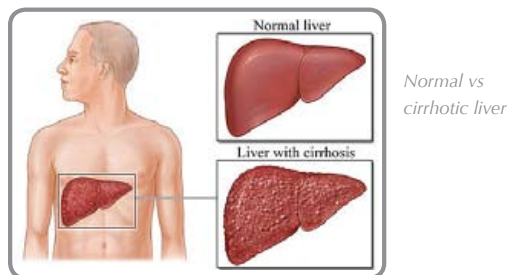


Liver Cirrhosis

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Liver Cirrhosis Cirrhosis of the liver refers to scarring of the liver which results in abnormal liver function as a consequence of chronic (long-term) liver injury. Cirrhosis is a leading cause of illness and death in the United States. In the United States, approximately 5.5 million people (2% of the U.S. population) are affected by cirrhosis. Cirrhosis causes 26,000 deaths each year and is the seventh leading cause of death in the United States among adults between the ages of 25 and 64. It is expected that the number of people affected by cirrhosis will continue to increase in the near future.

Cirrhosis of the liver is a consequence of long-term liver injury of many types. While excess alcohol use and chronic infection with hepatitis viruses (such as hepatitis B and hepatitis C) are the most common causes of cirrhosis in the United States, cirrhosis can be caused by other conditions including fatty liver disease, inherited disorders, drug-induced injury, bile duct disorders and autoimmune diseases. Some patients may have more than one cause for cirrhosis (such as alcohol excess and viral hepatitis). A large portion of patients (up to 20%) do not have an identifiable cause for cirrhosis. This is known as *cryptogenic cirrhosis*.



What is the Function of the Liver?

Blood from the digestive system (stomach, intestines) passes through the liver on its way back to the heart. The liver is the largest internal organ and is involved in many complex metabolic functions essential to life.

- The liver extracts nutrients from the blood and processes them for later use.
- The liver makes bile, which is used by the digestive system to help absorb fat and certain vitamins.
- The liver also removes medications and toxic waste-products from the blood and excretes them into bile.
- The liver is the body's main factory for blood proteins, including the proteins involved in normal blood clotting function. Your doctor may check blood clotting tests (prothrombin time or INR) as a measure of your liver function.

How Does Cirrhosis Develop?

There are many causes of liver injury such as excessive alcohol consumption, viruses, inherited disorders, drug-related injury and environmental toxin exposure. Injury to the liver leads to inflammation which may be detected by abnormalities in liver-related blood tests. Over time, ongoing injury leads to the development of scar tissue in the liver, a process called *fibrosis*. When cirrhosis is present, the presence of scar tissue causes increased resistance to blood flow through the liver. This results in high pressures developing in the veins that drain into the liver, a process called *portal hypertension*. Many of the complications of liver disease, such as fluid retention and esophageal bleeding, are caused by the presence of portal hypertension.

What are the Symptoms of Cirrhosis?

The signs and symptoms of liver cirrhosis may be absent or non-specific at early stages. Early non-specific symptoms include fatigue and itching. As scar tissue replaces healthy tissue and liver function worsens, a variety of liver-related symptoms may develop.

- Fatigue
- Itching:
- Edema (retention of abnormal amounts of fluid in the body, legs or abdomen)
- Shortness of Breath
- Digestive Tract Bleeding:
- Jaundice
- Encephalopathy (mental slowing, confusion, excess drowsiness, and slurring of speech)

How is Cirrhosis Diagnosed?

- Physical Exam
- Imaging such as ultrasound, CT or MRI
- Liver Biopsy

What are the Complications of Cirrhosis?

Since the liver performs many complex metabolic functions, there are many complications that arise from cirrhosis. In addition, some complications arise more commonly in certain diseases that cause cirrhosis (for example, osteoporosis occurs more commonly in patients with liver diseases that predominantly affect the bile ducts). Below is a list of some of the most common complications of liver disease.

Ascites: Ascites is the retention of abnormal amounts of fluid inside the abdominal cavity. When ascites is mild it may be detectable only by ultrasound or CT scan. When ascites becomes infected, it is known as Bacterial Peritonitis.

Varices: Varices are abnormally enlarged veins (similar to varicose veins in the legs) that develop within the digestive system of patients with cirrhosis. Varices most commonly occur in the esophagus. Your doctor may recommend an upper endoscopy (also known as an EGD) to see if varices are present.

Hepatic Encephalopathy: In cirrhosis, the normal filtering of ammonia is impaired. When ammonia enters the circulation, it is delivered to the brain and a condition called hepatic encephalopathy develops. Symptoms of hepatic encephalopathy include mental slowing, confusion, excess drowsiness, and slurring of speech. In severe cases, patients can develop coma.

Liver Cancer (Hepatocellular Carcinoma): Patients with cirrhosis are at increased risk of developing liver cancer, known as hepatocellular carcinoma. The risk for liver cancer varies according to the underlying liver disease, but in patients with hepatitis C infection (one of the most common causes of liver disease in the United States) it is approximately 3% each year.

What Treatments for Cirrhosis are Available?

Medical care for patients with cirrhosis has several aims: treating the underlying cause of liver disease, preventing cirrhosis-related complications, and treating the symptoms of cirrhosis. Since cirrhosis is a chronic disease, patients with cirrhosis require ongoing medical care with a physician specializing in the care of patients with liver disease.

Whenever possible, the underlying cause of cirrhosis should be treated. Some conditions improve with medical therapy and treatment can improve or delay worsening of liver function. In some circumstances, patients may not tolerate treatments for

their underlying liver disease because their cirrhosis is too advanced. Patients with cirrhosis should not drink alcohol. In patients who consume alcohol regularly, liver function may improve significantly with total avoidance of alcohol.

Your doctor may recommend various treatments aimed at preventing complications of cirrhosis from developing. Infection is an important cause of illness in patients with cirrhosis and your doctor may recommend updating your vaccinations. Typically, patients with cirrhosis should receive a yearly flu (influenza) vaccine and the pneumonia (pneumococcal) vaccine. Your doctor may test you for hepatitis A and hepatitis B and vaccinate you if you are not immune.

Your doctor may prescribe various treatments to help control symptoms from complications of cirrhosis.

These may include:

- Dietary salt restriction and diuretic medications (commonly known as “water pills”) are prescribed for the control of ascites and edema. In some cases, a small needle may be inserted into the abdominal cavity under local anesthesia to drain ascites fluid, a procedure known as a *paracentesis*.
- Patients who have experienced prior episodes of spontaneous bacterial peritonitis are given long-term antibiotic medication to prevent future episodes.
- Various medications may be prescribed for patients with hepatic encephalopathy. These include lactulose and/or oral antibiotics. In rare cases, dietary protein restriction may be recommended.
- Patients with esophageal varices may be treated with blood-pressure reducing medications or treatment may be applied directly to the varices during an endoscopy.

For some patients with severe liver disease, *liver transplantation* may be considered as a treatment option. Liver transplantation surgery is a major undertaking and requires life-long anti-rejection medications afterwards. Extensive testing is required before a liver transplant to ensure that a candidate is in good enough health to proceed with a transplant operation. Additionally, transplant centers typically require some period of abstinence from alcohol (often at least 6 months) and/or formal alcohol and drug treatment for patients with alcohol-related liver disease before transplantation. *Not all patients with cirrhosis need a liver transplant and transplantation is not the best choice for all patients.* Because liver transplantation is so complex it is only performed at large specialty centers and your doctor may need to refer you elsewhere in order to be evaluated for a liver transplant.