

Chapter 31: Lower Urinary Tract Conditions in Elderly Patients

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As our population ages, the number of patients presenting to their primary care physicians with urologic problems is significantly increasing. Urologic issues are the third most common type of complaint in patients 65 yr of age or older and account for at least a part of 47% of office visits.¹ One of the most predominant urologic problems in elderly persons, and the focus of this chapter, is lower urinary tract symptoms (LUTS). There are several disease processes that can lead to LUTS, as well as a number of consequences. In this chapter, we will give a brief overview of the major issues as they relate to elderly persons.

BENIGN PROSTATIC HYPERPLASIA AND LUTS

The prostate surrounds the male urethra between the bladder neck and urinary sphincter like a doughnut. When the doughnut enlarges, the doughnut hole can close off and create an outflow obstruction and/or irritative voiding symptoms. Benign prostatic hyperplasia (BPH) is a condition that affects the majority of elderly men.² Not all cases of BPH need treatment. LUTS are assessed with both subjective and objective studies. The American Urological Association BPH symptom score was designed to evaluate subjective complaints. Patients are asked a series of questions regarding their urination in addition to a “bother score.”³ Low scoring patients are advised of helpful lifestyle changes, median range patients are given the option of medication, and patients with high scores (or those patients who are very bothered by their symptoms) are offered medication or transurethral surgery. Surgery may be indicated for patients with recurrent/persistent infection, hematuria, bladder stones, hydronephrosis, progressive renal failure, or acute urinary retention. Urologic work-up is available and includes postvoid residual,

uroflow/urodynamic studies, and cystoscopy. Common transurethral treatment modalities include resection, laser ablation, and microwave or radiofrequency therapy.

There are two major approaches of medical therapy for prostatic outflow obstruction: relaxing the prostate smooth muscle tissue or decreasing glandular volume. α_1 -adrenergic blockade relaxes the smooth muscle fibers of the prostatic stroma and can significantly improve urine flow. Because α blockade can also have significant cardiovascular side effects, α_1 selective medications were developed to specifically target the urinary system. Common nonselective agents include terazosin and doxazosin; selective medications are tamsulosin and alfuzosin. 5- α reductase inhibitors block the conversion of testosterone $\rightarrow$ DHT, which is a potent stimulator of prostatic glandular tissue. This reduction in local androgen stimulation results in a progressive decrease in prostatic volume over a period of 6 mo to 1 yr. There is also a concomitant decrease in prostate-specific antigen (PSA) level by approximately 50%, necessitating a doubling of the post-treatment PSA to compare it with the pretreatment level. Common agents include finasteride and dutasteride. The combination of an α -blocker and a 5 α -reductase inhibitor may work synergistically, albeit expensively, to improve LUTS.

PROSTATE CANCER

With increasing age, clinical prostate cancer becomes more prevalent. It is estimated that about 10% of patients >65 yr of age have been diagnosed with prostate cancer. On autopsy studies, the inci-

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dence is even higher, at almost 70% of cadavers 70 yr or older. There is a lot of controversy regarding prostate cancer screening because most prostate cancers are nonlethal and there may be overtreatment in the United States. The American College of Preventative Medicine (ACPM) reports there is insufficient evidence to support prostate cancer screening with digital rectal exam (DRE) and PSA testing. The American Urologic Association recommends annual screening with DRE and PSA testing, beginning at age 50. Individuals with one or more first-degree relatives with a history of prostate cancer and African-American men are at a higher risk of prostate cancer and screening can be offered at 40 to 45 yr. Although the sensitivity and specificity of both screening tests are low, the combination of the two tests is synergistic and results in a better rate of detection than either one alone. According to the American Cancer Society, a PSA between 4 and 10 ng/ml represents a 25% risk of prostate cancer. Patients found to have an abnormal DRE and/or an elevated PSA typically undergo a prostate biopsy, depending on the clinical scenario. Although LUTS are much more commonly the result of BPH in men than prostate cancer, the primary care physician must be familiar with PSA and the DRE. PSA screening in men over 80 yr may do more harm than good, and a rectal exam alone should be sufficient.

POLYPHARMACY

The average elderly patient is on two to six prescribed medications, as well as one to three over-the-counter medications. Many of these prescribed, over-the-counter, and herbal medications can have urologic side effects. Many common medications, including cold and flu therapies, have anti-cholinergic properties that can exacerbate LUTS. Narcotics and sleep aids can result in constipation and restricted mobility, leading to voiding difficulties. Caffeine and alcohol are often associated with urinary urgency and may result in leakage. The medication list of all elderly patients must be reviewed to insure lower urinary tract signs or symptoms are not medication related.⁴

INCONTINENCE AND LUTS

Urinary incontinence is not a normal part of aging. It can be caused by a number of factors including medications, medical comorbidities, and urologic pathology. A helpful mnemonic for the differential diagnosis of temporary or reversible incontinence is “DIAPERS”: delirium, infection/inflammation, atrophic vaginitis, polypharmacy, endocrine (diabetes), restricted mobility, and stool impaction. There are four main types of urinary incontinence including urge, stress, overflow, and mixed. Urgency is a subjective feeling of a sudden need to void, and it can be associated with incontinence. Causes include infection, stones, medications, tumors, and neurologic pathology. Stress incontinence is the failure of the sphincter to remain closed during urine storage, because of an increase in

intra-abdominal pressure. It can range from occasional leakage with strenuous exercise to leakage with ambulation, coughing, or sneezing. In women, stress incontinence is commonly associated with a weakened urinary sphincter or inadequate pelvic floor muscle support that may be exacerbated by aging or multiparity. Men may develop stress incontinence after prostate surgery or other trauma to the urinary sphincter. Overflow incontinence occurs when the patient has a maximally distended bladder, leading to urine leakage. Common causes include prostatic obstruction/BPH, urethral stricture, or bladder contractility dysfunction that is neurologic in origin, such as diabetic neuropathy. Mixed incontinence is a combination of urge and stress incontinence, commonly seen in elderly women. Urge incontinence is very common in elderly men and women.⁵ If patients with urge incontinence have a negative urinalysis and low postvoid residual, they can be empirically managed with anti-cholinergic medications. Stress incontinence can also be managed medically or with behavioral modifications. Surgical managements include bladder/urethral suspensions and artificial sphincters, which can be well tolerated in elderly patients.

NOCTURIA

Nocturia is the act of awaking at night to urinate. Voiding two or less times a night is likely normal for most elderly persons. More than two episodes of nocturia per night can disrupt sleep and affect quality of life. It can be challenging to establish the cause of nocturia, and a voiding diary is often helpful. Patients record the time of void and voided volume, along with the fluid intake. Most problems can be avoided with simple lifestyle adjustments. Many elderly patients have nocturia because of increased fluid intake before bedtime or fluid mobilization. This can be treated by limiting fluids and supine positioning for a few hours before bedtime. At times, nocturia can be caused by poor bladder emptying, and a postvoid residual should be considered.

LOWER URINARY TRACT INFECTION

The bladder’s basic line of defense against infection is a healthy mucosa with low pressure storage and complete emptying of urine. Bacteria that may be introduced by poor hygiene, sexual activity, and catheterization are normally flushed out of the bladder. When there is bladder obstruction or poor emptying, this defense mechanism is less effective and can lead to colonization or infection. The most common cause of urinary tract infections (UTIs) in elderly patients are gram-negative organisms. Residents of nursing facilities or patients who have had a long hospitalization are at an increased risk for multidrug-resistant organisms such as pseudomonas and MRSA.

Bacteriuria can be either symptomatic or asymptomatic. All patients with symptomatic bacteriuria should be treated with

antibiotics. Patients will often experience burning with urination (dysuria), suprapubic discomfort, urinary frequency, and urgency. Elderly patients may have unique presentations including incontinence, lethargy, anorexia, and altered mental status.⁶ More severe cases develop fever, chills, nausea, and vomiting. Patients with asymptomatic bacteriuria usually do not need treatment, depending on the clinical situation. Diabetics, spinal cord injury patients, and patients that are immunocompromised may not present with the normal symptoms of an infection, and the decision to treat a positive culture is left to the physician's discretion. Risk factors for infection include prolonged catheterization, urinary tract anatomic abnormalities, urinary retention (BPH), and comorbid diseases (diabetes, immunosuppression). Urinary catheters should be avoided unless there is a clear indication (see below).

HEMATURIA

Blood in the urine is classified as either microscopic or gross, depending on whether or not the patient has visibly red urine. Microscopic amounts of blood are commonly discovered on urinalysis and can be from a variety of different etiologies including infection, stones, renal disease, trauma, and cancer. If the urine shows greater than three red blood cells per high-power field on two separate urinalyses, a hematuria work-up should be undertaken. Basic laboratory work including a serum blood urea nitrogen (BUN) and creatinine should also be obtained. An elevated creatinine and proteinuria suggest medical renal disease. A work-up for hematuria includes imaging of the urinary tract, urine cytology, and cystoscopy. All three components are necessary because many small cancers are not visible on imaging. UTIs should be ruled out or treated before a hematuria work-up is started.

URINARY RETENTION AND CATHETERS

Indwelling Foley catheters are to be used as a temporary means of emptying the bladder for surgical patients, medical monitoring of urine output, or in those who cannot void on their own. The Foley should be removed as soon as possible. In those patients who are in retention, the problem is often temporary. The risk of bacterial colonization during prolonged indwelling catheterization is approximately 10% per day, meaning that almost all patients that have a catheter for longer than a week will be colonized. As stated above, unless patients are having symptoms, treatment is not necessary. If prolonged catheterization is necessary, the catheter should be exchanged on a monthly basis. Catheters can lead to urethral trauma, hematuria, bladder spasms, infection, urethral erosion, and stricture formation. Bladder spasms are caused by foreign body irritation of the bladder and usually resolve shortly after catheter removal. In cases where a catheter is necessary, overactive blad-

der medications (*i.e.*, anti-cholinergics) are helpful to mitigate discomfort.

INDICATIONS FOR URETHRAL CATHETERIZATION

- Incontinence with open sacral/perineal wounds
- Relieve urinary obstruction
- Accurate inputs and outputs in critical care
- Bladder dysfunction and urinary retention (*i.e.*, neurogenic bladder)
- Continuous bladder irrigation (bleeding or medication)
- Ease comfort of palliative or hospice care patient
- Short-term use for surgery or procedure

In some patients, bladder-emptying dysfunction results in chronic retention that may not be amenable to surgical or medical treatment. In those patients, clean intermittent catheterization is preferable to a chronic indwelling urinary catheter. Severe chronic retention can result in obstructive uropathy and hydronephrosis. Patients with retention or large postvoid residuals should have renal function checked and hydronephrosis ruled out if there is evidence of renal insufficiency.

CONCLUSIONS

LUTS are ubiquitous to the elderly population. A simple history, physical exam, urinalysis, and postvoid residual are the basic components necessary to evaluate this patient population. Most urinary conditions are self-limited and can be safely managed without the use of antibiotics or urinary catheters. With a basic understanding of lower urinary tract conditions, the primary physician will be able to safely manage many of these conditions and use prudent judgment in referral to a urologist.

TAKE HOME POINTS

- LUTS are ubiquitous in the elderly population
- Most urinary conditions are self-limited and can be safely managed without the use of antibiotics or urinary catheters
- Clinical discretion is necessary to distinguish bacteriuria from urinary tract infection
- Hematuria has a variety of benign etiologies but if there is no obvious source, urothelial cancer must be ruled out
- Incontinence is not a normal part of the aging process and most causes are reversible
- A patient's bother score is the most useful tool when considering medication or surgery for BPH
- A simple history, physical exam, urinalysis, and postvoid residual are the basic components necessary to evaluate LUTS

DISCLOSURES

None.

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REVIEW QUESTIONS: LOWER URINARY TRACT CONDITIONS IN ELDERLY PATIENTS

1. Operative intervention for benign prostatic hyperplasia is necessary if:
 - a. AUA symptom score >10
 - b. The patient has a large prostate on exam
 - c. Age >80 yr
 - d. The patient refuses medication
 - e. None of the above
2. True or false: most cases of urinary incontinence are reversible.
 - a. True
 - b. False
3. A proper work up for hematuria will include
 - a. Cystoscopy
 - b. Upper urinary tract imaging
 - c. Urine cytology
 - d. All of the above
4. True or false: a work up for hematuria is only necessary if there is gross hematuria.
 - a. True
 - b. False
5. Which of the following is not an indication for urethral catheterization?
 - a. Accurate intake/output reporting
 - b. Urinary tract infection
 - c. Urinary retention
 - d. Palliation
 - e. Perioperative care