

Chapter 29: Disorders of the Lower Urinary Tract

- I. Lower Urinary Tract Physiology
 - a. The Lower Urinary Tract is everything beneath the kidneys, beginning with the ureters
 - b. Function is to transport urine from the kidney, allowing removal from the body via the urethra
 - c. Urine movement via gravity and facilitated by peristaltic ureter movement
 - i. Peristalsis is the wavelike muscular movement
 - d. Requires integrity of ureters and bladder, competent urethral sphincters and functioning nervous system
 - e. Mechanisms of Micturition
 - i. Bladder innervation
 1. Sympathetic nerves that exit the spinal cord at L1-L2 and allow relaxing and filling → Involuntary
 - ii. Parasympathetic nerves from S2-S4
 1. Bladder contraction, internal sphincter relaxation → Involuntary
 - iii. Micturition requires central, autonomic and peripheral nervous system functioning
 1. A mix of parasympathetic and voluntary control
 - f. Note → The external sphincter is innervated by the somatic pudendal nerve which is voluntary (keeps you from peeing yourself)
- II. Voiding Dysfunction → Incontinence
 - a. Etiology
 - i. Disorders of the lower urinary tract
 - ii. Pathologies affecting the central, autonomic, and peripheral nervous systems
 - iii. Factors affecting micturition control
 1. Medication, access to toilet facilities
 - b. Neurogenic Bladder (pudendal nerve)
 - i. Specific cause is pathology that produces disruption of nervous communication governing micturition
 - c. Treatment
 - i. Behavioral
 - ii. Drugs
 - iii. Surgical → To strengthen muscles
 - iv. Physical Therapy → to work on pelvic floor muscles
 - d. Types
 - i. Urge incontinence → can't make it to the bathroom
 1. Idiopathic
 2. Bladder infection (irritate the lining of the bladder, also most common)
 3. Radiation
 4. Tumors/Stones

- 5. CNS damage
 - ii. Stress
 - 1. Weakening of pelvic muscles
 - 2. Intrinsic urethral sphincter deficiency
 - iii. Mixed
 - 1. Combination of stress and incontinence
 - iv. Overflow
 - 1. Obstruction of the urethra or an underactive/inactive detrusor muscle
 - 2. Inability to completely void the bladder
 - 3. Diabetes / MS / GB Syndrome
 - v. Functional
 - 1. Related to physical or environmental limitations in reaching a bathroom
 - vi. Risk Factors for Incontinence
 - 1. Immobility
 - 2. Medications
 - 3. Smoking
 - 4. Environmental Barriers
 - 5. Low Fluid Intake
 - 6. Pelvic Muscle Weakness
 - 7. Pregnancy/Vaginal Delivery/Episotomy
 - a. Episotomy → snip vaginal opening to allow baby delivery easier which leads to overall weakness
 - vii. Pathologies
 - 1. UTI
 - 2. Diabetes
 - 3. Stroke
 - 4. MS
 - 5. Spinal Cord Injury
 - viii. Enuresis is an inappropriate wetting of clothing or bedding (Usually children)
 - 1. Maturation delay
 - 2. Treatment is usually behavior modification
- III. Urinary Tract Infection
 - a. Presence of bacteria in urine
 - i. >100,000 colonies/mL
 - ii. e.coli is most common
 - b. Site of Infections
 - i. Urethra → Urethritis
 - ii. Bladder → Cystitis
 - iii. Kidneys → Pyelonephritis
 - c. Diagnosis
 - i. High WBC and RBC in urine
 - ii. High WBC casts in urine

1. Pyelonephritis → usually bacterial infection that spreads through the urinary tract through the urethra, ecoli, Klesbsiella, stagnant urine

IV. Recurrent UTI

a. Urethritis

- i. Inflammation of urethra
- ii. Etiology
 1. Infection of the urethra → Burning dysuria
 - a. Can ascend to the bladder
 2. Infection from the bladder
 3. STD → Gonorrhea
 - a. Limited to urethra
 - b. Foul smell
 4. External Factors
 - a. Hygiene
 - b. Water
 - c. Tight clothes
 - d. Sexual activity
 - e. Sexual assault
 5. Tight clothing
- iii. Treatment
 1. Depends on cause

b. Cystitis

- i. Inflammation of bladder lining
- ii. Suprapubic pain
- iii. Etiology
 1. Infection
 - a. Most common most originate in urethra
 2. Chemical Irritants
 3. Stones
 4. Trauma
- iv. Predisposing Factors
 1. Female → Anatomic
 2. Increased Age → Immune Response
 3. Catheterization → Foreign Body
 4. Diabetes → Immune Response
 5. Bladder Dysfunction
 6. Poor Hygiene → Other
 7. Urinary Stasis → Intrinsic
 - a. Build up oof bacteria when not going to the bathroom
- v. Clinical Manifestations
 1. Frequency, urgency, dysuria, suprapubic pain, cloudy urine
 2. Older Adults → Lethargy, anorexia, confusion, anxiety
- vi. Treatment