

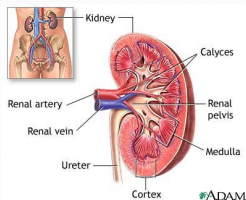
Urinary Disorders

Lemone and Burke Chapters 27, 28, 29, 50

Urinary Disorders

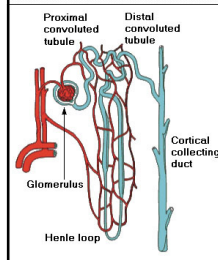
- **Objectives**
- Review anatomy and physiology
- Discuss etiology, pathophysiology, manifestation, management and nursing diagnosis of:
 - Renal calculi
 - Polycystic kidney disease
 - Glomerulonephritis
 - Prostatitis
 - BPH

Urinary System A & P



- **Organs include:**
 - Paired kidneys
 - Paired ureters
 - Bladder
 - Urethra

Urinary System A & P



- **Function of kidneys is to:**
 - Form urine
 - Excrete metabolic waste
 - Regulate acid base balance
 - Secrete hormones
- **Nephrons**
 - Glomerulus
 - Proximal convolute tubules
 - Loop of Henle
 - Distal convoluted tubules

Normal Lab values

- | | |
|------------------------------|---------------------------------------|
| BUN: 8 to 25 mg/dl | Glucose (fasting plasma) 70-110 mg/dl |
| Creatinine: 0.6 to 1.5 mg/dl | Hemoglobin |
| GFR: 120 mL/min | • Male: 13.8-17.2 g/dl |
| Sodium: 135 to 145 mmol/L | • Female: 12.1-15.1 g/dl |
| Potassium: 3.5-5.5 mEq/L | HCT |
| Chloride: 97-110 mmol/L | • Male: 40-50% |
| | • Female: 36-44% |

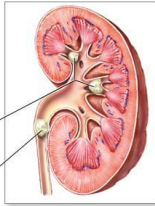
Urinary calculi

- **Lithiasis – stone formation**
 - Nephrolithiasis
 - Urolithiasis
 - Ureterolithiasis
- **Incidence and risk factors**
 - Industrialized country
 - In US – south or Midwest
 - males > females
 - Family hx
 - Dehydration
 - Immobility
 - Ca, oxalate, protein intake
 - Gout, urinary stasis, hyperparathyroidism

Renal Calculi - Pathophysiology



Kidney stones in the minor and major calyces of the kidney
Kidney stone in the ureter

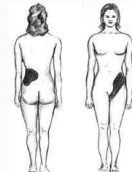


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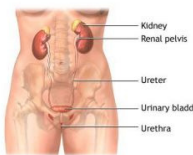
- 3 contributing factors:
 - Super saturation
 - Nucleation
 - Lack of inhibitory substances
- Composition:
 - 75-80% are calcium stones
 - 5-10 % Uric acid stones
 - 15 -20 % Struvite stones
 - Cystine stones

Manifestation Renal Calculi

- Kidney stones:
 - Often asymptomatic
 - Dull aching flank pain
 - Microscopic hematuria
 - UTI
- Bladder stones:
 - may be asymptomatic
 - Dull suprapubic pain
 - Gross or microscopic hematuria
 - UTI
- Ureteral stones:
 - Renal colic
 - Acute severe flank pain
 - Radiates to suprapubic region, groin and external genitals
 - N/V, pallor, cool clammy
 - UTI



Complication of Renal Calculi



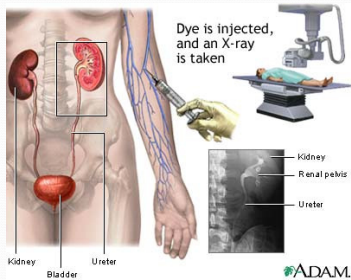
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- UTI
 - Chills, fever, urgency, frequency, dysuria
- Hydronephrosis
 - Acute
 - Acute colicky pain, may radiate into groin and abdomen
 - Hematuria, pyuria
 - Fever, N/V
 - Chronic
 - Dull, aching flank pain
 - Hematuria, pyuria
 - Fever
 - Palpable flank mass

Diagnosis Renal Calculi

- Symptoms
- Lab tests
 - UA
 - Serum calcium, phosphorus, uric acid levels
 - Urine calcium uric acid, oxalate levels
 - Chemical analysis of stones
- Radiology tests
 - KUB
 - Renal ultrasound
 - CT
 - IVP

Diagnosis - IVP



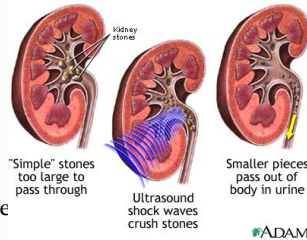
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Management Renal Calculi

- Medication
 - Analgesic
 - Prevention of further calculi
 - Antibiotics
- Nutrition and fluid
 - Oral and IV fluids
 - Limit foods that can contribute to stone formation

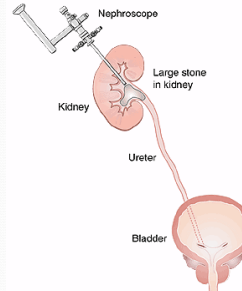
Management Renal Calculi

- **Extracorporeal shock wave lithotripsy (ESWL)**
 - Sound shock wave to break stone into small fragments
 - Under conscious sedation
 - Strain all urine to monitor passage of stone fragments
 - Bruising may occur on flank



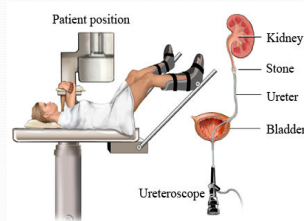
Management Renal Calculi

- **Percutaneous ultrasonic lithotripsy**
 - Nephroscope
 - Stone fragmented using ultrasonic waves



Management Renal Calculi

- **Laser lithotripsy**
 - Nephroscope or ureteroscope
- **Retrograde ureteroscopy**
 - Stones are manually removed
- **Surgery - rare**



Nursing Care Renal Calculi

- H & P
- Pain control
- Adequate fluid intake
- Strain urine
- Teaching:
 - Dietary changes
 - Adequate fluid intake
 - Physical activity

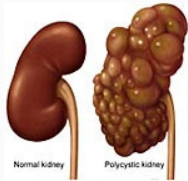
Nursing Diagnosis – Renal Calculi

- Acute pain
- Impaired urinary elimination
- Knowledge deficit
- Risk for infection
- Fluid volume deficit

Polycystic Kidney Disease

- Hereditary – cyst formation and kidney enlargement
- 2 forms
 - Autosomal recessive
 - Autosomal dominant
- Incidence
 - Autosomal dominant affects 1 in 300-1000 people in US
 - Accounts for 4 % ESRD

Polycystic Kidney Disease



- **Pathophysiology**
 - Fluid filled cysts affect nephrons
 - Renal blood vessels and nephrons compressed
 - Fibrotic, atrophic, scarred tissue

Polycystic Kidney Disease



- **Manifestation**
 - Slow progression
 - Flank pain, hematuria,
 - UTI, calculi, HTN,
 - CRF

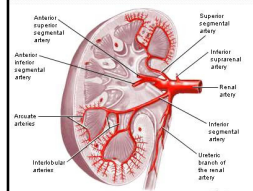
Polycystic Kidney Disease - Management

- **Diagnosis**
 - Renal US
 - IVP
 - CT
- **Supportive management**
 - Avoid further renal damage
 - Stress increased fluid intake
 - Control HTN

Polycystic Kidney Disease – Nursing Dx

- Knowledge deficit
- Risk for ineffective coping
- Chronic /acute pain
- Constipation
- Risk for infection
- Potential for HTN
- Potential for renal failure
- Excess fluid volume

Glomerulonephritis



- Inflammation of glomerular capillary membrane
- Streptococcal or viral infection
- Immune complexes trapped in glomerular membrane
- Leading cause of CRF in US

Glomerulonephritis - Manifestation

- Acute disease onset rapid
 - Hematuria, proteinuria, salt and H₂O retention
 - Brown urine
 - Edema
 - HTN
 - Fatigue
 - Anorexia
 - N/V
 - Pulmonary infiltrates

Glomerulonephritis

- **Nephrotic syndrome**
 - Proteinuria, hypoalbuminemia, hyperlipidemia,
 - Glomerulonephropathy
 - Edema
 - Risk of thromboemboli
 - Risk for renal impairment

Glomerulonephritis

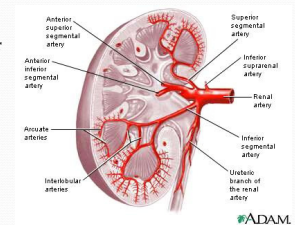
- **Good-pasture syndrome**
 - Auto-immune disorder
 - Unknown etiology
 - Antibodies form
 - Mainly affects young men
 - Causes hematuria, proteinuria, edema

Glomerulonephritis

- **Chronic glomerulonephritis**
 - Progressive
 - Kidneys decrease in size
 - Course varies

Glomerulonephritis - Diagnosis

- Streptococci detection
 - Throat or skin culture
 - Antistreptolysin O (ASO) titer
- ESR
- KUB
- Kidney scan
- Biopsy
- BUN
- Creatinine
- Creatinine clearance
- Serum electrolytes
- UA



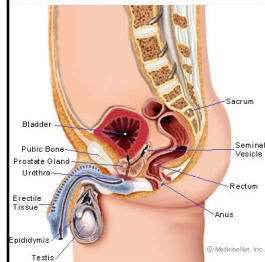
Glomerulonephritis- Management

- Medication
 - Antibiotics
 - Immunosuppressive therapy
- Treatment
 - Bedrest
 - Na , K, and protein restriction
 - Diuretics
 - Plasmapheresis
 - Dialysis

Glomerulonephritis –Nursing Dx

- Excess fluid volume
- Ineffective tissue perfusion
- Risk for imbalanced nutrition
- Ineffective protection
- Risk for ineffective therapeutic regimen management
- Fatigue
- Ineffective role performance

Prostatitis



- Inflammation of prostate gland
 - Acute bacterial prostatitis
 - Chronic bacterial prostatitis
 - Chronic prostatitis
 - Prostatodynia

Prostatitis

- Diagnosis
 - Cultures
 - X-ray, US
- Medications
 - Antibiotics
 - NSAIDS
 - Anticholinergics
 - Muscle relaxants

Prostatitis

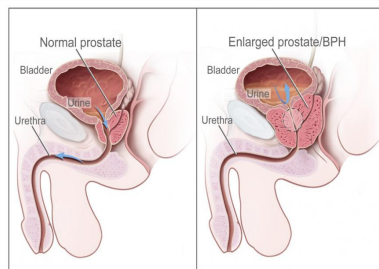
- Nursing care
 - Symptom management
 - Sitz bath or local heat
 - NSAIDS
 - Increase fluid intake
 - Regular BM
 - Finish antibiotic therapy

Benign Prostate Hyperplasia (BPH)

- Age related non-malignant enlargement of the prostate gland
- Begins age 40-45
- Affects 50% men >60 years
- Risk factors:
 - Age
 - Family Hx
 - Race
 - Diet

BPH - Pathophysiology

- Precondition:
 - age >50,
 - Testes
 - Hyperplasia
 - Hypertrophy

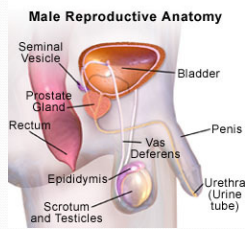


BPH- Manifestation

- Diminished force of urinary stream
- Hesitancy in initiating urinary stream
- Post void dribble
- Sensation of incomplete emptying
- Urinary retention
- Nocturia
- Frequency
- Urgency and urge incontinence
- Dysuria

BPH - Complications

- Bladder distension
- Infection
- Hydronephrosis
- Renal insufficiency



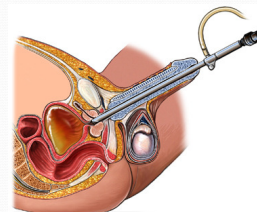
BPH - Diagnosis

- Physical examination
 - DRE
 - Post-void catheterization
- Tests
 - BMP
 - UA
 - PSA
 - KUB/IVP

BPH - Management

- Medication
 - Anti-androgen
 - Alpha-adrenergic antagonist
 - herbal
 - Meds to avoid: antihistamines, anticholinergics
- Surgery
 - Criteria:
 - Chronic bladder infection
 - Acute urinary retention
 - Hematuria
 - Hydronephrosis
 - Bladder neck obstruction syndrome (frequency, urgency)

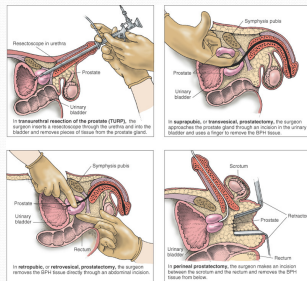
BPH - Surgery



- Transurethral microwave thermotherapy
- TUNA
- TURP
- TUIP
- YAG

BPH-Surgery

- Open surgery
 - Large prostate
- Abdominal wall
- Perineal floor

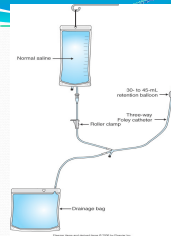


BPH – Nursing Care

- Pre – op
 - Assess knowledge of procedure
 - Explain procedure and post op expectations
- Post-op
 - VS
 - I+O
 - Catheter patency
 - Pain management
 - Labs
 - SCD
 - Encourage fluid intake

BPH – Nursing Care

- Continuous bladder irrigation (CBI)
 - Purpose :
 - Traction on prostate
 - wash out clots
 - Care
 - Accurate I+O
 - Explain CBI to pt
 - Assess catheter q 1-2 hrs
 - Assess labs: H/H, Na



Active 6. Attaching irrigation tubing to irrigation port of three-way Foley catheter using sterile technique.

BPH – Nursing Diagnosis

- Knowledge deficit
- Acute pain
- Urinary retention
- Risk for infection
- Risk for imbalanced fluid volume

Questions?????



"It's quite common with men your age. You've got a silver duct tapeworm."

Renal calculi – case study



- David Foster, 28 y/o carpenter admitted w severe right sided flank pain
- Tests ordered?
- Assessment findings?
- Management?
- Nursing Dx?

Nursing care of client having Lithotripsy

Glomerulonephritis – Case study



- Tanesha Johnson 29 y/o student teacher presents to her provider w c/o brown frothy urine.
- Tests ordered?
- Assessment findings?
- Management?
- Nursing Dx?

Benign Prostate Hyperplasia



- Frank Johnson 65 y/o retired bank manager c/o urinary frequency - small amounts only
- Tests ordered?
- Assessment findings?
- Management?
- Nursing Dx?