

Difference Between Liver Cirrhosis and Liver Cancer

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Key Difference – Liver Cirrhosis vs Liver Cancer

Cirrhosis is a pathological condition that is marked by the transformation of the entire [liver](#) into parenchymal nodules surrounded by fibrous bands and variable degrees of vascular shunting. The key difference between cirrhosis and liver cancers is that **liver cancers can spread to the adjacent organs and then into the distant sites because of the invasive nature of the malignant cells whereas cirrhosis is confined to the liver.**

What is Liver Cirrhosis?

Liver cirrhosis is a pathological condition that is marked by the transformation of the entire liver into parenchymal nodules surrounded by fibrous bands and variable degrees of vascular shunting. [Chronic inflammation](#) of the liver results in the death of hepatocytes on a massive scale. As a response to this hepatocyte destruction, fibrosis is activated. Fibrosis replaces the damaged functional hepatocytes with scar tissues containing [collagen](#), impairing the hepatic functions. Cirrhosis is the ultimate result of the recurrence of this process.

Causes

- Alcohol
- Chronic viral [hepatitis](#) (hepatitis B or C)
- Nonalcoholic fatty liver disease
- Primary sclerosing cholangitis
- Autoimmune liver disease
- Primary and secondary biliary cirrhosis
- [Cystic fibrosis](#)
- Hemochromatosis
- Wilson's disease
- Alpha 1 antitrypsin deficiency
- Any other chronic condition that affects the liver

Pathophysiology

- Hepatic injury
- Production of cytokines by Kupffer cells and hepatocytes
- Activation of the stellate cells in the space of Disse by the cytokines
- Transformation of the stellate cells into myofibroblast-like cells
- Production of collagen, pro inflammatory cytokines and other mediators that promote fibrosis

Morphology

Cirrhosis signifies the end stage of a progressive liver disease. There are several prominent pathological changes that are usually observed in a cirrhotic liver.

- A lobule is the functional unit of the liver. A healthy liver has millions of lobules arranged in an orderly manner. In cirrhosis, this lobular architecture is altered impairing the hepatic functions.
- Healing mechanisms are activated because of the ongoing liver damage. Therefore fibrous septae and numerous regenerative nodules can be observed both microscopically and macroscopically.
- Based on the nature of regenerative nodules, cirrhosis is categorized into three groups:

In **micronodular cirrhosis**, the nodules are relatively small. If there are large nodules that type is identified as the **macronodular cirrhosis**. In some instances, it is possible to have both large and small nodules together in a cirrhotic liver. That form of cirrhosis is called the **mixed type cirrhosis**.

- The network of blood vessels supplying blood to the hepatic parenchyma is subjected to various conformational changes because of fibrosis. New blood vessels develop in the fibrous septae, shunting the blood away from the active hepatocytes.
- Collagen accumulates in the space of Disse, occluding the fenestrations in the capillaries. This decreases the efficiency of solute transfer through capillary walls.
- The liver is bile stained if the liver damage is caused by a long standing bile stasis.

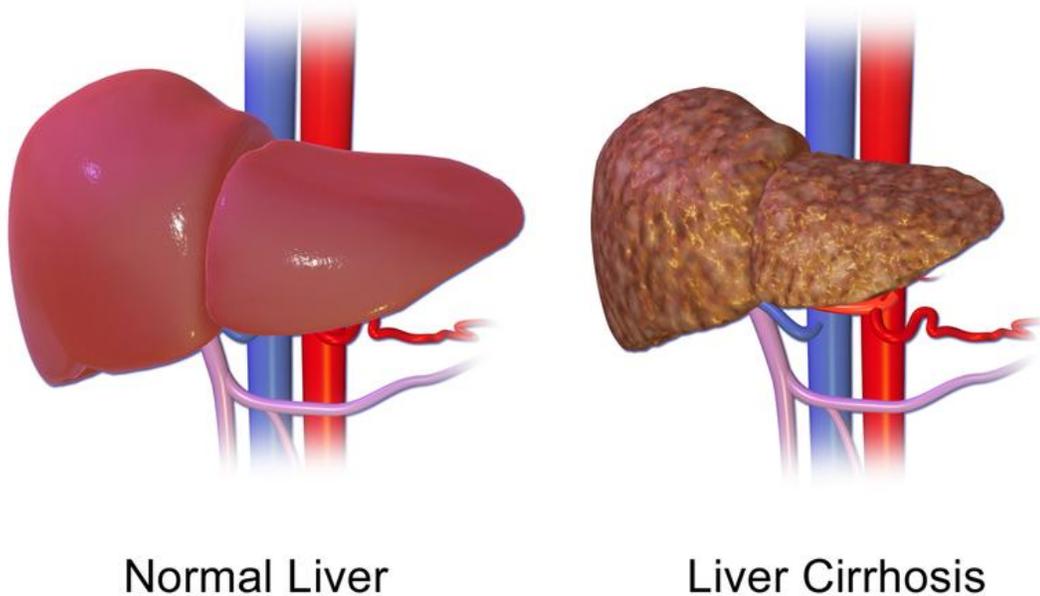


Figure 01: Normal Liver vs Liver Cirrhosis

Clinical Manifestations

Although most of the liver functions are compromised at this stage, in some cases, the normal functional capacity is maintained at lower limits. In clinical medicine, this is recognized as compensated cirrhosis. But with the disease progression, the compensatory mechanisms become inadequate and the clinical features of liver failure start to appear gradually. This is identified as the decompensated cirrhosis.

Clinical manifestations of liver failure are,

- Hepatomegaly
- Ascites
- [Jaundice](#)
- Circulatory changes- spider telangiectasia, palmar erythema, cyanosis
- Endocrine changes –Loss of libido, alopecia, gynecomastia, breast atrophy, irregular menses, testicular atrophy, [amenorrhea](#)
- Bruises, purpura, epistaxis
- Portal hypertension followed by splenomegaly and variceal bleeding
- Hepatic encephalopathy

- Finger clubbing

Management

- Endoscopy should be performed to screen for esophageal varices at least once in two years.
- Cirrhosis increases the risk of hepatocellular carcinoma. Therefore continuous surveillance for any malignant changes in the liver is important.
- The underlying cause should be treated
- Proper nutrition is an important aspect of the management
- Liver transplantation is the last resort treatment modality

What is Liver Cancer?

Liver cancers are the malignant conditions that develop in the liver. These malignancies are most often caused by a chronic inflammation that increases the turnover of hepatocytes.

Main four types of hepatic malignancies have been described

Hepatocellular Carcinoma

Aetiology

- Chronic HBV or HBC infection
- Chronic alcoholism
- Aflatoxin
- Any other condition that can give rise to chronic inflammatory changes in the liver.

Various contributory factors can elicit dysplastic changes in the hepatocytes. These dysplastic changes act as the precursor lesions for the hepatocellular carcinomas.

Morphology

- Macroscopy

These tumors can be observed as unifocal or multi focal masses having a characteristic pale greenish color. They are diffusely infiltrative. Hepatocellular

carcinomas invade the adjacent vessels; therefore they metastasize to the other organs through blood.

- Microscopy

Anaplastic [carcinomas](#) are the least differentiated form of hepatocellular carcinomas. Malignant cells of an anaplastic carcinoma are pleomorphic.

Well differentiated carcinomas have trabecular, acinar or pseudo glandular arrangements. They have cells with hyperchromic nuclei and prominent nucleoli.

Clinical Features

- Hepatocellular carcinomas are common among males.
- Abdominal pain, fever, malaise, ascites, and loss of weight are the usual presenting symptoms.
- Serum alpha fetoprotein level is abnormally elevated.

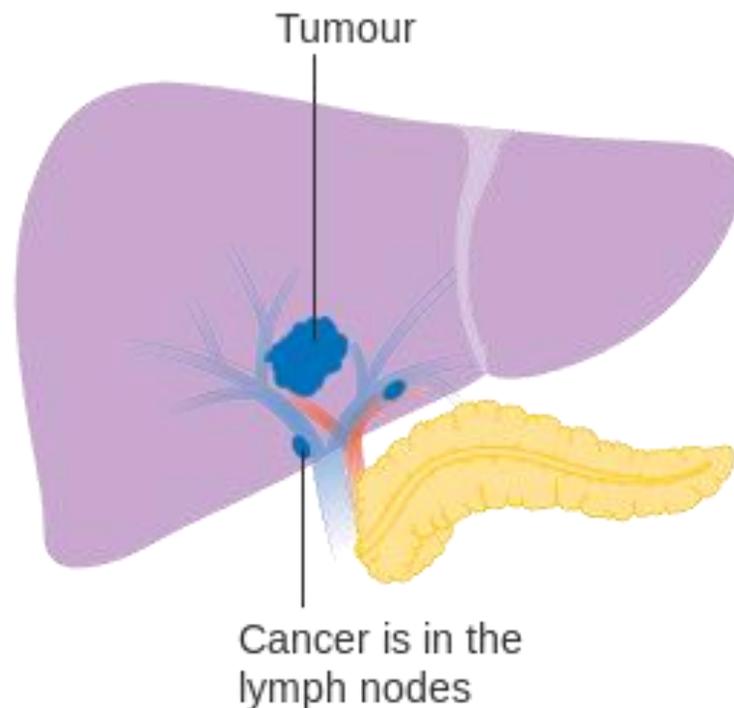


Figure 01: Liver Cancer

Cholangio Carcinomas

Cholangio carcinomas arise from the biliary ducts within or outside the liver.

Risk Factors

- Primary sclerosing cholangitis
- Choledochal [cyst](#)
- HCV infection
- Liver flukes

Morphology

These [tumors](#) are firm and gritty in nature. Markedly desmoplastic cells capable of invading the lymphatics and blood vessels can be observed microscopically. Cholangio carcinomas usually metastasize into the bones, adrenals, and brain.

Hepatoblastoma

Hepatoblastomas are seen among young children and are caused by the dysplastic changes in the primitive liver cells.

Angiosarcomas

This type of liver carcinomas has a very poor prognosis. The exposure to vinyl chloride is the main risk factor for the angiocarcinomas.

What are the similarities between Liver Cirrhosis and Liver Cancer?

- Both liver cirrhosis and liver cancer conditions are hepatic disorders.

What is the difference between Liver Cirrhosis and Liver Cancers?

Liver Cirrhosis vs Liver Cancers

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Relationship

Extensive regeneration of hepatocytes increases the likelihood of dysplastic changes happening in the cirrhotic liver. Therefore cirrhosis can be a cause of liver cancer.

Liver cancers usually do not cause cirrhosis.

Spread

Cirrhosis is confined to the liver.

Cancer cells can metastasize to distant sites via blood and lymph.

Summary – Liver Cirrhosis vs Liver Cancer

While both these conditions affect the liver, liver cancer has the ability to spread to other parts of the body whereas cirrhosis is confined to the liver. This is the key difference between cirrhosis and liver cancer. One vital fact to be noted is that not only alcoholics are at risk of developing cirrhosis. Therefore it is important to keep an eye on your liver functions if you have any of the risk factors that are known to have any associations either with cirrhosis or liver cancers.

Reference:

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