CONDITION

Cirrhosis

Learn how cirrhosis scars the liver, what symptoms and complications it can cause, and how treatment, monitoring, and lifestyle changes may protect liver health.

WHAT IT IS
Severe long-term scarring of the liver

BODY SYSTEM
Digestive system

MAIN SYMPTOMS
Tiredness, jaundice, abdominal swelling, confusion

WHAT CAUSES IT
Metabolic, alcohol, infection, immune or inherited

HOW IT IS DIAGNOSED
Blood tests, imaging, elastography, sometimes liver biopsy

MAIN TREATMENT
Cause-directed treatment and complication management

CAN IT BE CURED?
No, scarring usually cannot fully reverse

IS IT AN EMERGENCY?
Sometimes, bleeding, severe confusion or breathing trouble

LONG-TERM OUTLOOK
Progression may slow, but serious complications can develop

Overview

Cirrhosis is severe, long-term scarring of the liver. It develops when repeated injury causes healthy liver tissue to be replaced by scar tissue. This scarring changes the liver's structure and makes it harder for blood to flow through the organ.

The liver performs many essential jobs. It processes nutrients and medicines, removes waste from the blood, produces bile for digestion, and makes proteins involved in blood clotting and fluid balance. Cirrhosis can interfere with all of these functions.

Early cirrhosis may be compensated , meaning the liver still performs most of its work despite the scarring. A person may have few or no symptoms at this stage. Decompensated cirrhosis means complications have developed, such as fluid in the abdomen, internal bleeding, confusion, or jaundice.

Scar tissue from cirrhosis usually cannot be fully reversed. However, treating the cause may slow or stop further damage. In some people, liver function and pressure in the liver's blood vessels improve when the cause is controlled. Regular monitoring matters because complications can sometimes be found and treated before they cause noticeable symptoms.

Symptoms

Cirrhosis may not cause symptoms until liver damage is advanced. Early symptoms can be vague and may have many other causes.

Possible symptoms include:

Fluid buildup in the abdomen is called ascites . It may cause abdominal swelling, discomfort, early fullness when eating, or shortness of breath.

Cirrhosis can also affect brain function when the liver cannot clear certain substances from the blood. This is called hepatic encephalopathy . Symptoms can include sleep changes, poor concentration, unusual behavior, confusion, slurred speech, or hand-flapping movements. Mild symptoms may be difficult to recognize without input from family or friends.

Vomiting blood, passing black or bloody stool, severe confusion, difficulty waking, fainting, or severe breathing trouble requires emergency medical care. Fever with new or worsening abdominal pain or tenderness also needs urgent assessment because abdominal fluid can become infected.

- Ongoing tiredness or weakness
- Reduced appetite, nausea, or unplanned weight loss
- Loss of muscle strength
- Itchy skin
- Easy bruising or bleeding
- Yellowing of the skin or whites of the eyes, called jaundice
- Dark urine or pale stools
- Swelling in the legs, ankles, or abdomen
- Small, visible blood vessels on the skin
- Redness of the palms
- Changes in menstrual periods or sexual function

Causes and risk factors

Cirrhosis is the final stage of several types of long-term liver injury. More than one cause may be present.

Common causes include metabolic dysfunction-associated steatotic liver disease , or MASLD. In this condition, excess fat builds up in the liver in association with metabolic risk factors. Some people develop inflammation and progressive scarring. Risk is higher with type 2 diabetes, obesity, high blood pressure, abnormal cholesterol levels, or several of these conditions together.

Long-term heavy alcohol use can also injure the liver. The amount of alcohol that causes harm varies among individuals. Alcohol may speed liver damage from viral hepatitis, fatty liver disease, and other conditions.

Chronic hepatitis B or hepatitis C can cause years of inflammation before cirrhosis becomes apparent. Effective antiviral treatment can reduce ongoing liver injury. Hepatitis C can often be cured, while hepatitis B can usually be controlled with treatment when indicated.

Less common causes include:

Having a risk factor does not mean that a person has cirrhosis. The likelihood of progression depends on the cause, duration of injury, genetics, other medical conditions, and whether the liver injury is treated.

- Autoimmune hepatitis, in which the immune system attacks liver cells
- Primary biliary cholangitis and primary sclerosing cholangitis, which damage bile ducts
- Hemochromatosis, which causes excess iron storage
- Wilson disease, which causes copper buildup
- Alpha-1 antitrypsin deficiency, an inherited condition that may affect the liver and lungs
- Long-term blockage of bile flow
- Certain medicines or toxic exposures
- Severe, long-standing heart conditions that cause blood to back up into the liver

Diagnosis

A clinician may suspect cirrhosis based on symptoms, medical history, examination findings, blood tests, or imaging performed for another reason. Diagnosis usually combines several types of information.

Blood tests can measure liver inflammation, bilirubin, albumin, kidney function, and the blood's ability to clot. A complete blood count may show a low platelet count, which can occur when pressure rises in the liver's blood vessels. Blood tests may also look for viral hepatitis, autoimmune disease, excess iron, or other possible causes.

Ultrasound, computed tomography, or magnetic resonance imaging can show changes in the liver, an enlarged spleen, abnormal blood vessels, tumors, or abdominal fluid. Elastography is a specialized ultrasound or magnetic resonance test that estimates liver stiffness. Increased stiffness can suggest significant scarring, although inflammation and other factors may affect the result.

A liver biopsy removes a small tissue sample for examination under a microscope. It can confirm the amount and pattern of damage, but it is not needed in every case. Noninvasive tests are often enough to identify advanced scarring and guide care.

Clinicians also assess whether cirrhosis is compensated or decompensated. They may calculate scores using blood test results and clinical findings. The Model for End-Stage Liver Disease, known as MELD, estimates the risk from advanced liver disease and helps guide transplant evaluation and organ allocation.

An upper endoscopy may be recommended to look for varices . These are enlarged veins in the esophagus or stomach caused by increased pressure in the portal vein, which carries blood to the liver. Varices can bleed if they rupture.

Treatment and management

Treatment depends on the cause, liver function, complications, and other health conditions. Care may involve a primary care clinician, gastroenterologist, liver specialist, dietitian, or transplant center.

The first goal is to remove or control the source of liver injury. This may involve treatment for hepatitis B or C, stopping alcohol, managing metabolic risk factors, treating an autoimmune or bile duct disease, or addressing an inherited condition. Medicines should not be stopped without medical advice, even if liver injury is a concern.

People with cirrhosis are generally advised to avoid alcohol. A clinician can help arrange counseling, medicines for alcohol use disorder, or a supervised withdrawal plan when needed. Suddenly stopping alcohol can be medically dangerous for someone who is physically dependent.

Nutrition is important because cirrhosis can lead to muscle loss and malnutrition. Many people benefit from regular meals, adequate protein, and a late-evening snack rather than long fasting

periods. Protein restriction is not routinely recommended, including for most people with hepatic encephalopathy. A dietitian can tailor advice if ascites, diabetes, kidney disease, or poor appetite is present.

People with fluid buildup may be advised to reduce sodium and may receive medicines that help the kidneys remove excess salt and water. Large amounts of abdominal fluid can sometimes be drained through a procedure called paracentesis . Fluid may be tested for infection.

Hepatic encephalopathy is commonly treated with medicines that reduce the production or absorption of substances linked to confusion. Family members may need to help monitor symptoms and medicine use.

Treatment to lower pressure in the portal vein may reduce the risk of variceal bleeding in selected patients. Depending on the findings, this may involve a nonselective beta blocker or an endoscopic procedure that places bands around enlarged veins. Active bleeding requires emergency hospital treatment.

Medicines, vitamins, and herbal supplements should be reviewed with a clinician or pharmacist. Some over-the-counter pain relievers and supplements can worsen bleeding, kidney function, fluid retention, or liver injury. A person with cirrhosis should obtain individual advice before using them.

Vaccination status should also be reviewed. Protection against hepatitis A, hepatitis B, influenza, COVID-19, pneumococcal disease, and other infections may be appropriate based on age, prior vaccination, immunity, and medical history.

Liver transplantation may be considered when cirrhosis causes serious complications or severely reduced liver function. Evaluation includes medical testing and assessment of the person's overall health, support system, and ability to follow a complex treatment plan.

Complications

Cirrhosis can increase pressure in the portal vein, a condition called portal hypertension . This may cause an enlarged spleen, low platelets, ascites, or enlarged veins in the digestive tract.

Major complications include:

People with cirrhosis are commonly screened for liver cancer with liver ultrasound, sometimes combined with an alpha-fetoprotein blood test, about every six months. The exact approach depends on clinical circumstances and whether ultrasound can provide a clear view.

- Variceal bleeding: Enlarged veins in the esophagus or stomach can rupture and bleed.

- Ascites and infection: Abdominal fluid can become infected without an obvious source. This is called spontaneous bacterial peritonitis.
- Hepatic encephalopathy: Toxin buildup can affect attention, behavior, coordination, and consciousness.
- Kidney or lung problems: Advanced liver disease can disrupt circulation and impair other organs.
- Malnutrition and frailty: Poor appetite, altered metabolism, and reduced activity can lead to muscle loss.
- Blood-clotting problems: Cirrhosis can increase the risk of both bleeding and abnormal blood clots.
- Liver cancer: Cirrhosis is a major risk factor for hepatocellular carcinoma, the most common primary liver cancer.

Follow up

Cirrhosis requires ongoing follow-up even when symptoms are absent. Routine visits may include blood tests, assessment of nutrition and muscle strength, medicine review, and monitoring for fluid buildup, confusion, bleeding, or infection.

The care plan may also include liver cancer surveillance and evaluation for portal hypertension or varices. Follow-up frequency depends on liver function, the cause of cirrhosis, previous complications, and current treatment.

Contact the treating clinician promptly for increasing abdominal or leg swelling, worsening jaundice, new confusion, reduced urine output, persistent vomiting, fever, or a rapid change in weight. These symptoms may require earlier testing or adjustment of treatment.

Seek emergency care for:

Keeping an updated medicine list and sharing it with every healthcare professional can reduce medication-related harm. It may also help to involve a trusted family member or caregiver, particularly if confusion has occurred before.

- Vomiting blood or material that looks like coffee grounds
- Black, tar-like stool or a large amount of blood in the stool
- Severe or rapidly worsening confusion
- Inability to wake normally
- Fainting, severe weakness, or difficulty breathing

- Fever with new abdominal pain or tenderness

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