

## A Short Review on Liver Cirrhosis

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### ABSTRACT

The liver is 2<sup>nd</sup> largest organ, first largest gland. Liver plays a vital role in synthesis of proteins (for example, albumin, clotting factors and complement), detoxification, and storage (for example, vitamin A). In addition, it participates in the metabolism of lipids and carbohydrates. Cirrhosis is a condition in which the liver does not function properly due to long-term damage, caused mainly due to chronic alcoholism and chronic hepatitis B&C. These nodules protrude and make the liver surface uneven and turn it to pale brown. Proliferation of hepatocytes to form regenerative nodules is obscure. Spontaneous bacterial peritonitis, hepatic encephalopathy, dilated veins in the esophagus, Cirrhosis is often preceded by hepatitis and fatty liver (steatosis), independent of the cause.

**Keywords:** cirrhosis, portal hypertension, fibrous tissue, liver damage.

### INTRODUCTION

Cirrhosis may be defined as the chronic injury of liver involving fibrosis of hepatocytes (functional units of the liver) with in the liver accompanied with in regenerative nodule formation. The nodules protrude and make the surface of liver uneven and turn it to pale brown. Cirrhosis may be due to various causes and leads to decreased hepatic function. Almost all the chronic diseases progress to cirrhosis.

The most common cause of cirrhosis is chronic alcoholism and chronic hepatitis-B&C, followed by biliary disease and hemochromatosis. The term cirrhosis first derived from Greek kirrrosis = tawany.

### DEFINITION

It is defined as diffused process characterized by fibrosis and conversions of normal liver architecture into structurally abnormal nodules. (Or) Chronic injury of the liver involving fibrosis of the hepatocytes (hepatic parenchyma) and nodule formation is termed as cirrhosis. Cirrhosis results from a long-standing injury of the liver which may be due to various causes and leads to decreased hepatic function.

Cirrhosis describes a disease liver characterized by fibrosis usually due to many years of continuous injury.

### CHARACTERISTICS

Bridging fibrous septa (In the form of delicate bands / broad scans around multiple adjacent lobules).

Parenchymal nodules (Varying from very small-large which are encircled by fibrotic bands).

Disruption of the architecture of entire liver (The parenchymal cell injury and fibrosis are diffuse, extending throughout the liver; focal injury with scarring does not constitute cirrhosis).

fig no:01The abdomen of a person with cirrhosis showing massive fluid buildup and very visible veins

### FEATURES

The most common causes of cirrhosis are chronic alcoholism and chronic hepatitis-B&C, followed by biliary disease and hemochromatosis.

The magnitude of the cryptogenic cirrhosis “waste basket”. The surface of liver in alcoholic cirrhosis is studded with diffuse nodules which vary little in size, producing hobnail liver (because of the balance of the surface with the sole of an old-fashioned shoe having short nails with heavy metals).

### CLASSIFICATION

Classification based upon two types

Based on morphology

Based on etiology

Based on morphological classification

Macro nodular

Micro nodular

Mixed nodular

Based up on etiology classification

Alcoholic cirrhosis

Post-necrotic cirrhosis

Biliary cirrhosis

Pigment cirrhosis in haemochromatosis

Cirrhosis in willson’s disease

Cirrhosis in  $\alpha$ -1-antitrypsin deficiency

Cardiac cirrhosis

Indian child hood cirrhosis

Cirrhosis in auto immune hepatitis

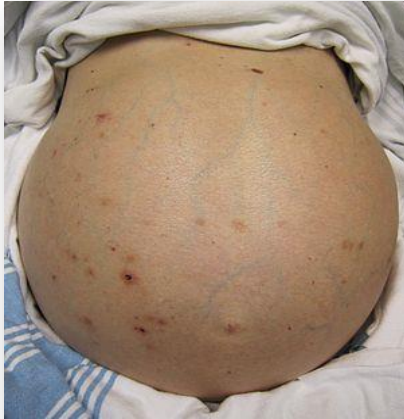
Cirrhosis in non-alcoholic steatohepatitis

Miscellaneous forms of cirrhosis

Cryptogenic cirrhosis

## EPIDEMIOLOGY

Most cases of cirrhosis are identified as alcohol related. It is more common in men of age between 40-60 years.



Cirrhosis was caused mainly by the age people at 30-40 years (men).

According to worldwide 98% of people are effected by cirrhosis (men).

In India 78% of people was suffered with cirrhosis.

## AETIOLOGY

Many causes are associated with the development of cirrhosis.

### *Alcoholic liver disease*

The most common cause of cirrhosis is alcohol consumption. Chronic alcoholism can induce fatty changes, inflammation and progressive fibrosis of liver leading to alcoholic cirrhosis.

### *Chronic hepatitis -C*

About 20-30% patients infected with hepatitis C virus (HCV) develop to cirrhosis. Hepatic steatosis (infiltration of hepatocytes with fat or abnormal entry of fat into the liver), increased iron content, oxidative stress, etc., are the few proposed mechanisms by which (HCV) causes liver damage.

### *Chronic hepatitis -B*

Chronic infection with hepatitis virus HBV can cause hepatic inflammation and injury which progresses to cirrhosis over several years. HBV is the next common cause of cirrhosis.

### *Auto immune hepatitis*

It is an immunological disease of unknown cause. It involves inflammation of the liver that ultimately leads to cirrhosis.

### *Primary sclerosing cholangitis(PSC)*

Cholangitis in the inflammation of the bile ducts. Sclerosing cholangitis is caused due to chronic ulcerative colitis in which all the bile ducts become narrow. This leads to cholestasis and ultimately cirrhosis. It typically occurs in young males.

## RISK FACTORS

Modifying risk factors- alcoholism, smoking etc.,

Unmodifying risk factors-gene, race (African ancestor, American's), Age etc.

## PATHOPHYSIOLOGY/PATHOGENESIS<sup>1,9</sup>

Cirrhosis initiates with the release of cytokines during inflammation and necrosis of hepatocytes.

These cytokines stimulate fibrogenesis.

After subsiding of inflammation, the destroyed liver tissue gets replaced by fibrous tissue.

Fibrous tissues lead to a consequent loss of normal architecture of liver along with loss of normal function.

Later hyperplasia of hepatocytes (adjacent to damaged cells) occurs that leads to the formation of nodules consisting of hepatocytes confined within sheets of fibrous tissue.

As the condition progress, there is a decreased flow of blood through the liver leading to a rise in the portal pressure.

This is known as portal hypertension which can lead to severe complications such as ascites, esophageal varices, hepatic encephalopathy and rarely Hepatorenal syndrome.

Liver cirrhosis increases resistance to blood flow and leads to higher pressure in the portal venous system, resulting in portal hypertension.

Ascites is characterized by accumulation of fluid in the abdominal cavity (peritoneum).

Esophageal varices result from collateral portal blood flow through vessels in the stomach and esophagus (a process called portacaval anastomosis). When these blood vessels become enlarged, they are called varices and are more likely to rupture. Variceal rupture often leads to severe bleeding, which can be fatal.

## CLINICAL SIGNS

Fatigue

Pruitus

Hyper pigmentation

Jaundice

Hepatomegaly

Splenomegaly

Palmar erythema

Spider angiomata

Encephalopathy

## CLINICAL SYMPTOMS

Ascites

Gynecomastia

Edema

Pleura effusion

Respiratory difficulties

Malaise

Anorexia

Weight loss.

## COMPLICATIONS

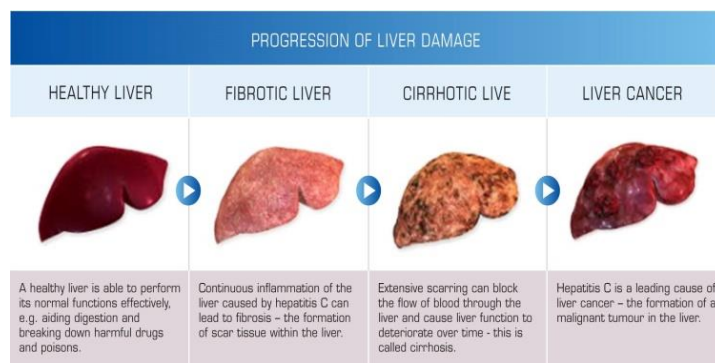
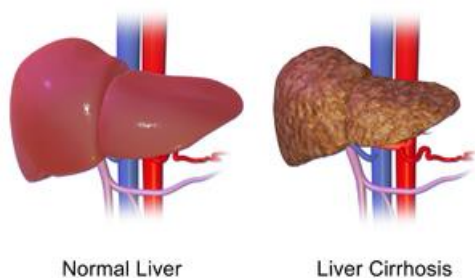
Ascites

Variceal bleeding

Coagulation disorder

Hepatic encephalopathy

Hepatorenal syndrome.



## DIAGNOSIS

Patient history

Physical examination

Symptoms (or) signs of cirrhosis

Mainly focused on the heart patients and liver disorder persons

Laboratory tests (liver function tests)

Biochemical liver function tests (LFTs) are simple and inexpensive medical assessments to ascertain the underlying aetiology. These approaches help in monitoring of disease progression and/or response of patient to therapy. Following parameters are assessed or evaluated to know the functioning of liver.

*Amino transferases*

Aspartate aminotransferases (AST) and alanine transferases (ALT) are the hepatic enzymes that are released during hepatic damage



Suggest there is hepatic injury



By elevated serum levels of hepatic enzymes

*Alkaline phosphate*

It is present in biliary canaliculi and many other tissues such as bone, kidneys, WBC etc.

Elevated serum levels of these enzymes suggest biliary damage rather than a parenchymal damage of the liver.

*Prothrombin time*

elevated levels of clotting factors due to liver cirrhosis, it directly increase in Prothrombin time, that indicates a decrease in hepatic function.

*Liver biopsy*

liver biopsy is a standard diagnostic procedure for cirrhosis but it is associated with significant risk to the patient. So, it is not usual performed.

*Bilirubin*

high serum concentration of bilirubin is seen in acute hepatitis and end stage chronic liver diseases.

Ultra sound – ultrasound can give important information regarding the presence of Ascites, extent splenomegaly, hepatomegaly etc.

## TREATMENT

*Treatment of Ascites*

Remove of ascitic fluid from abdominal cavity by diuresis  
Eg: spironolactone, furosemide, triamterene.

*Treatment of spontaneous bacterial peritonitis:*

To prevent spontaneous and recurrence bacterial peritonitis.

Eg: cefotaxime, norfloxacin (long term usage)

*Treatment of esophageal and gastric varices:*

Variceal bleeding is associated with high death rate and so, it should be treated immediately.

Eg: vasopressin, octerotide, propranolol/nadolol.

Endoscopic Techniques:

Sclerotherapy (can control acute bleeding in about 90% of patients).

Endoscopic variceal ligation

*Treatment of hepatic encephalopathy*

Treatment of hepatic encephalopathy is to reduce the circulatory levels of NH<sub>3</sub> and other nitrogenous substances.

Eg: lactulose, Antibiotics - neomycin, rifaximin.

*Treatment of Hepatorenal syndrome:*

Liver transplantation is the only treatment that can produce long-term survival in patients with Hepatorenal syndrome.

Eg: dopamine

Surgery/Transplantation:

Patients with end-stage liver disease should be proceed for liver transplantation

## ADVERSE DRUG REACTIONS

Hyperkalemia

Gynaecomastia

Menstrual irregularities

Pruritus

Urticaria

Hypovolemia

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