URGE URINARY INCONTINENCE - OVERACTIVE BLADDER

Week 4

Prepared by: Annie Fu, MD

Reading Assignment:
ACOG, “Clinical Updates in Women’s Health Care: Overactive Bladder”: Management section
https://www.acog.org/clinical/journals-and-publications/clinical-updates/2020/01/overactive-bladder
LEARNING OBJECTIVES

• Understand the background and pathophysiology of overactive bladder
• Understand how to evaluate OAB
• Learn the tiered-management options for OAB
CASE VIGNETTE

Patient is a 39 y.o. G5 P5005 woman who presents with a 3-month history of worsening urinary symptoms.

Patient underwent a mid-urethral sling placement 3 years ago for stress urinary incontinence. Since that procedure, she denies any further episodes of stress incontinence. However, she now reports frequent nocturia and polyuria. She reports infrequent episodes of urinary incontinence when she can’t make it to the bathroom in time. She denies dysuria, hematuria, or abdominal pain.
FOCUSED HISTORY

What elements of the patient’s history are most pertinent?

• **POBH:** 5x FT NSVD
• **PGYN:** Menarche @ 13 yo, regular cycles q 28 d x 4 d; denies STIs, abnormal paps, fibroids, cysts
• **PMH:** History of stress urinary incontinence
• **PSH:** Midurethral sling placement
• **FH:** Mother-HTN, DM2; father-HTN; sister-fibroids
• **SH:** No toxic habits; works in a factory; single; lives with 5 children; denies IPV
• **Meds:** Multivitamin, fish oil supplement
• **All:** NKDA
PERTINENT PHYSICAL EXAM FINDINGS

What elements of the patient’s physical exam are most important?

**VS:** P 70    BP 130/70    **Wgt:** 80 kg    **Hgt:** 166cm    **BMI:** 29.0 kg/m²

- **General:** NAD, well-appearing
- **Abd:** Soft, NT/ND, no rebound/guarding, no masses
- **Gyn:** NEFG, normal urethral meatus, normal vaginal epithelium, **no mesh erosion noted or scarring**; cervix WNL and no discharge; uterus 6 week size, anteverted, nontender, no masses; no adnexal masses or tenderness
  - **Mild apical descent** to 2 centimeters above introitus with Valsalva
  - **Post-void residual 10 mL**
- **Ext:** WWP

**UA:** negative
BACKGROUND

• **How do you define overactive bladder (OAB)?**
  - Urinary urgency, typically accompanied by frequency and nocturia, with and without urgency urinary incontinence in the absence of urinary tract infection or other obvious pathology
  - Per, International Continence Society: A syndrome characterized by urgency incontinence, bladder instability, the unstable bladder, and frequency-urgency syndrome

• **How do you define urgency urinary incontinence?**
  - Involuntary loss of urine associated with urgency or a sudden, compelling desire to void that is difficult to deter

• **What is the prevalence of OAB?**
  - ~13% in women between 18-60 yo
    - More likely in older women but seen in a wide range of ages
  - African American women (33%) > Hispanic (29%), White (29%)

• **What are the categories of OAB?**
  - OAB-wet (with UI) and OAB-dry (without UI)
PATHOPHYSIOLOGY

• Detrusor muscle innervated via parasympathetic (S2-S4, acetylcholinergic) and sympathetic (T11-L2, noradrenergic) nervous symptoms
  • PSNS: stimulates muscarinic M3 receptors → detrusor contraction for urination; also inhibits internal urethral sphincter then relaxes to allow urination
  • SNS: stimulates $\beta_3$- and $\alpha_1$-adrenergic receptors → detrusor relaxation, internal urethral sphincter muscle contraction

• What are suggested theories for the occurrence of OAB?
  • 1) Myogenic theory: myocyte alteration/dysfunction leads to increased excitability of detrusor → exaggerated response to stimuli, involuntary contraction
  • 2) Urothelium theory: urothelium has sensory responsive capabilities, also has a secretory and inhibitory factor; unclear association but loss of urothelium seen in cases of increased detrusor activity
  • 3) Neurogenic theory: damage to suprapontine region of the brain, spinal axonal pathways associated with lower urinary tract dysfunction (MS, Parkinsons, CVA)
  • 4) Hypoestrogenism: atrophic lower urinary tract, altered bladder microbiome both contribute to bladder dysfunction
DIAGNOSIS AND EVALUATION

• OAB is primarily a clinical diagnosis

• How should you evaluate a patient for OAB?
  • Detailed history (+/- validated questionnaires on effect of symptoms on quality of life, e.g. Overactive Bladder Questionnaire, OAB-q)
  • Physical exam, including post-void residual, assessment for pelvic organ prolapse, and cough stress test
  • Urinalysis

• What are some other testing modalities that may be useful?
  • Urodynamics
  • Cystoscopy (especially in patients with prior pelvic floor surgery)
DIFFERENTIAL DIAGNOSIS
1. Behavioral Modification
- Reduce caffeine intake
- Reduce excess fluid consumption
- Weight loss
- Bladder diary for 1-5 days
- Timed voiding
- Bladder training (daily regimen x 4-6 weeks)
- Pelvic floor muscle therapy, urge suppression techniques, and biofeedback

Figure 3. Bladder training regimen.

Figure 4. Figure illustrating the “urgency wave” and urge suppression techniques. The red area highlights the worst time to urinate, whereas the green area highlights the best time to urinate.
MEDICATION MANAGEMENT

Antimuscarinics (oxybutynin, tolterodine, solifenacin, trospium)
- Nonselective
- Side effects: dry mouth (29.6%) and pruritus (15.4%) most common; others include erythema, GERD, blurry vision, urinary retention, cognitive adverse effects, constipation
  - Manage side effects preemptively
- DO NOT use: angle-closure glaucoma, at risk of cognitive impairment (e.g. elderly population), medicine interactions (tricyclic antidepressants, first-generation antihistamines, antipsychotics)

B3-adrenergic receptor agonists (mirabegron)
- Generally well-tolerated, more favorable side-effect profile (vs. antimuscr.), more favorable for elderly population
- Side effect: hypertension
- Disadvantage: no generic of Mirabegron available yet

Desmopressin
- For nocturnal polyuria
- Oral and intranasal formulations available
- Side effect: hyponatremia (generally mild, but needs regular monitoring)

Vaginal estrogen
- Systemic estrogen is not proven to improve OAB symptoms
- Local/vaginal estrogen has shown to have some benefit to reduce OAB symptoms
- Can treat vaginal atrophy simultaneously
THIRD-LINE TREATMENTS

**OnabotulinumtoxinA**
- Inhibits vesicle-mediated neurotransmission (inhibits acetylcholine release) → detrusor relaxation; lasts 6-12 months
- Incontinence episode reduction similar to medication regimen, but complete resolution better (27% vs 13%)
- Side effect: 1) urinary retention, 2) UTIs

**Sacral neuromodulation**
- Two-step process
- Stimulates S3 sacral nerves
- Similar reduction of UUI episodes compared to onabotoxA

**Percutaneous tibial nerve stimulation**
- S2-S4 nerve stimulation in medial malleolus
- Weekly treatments x 12 weeks, the monthly maintenance
- Better long-term results compared to medication alone (select population)
SOCIAL DETERMINANTS OF HEALTH

• Nonneurogenic OAB in women is associated with a significant economic cost in the United States
  • More than $7 billion annually (4x the cost of OAB in men)
  • Younger patients have increased diagnostic costs; older patients (>65 y.o.) have increased costs for home and routine care
    • All patients bear pharmacologic costs ($1.2 billion)

• OAB significantly impacts a woman’s quality of life
  • Sexual dysfunction (shame, decreased arousal and desire)
  • Physical limitations (fear of UI episodes affecting choice of work, ability to feel comfortable in social situations away from home)

Overactive bladder has a significant impact on the psychological, social, and economic health of women and affects a wide age-range: Always screen your patients for symptoms!
Description: Overactive bladder counseling

We reviewed the patient’s diagnosis of overactive bladder. In our discussion, we went over, in detail, her symptoms consistent with the diagnosis, possible etiologies for her symptoms, and prognosis. We reviewed management options, with first-line options being behavioral modification and pelvic floor exercises. Second-line options include antimuscarinic or adrenergic agonist medications. Third-line options for refractory cases include intravesical botox injections, sacral nerve modulation, or posterior tibial nerve stimulation.

The patient’s questions were answered. She was instructed on maintaining a bladder diary for 2 days. She was also educated on ***weight loss, pelvic floor exercises, avoidance of foods that stimulate the bladder, reduced fluid intake, and timed voids. She will return in 2-3 months for a follow-up of her symptoms. ***She was referred to urogynecology for further evaluation and management.
CODING AND BILLING

• ICD-10

  • **N32.81**: Overactive bladder
  • **N39.41**: Urge urinary incontinence
EVIDENCE

