LIVER AND BILIARY SYSTEM
Liver and Biliary Anatomy

- Liver located in the R upper quadrant of the abdomen
Liver and Biliary Anatomy

- Liver is attached to the gallbladder via extrahepatic bile ducts
  - Where bile ducts exit = hilus
  - Via the hilus the liver gets its dual blood supply
    - Hepatic artery
      - Gets oxygenated blood
    - Portal vein
      - Gets nutrients absorbed from food from venous blood
Liver Physiology

- **Function**
  - Excretory
    - Bile main excretory product
  - Metabolic
    - Essential for intermediary metabolism of carbohydrates, fats, proteins
  - Storage
    - Major storage site for carbohydrates and lipids
  - Synthesis
    - Of all major plasma proteins, except immunoglobulin
Jaundice

- Symptom NOT disease
- Yellow discoloration of the skin and mucosa secondary to hyperbilirubinemia

- Common causes
  - Hemolysis
  - Hematoma
  - Viral hepatitis
  - Alcoholic liver disease
  - Drug-induced liver disease
  - Cirrhosis
  - Gallstones
  - Cancer
Jaundice

- Normal functioning liver and spleen break down old RBC into heme and globin
  - Heme broken into bilirubin
  - Bilirubin excreted in urine or recycled by liver

- Abnormal functioning liver:
  - Bilirubin builds up in the blood
  - Becomes toxic to the body
Viral Hepatitis

- Inflammation of the liver caused by
  - Hepatropic viruses
    - A, B, C, D, E, G
  - Occurs in the course of several systemic disease
    - Epstein-Barr virus
    - Herpes simplex type I and II
    - Varicella-zoster virus
    - Measles
    - Cytomegalovirus
Viral Hepatitis

- Hepatitis A (HAV)
  - Fecal-oral route
  - Symptoms
    - Short lived, mild, enteric fever with vomiting
    - Loss of appetite
    - Jaundice
  - Prognosis: Good
    - Recovery: 4-8 weeks
    - Never transitions into chronic hepatitis
    - Vaccine available
Viral Hepatitis

- Hepatitis B (HBV)
  - Exposure to infectious blood or body fluids containing blood
  - Symptoms
    - Weakness, nausea, and vomiting
    - Jaundice
  - Prognosis: Good
    - Most recover completely from acute phase
    - Can transition into chronic hepatitis, even without acute phase
    - Vaccine available
Viral Hepatitis

- **Hepatitis C (HCV)**
  - Contact with the blood of an infected person, primarily through sharing contaminated needles to inject drugs
  - Most common viral cause of hepatitis
  - Similar presentation to HBV, just less severe
  - Prognosis
    - Tendency to develop into chronic hepatitis, and later cirrhosis and cancer
    - No vaccine
Cirrhosis

- Loss of normal liver structure and function
- Chronic fibrosis of liver
- May lead to complete liver failure
- Liver initially enlarges due to inflammation, then reduces in size due to fibrosis
- Liver loses functional ability to detoxify body
Cirrhosis

- Caused by
  - alcohol abuse
  - Hepatitis B,C,D
  - Hereditary
  - Autoimmune
  - Biliary obstruction
  - Drugs
Cirrhosis

- Symptoms
  - Portal HTN
    - Fibrosis and nodularity of liver impede blood flow
  - Poor digestion of food
  - Diarrhea
  - Malnutrition
  - Fatigue
  - Splenomegaly
  - Decreased blood clotting
  - Jaundice
Drug & Toxin Induced Liver Disease

- Injured by chemicals that is metabolizes
- Includes
  - Acetominophen
  - Tetracycline
  - Anabolic steroids
  - aspirin
  - Methotrexate
  - Estrogens
  - Penicillin
  - Herbs, vitamins
Alcoholic Liver Disease

- Alcohol
  - inhibits some enzymes and stimulates others in liver
  - alters the fluidity and function of cell membranes

- Can cause
  - Fatty liver
  - Alcoholic hepatitis
  - Cirrhosis
Metastases to the Liver

- Much more common than primary tumors
- Primary tumors from GI tract, lungs, breast
- Most common cause of liver enlargement
- Other symptoms
  - Jaundice
  - Ascites
- Most die within months after these metastases have been identified
Bladder

- Neurogenic bladder
  - Impaired nerve supply to bladder causing:
    - Incontinence
    - Decreased bladder capacity
    - Inability to empty bladder
    - Inability to detect when bladder is full
  - SCI, spinal tumors, MS, neuropathy, Alzheimer’s Disease