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Cirrhosis

Cirrhosis is a condition in which liver cells, as a result of severe injury, have been replaced by scar tissue. Cirrhosis is most often the result of long-standing injury, but can occur after an acute injury of significant severity.

The most common cause of cirrhosis is long-standing alcoholic hepatitis. Other causes include chronic viral hepatitis, nonalcoholic fatty liver disease, chronic exposure to toxins (medications, chemicals) and chronic autoimmune hepatitis. Less common causes are congestive heart failure, chronic bile duct obstruction, malnutrition, parasites and diseases such as Wilson's disease, alpha-1-antitrypsin deficiency, primary biliary cirrhosis and hemochromatosis.

As individual liver cells are irreversibly damaged and die, many are replaced by scar tissue. Although the liver attempts to grow new cells, the cell damage, cell death and replacement by scar tissue continue. The number of healthy, functioning liver cells declines; fewer and fewer cells are left behind to perform the normal work of the liver. Continued scarring causes the liver to become small and contracted. New liver cells grow in the midst of scar tissue. The once highly-organized liver architecture is lost, and is replaced by disorganized bands of scar tissue mixed with nodules of regenerating liver cells.

The result is a small, nodular liver which has too few healthy cells to carry out normal liver function, and whose architecture has become so disorganized that blood no longer flows through it in a normal fashion. Blood flow begins to bypass the liver, flowing through channels which are normally closed. For example, the veins just beneath the lining of the esophagus become distended with blood; these veins are called "varices," and are dangerously prone to bleeding.

Symptoms. So long as adequate numbers of functioning liver cells remain, and before liver blood flow is markedly diverted, there may be no symptoms, even while cirrhosis is becoming well established.

In time the diversion of blood flow around the liver results in the slow build-up of toxins which are normally removed by the liver. The loss of normal blood flow deprives the liver of

dietary nutrients, with which it normally makes important body proteins.

The build-up of toxins in the blood results in fatigue, loss of appetite, generalized weakness, and weight loss. As the liver fails to make important clotting proteins, easy bruising occurs, and the risk of bleeding increases. With fewer clotting proteins, any bleeding will be more difficult to control. The failure to make other important body proteins renders the individual more vulnerable to infection and injury.

As cirrhosis progresses, jaundice and intense itching of the skin develop, as a result of a build-up of bile and other substances in the blood which are normally cleared by the liver. Fluid retention occurs, with swelling of the feet and legs, and distention of the abdomen by fluid, a condition called "ascites." Men lose interest in sex, develop enlargement of the breasts, and become impotent. Women often stop menstruating. Bleeding from esophageal varices may occur, and is often life-threatening. An accumulation of ammonia and toxins in the blood begin to affect brain function, initially with tremor and agitation, then confusion, and finally coma.

Treatment. Treatment is mainly supportive, and is directed towards controlling the complications of the disease. Increasing confusion, coma, intestinal bleeding and fever all require urgent medical attention. Identification and correction of the underlying cause of the cirrhosis (for example, stopping alcohol, treating chronic hepatitis, controlling heart failure or discontinuing a toxic medication) will not reverse the damage at this stage, but will help to prevent further liver injury and may prolong life. Regardless of the cause of the cirrhosis, avoiding substances which may further harm the liver is essential. Liver transplantation may be recommended.

