

# Cirrhosis

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Definition: Fibrosis and regenerative nodules resulting from hepatocellular injury → Irreversible architectural changes to liver

Etiologies:

- Alcohol, NASH
- Viral Hepatitis:
  - Hep B → HCC w/o Cirrhosis
  - Hep C → Cirrhosis → HCC
- Autoimmune Hepatitis
- Metabolic Disease: Wilson's, Hemochromatosis,  $\alpha$ -1 AT deficiency
- Biliary Tract:
  - Primary Biliary Cirrhosis (♀, Anti-mitochondrial Ab, Mononuclear infiltrate + bile duct destruction)
  - Primary Sclerosing Cholangitis (♂, Inflammation, fibrosis, and strictures of hepatic bile ducts)
- Vascular: Budd-Chiari, R-sided CHF, Sinusoidal obstruction syndrome
- Meds: Tylenol, Chemo, Supplements
- Infection: CMV, TB

Decompensated Cirrhosis = Jaundice, Variceal bleed, encephalopathy, ascites

Physical Exam:

- Liver: Enlarged, firm, eventually shrunken and nodular
- Asterix (negative myoclonus, sign of encephalopathy)
- Ascites
  - Splanchnic Vasodilation → Sequestering of blood → ↑RAAS
  - Liver also can't get rid of Aldosterone
  - Shifting dullness (wait 30 seconds to repercuss)
  - Flank dullness (NPV)
  - Fluid shift (PPV)
- Estradiol excess
  - Gynecomastia (rim of breast tissue around nipple vs cancer), Palmar Erythema, Spider Angiomata, Testicular atrophy
- Hand: Dupuytren's contractures, White nail lines (Muehrcke's lines), White Nail beds (Terry's nails)
- Clubbing (Hepatopulmonary syndrome, Megakaryocytes not inactivated when they pass through pulmonary system)
- Leukonychia (edema under nail from low albumin)
- Parotid Gland enlargement (Alcoholic cirrhosis)

Labs:

↑Bilirubin, ↑PT, ↑AST, ↑ALT, ↓Albumin, ↑Alk. Phos. If biliary involvement

Workup:

- Abdominal U/S w/ Doppler: Liver Size, R/o HCC, Ascites, Patency of Portal, splenic, and Hepatic Veins
- Determine etiology
  - Viral Hepatitis Panel
  - Autoimmune Hepatitis: ANA, IgG, anti-smooth muscle Ab
  - Hemochromatosis: Iron studies, Liver Bx (Best)
  - Wilson's Disease: Ceruloplasmin, Liver Bx
  - PSC: MRCP – Beads on a string, Bx – Onion skin fibrosis
- **Ascites**
  - Paracentesis
    - Indications
      1. New Onset Ascites

- 2. Progressive Symptoms
- 3. Tap during new admission
- Contraindications
  - **DIC only**
- Treatment
  - Restrict Na+
  - 100 spirinolactone : 40 furosemide
    - Dose to maintain Eukalemia
    - No response? → Increase Dose (Max 4x starting amount)
    - Still no response? → Repeat paracentesis, TIPS (Increase R side return)
      - TIPS CI: Encephalopathy, Pulm HTN, Portal vein Thrombosis

	SAAG >1.1	SAAG <1.1
Total Protein <2.5	<b>Sinusoidal</b> Portal HTN/Cirrhosis	Nephrotic syndrome
Total Protein >2.5	<b>Postsinusoidal</b> Budd chiari, Cor pulmonale (RSHF)	Infection Inflammation Neoplasm

Sinusoidal (within liver, TP <2.5)

Post Sinusoidal (Past Liver, TP >2.5)

### Liver Transplant

- OLD: Child Pugh – Encephalopathy, Ascites (too objective)
- NEW: MELD – INR, Cr, Bilirubin
- Indications
  - Recurrent/severe encephalopathy
  - Refractory Ascites
  - SBP
  - Recurrent Variceal bleeding
  - HRS, HPS, HCC
  - Acute liver failure
- CI: EtOH w/in last 6 months, sepsis, significant comorbidity
- Survival
  - 1 – year → 90%
  - 5 – years → 80%

### Spontaneous Bacterial Peritonitis (SBP)

- Infection of Peritoneal Fluid without disrupting viscus
- Causes: Translocation or Sepsis
- Bowel Wall edema → Lowered immune status
- Ig/Complement gets diluted in Ascites
- High mortality rate from Hepatorenal syndrome
- Treatment
  - Cover GNR for 5-7 days
  - Give Albumin Day 1 + 3 to prevent Hepatorenal syndrome
- PPx if:
  - GI bleed → Ceftriaxone (7 days)
  - Hx SBP → Fluoroquinolone
  - SAAG <1 → Low immunoglobulin (Abx until d/c)
  - Varices → Propanolol or (large) banding
    - Causes: Splanchnic Vein Thrombosis, HVT, Cirrhosis

## Hepatic Encephalopathy

- Failure of Liver to detoxify  $\text{NH}_3 \rightarrow$  Cerebral edema
- Stages
  1. Confusion
  2. Drowsiness
  3. Stupor
  4. Coma
- Signs
  - Reversal of sleep-wake cycle
  - Mood changes
  - Asterixis
  - Lethargy, confusion
  - Constructional Apraxia (Can't draw clock)
- Treatment
  - Lactulose – Gut bacteria converts drug to lactic acid  $\rightarrow$  Converts  $\text{NH}_3 \rightarrow \text{NH}_4^+$  (preventing its reabsorption)
  - Rifaxamin – Inhibits Gut bacterial synthesis (binds to RNA polymerase)