Renal Outline - Child

I. Wilm's Tumor (Nephroblastoma)

A. Overview
   1. Renal malignancy that may involve one or both kidneys
   2. Most common malignant neoplasm of the kidney in children

B. Symptoms & Diagnosis
   1. Often discovered by a parent who notices an increased abdominal size or by MD during routine physical exam (abdominal mass)
   2. "mass appears overnight" usually favors left kidney
   3. S&S- abdominal pain, vomiting, fever, hematuria, some have HTN

C. Treatment
   1. Depends on staging of the tumor process
   2. DO NOT palpate the abdomen any more than necessary
   3. Surgery – chemo – radiation

D. Prognosis
   1. Usually excellent, however if relapse – prognosis is poor

II. Cryptorchidism

A. Definition- Failure of one or both testes to descend from the abdominal cavity to the scrotum

B. Incidence- more common in preterm males, but can happen to full term males as well

C. Etiology- Cause not known

D. Diagnosis
   1. Palpation
   2. Ultrasound
   3. CT scan

E. Therapeutic Management
   1. If persists after 6mths- 1 year – refer to surgeon
   2. Orchiopexy- surgical repositioning of the testis done between 1 and 2 years as OP
   3. Teaching- higher risk of testicular cancer. Self-exams

III. Enuresis

A. Definition – involuntary voiding of urine beyond the expected age at which voluntary control should be achieved after successful toilet training.

B. Classification
   1. Primary – never achieved dryness for at least 3 mths
   2. Secondary- child dry for a period of time, then starts wetting again
   3. Diurnal- daytime wetting only (more common in girls)
   4. Nocturnal- nighttime wetting only (more common in boys)

C. Diagnosis
   1. Organic factors: structural disorders, UTI, constipation, diabetes, kidney disorders
   2. Non-organic factors: sleep disturbances/disorders, stress
   3. Physical exam and detailed history
   4. Voiding diary by parents
   5. Renal ultrasound

D. Treatment
   1. If organic- treat specific cause
   2. Medications – used with other therapies. Not a cure, part of treatment
      a) Oxybutyin chloride (Ditropan)- reduces overactive bladder symptoms
      b) Desmopressin (DDAVP)- reduces flow of urine (nighttime usage)
      c) Imipramine (Tofranil)- inhibits urination, can lighten sleep
   3. Bed wetting alarms –

4. Motivational therapies –
5. Elimination diets- Avoid certain foods and eating/drinking too late in the evening before bed

IV. Nephrotic Syndrome

A. Definition-clinical state that includes massive proteinuria, hypoalbuminemia, hyperlipidemia and edema.
- **1.** Glomeruli stop working properly and become permeable to proteins and albumin due to some type of injury
- **2.** Results in massive proteinuria and hypoproteinemia, hypoalbuminemia and hyperlipidemia
- **3.** With less protein in the blood, changes in osmotic pressure occur within intravascular spaces and extracellular edema occurs.

B. Incidence- males 2:1 and occurs in any age but especially 2-7yrs old

C. Main Type
- **1.** Minimal Change Nephrotic Syndrome (MCNS)-most common form 80% of cases

D. S&S- Characteristic symptoms of Minimal Change Nephrotic Syndrome
- **a)** Proteinuria
- **b)** Edema/Ascites
- **c)** Low serum albumin
- **d)** Increased blood lipid level- not fully understood why this happens

E. Clinical Manifestations
- **1.** Previous well child begins to gain weight
- **2.** Puffiness, Edema to face, extremities, abdomen
- **3.** Edema of intestinal mucosa
- **4.** Volume of urine decreases
- **5.** Skin
- **6.** Behavior- irritable, lethargic
- **7.** Weight loss obscured by edema

F. Diagnostics
- **1.** History- do the characteristic symptoms exist?
- **2.** UA
- **3.** Serum
- **4.** Renal biopsy- to differentiate between other types of nephrotic syndrome

G. Therapeutic Management
- **1.** Goal: reduce excretion of protein, reduce fluid retention, prevent infection, minimize complications
- **2.** Diet- low salt diet, fluid restriction
- **3.** Corticosteroid therapy
  - **a)** Prednisone – safest and least expensive
- **4.** May have tendency to relapse 1-3 times a year due to allergies/immunizations/illness
- **5.** Diuretics to reduce fluid retention in the tissues

I. Nursing Considerations
1. I&O
2. Daily weights
3. Abdominal girths
4. Loss of appetite
5. Parent teaching

J. Prognosis
1. If dx early then damage to basement membrane is less and renal function is near normal

I. Acute glomerulonephritis

H. Definition- Inflammation of glomeruli

I. Etiology- reaction that occurs often as a by-product of a recent strep infection

J. Pathophysiology

1. Strep infection – release of membrane like material from organism into circulation – antibodies are formed – immune complex reaction occurs – leukocytes get trapped in glomerular capillary loop and occlude the capillary lumen

2. Decreased glomerular filtration rate

K. Clinical Manifestations

a) Puffiness of face/eyes worse in the AM, edema generalized

b) anorexia

c) Dark colored urine and decreased volume

b) Pale

c) Lethargy, irritable

d) Older children: headache, abdominal discomfort, dysuria

e) Vomiting

f) HTN

L. Diagnosis

1. UA- hematuria, proteinuria

2. Serum

a) BUN and Creatinine elevated often

b) inc ASO – antistreptolysin which means a recent strep infection occurred

M. Therapeutic Management

1. Antibiotics- to rid the offending organism if strep suspected to be persistent

2. Diuretics

3. Supportive: Bed rest, good nutrition, low activity

4. Improvement= increased urination amount, decreased edema

N. Complications

1. Hypertensive encephalopathy

2. Acute cardiac decompensation- CHF s/s

3. Acute renal failure

O. Nursing Considerations/ Care

1. Assess

a) Fluid balance

b) VS

c) Daily weights

P. Prognosis- complete recovery

V. <u>Hemolytic Uremic Syndrome (HUS)</u>

A. Definition-

1. Clinical Features:

a) Hemolytic anemia

b) Thrombocytopenia

c) Acute renal failure

d) Can also have CNS symptoms

B. Etiology- exact cause unknown, could be linked to undercooked meat, contaminated h20

C. Pathophysiology

1. Site of injury: endothelial lining of small glomerular arterioles of the kidney

a) Deposit of platelets and fibrin – partial or complete occlusion of arterioles and capillaries of the kidneys

b) Erythrocytes and platelets try to travel these occluded vessels – they are fragmented- RBC's are damaged and removed by the spleen = anemia

2. Thrombocytopenia

3. Renal failure

D. Clinical Manifestations
1. Hemorrhagic manifestations-bruising, petechiae, bloody diarrhea
2. Vomiting, irritable, lethargic
3. Possible CHF symptoms- swelling hands/feet
4. Decreased renal function-oliguria, anuria
5. CNS involvement

E. Diagnosis
1. Labs
    a) Serum- BUN/Creatinine elevated, low Hgb and Hct
    b) Urine- protein and blood in urine

F. Management- treat the AKI and anemia
1. Treat anemia prn- blood transfusions
2. Dialysis prn if severe case
3. Prevent circulatory overload

G. Prognosis- good recovery with prompt treatment

H. Prevention