

# Pathophysiology II

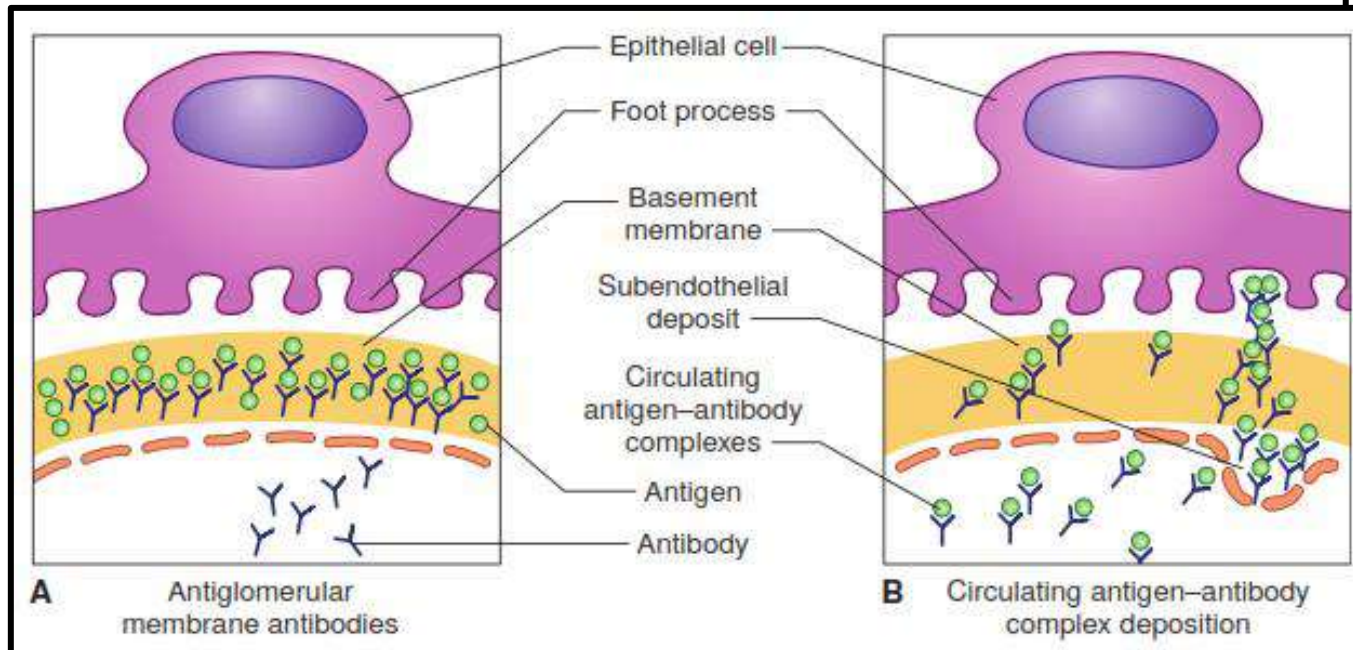
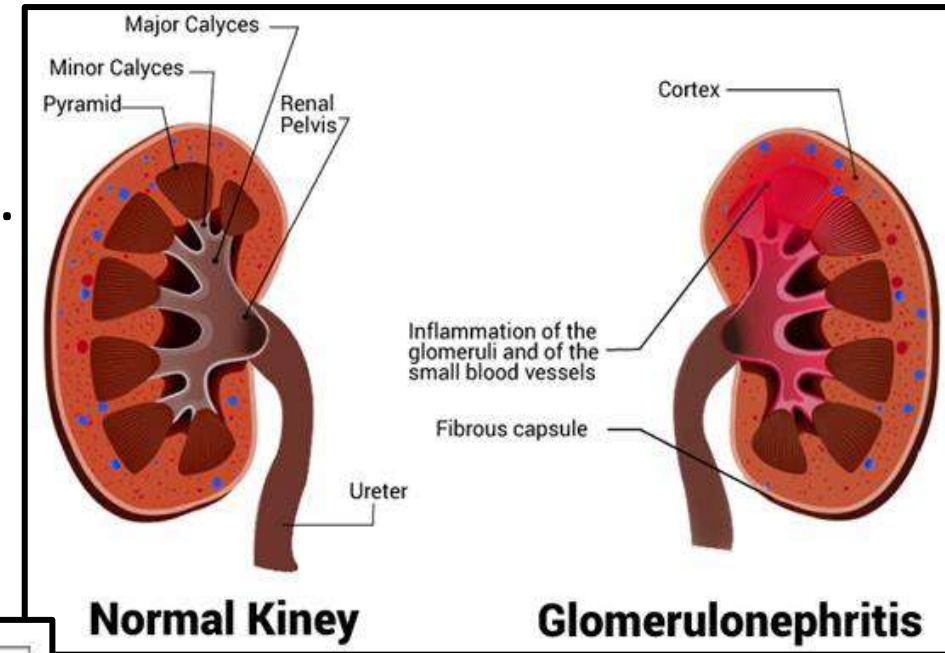
## Chapter (4): Kidney diseases

- Inflammatory Disorders
- Urinary Tract Obstructions
- Vascular Disorders
- Congenital Disorders
- Renal Failure

# Inflammatory Disorders

## 1. Glomerulonephritis (Nephritic Syndrome)

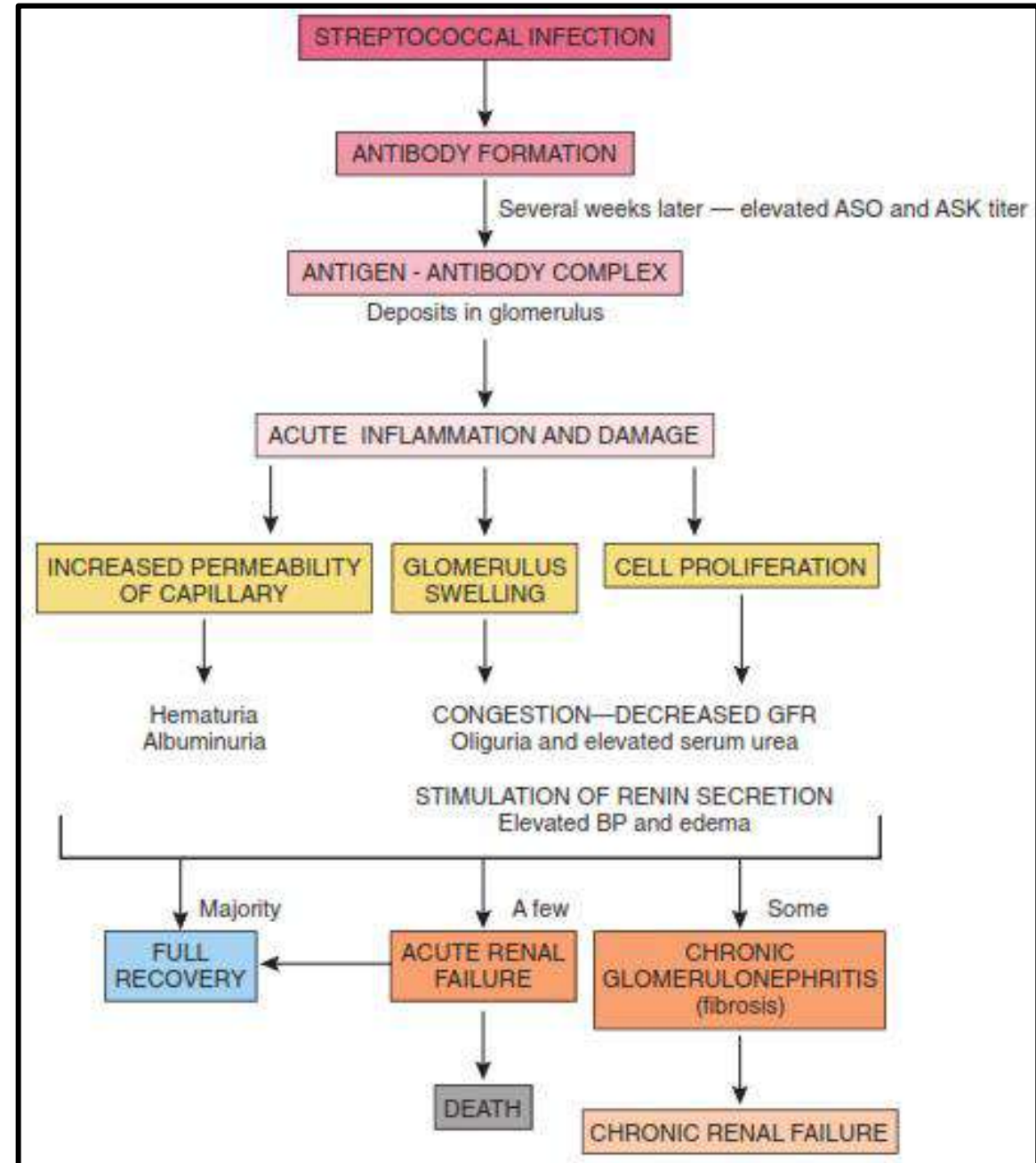
- It is an inflammatory process that involves glomerular structures.
- Causes:
  - Immunologic: type II, and type III hypersensitivity, infections
    - Acute poststreptococcal glomerulonephritis (APSGN)
  - Non-Immunologic : HTN, DM, toxic substances



# Inflammatory Disorders

## 1. Glomerulonephritis (APSGN)

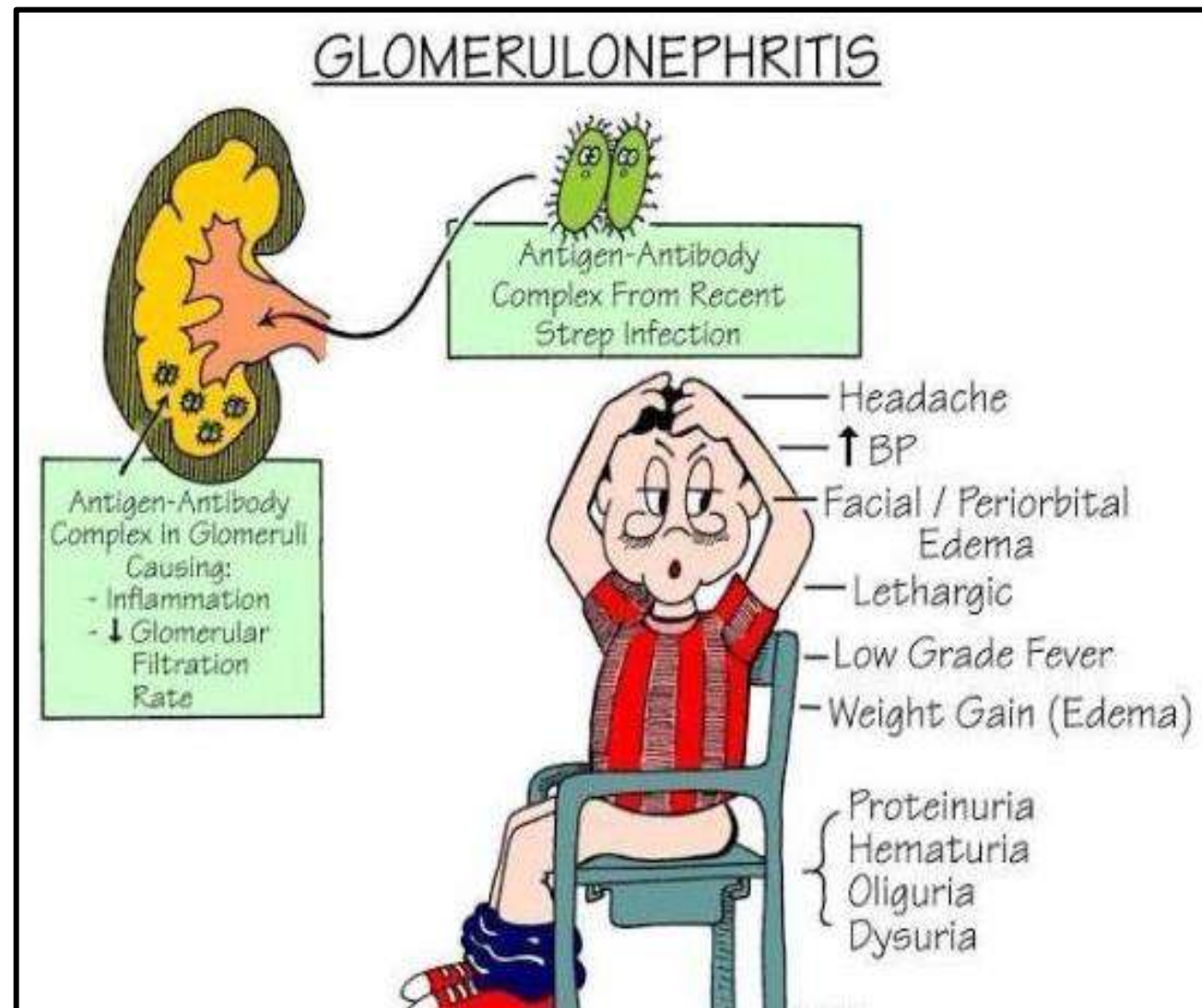
- Pathogenesis



# Inflammatory Disorders

## 1. Glomerulonephritis (APSGN)

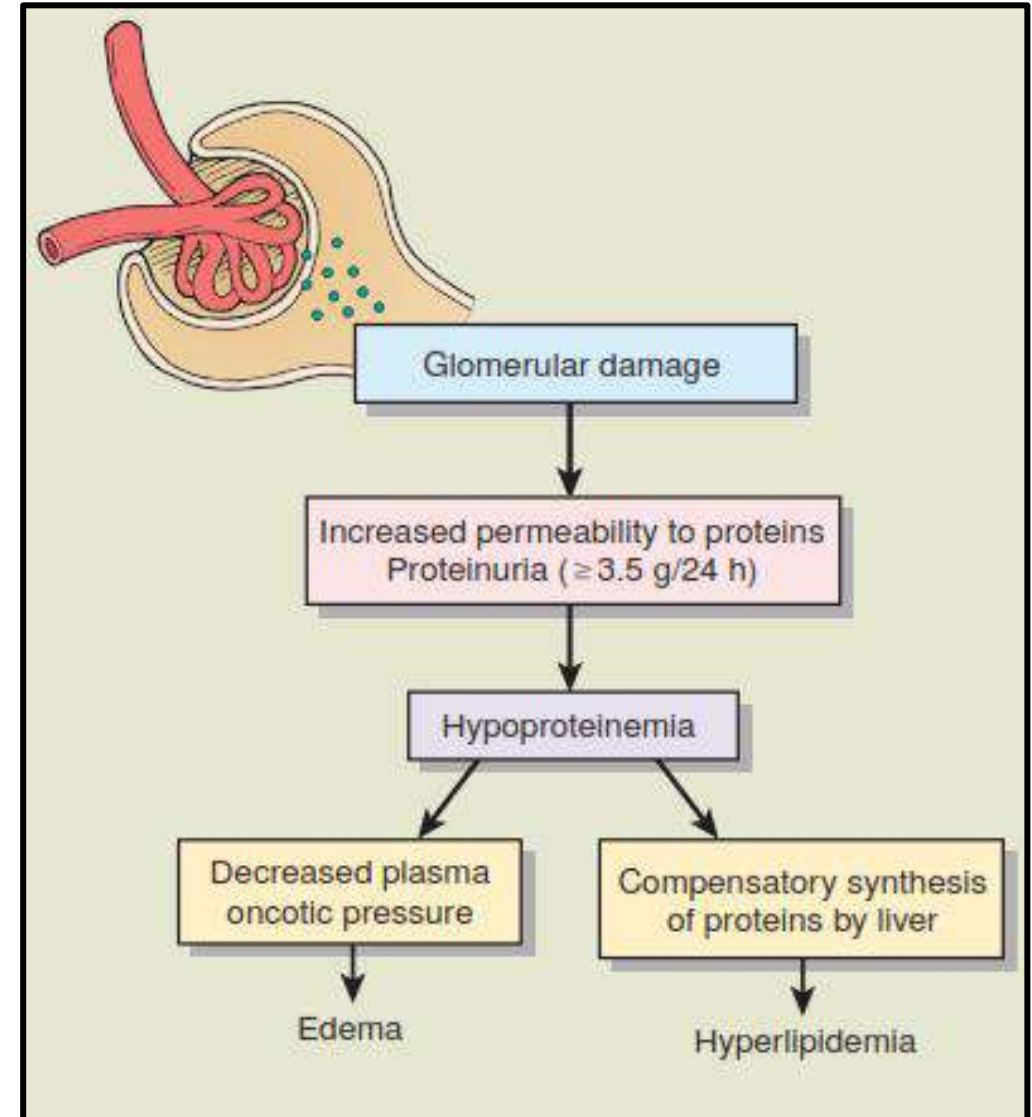
- Symptoms
- Diagnosis
- Blood tests
  - Serum urea and creatinine levels
  - Streptococcal antibodies: Anti DNase B, anti-streptolysin-O (ASO), and anti-streptokinase (ASK)
  - Metabolic acidosis
- Urine tests
  - Proteinuria, and hematuria
- Treatment



# Inflammatory Disorders

## 2. Nephrotic Syndrome (Nephrosis)

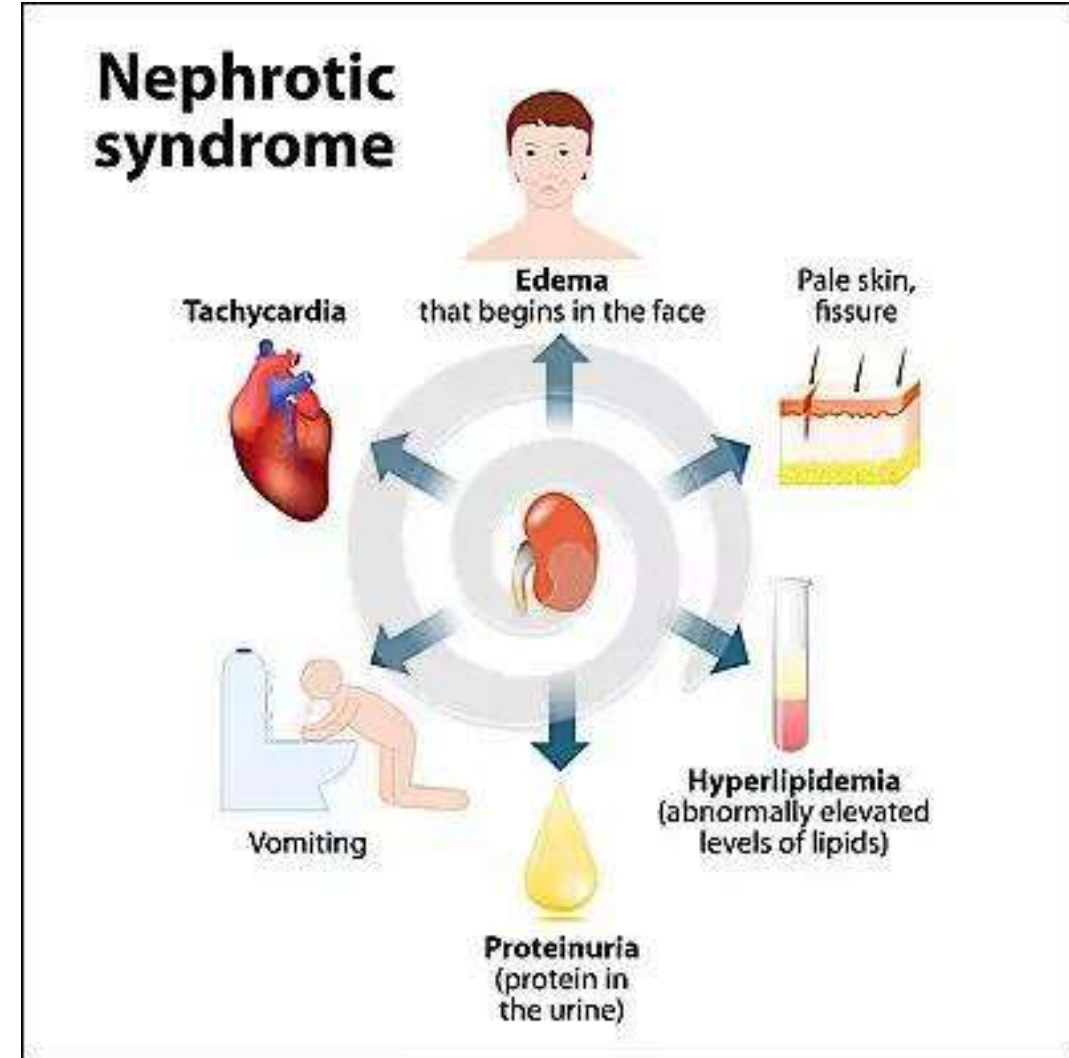
- It is a kidney disorder characterized by high protein in the urine, low blood albumin levels, lipiduria, high blood lipids, and significant swelling (massive edema).
- Secondary:
  - Renal diseases: glomerulonephritis
  - HTN, DM, SLE, drugs



# Inflammatory Disorders

## 2. Nephrotic Syndrome (Nephrosis)

- Symptoms
  - **Anasarca**
- Treatment

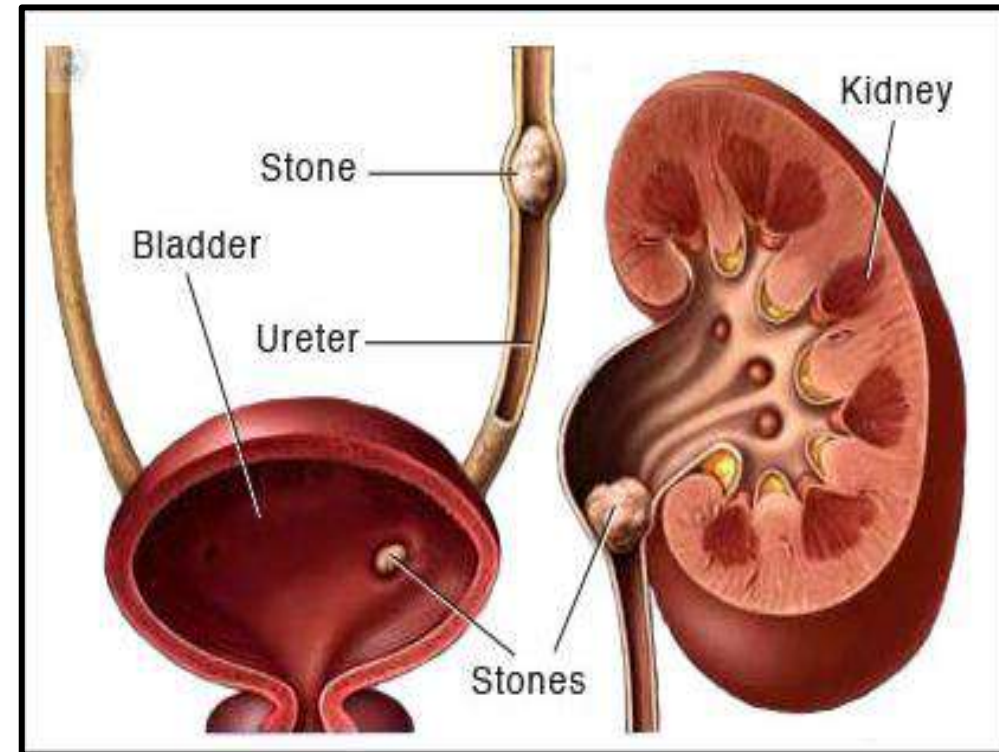


# Urinary Tract Obstruction

- It is the drop in the normal urine flow through any part of urinary tract causing urinary retention.
  - Renal stones
  - Benign prostatic hyperplasia

## Urolithiasis (renal calculi, kidney stones)

- It is the formation of stones anywhere in the urinary tract.



# Urinary Tract Obstruction

## Urolithiasis (renal calculi, kidney stones)

- Types
- Causes



Calcium Oxalate Stones



Cystine Stones



Uric Acid Stone



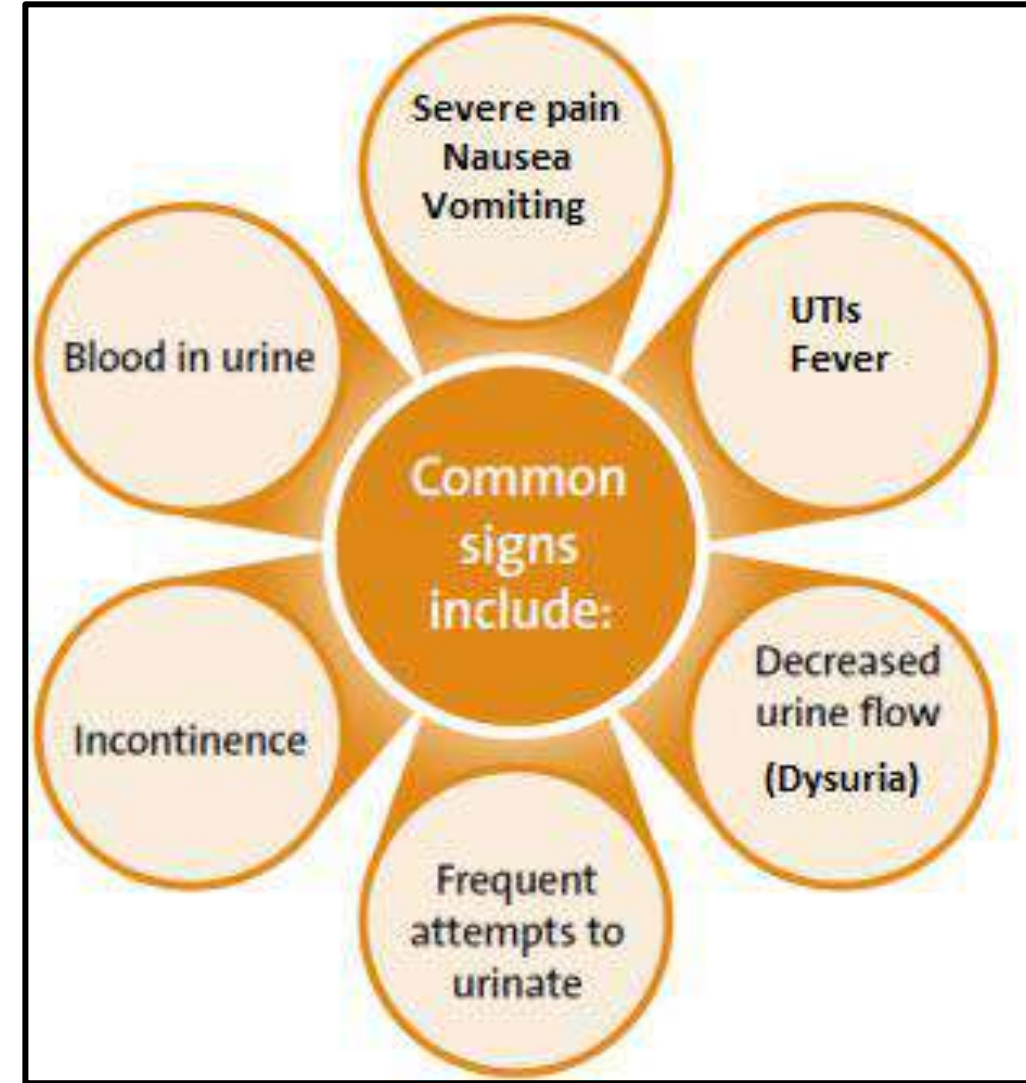
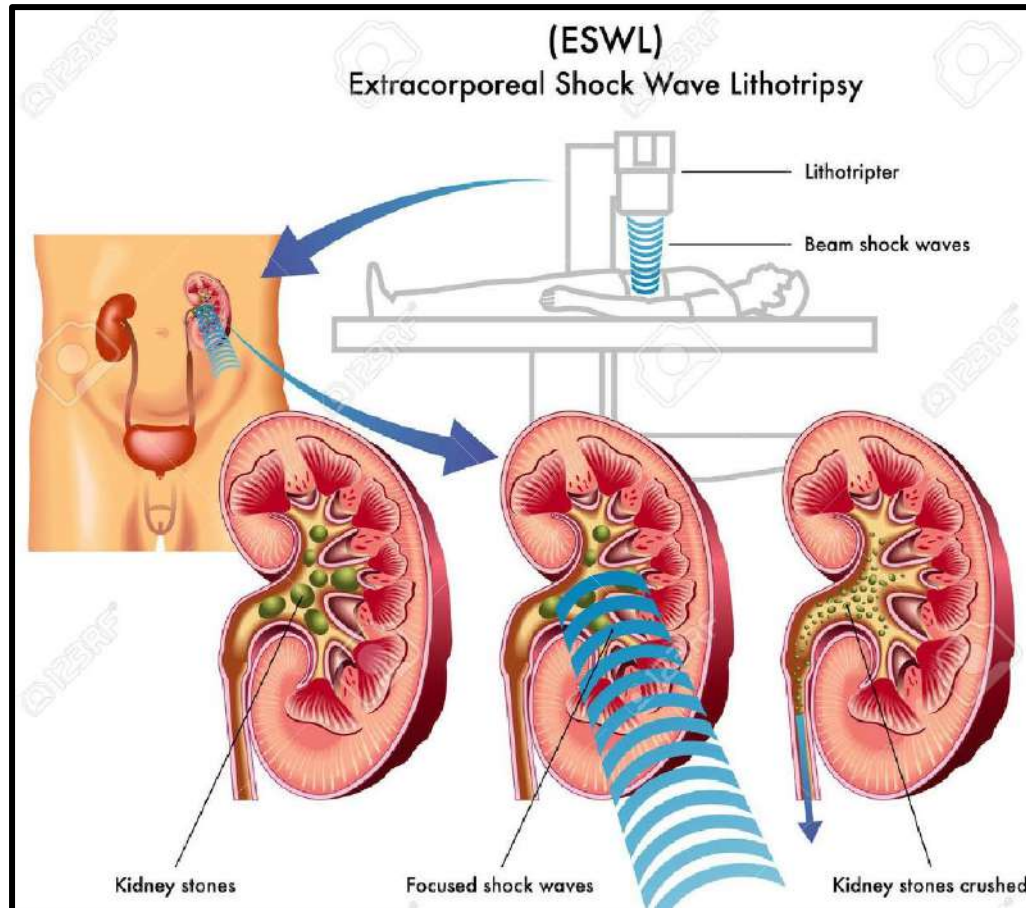
Struvite Stone



# Urinary Tract Obstruction

## Urolithiasis (renal calculi, kidney stones)

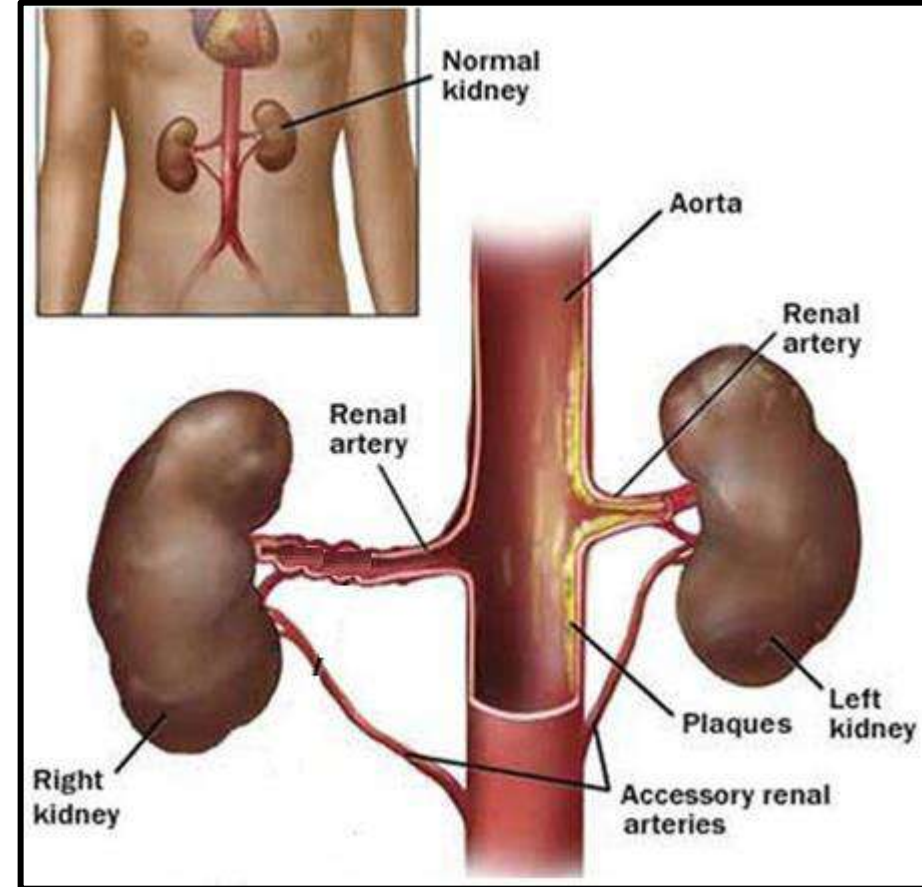
- Symptoms
- Treatment



# Vascular disorders

## Nephrosclerosis

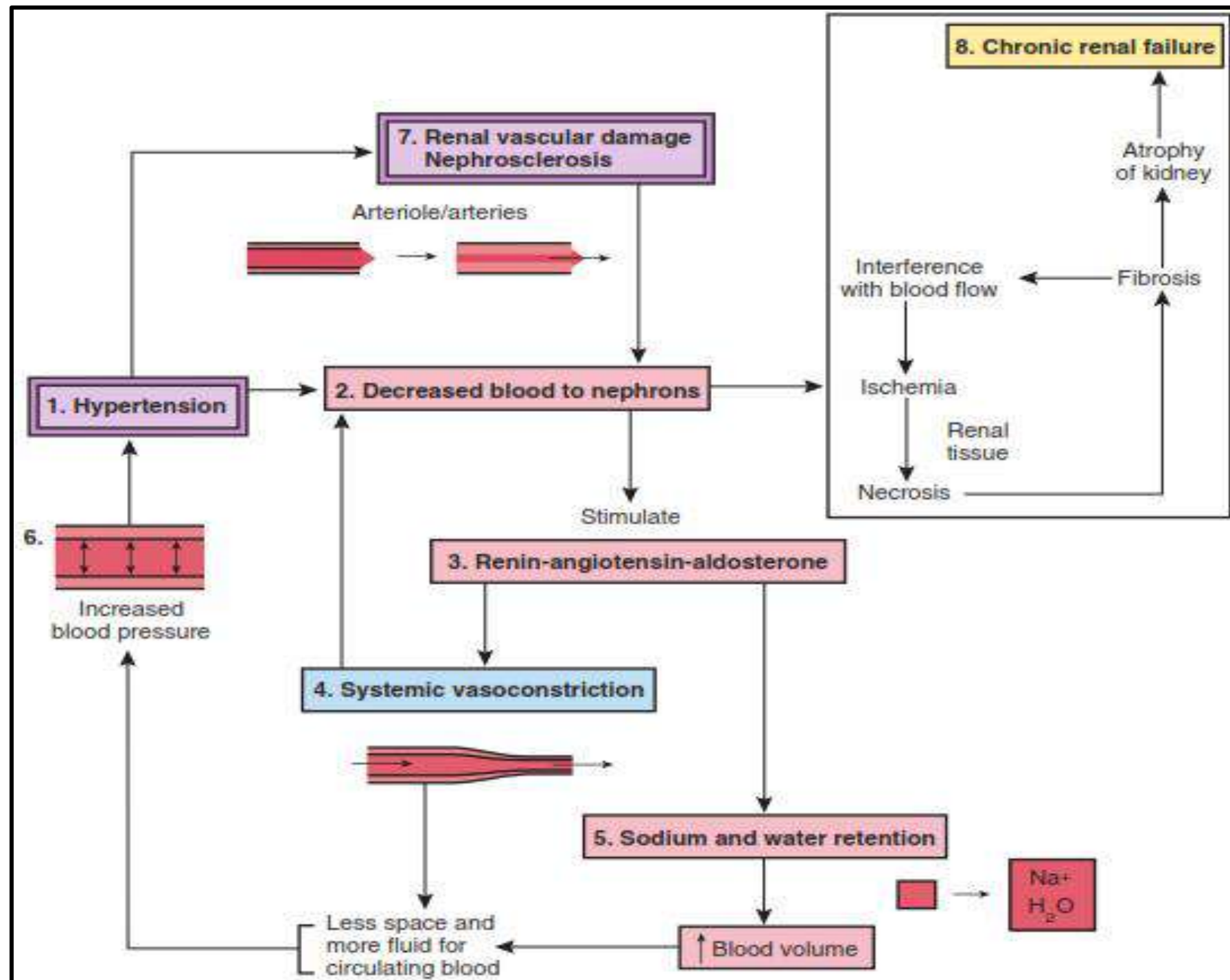
- It is hardness of the walls of the small arteries and arterioles of the kidney.
- Causes
  - Hypertension: Major, hypertensive nephrosclerosis
  - DM: Diabetic nephrosclerosis
  - Aging



# Vascular disorders

## Nephrosclerosis

- Pathogenesis of hypertensive nephrosclerosis

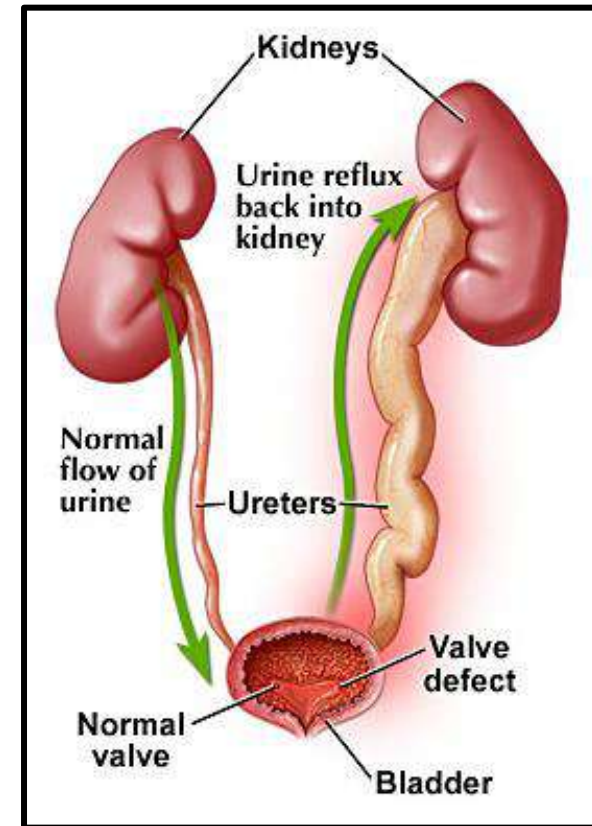
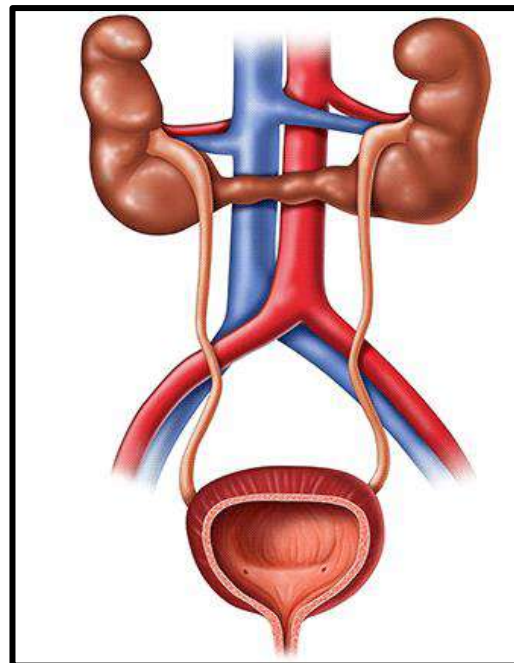
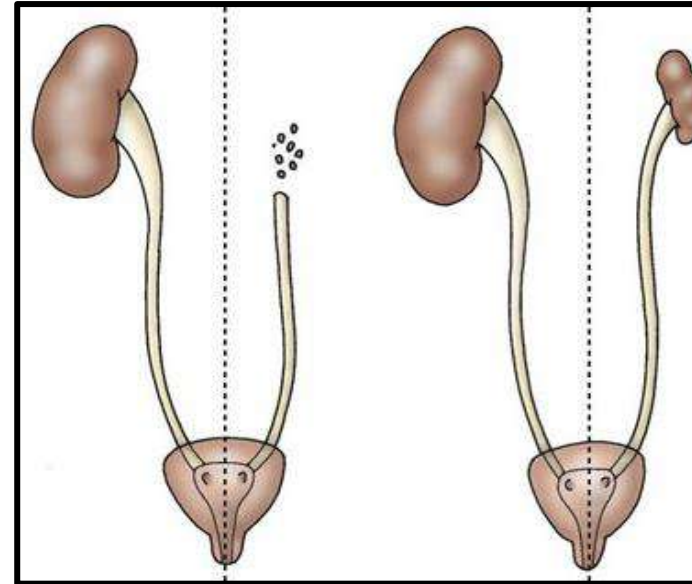
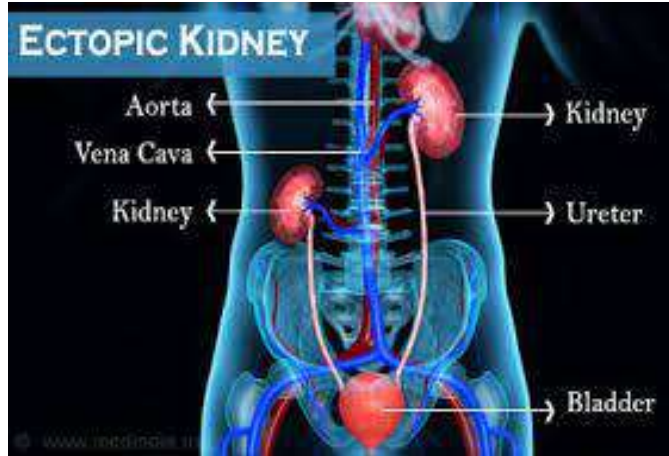


## Nephrosclerosis

- **Diagnosis**
  - **Blood test**
  - **Urine analysis**
  - **Ultrasound of the kidneys**
  
- **Treatment**

# Congenital disorders

- Vesicoureteral reflux
- Agenesis
- Hypoplasia
- Ectopic kidney
- Horseshoe kidney



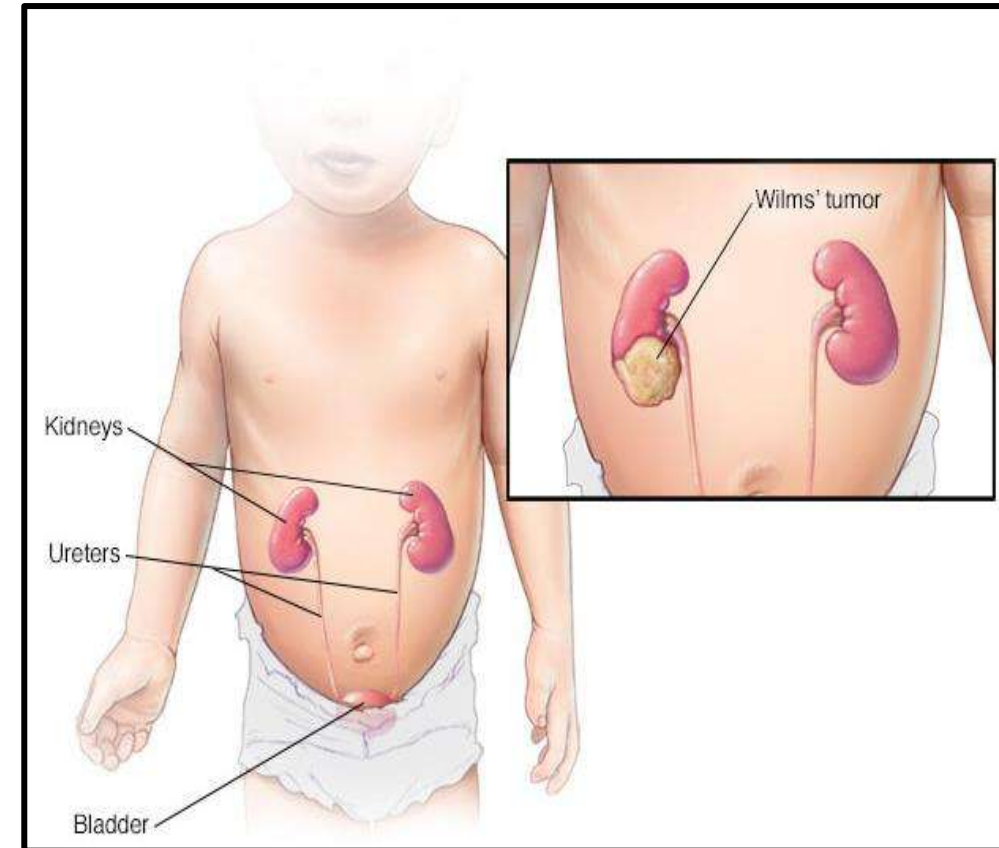
# Congenital disorders

## Nephroblastoma (Wilm's tumor)

- It is a defect in the tumor suppression gene (Wilm's tumor gene) at chromosome 11 leading to cancer in one kidney.
- Unilateral, mainly in children (2-5 years)

### Symptoms

- Nontender, abdominal mass
- Abdominal swelling
- Abdominal pain
- Fever
- High blood pressure
- Vomiting
- Hematuria
- Loss of appetite



# Renal failure

- **It is a condition occurs when the kidneys lose the ability to filter waste from the blood sufficiently.**
  - **Acute renal failure: rapid, reversible**
    - **Causes**
  - **Chronic renal failure: slow, gradual irreversible**
    - **Causes**

# Renal failure

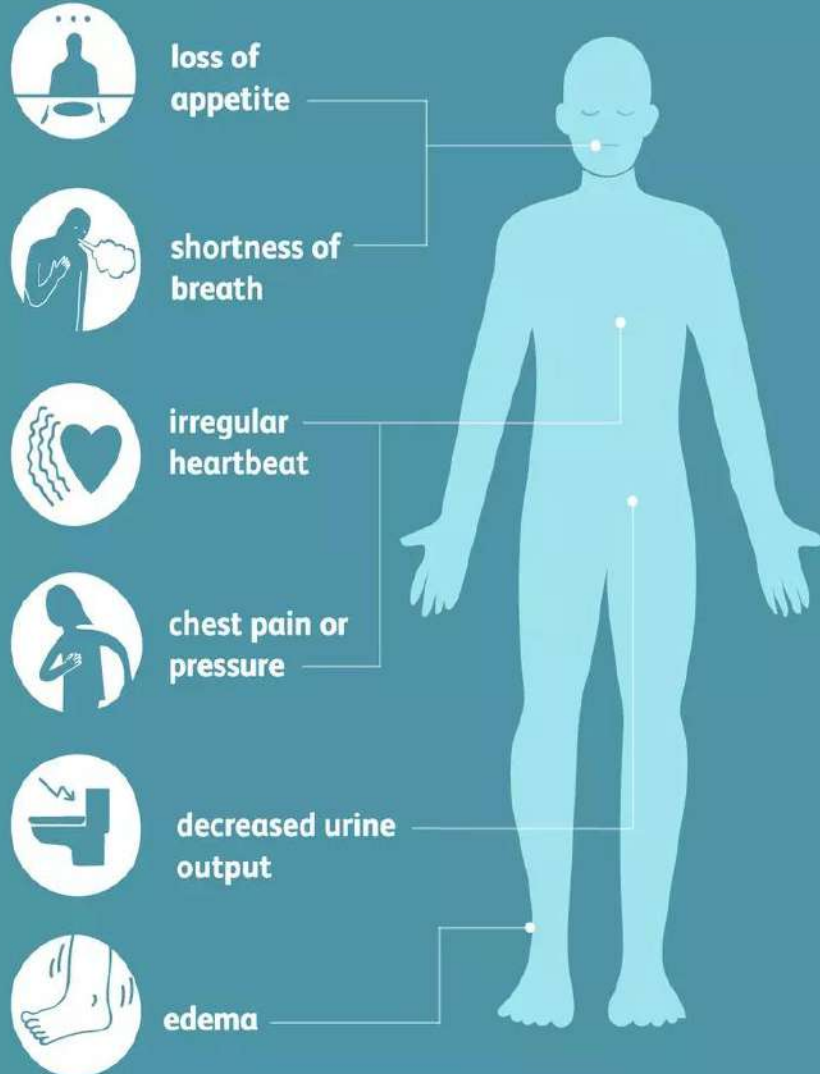
- **It is a condition occurs when the kidneys lose the ability to filter waste from the blood sufficiently.**
  - **Chronic renal failure: slow, gradual irreversible**
    - **Causes**
    - **Stages of chronic renal failure**
      - **Early stage (decreased reserve)**
      - **Second stage (renal insufficiency)**
      - **Last stage (end stage renal disease)**



# Renal failure

## Acute Renal Failure

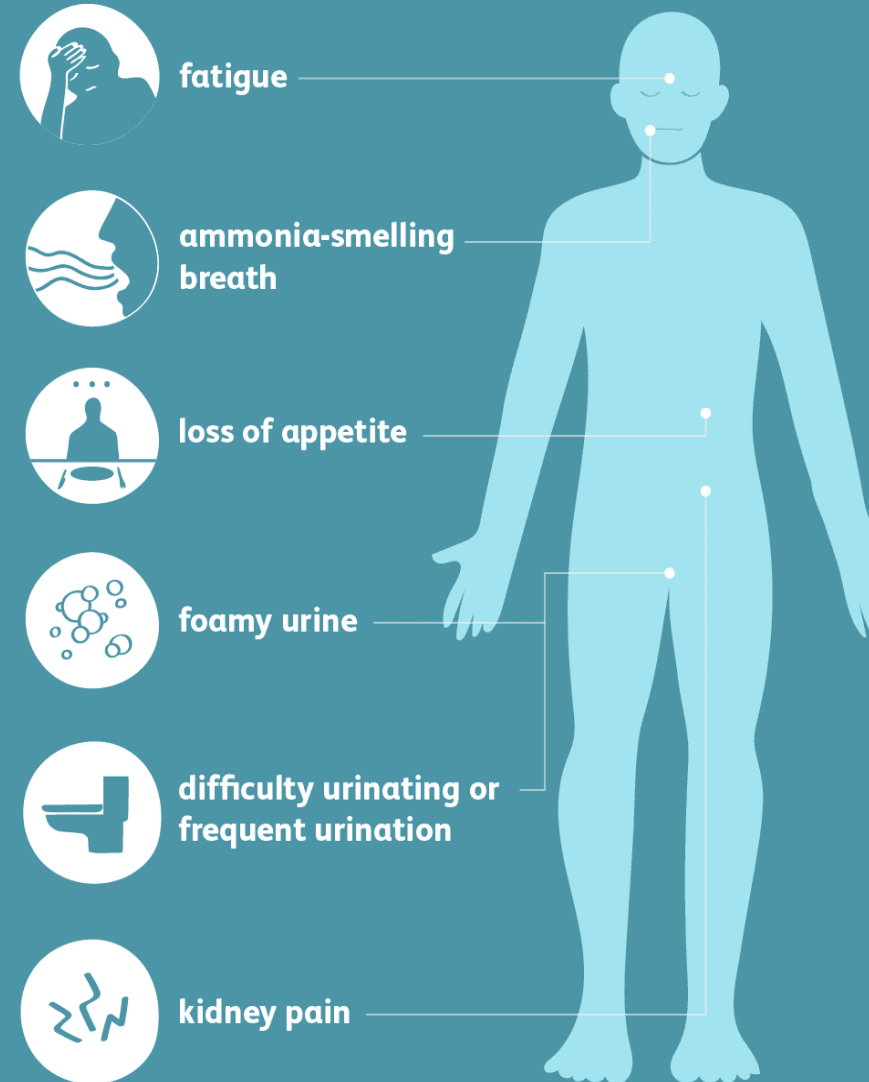
### Symptoms



## Chronic Kidney Disease

### Early stage

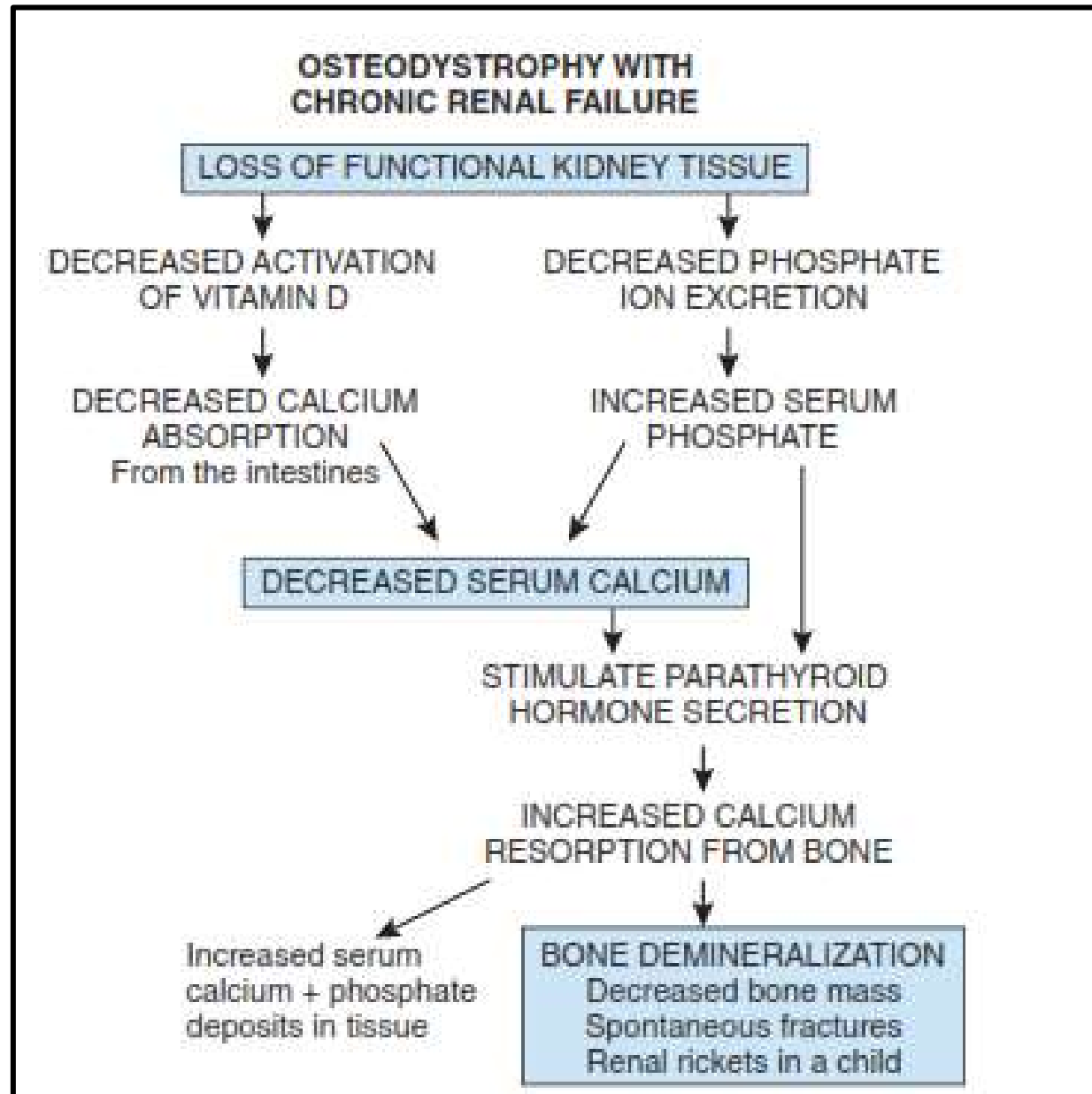
### Common Symptoms



## ESRD

- Skin itching, hyperpigmentation
- Peripheral neuropathy
- Sexual dysfunction
- Arrhythmia due to hyperkalemia
- Encephalopathy
- Osteodystrophy
- Tetany
- Uremic frost
- Frequent infection
- Anemia
- Edema (general and pulmonary)

# Renal failure



# Renal failure

- **Diagnosis**
- **Treatment**

