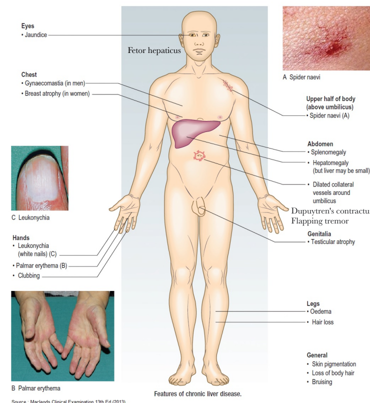
Liver cirrhosis

- ✓ **Blood supply of liver** : 75% portal vein , 25% hepatic artery
- ✓ Obstruction of hepatic veins > Budd Chiari syndrome
- ✓ Irreversible late fibrosis , distortion of hepatic structure , and nodule
- ✓ **Clinical presentation** : most patient are **asymptomatic** and are diagnosed incidentally , stigmata of chronic liver disease , decompensated liver disease (variceal bleeding , ascites)

stigmata of chronic liver disease



Features of chronic liver disease.

Source : Macleods Clinical Examination 13th Ed (2013)

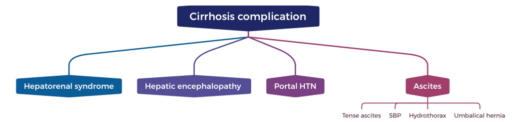
- ✓ **Labs :**
  - **ALT , AST** : Mildly elevated , AST > ALT , AST/ALT>1
  - **ALK** phosphatase : elevated by 2-3 fold , mainly if the cause of the cirrhosis is cholestatic (primary sclerosing cholangitis
  - **GGT** : with ALK phosphatase , elevated mainly in alcoholic patients
  - **Albumin** : hypoalbuminemia , but not specific for liver disease
  - **Bilirubin** : normal if well compensated and **rise** progressively
  - **PT** : prolonged , and reflect the hepatic dysfunction
  - **Globulin** : elevated (IgG > primary biliary cirrhosis , IgM > autoimmune hepatitis)
  - **Sodium** : hypervolemic hyponatremia
  - **CBC** : Anemia , thrombocytopenia , leukopenia , neutropenia
- ✓ **Diagnosis** :
  - **U/S** : small liver with nodule , increase diameter of veins , collateral veins
  - **CT ,MRI** : if HCC is suspected
  - **Fibroscan** : harder tissue > faster wave
  - **Liver biopsy** : gold standard but rarely used
  - **Upper endoscopy** : esophageal varices

- ✓ Child classification : INR , bilirubin , hepatic encephalopathy , ascites , albumin

A <7 compensated , B 7-10 and C >10 non compensated

- ✓ MELD score : bilirubin , INR , Cr

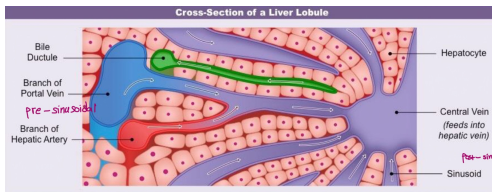
- ✓ **Treatment** : transplantation and management of complication
- ✓ **Complications of cirrhosis**



➢ Portal HTN

High risk of variceal bleeding with high mortality rate

Not usually done but it is Measured by : transhepatic , transjagular , laparotomy , catheterization splenic pulp puncture

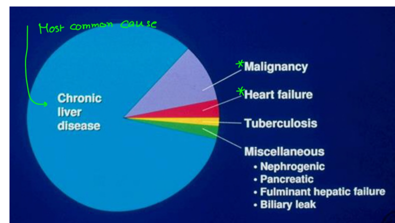


Type		Examples
Prehepatic		Portal or splenic vein thrombosis
Intrahepatic	Presinusoidal	Schistosomiasis
	Sinusoidal	Alcoholic cirrhosis
	Postsinusoidal	Veno-occlusive disease
Posthepatic		Hepatic vein thrombosis Constrictive pericarditis

➢ Ascites (abd discomfort or pain , SOB, wt gain , early satiety)

Diagnosis : by diagnostic paracentesis and fluid analysis (proteins , cells count , albumin , culture > SAAG) – no contraindications

Indications of paracentesis:
New onset ascites
Refractory ascites and clinical detoration
Worsening kidney fuction
Fever
Admision to hospital



SAAG = serum Albumin – Ascites Albumin

	SAAG (g/dL)	
	≥ 1.1 = Portal HTN	< 1.1 No portal HTN
Total protein (g/dL)		
< 2.5	Cirrhosis	Nephrotic syndrome
	Acute liver failure	
≥ 2.5	CHF	Peritoneal carcinomatosis
	Constrictive pericarditis	TB peritonitis
	Budd-Chiari syndrome	Pancreatic ascites
	Veno-occlusive disease	Chylous ascites

Therapy :

- **Low sodium diet (**less than 2 g /day) -without fluid restriction-
- **Diuretics** (furosemide 40mg and spironolactone100 mg)-Initial doses-

For refractory ascites

- **large volume paracentesis** with albumin supplement (8 g for each litter removed after removing 4 litter)
  albumin to prevent hepatorenal syndrome
- **TIPS** : stent is put between hepatic circulation and portal circulation > blood goes to systemic circulation without detoxification > increase risk of hepatic encephalopathy and HF
- **Peritoneovenous shunt , liver transplantation**

Complication of ascites :

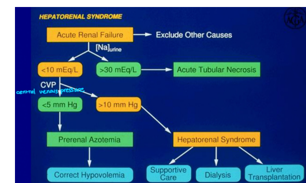
- **Hydrothorax : (transudative pleural effusion)**

2/3 right sided , but can be left sided and bilateral

Fluid is similar to ascites (high SAAG ,low protein) and treated as ascites by diuretics ,large volume paracentesis and TIPS -Not by chest tube-

- **Umbilical hernia**
  Firstly , it is Treated by ascites control, and if it doesn't resolve , it is repaired surgically unless incarceration happens it it is repaired by urgent surgery .
- **SBP** (spontaneous bacterial peritonitis)
  -Caused by : E.coli , klebsiella , strep pneumoniae
  -In advanced cirrhosis and 40 -50 % is asymptomatic and detected in hospital admission but can present with Fever , abdominal pain , tenderness , change in mental status , jaundice , PMN count >250 in ascitic fluid
  -Treatment : culture and empirical antibiotics (cefotaxime , ceftriaxone) for 5 days
  Then Life long ciprofloxacin when SBP happened once and reduce ascites

  Patient with (upper GI bleeding and cirrhosis) , (cirrhosis , renal and liver failure) should take prophylactic antibiotics for 7 days .
- **Tense ascites**



➢ **Hepatorenal syndrome** :
  -Renal failure with cirrhosis and ascites
  -High mortality rate , (death within weeks)
  -Azotemia , hyponatremia , urine sodium < 10 , no response to plasma expansion , high CVP >10
  -Treatment : supportive with fluid , restrict sodium and water , hemodialysis , liver transplantation , avoid nephrotoxic drugs (NSAID , gentamicin)

➢ **Hepatic encephalopathy**
-Reversible neuropsychiatric changes with normal EEG, asterixis
-In Occult encephalopathy : diagnosis done by number connection test , or draw a star -psychometric testing -

Stage of HE	Time
0	Up to 30 s
0-I	31–50 s
I-II	51–80 s
II-III	81–120 s
III	Forced termination

-There is a correlation between ammonia and stages of encephalopathy but not used in diagnosis , used when HE diagnosis in question

Differential diagnosis :

1. Intracranial lesions (stroke , hematoma , abscess)
2. Upper GI bleeding
3. Alcohol intoxication or withdrawal
4. Drugs :sedative , hypnotics , new diuretics usage
5. Hypoglycemia or hyperglycemia
6. Uremia
7. Hypokalemia
8. Metabolic alkalosis
9. Hypoxia , hypercapnia
10. Infections (meningitis , sepsis , UTI , SBP)
11. psychatric , post seizures

Precipitant :

1. HCC
2. High protein diet
3. Constipation
4. Upper GI bleeding
5. TIPS
6. Infection
7. Alcohol and drugs
8. recent surgery

Stage	Mental State	Neurologic Signs
1	*Mild confusion; ↓ attention; irritability; *inverted sleep pattern	Incoordination; tremor; impaired handwriting
2	*Drowsiness; personality changes; intermittent disorientation	واضح Asterixis; ataxia; dysarthria
3	Somnolent; gross disorientation; marked confusion; slurred speech نايم معظم الوقت بس بتصحى وآخرها بتختفي الـ asterixis	Hyperreflexia; muscle rigidity; Babinski sign
4	Coma → need Intubation + ICU care	No response to pain; decerebrate posture

Treatment :

-First line : Lactulose

- 30 to 45 mL [20 to 30 g] / two to four times per day
- should be titrated to achieve two to three soft stools per day

-rifaximin if no improvement after 48 h

-Treatment of the underlying cause and to prevent recurrence of the HE.

- Diet

- Daily energy intakes should be 35-40 kcal/kg ideal body weight .
- Daily protein intake should be 1.2-1.5 g/kg/ day .
- Small meals or liquid nutritional supplements evenly distributed throughout the day and a late-night snack should be offered .
- Oral BCAA supplementation may allow recommended nitrogen intake to be achieved and maintained in patients intolerant of dietary protein.

Budd-Chiari Syndrome

☠️ Extra : but there were 3 past papers questions about it

1. Liver disease caused by occlusion of hepatic venous outflow, which leads to hepatic congestion and subsequent microvascular ischemia.

2. The course is variable, but most cases are indolent, with gradual development of portal HTN and progressive deterioration of liver function.

3. Rarely the disease is severe and leads to acute liver failure, which may be fatal without immediate therapy

Causes ; hypercoagulable states, myeloproliferative disorders (e.g., polycythemia vera), pregnancy, chronic inflammatory diseases, infection, various cancers, trauma.

-Condition is idiopathic in up to 40% of cases.

Clinical Features (resemble those of cirrhosis)-hepatomegaly, ascites, abdominal pain (RUQ), jaundice, variceal bleeding.

Diagnosis : hepatic venography; serum ascites albumin gradient >1.1 g/dL.

Treatment :

1. Medical therapy (e.g. , anticoagulation, thrombolytics, diuretics) is usually unsatisfactory

2. Surgery is eventually necessary in most cases (balloon angioplasty with stent placement in inferior vena cava, portacaval shunts).

3. Liver transplantation if cirrhosis is present.