

Primary Liver Cancer

Primary liver cancer is where the cancer originates in the liver. It is a common cancer worldwide and its incidence is increasing in the USA. Most cases develop in the setting of liver cirrhosis (hard liver due to scarring). Surgery to remove the cancer gives the best chance of a cure.

What is the liver?

The liver is the second most important organ in the body and is located under the rib cage on the right side. It weighs about three pounds and is shaped like a football that is flat on one side. The liver performs many jobs in the body including :

- Storing glycogen (fuel for the body) which is made from sugars. When required, glycogen is broken down into glucose (sugar) which is released into the bloodstream.
- Helping to process fats and proteins from digested food.
- Making proteins that are essential for blood to clot (clotting factors).
- Helping to process and/or remove alcohol, many types of medicines, toxins and poisons from the body.
- Making bile which passes from the liver to the gut down the bile duct. Bile breaks down the fats in food so that they can be absorbed from the bowel.

What is cancer?

Cancer is a disease of the cells in the body. The body is made up of millions of tiny cells. There are many different types of cell in the body, and there are many different types of cancer which arise from different types of cell. What all types of cancer have in common is that the cancer cells are abnormal and multiply 'out of control'.

A cancerous or malignant tumor is a 'lump' or 'growth' of tissue made up of cancer cells which continue to multiply. As they grow, malignant tumors can invade into nearby tissues and organs.

Malignant tumors may also spread to other parts of the body. This happens if some cells break off from the first (primary) tumor and are carried in the bloodstream or lymph channels to other parts of the body. These small groups of cells may then multiply to form 'secondary' tumors (metastases) in one or more parts of the body. These secondary tumours may then grow and invade nearby tissues, and spread again.

Some cancers are more serious than others, some are more easily treated than others (particularly if diagnosed at an early stage), some have a better outlook (prognosis) than others.

In each case it is important to know what type of cancer has developed, where it has developed, how large it has become, and whether it has spread. This will enable you to get information on treatment options.

What is primary liver cancer?

Cancer that starts in the liver is called primary liver cancer. Tumors may also spread from other parts of your body, such as from your bowel, breast or lungs, to your liver - this is called secondary liver cancer. This spread of cancer is also called metastasis. Primary liver cancer is one of the few cancers on the rise in the United States. Primary liver cancer is about twice as common in men than in women.

There are different types of primary liver cancer which include:

- Hepatocellular carcinoma (Hepatoma). This is the most common type of primary liver cancer. This type of cancer originates from a liver cell (hepatocyte) which becomes cancerous. It also most commonly develops as a complication of liver diseases such as cirrhosis (scarring of the liver) or types of hepatitis (liver inflammation).
- Cholangiocarcinoma. This is a primary tumor of the liver, but it develops from cells which line the bile duct, not the hepatocyte.
- Fibrolamellar hepatoma is a rare sub-type of hepatocellular carcinoma. It typically develops in a liver which was previously healthy.
- Hepatoblastoma. This is a very rare cancer which occurs in some young children.
- Angiosarcoma. This is very rare. It develops from cells of blood vessels within the liver.

What causes primary liver cancer?

A cancerous tumor starts from one abnormal cell. The exact reason why a cell becomes cancerous is unclear. It is thought that something damages or alters certain genes in the cell.

Most people who develop a primary liver cancer have one or more of the following 'risk factors' which seem to make liver cells more prone to becoming cancerous:

- Cirrhosis (scarring of the liver) can lead to liver cancer. In the United States, chronic alcoholism and hepatitis C are the leading causes of cirrhosis. This is the number one risk factor for hepatocellular carcinoma.
- Long-term hepatitis B and hepatitis C infection are linked to liver cancer because they often lead to cirrhosis. It typically takes 20-30 years after first becoming infected to develop primary liver cancer. In contrast to hepatitis C, hepatitis B can lead to liver cancer without cirrhosis.
- Hemochromatosis - a genetic condition where your body has too much iron
- Obesity may increase the risk of liver cancer.
- Diabetes can increase the risk of liver cancer, especially in those who drink heavily or have viral hepatitis.
- There is some evidence that smoking can increase the risk of developing primary liver cancer.

What are the symptoms of primary liver cancer?

There may be no symptoms in the early stage of the disease. The first symptoms to develop

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may be quite vague, such as fatigue and a general unwell feeling. As the cancer grows, symptoms may include pain on the right side of the upper abdomen or back and shoulder, nausea, loss of appetite, bloating, weight loss, progressive weakness, and jaundice (yellowing of the eyes and the skin). Many people who develop primary liver cancer will already have symptoms associated with cirrhosis. If you already have cirrhosis and your health becomes worse quickly, the cause may be a liver cancer which has developed.

Often there are no symptoms of liver cancer until the disease is in an advanced stage.

How is cancer of the liver diagnosed ?

Liver cancer may be diagnosed by a physical examination or by imaging tests. To confirm a diagnosis of liver cancer, a doctor may use blood tests, ultrasound, computer tomography (CT) scan, or magnetic resonance imaging (MRI). In most cases, the diagnosis of hepatocellular carcinoma can be made with history, physical examination, blood tests, and imaging. In some cases, a liver biopsy may need to be done.

Several tests are usually needed. They may include:

- Imaging such as ultrasound scan, CT scan or MRI scan. These can help to show the location and extent of the cancer.
- Blood tests help to assess the liver function and your general health.
- A liver biopsy. If a biopsy is needed, a small sample of tissue is removed from an area of the liver tumor. The sample is then examined under the microscope to look for abnormal cells.
- Other tests may be done if the above do not clarify the situation. For example, a laparoscopy is sometimes done. This is a small operation to 'look inside' the abdomen with a flexible telescope.

What are the treatment options for primary liver cancer?

Liver cancer treatment depends on:

- The liver's condition
- The size, location and number of tumors
- If the cancer has spread outside the liver
- The person's age and overall health

Surgery

Surgery is the only treatment that offers a cure. Liver transplantation, liver resection, and heat ablation (microwave or radiofrequency ablation) to remove the tumor are examples of surgery. These options are potentially available if the cancer is small, limited in the number of tumors, and has not spread outside of the liver (metastasized) :

- Liver resection is where a portion of the liver containing the tumor is removed. If the cancer is small, has not spread outside the liver, and the rest of the liver is healthy, then it may be possible to remove the part of the liver which contains the cancer. Healthy liver tissue will 'regrow' in several weeks if a portion of liver is removed. However, this operation may not be suitable if the liver is damaged with severe cirrhosis (which is the case in many people with primary liver cancer).
- Liver transplantation is where the liver is replaced with a donor's liver. If the cancer has not spread, liver transplantation may be an option. Certain criteria must be met to be eligible for liver transplantation.
- Microwave ablation is a heat therapy where a special probe is inserted into the tumor under ultrasound guidance. The probe then "heats up" the tumor to destroy it. In general, only small tumors are treated with microwave.
- Radiofrequency ablation is also a heat therapy similar to microwave. During an ultrasound or CT scan, a radiofrequency probe is placed in your tumor. The needle creates heat in the tumor to destroy the tumor similar to microwave. Similar to microwave ablation, in general, only small tumors are treated with radiofrequency.

Other treatments

If surgery is not possible, there are other treatments available to treat the tumor. These treatments may be used alone or in combination with other therapies.

Chemotherapy and chemoembolization. Chemotherapy involves using medicines to shrink the tumor and reduce symptoms. Chemotherapy isn't very successful at treating liver cancer, but a procedure called chemoembolization can be effective. In this procedure, chemotherapy medicines are mixed with an oily substance called lipiodol, which helps the chemotherapy to stay in the liver tumor for longer and so it have a greater effect. At the same time, tiny beads of gel are injected to block off the blood supply to the tumor. It is not likely to be curative for primary liver cancer, but may shrink the tumor down to slow the progression of the disease. A newer method uses drug-eluting beads to which the chemotherapy is attached. The beads are injected into the liver tumor and act both to deliver the chemotherapy and to block off the blood supply.

Radioembolisation. Radioembolisation is a newer type of treatment where radiation is attached to small beads which are then injected into the blood vessels supplying the liver tumor.

Radiotherapy. This is a treatment which uses high energy beams of radiation which are focused on cancerous tissue. This kills cancer cells, or stops cancer cells from multiplying. Radiotherapy is not often used for primary liver cancers apart from cholangiocarcinoma (bile duct cancer).

Sorafenib (Nexavar). This is an oral medication FDA approved for use in advanced cases of hepatocellular carcinoma (the most common type of primary liver cancer). It is a type of drug

called a multi-targeted kinase inhibitor, which interferes with the growth of cancer cells. Research has shown that sorafenib can be beneficial for people with advanced hepatocellular carcinoma.

What is the prognosis (outlook)?

The best chance of a cure is with surgery when the cancer is small, has not spread from the liver, and the rest of the liver is relatively healthy. However, if this is not the case, various other treatments described above may delay the progression of the disease, but are not often curative.

How can you reduce the risk of liver cancer?

- Regularly see your doctor
- Talk to your doctor about viral hepatitis prevention, including hepatitis A and hepatitis B vaccinations
- Take steps to prevent exposure to hepatitis B and hepatitis C
- If you have cirrhosis or chronic liver disease, follow your doctor's recommendations for treatment and be screened regularly for liver cancer
- If you are overweight or obese, diabetic, or drink heavily, talk to your doctor about liver health and cancer screenings.

Sources : www.patient.co.uk
 www.bupa.co.uk/individuals/health-information

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