Overactive Bladder: Regaining Control

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Educational Objectives

1. Review the epidemiology and etiology of overactive bladder.
2. Review non-pharmacological treatment options.
3. Identify the pharmacological bladder control options, including mechanism of action, efficacy, dosing, safety, and tolerability profiles.
4. Describe the proactive role of pharmacists in identifying, counseling and treating patients.
Overactive Bladder

- Urinary urgency
- Urge incontinence
- Urinary frequency
- Nocturia

Prevalence

- Estimated 34 million men and women
- Prevalence 2002, 9-16%
- Women > Men
  - 15-50% of women
  - 1.5-5% of men
- Costs
  - $19.5 billion/year managing incontinence
  - $12.6 billion/year managing overactive bladder

Physiology

Process of Urination

- Combination of automatic and conscious muscle actions
  - Emptying phase
  - Filling/storage phase
    - Automatic
      - cholinergic and adrenergic neurotransmitters
      - serotonin and noradrenaline
    - Conscious
      - voluntarily contraction of external sphincter muscles
Overactive Bladder: Regaining Control

Pathophysiology

- Neurogenic
- Myogenic

Clinical Assessment

- History
- Symptoms
- Medications

Diuretics
Antidepressants
Alpha-agonists
Alpha antagonists
Beta antagonists
Sedatives
Anticholinergics
Analgesics

Clinical Assessment

- Physical Examination
- Testing
  - Urinary Track Infections
  - Benign Prostatic Hypertrophy,
  - Diabetes, Mellitus
  - Neurological conditions (Multiple Sclerosis,
    Stroke, Alzheimer’s disease, Spinal Cord Injury
    or Stenosis)

Effects of OAB

- Emotional
- Depression
- Loneliness, shame, helplessness, introversion,
lack of confidence
- Disruption of Daily living
  - Advance planning
  - Loss of independence
  - Stop exercising
Goals in Treatment

- Diminish Symptoms
- Prevent Complications
- Improve Quality of Life

Treatment Approach

- Behavioral
- Pharmacological
- Surgical

Behavioral Modifications

- Urge Inhibition
- Reinforcement
- Fluid/Dietary Management
- Void Diary
- Pelvic Muscle Training
- Education
Dietary Considerations

- Weight control
- Fluid Control
- Food restrictions
  - Caffeinated beverages
  - Alcoholic beverages
  - Citrus fruits and juices, tomatoes/products
  - Chocolate
  - Sugars, artificial sweeteners

Pelvic Floor Muscle Training

- Kegel Exercises
- Contraction and relaxation of pelvic floor muscles

Pharmacologic Treatment

- Antimuscarinics/Anticholinergic
- Alpha-Adrenergic Agonists
- Estrogen
- Tricyclic antidepressants/ Serotonin-Norepinephrine Reuptake Inhibitors
- Capsaicin and analogs
- Botulinum toxin type A

<table>
<thead>
<tr>
<th>Time</th>
<th>Drinks</th>
<th>Trips to the Bathroom</th>
<th>Accidental Leaks</th>
<th>Did you feel a strong urge to go?</th>
<th>What were you doing at the time?</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 a.m.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td></td>
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<tr>
<td>3:00 a.m.</td>
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<tr>
<td>4:00 p.m.</td>
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</tr>
<tr>
<td>5:00 a.m.</td>
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<td></td>
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<tr>
<td>6:00 a.m.</td>
<td></td>
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</tr>
</tbody>
</table>

Used _____ pads today. I used _____ diapers today (write number).
Antimuscarinic/Anticholinergic

- Block the cholinergic muscarinic receptors (M2 and M3)
  - M2, smooth muscle, hindbrain, cardiac
  - M3, smooth muscle, salivary gland, eye
- Inhibit involuntary contractions of the bladder
- Increase bladder capacity
- Delay initial urge to void

Anticholinergic Side Effects

- Side Effects a result of peripheral and central anticholinergic action
- Dry as a Bone
- Blind as a Bat
- Red as a Beet
- Hot as Hades
- Mad as a Hatter

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand Name</th>
<th>Initial Dose</th>
<th>Maximum Dose</th>
<th>Side Effect/Dry Mouth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darifenacin</td>
<td>Enablex</td>
<td>7.5 mg qd</td>
<td>15 mg qd</td>
<td>in 20.2% and 35.3%</td>
</tr>
<tr>
<td>Oxybutynin*</td>
<td>Ditropan</td>
<td>5 mg bid or tid</td>
<td>5 mg qd</td>
<td>Common</td>
</tr>
<tr>
<td>Oxybutynin LA*</td>
<td>Ditropan LA</td>
<td>5 mg qd</td>
<td>30 mg qd</td>
<td>60.8%</td>
</tr>
<tr>
<td>Oxybutynin patch</td>
<td>Oxytrol</td>
<td>3.9 mg/day patch twice weekly</td>
<td>3.9 mg/day patch twice weekly</td>
<td>12%</td>
</tr>
<tr>
<td>Solifenacin</td>
<td>Vesicare</td>
<td>5 mg qd</td>
<td>10 mg qd</td>
<td>10% and 27.6%</td>
</tr>
<tr>
<td>Tolterodine*</td>
<td>Detrol</td>
<td>1-2 mg bid</td>
<td>2 mg bid</td>
<td>35%</td>
</tr>
<tr>
<td>Tolterodine LA*</td>
<td>Detrol LA</td>
<td>2-4 mg qd</td>
<td>4 mg qd</td>
<td>23%</td>
</tr>
<tr>
<td>Trospium</td>
<td>Sanctura</td>
<td>20 mg bid</td>
<td>20 mg bid</td>
<td>20.1%</td>
</tr>
</tbody>
</table>

Solifenacin (Vesicare)

- Mechanism of Action
  - Inhibits primarily M3 muscarinic receptors
- Dosage
  - 5 mg once daily to 10 mg once daily; taken with liquid and swallowed whole, with or without food
  - Altered pharmacokinetics with Ketoconazole – maximum dose 5 mg
**Vesicare**
- **Contraindications**
  - Urinary Retention
  - Gastric Retention
  - Un-controlled narrow angle glaucoma
  - Allergy
- **Precautions**
  - Impaired Renal or reduced hepatic function
  - Do not exceed 5 mg/day dosing

**Darifenacin (Enablex)**
- **Mechanism of Action**
  - Selective muscarinic M3 reactor antagonist
- **Dosage**
  - 7.5 mg once daily, can be increased to 15 mg once daily after 2 weeks
  - Extended release tablets to be taken whole with liquid

**Enablex**
- **Side Effects**
  - Dry mouth
  - Constipation
  - Dyspepsia, abdominal pain, nausea, diarrhea, dizziness
- **Drug interactions**
  - Ketoconazole and Itraconazole
  - Do not exceed 7.5mg of Enablex
- **Contraindications**
  - Urinary retention, gastric retention, uncontrolled narrow angle glaucoma

**Alpha-adrenergic agonists**
- **Mimic norepinephrine to stimulate alpha-adrenergic receptors**
  - Contraction of urethral smooth muscle to tighten the urinary sphincter and valve
  - Ephedrine and Pseudoephedrine
- **Side effects**
  - Agitation, insomnia, anxiety, dry mouth, headache
- **Precaution Use**
  - Glaucoma, diabetes, hyperthyroidism, hypertension
### Estrogen
- Helps maintain the strength and flexibility of bladder and urethral tissues
- Improve blood flow, enhance nerve function and correct tissue deterioration
- Prescribed as cream
- Increase risk of heart disease, stroke and breast cancer

### Tricyclic Antidepressants
- Imipramine (Tofranil)
  - Anticholinergic effects
  - Alpha-adrenergic effects
- Bladder relaxation while causing bladder neck smooth muscles to contract
- Side Effects
  - Drowsiness, irregular heartbeat, dizziness, orthostatic hypotension, dry mouth, blurred vision, constipation

### Capsaicin
- Extract from hot chili peppers
- Thought to numb the hypersensitive bladder
- Administered through catheter
  - Stimulates sensory nerves of bladder
  - Produces long term resistance to sensory activation
- Side Effects
  - Temporary discomfort and burning

### Botulinum toxin type A
- Blocks the actions of acetylcholine and relaxes the bladder muscle
- Investigational
A Recipe for Continence in the Nursing Home

• 2 measures of intact lower urinary tract function (bladder and urethra)
• 1 measure of conscious cerebral oversight
• Dash of sensation
• Adequate leaven to rise to toilet, or to obtain assist to get there
• A proper pan or bowl in the correct shape to contain the recipe
• Sprinkle of desire to stay dry
• Doubled doses of patience for each minute required to wait for assistance

- Elizabeth Enriquez