Benign prostatic hyperplasia (BPH)

Guideline

The Agency for Healthcare Research and Quality's (AHRQ) is one of 12 agencies within the United States Department of Health and Human Services (HHS). The agency originally began as the Agency for Health Care Policy and Research and was tasked with producing guidelines.

Its mission is to produce evidence to make health care safer, higher quality, more accessible, equitable, and affordable, and to work within the U.S. Department of Health and Human Services and with other partners to make sure that the evidence is understood and used.

Introduction:

The term "lower urinary tract symptoms," or LUTS, is nonspecific. It has been used as a general term to refer to any combination of urinary symptoms or as a more specific term to refer to those symptoms primarily associated with overactive bladder (frequency, urgency, and nocturia), It has also been commonly referred to as prostatism.

Benign prostatic hyperplasia (BPH), also known as benign prostatic hypertrophy, is a histologic diagnosis characterized by proliferation of the cellular elements of the prostate. Chronic bladder outlet obstruction (BOO) secondary to BPH may lead to urinary retention, renal insufficiency, recurrent urinary tract infections, gross hematuria, and bladder calculi.

When the prostate enlarges, it may constrict the flow of urine. Nerves within the prostate and bladder may also play a role in causing the following common symptoms:

- Urinary frequency.
- Urinary urgency.
- Hesitancy: Difficulty initiating the urinary stream; interrupted, weak stream.
- Incomplete bladder emptying: The feeling of persistent residual urine, regardless of the frequency of urination.
- Straining: The need strain or push (Valsalva maneuver) to initiate and maintain urination in order to more fully evacuate the bladder.
- Decreased force of stream: The subjective loss of force of the urinary stream over time.
- Dribbling: The loss of small amounts of urine due to a poor urinary stream.

The diagnostic criteria:

-Digital rectal examination

The digital rectal examination (DRE) is an integral part of the evaluation in men with presumed BPH.
**Laboratory studies**

- Urinalysis: Examine the urine using dipstick methods and/or via centrifuged sediment evaluation to assess for the presence of blood, leukocytes, bacteria, protein, or glucose.
- Urine culture: This may be useful to exclude infectious causes of irritative voiding.
- Prostate-specific antigen.
- Electrolytes, blood urea nitrogen (BUN), and creatinine: These evaluations are useful screening tools for chronic renal insufficiency in patients who have high postvoid residual (PVR) urine volumes.

**Ultrasonography**

Ultrasonography (abdominal, renal, transrectal) and intravenous urography are useful for helping to determine bladder and prostate size and the degree of hydronephrosis in patients with urinary retention or signs of renal insufficiency.

**Endoscopy of the lower urinary tract**

**Cystoscopy**

Cystoscopy may be indicated in patients scheduled for invasive treatment or in whom a foreign body or malignancy is suspected.

**IPSS/AUA-SI**

The severity of BPH can be determined with the International Prostate Symptom Score (IPSS)/American Urological Association Symptom Index (AUA-SI) plus a disease-specific quality of life (QOL) question.
Management/Treatment:

The treatment options of lifestyle intervention (fluid intake alteration), behavioral modification and pharmacotherapy (anticholinergic drugs) should be discussed with the patient.

Non pharmacological therapy:

1. Information on the benefits and harms of benign prostatic hyperplasia (BPH) treatment options explained to patients considering interventional therapy.
2. Watchful waiting Patients with mild symptoms of LUTS secondary to BPH (AUA-SI score <8) and patients with moderate or severe symptoms (AUA-SI score ≥8) who are not bothered by their LUTS should be managed using a strategy of watchful waiting.

3. Minimally invasive therapies

- Transurethral needle ablation (TUNA of the prostate is an appropriate and effective treatment alternative for bothersome moderate or severe LUTS secondary to BPH).
- Transurethral microwave thermotherapy (TUMT is effective in partially relieving LUTS secondary to BPH and may be considered in men with moderate or severe symptoms)

4. Surgical procedures

Surgery is recommended for patients who have renal insufficiency secondary to BPH, who have recurrent UTIs, bladder stones or gross hematuria due to BPH, and those who have LUTS refractory to other therapies. The presence of a bladder diverticulum is not an absolute indication for surgery unless associated with recurrent UTI or progressive bladder dysfunction.

- Open prostatectomy (is an appropriate and effective treatment alternative for men with moderate to severe LUTS and/or who are significantly bothered by these symptoms The choice of approach should be based on the patient's individual presentation including anatomy, the surgeon’s experience, and discussion of the potential benefit and risks for complications).
- Laser therapies are appropriate and effective treatment alternatives to transurethral resection of the prostate and open prostatectomy in men with moderate to severe LUTS and/or those who are significantly bothered by these symptoms
  - Transurethral holmium laser ablation/enucleation of the prostate
  - Holmium laser resection of the prostate
  - Photoselective vaporization of the prostate
• Transurethral incision of the prostate (is an appropriate and effective treatment alternative in men with moderate to severe LUTS and/or who are significantly bothered by these symptoms when prostate size is less than 30 mL).

• Transurethral electrovaporization of the prostate (is an appropriate and effective treatment alternative in men with moderate to severe LUTS and/or who are significantly bothered by these symptoms).

• Transurethral resection of the prostate (is an appropriate and effective primary alternative for surgical therapy in men with moderate to severe LUTS and/or who are significantly bothered by these symptoms).

*there is insufficient evidence to recommend using 5-ARIs in the setting of a pre-TURP to reduce intraoperative bleeding or reduce the need for blood transfusions.

Pharmacological therapy:

• Alpha-adrenergic blockers

- Second generation:
  
  • Alfuzosin
  • Doxazosin
  • Terazosin

*Have Adverse effect like: first-dose syncope, orthostatic hypotension, dizziness

- Third generation:

  • Tamsulosin

* good choice if:

1) can not tolerate hypotension

2) severe coronary artery disease
3) volume depletion
4) cardiac arrhythmias
5) severe orthostasis
6) liver failure
7) taking multiple antihypertensives
8) when the titration would be too complicated for the patient or produce an unacceptable delay in onset for a particular patient.

Alfuzosin, doxazosin, tamsulosin, and terazosin are appropriate and effective treatment alternatives for patients with bothersome, moderate to severe LUTS secondary to BPH (AUA-SI score ≥8). Although there are slight differences in the adverse events profiles of these agents, all four appear to have equal clinical effectiveness. As stated in the 2003 Guideline, the effectiveness and efficacy of the four alpha blockers under consideration appear to be similar. Although studies directly comparing these agents are currently lacking, the available data support this contention.

- **5-Alpha-reductase inhibitors (5-ARIs)**
  - Dutasteride
  - Finasteride

*first choice for:*
- a significantly enlarged prostate (>40 g)
- and can not tolerate the cardiovascular adverse effects of alpha 1-adrenergic antagonists.

*preferred for patients with BPH and an enlarged prostate gland who have:*
- uncontrolled arrhythmias
- poorly controlled angina
- taking multiple antihypertensive agents
- unable to tolerate hypotensive adverse effects of alpha 1-adrenergic antagonists.

* 5-ARIs may be used to prevent progression of LUTS secondary to BPH and to reduce the risk of urinary retention and future prostate-related surgery.
* The 5-ARIs are appropriate and effective treatment alternatives for men with LUTS secondary to BPH who have demonstrable prostate enlargement.

*Finasteride is an appropriate and effective treatment alternative in men with refractory hematuria presumably due to prostatic bleeding (i.e., after exclusion of any other causes of hematuria). A similar level of evidence concerning dutasteride was not reviewed

- **Combination therapy**
  - Alpha-blocker and 5-ARI

*if enlarged prostate gland > 40 g & an elevated PSA ≥ 1.4 ng/mL (1.4 mc/L)

*The combination of an alpha-blocker and a 5-alpha reductase inhibitor (5-ARIs) (combination therapy) is an appropriate and effective treatment for patients with LUTS associated with demonstrable prostatic enlargement based on volume measurement, prostate-specific antigen (PSA) level as a proxy for volume, and/or enlargement on digital rectal exam (DRE).

- **Anticholinergic agents**
  - Oxybutynin
  - Tolterodine

*patient still complain of irritative voiding symptoms (e.g., urinary frequency, urgency) after alpha 1-adrenergic antagonist, 5 alpha-reductase inhibitor, or surgery

*Anticholinergic agents are appropriate and effective treatment alternatives for the management of LUTS secondary to BPH in men without an elevated post-void residual and when LUTS are predominantly irritative.

*Prior to initiation of anticholinergic therapy, baseline PVR urine should be assessed.
Anticholinergic should be used with caution in patients with a post-void residual greater than 250 to 300 mL.

Table 67-3 Comparison of α1-Adrenergic Antagonists, 5α-Reductase Inhibitors, Phosphodiesterase Inhibitors, and Anticholinergic Agents for BPH

<table>
<thead>
<tr>
<th></th>
<th>α1-Adrenergic Antagonists</th>
<th>5α-Reductase Inhibitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relaxes prostatic smooth muscle</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Decreases prostate size</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Halts disease progression</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Peak onset</td>
<td>1–6 weeks</td>
<td>3–6 months</td>
</tr>
<tr>
<td>Efficacy in relieving BOO</td>
<td>++</td>
<td>++ (for patients with enlarged prostates)</td>
</tr>
<tr>
<td>Frequency of dosing</td>
<td>One to two times per day, depending on the agent and dosage formulation</td>
<td>Once per day</td>
</tr>
<tr>
<td>Decreases prostate-specific antigen (PSA)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Sexual dysfunction adverse effects</td>
<td>EJD</td>
<td>Decreased libido, ED, EJD</td>
</tr>
<tr>
<td>Cardiovascular adverse effects</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Relaxes prostatic smooth muscle</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Decreases prostate size</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Halts disease progression</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Peak onset</td>
<td>4 weeks</td>
<td>1–2 weeks</td>
</tr>
<tr>
<td>Efficacy in relieving BOO</td>
<td>+</td>
<td>0 (irritative symptoms only)</td>
</tr>
<tr>
<td>Frequency of dosing</td>
<td>Once per day</td>
<td>Once per day</td>
</tr>
<tr>
<td>Decreases prostate-specific antigen</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Sexual dysfunction adverse effects</td>
<td>No</td>
<td>ED</td>
</tr>
<tr>
<td>Cardiovascular adverse effects</td>
<td>Yes (mild hypotension)</td>
<td>Yes (tachycardia)</td>
</tr>
</tbody>
</table>

ED: erectile dysfunction; EJD, ejaculation disorder.

+ Notation is a quantitative assessment.

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