CONDITION

Hepatocellular carcinoma

Hepatocellular carcinoma is a cancer that begins in the liver's main cells, often after long-term liver damage.

WHAT IT IS
Primary liver cancer arising from liver cells

BODY SYSTEM
Liver and digestive system

MAIN SYMPTOMS
Abdominal discomfort, weight loss, tiredness, jaundice

WHAT CAUSES IT
Cell changes linked to cirrhosis or hepatitis infection

HOW IT IS DIAGNOSED
Contrast CT or MRI, sometimes biopsy

MAIN TREATMENT
Surgery, transplant, ablation, liver-directed or systemic therapy

CAN IT BE CURED?
Sometimes - early tumors may allow curative treatment

IS IT AN EMERGENCY?
Sometimes - vomiting blood, black stools, or confusion

LONG-TERM OUTLOOK
Best when found early; advanced cancer is harder to control

Overview

Hepatocellular carcinoma, often shortened to HCC, is a cancer that starts in hepatocytes, the main cells of the liver. It is the most common type of primary liver cancer. "Primary" means that the cancer began in the liver, rather than spreading there from another part of the body.

The liver processes nutrients, removes harmful substances from the blood, makes bile for digestion, and produces proteins needed for blood clotting. HCC can affect these jobs. Many people with HCC also have cirrhosis, which is severe scarring caused by long-term liver damage. Treatment therefore needs to address both the cancer and the health of the remaining liver.

HCC may not cause symptoms when it is small. It is sometimes found during regular liver cancer surveillance in someone at increased risk. Finding it early can provide more treatment

options, including treatments intended to remove or destroy all known cancer.

The outlook is shaped by the cancer's size, number and location, whether it has entered blood vessels or spread elsewhere, and how well the liver is working. A person's general health and ability to manage daily activities also matter.

Symptoms

Early HCC often causes no noticeable symptoms. When symptoms develop, they may come from the tumor, reduced liver function, or worsening cirrhosis.

Possible symptoms include:

These symptoms have many possible causes and do not necessarily mean that someone has liver cancer. New or persistent symptoms still need medical assessment, especially in someone with cirrhosis or chronic hepatitis B.

A sudden decline in someone with stable liver disease can also be important. Examples include new abdominal swelling, worsening jaundice, confusion, or bleeding from the digestive tract.

- Discomfort, fullness, or a lump in the upper right abdomen
- Loss of appetite or feeling full after eating a small amount
- Unplanned weight loss
- Tiredness or weakness
- Nausea or vomiting
- Jaundice, meaning yellow skin or yellowing of the whites of the eyes
- Dark urine or pale stools
- Abdominal swelling from fluid, called ascites
- Swelling in the legs or ankles
- Itching
- Easy bruising or bleeding

Causes and risk factors

HCC develops when liver cells acquire changes in their DNA, the instructions that control how cells grow and divide. The exact reason this happens is not always known.

Long-term liver damage and repeated inflammation make these cell changes more likely.

Cirrhosis is the main setting in which HCC develops, although not everyone with HCC has cirrhosis.

Important risk factors include:

Hepatitis B can lead to HCC even before cirrhosis develops. Successfully treating hepatitis B or curing hepatitis C lowers the risk, but it may not remove the risk completely if advanced liver scarring is already present.

HCC itself is not contagious. It cannot be passed through touch, food, or shared living spaces. Hepatitis B and C can spread between people, but the cancer that may result does not.

- Chronic hepatitis B infection
- Chronic hepatitis C infection
- Cirrhosis from any cause
- Alcohol-related liver disease
- Metabolic dysfunction-associated steatotic liver disease, involving excess liver fat linked to metabolic health
- Certain inherited liver conditions, such as hemochromatosis
- Long-term exposure to aflatoxins, toxins made by molds that can contaminate food in some regions

Diagnosis

HCC may be found after symptoms develop or during surveillance of someone at increased risk. The assessment usually begins with a medical history, physical examination, blood tests, and imaging.

Blood tests can show how well the liver and kidneys are working and whether the blood is clotting normally. These results help assess the safety of treatment. Tests may also look for hepatitis B or C.

Alpha-fetoprotein, or AFP, is a protein that may be raised in HCC. However, some people with HCC have a normal AFP level, and other liver conditions can raise it. AFP cannot confirm or rule out HCC by itself.

Contrast-enhanced CT or MRI scans examine how a liver abnormality takes up and releases contrast material. In someone at high risk, HCC can sometimes be diagnosed from a characteristic scan appearance without a biopsy.

A biopsy removes a small sample of tissue for examination under a microscope. It may be

needed when imaging is unclear, when the liver is not already known to be at high risk, or when tissue testing could guide treatment. Biopsy is not necessary in every case.

If HCC is confirmed, further imaging may check for growth into nearby blood vessels or spread to lymph nodes, the lungs, bones, or other areas. The care team also assesses liver function and general health. This process is called staging.

Treatment and management

Treatment is planned around both the cancer and the condition of the liver. Options are usually discussed by a team that may include liver specialists, cancer specialists, surgeons, radiologists, and transplant professionals.

Treatments intended to eliminate all known cancer may include:

Liver-directed treatments focus on tumors while limiting exposure to the rest of the body. Transarterial embolization blocks the tumor's blood supply, sometimes while delivering chemotherapy or radiation. External radiation may also be used in selected situations.

Systemic treatment travels through the bloodstream. It may be offered when HCC cannot be removed, has entered major blood vessels, has spread, or continues to grow after liver-directed treatment. Options include immunotherapy, which helps the immune system recognize cancer, and targeted therapy, which interferes with signals that cancer cells use to grow. The choice depends on liver function, bleeding risk, previous treatment, other health conditions, and the cancer's features.

Supportive care can be provided at every stage. It may include treatment for pain, nausea, itching, poor appetite, abdominal fluid, tiredness, sleep problems, or emotional distress. Palliative care is specialist support for symptoms and quality of life; it can be given alongside cancer treatment.

- Surgical resection: Removing the tumor and part of the surrounding liver. This is most suitable when the cancer is limited and the remaining liver is expected to work well.
- Liver transplant: Replacing the affected liver with a donor liver. This can treat both selected tumors and the underlying cirrhosis, but eligibility depends on tumor features, overall health, and donor availability.
- Ablation: Destroying a tumor without removing it, often using heat delivered through a needle. It is generally used for selected small tumors.

Complications

HCC can reduce liver function directly or worsen existing cirrhosis. Possible complications include jaundice, abdominal fluid, infection, bleeding problems, and hepatic encephalopathy. Encephalopathy is a change in brain function caused by substances that a damaged liver can no longer clear; it may cause confusion, unusual sleepiness, or personality changes.

The cancer can grow into the portal vein or other blood vessels. It may also spread outside the liver, commonly to lymph nodes, lungs, bones, or adrenal glands.

Cirrhosis can increase pressure in the portal vein, which carries blood through the liver. This may produce swollen veins in the esophagus or stomach, called varices. If they bleed, a person may vomit blood or pass black, tar-like stools.

Rarely, a liver tumor can rupture and bleed into the abdomen. This may cause sudden severe abdominal pain, weakness, or fainting and requires emergency care.

Treatment can also cause complications. The specific risks differ between surgery, transplant, ablation, radiation, embolization, immunotherapy, and targeted therapy. Monitoring is used to identify side effects and changes in liver function.

Prevention

Not every case of HCC can be prevented. Some people develop it despite treatment of known risks, and some causes of liver disease are inherited.

Hepatitis B vaccination helps prevent hepatitis B infection and the liver damage it can cause. There is no vaccine for hepatitis C, but testing and antiviral treatment can cure most infections.

Treating chronic hepatitis B can reduce liver injury. Treating hepatitis C can also lower future risk, although people with advanced scarring may still need liver cancer surveillance after the infection is cured.

Other ways to reduce avoidable liver damage include limiting or avoiding alcohol, not smoking, and working toward metabolic health if there is excess liver fat, diabetes, high blood pressure, or abnormal cholesterol. These steps lower risk but cannot guarantee prevention.

People at increased risk may be offered regular surveillance with liver ultrasound and sometimes an AFP blood test. Surveillance does not prevent HCC, but it can help find it before symptoms appear, when more treatments may be possible.

Living with it and what to expect

HCC can follow very different courses. A small tumor found during surveillance may be treated with surgery, transplant, or ablation. Follow-up then continues because cancer can return in the remaining liver, and underlying liver disease may still need care.

After treatment, follow-up commonly includes imaging, blood tests, and checks of liver function. The timing is based on the treatment used, the risk of recurrence, and overall liver health. Keeping these appointments matters even when you feel well.

When HCC cannot be removed completely, treatment may control it for a period rather than cure it. Scans and blood tests show whether tumors are shrinking, stable, or growing. Treatment may change over months or years if the cancer progresses or side effects become difficult.

Daily life may be affected by tiredness, appetite changes, abdominal swelling, appointments, and uncertainty. Some people continue many usual activities, while others need help with work, travel, meals, or personal care. The effect often reflects both the cancer and the degree of liver damage.

There is no special diet that cures HCC. A dietitian familiar with liver conditions can help if eating is difficult, weight or muscle is being lost, or abdominal fluid affects appetite. Alcohol may cause further liver damage, so the care team may advise avoiding it.

When to get medical help

Arrange a prompt, non-emergency assessment for persistent upper abdominal discomfort, unexplained weight loss, reduced appetite, a new abdominal lump, worsening tiredness, or new jaundice. People with cirrhosis or chronic hepatitis B should also report new abdominal swelling or a clear change from their usual health.

Contact the cancer or liver care team promptly for fever, repeated vomiting, rapidly increasing abdominal swelling, reduced urine, worsening jaundice, new treatment side effects, or pain that is not controlled.

Seek emergency help for:

These signs can reflect internal bleeding, severe liver dysfunction, infection, or another urgent complication.

- Vomiting blood or material that looks like coffee grounds
- Black, tar-like stools
- New confusion, marked drowsiness, or difficulty waking

- Sudden severe abdominal pain, especially with weakness or fainting
- Severe shortness of breath
- Heavy bleeding that does not stop

Common questions

Is hepatocellular carcinoma curable?

Sometimes. Surgery, liver transplant, or ablation may cure selected early tumors. Cure becomes less likely when the cancer has entered major blood vessels, spread outside the liver, or occurs with liver damage that limits treatment.

How fast does hepatocellular carcinoma grow?

Growth rates differ between tumors. Some remain stable for a time, while others grow or spread more quickly. Comparing scans taken at different times gives more useful information than symptoms alone.

Does a high AFP level mean I have liver cancer?

No. AFP may be raised by HCC, but it can also rise with other liver conditions. Some HCC tumors do not raise AFP at all. Diagnosis relies mainly on appropriate imaging and, in some cases, biopsy.

Can I have a liver transplant for HCC?

A transplant may be possible when the number, size, and location of tumors fit transplant criteria and there are no findings that make transplantation unsuitable. Liver function, general health, waiting-list rules, and donor availability also matter.

Is HCC the same as cancer that has spread to the liver?

No. HCC begins in liver cells. Cancer that begins in the bowel, breast, lung, pancreas, or another organ and then reaches the liver is metastatic cancer. It is named and treated according to where it started.

Can HCC come back after treatment?

Yes. HCC can return near the original site, elsewhere in the liver, or outside the liver. This is why follow-up imaging and blood tests continue after treatment that removed or destroyed all visible cancer.

Sources

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