A Short Review on Liver Cirrhosis

P Hemasoundarya*, Y Madhuri, A Narendra Babu, J Naga Lakshmi

Chalapathi Institute of Pharmaceutical Sciences, Lam, Guntur-522034, Andhra Pradesh, India

ABSTRACT

The liver is 2nd 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 kírρhōs, "waste basket". The 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-fashionised shoe having short nails with heavy metals).

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.

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 α-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

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).

*Author for Correspondence: hemasoundarya18@gmail.com
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

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 angioma
Encephalopathy

Clinical Symptoms

Ascites
Gynecomastia
Edema
Pleura effusion
Respiratory difficulties
Malaise
Anorexia
Weight loss.

Complications

Ascites
Varicel 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 heparin 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.

Prothrombine time
Elevated levels of clotting factors due to liver cirrhosis, it directly increase in Prothrombine 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.

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 NH₃ and other nitrogenous substances.

Eg: lactulose, Antibiotics - neomycin, rifaximin.

Treatment of Hepatoportal syndrome:
Liver transplantation is the only treatment that can produce long-term survival in patients with Hepatoportal 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

ACKNOWLEDGEMENT

The authors are thankful for the management of chalapathi institute of pharmaceutical sciences for providing facilities to do the review and a special thank’s to our department and A.Narendra Babu Sir And My Co-Team.

Finally a dedication of this review is success I dedicated to my department (pharmacology) and my classmates, past and present, in the field of logic.

REFERENCE
1. Martin m.zdanowicz essentials of pathophysiology for pharmacy published by CRC press pharmacy education series.