

# A Review Literature: Cirrhosis

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## Abstract:

Liver cirrhosis is a result of chronic inflammation and fibrosis of the liver. The disease was recently found to be the 12th leading cause of death. The following symptoms are occurring like persistent, fatigue, tiredness, listlessness etc. It is mainly of four types like alcoholic cirrhosis, post necrotic, biliary cirrhosis and cardiac cirrhosis. The name alcoholic indicate that are occurring by excessive use of alcohol, the post necrotic cirrhosis cause by irregular pattern of regenerating cell, biliary cirrhosis cause by the obstruction of infection and cardiac cirrhosis constrictive pericarditis or tricuspid insufficiency . The following major and minor tests are commonly used to diagnose cirrhosis like complete blood count (CBC) , liver function test including alkaline phosphatase, liver biopsy and so on. Patients with cirrhosis are at increased risk of numerous complications and have a decreased expectancy. The main goal of management of compensated cirrhosis is treatment of underlying etiology, early recognition. The main treatment is naturopathy which is most commonly used; it has the following eight stages. Other treatments like drug therapy , nutrition therapy.

**Key words:** Cirrhosis, symptoms, survival rate, cause, risk factor, pathophysiology, types, diagnosis and treatments.

## Introduction:

Cirrhosis is a chronic, irreversible disease of the liver. Cirrhosis mainly occurs in response to damage to the liver in many years. In cirrhosis of liver, progress scarring of the liver causes scar tissue to replace normal liver tissue.

OR

Cirrhosis is a dangerous, even life – threatening chronic disease of the liver. It is also characterized by degeneration of liver cells, resulting in scarring, inflammation and also fibrous thickening of tissue. Most often, it is caused by excessive use of alcohol, hepatitis or fatty liver disease. At the stage of cirrhosis the liver has damage to an extent that is scarred and shrunken and it will never return to normal. <sup>1</sup>



Healthy liver



Cirrhotic liver

## Symptoms:

The earliest warning signs, when they do appear, could include the followings –

- Persistent fatigue, tiredness, listlessness.

- A frequent feeling of weakness
- Occasional nausea
- Reduced appetite, often causing unintentional weight loss.
- Lowered sex drive

As cirrhosis progresses further, these symptoms would begin to occur

- Jaundice, which cause a yellow tint in the skin and whites of the eyes.
- Fever, often including shivering.
- Vomiting
- Changes in bowel movements, including diarrhea and dark, tarry stools
- Skin will begin to feel itchy as toxins build up in the blood streams
- Abdominal discomforts possibly severe pain
- A swollen or bloated stomach
- A tendency to bleed or bruise easily
- Tiny red lines appear on the skin waist level (blood capillaries)
- Legs, ankles and feet become swollen as excess fluids build – up (also called edema)
- Maintaining normal weight become more difficult
- Behavioral changes and cognitive difficulties appear – confusion difficulty concentrating memory loss, or hallucinations.
- In women abnormal periods
- In men, enlarge breasts and swollen scrotum or shrunken testicles.

**Note:** Cirrhosis occurs through the loss of liver cells and irreversible scarring damage of the liver, often caused by excessive alcohol use or viral infections like hepatitis.<sup>2</sup>

#### **Survival rate:**

The survival rate for cirrhosis is difficult to determine because some patients pass away within days of being diagnosed, while others survive many years. Surviving with cirrhosis depends on many different factors, which include the followings cause of cirrhosis i.e -

#### **Causes:**

- Age and general health of the patient
- Presence of complications
- Stage (the extent of liver damage)

#### **Risk factors:**

- Personal habits (Alcohol use, injection drug use)
- Medications (herbal and over the counter)
- Sexual activity
- Exposure to jaundice or other high risk persons
- Recent surgery
- Remote or recent blood products transfusion
- Occupation
- Accidental exposure to blood or needle stick
- Familial history of liver disease.<sup>3</sup>

**Pathophysiology:**

Cirrhosis



Cirrhosis is often caused by hepatitis and fatty liver



The primary function event is injury to hepatocellular element

JETIR



Initiate inflammation response with cytokine release (toxic substance)



The pathophysiology of cirrhosis is the development of scar tissue by which the destruction of hepatocytes, bile duct cells, vascular endothelial cells

Formations of fibrous scar, which replace normal parenchyma, blocking the partial flow of blood through the organ and disturbing normal function of the liver.<sup>4</sup>

**Types of liver cirrhosis:**

There are four types of liver cirrhosis –

1. Alcoholic cirrhosis (Laenec)
2. Post necrotic cirrhosis (Macronodular)
3. Biliary cirrhosis
4. Cardiac cirrhosis

**1. Alcoholic cirrhosis:** Alcoholic cirrhosis is a condition when the liver does not work correctly by the excessive and repeated use of alcohol. In this condition the liver becomes stiff, swollen and barely able to do its work.<sup>5</sup>

**2. Post necrotic cirrhosis:** A post necrotic cirrhosis is a most common cirrhosis across world wide, massive loss of liver cells with irregular pattern of regenerating cells due to complication of viral or idiopathic (autoimmune) hepatitis.

**3. Biliary cirrhosis:** The cirrhosis is associated with chronic biliary obstruction and infection. There is diffuse fibrosis of the liver with jaundice.

**4. Cardiac cirrhosis:** Chronic liver damage results from long – standing, severe right side heart failure – with cor pulmonale, constrictive pericarditis and tricuspid insufficiency.<sup>6</sup>

#### Diagnosis:

1. Complete blood count test (CBC)
2. Liver function test including alkaline phosphatase
3. Serum albumin
4. Liver biopsy
5. Liver scan
6. Computed tomography (CT) of the abdomen
7. Magnetic resonance imaging (MRI) of the abdomen
8. Ultrasound of the abdomen

**1. Computed blood count test (CBC):** This test checks the level of red and white blood to get the picture of overall health. It is also called CBC, is often ordered along with a liver panel for people with suspected liver damage or cirrhosis. Although CBC does not measure the liver function or cirrhosis, the test can provide clues about what may be occurring in the body that could adversely affect the liver. A CBC includes counts of the WBCs, RBC and platelets. WBCs defend the body against infections, so high level may indicate infection or inflammation, RBC cell transport oxygen in the body and platelets are cell fragments needed for blood clotting.

**2. Liver function test:** A liver function test is also known as liver chemistries, which help to determine the health of liver by measuring the level by protein, liver enzyme and bilirubin in blood.

- **Alkaline phosphatase test:** Alkaline phosphatase test (ALP) is an enzyme found in the bond, bile duct, and liver. An ALP test is typically ordered in combination with several other tests. High levels of ALP may indicate liver inflammation, blockage of the bile ducts, or a bone disease.<sup>7</sup>

**3. Serum albumin test:** A serum albumin test is a simple blood test that measures the amount of albumin in the blood. A serum test defines how well the liver is working.

**4. Liver biopsy:** A liver biopsy is a surgical procedure by which to remove the amount of liver tissue. A liver biopsy is held to determine if an area is infected, inflamed or cancerous.<sup>8</sup>

**5. Computed tomography (CT scan):** Computer tomography (CT) scan demonstrates irregularity of the external counter of the left lobe. Computed tomography (CT scanner CAT scan) is a noninvasive diagnostic imaging procedure that uses a combination of x – ray and computer technology to produce horizontal, or axial, images (often called slices) of the body. CT scan of the liver and biliary tract (the liver gallbladder, and bile ducts) can provide more details information about the liver, gallbladder, and related structure than standard x – rays of the abdomen, thus providing more information related to injuries and or disease of the liver and biliary tract.

**6. MRI:** MRI resonance imaging (MRI) is the modern gold standard for the non – invasive evaluation of the cirrhotic liver. Cirrhosis is the late stage of scarring (fibrosis) of the liver resulting from chronic hepatic inflammation caused by many from the liver disease and conditions such as hepatitis.

**7. Ultrasound:** Ultrasound scans use high frequency sound waves to capture images and video of the inside of the body. These organs include the gallbladder, kidney, liver pancreas and spleen.

#### Treatments:

## Naturopathy treatment of cirrhosis of liver:

1. **First step:** Stop negative emotions.
2. **Second step:** Happy walking (0 to 20 km)
3. **Third step:** Control breathing
4. **Fourth step:** Stop use to drink / smoking/oily foods / fast foods
5. **Fifth step:** Stop eating sweet / salty foods.
6. **Six step:** Drink only normal water
7. **Seven step:** Eat organic fruits and vegetables
8. **Eight step:** Stop to eat allopathy medicine<sup>9</sup>

### Other treatments:

#### II. Individualized according to disease severity and complication –

- Supportive care
- Appropriate diet
- Avoidance of liver toxins
- Abstinence from alcohol

#### III. Drug therapy:

- Medication for portal hypertension, varices
- Diuretics
- Appetite stimulants
- Medications to reduce or control ammonia level

#### IV. Nutrition therapy:

- Customized for each patient's needs
- Avoidance of substance that can cause liver damage
- Enteral and parenteral nutrition support as indicated.

#### I. Individualized according to disease severity and complication:

**Supportive Care:** The goal of supportive care is to prevent or treat as early as possible the symptoms of a disease, side effects caused by treatment of a disease, and physiological, social, and spiritual problems related to a disease or its treatment. It is also called comfort care, palliative care, and symptom management.

**Appropriate diet:** A healthy diet provides the body with essential nutrition fluid, macronutrients, micronutrients and adequate calories. A healthy diet may contain fruits, vegetables, and whole grains and includes little to no processed food and sweetened beverages.

**Avoidance of liver toxins:** The liver is a vital detoxification organ, if it becomes overloaded with toxins from the food, drink, or medication. Patient will have more toxins circulating throughout the body, damaging organs and gland –

**a. Alcohol:** The alcohol can cause a buildup of a toxin enzyme called acetaldehyde. With just one or two drinks in the stream, the liver is able to flush out that enzyme and it doesn't cause many problems. But with binge



drinking or heavy consumption of alcohol, it can become overload. This results in alcohol poisoning as well as inflammation of the liver with toxins and, as a result, it cannot out fats.

**b. Fried foods:** This is a very common problem. The function is to break down nutrients, when it becomes overloaded with fats, it cannot keep up. Fried foods and other high fat foods can cause nonalcoholic fatty liver, so it's best to avoid them for the most part. The extra fat can cause swelling and scarring, thus permanently damaging the organ's ability to filter nutrients. As an alternative to frying food, consider sautéing the food in healthy fats (such as coconut oil) or boiling them in the oven to get them good and crispy.

**c. High salt content:** Anything in excess can cause damage, and that includes salt. Though salt is known for increasing blood pressure, it can harm other parts of the body. New studies have been proved too much salt in the diet can cause damage and scarring to the liver. Some antioxidants like vitamin C can help to decrease that damage. Patients should avoid foods high in sodium, as well as try adding new foods to their diet.

**d. Red meat:** Red meat can deal double whammy of difficult nutrients for the body to metabolize. It is also high in iron, which the body has no way to dispose of. If the diet contains high iron, it can start to build up and damage the liver. Red meats are also saturated in fats, therefore a diet with too much red meat can cause fatty buildup.

**Abstinence from alcohol:** Abstinence from alcohol remains the best way of preventing progression liver injury as well as prolonging survival in patients with established cirrhosis. More vigorous counseling about the need for abstinence, including the risk of progressive liver disease should drinking continue, could significantly reduce the prevalence from ALD. Patients who are required to abstain from alcohol, usually for at least 6 months, as a condition of eligibility of liver transplantation may have sufficient return of function, due to cessation of alcohol – induced liver injury and liver regeneration, that transplantation can be delayed or avoided altogether. Examination of explants tissue from patients undergoing transplantation for alcoholic cirrhosis afford an opportunity to observe the changes that occur after abstinence such as hepatocytes with enlargement and a prominent glassy eosinophilic cytoplasm.

### III. Drug therapy:

**Medication for portal hypertension:** The  $\beta$  – blocker or nitrate may be used to treat portal hypertension. B – blocker can help to lower the pressure in the varices and reduce the risk of bleeding. Gastrointestinal bleeding requires an immediate upper endoscopy to look for esophageal varices. A band – ligation using a special device to compress the varices and stop the bleeding. People who have had varices in the past may need to take medicine to prevent future episodes.

**Diuretic:** Spironolactone is the first line diuretic and it is also an aldosterone antagonist recommended for patient with cirrhosis, it is mainly acting on distal tubules to increase natriuresis and conserve potassium, initiating with dose 50 mg. With its long half – life , doses are altered after 3 to 4 days.

**Appetite stimulants:** Appetite stimulant is a substance that helps to promote weight gain in elderly with unintentional weight loss. The appetite stimulants are commonly used to treat various diseases like liver disease (cirrhosis). The following appetite stimulants are commonly used such as –Dronabinol, Mirtazapine, Megestrol acetate, Metoclopramide etc.

**Medication to reduce ammonia level:** Lactulose is a synthetic sugar used to treat to reduce ammonia level in the blood of patients with liver disease. It works by drawing ammonia from the blood into the colon where it is removed from the body.<sup>10</sup>

### IV. Nutrition therapy

**Customize for each patient's need:** Nutrition therapy uses food to prevent and reverse diseases that plague most western societies: diabetes, obesity, heart disease, arthritis and depression. According to European Society

for clinical nutrition and metabolism (ESPEN) recommends that patients with liver cirrhosis should receive 35 – 40 kcal/kg per day.

**Avoidance of substance causes liver damage:** Many substances could surely cause liver damage such as alcohol heavy drinking over many years can lead to alcoholic hepatitis means inflammation in the liver due to the excessive use of alcohol, junk foods salty foods may also lead to damage to the liver. Some medication may also cause liver damage such as Acetaminophen. Non steroidal anti-inflammatory drugs (NSAIDS) aspirin, ibuprofen and naproxen sodium can cause toxic liver disease.<sup>11</sup>

**Enteral and parenteral nutrition support is indicated as:** Modify enteral and parenteral nutrition nutrition by avoid overfeeding, optimize parenteral lipid, Cyclical parenteral nutrition and maximize enteral nutrition. In patients with liver disease, parenteral nutrition is often recommended when caloric and nutritional intake in insufficient through either oral or enteral means cirrhotic patient require a caloric intake that is approximately 1.2 -1.3 times.<sup>12</sup>

### Conclusion:

Cirrhosis is characterized by fibrosis and nodule formation of the chronic liver disease. It usually progresses world – wide. There are many cells play a major role in the development of cirrhosis including hepatocytes, sinusoidal lining cells such as hepatic stellate cell (HSCs), sinusoidal endothelial cells (SECS) and kupffer cells (KCS). Cirrhosis was the 2th leading cause of death in the United state in 2011. The main cause of cirrhosis is hepatitis B and C viruses, overuse of alcohol. Cirrhosis prevalence was estimated at 0.15% or 400,000 in the USA, where it accounted for more than 25,000 deaths and 373,000 hospital discharges.

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### Reference:

1. Anthony PP, Ishak KG, Nayak, Poulsen HE, Schever PJ, sobin LH. The morphology of cirrhosis: definition nomenclature and classification. *Ball world health organ* 1977; 55;521 -590.
2. Schuppan D, Afdhal NH, Liver cirrhosis, *Lancet* 2008 March.
3. Kim MY, Bail SK, Leess. Hemodynamic alterations in cirrhosis and portal hypertension. *Korean J. Hepatol.* 2010 Dec; 16 (4): 347 – 352.
4. Garcia – Tsao G, Sanyal Aj, grace MD Carey W; Practice guidelines committee of the American association for the study of liver disease. Practice parameter committee of the American college of gastroenterology. Prevention and management of gastroesophageal Varices and variceal hemorrhage in cirrhosis. *Hepatology* 2007 sep ; 46 (3); 922 -938.
5. Jeremy J. Prunty, Pharm D, BCPS, liver cirrhosis, assistant clinical professor, west Virginia University school of pharmacy.
6. Irina ivanova, liver cirrhosis, ESS gastroenterology, Hepatology and Nutrition, Department of Internal Disease, Faculty of medicine, Medical university of varna
7. Hiroki Nishikawa, yokio usaki, Department of gastroenterology and hepatology,osaka red cross hospital, osaka, japan mediators of inflammation, volume 2015 Hindawi corporation.
8. N. Toshikuni T. Arisawa and M. Tsutsumi, ‘ Nutrition and exercise in the management of liver cirrhosis world journal of gastroenterology volume 20, no. 23 . pp 7286 – 7297, 2014.

9. C. Bemeur and R.F. Butter worth, “Nutrition in the management of cirrhosis and its neurological complication, Journal of clinical and experimental hepatology, vol. 4 no. 2, pp. 141 – 150, 2014.
10. Maurizio soresi, Lydia Giannitrapani, [...], and giuseppe montalto, non – invasive tool for the diagnosis of liver cirrhosis, Baishidieng publishing group, Inc, world journal of gastro – enterology: WJG.
11. Rockey DC, Caldwell SH, Goodman 2D, Nelson RC, smith AD, liver biopsy hepatology. 2009; 49: 1017 – 1044.
12. Bogdan precept, unnal Berzigotti, diagnosis of cirrhosis and portal hypertension: imaging non – invasive marker of fibrosis and liver biopsy, gastroenterology report, volume 5, issue 2, may 2017.

