

BY BITO HEALTH

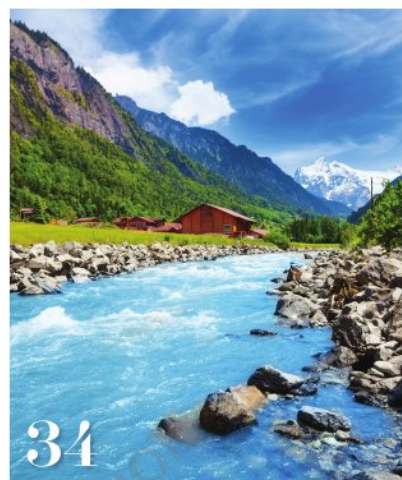
LIVER CANCER

LIVER CANCER & SURGERY

This beautifully designed magazine has been created to give you all the essential information about liver cancer in an easy-to-understand manner. We aim to empower you throughout your cancer journey, enabling you to make informed choices, anticipate treatment and lifestyle changes, and ultimately achieve the best possible outcome.

Let's start the journey. Let's Bring It On!

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INTRODUCTION

Liver cancer is a prevalent form of cancer that ranks as the 5th most common cancer in men and the 9th most common cancer in women. In the United States, it is estimated that there are around 41,200 new cases of liver cancer each year, which amounts to approximately 9.3 cases per 100,000 men and women annually. About 1.1 percent of both men and women may develop liver and intrahepatic bile duct cancer at some point in their lifetime.

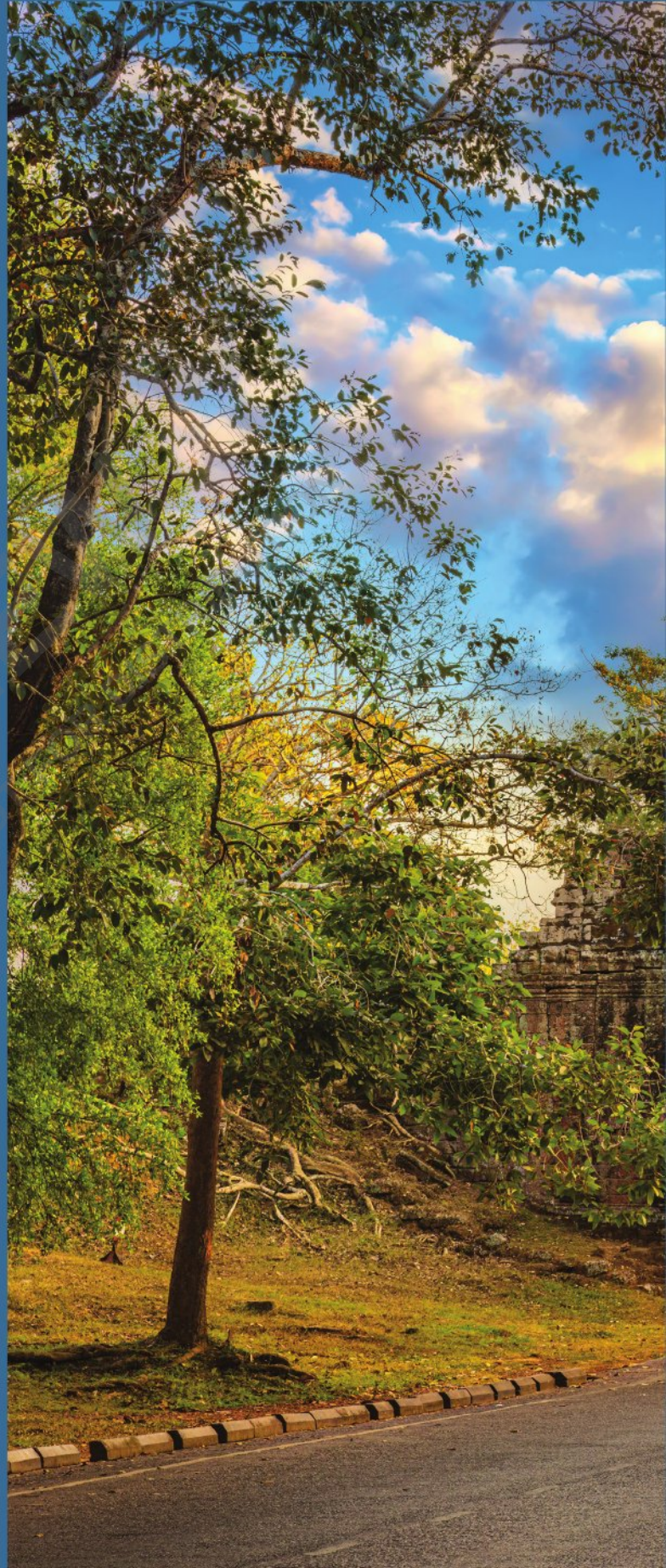
WHERE, WHAT, SYMPTOMS, & DIAGNOSIS

WHERE IS THE LIVER?

The liver is a vital organ that performs many essential functions in the human body. It is in the upper right quadrant of the abdomen, below the diaphragm, and above the stomach. The liver has two main lobes, the right and the left, further divided into smaller segments. The liver is connected to the gallbladder and the small intestine by a network of ducts that carry bile, a fluid that helps digest fats. The liver performs vital functions such as metabolizing food, producing bile, detoxifying harmful substances, regulating blood sugar and cholesterol levels, and regenerating damaged tissue.

“OBSTACLES ARE THOSE FRIGHTFUL THINGS YOU SEE WHEN YOU TAKE YOUR EYES OFF YOUR GOAL.”

– HENRY FORD



WHAT IS LIVER CANCER?

PRIMARY LIVER CANCER VS SECONDARY LIVER CANCER

THERE ARE TWO FORMS OF LIVER CANCER:

Primary liver cancer is a type of cancer that begins in the cells of the liver, such as liver cells (hepatocytes) or bile duct cells (cholangiocytes). It is more common in areas where chronic viral hepatitis or liver cirrhosis are prevalent. Symptoms of primary liver cancer include jaundice, abdominal pain, weight loss, or ascites. The most common forms of primary liver cancer are hepatocellular carcinoma (HCC) and intrahepatic cholangiocarcinoma (ICC). It is usually treated with surgery, ablation, embolization, transplantation, or targeted therapy.

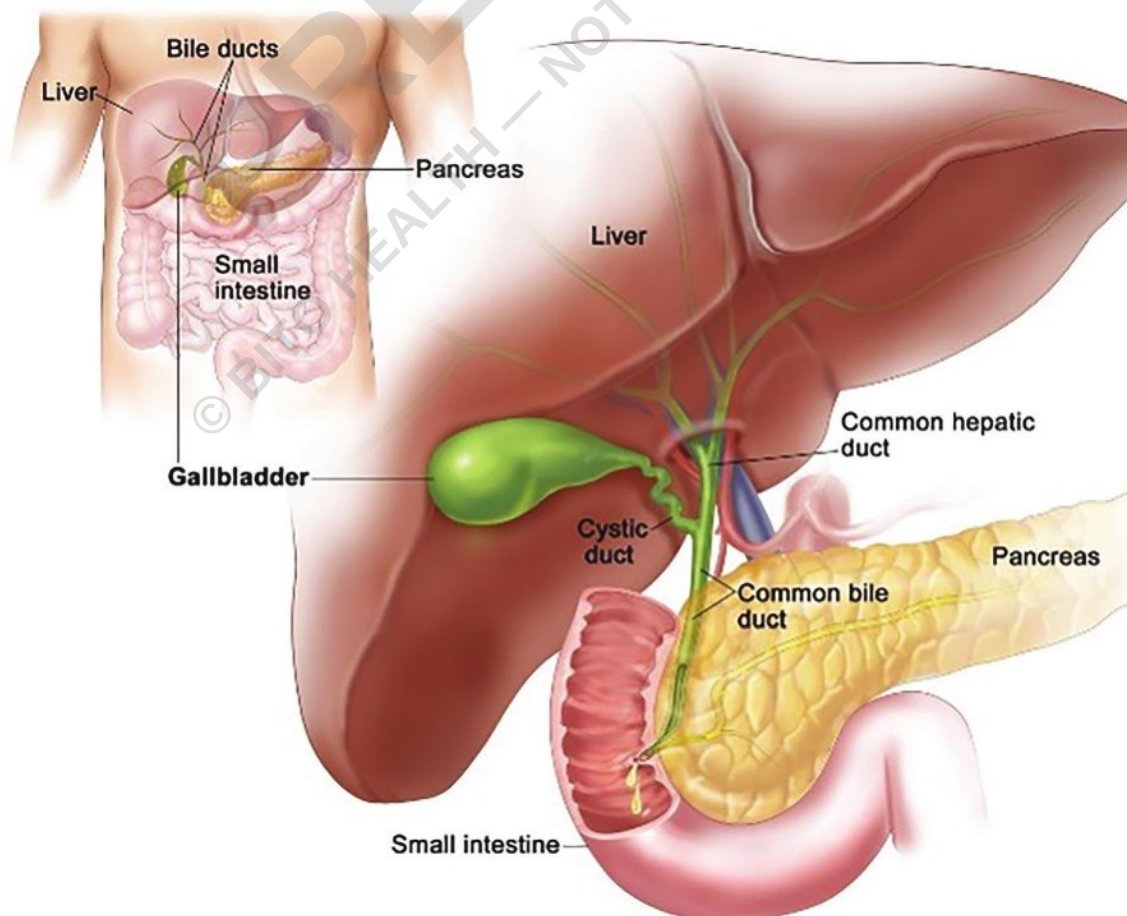
Secondary liver cancer is a type of cancer that occurs when cancer cells spread to the liver from another organ, such as the gastrointestinal track (esophagus, stomach, small bowel, colon), pancreas, breast, or lung. Secondary liver cancer is more common in regions where other cancers are prevalent and may not show any symptoms until the cancer is advanced. The most common sources of secondary liver cancer are colorectal cancer, breast cancer, and carcinoid tumors. Any cancer can potentially metastasize to the liver. Treatment for secondary liver cancer usually involves chemotherapy, surgery, immunotherapy, or radiation therapy.

PRIMARY LIVER CANCER

THESE ARE THE COMMON FORM OF PRIMARY LIVER TUMOR IN ADULT AND CHILDREN

1. Adult: Hepatocellular Carcinoma (HCC), Intrahepatic Cholangiocarcinoma (ICC), Sarcoma.
2. Children: Hepatoblastoma, Sarcoma.

The following discussion will be focusing on adult primary liver cancer, especially on Hepatocellular Carcinoma (HCC).



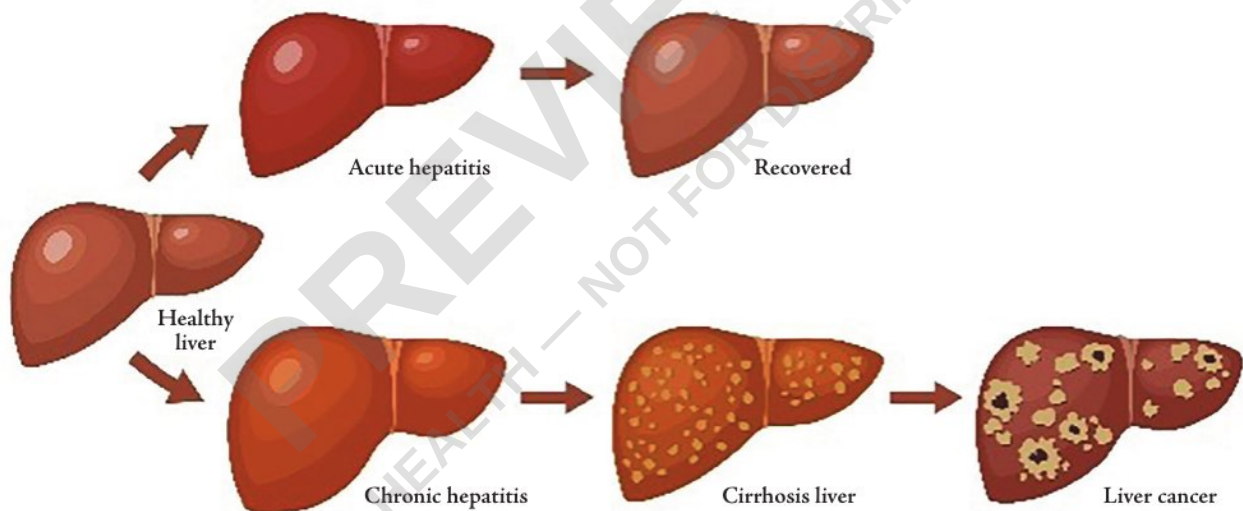
RISK FACTORS FOR PRIMARY LIVER CANCER

SOME OF THE RISK FACTORS FOR DEVELOPING PRIMARY LIVER CANCER ARE:

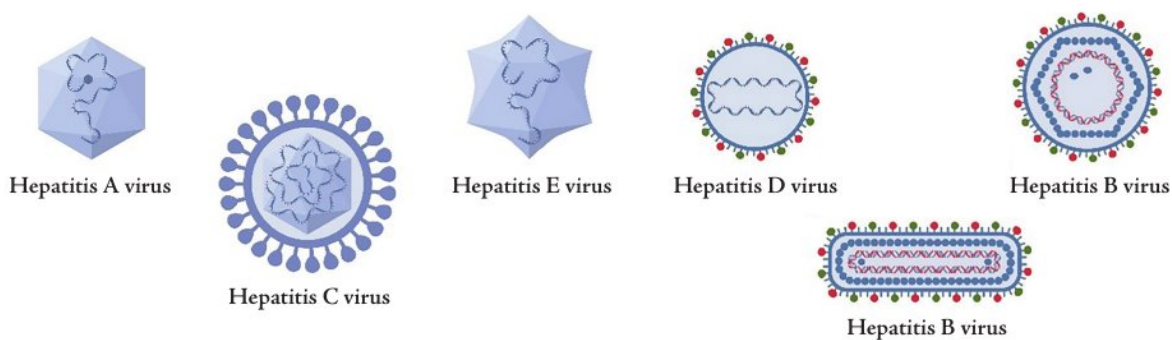
1. Chronic infection with hepatitis B or C virus, which can damage the liver cells and cause inflammation and scarring (Chronic liver disease).
2. Cirrhosis is a condition where the liver tissue is replaced by scar tissue due to chronic liver damage from various causes, such as alcohol abuse, fatty liver disease, autoimmune hepatitis, etc.
3. Obesity is a condition where the body weight is too high and can cause fatty liver disease and inflammation in the liver (Steatohepatitis).
4. Family history of liver cancer, which can indicate a genetic predisposition to the disease.
5. Others: Exposure to aflatoxins, toxins produced by certain fungi that can contaminate crops such as corn, peanuts, and grains.

These risk factors do not necessarily mean that a person will develop liver cancer, but they can increase the likelihood of it. Therefore, it is essential to be aware of them and take preventive measures, such as getting vaccinated against the hepatitis B virus, avoiding exposure to aflatoxins, maintaining a healthy weight and blood sugar level, and getting regular check-ups and screenings for liver health.

Stages of liver disease in hepatitis



Hepatitis viruses



PRIMARY LIVER CANCER SCREENING

For patient population at risk, liver cancer screening is crucial for patients who are at risk of developing Hepatocellular Carcinoma (HCC). Regular surveillance has been shown to be associated with early tumor detection and improved survival. The primary goal of HCC surveillance is to reduce mortality. The groups that are at risk for HCC are usually well-defined. The best tool for such surveillance is ultrasound, which is non-invasive, low-cost, highly sensitive, and has excellent specificity.

The table below shows the surveillance guidelines followed in different regions. In the USA, most centers adhere to the guidelines of AASLD (American Association for the Study of Liver Diseases).

Recommendation	AASLD	EASL	APASL
Target population Child-Pugh A or B	Any etiology Child-Pugh A or B cirrhosis Any Child-Pugh cirrhosis awaiting LT Chronic HBV with active hepatitis or family history of HCC, Africans, African-Americans, Asian males > 40 yr and Asian females > 50 yr	Any etiology Child-Pugh A or B Cirrhosis Child-Pugh C awaiting LT Any chronic HBV with ≥ 10 PAGE-B score Chronic HCV with bridging fibrosis	Any etiology cirrhosis Asian males > 40 yr Asian females > 50 yr Africans > 20 yr Family history of HCC
Screening interval	Every 6 (4-8) months	Every 6 months	Every 6 months
Imaging	US	US	US
Biomarkers	As discretion	None	AFP
Confirmation	CT/MRI/CEUS for ≥ 1 cm nodule	CT/MRI/CEUS for ≥ 1 cm nodule	CT/MRI/CEUS
Liver biopsy	Not recommended as a routine	Mandatory in noncirrhotics	Unsolved ≥ 1 cm size
Unsolved nodule	Alternative imaging/contrast medium	Different imaging or liver biopsy	Further imaging
< 1 cm nodule	Same as unsolved nodules	US every 4 months in the 1st yr. If size unchanged return to 6 months	CT/MRI every 3-6 mo

LT = liver transplantation, PAGE-B score = patient, age & gender (range 0-18 points), US = ultrasound, AFP = alpha fetoprotein, CT = multiphasic computed tomography, MRI = magnetic resonance imaging, CEUS = contrast enhanced US.

EASL: European Association for the Study of the Liver AASLD: American Association for the Study of Liver Diseases.

APASL: Asian Pacific Association for the Study of the Liver

Lesion < 1 cm: in size cannot be accurately diagnosed through further imaging or biopsy. These lesions are likely to be benign, and can be monitored more frequently, for example, every three to six months, for a maximum of two years. If the lesion disappears or remains smaller than 1 cm, the patient can return to regular check-ups every six months.

Lesion > 1 cm in size diameter should be further evaluated with other liver imaging that incorporates intravenous contrast (CT and or MRI).

WHAT ARE THE SYMPTOMS AND SIGNS OF PRIMARY LIVER CANCER?

It is essential to know that the symptoms of liver cancer can vary, and some people with cancer may not have any symptoms. Some of the signs and symptoms of liver cancer may not appear in the early stages of liver cancer. The following symptoms can present in patients with liver cancer but are not specific to the liver cancer: progressive weight loss, Loss of appetite, abdomen pain, vomiting, weakness, fatigue, enlarged liver, jaundice (Yellow discoloration of the skin), pale stools, ascites (abdominal distension due to fluid accumulation). Symptoms tend to develop when the tumor becomes larger or affects adjacent organs.

HOW IS PRIMARY LIVER CANCER DIAGNOSED?

DOCTORS MAY USE VARIOUS TESTS TO INVESTIGATE AND DIAGNOSE LIVER CANCER

The following investigation or tests and procedures may be used:

HISTORY AND PHYSICAL EXAM:

BLOOD TEST:

Serum tumor marker test: Alpha-fetoprotein (AFP) and CA19-9 may be elevated in patients with liver cancer. They are neither highly sensitive nor specific; other cancers and certain noncancerous conditions, including Cirrhosis and hepatitis, may also increase AFP levels. Liver Function Tests (LFTs), Complete Blood Count (CBC), Prothrombin Time (INR, International Normalized Ratio), Basic Metabolic Panels (Chem 7), and Appropriate hepatitis panels (Hep B and C). These tests may give some indication regarding the general health of the liver.

IMAGING STUDIES:

HCC can be diagnosed by contrast-enhanced computed tomography (CT), magnetic resonance imaging (MRI), or ultrasound (US). In most high-risk patients, HCC can frequently be diagnosed on imaging alone, obviating the need for a biopsy.

DIAGNOSIS:

A biopsy is not always necessary to diagnose certain liver tumors. Hepatocellular carcinoma, a type of liver cancer, can be identified by its specific imaging features, especially in patients who are eligible for surgery or transplant.

BIOPSY:

In some cases of intrahepatic cholangiocarcinoma and combined hepatocellular-cholangiocarcinoma, the imaging features can be suggestive of malignancy, but are yet is sufficient to make a firm diagnosis. Images guided (Ultrasound, Dynamic contrast-enhanced CT, or MRI) biopsy is then necessary to make a diagnosis. This involves using a thin or thick needle to collect a sample of tissue from the liver tumor. A pathologist then examines the tissue under a microscope for cancer cells. The biopsy results help confirm the diagnosis. More tracers than normal cells and appear as bright spots on the PET scan. PET has low sensitivity but high specificity and may be helpful when a doubtful finding exists.

RISK STRATIFICATION & DIAGNOSIS

PATIENT WITH CIRRHOSIS (HIGH RISK FOR HCC)

a. AFP and Imaging studies: Biopsy for histologic confirmation is not required if the liver lesion fulfills typical imaging criteria for HCC.

PATIENT WITH CHRONIC NONVIRAL LIVER DISEASE, NO CIRRHOSIS (ELEVATED RISK FOR HCC)

a. AFP and Imaging studies: Biopsy for histologic confirmation is not required if the liver lesion fulfills typical imaging criteria for HCC.

b. If the diagnosis remains uncertain, a biopsy is indicated.

PATIENT WITHOUT CHRONIC LIVER DISEASE (LOW RISK FOR HCC)

a. AFP and Imaging studies: Biopsy for histologic confirmation is not required if the liver lesion fulfills typical imaging criteria for HCC.

b. If the diagnosis remains uncertain, a biopsy is indicated.

STAGING

WHAT OTHER TESTS DO I NEED AFTER THE DIAGNOSIS IS MADE?

Once the diagnosis of liver cancer is established, the local and distant extent of the disease must be determined to provide a framework for discussing therapy and prognosis. Hence, your doctor may order tests to determine the stage of your cancer. By knowing the stage of your cancer, your healthcare team can plan the best treatment options and predict your chances of survival. Different staging modalities can provide additional information about the tumor size, location, lymph node involvement, and distant metastasis.

The most used staging modalities for liver cancer are CT, MRI (Magnetic Resonance Imaging), and occasionally PET (Positron Emission Tomography) scan.

BLOOD TEST:

AFP, CA19-9: High CA19-9 levels do not necessarily mean cancer or advanced disease. They can also be a sign of infection, inflammation, or obstruction. CA 19-9 will not be detectable in people lacking the Lewis antigen. CBC (Complete Blood Count), Chem 7 (Basic Metabolic Panel), LFTs (Liver Function Tests). Appropriate hepatitis panels (hep B and C).

CT SCAN (COMPUTER TOMOGRAPHY):

CT scan is an X-ray that produces detailed images of the abdomen and chest. It can show the size and shape of the Liver, the extent of local invasion, and the presence of metastasis in the liver, lungs, or other organs. CT scan is usually the first choice for staging liver cancer.

MRI (MAGNETIC RESONANCE IMAGING):

An MRI scan differs from a CT scan because it employs magnetic fields instead of X-rays. This imaging technique can produce highly detailed images of soft tissues and blood vessels. Sometimes, an MRI scan is especially valuable in evaluating the effects of major blood vessels near the Liver, as this information can inform surgical decisions.

PET SCAN (POSITRON EMISSION TOMOGRAPHY):

A nuclear medicine test called PET scan uses a radioactive tracer to measure how cells use energy. The tracer goes into a vein and moves through the blood. Cancer cells take in more tracers than normal cells and appear as bright spots on the PET scan. PET has low sensitivity but high specificity and may be helpful when a doubtful finding exists.