may be one of the significant factors. Dysmenorrheic adenomyosis patients might be screened for LUTS symptoms to facilitate early diagnosis and prompt treatment.

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Table 1. Characteristic of the Study

Basic Characteristics	Group		*P-value*
	Dysmenorrhea (n=29) %	No Dysmenorrhea (n=18) %	
Age (y o)			0.062
20-30	16 (55)	4(25)	
31-40	11 (38)	10 (50)	
41-50	1 (4)	4 (25)	
>50	1 (4)	0	
Education			0.593
Elementary school or equivalent	1 (4)	1 (5)	
Junior high school or equivalent	4(14)	3(15)	
High school or equivalent	16(55)	10(55)	
College	8(27)	4(25)	
Urinary Disorder			0.022
Mild	21(73)	18(100)	
Moderate	6(21)	0	
Severe	2(6)	0	

Table 2. The Correlation between Age and Urinary Disorders

Variable	*P-value*
Age	0.920
Urinary disorders	

Table 3. The Correlation between adenomyosis and dysmenorrhea on Urinary Disorders

Variable	*P-value*
Adenomyosis and dysmenorrhea	0.016
Urinary disorders	