Erectile dysfunction (ED) and benign prostatic hyperplasia (BPH) are a significant problem for a large proportion of men in the United States. Lower urinary tract symptoms (LUTS), which are often caused by BPH, and ED are common in the aging male population. From numerous epidemiologic studies, it is well known that the prevalence of BPH and the loss of erectile function increase with advancing age. Men with LUTS have sexual dysfunction, including ejaculatory loss, painful ejaculation, and ED. Even though the pathogenic relationship between BPH and ED is not completely understood, a direct association between these two symptom complexes in aging men is now becoming evident. This presentation reviews the role of LUTS and ED in aging men and noninvasive and invasive treatment modalities for BPH.

The field of male sexual dysfunction has made notable advances in research and development during the past two decades. In particular, the recent introduction of new pharmacologic agents (ie, phosphodiesterase type 5 [PDE5] inhibitors) has transformed the way clinicians diagnose and treat erectile dysfunction (ED).

Benign prostatic hyperplasia (BPH) is another common urologic condition observed in aging (>55-year-old) men. The definition for BPH is somewhat controversial among differing authorities, but BPH generally refers to obstructed urinary symptoms such as poor urinary stream, hesitancy, and postvoid dribbling. Recently, the term lower urinary tract symptoms (LUTS) has been adopted to refer to such symptoms; however, these symptoms are not necessarily specific to BPH.

A number of recent reports have focused on the association of BPH/LUTS and the increased risk for sexual problems. Although causality has not been established, the association of these two common urologic conditions in aging men is well recognized.

For convenience, we often divide sexual functions into four separate domains (Figure 1).

Lack of desire in men is correlated with low serum testosterone levels or hypogonadism. Diminishing serum testosterone levels have been identified in aging men in general. New modes of testosterone replacement therapy include skin patches, gels, and buccal tablets. It is somewhat surprising that only 5% (1 in 20) of men with documented low testosterone levels are currently receiving testosterone therapy. As the general awareness of hypogonadism grows, demand for treatment undoubtedly will be heightened.

Approximately 30 million American men have some degree of ED. Three highly effective erectogenic agents (sildenafil citrate, vardenafil hydrochloride, and tadalafil) have been approved by the US Food and Drug Administration (FDA) for the treatment of patients with ED. It is important to recognize that these PDE5 inhibitors affect only the arousal/erectile disorder and have no effect on the other areas of sexual function.

The third domain of sexual function involves ejaculatory function, namely, the force and volume of ejaculate. A number of medications such as tamsulosin hydrochloride may influence a man’s ability to ejaculate normally.

Although few scientific data have been written on the orgasm (satisfaction/sensation) domain, more scientific investigation is anticipated in this important area in the near future.

A key message from a number of recent publications is that men with LUTS/BPH should be asked or evaluated for sexual dysfunction (or both). Sexual problems can include ED, ejaculatory disorders (ejD), desire disorders

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**Benign Prostatic Hyperplasia, Sexual Function, and Overall Evaluation of the Male Patient**

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This article was developed from a lecture presented by Dr. Hellstrom at an American College of Osteopathic Family Physicians symposium sponsored by Sanofi-Synthelabo Inc, at the 108th Annual AOA Convention and Scientific Seminar on October 14, 2003, in New Orleans, La.

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**Domains of Sexual Function**

- Desire (libido)
- Erection (arousal)
- Ejaculation
  - force
  - volume
- Orgasm/satisfaction

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Figure 1.
How LUTS interfere with sexuality

![Diagram showing relationship between LUTS distress, factors, and sexuality]

Figure 2. Sexual impact of lower urinary tract symptoms (LUTS) on sexuality.

**Treatment Options**

- **Watchful waiting**
- **Medical therapy**
  - Phytotherapy
  - α-Adrenergic blockers
  - 5α-Reductase inhibitors
  - Combination therapy
- **Office-based treatment**
  - TUMT (transurethral microwave thermotherapy)
  - TUNA (transurethral needle ablation)
  - WIT (water-induced thermotherapy)
- **Surgicenter/hospital-based treatment**
  - TURP (transurethral resection of the prostate), gold standard
  - TUIP (transurethral incision of the prostate)
  - Open surgery (prostatectomy)
  - TUVAP (transurethral electrovaporization ablation of the prostate)
  - ILC (interstitial laser coagulation)
  - VLAP (visual laser ablation of the prostate)
  - Prostatic stents

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Treatment options for LUTS and BPH are varied (Figure 3). Watchful waiting, the most conservative treatment modality, allows patients with a relatively low American Urological Association symptom index (AUA-SI) score to be monitored yearly to ensure a stable condition without any deterioration in urinary function. Medical modes of therapy include α-adrenergic blockers, 5α-reductase inhibitors (5-ARIs), and combination therapy. α-Adrenergic blockers and 5-ARIs are prostate-directed oral medications. In the past decade, α-adrenergic blockers have been used as first-line therapy. The 5-ARIs were relegated to larger prostates (>40 cm³). More recently, it has been documented that the combination of α-adrenergic blockers and 5-ARIs may have beneficial effects by inhibiting prostate growth: (1) lessening the likelihood of acute urinary retention, and (2) reducing the need for a surgical procedure.

Patients are self-prescribing herbal therapy, also known as phytotherapy. Common phytotherapy treatments are varied (Table 1). These dietary supplements—available as single-plant or combination extracts—are commonly marketed for specific ailments such as prostate health, ED, or both. Although consumers spend billions of dollars per year on prostate-specific supplements, these agents do not undergo the same rigorous testing for benefits, risks, side effects, dosing, and quality for FDA approval as do pharmaceutical agents. (Patients often obtain the supplements over the Internet.) Because of the lack of preregistration testing, the mechanism of action of these agents is often uncertain. These supplements are already extensively used in Europe, and there has been an upsurge in use in the United States in recent years. As time goes on, increasing numbers of patients likely will try different forms of phytotherapy for
Phytotherapy for Benign Prostatic Hyperplasia

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Botanical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw palmetto (fruit)</td>
<td>Serenoa repens</td>
</tr>
<tr>
<td>African plum (bark)</td>
<td>Pygeum africanum</td>
</tr>
<tr>
<td>Purple coneflower</td>
<td>Schinacea purpurea</td>
</tr>
<tr>
<td>Pumpkin (seeds)</td>
<td>Cucurbitae peponis semen</td>
</tr>
<tr>
<td>Rye (pollen)</td>
<td>Secale cereale</td>
</tr>
<tr>
<td>South African star grass (root)</td>
<td>Hypoxis rooperi</td>
</tr>
<tr>
<td>Stinging nettle (root)</td>
<td>Urtica dioica</td>
</tr>
</tbody>
</table>

Office-based treatment for BPH often employs heat or water therapy and different forms of energy (ie, transurethral microwave thermotherapy [TUMT], transurethral needle ablation [TUNA], and water-induced thermotherapy [WIT]). These procedures coagulate the tissues and cause the prostate to shrink.

More invasive procedures are done in a surgery center or hospital. These procedures include transurethral resection of the prostate (TURP), currently considered the gold standard. During TURP, a resectoscope is passed transurethrally and the obstructing prostate gland is resected within a short time. Patients are often sent home on the same day. One variation of TURP is transurethral incision of the prostate (TUIP), and though less invasive than TURP, it has been found to help a substantial number of patients. Another variation of TURP is transurethral electrovaporization of the prostate (TUVAP). Open prostatectomy is reserved for patients who have a large (>75 g) prostate.

Laser modes of therapy include interstitial laser coagulation (ILC) and visual laser ablation of the prostate (VLAP). In severely debilitated patients, prostatic stents are sometimes used. These prostatic stents allow patients to live more comfortably, without the need of a long-term Foley catheter.

Many treatment modalities (eg, oral drugs) can affect sexual function, which in turn can affect treatment compliance. α-Adrenergic agents reduce the amount of ejaculate and may also affect erections; however, these agents do not affect libido or desire. The 5-ARIs (finasteride and dutasteride) reduce the amount of ejaculate by approximately 20% because of shrinkage of the glandular portion of the prostate. Approximately 5% of patients treated with a 5-ARI have demonstrated a reduction in libido, and erections may be affected in about 6% to 10% of cases.

No data are available on phytotherapy, as herbal modes of therapy are not monitored by the FDA.

Minimally invasive laser therapy and more invasive transurethral and open surgical modes of therapy are recognized to disrupt the ejaculatory mechanism to different degrees. These changes can indirectly affect erections (Table 2).

Sexual Function and Prevalence of Lower Urinary Tract Symptoms

The recently published Multinational Survey of the Aging Male (MSAM-7) examined sexual function and the prevalence of LUTS in a representative population of men. It documented the relationship between sexual disorders and the severity of LUTS.

A total of 14,254 men between the ages of 50 and 80 years were recruited from seven countries (the United States, the United Kingdom, France, Germany, Italy, Spain, and The Netherlands). The following validated postal questionnaires were mailed to the subjects: the International Prostate Symptom Score Questionnaire (IPSS), which has 7 questions; the Danish Prostate Symptom Score (Dan-PSSsex), which has 6 questions; and the International Index of Erectile Function (IIEF), which has 15 questions.

Amazingly, 89.9% (12,815) of the questionnaires were evaluable, and these responses were available for analysis. Respondents were categorized in three age groups. Participants who had been sexually active during the previous 4 weeks according to age group were as follows: 50 to 59 years old, 92%; 60 to 69 years old, 83%; and 70 to 80 years old, 65% (Figure 4). What is apparent is that 83% of these 50- to 80-year-old men were still sexually active, and, as a lifestyle parameter, this activity is important for men’s health and quality of life.

For men aged 50 to 80 years, ED is common (49% have reduced or no erections), and EjD is almost as common (46% have reduced or no ejaculation, and 7% have pain or discomfort with ejaculation). These numbers have been corroborated by further unpublished studies as well as by actual interviews with all the men afterward.

The MSAM-7 also examined the number of men who were bothered by these changes. Of men with reduced or no ejaculation, 59% found EjD bothersome (as measured by Dan-PSSsex). Of patients who have pain when they ejaculate, 89% are bothered. Of men who have reduced or no erections, 78% are bothered.

According to the MSAM-7, frequency of sexual activity declines with increasing severity of LUTS, independent of age and common comorbidities such as diabetes and hypertension. As men age, the frequency of their sexual activity decreases. The more severe the LUTS, the more unlikely patients are to engage in sexual activity. This premise holds true across all three age groups: 50 to 59 years, 60 to 69 years, and 70 to 79 years (Figure 5). The MSAM-7 also determined that ED increases with increasing severity of LUTS, independent of age (as measured by the IIEF, a questionnaire that quantitates men’s ability to have sexual relations with their partners). As men have more severe LUTS, independent of age, they have more pronounced difficulty...
with erectile abilities. In addition, the age effect is superimposed on these observations (Figure 6).

Regarding the prevalence of EjD, the MSAM-7 determined that difficulty with ejaculation increases with the severity of LUTS (as measured by Dan-PSSsex). As men grow older, they are more likely to have reduced or no ejaculation whatsoever (Figure 7).

The MSAM-7 concluded that older men have active sex lives. Independent of other risk factors, patients with more LUTS have a greater decrease in sexual function. Men are bothered not only by ED (as many advertisements lead the public to believe), but also by EjD. Sexual dysfunction should be considered in the initial evaluation of patients with BPH, especially when deciding on a treatment modality to effectively relieve this problem.

### Treatment Principles for Lower Urinary Tract Symptoms and Benign Prostatic Hyperplasia

The objective of treatment of patients with LUTS or BPH is to improve symptoms and bother, to eliminate interference with daily activities, and to improve or restore quality of life. Choosing treatment is a joint process involving both physician and patient, who together review the risks and benefits of each therapeutic option.

It is primary care physicians who usually do the initial evaluation and provide initial treatment if it is needed. Patients who should be referred to urologists include those with complex differential diagnoses, those who do not respond to therapy, and those with additional complications (such as gross hematuria, bladder stones, recurrent urinary tract infections that may involve strictures, obstructive uropathy, and upper urinary tract damage). After management of these more complex issues, it is the custom for urologists to refer these patients back to their primary care physicians for continued care (Nuckolls JG, personal communication).

### Overall Approach to Management

Men with LUTS or BPH are at increased risk for sexual problems, including ED, EjD, desire disorders (or decreased libido), or any combination of these problems. Many treatment modalities currently available for LUTS may affect sexual function. Health care providers need to screen for sexual problems, just as they do for LUTS and BPH, and continue monitoring once therapy is initiated.

Initial evaluation includes history (with review of systems), a physical examination, a digital rectal examination, and a prostate-specific antigen (PSA) test for men older than 50 years, men with a family history of prostate cancer, and African American men older than 40 years. This evaluation should be done every 1 to 2 years.

If the patient is found to have a normal prostate and no LUTS, he may be monitored yearly. If the patient has an enlarged prostate or a normal prostate with some symptoms, treatment may be considered. Most pharmaceutical companies provide trial samples for patients to determine whether a drug improves their condition. Patients may be evaluated with the AUA-SI score before and during treatment to determine whether therapy provides any significant difference or improvement in their bother scores.

If the medical treatment is effective, the patient can be monitored on a regular basis. However, if the medical treatment fails or if adverse events are intolerable, the patient may need further evaluation by a urologist. In certain circumstances, more invasive interventions may be required. The aim of treatment is to improve patients’ quality of life.

Three simple areas of inquiry that a primary care physician should consider involve urinary function, erectile function, and ejaculatory function. For instance, in the early stages of LUTS and ED, many patients do not necessarily know how to frame questions, though if asked, patients are generally able to articulate a concern. Patients’ problems may be quantified as needed using quantification tools such as the AUA-SI, the quality-of-life questionnaire, the BPH impact index, and the sexual function questionnaire.

Patients can complete structured questionnaires in a short time. Questionnaires help to improve physician-patient dialogue as well as to reduce the
time needed for primary care physicians to ask questions. In certain circumstances, alternatives to the treatment modalities mentioned here are recommended.

Watchful waiting is an appropriate option for patients with mild symptoms as well as for many patients with moderate to severe symptoms who do not consider their symptoms bothersome. When patients become bothered (for example, an older patient who has to awaken 5 to 6 times per night to urinate), then intervention is required. Patients are reassessed yearly. LUTS symptoms—sexual dysfunction, urodynamic parameters, and prostate size—may have undergone variable progression within 1 year.

**Comment**

The scientific understanding of the relationship between sexual health and BPH is evolving. Increasing numbers of patients will need treatment for LUTS or BPH in the future. It is important for primary care physicians to educate themselves about the relationship between LUTS and sexual function and then to discuss this relationship with patients. Primary care physicians need to inquire about all aspects of sexual dysfunction, including ED, EjD, libido, and overall sexual satisfaction. The two problems together are most likely not coincidental, but they appear to have the same causality.

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