



Diagnosis and Treatment of Overactive Bladder in Midlife Women

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Overactive bladder is a debilitating health condition that affects 16.6% of the US female population. The inability to control the involuntary loss of urine is one of the most unpleasant and distressing symptoms a woman can experience and may significantly affect her quality of life.

Overactive bladder (OAB) is a common and embarrassing problem that affects many women before, during, and beyond menopause. OAB presents with or without incontinence and has a constellation of symptoms including urgency, usually with urinary frequency and nocturia.¹ A diagnosis of OAB is made when a patient presents with urgency in the absence of pathologic or metabolic conditions that might otherwise explain this symptom. OAB is a bladder storage disorder caused by an increase in bladder pressure from an uninhibited contraction of the detrusor muscle. Additionally, many women with OAB have sensory urgency that is not necessarily associated with a bladder contraction.

OAB affects 16.6% of the general female population in the United States.² OAB prevalence increases with age, and approximately 23% of women ages 55 to 64 years have OAB; hence, this condition will increase in absolute numbers as the demographic of aging women expands.³ The occurrence of OAB is higher than that of stress incontinence

in the aging female population. The inability to control the involuntary loss of urine is one of the most unpleasant and distressing symptoms a woman can experience and may significantly affect her quality of life. Ultimately, these alterations in the physical, occupational, and sexual quality of life may result in depression or loss of self-esteem. Unfortunately, women affected by OAB may attempt to cope with symptoms on their own instead of seeking treatment for a variety of reasons including poor access to health care, embarrassment, and lack of knowledge about OAB treatments.

Diagnosis of OAB

A presumptive diagnosis of OAB can be made with a careful history and physical examination. Typical symptoms

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include voiding more than 8 times per day (urinary frequency) or more than once at night (nocturia), and a strong and sudden desire to urinate (urinary urgency). One simple question can elicit a response confirming urgency urinary incontinence: “Do you feel the need to urinate but cannot get to the toilet fast enough?” In addition, validated questionnaires such as the “Incontinence Impact Questionnaire” measures symptom distress in women with this complaint.

A physical should include a focused neurologic examination in which the physician evaluates sacral nerve function by testing the bulbocavernosus reflex and/or an anal wink. Used over a period of 72 hours, a temporal log of urination can gauge progress following treatments and is well correlated with urodynamic

nosis with a history of mixed urinary incontinence or other provocative maneuver defined as stress provoked detrusor overactivity. Cystometry has traditionally been a barrier to treatment since primary care providers do not feel comfortable with the extensive testing. Complicated patients may require cystometry while more clear-cut cases of OAB can be cared for without this step.

Conservative Therapy

We have recommended noninvasive approaches prior to pursuing invasive approaches for treatment of incontinence. Behavioral modification such as reduction in consumption of bladder irritants, bladder training, and pelvic floor muscle exercises all heavily rely on compliance of the patient. Scheduled voiding (bladder training) is a mainstay of treatment for OAB. Patients are instructed to void every hour while awake then slowly increase the time interval between voids. Pelvic floor muscle rehabilitation focuses on strengthening the levator ani muscles in order to help the patient suppress detrusor contractions. Although anticholinergic medicines, as will be discussed below, may decrease the frequency of urge episodes, medicine will not stop an urge once it starts. When an urge starts, contraction of the levator ani muscles may be the only method to relax the detrusor muscle and prevent urinary incontinence. Many patients will require a concurrent second treatment option, which has been shown to be more effective than a single treatment alone.⁵

Pharmacologic Therapy

Anticholinergics/Antimuscarinics

The goal of pharmacotherapy is to limit the frequency and number of leakage episodes by decreasing bladder contractions. Anticholinergic medications block the action of acetylcholine receptors in the bladder smooth muscle to prevent strong bladder contractions at low volumes of urine. The efficacy of various anticholinergics/antimuscarinics has been evaluated by a comprehen-

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diagnosis.⁴ A urinalysis, and possibly a urine culture, should be performed to rule out a urinary tract infection as the etiology of the OAB. Some practitioners feel that a postvoid residual should also be performed to rule out voiding dysfunction, although there are some data to support a less extensive workup.

Cystometry is the only way to quantitatively diagnose the amplitude of detrusor contractions and thus make the diagnosis of detrusor overactivity. The most cost-effective diagnostic method is office cystometrics in which the bladder is retrograde filled with saline, and the meniscus of fluid in a graduated syringe is observed for fluctuations. Subtracted multichannel urodynamics can be used to make a diag-

sive Agency for Healthcare Research and Quality meta-analysis.⁶ The conclusion of the meta-analysis was that there were mild improvements with anticholinergic medications when compared to placebo, and that long acting agents were more efficacious than short acting medications.

In addition, improvements in continence produced by behavior modifications are similar to the impact of anti-muscarinics. A 2006 Cochrane review showed at the end of the treatment peri-

techniques are justified. We recommend pursuing invasive techniques when behavioral interventions and at least two pharmacologic therapies fail, are contraindicated, or cannot be tolerated. Women who fail conservative and pharmacologic management and are diagnosed with refractory undesired bladder contractions may consider surgery. Even in the subset of hard-to-treat women, the decision to treat OAB surgically should not be made lightly.

Botulinum toxin type A intra-detrusor injections are not FDA approved and are currently being studied as a chemodenervation agent for temporary paralysis of the muscle.⁸ Using a cystoscope, the physician injects 100 to 200 units of botulinum toxin type A within the detrusor muscle or bladder submucosa. Data from two randomized controlled trials (RCTs) illustrated that 200 units decreased urge incontinence in women with idiopathic detrusor overactivity and refractory urge incontinence; however, one trial was halted because of a statistically significant increased risk of urinary retention.^{9,10} Women who received these injections were more likely to report improvement on a validated questionnaire, a 3-day urinary diary, and had a median duration of response that was significantly longer than for placebo ($P < .0001$). However, the clinical significance of the resultant urinary retention is unclear as it was temporary and the majority of patients did not complain of voiding dysfunction.

Sacroneuromodulation is another surgical method employed to treat OAB. Several anatomic sites for neuromodulation have included the placement of electrodes adjacent to the dorsal clitoral nerve, sacral nerve roots, and tibial nerve.^{11,12} Six months after placement of a sacral nerve stimulator, the number of daily heavy incontinence episodes decreased from 3.4 ± 3.8 to 0.3 ± 0.9 ($P < .0001$) in one RCT.¹³ Sacral nerve stimulation was government approved for use with refractory voiding dysfunction in 1997. The exact mechanism of

od, the improvement in leakage episodes in 24 hours was statistically significant favoring medication (RR, 1.39; 95% CI, 1.28-1.51).⁷ The placebo effect (33% to 56%) is strong in this patient population because patients may be somewhat desperate for a solution. The role of antispasmodic, antidepressant, and calcium channel blocking medications is still under review.

Estrogen Therapy

Local vaginal estrogen therapy is used by many clinicians in women with urge incontinence and vaginal atrophy, although the evidence of benefit is not clear.

Surgery

There are several surgical techniques available to treat refractory OAB including detrusor injection of Clostridium botulinum toxin type A (Botox), neuromodulation, and other methods. Surgeons' views differ as to when invasive

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action of sacral nerve stimulation is not known. Placement of a sacral nerve stimulator is a two-stage process whereby a subcutaneous implantable pulse generator is connected to a lead electrode that lies along the third sacral nerve. The first stage can be performed either as an office percutaneous nerve stimulation or as an outpatient procedure. The neuromodulation device is commonly described to patients as a “bladder pacemaker” (Figure).

Given the high cost associated with sacral neuromodulation, a thorough preoperative evaluation should be performed to ensure the patient is a suitable candidate. Patients should understand that they need to turn off the generator if they are going to undergo a surgical procedure, they cannot have magnetic resonance imaging with the device in place and they cannot undergo a procedure employing diathermy. Unknown durability and operative reversibility are the unique risks of sacral nerve stimulators and should be discussed.¹⁴

Posterior tibial nerve stimulation is a percutaneous therapy. Tibial nerve stimulation is technically simple to perform and is based on the insertion of acupuncture needles. Multiple treatment sessions are scheduled in the office and may be helpful in patients who desire not to take more medications.

In extreme cases of OAB with urgency urinary incontinence, bladder augmentation with a loop of bowel establishes an acontractile bladder or bladder-intestine-reservoir. This procedure is rarely performed given the associated morbidity. Prior to any operative procedure, the physician should document that an adequate trial of medical or conservative management has been offered and attempted or refused (informed refusal). Physicians who have a strong understanding of the consent process and the variety of various OAB options will be best prepared to illustrate this risk versus benefit relationship.

Conclusions

Given the growing number of OAB cases

treated annually, it is encouraging to see that during the past 5 years new drugs and procedures have been developed to treat these patients. There remains little data regarding the ideal OAB management that minimizes morbidity while maximizing subjective outcomes for the menopausal patient. Thus, treatment

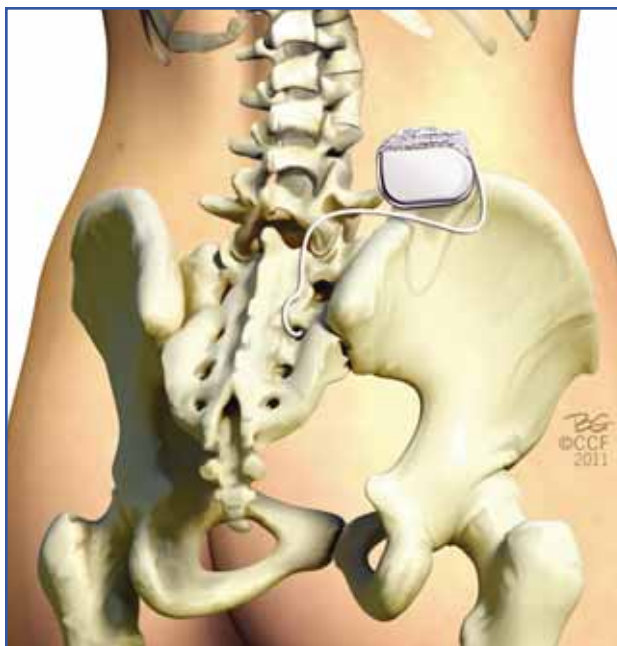


FIGURE. A sacral nerve stimulator with a tined lead placed in the second sacral nerve root.

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should be individualized, based on provider experience and patient preference, depending on both the patient’s and provider’s tolerance for risk.

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References

1. Abrams P, Cardozo L, Fall M, et al. The standardisation of terminology of lower urinary tract function: report from the Standardisation Sub-committee of the International Continence Society. *Am J Obstet Gynecol.* 2002;187(1):116-216.
2. Coyne KS, Payne C, Bhattacharyya SK, et al. The impact of urinary urgency and frequency on health-related qual-

- ity of life in overactive bladder: results from a national community survey. *Value Health*. 2004;7(4):455-463.
- Gray M. The importance of screening, assessing, and managing urinary incontinence in primary care. *J Am Acad Nurse Pract*. 2003;15(3):102-107.
 - Wyman JF, Choi SC, Harkins SW, Wilson MS, Fantl JA. The urinary diary in evaluation of incontinent women: a test-retest analysis. *Obstet Gynecol*. 1988;71(6 Pt 1):812-817.
 - Burgio KL, Kraus SR, Menefee S, et al. Behavioral therapy to enable women with urge incontinence to discontinue drug treatment: a randomized trial. *Ann Intern Med*. 2008;149(3):161-169.
 - Hartmann KE, McPheeters ML, Biller DH, et al. Treatment of overactive bladder in women. *Evid Rep Technol Assess (Full Rep)*. 2009;187:1-120, v. Available at: <http://www.ahrq.gov/clinic/tp/bladdertp.htm>. Accessed January 17, 2012.
 - Nabi G, Cody JD, Ellis G, Herbison P, Hay-Smith J. Anticholinergic drugs versus placebo for overactive bladder syndrome in adults. *Cochrane Database Syst Rev*. 2006;(4):CD003781.
 - Mahajan ST, Brubaker L. Botulinum toxin: from life-threatening disease to novel medical therapy. *Am J Obstet Gynecol*. 2007;196(1):7-15.
 - Brubaker L, Richter HE, Visco A, et al. Refractory idiopathic urge urinary incontinence and botulinum A injection. *J Urol*. 2008;180(1):217-222.
 - Sahai A, Khan MS, Dasgupta P. Efficacy of botulinum toxin-A for treating idiopathic detrusor overactivity: results from a single center, randomized, double-blind, placebo controlled trial. *J Urol*. 2007;177(6):2231-2236.
 - van Balken MR, Vergunst H, Bemelmans BL. The use of electrical devices for the treatment of bladder dysfunction: a review of methods. *J Urol*. 2004;172(3):846-851.
 - Goldman HB, Amundsen CL, Mangel J, et al. Dorsal genital nerve stimulation for the treatment of overactive bladder symptoms. *NeuroUrol Urodyn*. 2008;27(6):499-503.
 - Schmidt RA, Jonas U, Oleson KA, et al. Sacral nerve stimulation for treatment of refractory urinary urge incontinence. *J Urol*. 1999;162(2):352-357.
 - van Kerrebroeck PE, van Voskuilen AC, Heesakkers JP, et al. Results of sacral neuromodulation therapy for urinary voiding dysfunction: outcomes of a prospective, worldwide clinical study. *J Urol*. 2007;178(5):2029-2034.

For a **PATIENT HANDOUT** on overactive bladder in midlife women, see page 49.