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PREVALENCE AND MANAGEMENT OF UROLOGICAL DISORDERS IN MEN

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Abstract. Aging populations are associated with a marked rise in the number of patients seeking care from primary physicians for urological conditions. Among individuals aged 65 years and older, urological complaints represent the third most frequent category of medical concern and contribute, at least in part, to approximately 47% of outpatient visits. Common andrological and urological conditions in this age group include Lower Urinary Tract Symptoms (LUTS), Benign Prostatic Hyperplasia (BPH), acute urinary retention, genitourinary malignancies, urinary tract infections, urolithiasis, and various forms of sexual dysfunction. These disorders exert a substantial negative effect on patients' quality of life, often resulting in reduced physical mobility, sleep disturbances, and increased risk of social isolation.

Keywords: Elderly, Lower Urinary Tract Symptoms, Acute Urinary Retention, Chronic Urinary Retention, Urinary Incontinence, Nephrolithiasis, Management, Multidisciplinary Care

Аннотация. Старение населения сопровождается заметным ростом числа пациентов, обращающихся за медицинской помощью к терапевтам по поводу урологических заболеваний. Среди лиц в возрасте 65 лет и старше урологические жалобы занимают третье место по частоте среди всех медицинских обращений и составляют, как минимум частично, около 47% амбулаторных визитов. Наиболее распространённые андрологические и урологические заболевания в этой возрастной группе включают нижние мочевые пути симптомы (LUTS), доброкачественную гиперплазию простаты (BPH), острое задержание мочи, злокачественные новообразования мочеполовой системы, инфекции мочевыводящих путей, уролитиаз и различные формы сексуальной дисфункции. Эти расстройства оказывают значительное негативное влияние на качество жизни пациентов, часто приводя к снижению физической подвижности, нарушениям сна и повышенному риску социальной изоляции.

Ключевые слова: Пожилые, Нижние мочевые пути симптомы, Острое задержание мочи, Хроническое задержание мочи, Недержание мочи, Нефролитиаз, Лечение, Мультидисциплинарный подход

LOWER URINARY TRACT SYMPTOMS

Among the elderly population, Lower Urinary Tract Symptoms (LUTS) represent the most prevalent urological concern. These symptoms may arise secondary to a wide range of underlying pathologies, including benign prostatic enlargement and obstruction, urethral stricture, urethral or bladder calculi, urinary tract infections, neurogenic bladder dysfunction, detrusor overactivity or underactivity, intravesical foreign bodies, and prostatitis.

Epidemiological data indicate that LUTS affects up to 30% of men over the age of 65. Clinically, the symptom complex is classified into three principal categories: storage symptoms, voiding symptoms, and post-micturition symptoms. LUTS is characterized as a progressive, age-associated, non–sex-specific, and non–organ-specific constellation of symptoms. Both men and women may experience varying combinations of storage, voiding, and post-micturition complaints.

LUTS is highly prevalent globally and constitutes a significant public health issue, particularly in aging populations. Estimates suggest that approximately 45.2% of the worldwide population aged 20 years and older experienced at least one LUTS in 2008. Regional data,

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including findings from Sri Lanka, demonstrate that the majority of affected individuals present with mild symptoms. Furthermore, LUTS appears to be more common among men older than 44 years and is expected to increase in prevalence in parallel with population aging.

From a clinical perspective, LUTS can be systematically categorized into voiding symptoms (e.g., weak stream, hesitancy), storage symptoms (e.g., urgency, frequency), and post-micturition symptoms (e.g., incomplete emptying, post-void dribbling). The etiology of LUTS is frequently multifactorial, reflecting the complex interaction of anatomical, functional, neurological, infectious, and lifestyle-related factors.

One of the principal causes is Benign Prostatic Hyperplasia (BPH), in which prostatic enlargement leads to urethral compression and secondary bladder outlet obstruction, thereby producing LUTS. Detrusor overactivity may result in increased urinary urgency and frequency. Additionally, systemic conditions such as diabetes mellitus, spinal cord injury, and Parkinson's disease may impair neural control of bladder function, contributing to symptom development. Urinary tract infections can provoke bladder inflammation and irritation, manifesting as urgency, frequency, and dysuria. Lifestyle-related factors—including dietary habits, fluid consumption patterns, and physical activity levels—may further influence bladder function and play a contributory role in the pathogenesis of LUTS.

Bladder Outlet Obstruction (BOO)

Bladder Outlet Obstruction (BOO) is a urodynamically established condition defined by elevated detrusor pressure accompanied by a reduced urinary flow rate during voiding. It reflects impaired urine outflow at the level of the bladder neck or urethra and may arise from a variety of underlying etiologies.

Common causes of BOO include prostatic pathologies such as benign prostatic hyperplasia (BPH), prostate carcinoma, and prostatitis. Urethral strictures represent another important cause and may develop secondary to trauma, prior instrumentation (including post–transurethral resection of the prostate [TURP]), or inflammatory conditions such as chlamydial or gonococcal infections. Diagnostic evaluation is typically performed using ascending urethrography, while management options include urethral dilatation or urethroplasty, depending on severity and stricture characteristics.

Additional etiological factors include bladder calculi, phimosis (including balanitis xerotica obliterans, BXO), urethral meatal stenosis, bladder neck stenosis, and detrusor–sphincter dyssynergia (DSD), particularly in patients with spinal cord injury. These conditions interfere mechanically or functionally with coordinated urinary outflow, resulting in obstructive symptomatology.

Benign Prostatic Hyperplasia (BPH) and Benign Prostatic Enlargement (BPE)

Benign Prostatic Hyperplasia (BPH) is a histopathological condition characterized by non-malignant hyperplasia of prostatic stromal and glandular components. It is a highly prevalent disorder, affecting approximately one-third of men over the age of 50. Although the pathological process may begin as early as the fourth decade of life, clinical manifestations typically emerge later.

Importantly, symptom severity does not necessarily correlate with prostate size. The development of BPH is closely associated with aging and androgenic stimulation, particularly testosterone and its metabolites, leading to progressive proliferation of both fibrous and glandular elements within the prostate.

Benign Prostatic Enlargement (BPE) refers specifically to the macroscopic increase in prostate size resulting from the histological process of BPH. Clinically, BPE describes prostate enlargement that may contribute to lower urinary tract symptoms by causing bladder outlet

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obstruction. It is a common condition in men over 50 years of age, is non-cancerous in nature, and is generally not considered a life-threatening disorder. Moreover, the presence of an enlarged prostate does not inherently increase the risk of developing prostate cancer compared to men without prostatic enlargement.

Risk Factors, Complications, and Clinical Evaluation of LUTS

Risk Factors

The development of Lower Urinary Tract Symptoms (LUTS) is influenced by multiple demographic, genetic, lifestyle, and clinical factors. Advancing age represents the most significant risk factor, with prevalence increasing markedly after the age of 50, largely due to the higher incidence of benign prostatic hyperplasia (BPH) in older men. Male sex is independently associated with a greater likelihood of LUTS, primarily because of prostatic anatomy and its potential to cause bladder outlet obstruction.

A positive family history of LUTS or BPH further increases susceptibility, suggesting a genetic predisposition. Lifestyle-related factors, including excessive consumption of caffeine and alcohol, may exacerbate urinary frequency and urgency, thereby contributing to symptom development. Chronic systemic conditions such as diabetes mellitus, Parkinson's disease, and spinal cord injury can impair neural regulation of bladder function and increase the risk of LUTS. In addition, certain pharmacological agents—particularly diuretics and antihistamines—may precipitate or aggravate urinary symptoms.

Complications

If left untreated, LUTS may lead to significant complications. These include chronic renal failure secondary to obstructive uropathy, recurrent urinary tract infections (UTIs), bladder calculi, haematuria, acute painful urinary retention, and chronic painless urinary retention. Progressive obstruction may ultimately compromise upper urinary tract function and renal integrity.

Clinical Assessment

Comprehensive evaluation of LUTS requires detailed history-taking and thorough physical examination. A complete medical history should aim to identify potential etiological factors and co-morbid conditions, including a careful review of all current medications, encompassing prescribed, over-the-counter, and herbal preparations.

Physical examination must include abdominal assessment, inspection of the external genitalia, and digital rectal examination (DRE) to evaluate prostate size, consistency, and nodularity. Additional assessment should involve measurement of blood pressure and evaluation for signs of uraemia, bladder distension, renal enlargement, prostatic enlargement, and palpable lymph nodes.

Laboratory and Diagnostic Investigations

Baseline laboratory investigations include full blood count and assessment of glycaemic status. Renal function tests are essential to evaluate possible obstructive nephropathy. Measurement of prostate-specific antigen (PSA) levels assists in differential diagnosis, particularly in excluding advanced prostate cancer in older men presenting with bladder outlet obstruction. PSA testing may also support clinical decision-making regarding surgical intervention and monitoring strategies such as watchful waiting.

Urinalysis and urine microscopy are necessary to detect urinary tract infection, haematuria, or other abnormalities. Voiding diaries (frequency–volume charts) provide valuable insight into micturition patterns and should document the date, time (day and night), voided volumes, and fluid intake over a minimum of three days.

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Ultrasound examination of the kidneys, ureters, and bladder (KUB) is performed to determine prostate volume (a volume greater than 20 cm^3 is generally considered enlarged) and to assess for hydroureter, hydronephrosis, and features suggestive of chronic renal disease. Measurement of post-void residual (PVR) urine volume by ultrasound is a key parameter. A PVR greater than 50 mL has been associated with an increased risk of disease progression in controlled clinical studies. However, PVR values may vary depending on voided volume and testing conditions. In routine clinical practice, referral to a urologist is strongly recommended for patients with a PVR exceeding 250 mL.

Uroflowmetry is routinely employed to complement the initial assessment. A maximum urinary flow rate (Qmax) exceeding 15 ml/sec is generally considered within the normal range. Additional parameters, including voiding duration, voided volume, and the pattern of urination, are also systematically evaluated. Flexible cystoscopy is indicated when haematuria is present to allow direct visualization of the lower urinary tract.

Management strategies encompass both conservative and surgical approaches. Conservative management typically involves lifestyle modifications combined with pharmacotherapy. Watchful waiting refers to active monitoring without immediate medical or surgical intervention, incorporating patient education, reassurance, periodic follow-up, and guidance on lifestyle adjustments. Modifications in diet and fluid intake, such as reducing caffeine and alcohol consumption and avoiding bladder-irritating foods, may alleviate lower urinary tract symptoms (LUTS).

Physical therapy, including pelvic floor muscle training (Kegel exercises), strengthens the muscles responsible for urinary control and can improve symptomatology. Bladder training, involving the gradual extension of intervals between voiding, aims to increase functional bladder capacity.

Pharmacologic therapy commonly utilizes alpha-blockers and antimuscarinic agents to relax bladder smooth muscle and enhance urinary flow. Additional agents, such as 5-alpha-reductase inhibitors and beta-3 agonists, may be prescribed depending on individual patient needs.

Surgical intervention is indicated for patients who either do not respond to medical therapy or present with complications related to benign prostatic hyperplasia (BPH). Transurethral resection of the prostate (TURP) remains the most widely performed prostatic ablative procedure, demonstrating proven efficacy and long-term durability. Alternative ablative techniques include transurethral incision of the prostate (TUIP), transurethral vaporization, photoselective vaporization, laser enucleation, robotic waterjet ablation, transurethral microwave therapy, and simple prostatectomy.

Minimally invasive surgical therapies (MIST), such as water vapor thermal therapy and prostatic urethral lift, offer less invasive options and are increasingly incorporated into contemporary practice.

Urinary Retention

Urinary retention (UR) refers to the incomplete emptying of the bladder and can be classified into acute urinary retention (AUR) and chronic urinary retention (CUR). AUR is characterized by the sudden inability to void, often accompanied by pain and significant bladder distention; however, painless presentations can occur, particularly in patients with spinal cord injuries. Epidemiologically, approximately 10% of men in their seventies experience AUR, with a tenfold higher prevalence in men compared to women. In female patients, neurological disorders and infections such as urethritis or Bartholin's abscess must be excluded. In older men, AUR may occur spontaneously or be precipitated by factors such as general or spinal anesthesia,

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alcohol intake, perineal conditions, certain medications (e.g., sympathomimetics or anticholinergics), or underlying benign prostatic hyperplasia (BPH).

Chronic urinary retention can be further subdivided into high-pressure (HPCR) and low-pressure (LPCR) forms. HPCR is associated with upper urinary tract dilatation, which can result in renal impairment, or nocturnal enuresis due to decreased urethral resistance during sleep. LPCR is characterized by elevated detrusor pressure during

the bladder filling phase.

The etiology of urinary retention can be broadly categorized as obstructive, neurological, or myogenic. Obstructive causes include:

- **Mechanical obstruction:** BPH, urethral strictures, prostatic infarction, increased adrenergic activity (e.g., stress, cold, certain drugs like tamsulosin), imbalance in stromal-epithelial ratio (e.g., epithelial-targeting drugs like finasteride reduce AUR risk), neurotransmitter modulation (reduced adrenergic or non-cholinergic signaling), and prostatic inflammation.
- **Dynamic obstruction:** Increased smooth muscle tone postoperatively or due to pharmacological agents.

Neurological causes arise from disruption of sensory or motor innervation to the bladder, as seen in pelvic surgery, multiple sclerosis, spinal cord injury, or diabetic neuropathy. Myogenic retention typically results from overdistention of the bladder, which may occur after anesthesia or excessive alcohol intake.

Risk factors for AUR in patients with BPH include advanced age, large prostate volume, elevated PSA levels, increased post-void residual urine (PVRU), reduced maximum urinary flow rate (Qmax <10 ml/s), prior episodes of AUR, and severe lower urinary tract symptoms (LUTS).

Clinical assessment should encompass a detailed history of LUTS, emphasizing previous AUR episodes, precipitating factors, and nocturnal enuresis. Physical examination, including palpation of the bladder, digital rectal examination (DRE), neurological evaluation, and documentation of drained urine volume, is essential. In addition to routine LUTS investigations, PSA measurement should be repeated after two weeks.

Management of AUR primarily involves bladder decompression via urethral catheterization, typically using a 14–16 Fr Foley catheter. In difficult cases, strategies include the use of a smaller catheter, insertion by an experienced clinician, or use of a coude catheter. If urethral catheterization remains unsuccessful, an ultrasound-guided suprapubic approach with an 18–20 Fr catheter may be employed.

Urinary Incontinence

Urinary incontinence (UI) is defined as the involuntary leakage of urine. Although age-related physiological changes do not directly cause incontinence, they increase susceptibility. The prevalence of UI rises with age, affecting approximately 14% of women and 13% of men aged 65–74 years, with up to one-third of older individuals experiencing transient episodes.

The occurrence of UI depends on the functional integrity of the lower urinary tract, as well as adequate cognitive function, mobility, motivation, and manual dexterity. Age-related reductions in bladder contractility, capacity, and the ability to postpone micturition are also significant contributors. The etiology of UI is multifactorial and may include delirium, infections, atrophic urethritis, certain medications, psychological disorders (e.g., severe depression), polyuria, restricted mobility, and stool impaction.

Stress urinary incontinence (SUI) is characterized by involuntary urine leakage during activities that increase intra-abdominal pressure (e.g., coughing, sneezing) without detrusor contractions. It is typically indicative of urethral sphincter incompetence. In men, contributing

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factors include intrinsic sphincter deficiency, damage to the voluntary urethral sphincter (e.g., post-TURP), collagen disorders, and advancing age.

Detrusor overactivity presents as urgency, with or without urge incontinence, often accompanied by increased frequency or nocturia. Neurogenic causes include spina bifida, multiple sclerosis, spinal cord injury, and pelvic surgery, whereas non-neurogenic detrusor overactivity is usually attributed to intrinsic abnormalities of the bladder wall.

Overflow incontinence occurs when incomplete bladder emptying leads to continuous urine leakage, commonly due to obstruction or weakened bladder musculature. Clinical features include persistent dribbling, a sensation of incomplete voiding, and a weak urinary stream.

Mixed incontinence combines features of different types, most commonly stress and urge incontinence, exhibiting symptoms of both. **Extraurethral incontinence**, such as ectopic ureters or urinary diversions, is less common and involves abnormal anatomical connections between the urinary tract and other structures, resulting in continuous leakage from birth.

Management strategies vary according to the type of incontinence. Overflow incontinence often requires interventions to facilitate complete bladder emptying, mixed incontinence may necessitate a combination of therapies addressing both stress and urge components, and extraurethral incontinence typically requires surgical correction of the underlying anatomical abnormality. Accurate diagnosis and individualized management under the supervision of a healthcare professional are essential for all forms of urinary incontinence.

Renal Stones

Renal stone disease, or nephrolithiasis, can affect individuals across all age groups, including the elderly, with incidence increasing with age and peaking in the sixth decade of life. Age-related physiological changes, such as diminished thirst perception, predispose older adults to dehydration, which in turn increases urinary mineral concentration and promotes stone formation. Declining renal function, often compounded by comorbidities such as diabetes mellitus and hypertension, further contributes to the accumulation of waste products and minerals in the urine, facilitating nephrolithiasis.

Certain medications, including thiazide diuretics and calcium-containing antacids, may also increase susceptibility to renal stone formation. Chronic diseases prevalent in older adults, such as diabetes and hypertension, further elevate the risk.

Investigations are tailored according to stone size, location, and the overall health status of the patient. Management focuses on alleviating pain and discomfort and may involve interventional procedures to remove the stone, including shock wave lithotripsy, ureteroscopy, or percutaneous nephrolithotomy.

Preventive strategies in the elderly emphasize adequate hydration, dietary modifications to reduce high-salt and high-protein intake, and limiting consumption of oxalate-rich foods such as spinach and nuts. Additionally, avoiding medications that increase the risk of stone formation may be beneficial. In selected cases, surgical intervention remains necessary for definitive stone removal.

Conclusion. Lower urinary tract disorders, urinary retention, urinary incontinence, and nephrolithiasis represent significant health challenges among the elderly, reflecting the complex interplay of anatomical, neurological, myogenic, and age-related physiological changes. The prevalence of these conditions increases with advancing age and is often compounded by comorbidities such as diabetes, hypertension, and chronic kidney disease. Comprehensive evaluation is essential and should include a detailed patient history, assessment of lower urinary tract symptoms, physical examination, and targeted investigations, including uroflowmetry, post-void residual measurements, imaging studies, and laboratory tests.

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Management requires a multifaceted approach tailored to the etiology and severity of each condition. Conservative strategies, such as lifestyle modifications, pelvic floor rehabilitation, and pharmacologic therapy, remain first-line interventions for many patients. For individuals unresponsive to conservative measures or those presenting with complications, minimally invasive or surgical procedures—including transurethral resection of the prostate, laser enucleation, ureteroscopy, or percutaneous nephrolithotomy—may be indicated. Preventive strategies, including adequate hydration, dietary modification, and avoidance of high-risk medications, are critical to reducing recurrence, particularly in nephrolithiasis.

Early recognition and intervention are crucial to preserving renal function, improving urinary continence, alleviating symptoms, and enhancing overall quality of life. Given the multifactorial nature of these disorders, a multidisciplinary approach that integrates urological, geriatric, and rehabilitative expertise is recommended to optimize patient outcomes. Ongoing patient education and follow-up are fundamental to achieving long-term clinical success and minimizing the physical, psychological, and social impacts of these conditions.

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