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Urinary incontinence in postmenopausal women in the aspect of sexual health and therapeutic approach

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ABSTRACT

Introduction

Urinary incontinence (UI) is a prevalent condition among postmenopausal women, seriously impacting their sexual health and quality of life. In the postmenopausal period, multiple hormonal and structural changes occur in female body. These conditions can lead to psychosomatic disorders, causing shame, social withdrawal, and negatively affecting sexual health. Loss of bladder control creates discomfort during sex, reducing satisfaction for both women and their partners. Management strategies for UI in postmenopausal women include pelvic floor training, medications, and surgical options. Addressing the psychosocial aspects of urinary incontinence through counseling and education is essential for empowering women to seek support.

Aim of the study

The article discusses urinary incontinence in postmenopausal women, highlighting its impact on sexual health. It discusses the hormonal and physiological changes related to this condition and aims to present effective diagnostic and treatment strategies.

Materials and methods

We searched the following databases: PubMed, Web of Science, clinical trial registry platforms, and Google Scholar, using key terms such as "urinary incontinence," "postmenopausal women," "sexual health," "lower urinary tract symptoms (LUTS)."

Conclusion

UI is a serious problem affecting many postmenopausal women. It is crucial to elevate the understanding of both patients and medical staff about diagnosis, effective treatment options, and the importance of mental support. By taking this approach, we can create a healthcare environment that is more informed and compassionate.

Key words

Urinary incontinence; Postmenopausal women; Sexual health; Lower urinary tract symptoms (LUTS)

Introduction

Urinary incontinence is one of the most common diseases among Polish women, affecting 4 to 6 million women. It is estimated that approximately 63% of these cases are a form of stress urinary incontinence, 19-25% are urgent urinary incontinence, and 12-19% are a mixed form, characterized by the simultaneous occurrence of both types of urinary incontinence. (1).

Women who struggle with urinary incontinence are more likely to be frightened of sexual activity. They avoid sexual intercourse and even choose complete sexual abstinence. Multiple studies confirm the presence of deficits in the area of sexual contact related to insufficient vaginal hydration, lack of satisfaction with intercourse, or lack of good judgment of cenesthesia and the occurrence of pain. (2,3). Moreover, partners of women suffering from urinary incontinence, compared to men who were not in a relationship with women without diagnosed disorders in this aspect, were more likely to avoid intercourse with their partner (4).

Questioning about aspects of sexual health is an integral part of the medical interview conducted by a doctor. However, what is disturbing is the fact that a survey conducted among adult residents of Poland shows that 79% of men and 67% of women have never been asked by a doctor about their sexual health. (5).

According to the definition of the World Association for Sexual Health (WAS), sexual health includes biological, emotional, intellectual, and social aspects necessary for positive personality development, effective communication, and building interpersonal relationships.

(6). It is an integral component of the concept of health, and since 1975, WHO has determined sexual health as a fundamental human right (7).

It is thus necessary to increase awareness among medical staff and introduce systematic consideration of sexual health aspects in diagnosis and therapy. More complete support is necessary, especially for women and their partners impacted by this disease.

Definition of urinary incontinence

Urinary incontinence (UI) is the loss of control over micturition and, consequently, involuntary leakage of urine. Although conditions are more typical in older people, they may also affect younger adults, having a significant impact on health and quality of life. The initial evaluation usually doesn't need a urological or gynecological consultation. However, it is necessary to exclude potential reversible reasons. It should be remembered that the symptoms reported by patients are subjective and may correspond to other urinary system dysfunctions, such as lower urinary tract infections. (8).

Urinary incontinence can be classified as temporary or chronic (9). Temporary urinary incontinence resolves spontaneously once the cause is removed. In contrast, chronic refers to conditions that are long-lasting and permanent. There are five main types of chronic conditions: stress incontinence, urge incontinence, mixed form, overflow incontinence, and functional incontinence. (10–12).

- 1) stress urinary incontinence (SUI) is the leakage of urine caused by activities that increase intra-abdominal pressure (e.g. sneezing, coughing) to values greater than the pelvic floor pressure. Small portions of urine are characteristic, and the leakage itself is temporary and disappears after the intra-abdominal pressure normalizes. It is more common in women and has been proven to be a consequence of pregnancy and childbirth, obesity, and constipation;**
- 2) urge urinary incontinence (UUI) is part of a set of symptoms called overactive bladder syndrome (OAB). Spontaneous urination is preceded by a strong feeling of urge to urinate and the need to urinate, which cannot be postponed. OAB is divided into the type with urinary incontinence - "OAB wet" and without urine leakage - "OAB dry";**
- 3) mixed urinary incontinence occurs when involuntary leakage of urine is caused by stress and urgency.**

- 4) **overflow incontinence occurs as a complication of urinary retention. It may be the result of prostatic hyperplasia (BPH), pregnancy, medications, surgery, obesity, or neurological disorders. It is characterized by the constant leakage of small amounts of urine - also known as droplet incontinence. Due to incomplete emptying of the bladder and residual urine, the risk of Urinary Tract Infections (UTI) increases. Overflow incontinence is the only type of urinary incontinence considered potentially dangerous because it can directly lead to kidney failure or permanent bladder damage.**
- 5) **functional incontinence has no organic cause and is related to factors that impair the patient's ability to use the toilet. Common causes include dementia, poor mobility or dexterity, visual impairment, or changes in the environment (13).**

Type	Epidemiology	The main mechanism of pathophysiology
Stress urinary incontinence (SUI)	In women over 30 years of age. From 24 to 45% of women, depending on the data	Weakening of the sphincter and increase in intra-abdominal pressure.
Urge urinary incontinence (UUI)	42% in men over 75 years of age 9% in women under 45 years of age 31% of women over 75 years of age	Excessive detrusor reactivity. Most often caused by bladder irritants or loss of neurological control over bladder contractions.
Mixed urinary incontinence	In 20 – 30% of patients with the problem of chronic urinary incontinence	Combination of stress and urgency mechanisms
Urinary incontinence from overflow	5% of patients with chronic urinary incontinence	Excessive distension of the bladder wall caused by obstruction of the urinary outflow tract or detrusor dysfunction itself (e.g. neurogenic bladder)
Functional urinary incontinence	Underestimated	Organic disorders, psychological barrier, individual obstacles difficult to classify

Table 1. Types of urinary incontinence. Own study based on Dowling-Castronovo and Specht, 2009; Frank and Szlanta, 2010; Holroyd-Leduc et al., 2008; Linda Cardozo, Eric Rovner, Adrian Wagg, Alan Wein, Paul Abrams, 2023; Mckertich, 2008)

Diagnostics

Diagnosing urinary incontinence involves a comprehensive process that includes clinical assessment and standardized diagnostic tools, enabling precise evaluation of symptom type and severity.

First, reversible or temporary urinary incontinence problems, such as urinary tract inflammation or BPH should be excluded (10,11,14). The foundation for exclusion is the duration of symptoms. Reversible problems usually appear suddenly and last no longer than 6 weeks (15). Medical staff should also pay attention to the medications and stimulants the patient is taking. Particular attention should be paid to diuretics, alcohol, opioids, antidepressants, antiparkinsonian agents, antipsychotics, Angiotensin-converting enzymes, and Calcium channel blockers inhibitors (16). It's also recommended that a general urine test be performed to detect possible urinary tract infections, glycosuria, or hematuria, which may be related to urinary incontinence. Other reversible conditions such as obesity, constipation, and depression should be assessed and treated. Pelvic examination should include assessment for vulvovaginal atrophy (VVA), pelvic floor muscle abnormalities, and pelvic organ prolapse. The integrity and function of the pelvic floor muscles should also be checked to see if patients have difficulty toning them properly. Moreover, there is a significant correlation between the occurrence of nocturnal enuresis in childhood and the occurrence of UI in adulthood (17,18). All this proves the validity of the hypothesis that a well-collected interview with the patient is the basis for making the correct diagnosis.

After ruling out the above causes, the doctor should conduct thorough diagnostics using standardized tools, such as assessment questionnaires, which enhance interaction with the patient and help differentiate between types of urinary incontinence.

Mandle and colleagues evaluated 11 available questionnaires for finding and assessing UI cases. All available forms were found to have adequate sensitivity and specificity for urinary incontinence symptoms (19). However, one of the most used forms is the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF). ICIQ-SF is a short form that allows you to obtain information about the frequency of urinary incontinence, the amount of leakage, and the impact of the problem on the patient's daily life. In turn, the B-SAQ questionnaire is the only questionnaire covering the symptoms of the so-called "red flags", i.e. hematuria and lower abdominal pain.(20). The European guidelines for UI diagnostics don't directly indicate one ideal diagnostic tool. The choice of form is up to the doctor and should be adjusted to the patient's present needs.

Another tool used in diagnostics is the voiding diary that the patient keeps for a specified period, recording the volume and frequency of voiding, as well as incidents of urinary incontinence and triggers. The voiding diary provides valuable information on the symptom profile and allows for the differentiation between types of urinary incontinence - e.g. stress and urge incontinence. There are paper versions and, due to tendency to the digitization of medical data, and telemedicine, in the form of applications downloaded to the phone - e.g. Bladder Diary by iUFlow, URApp. Katerina Lembrikova proved that there are no significant differences in calculations on data from paper diaries vs. data from the application. However, almost 44% of paper diaries were completed incorrectly, with zero errors in the application. The results suggest that applications can significantly facilitate patient care by ensuring accurate calculations and transparency of records. (21).

Additionally, it is recommended to assess post-micturition residual urine in patients with pelvic organ prolapse or a feeling of incomplete or unsatisfactory bladder emptying.

To more accurately diagnose the severity and type of urinary incontinence, clinicians may also use the Incontinence Quality of Life Questionnaire (I-QOL). It is a tool that measures the impact of disease symptoms on the patient's mental well-being, social activity, and overall quality of life. The results obtained through I-QOL are an important element in making therapeutic decisions, especially in cases requiring long-term treatment. (22).

Currently, urodynamic test is not recommended for the diagnosis of uncomplicated urinary incontinence or before surgical treatment. However, in postmenopausal patients, urodynamic tests are often necessary to assess bladder or urethral function and plan treatment methods. (9).

Time of the day	What did You drink?	What was Your fluid intake?	Did You have any urine leaks and accidence?		
			Urine leak Yes/No	How stornng was the urge to go? 1-5	What were You doing when you leaked?
8:00	Tea	300ml			
9:30	Sparkling water	200 ml			
10:20			Yes	4	Coughing

Table 2. Examle of bladder diary.

The issue of urinary incontinence during menopause.

As previously indicated, menopause has a significant impact on the occurrence of urinary incontinence in women. The results of the EPINCONT study confirm the peak incidence of UI in menopausal women (23). Due to anatomical, hormonal, and functional changes in the lower urogenital tract, there is a significant correlation between the period of menopause in women and dysfunction of the pelvic floor structures, and thus the occurrence of most urogenital disorders (24). Interestingly, a British study of women who had been perimenopausal for ≥ 12 months found that the most common cause of UI was stress (63%), while postmenopausal women had the lowest incidence of symptoms (43%). The authors suggest that perhaps perimenopausal women also have several other symptoms that are new to them and may be more sensitive to changes occurring in their bodies, which is why they over-report UI symptoms (18). Unfortunately, this study did not include other types of UI. Moreover, there are only a few scientific papers defending this idea.

In postmenopausal women, there is a significant decrease in the level of sex steroid hormones associated with the cessation of ovarian function (25). The fact that the lower urinary tract originates embryonically from the same germ layer as the female reproductive system makes it sensitive to declines in steroid hormone levels. In addition, estrogen, androgen, and progesterone receptors are expressed throughout the entire length of the lower urinary tract, specifically in structures directly related to maintaining control over urination. As a result, dysfunction occurs in structures such as the urethra, and vagina, as well as the muscles, fascia, and ligaments of the pelvic floor. The result is an increased frequency of UI in women in the peri- and postmenopausal period. (26–28).

Multiple studies demonstrate that 37% to 54% of women struggling with pelvic organ prolapse (POP) experience UI symptoms (29–31). There are several factors that contribute to pelvic organ prolapse (POP), including heavy lifting, vaginal delivery, and hysterectomy. One significant factor is estrogen deficiency during menopause, which leads to the weakening and thinning of the pelvic support tissues. This weakening can result in sagging and, subsequently, uncontrollable urine leakage (32).

The degeneration of connective tissue and the loss of elasticity and mobility in the urethra during menopause significantly impact its closure mechanisms. Additionally, an increase in collagen within the detrusor smooth muscle may contribute to heightened symptoms of overactive bladder and uncontrolled urine leakage (33).

Another aspect is the influence of sex hormones on the process of regulating vaginal microflora. Recent research conducted on women in the pre-, peri- and post-menopausal

phases confirmed a powerful relationship between the bacterial composition of the vagina and the stage of menopause (34). Increasing evidence suggests that urinary tract microflora may play an important role in certain urinary tract disorders, including urinary (34).

Although UI is part of the genitourinary syndrome of menopause (GSM), the correlation between sex steroids and UI is still controversial. There is no clear evidence that urinary incontinence is a direct consequence of changes occurring due to hormone deficiencies and not the natural aging process (35,36).

Sexual life of postmenopausal women with urinary incontinence

Urinary incontinence, which is increasingly common among postmenopausal women, can significantly impact their sex life. Research indicates that between 24% and 66% of women experiencing urinary incontinence report some form of sexual dysfunction (2). These findings unquestionably illustrate the correlation between urinary incontinence and sexual difficulties.

The psychological and emotional effects of urinary incontinence can be severe. The relationship between UI and sexual dysfunction is complex because both conditions can exacerbate each other, leading to a cycle of anxiety and decreased sexual activity.

Studies have shown that urinary incontinence is associated with several sexual dysfunctions. Especially with reduced libido, difficulty in arousal, and pain during intercourse - dyspareunia (2,3,37). However, analyzing sexuality only in biological terms is a mistake. The psychological impact of urinary incontinence, including sensations of embarrassment and uncertainty, can further inhibit sexual desire and pleasure. Many women are frightened of urine leaking during intercourse. As a result of orgasm, intra-abdominal pressure increases, which may result in uncontrolled urine leakage in women with urinary incontinence. These fears create significant obstacles in intimate relationships, leading to greater discomfort and frustration (38,39). Consequently, women often face a decline in self-esteem and perceived physical attractiveness, which greatly impacts their sexual life and the quality of their relationship with their partner. Additionally, the stigma surrounding urinary incontinence can lead to withdrawal from social life, resulting in increased frustration and intensified mental symptoms (40). A sense of attractiveness and self-confidence are the primary determinants of sexual comfort, while urinary incontinence disturbs this balance, making women feel less valuable and less accepted. As a result, self-esteem may decline, putting partner relationships at risk and disrupting intimacy (2,41). It decreases the quality of life and positions women in a

state of chronic stress, which further increases the problems resulting from UI by increasing muscle tension.

Despite various scientific reports describing urinary incontinence as a direct reason for sexual dysfunction, some point out that factors such as hormonal changes during menopause and the presence of other pelvic floor disorders may also play a notable role. For example, the hormonal changes that occur during menopause cause vaginal atrophy, or thinning of the vaginal walls, which often leads to dryness and pain during intercourse (42).

The analysis of the collected material suggests that the relationship between urinary incontinence and sexual function is not only a matter of physical symptoms. It also includes emotional and psychological dimensions. Women suffering from UI often report higher levels of depression and anxiety, which can further reduce sexual desire and satisfaction (43).

The impact of urinary incontinence on sexual life does not only affect women. Agitated intimate relationships that result from the disease also affect the woman's immediate environment. Problems related to UI have a powerful impact on the partners of these women. Stress and anxiety related to sexual intimacy can decrease sexual activity and satisfaction for both partners (4). Open communication between partners about the challenges of UI can be beneficial in mitigating the effects described above and creating a supportive environment in addressing sexual health concerns.

To sum up, the sexual life of postmenopausal women is closely related to the occurrence of urinary incontinence. The high incidence of this disease among postmenopausal women, combined with the accompanying sexual dysfunctions, indicates the need to develop a comprehensive, holistic therapeutic strategy.

Treatment

Treatment of urinary incontinence in postmenopausal women is a complex, multi-faceted process and should contain both physiological and psychological aspects. Currently, we have many treatment methods, including conservative measures, pharmacological actions, and surgical interventions.

1. Conservative treatment

Lifestyle changes, weight loss, and dietary adjustments significantly impact urinary incontinence treatment. Research shows that weight loss can reduce the intensity of symptomatic UI by approximately 70% (44). European guidelines strongly recommend that treatment be administered to patients with a body mass index (BMI) exceeding 30, highlighting its importance for effective health outcomes (45).

Studies prove a significantly increased risk of UI in patients consuming carbonated drinks and smokers. Patients should pay attention to their fluid intake, ensuring it is neither too low nor too high. It is recommended to drink small portions of fluids frequently, aiming for up to 2 liters a day, with water being the primary choice. Additionally, patients should limit their consumption of caffeine, carbonated drinks, and diet beverages. Furthermore, increasing the intake of vegetables, bread, and chicken has been shown to significantly reduce the symptoms of urinary incontinence (UI) (46,47).

The patient's daily habits should also be modified based on voiding diaries. Voiding at scheduled times and limiting fluid intake are effective first-line strategies for women with UUI (48).

Additionally, regular physical activity, including pelvic floor exercises, has been linked to improved urinary control and overall quality of life. Pelvic floor muscle exercises (PFME) are effective for all types of urinary incontinence (49). However, over one-third of women declare a lack of confidence in the correct performance of pelvic floor muscle contraction exercises, and most of them admit to a lack of regularity in exercises (50).

2. Pharmacological treatment in menopausal women

Pharmacotherapy should be considered in patients with UI when conservative treatment has failed. Pharmacological treatment of UI in postmenopausal women includes estrogen monotherapy or estrogen therapy in combination with anticholinergic drugs. Although the effects of combined estrogen therapy with anticholinergic drugs for treating postmenopausal women with overactive bladder are unclear (51,52). Meta-analyses confirm that local use of estrogen is safe and effective in the treatment of urinary incontinence and overactive bladder. Even though the effects of combined estrogen therapy with anticholinergic drugs for treating postmenopausal women with overactive bladder are unclear (53). Surprisingly, systemic hormone therapy appears to decline UI symptoms by increasing pelvic floor muscle laxity. However, the evidence is not clear and still needs to be confirmed, and the reports come from studies in which UI was not the main research topic (54,55). Local estrogen therapy, especially vaginal estrogen, may help alleviate symptoms associated with vaginal atrophy and urge incontinence by restoring the health of urogenital tissues. Vaginal estrogens reduce transitional epithelial damage, inflammatory cell infiltration, and muscle atrophy (56,57).

However, local hormone therapy may be unpleasant and embarrassing for women (58). An alternative for such patients is the first non-hormonal selective estrogen receptor modulator Ospemifen. Research points out that Ospemifen may be an alternative for women suffering

from overactive bladder, reducing the intensity of the urge to urinate and the frequency of urination (59,60). Additionally, there are writings that Ospamifen may be used to reduce the urge component in mixed urinary incontinence (61).

Currently, there are no FDA-approved medications specifically for the treatment of NWM. Nevertheless, effective pharmacological options for managing UUI are available, including anticholinergic drugs and mirabegron, a beta-3 agonist. These treatments can seriously improve quality of life for those affected. The percentage of patients reporting improvement after using anticholinergic drugs is approximately 49% (62). These drugs block muscarinic receptors in the smooth muscles of the bladder, which consequently inhibits the contraction of the detrusor muscle. Nevertheless, treatment is often discontinued due to side effects of these drugs (63–65). Mirabegron stimulates beta-3-adrenergic receptors, causing bladder smooth muscles to relax and increasing bladder capacity. Studies confirm a reduction in urinary urgency incontinence (UUI) episodes compared to placebo (66,67).

3. Surgical treatment

For UI that doesn't respond to initial pharmacological therapy, considering a combined treatment approach is advisable. To effectively minimize side effects, it is highly beneficial to choose extended-release formulations.

Treatment for women with symptoms of persistent urge urinary incontinence or drug intolerance is based on the level of the nervous system. The basis of such treatment is botulinum toxin type A, which blocks the release of acetylcholine. It thus inhibits the activation of muscarinic receptors and the contraction of the bladder detrusor. Positive effects of therapy occur in approximately 65% of patients undergoing treatment and last up to a year (68,69). The toxin administration procedure is minimally invasive and is performed on an outpatient basis during cystoscopy.

Surgical interventions are effective in as many as 84% of women undergoing surgery (62). Suburethral tapes are currently the primary surgical treatment for UI in clinical practice. These surgeries are proper for women who have never had surgery before and for those who have previously had unsuccessful surgery. During the procedure, the operator places tapes under the urethra. When the woman coughs, the tape compresses the tube, thus providing the support necessary to prevent urine leakage. There are three main methods:

- **traditional suburethral slings**
- **minimally invasive slings such as TVT and TOT**
- **single incision slings, also known as mini-slings (70–72)**

However, surgical options carry risks and potential complications that require careful patient counseling and concern for the individual situation.

In postmenopausal women, complications such as voiding disorders may occur after the tape is placed under the urethra. This may result in a persistent urge that was present before the tape was applied or indicate a new urge, referred to as *de novo* urgency. The most common cause of urinary tract infection is urinary tract infection. In patients with no confirmed infection or bladder overactivity resistant to standard treatment, it is worth considering diagnostics for urinary tract obstruction or perforation.

4. Laser treatment

Laser therapy is a new, promising, and non-invasive method of treating Vulvovaginal Atrophy (VVA). Research is currently being conducted on its potential use to alleviate symptoms of prolapse and urinary incontinence. Through its local action, the laser stimulates tissue remodeling and the neof ormation of collagen and elastic fibers. Therefore, the tension in the vaginal muscles is effectively revitalized

Current research does not provide enough evidence to position it as an alternative to gold-standard methods, such as pelvic floor muscle training and suburethral tapes (73).

Summary

Urinary incontinence is a common health problem, especially among middle-aged and older women, which significantly affects their quality of life, mental health, and social activity. This condition can lead to embarrassment, social isolation, and even depression. However, many effective therapeutic methods enable patients to improve their quality of life. Medical professionals play an essential role in the management of urinary incontinence. By precisely diagnosing the type of incontinence and pinpointing treatable causes, they can develop a customized treatment plan tailored to each patient's unique needs. The priority of health care should be to provide personalized and effective care for women suffering from urinary incontinence so that they can regain full health and freedom in everyday functioning, including sexual health.

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Not applicable

2. Data were obtained from

PubMed, Google Scholar, Web of Science

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