

Common Conditions of Genitourinary Dysfunction

PTA 103

Objectives from PTA 103

- Describe the primary components of the genitourinary system
- Describe common pathologies (etiology, s/sxs) of the genitourinary system
- Identify *at least three* different therapeutic interventions for a neurogenic bladder
- Define the classifications of urinary incontinence
- Discuss the psychosocial implications of genitourinary dysfunction
- Evaluate the role of the PTA in the treatment of patients with genitourinary dysfunction

Anatomy

Primary Components

- Kidneys: (Review Basic Structure)
- Ureter
- Bladder
- Urethra

Secondary Components

- Prostate
- Pelvic Floor Muscles
- Genitals

Review of Physiology

Resources to Review physiology of GU system

- Your A&P course text
- National Kidney Foundation
- A brief review: kidneys filter urea (metabolic waste product) from blood → urea + other waste = urine → eliminated through ureters and stored in bladder → excreted through genitalia

Terminology

- Incontinence = involuntary loss of urine (pathologic, anatomical, physiologic)
- Enuresis = involuntary voiding during sleep
- Voiding = emptying urine from bladder
- Micturition = Urination
- Hematuria = blood in urine
- Dysuria = abnormal urine/urination
- Urgency = sensation of need to urinate; may be neurological or due to spasm of smooth muscle in bladder

Pathology

- Urinary Tract Infection (UTI) = bacterial infection
- Urethritis = inflammation of the urethra
- Cystitis = inflammation of the bladder
- Pyelonephritis = bacterial infection in kidneys
- Nephrolithiasis = kidney stones composed of minerals and salts
- Cystocele = fallen bladder
- Neurogenic bladder = dysfunctional autonomic control of micturition
- Benign Prostate Hypertrophy/Hyperplasia (BPH) = enlargement of prostate gland

Chronic kidney disease, dialysis and diabetes will be covered in PTA 205

UTI

- Increased risk with catheterization
- Increased risk with hospitalization
- Higher incidence in individuals with diabetes and women (shorter urinary tract)
- Higher risk with PMHx of UTI
- Most common cause is E. Coli bacterial infection
- Higher incidence in patients with immunosuppression
- If untreated, can lead to kidney infection and sepsis/septic shock

Signs and Symptoms of UTI

- Frequency of urination/urinary urgency
- Painful urination
- Burning feeling in the bladder
- Milky or cloudy urine
- Reddish or bloody urine
- Fever
- Back pain

Urethritis and Cystitis

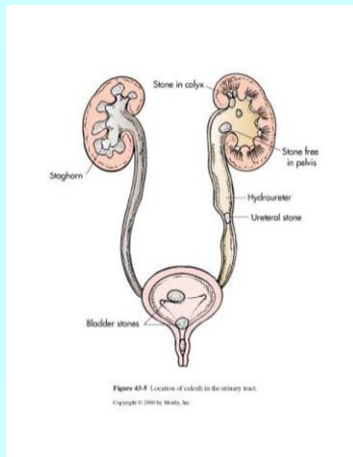
- Associated with sexually transmitted diseases (STDs)
- S/S- frequency, urgency, suprapubic pain, foul smelling urine, pyuria, dysuria
- Asymptomatic bacteriuria- hematuria, fatigue, anorexia, cognitive changes
- Results in pain, swelling of involved structure, and increased urinary frequency
- Treated with Abx and patient education/nursing care

Pyelonephritis

- Acute or chronic inflammation of renal pelvis or parenchyma of kidney
- Infection ascends from lower urinary tract
- Often, preexisting factor (hx repeat UTI, DM)
- S/S: mild sluggishness, s/s cystitis, sudden fever, chills, vomiting, malaise, severe flank pain, costovertebral tenderness on affected side
- Bacteremia (blood infection), septic shock
- Chronic pyelonephritis- starts in medulla (kidney), spreads to cortex, heals, fibrosis, scars

Nephrolithiasis

- Kidney stones: crystallization of Ca, uric acid, magnesium-ammonium acetate
- Stones may form anywhere along the urinary tract
- Stone formation is associated with decreased fluid intake, low urine volume, genetic factors, sedentary lifestyle, bed rest
- Higher risk in geographic areas with high temperatures and humidity
- S/sx similar to pyelonephritis: marked increase in flank pain and pain with urination; increased n/v



Neurophysiology

- Urination has voluntary and involuntary components
 - Recall that:
 - L1-L3 forms the sympathetic branch (hypogastric nerves)
 - S2-S4 forms the parasympathetic branch (visceral afferent pathways and pudendal nerves)

Neurogenic Bladder

- Bladder dysfunction from CNS neurologic disorder or trauma to CNS
- Tumors, SCI, TBI, ALS, CVA, MS, diabetic neuropathy, chronic UTIs
- Failure to store, empty or both: lack of impulse coordination in the nervous system
- Dysfunction of bladder or urethra
- Signs = urination on exertion, urination without sensation, chronic UTIs, inability to actively control bladder and urination
- Medical treatment may include hormone replacement therapy and medications

Renal Trauma

- Blunt trauma common- car accidents, sports, falls with injury to flank, abdomen or back
- Penetrating – gunshots, stabbing
- Dx: history, hematuria, u/a, IVP with cystogram, ultrasound, CT, MRI

PT Treatment for Neurogenic Bladder

- Pelvic floor strengthening exercises
 - Kegel most commonly known
 - Most effective in stress incontinence
- Electrical stimulation
 - Used to stimulate or decrease over-activation of pelvic floor and sphincter muscles; electrodes are internal
- Biofeedback
- Timed voiding: coordinated with estim and biofeedback to retrain recognition and coordination of neurological components

Urinary Incontinence

- Stress incontinence
- Urge incontinence
- Overflow incontinence
- Overflow/reflux incontinence = complete urinary retention (bladder is full); associated with prostate obstruction, DM, SCI and MS
- Incontinence after trauma or surgery
- Total incontinence = continuous leakage of urine from the bladder
- Functional incontinence
- All can lead to an avoidance of social activities and sexual intimacy

Causes of Urinary Retention

- Antihypertensives- Aldomet, Apresoline
- Antiparkinsonian- Levodopa
- Antihistamines
- Anticholinergics- Atropine
- Antispasmodics
- Sedatives & spinal anesthesia
- Urethral obstruction
- Psychological

Instrumentation used for Medical Management

- Urethral catheters
- Ureteral Catheters
- Suprapubic catheters
- Nephrostomy tubes
- Intermittent catheterization

Cystocele

- Fallen bladder (prolapse)
- Etiology is excessive lifting, straining during bowel movements, decreased estrogen concentrations, childbirth
- Grades are based on severity of prolapse
 - Grade 1: Bladder drops into vagina
 - Grade 2: Bladder has sunk into opening of vagina
 - Grade 3: Bladder protrudes into vaginal opening
- May require surgical repositioning (bladder sling) for stabilization

Benign Prostate Hypertrophy

- Begins to enlarge at age 40
- Affects 90% of men over age 70: hypertrophy is unrelated to severity of sx's.
- Enlargement results in urethral compression with reflexive bladder contraction regardless of urine volume (frequency and urgency increases)
- Bladder can become thickened and distended
- Symptoms include: hesitancy or weak stream, urgency, leaking/dribbling, nocturnal frequency

Terminology Associated with BPH

- TUMT (Transurethral microwave thermotherapy): heats and destroys excessive prostate tissue
- TUNA (Transurethral needle ablation): radiofrequencies burn prostate tissue
- TURP (Transurethral resection of the prostate): surgical intervention to resect prostate tissue

Role of the PTA

- Patients may often confide GU complaints and signs/sxs; physician, PT or PCP may be unaware of the condition/dysfunction
 - Documented discrepancy in incidence versus those who seek treatment
 - Neutral communication and trust is critical
 - Inform patient that treatment options may be available; encourage consultation with PCP; coordinate with PT on plan of care and care coordination
- Patients may need support and education in equipment and supplies to prevent social isolation (disability); Recognize declines in functional mobility (possible increased disability) due to incontinence
- Patients may complain of acute flank/back pain of non-mechanical origin; referral back to PT/PCP is indicated
- Monitor BP due to stress on kidney function with urinary disorders

Role of the PTA

- Assist with positioning in bed to alleviate pain from supine lying on kidneys
- I&O is monitored by nursing: be sure to notify nsg staff of urination episode, volume of urine emptied from catheter bag or bedside urinal
- Monitor catheter position during bedside and therapeutic activities to prevent reflux into bladder; gravity-dependent positioning
- Instruct post-operative patients in airway clearance and mobility program to minimize secondary complications from GU surgery
- Modify activities according to pain response with ambulation following prostate resection

Role of the PTA

- Avoid abdominal “crunches” and high impact exercises in women with GU dysfunction
- Instruct in kegel exercises
- Instruct in abdominal and dynamic pelvic floor exercises (hip ER, adductors)
- Instruct in body mechanics and pacing and prioritizing for proper lifting
- Modalities for pelvic floor reeducation; biofeedback and autonomic nervous system self-monitoring
- Maintain neutral, supportive presence with disclosure of sexual dysfunction/abuse; maintain confidentiality and dignity of patient; communicate with PT as soon as possible for care coordination
