Urinary Incontinence

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Objectives:

- Define urinary incontinence
- Be familiar with the types of urinary incontinence and associated signs and symptoms:
  - Urinary urge incontinence
  - Stress urinary incontinence
  - Mixed urinary incontinence
  - Overflow urinary incontinence
- Describe the options available for management of urinary incontinence and implement appropriate treatment
- Be able to communicate with patients so that they are able to manage their condition
- Know when to refer to a specialist for further evaluation

Terms to be familiar with:

- **Urinary frequency:** voids more often than every 2 hours
- **Nocturia:** awaken to due to the urge to urinate at least more than once a night, this is a sleep disturbing voiding
- **Urinary urgency:** a sudden and compelling need to urinate
- **Overactive bladder:** detrusor muscle instability, may consist of symptoms of urinary frequency urgency, nocturia with or without urinary incontinence
Urinary Incontinence

- International Continence Society definition:

The involuntary loss of urine that is objectively demonstrable and a social or hygienic problem.

Prevalence

- Within the general population, 15-30% are 65 years old or older
- Most common amongst women up until the age of 80 yrs old, thereafter F=M
- Present in about 50% of residents residing in long term care facilities

Risk factors for urinary incontinence

- Diabetes
- Cerebrovascular disease
- Neurological disease (Parkinson’s disease, MS, Spina bifida, Dementia)
- Impaired mobility (SCI, Chronic back pain, Obesity)
- Depression
- Multi-parity
- Constipation
- Menopause, x-p Hysterectomy
- Prostate cancer treatments
Bladder anatomy

Urinary continence

• Coordination of function between the urethra, bladder, pelvic muscles and surrounding connective tissue elements
  • Urethral tone is maintained by smooth and striated muscles within the urethral wall
  • Pelvic muscles reinforce the bladder and the urethra by contraction of the levator ani pulling the vagina forward towards the pubic symphysis

Neural control of the Lower Urinary Tract

• Innervation is provided by three sets of peripheral nerves
  • Pelvic Parasympathetic nerves: bladder excitation (contraction) and relaxation of the urethra
  • Sacral sympathetic nerves: inhibition of bladder body (relaxation), excites bladder base and urethra
  • Pudendal nerves: excitation of external urethral sphincter
Bladder Mechanism

- **Filling Stage**
  - Via SNS, the Detrusor muscle is relaxed and the urethra and sphincters are contracted. Filling triggers mechanoreceptors, responding to stretch and change in bladder pressure and the innervation travels via pelvic nerves to the various areas of the brain (modulation and inhibitory signals are managed)

- **Voiding Stage**
  - When bladder capacity is reached, micturition centers are activated and signals the PNS to promote bladder contraction and relaxation of the pelvic muscles and urethral tone

- Therefore any dysfunction of the bladder or the urethral will result with involuntary loss of the urine

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Types of urinary incontinence

- **Urinary urge incontinence**
  - Involuntary loss of urine accompanied or immediately preceded by urinary urgency. Loss of urine may be in frequent small quantities or catastrophic large voids
  - Due to instability of the Detrusor muscle and minimal to no sphincter stability
  - Patient may report constant urinary loss

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Urinary Urge Incontinence
Urinary Urge Incontinence

• Evaluation:
  - Detailed history: duration of incontinence, severity (pad size), precipitating factors (activity, diet), pregnancy, medications (diuretics, antihistamines, nonsteroidal anti-inflammatory drugs, antibiotics)
  - Physical examination: evaluation for pelvic organ prolapse or neurologic abnormalities
  - Labs: UA, GCS, HB, A1C

• Treatment:
  - Behavioral modification: bladder training, pelvic muscle exercises
  - Anticholinergic medications: Oxybutynin, Detrol (furosemide), Oxyuric (tolterodine), Stantac (tominadine)
  - Baclofen: Mylotro (baclofen)
  - Sacral nerve modulation therapy: Interstim Sacral nerve stimulation, Tblial nerve stimulation
  - Intravesical onabotulinumtoxinA (BOTOX)
  - Bladder augmentation or urinary diversion (marked to severe cases)

Types of Urinary Incontinence

• Stress Urinary Incontinence (SUI)
  - Involuntary loss of urine associated with exertion (effort), or sneezing or coughing
  - Due to pelvic floor weakness and lack of support from the vesicourethral support system

  - Weight-related: atrophic vaginitis changes, multiparity (labor & delivery), prostatic or perineal byx of pelvic radiation or neurologic tissue, obesity
  - Aging: associated with trauma (prior prostatectomy), radiation or neurologic injury, obesity

Stress Urinary Incontinence

- Weakened or injured pelvic floor muscles causing urine leakage.
- Curing the problem can be achieved through exercises that strengthen the pelvic floor muscles.
Stress Urinary Incontinence

• Evaluation:
  • Detailed history: activity association, duration of incontinence, severity of
    symptoms; # of pad use, precipitating factors (activity, diet); PMH;
  • Physical examination, evaluation for pelvic organ prolapse
  • Labs: UA, CBC, HGB

• Treatment:
  • Pelvic muscle exercises (depending on severity)
  • Address pelvic organ prolapse if present
  • Implant of urethral support sling
  • Injection of urethral bulking agent
  • Implant of artificial urinary sphincter

Types of Urinary Incontinence

• Mixed Urinary Incontinence
  • Involuntary loss of urine associated with stress-related incontinence and
    symptomatic urinary urgency; + urinary urge incontinence
  • Most common amongst elderly women

• Treatment:
  • Attempt to address symptoms of urinary urge incontinence first with an
    anticholinergic (Vesicare, Toviaz, oxybutynin) or beta 3 agonist
  • If there has not been an improvement in the urinary symptoms after a month trial
    with medication then refer to specialist.
  • Referral to urology/gynecology

Types of Urinary Incontinence

• Overflow Urinary Incontinence
  • Involuntary loss of urine associated with bladder distress
  • Bladder outlet obstruction (Benign prostatic hyperplasia, bladder neck contracture,
    Pelvic organ prolapse, urethral stricture)
  • Inadequate bladder contraction
  • “Overactive hyperactivity with impaired contraction” OAB
  • Medications
  • Neurological conditions
  • Diabetes
Overflow Urinary Incontinence

- Evaluation:
  - Detailed history: duration of incontinence, severity (pad use), precipitating factors (activity, diet), dysuria, gross hematuria, PMH
  - Surgical HR
  - Physical examination, GU exam evaluating for P.O.P in female patients, DRE in men
  - Labs: UA, U/S, HBAsa, CMP
  - Imaging: US, renal ultrasound

Overflow Urinary Incontinence

- Treatment:
  - Dependent on the cause of the urinary overflow
    - Intermittent catheterization with anti-adrenergic medications with DHQ (detrussor hyperactivity with impaired contractions)
    - BPAs, alpha blockers, 5 alpha reductase inhibitors, SALINE TURP, PVP, Suprapubic prostatectomy
    - Urethral strictures: urethral dilation, urethrotomy
    - Pelvic organ prolapse: address P.O.P

Case History #1:

- 68 yr old female with complaints of constant urinary leakage for at least 3 years and worsening. Complains of urinary frequency, urgency and nocturia. Urinary leakage is worse when she gets up from a seated position. Uses 6-8 thick undergarment pads during the day and saturates 3 pads and several towels at night. Denies dysuria, gross hematuria. Has tried Oxybutynin in the past, unable to tolerate due to severe dry mouth.
Case History #1:

- PMH: Atrial fibrillation, CHF, DM, HTN, Hx of urolithiasis
- SX: ESWL, “Bladder lift”
- Medications: Coumadin 5 mg, Lasix 20 mg, Glipizide 5 mg, Metformin 500 mg, Lisinopril 5 mg and Metoprolol 25 mg
- Labs: UA+C/S negative, HB A1c 6.0
- PE: W/DWN, NAD, A/O x 3; No wheezing, no wheezing, no rales; Abd benign, GU remarkable for atrophic vaginal changes, Stage II cystocele, Stage I rectocele

Case History #1

- Diagnosis: Most likely, Mixed Urinary Incontinence with predominance of OAB with urinary urge incontinence
- Approach to treatment:
  - Discuss bladder training and timed voiding to combine with an anti-
    cholinergic medication or Betadine agonist. (Preference of Choice)
  - If patient has failed 3+ medications or if urinary symptoms have worsened
    referral to urology
  - Consider treatment of cystocele, conservatively vs surgically
  - Advise patient to monitor improvements in urinary symptoms over 14-21
    days; monitoring pad use

Case History #2

- 79 yr old female with complaints of urinary leakage, uses 1-2 pads a day
  but also with complaints of an inconsistent urinary stream. Nocturia x 6.
  Denies symptoms of GU, dysuria or gross hematuria
- PMH: HTN
- Sx Hx: None, 3 vaginal deliveries
- Medications: None
- Labs: Urinalysis: 9+ HBC, 2+ WBC, Nitrites negative, CX pending
- PE: A/O x 3, NAD, Lungs clear, Abd benign, GU: Stage III cystocele, stage I rectocele
- Renal/bladder: No renal masses, no hydronephrosis, no renal
  calcifications, bladder is distended with prevoid volume of 800 ml and post void of 500 ml
Case History #2
- DX: Overflow urinary incontinence due to Pelvic organ prolapse
- Approach:
  - Reduce pelvic organ prolapse in office if possible and placement of foley catheter
  - Referral to urogynecology or gynecology or urology for pelvic organ prolapse repair

Case History #3
- 72 yr old gentleman with hx of PCA & RRP. Reports urinary frequency, urgency with urinary leakage yet with slow urinary stream with dysuria. Reports urinary Uses 3-5 thick pads a day. Nocturia x 4. Denies prior history of STD, denies hx of urolithiasis
- PMH: Hx of ACA, HTN
- 5x Hx: Vasectomy, Rotator cuff repair, RRP, Implant of IPP, Implant of artificial urinary sphincter
- Meds: none reported
- Labs: PSA undetectable; UA: RBC ++, WBC 3+, Protein 100, Nitrates +

Case History #3
- Differential Diagnosis:
  - Urinary tract infection
  - Bladder stones
  - Urethral erosion from artificial urinary sphincter
  - Bladder neck contracture
- Approach:
  - Treat suspected UTI
  - Refer to urology ASAP for further evaluation of the lower urinary tract anatomy
Case History #4

- 52 yr old female, G3P2 history of cervical carcinoma with report of urinary leakage while running and exercising. Avoids physical activity and uses 4 pads a day. Reports urinary frequency and urgency, denies nocturia. Symptoms worsened after last pregnancy.
- PMH: Hx of cervical carcinoma s/p radiation and total hysterectomy
- rx: See above
- Physical Exam: NAD, WDWN, GU no cystocele but marked urethral hypermobility
- Labs: none

Case History #4

- Differential Diagnosis:
  - Mixed urinary incontinence, predominantly SUI
    - Vaginectomy, hysterectomy, pelvic radiation therapy, Multi-party
- Approach:
  - Referral to urology for evaluation of lower urinary tract with urodynamic study and cystoscopy
  - Options for treatment: Urethral sling, injection of urethral bulking agent