URGE INCONTINENCE
COMMONEST TYPE IN ELDERLY WOMEN

Causes: 1 - Defects in CNS regulation

- Stroke
- Parkinson’s disease
- Dementia (Alzheimer’s and other types)
- Normopressure hydrocephalus
- Brain tumors
- Subdural hematoma
- Suprasacral spinal cord lesions (disc prolapse, multiple sclerosis)
- Idiopathic (15%)
SENSORY URGE INCONTINENCE
URGE INCONTINENCE

Causes: 2 - Sensory urge incontinence

- Infection
- Interstitial cystitis
- Radiation cystitis
- Bladder stones, tumors
- Prostate hypertrophy
- Ca of prostate
- Fecal impaction
- Uterine prolapse
- Surgery
Overactive Bladder Syndrome (OAB)

Hashim Hashim 2007
Definition of OAB

- Urgency, with or without urgency incontinence, usually with increased daytime frequency and nocturia

NB. There should be no proven infection or other obvious pathology

Hashim Hashim 2007
OAB ASSOCIATED FACTORS

- Increasing age
- Females
- Obesity
- Impaired functional status
- Depression
- Recurrent UTI
- Diabetes
- Neurological disorders
- Bladder symptoms in childhood
Causes of OAB

• Actual cause of OAB is still unknown
• Three main theories have been proposed
• The true causes of OAB and DO may be different in different individuals:
  • may include one or more of the proposed theories
  • possible other mechanisms as yet undescribed

Hashim Hashim 2007
OAB - Principles of treatment

- Increase voided volume
- Decrease urgency
- Reduce Urgency Urinary Incontinence (UUC)
Treatment of Overactive Bladder (OAB)

1. Nonpharmacological treatment

2. Pharmacological treatment
Treatment strategies OAB

- **Life style intervention** (Behavioral treatment)
- **Bladder training and pelvic floor muscle exercises** (PFME) (Kegel)
- **Biofeedback and/or electrical stimulation**
- **Acupuncture**
- **Hypnotherapy**
- **Drugs**
- **Intravesical therapy**
- **Neuromodulation**
- **Surgery**
Life style intervention

- Limit fluid intake (in the evening)
- Reduce caffeine intake
- Empty bladder before going to bed
- In women: reduce obesity, smoking, carbonated drinks
- Not proven in men
- In men: beer may be protective?
- Treat constipation
Treatment strategies OAB

- Life style intervention
- Bladder training and pelvic floor muscle exercises (PFME) (Kegel)
- Biofeedback and/or electrical stimulation
- Acupuncture
- Hypnotherapy
- Drugs
- Intravesical therapy
- Neuromodulation
- Surgery
Bladder training

- Used for *urge incontinence (OAB)* and *mixed incontinence*
- *Frequent voluntary voiding* to keep the bladder volume low
- *Training of CNS and pelvic mechanisms* to inhibit urgency
## Voiding Chart

<table>
<thead>
<tr>
<th>Time</th>
<th>Drinks</th>
<th>Urine</th>
<th>Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Accidental Leaks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How Many Times?</td>
<td>How Much? (circle one)</td>
</tr>
<tr>
<td>Sample</td>
<td>Soda</td>
<td>sm med lg</td>
<td>sm med lg</td>
</tr>
<tr>
<td>7-8 p.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-9 p.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-10 p.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-11 p.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-12 a.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-1 a.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2 a.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3 a.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-4 a.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-5 a.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-6 a.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Kegel Exercise
Kegel Exercises:
Contract your pelvic floor muscles for three seconds, then relax the muscles for three seconds. Do this 10-15 times several times a day. Although shown here while lying down, these exercises can be done during a variety of daily activities, such as sitting in a meeting, while stopped in your car at a traffic light or when talking on the phone.
Treatment strategies OAB

- Life style intervention
- Bladder training and pelvic floor muscle exercises (PFME) (Kegel)
- **Biofeedback and/or electrical stimulation**
- Acupuncture
- Hypnotherapy
- **Drugs**
- Intravesical therapy
- Neuromodulation
- Surgery
Biofeedback for Urinary Incontinence
Oral pharmacotherapy in OAB

- Acetylcholine main neurotransmitter
- Muscarinic bladder receptors blockade reduces Detrusor Overactivity
- M2- receptor predominant subtype
- M3- receptor one third, predominantly responsible for normal/abnormal detrusor contractions
Innervation of Normal Voiding
Parasympathetic

S2-S4

Pelvic Nerves

Acetylcholine

Detrusor Contraction
Drugs used for OAB treatment

- Oxybutinin chloride (Novitropan)
  - Immediate release (IR)
  - Extended release (ER)
  - Transdermal patches
- Tolterodine tartrate (Detrusol) IR and ER
  - Low penetration of blood-brain barrier
- Trospium chloride (Spasmex)
  - Does not cross blood-brain barrier
  - Once daily
- Solefenacin succinate (Vesicare)
- Fesoterodine (Toviaz)
- Darifenacin
Which anticholinergic drug is more effective?

- Oxybutinin and Tolteridine have similar effects.
- Oxybutinin causes more adverse effects (dry mouth).
- More patients withdrawn from Oxybutinin.
- Extended release drugs (ER, transdermal) cause less side effects.

Hay-Smith J, Cochrane 2005
Side effects of antimuscarinic drugs

- **M3** – receptors in smooth muscle, salivary glands, eye and brain
- **M2** – receptors also in heart
Side effects – cont.

- Dry mouth (20 – 30 %)
- Constipation
- Headache
- Blurred vision
- Cardiac effects – little evidence
  - Increase in heart rate (0.1 %)
  - QT – prolongation
  - Torsade de pointes (polymorphic VT)
- Cognitive impairment?
Innervation of Normal Voiding

Sympathetic

Detrusor Relaxation

Hypogastric Nerves

Bladder Neck Contraction

Th12-L2

Alpha adrenergic blockers

- Terazosin (Hytrin) 1-10 mg/d
- Doxazosin (Cardoral, Cadex) 2-4 mg/d
- Alfuzosin (Xatral) 2.5 mg/d
- Tamsulosin (Omnic) 0.4 mg/d (selective)
- Silodosin (selective)
Side effects of alpha-blockers

- Orthostasis
- Hypotension
- Dizziness
- Syncope
- Fatigue, headache
- Retrograde ejaculation, erectile dysfunction
- Floppy iris syndrome (Tamsulosin)
- Nasal congestion
Combination therapy

Combination of alpha – blockers and anti-muscarinic drugs is effective in men with benign hypertrophy of the prostate (BHP)
Mirabegron

- Beta-3 agonist
- Indication: Overactive Bladder (OAB)
  FDA-approved
- Not yet approved and marketed in Israel
- Side effects: hypertension
  urinary retention
Intravesical pharmacotherapy for OAB

- Botulinum A
- Resiniferatoxin
- (Capsacain)
Reduction from Baseline in Number of Episodes of Urgency Urinary Incontinence (UUI) per Day.

Baseline mean (±SD) levels of daytime UUI episodes per day:
- Anticholinergic group, 5.2±2.7
- OnabotulinumtoxinA group, 4.8±2.7

Neuromodulation for OAB

- Sacral nerve stimulation (SNS)
- Percutaneous nerve stimulation (PTNS)
Sacral nerve stimulation
Percutaneous nerve stimulation
Surgery

- Rhizotomy
- Augmentation cystoplasty
- Detrusor myectomy
- Enterocystoplasty
- Urinary diversion