CONDITION

Hepatic ischemia

Hepatic ischemia is liver injury caused by too little blood flow or oxygen.

WHAT IT IS
Liver injury from inadequate blood flow or oxygen

BODY SYSTEM
Digestive, heart and circulation

MAIN SYMPTOMS
Nausea, upper-right abdominal pain, jaundice, confusion

WHAT CAUSES IT
Reduced liver blood flow or oxygen delivery

HOW IT IS DIAGNOSED
Blood tests, clinical context, and exclusion of other causes

MAIN TREATMENT
Restoring circulation and treating the underlying cause

CAN IT BE CURED?
Sometimes - liver injury often reverses

IS IT AN EMERGENCY?
Yes - often signals severe circulation or breathing failure

LONG-TERM OUTLOOK
Liver often recovers; underlying illness drives overall outlook

Overview

Hepatic ischemia means the liver is not receiving enough blood or oxygen. Without an adequate supply, liver cells become injured and may die.

When this causes widespread, sudden liver-cell injury, clinicians may call it ischemic hepatitis or hypoxic hepatitis. It is also sometimes informally called "shock liver." Despite the word "hepatitis," infection is not usually involved. The term describes liver inflammation or injury caused by poor oxygen delivery.

Hepatic ischemia is most often a complication of another serious problem. Examples include heart failure, major blood loss, a severe infection affecting circulation, or respiratory failure. It can also follow a blockage in a blood vessel supplying the liver, particularly after liver surgery or transplantation.

The liver has two major sources of blood, so it is usually well protected against a brief reduction in one supply. Significant injury is more likely when overall circulation is poor, oxygen levels are low, or the liver is already congested because blood is backing up from the heart.

The liver can often recover if circulation and oxygen delivery improve promptly. However, the condition matters because it may be a sign of a serious problem elsewhere in the body.

Symptoms

Hepatic ischemia may not cause clear liver-related symptoms. Many people are already unwell from the heart, circulation, breathing, or infection problem that caused it.

Possible symptoms include:

Symptoms of the underlying cause may be more noticeable. These can include breathlessness, chest discomfort, fainting, a fast or irregular heartbeat, low blood pressure, fever, or bleeding.

Confusion can result from poor circulation, low oxygen, infection, medication effects, or severe liver dysfunction. It needs prompt medical assessment rather than being assumed to come from the liver.

- Nausea, vomiting, or reduced appetite
- Discomfort in the upper-right side of the abdomen
- Yellow skin or eyes, called jaundice
- Dark urine
- Unusual tiredness or weakness
- Confusion, sleepiness, or difficulty concentrating

Causes and risk factors

Hepatic ischemia usually develops when the liver receives too little blood, too little oxygen within the blood, or both.

Common settings include:

A recorded episode of very low blood pressure is not always present. A shorter or less obvious reduction in circulation may still injure a vulnerable liver.

Right-sided heart failure is an important risk factor. It can cause blood to back up in the liver, known as hepatic congestion. A congested liver may be less able to tolerate a further fall in blood flow or oxygen.

A focal blockage can occasionally cause a hepatic infarction. This is an area of liver tissue that dies because its blood supply has been interrupted. It is different from the more widespread liver-cell injury usually meant by ischemic hepatitis.

- Heart problems: Severe heart failure, a heart attack, an abnormal heart rhythm, or another condition that reduces the heart's pumping ability
- Circulatory shock: Critically low blood flow caused by major bleeding, severe infection, dehydration, an allergic reaction, or another serious illness
- Respiratory failure: Very low blood oxygen caused by severe lung or breathing problems
- Blood-vessel blockage: A clot or injury affecting the hepatic artery, which supplies oxygen-rich blood to the liver
- Surgery or transplantation: Changes in blood flow can occur during major operations or after liver transplantation

Diagnosis

There is no single test that proves hepatic ischemia in every case. Diagnosis is based on the pattern of blood-test changes, the surrounding medical circumstances, and the exclusion of other likely causes.

Blood tests usually show a sudden, marked increase in alanine aminotransferase and aspartate aminotransferase. These enzymes, often shortened to ALT and AST, enter the blood when liver cells are damaged. Lactate dehydrogenase, or LDH, may also rise sharply.

Other tests may assess:

High liver enzymes do not identify the cause by themselves. Similar changes can occur with paracetamol overdose, other medication-related injury, viral hepatitis, autoimmune liver disease, or acute blockage of a bile duct. The medical team may use blood tests and a medication history to investigate these possibilities.

An ultrasound with Doppler can examine blood flow through the liver's major vessels. A CT or MRI scan may be used if a clot, infarction, tumour, bile-duct problem, or surgical complication is suspected.

Heart tests, such as an electrocardiogram or echocardiogram, may be needed. An echocardiogram uses ultrasound to show how well the heart is pumping. Tests of the lungs and oxygen level may also help identify the underlying cause.

A liver biopsy is rarely needed when the clinical situation and blood-test pattern are typical. It may be considered if the cause remains unclear.

- Bilirubin, which can rise and cause jaundice
- Blood clotting, often measured with the INR
- Kidney function and blood sugar
- Blood oxygen and acid levels
- Signs of infection, heart strain, or blood loss

Treatment and management

Treatment focuses on restoring enough blood flow and oxygen to the liver. There is no specific medicine that directly reverses ischemic liver-cell injury.

The exact approach is guided by the underlying problem. Hospital care may include:

A blood-vessel blockage after liver transplantation or surgery may require urgent specialist treatment. Options can include a procedure through a blood vessel or another operation.

The medical team will review medicines and supplements because some can worsen liver injury or complicate low blood pressure. You should not stop a prescribed medicine without medical advice unless emergency services direct you to do so.

Blood tests are usually repeated to see whether liver injury is improving. Heart function, breathing, kidney function, blood sugar, mental state, and blood clotting may also need close monitoring.

If severe liver dysfunction develops, care from a liver specialist is important. A small number of people with acute liver failure may need assessment at a specialist liver or transplant centre.

- Oxygen or breathing support
- Fluids, blood products, or medicines to support circulation
- Treatment for heart failure or an abnormal heart rhythm
- Antibiotics and circulation support for severe infection
- Control of active bleeding
- A procedure to restore blood flow through a blocked vessel

Complications

Most complications occur when the lack of circulation or oxygen is severe or continues for too long.

Possible complications include:

Hepatic infarction can sometimes lead to infection, bleeding, or loss of a larger area of liver tissue. This is not the usual course of diffuse ischemic liver injury.

The overall outlook is often determined more by the heart, lung, infection, or circulation problem than by the liver-test results alone.

- Acute liver failure
- Problems with blood clotting
- Low blood sugar
- Confusion caused by liver dysfunction, called hepatic encephalopathy
- Kidney injury
- Injury to other organs from the same circulation or oxygen problem
- Death from the underlying critical illness

Prevention

Hepatic ischemia cannot always be prevented. It may develop suddenly during a major infection, severe bleeding, heart problem, respiratory failure, or operation.

Managing known heart and lung conditions may reduce the chance of an episode related to poor circulation or low oxygen. This includes attending planned follow-up, taking medicines as directed, and reporting a clear worsening of breathlessness, swelling, fainting, or heart-rhythm symptoms.

People who have had liver surgery or a liver transplant need the specific blood-test and imaging follow-up arranged by their transplant or surgical team. This can help identify blood-flow problems before extensive liver injury occurs.

Avoid changing heart, blood-pressure, or diuretic medicines on your own. Both too much and too little treatment can affect circulation.

Living with it and what to expect

Hepatic ischemia is usually an acute event rather than a lifelong liver condition. If adequate circulation returns, liver enzymes often begin falling within several days and may approach previous levels over one to two weeks. Recovery can take longer when the original illness remains active or other liver problems are present.

A single, brief episode that resolves does not usually turn into chronic liver disease by itself. The liver has a strong ability to replace injured cells. However, recovery cannot be assumed until symptoms, blood tests, and the underlying cause have been reassessed.

Follow-up may include repeat liver, kidney, and clotting tests. If heart or lung disease caused the episode, longer-term care will focus on controlling that condition. Repeated episodes are possible when severe heart failure, low oxygen, or circulation problems continue.

Some people recover fully from the liver injury but need rehabilitation after a critical illness. Tiredness, weakness, reduced stamina, sleep changes, and poor appetite can persist for weeks or months after a hospital stay. These symptoms are not necessarily signs of continuing liver damage.

New jaundice, increasing abdominal swelling, confusion, or a return of breathlessness should not wait for a routine appointment.

When to get medical help

Hepatic ischemia is commonly linked to conditions that need urgent hospital treatment.

Call emergency services for:

Seek urgent same-day medical care for new yellowing of the skin or eyes, dark urine with marked weakness, persistent vomiting, or upper-right abdominal pain after recent major surgery or transplantation.

If you are recovering from hepatic ischemia and otherwise feel stable, routine follow-up is used to repeat blood tests and manage the condition that caused it. Contact your care team sooner if symptoms return or become worse rather than waiting for the next planned visit.

- Severe or rapidly worsening breathlessness
- Chest pain, fainting, or collapse
- New confusion, extreme drowsiness, or difficulty waking
- Blue or grey lips or skin
- Heavy bleeding or vomiting blood
- Signs of shock, such as cold clammy skin with severe weakness

Common questions

Is hepatic ischemia the same as ischemic hepatitis?

The terms often refer to the same widespread liver-cell injury caused by inadequate blood flow or oxygen. "Hypoxic hepatitis" is another term used in medical literature. Hepatic ischemia can also describe a more local blood-flow problem, such as one affecting a hepatic artery.

Can the liver recover from hepatic ischemia?

Often, yes. Liver cells can recover or be replaced once circulation and oxygen delivery improve. Recovery is less certain when poor blood flow continues, a large artery remains blocked, or severe failure of several organs has occurred.

How long do liver enzymes stay high?

In a typical improving episode, AST and ALT fall quickly over several days and may move toward previous levels within one to two weeks. The timing can be longer if the underlying illness continues or another cause of liver injury is also present.

Is hepatic ischemia always caused by a blood clot?

No. It is more often caused by poor overall circulation, reduced heart pumping, or low blood oxygen. A clot in the hepatic artery is a less common but important cause, especially after liver transplantation or surgery.

Is hepatic ischemia caused by alcohol?

Alcohol is not a typical direct cause of hepatic ischemia. Heavy alcohol use can cause other forms of liver injury and may reduce the liver's ability to tolerate a serious illness. Blood tests and medical history help distinguish these conditions.

Is hepatic ischemia contagious?

No. It is caused by inadequate blood flow or oxygen, not by an infection that can spread between people. However, a severe infection elsewhere in the body can sometimes trigger the circulation problems that lead to it.

Sources

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