

## Liver, Gall Bladder, and Pancreatic Disease

## Manifestations of Liver Disease

- Inflammation - Hepatitis
  - Elevated AST, ALT
  - Steatosis
  - Enlarged Liver
- Portal Hypertension
- Functional
  - Jaundice
  - Lowered albumin (and other proteins)
- Cirrhosis
  - Scarring
  - Small liver

## Hepatitis

- Alcohol
- Hepatitis – A,B,C,D,E,G
  - 44% Hep B (present in all secretions, STD)
  - 37% Hep A (oral-fecal route)
  - 19% Hep C (percutaneous)
  - Liver damage – Immune mediated necrosis
  - Systemic effects – Type III reaction

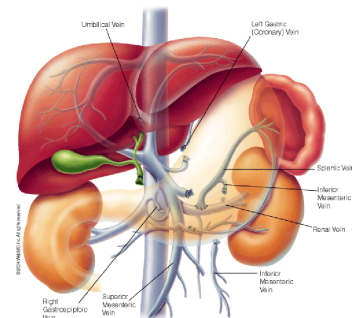
## Hepatitis

- Symptoms
  - Latent: 30% HBV, 80% HCV
  - Acute Phase: 1 – 4 months
    - Malaise, anorexia, fatigue, NV, abd pain
    - Fever, H/A, Icterus (optional)
  - Convalescence: 2 – 4 months
  - Chronic
    - Uncommon for HAV
    - Most common HCV
  - Fulminant Hepatitis

## Hepatitis Tests

- LFTs
  - AST, ALT (SGOT, SGPT)
  - Albumin
  - Globulins
- Specific
  - Antibodies: surface and core, IgM, IgG
    - e.g., HBcIgM, HBcIgG
  - Antigens: surface and core
    - e.g., HBsAg, HBcAg

## Portal Vein System



## Portal Hypertension

- Etiology
  - Intrahepatic
    - Thrombosis
    - Inflammation
    - Fibrosis (cirrhosis)
  - Posthepatic
    - Cardiac insufficiency
  - Prehepatic
    - Narrowing of portal vein
    - Increased splanchnic artery vasodilation

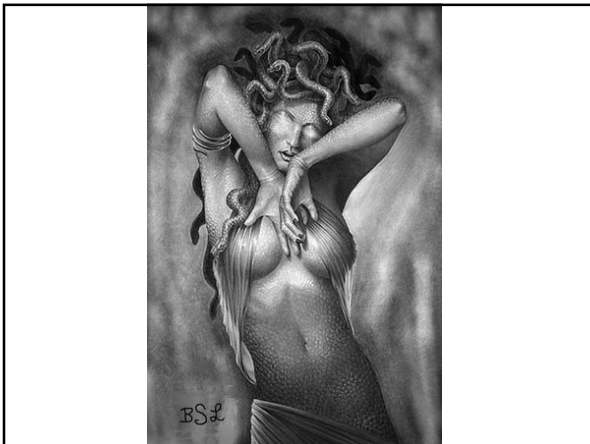
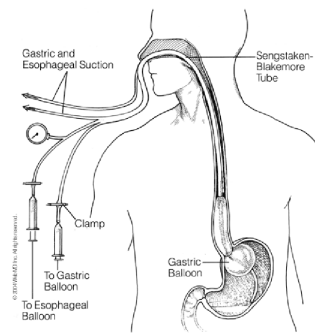
## Pathophysiology

- Blood backs up
  - Mesenteric veins
  - Spleen (splenomegaly)
  - Collateral circulation
    - Esophagus (varices)
    - Abdominal wall (caput medusae)
    - Rectum (hemorrhoids)
- Splanchnic artery dilation
  - Drop in blood pressure
  - RAAS activation, epinephrine
- Ascites
- Hepatic Encephalopathy

## Splenomegaly

- Premature erythrocyte removal

## Esophageal Varices





Thrombosed External Hemorrhoid

## Splanchnic Artery Dilation

- Inappropriate dilation of gut arteries
  - Lowers systemic BP
    - Increased Epi and Norepi
    - Increased RAAS
    - Even though fluid overloaded, at risk for hypotension
  - Increased Portal Pressure
    - Worsens portal hypertension
    - Increases ascites

## Ascites

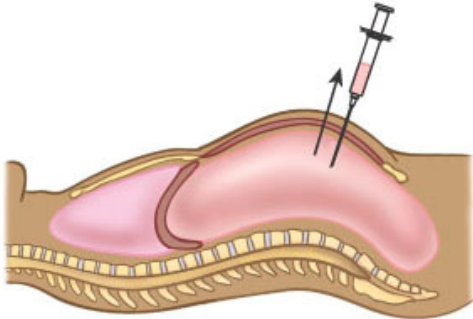
- Transudate
- Accumulation of
- Increased portal hydrostatic pressure
- Decreased oncotic pressure
- Manifestations
  - Distended abdomen
  - Fluid wave
  - Respiratory distress
  - Electrolyte imbalance
- Treatment
  - Underlying cause
  - Paracentesis

## Massive Ascites



Source of image unknown

## Paracentesis



## Other Hepatic Manifestations

- Jaundice
  - Excess bilirubin
  - Liver cannot conjugate bilirubin
  - Liver cannot excrete conjugated bilirubin
  - Icterus include yellowing of sclera
- Decreased liver function
  - Decreased plasma enzymes
    - Edema, increased bleeding, increased infection
  - Decreased removal of waste
    - Drug levels become toxic
    - Increased ammonia levels

## Hepatic Encephalopathy

- Ammonia buildup from protein digestion
- Manifestations
  - Changes in personality
  - Memory, confusion
  - Asterixis (Hand flapping)
  - Stupor, Coma
- Treatment
  - Low protein diet
  - Lactulose

## Gall Bladder Diseases

- Cholecyst
  - fills from biliary tract
  - Stores and secretes bile into the common bile duct
- Cholelithiasis/Cholecystitis
  - Genetic component
  - High fat diets
  - Cholecystectomy
    - Requires diet modification

## Acute Pancreatitis

- Ranges from mild edema to necrosis
  - May resolve completely or
  - Become chronic/episodic
- Etiology
  - Biliary tract disease (most common in women)
  - Alcoholism (most common in men)
  - Trauma, surgery, drugs, vascular disease

## Acute Pancreatitis

- Pathophysiology
  - Autodigestion: lipase, amylase, trypsin
- Clinical Manifestations
  - Pain...unbelievable pain
    - Worse with eating
    - Patient often writhes
  - Other
    - Fever, leukocytosis
    - Hypotension, tachycardia, jaundice
  - Complications
    - Pseudocyst, pancreatic abscess

## Acute Pancreatitis

- Eval
  - Amylase and lipase levels
  - Various radiographic tests
- Treatment
  - PAIN management
  - Antispasmodics
  - NPO
  - Support blood pressure
  - Surgery

## Chronic Pancreatitis

- Progressive inflammatory replacement of parenchyma with fibrous tissue
  - Chronic obstructive pancreatitis
    - Gall bladder disease
  - Chronic calcifying pancreatitis
    - Alcoholic
- Eval: Same
- Tx:
  - Dietary/alcohol modification
  - Cholecystectomy
  - Pancreatic Enzymes
  - Treat flares like acute pancreatitis