

## Cirrhosis

### Overview

Cirrhosis is a chronic condition of the liver characterised by abnormal liver function and structure, as a result of damage caused by inflammation of liver cells. Inflammation and regeneration that is associated with dying liver cells leads to the formation of scar tissue. Surviving cells multiply as they try to replace dead cells, resulting in bundles of newly formed liver cells or regenerative nodules within the scar tissue.

### Causes

The liver may be injured by a single acute event such as acute hepatitis or drug overdose, by regular injury over months or years such as a chronic condition, for example blockage of bile ducts due to cancerous growths or chronic hepatitis, or by continuous injury such as daily alcohol abuse.

### Effect of Cirrhosis on the Body

The liver is a vital organ in the human body as it is involved in so many functions. These include homeostasis or regulation of a stable internal environment within the body, protein synthesis or creation of proteins which are the building blocks of body tissues and a major part of the immune system, detoxification and digestion. Cirrhosis has a number of different effects on the body, outlined as follows:



### Blood Flow

The liver receives blood flow from veins which carry blood from the intestines back to the heart. The main vein that carries blood from the intestines to the liver is the portal vein.

The portal vein divides up into increasingly smaller veins within the liver. This allows blood to have direct contact with the liver cells and substances can be exchanged between the blood and the liver cells. The veins then get progressively larger and blood flows through the hepatic vein to leave the liver.

This close knit relationship between the liver cells and the blood flow is destroyed by cirrhosis, as scarring interrupts the blood flow. As a result of this, a number of situations occur:

- ❖ blood backs up in the portal vein causing portal hypertension. This increased pressure in the portal vein causes the blood to seek other routes to return to the heart and subsequently blood mainly flows through veins that bypass the liver, meaning toxins no longer get removed from the blood;
- ❖ the veins that the blood flows through to bypass the liver dilate and new venous branches are formed. These are called collaterals. The main sites of the collaterals are at the gastroesophageal junction, the rectum, the left renal or kidney vein, the diaphragm, and the anterior abdominal wall;
- ❖ the collaterals at the gastroesophageal junction are referred to as varices and these tend to rupture. Approximately ninety percent of patients with cirrhosis will develop gastroesophageal varices, however only thirty percent will bleed from them. There is a high mortality rate associated with ruptured varices, as twenty five to fifty percent of these patients will not survive; and
- ❖ build up of fluid in the abdominal cavity, also known as ascites.

<b>Biliary Flow</b>	Bile is produced by liver cells to eliminate toxins and aids digestion. The bile ducts in the liver converge into one duct which deposits bile into the small intestine. As with blood flow, the bile ducts are interrupted and thus bile cannot be excreted properly and toxins build up in the body.
<b>Hepatic Encephalopathy</b>	The build up of toxins in the body eventually affects the brain, causing bizarre behaviour, confusion and extreme tiredness.
<b>Hepatorenal Syndrome</b>	In patients with cirrhosis, progressive kidney failure can occur, as a result of portal hypertension and excessive fluid in the abdomen.
<b>Liver Cancer</b>	Cirrhosis can lead to hepatocellular carcinoma. This is not metastatic liver cancer caused by spread of cancer from another organ, it is a cancer caused by the scarring of the liver due to cirrhosis. Liver cancer is the third most prevalent cancer, and one of the most lethal.

## Prevalence

The overall prevalence of cirrhosis is unknown. However, scientists have investigated autopsy records and deduced that around five to ten percent of people have cirrhosis of the liver. In developing countries, viral hepatitis is the leading cause of cirrhosis. In the developed countries, the most significant causes of cirrhosis are alcoholic liver disease, hepatitis C and non alcoholic steatohepatitis.

Worldwide death rates from alcohol related liver cirrhosis have been decreasing generally, although an increase has been observed in a few Eastern European countries and England. In America, there has been an increase in the number of cases of cirrhosis caused by hepatitis C compared with alcohol related cirrhosis. Cirrhosis is slightly more common in males than females.

## Prognosis

Because cirrhosis is caused by irreversible scarring of the liver, once it has occurred, it is not possible to heal the liver or return its function to normal. Treatment can be directed at reducing symptoms and preventing further damage, as well as treating the initial cause, for example a hepatitis infection.

Due to the many functions of the liver, cirrhosis is a very serious condition that can lead to many different complications. Therefore prognosis is somewhat guarded and depends on the cause and severity of the cirrhosis. Regardless of the cause, liver damaging substances, such as alcohol and paracetamol, are discouraged.

A note on alcohol...

According to the Australian National Health and Medical Research Council, two standard drinks for a healthy man or woman a day, over a lifetime, are the recommended limits, if drinking every day. On a single occasion of drinking, no more than four standard drinks should be consumed.



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