

Diagnostic Work-Up of Lower Urinary Tract Symptoms



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KEYWORDS

- Benign prostatic hyperplasia • Prostatic enlargement • Bladder outlet obstruction • Diagnosis
- Testing • Work-up • Lower urinary tract symptoms

KEY POINTS

- The focus of the initial evaluation of LUTS should be to assess symptomatology and rule out etiologies other than prostatic enlargement.
- Algorithms for the evaluation of LUTS rely largely on expert opinion.
- All patients presenting with LUTS should undergo a medical history, physical examination with DRE, and urinalysis.
- Data regarding the benefits of invasive testing including pressure-flow studies, prostate ultrasound, and endoscopy are lacking and mixed.
- The extent of the diagnostic work-up should depend on symptom severity and planned intervention.

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a histologic diagnosis defined by proliferation of benign prostatic stromal and epithelial tissue. It can lead to benign prostatic enlargement and subsequent bladder outlet obstruction and/or lower urinary tract symptoms (LUTS). Most patients with BPH presenting to their urologist come with a chief complaint of LUTS.¹ The goal of the initial work-up is two-fold: assess the severity of the patient's symptoms and rule out alternative etiologies. Broadly speaking, the extent of the work-up should depend on the extent of symptoms, the suspected cause, and the planned therapy. Fortunately non-BPH causes of LUTS are usually easily identified by history; physical examination; and inexpensive, noninvasive testing. For patients in whom the diagnosis remains unclear after initial work-up, additional diagnostic testing may be helpful.

Given that BPH is a progressive disease, a secondary goal is to identify patients at risk of rapid symptomatic progression and of

complications of BPH, because these patients may decide to pursue more aggressive therapies early on. Complications of BPH include urinary retention, gross hematuria, recurrent urinary tract infection (UTI), bladder stones, and bladder decompensation (diverticula, decreased contractility, hypercontractility, hypertrophy with increased voiding pressures, and obstructive nephropathy). Patients who present with complications of BPH are subject to a different diagnostic algorithm than those presenting with isolated LUTS.

PATIENT HISTORY

Symptom Score

A validated assessment of LUTS is uniformly recommended in the initial work-up of LUTS, both as an objective assessment of symptoms and a quantifiable metric by which to measure efficacy of treatment. The International Prostate Symptom Score (IPSS) is a scoring system originally developed by the American Urologic

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Association (AUA), and is now the standard assessment in the United States.^{2,3} In this questionnaire, seven voiding symptoms are rated on a five-point Likert scale, followed by a quality of life score. Symptom scores are summed and classified as mild (0–7), moderate (8–19), or severe (20–35). Although the IPSS is internally consistent and reliable, there are certainly limitations. First and foremost IPSS does not diagnose BPH and does not determine treatment, which is guided primarily by quality of life score and complications of BPH. The validity of the self-administered IPSS varies across socioeconomic class.⁴ Other validated scoring systems do exist (eg, Danish Prostate Symptom Score, BPH Impact Index); however, these are less ubiquitous in North America.⁵

Frequency-Volume Charts

Frequency-volume charts, or voiding diaries, are simple to complete, inexpensive, and can provide useful objective insights into a patient's voiding history. These can serve as an adjunct to the IPSS, and tend to be more accurate than patient recall.^{6,7} Although there is no standard diary protocol data suggest that a voiding diary should last at least 3 days, with the goal of being long enough to avoid sampling error but short enough to optimize compliance.^{8–10} The AUA guideline on the management of BPH suggests that frequency-volume charts be used in patients with nocturia as the dominant symptom to help identify patients with isolated nocturnal polyuria or excessive fluid intake. Polyuria, defined in the AUA guidelines as urine output greater than 3 L daily, or nocturnal polyuria, defined as more than one-third of urine output during the night, should be approached initially with lifestyle modification.¹¹

Additional History

In addition to an assessment of voiding symptoms, the patient interview must include a directed history regarding alternative causes of voiding dysfunction. Specific additional areas to discuss when evaluating a man with LUTS include a history of UTI, hematuria, diabetes, spine and neurologic disease, prior urinary retention, and sleep disorders including sleep apnea. Any prior urologic history including urinary catheterization and instrumentation should be elucidated, as should risk factors for urethral stricture disease including prior trauma or sexually transmitted infections. A smoking history is important to assess the risk for bladder cancer and because nicotine is a bladder irritant.¹² Medications and supplements should be reviewed in detail, with particular attention to

medications that increase outflow resistance (eg, α -sympathomimetic agents) or reduce bladder contractility (eg, anticholinergics).

PHYSICAL EXAMINATION

The physical examination of patients with LUTS suspected to be caused by BPH should include the following:

1. Abdominal examination: to evaluate for a palpably distended bladder
2. Genitourinary examination: evaluate meatal stenosis, phimosis, urethral discharge, lichen sclerosis (which can be associated with stricture disease), and urethral mass
3. Focused neurologic examination: including motor and sensory function of the perineum and lower limbs
4. Digital rectal examination (DRE): to evaluate sphincter tone, prostate nodules, tenderness or boggy of the prostate, rectal masses, and to give an estimate of prostate size

Digital estimation of prostate size is notoriously inaccurate, although one can generally distinguish prostates less than 50 g from those greater than 50 g.¹³ Training with a dedicated model can improve accuracy.^{14–16} Moreover, prostate size does not correlate well with symptom severity, degree of urodynamic obstruction, or treatment outcomes.^{17,18} Still, given that gland size portends a greater risk of BPH progression and may guide pharmacologic or surgical approach, a general estimate of size based on DRE can be valuable.

IMAGING AND ADDITIONAL TESTING

Some basic, noninvasive testing is recommended in all patients. Urologists may pursue additional imaging and additional testing in the work-up of LUTS when invasive therapies are being considered, or where there is suspicion that the patients' symptoms are not caused by BPH.

Urine Studies

Urinalysis with urine microscopy is recommended for all men presenting with LUTS.^{11,19–21} Although serious urinary tract pathology is rarely detected, urinalysis is an innocuous, inexpensive, simple to perform test, and the benefits clearly outweigh the harm. It may reveal the following:

- UTI: Detecting UTI is important in men with LUTS for two reasons. UTI can mimic LUTS, and a symptom assessment should be repeated once the UTI is treated. Moreover, recurrent UTIs in patients with BPH

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