

Cirrhosis of the Liver

National Digestive Diseases Information Clearinghouse



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The liver weighs about 3 pounds and is the largest organ in the body. It is located in the upper right side of the abdomen, below the ribs. (See Figure 1.) When chronic diseases cause the liver to become permanently injured and scarred, the condition is called cirrhosis.

The scar tissue that forms in cirrhosis harms the structure of the liver, blocking the flow of blood through the organ. The loss of normal liver tissue slows the processing of nutrients, hormones, drugs, and toxins by the liver. Also slowed is production of proteins and other substances made by the liver.

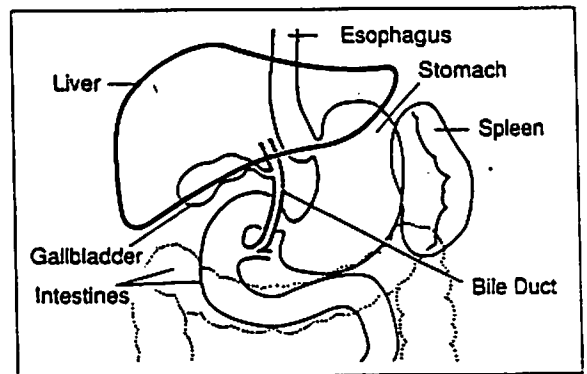
What Is the Impact of Cirrhosis?

Cirrhosis is the seventh leading cause of death by disease. About 25,000 people die from cirrhosis each year. There also is a great toll in terms of human suffering, hospital costs, and the loss of work by people with cirrhosis.

What Are the Major Causes of Cirrhosis?

Cirrhosis has many causes. In the United States, chronic alcoholism is the most common cause. Cirrhosis also may result from chronic viral hepatitis (types B, C, and D). Liver injury that results in cirrhosis also may be caused by a number of inherited diseases such as cystic fibrosis, alpha-1 antitrypsin deficiency, hemochromatosis, Wilson's disease, galactosemia, and glycogen storage diseases.

Figure 1



Two inherited disorders result in the abnormal storage of metals in the liver leading to tissue damage and cirrhosis. People with Wilson's disease store too much copper in their livers, brains, kidneys, and in the corneas of their eyes. In another disorder, known as hemochromatosis, too much iron is absorbed, and the excess iron is deposited in the liver and in other organs, such as the pancreas, skin, intestinal lining, heart, and endocrine glands.

If a person's bile duct becomes blocked, this also may cause cirrhosis. The bile ducts carry bile formed in the liver to the intestines, where the bile helps in the digestion of fat. In babies, the most common cause of cirrhosis due to blocked bile ducts is a disease called biliary atresia. In this case, the bile ducts are absent or injured, causing the bile to back up in the liver. These babies are jaundiced (their skin is yellowed) after their first month in life. Sometimes they can be helped by surgery in which a new duct is formed to allow bile to drain again from the liver.

In adults, the bile ducts may become inflamed, blocked, and scarred due to another liver disease, primary biliary cirrhosis. Another type of biliary cirrhosis also may occur after a patient has gallbladder surgery in which the bile ducts are injured or tied off.

Other, less common, causes of cirrhosis are severe reactions to prescribed drugs, prolonged exposure to environmental toxins, and repeated bouts of heart failure with liver congestion.

What Are the Symptoms of Cirrhosis?

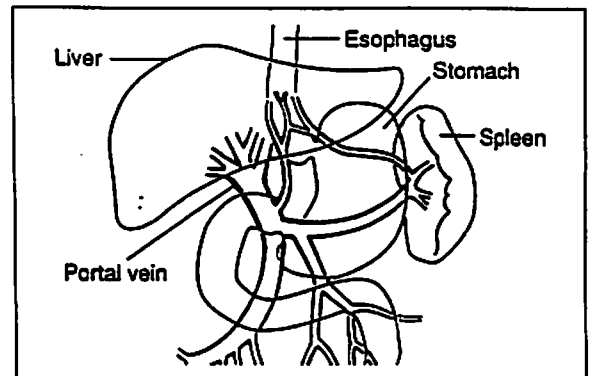
People with cirrhosis often have few symptoms at first. The two major problems that eventually cause symptoms are loss of functioning liver cells and distortion of the liver caused by scarring. The person may experience fatigue, weakness, and exhaustion. Loss of appetite is usual, often with nausea and weight loss.

As liver function declines, less protein is made by the organ. For example, less of the protein albumin is made, which results in water accumulating in the legs (edema) or abdomen (ascites). A decrease in proteins needed for blood clotting makes it easy for the person to bruise or to bleed.

In the later stages of cirrhosis, jaundice (yellow skin) may occur, caused by the buildup of bile pigment that is passed by the liver into the intestines. Some people with cirrhosis experience intense itching due to bile products that are deposited in the skin. Gallstones often form in persons with cirrhosis because not enough bile reaches the gallbladder.

The liver of a person with cirrhosis also has trouble removing toxins, which may build up in the blood. These toxins can dull mental function and lead to personality changes and even coma (encephalopathy). Early signs of toxin accumulation in the brain may

Figure 2



include neglect of personal appearance, unresponsiveness, forgetfulness, trouble concentrating, or changes in sleeping habits.

Drugs taken usually are filtered out by the liver, and this cleansing process also is slowed down by cirrhosis. The liver does not remove the drugs from the blood at the usual rate, so the drugs act longer than expected, building up in the body. People with cirrhosis often are very sensitive to medications and their side effects.

A serious problem for people with cirrhosis is pressure on blood vessels that flow through the liver. Normally, blood from the intestines and spleen is pumped to the liver through the portal vein. (See Figure 2.) But in cirrhosis, this normal flow of blood is slowed, building pressure in the portal vein (portal hypertension). This blocks the normal flow of blood, causing the spleen to enlarge. So blood from the intestines tries to find a way around the liver through new vessels.

Some of these new blood vessels become quite large and are called varices. (See Figure 3.) These vessels may form in the stomach and esophagus (the tube that connects the mouth with the stomach). They have thin walls and carry high pressure. There is great danger that they may break, causing a serious bleeding problem in the upper stomach or esophagus. If this happens, the patient's life is in danger, and the doctor must act quickly to stop the bleeding.

How Is Cirrhosis Diagnosed?

The doctor often can diagnose cirrhosis from the patient's symptoms and from laboratory tests. During a physical exam, for instance, the doctor could notice a change in how your liver feels or how large it is. If the doctor suspects cirrhosis, you will be given blood tests. The purpose of these tests is to find out if liver disease is present. In some cases, other tests that take pictures of the liver are performed such as the computerized axial tomography (CAT) scan, ultrasound, and the radioisotope liver/spleen scan.

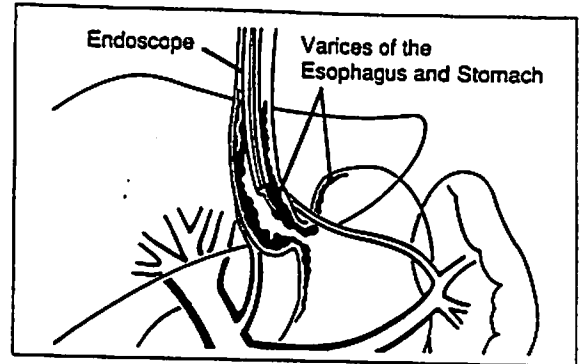
- The doctor may decide to confirm the diagnosis by putting a needle through the skin (biopsy) to take a sample of tissue from the liver. In some cases, cirrhosis is diagnosed during surgery when the doctor is able to see the entire liver. The liver also can be inspected through a laparoscope, a viewing device that is inserted through a tiny incision in the abdomen.

What Are the Treatments for Cirrhosis?

Treatment of cirrhosis is aimed at stopping or delaying its progress, minimizing the damage to liver cells, and reducing complications. In alcoholic cirrhosis, for instance, the person must stop drinking alcohol to halt progression of the disease. If a person has hepatitis, the doctor may administer steroids or antiviral drugs to reduce liver cell injury.

Medications may be given to control the symptoms of cirrhosis, such as itching. Edema and ascites (fluid retention) are treated by reducing salt in the diet. Drugs called diuretics are used to remove excess fluid and to prevent edema from recurring.

Figure 3



Diet and drug therapies can help to improve the altered mental function that cirrhosis can cause. For instance, decreasing dietary protein results in less toxin formation in the digestive tract. Laxatives such as lactulose may be given to help absorb toxins and speed their removal from the intestines.

The two main problems in cirrhosis are liver failure, when liver cells stop working, and the bleeding caused by portal hypertension. The doctor may prescribe blood pressure medication, such as a beta blocker, to treat the portal hypertension. If the patient bleeds from the varices of the stomach or esophagus, the doctor can inject these veins with a sclerosing agent administered through a flexible tube (endoscope) that is inserted through the mouth and esophagus. In critical cases, the patient may be given a liver transplant or another surgery (such as a portacaval shunt) that is sometimes used to relieve the pressure in the portal vein and varices.

Patients with cirrhosis often live healthy lives for many years. Even when complications develop, they usually can be treated. Many patients with cirrhosis have undergone successful liver transplantation.

Additional Readings

Biliary Atresia. This brochure presents information on biliary atresia and cirrhosis, including discussions of diagnosis, treatment, and complications. Available from the American Liver Foundation, 1428 Pompton Avenue, Cedar Grove, NJ 07009. (800) 223-0179 or (201) 256-2550.

Cirrhosis. This fact sheet presents general information on cirrhosis of the liver, research, and the work of the American Liver Foundation. Available from the foundation.

Clayman CB, ed. *The American Medical Association Encyclopedia of Medicine.* New York: Random House, 1989. Authoritative reference guide for patients, with sections on cirrhosis, hepatitis, and other disorders affecting the liver. Widely available in libraries and bookstores.

Primary Biliary Cirrhosis. This fact sheet presents information on PBC and cirrhosis, including discussions of diagnosis, treatment, and liver transplantation. Available from the American Liver Foundation.

Rosenfeld I. *Second Opinion: Your Comprehensive Guide to Treatment.* New York: Bantam Books, 1988. General medical guide with sections on cirrhosis and other disorders affecting the liver. Widely available in libraries and bookstores.

Resources

American Liver Foundation
1425 Pompton Avenue
Cedar Grove, NJ 07009
(800) 223-0179 or (201) 256-2550

United Network for Organ Sharing
1100 Boulders Parkway, Suite 500
P.O. Box 13770
Richmond, VA 23225-8770
(804) 330-8500

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