LIVER CIRRHOSIS

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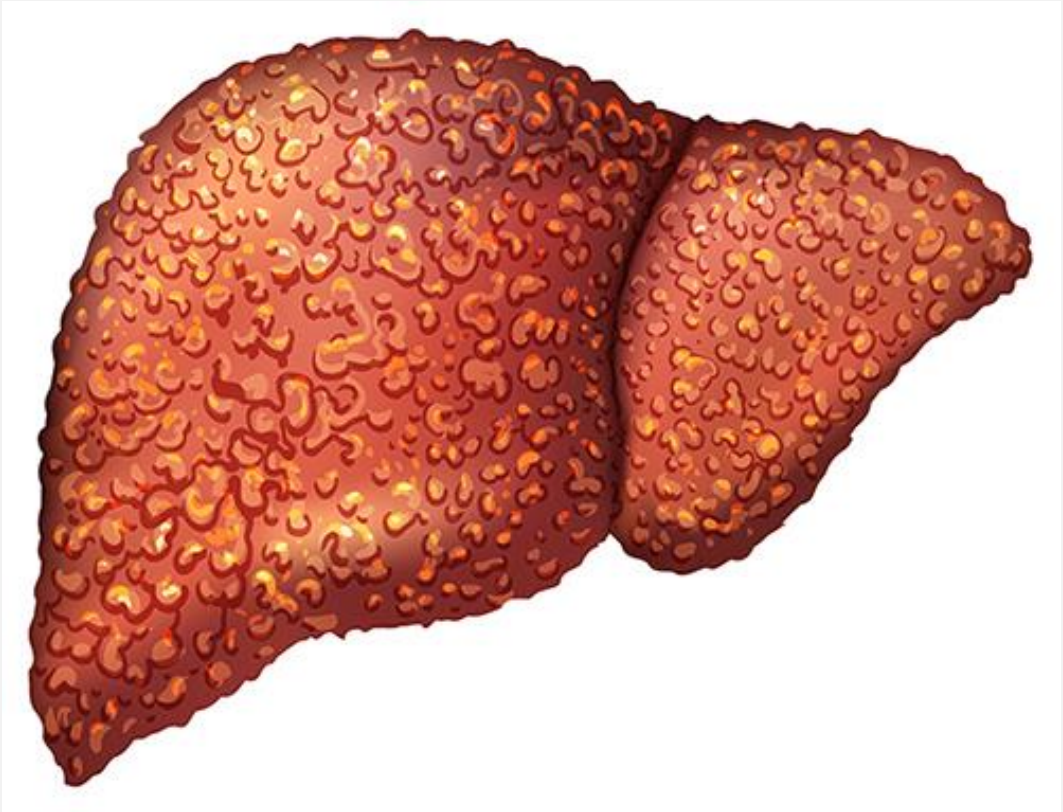
- Cirrhosis represents a late stage of progressive hepatic fibrosis characterized by distortion of the hepatic architecture and the formation of regenerative nodules. It is generally considered to be irreversible in its advanced stages, at which point the only treatment option may be liver transplantation.



ETIOLOGIES AND CLASSIFICATION

- Nonalcoholic fatty liver disease
- Chronic viral hepatitis (hepatitis B, C)
- Alcoholic liver disease
- Hemochromatosis

- **Less common causes include:**
- Autoimmune hepatitis Primary and secondary biliary cirrhosis Primary sclerosing cholangitis Medications (eg, methotrexate, isoniazid) Wilson disease Alpha-1 antitrypsin deficiency Celiac disease Idiopathic adulthood ductopenia Granulomatous liver disease Idiopathic portal fibrosis Polycystic liver disease Infection (eg, brucellosis, syphilis, echinococcosis) Right-sided heart failure Hereditary hemorrhagic telangiectasia Veno-occlusive disease

CLINICAL MANIFESTATIONS

- clinical manifestations of cirrhosis may include :

  Nonspecific symptoms (eg, anorexia, weight loss, weakness, fatigue) or

  signs and symptoms of hepatic decompensation (jaundice, pruritus, signs of upper gastrointestinal bleeding, abdominal distension from ascites, confusion due to hepatic encephalopathy) ask about sleep disturbance & chronic diarrhea.

The cause of diarrhea in patients with cirrhosis may be multifactorial (eg, alterations in small bowel motility, small bowel bacterial overgrowth, changes in intestinal permeability and bile acid deficiency)

- In women, chronic anovulation is common, which may manifest as amenorrhea or irregular menstrual bleeding [12]..

- Men with cirrhosis may develop hypogonadism. It is manifested by impotence, infertility, loss of sexual drive, and testicular atrophy.

  predominantly in patients with alcoholic cirrhosis and hemochromatosis.

PHYSICAL SIGNS

- **Decreasing blood pressure**

- **Skin findings**

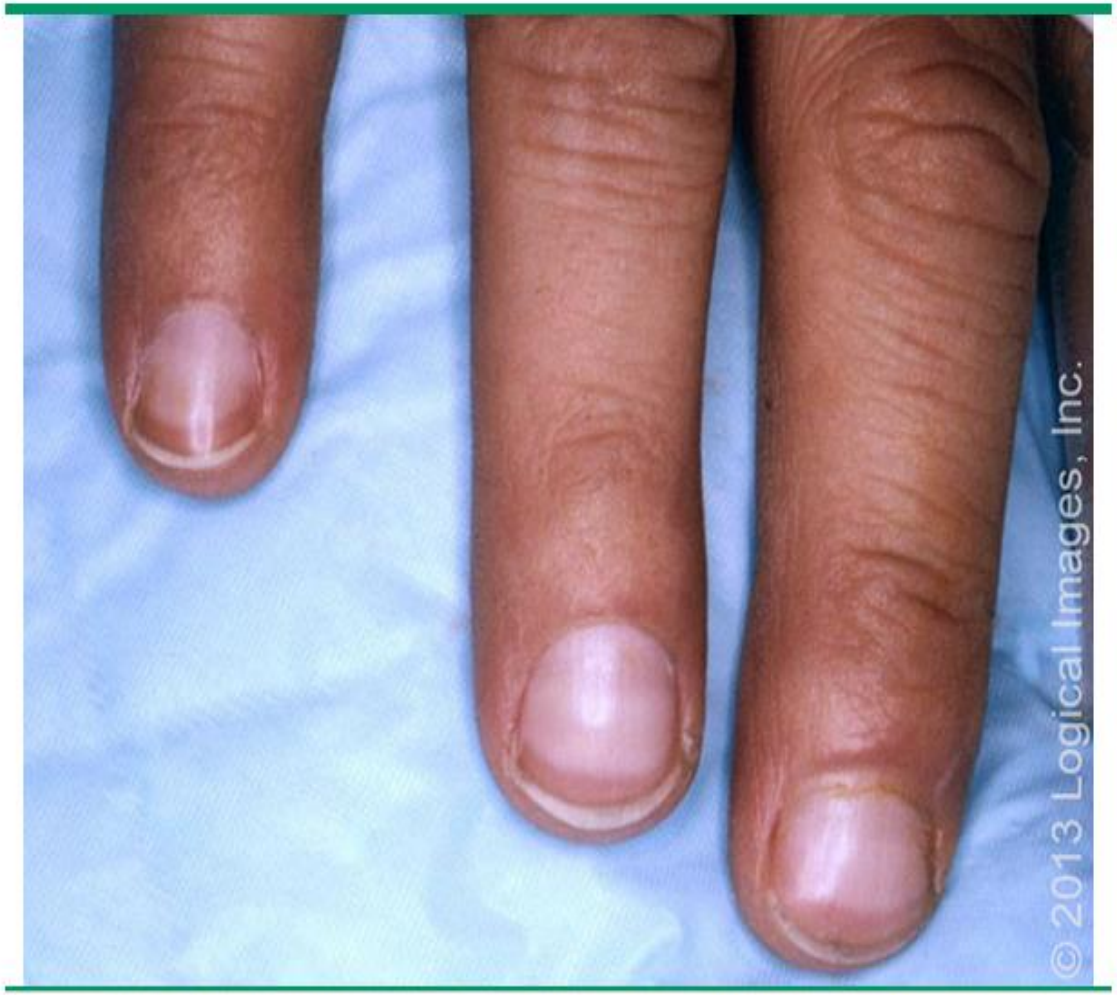
  Jaundice (yellow coloring of the skin and mucous membranes that results from increased serum bilirubin. : detectable if > 2 to 3 mg/dL.

excessive consumption of carotene vs jaundice .

Spider angiomata (also referred to as spider telangiectasias)

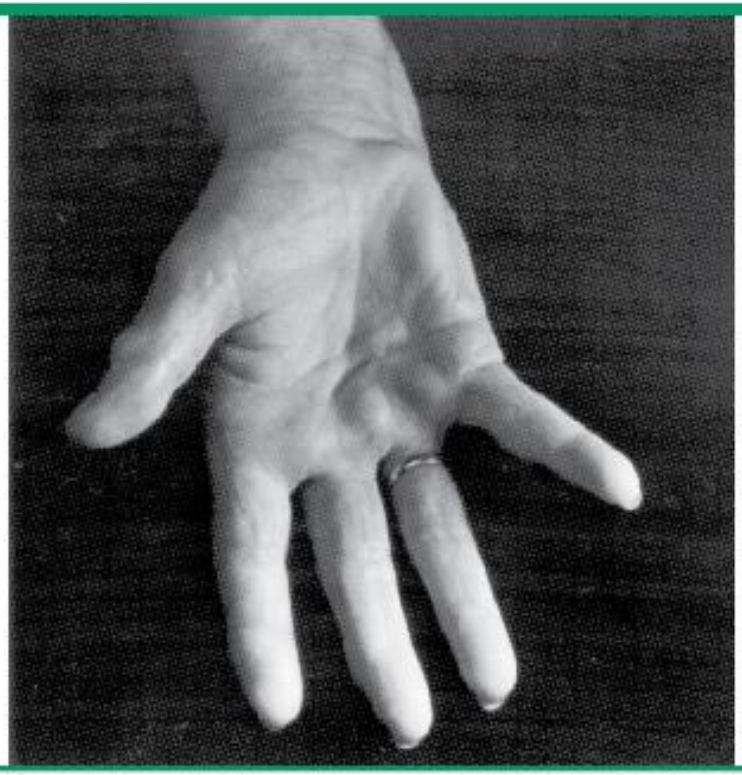
- **Head and neck findings** : Parotid gland enlargement and fetor hepaticus.
- **Chest_**: gynecomastia & spider angiomata.
- **Abdominal findings:** splenomegaly, ascites, caput medusae, and a Cruveilhier-Baumgarten murmur.
- **Genitourinary findings:** testicular atrophy due to the development of hypogonadism.
- **Extremity findings** : palmar erythema, nail changes, clubbing, hypertrophic osteoarthropathy, and Dupuytren's contracture & L.L edema

Terry nails



Patients with cirrhosis may have a finding known as Terry nails. In patients with Terry nails, the proximal two-thirds of the nail plate appears white, whereas the distal one-third is red. This finding is believed to be secondary to a low serum albumin. Terry nails may also be seen in patients with renal failure, diabetes, and heart failure.

Dupuytren's contracture



Nodular fibrosing lesions with bands radiating distally are features of Dupuytren's contracture. The ulnar side of the hand is affected, with the fourth and fifth fingers usually involved first.

- **Physical examination findings** may include jaundice, spider angiomata, gynecomastia, ascites, splenomegaly, palmar erythema, digital clubbing, and asterixis.

- **Laboratory abnormalities** may include elevated serum bilirubin, abnormal aminotransferases, elevated alkaline phosphatase/gamma-glutamyl transpeptidase, a prolonged prothrombin time/elevated international normalized ratio (INR), hyponatremia, hypoalbuminemia, hypoglycemia, and thrombocytopenia.

CHILD PUGH SCORE

Factor	Units	1	2	3
Serum bilirubin	µmol/L mg/dL	<34 <2.0	34-51 2.0-3.0	>51 >3.0
Serum albumin	g/L g/dl	>35 >3.5	30-35 3.0-3.5	<30 <3.0
Prothrombin time	Seconds prolonged INR	<4 <1.7	4-6 1.7-2.3	>6 >2.3
Ascites		None	Easily controlled	Poorly controlled
Hepatic encephalopathy		None	Minimal	Advanced

Clinical manifestations of cirrhosis

Symptoms
Anorexia
Weight loss
Weakness
Fatigue
Muscle cramps
Easy bruising
Amenorrhea/oligomenorrhea/metrorrhagia (women)
Impotence (men)
Infertility
Decreased libido (men)
Jaundice*
Dark or "cola-colored" urine*
Pruritus*
Hematemesis/melena/hematochezia*
Abdominal distension*
Lower extremity edema*
Confusion or sleep disturbances*
Physical examination
Hepatomegaly
Splenomegaly
Spider angiomata/spider telangiectasias
Palmar erythema
Digital clubbing
Hypertrophic osteoarthropathy
Dupuytren's contracture
Muehrcke nails
Terry nails
Parotid gland enlargement (likely due to alcohol use and not cirrhosis per se)
Gynecomastia (men)
Loss of chest or axillary hair (men)
Testicular atrophy (men)
Caput medusa
Cruveilhier-Baumgarten murmur (venous hum heard best with the stethoscope over the epigastrium)
Jaundice*
Ascites (abdominal distension, shifting dullness, fluid wave)*
Asterixis*
Fetor hepaticus*
Laboratory tests
Moderately elevated aminotransferases (often with an AST:ALT ratio >1)
Elevated alkaline phosphatase (2 to 3 times the ULN)
Elevated gamma-glutamyl transpeptidase
Thrombocytopenia
Leukopenia/neutropenia
Anemia
Low serum albumin*
Prolonged prothrombin time/elevated INR*
Hyperbilirubinemia*
Hyponatremia*
Elevated serum creatinine*
Imaging tests
Surface nodularity
Increased echogenicity (ultrasound)
Atrophy of the right lobe
Hypertrophy of the caudate or left lobes
Small, nodular liver*
Ascites*
Hepatocellular carcinoma*
Portal/splenic/superior mesenteric vein thrombosis*
Portosystemic collaterals*

AST: aspartate aminotransferase; ALT: alanine aminotransferase; ULN: upper limit of normal; INR: international normalized ratio.
* Suggests advanced disease or the development of a major complication.

- **Radiologic findings** :
  Abd. ultrasound, CT scan, and MRI
  Findings may include a liver that appears shrunken, irregular, and nodular.

- Imaging studies may also show evidence of varices and ascites in patients with portal hypertension.

DIAGNOSIS

- patients suspected of having cirrhosis, abdominal imaging (typically ultrasound) is obtained to evaluate the liver parenchyma and to detect extrahepatic manifestations of cirrhosis.

- A liver biopsy is required to definitively confirm the diagnosis. However, it is generally not necessary if the clinical, laboratory, and radiologic data strongly suggest the presence of cirrhosis and the results would not alter the patient's management.

- Noninvasive serologic (AST / plts ratio , FibroTest/FibroSure) and radiographic (Elastography , nuclear studies) methods for diagnosing cirrhosis are also being developed.

COMPLICATIONS OF CIRRHOSIS & PORTAL HYPERTENSION

- **Ascites** :
  - SAAG
  - Treatment

- **Spontaneous bacterial peritonitis**
  - Definition
  - Treatment

- **Hepatic Encephalopathy**
  - Grades
  - Precipitating factors
  - Treatment

- **Hepatorenal syndrome.**

Diagnostic criteria:

1. Cirrhosis with ascites;
2. Serum creatinine > 133 μmol/L (1.5 mg/dl);
3. No sustained improvement of serum creatinine (decrease to a level of 133 μmol/L or less) after at least 2 days of diuretic withdrawal and volume expansion with albumin. The recommended dose of albumin is 1 g/kg of bodyweight per day to a maximum of 100 g/day;
4. Absence of shock;
5. No current or recent treatment with nephrotoxic drugs;
6. Absence of parenchymal disease as indicated by proteinuria >500 mg/day, microhematuria (>50 red blood cells per high power field) and/or abnormal renal ultrasononography.

Types

Treatment.

- **Portopulmonary Hypertension**
- Diagnostic criteria

Diagnostic criteria
Clinical portal hypertension with or without significant chronic liver disease
mPAP >25 mmHg
PAWP <15 mmHg
PVR >2-3 wood units

mPAP = Mean pulmonary artery pressure, PAWP = Pulmonary artery wedge pressure, PVR = Pulmonary vascular resistance

Echocardiogram is the screening test of choice.

Treatment: O2 , diuretics. Vasodilators.

- **Hepatopulmonary syndrome**

- Definition: Hypoxemia in pt. with liver disease & portal HTN resulting from increase A-a gradient.

Diagnostic criteria :

Liver disease
P_{A-a,O_2}[#,¶] $\geqslant$ 15 mmHg
Positive CEE

P_{A-a,O_2}: alveolar–arterial oxygen tension difference; CEE: contrast-enhanced echocardiography. [#]: abbreviated formula: $P_{A,O_2} - P_{a,O_2} = F_{I,O_2}(P_{atm} - P_{H_2O}) - P_{a,CO_2}/RER - P_{a,O_2}$, where P_{A,O_2} is alveolar oxygen tension, P_{a,O_2} arterial oxygen tension, F_{I,O_2} inspiratory oxygen fraction, P_{atm} atmospheric pressure, P_{H_2O} water vapour partial pressure and RER exchange respiratory ratio (assumed to be 0.8)

Platypnea & Orthodeoxia

- **Diagnosis** :

Pao2 <70 mmhg ; normal CXR & PFT

Tests to demonstrate Intrapulmonary vascular dilatation:

Contrast enhanced echogram (microbubble study)

Technetium labeled macroaggregated albumin study

Angiography

Treatment:

O2 therapy

Liver transplant

Hepatic Hydrothorax

THANK YOU