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Alcoholic Liver Cirrhosis: Major Genetic Advance

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Review Article

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ABSTRACT

Liver is a large organ with an important job in your body. It filters the blood of toxins, breaks down proteins, and creates bile to help the body absorb fats. When a person drinks alcohol heavily over the course of decades, the body starts to replace the liver's healthy tissue with scar tissue.

INTRODUCTION

Liver is a large, meaty organ that sits on the right side of the belly. Weighing about 3 pounds, the liver is reddish-brown in colour and feels rubbery to the touch. Liver cirrhosis [1] was commonly associated with coagulopathies, including thrombocytopenia [2] and hypoprothrombinemia [3], which often cause easy bruising and bleeding. Sudden bleeding from gastrointestinal varies due to portal hypertension [4] was also an established risk of liver cirrhosis. Cirrhosis is a slowly progressing disease in which healthy liver tissue is replaced with scar tissue, eventually preventing the liver from functioning properly. The scar tissue blocks the flow of blood through the liver and slows the processing of nutrients, hormones, drugs and naturally produced toxins.

WHAT CAUSES CIRRHOSIS OF THE LIVER?

Cirrhosis is most commonly caused by alcohol, hepatitis B, hepatitis C and non-alcoholic fatty liver disease [5-8] typically, more than two or three drinks per day over a number of years are required for alcoholic cirrhosis to occur. Non-alcoholic fatty liver disease is due to a number of reasons, including being overweight, diabetes, high blood fats, and high blood pressure. A number of less common causes include autoimmune hepatitis, primary biliary cirrhosis, hemochromatosis, certain medications, and gallstones [9-12]. Cirrhosis is characterized by the replacement of normal liver tissue by scar tissue. These changes lead to loss of liver function. Diagnosis is based on blood testing [13], medical imaging, and liver biopsy [14].

Hepatitis: Hepatitis is an inflammation of the liver. It is commonly caused by toxins, certain medications, drugs, autoimmune diseases [15], alcohol and viral infections [16]. Common symptoms for hepatitis include decreased appetite, abdominal pain, dark urine, pale-colored stools, joint pain [17] unexplained weight loss and jaundice. Viral hepatitis is classified into five types, as hepatitis A, B, C, D and E.

Alcoholic Liver Disease

Alcoholic liver disease [18] from drinking lots of alcohol. It can even show up after a short period of heavy drinking. Alcoholic liver disease is a term that encompasses the liver manifestations of alcohol overconsumption, including fatty liver, alcoholic hepatitis [19] and chronic hepatitis [20] with liver fibrosis or cirrhosis [21].

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Alcoholic Fatty Liver Disease

Alcoholic fatty liver disease is the accumulation of fat in the liver [22] caused by excessive consumption of alcohol. In fact, fatty liver may occur after as little as three days of excessive alcohol ingestion. Fatty Liver Disease is associated with obesity & Diabetes.

Obesity

Obesity [23] is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health.

Diabetes

Diabetes mellitus [24] (DM), commonly referred to as diabetes, is a group of metabolic diseases [25] in which there are high blood sugar levels over a prolonged period. Symptoms of high blood sugar [26] include frequent urination, increased thirst, and increased hunger [27].
Alcoholic hepatitis: Alcoholic hepatitis is liver inflammation [28] caused by excessive alcohol consumption. Symptoms can be non-existent in some people and severe in others. In the case of non-existent symptoms, alcoholic hepatitis may be discovered during a routine blood test [29].
Alcoholic cirrhosis: Cirrhosis [30] is a late stage of serious liver disease marked by inflammation (swelling), fibrosis (cellular hardening) [31] and damaged membranes preventing detoxification of chemicals in the body, ending in scarring and necrosis (cell death) [32]. Between 10% to 20% of heavy drinkers will develop cirrhosis of the liver. Acetaldehyde [33] may be responsible for alcohol-induced fibrosis by stimulating collagen deposition by hepatic stellate cells [34].

SYMPTOMS OF LIVER CIRRHOSIS

The symptoms of cirrhosis of the liver vary with the stage of the illness. In the beginning stages, there may not be any symptoms. As the disease worsens, symptoms may include:

Loss of Appetite

Loss of appetite medically referred to as anorexia [35], can be caused by a variety of conditions and diseases. Some of the conditions can be temporary and reversible, such as loss of appetite from the effects of medications [36]. Some of the conditions can be more serious, such as from the effects of underlying cancer [37].

Obesity

Obesity [38] is a leading preventable cause of death worldwide, with increasing rates in adults and children. Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health [39].

Bruises

A bruise is a common skin injury [40] that results in a discoloration of the skin. Blood from damaged blood cells deep beneath the skin collects near the surface of the skin, resulting in what we think of as a black and blue mark.

Jaundice

Jaundice [41] also known as icterus is a term used to describe a yellowish tinge to the skin and sclerae (the white part of the eye) that is caused by hyperbilirubinemia [42] (an excess of bilirubin in the blood). Body fluids may also be yellow.

Itchy Skin

Itching [43] can be a sign of an underlying condition that may affect the inside of the body without necessarily causing any other obvious symptoms & liver-related conditions, such as primary biliary cirrhosis [44] and hepatitis [45].

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Edema

Things like a twisted ankle [46], a bee sting, or a skin infection will cause edema [47]. In some cases, like an infection, this may be helpful. More fluid from your blood vessels [48] puts more infection-fighting white blood cells in the swollen area. Severe liver disease (such as cirrhosis) causes you to retain fluid. Cirrhosis also leads to low levels of albumin [49] and other proteins in your blood. Fluid leaks into the abdomen and can also cause leg swellings.

Fever

A fever [50] also known as a high fever or a high temperature is not by itself an illness. It's usually a symptom of an underlying condition, most often an infection [51].

COMPLICATIONS OF LIVER CIRRHOSIS

Variceal Bleeding

Variceal bleeding [52] is caused by portal hypertension [53], which is an increase in the pressure within the portal vein [54] (the large vessel that carries blood from the digestive organs to the liver). This increase in pressure is caused by a blockage of blood flow through the liver as a result of cirrhosis. Increased pressure in the portal vein causes other veins in the body to enlarge (varices), such as those in the oesophagus [55] and stomach, to bypass the blockage. These varies become fragile and can bleed easily, causing severe haemorrhaging [56] and fluid in the abdomen.

Hepatic Encephalopathy

Most often occurs when cirrhosis has been present for a long time [57]. Toxins produced in our intestines are normally detoxified by the liver, but once cirrhosis occurs, the liver cannot detoxify as well.

Kidney Failure

Kidneys [58] are the organs that help filter waste products from the blood. They are also involved in regulating blood pressure [59], electrolyte balance [60] and red blood cell production in the body. The diagnosis of kidney failure usually is made by blood tests measuring BUN, creatinine [61] and glomerular filtration rate (GFR) [62].

Hypoxemia

Is an abnormally low level of oxygen in the blood [63]? More specifically, it is oxygen deficiency in arterial blood [64]. Hypoxemia is usually defined in terms of reduced partial pressure of oxygen (mm Hg) in arterial blood, but also in terms of reduced content of oxygen [65] (ml oxygen per dl blood) or percentage saturation of haemoglobin (the oxygen binding protein within red blood cells) with oxygen, which is either found singly or in combination [66].

DIAGNOSIS OF LIVER CIRRHOSIS

Cirrhosis of the liver is diagnosed through several methods:

Physical Exam

During a physical exam [67], your doctor can observe changes in how your liver feels or how large it is a cirrhotic liver [68] is bumpy and irregular instead of smooth.

Blood Tests

If your doctor suspects cirrhosis, you will be given blood tests to find out if liver disease is present [69].

Endoscopy

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Gastroscopy [70] (endoscopic examination of the oesophagus, stomach, and duodenum) is performed in patients with established cirrhosis to exclude the possibility of oesophageal varices [71]. If these are found, prophylactic local therapy may be applied sclerotherapy or banding and beta blocker treatment may be commenced.

Imaging

Ultrasound [72] is routinely used in the evaluation of cirrhosis. It may show a small and nodular liver [73] in advanced cirrhosis along with increased echogenicity with irregular appearing areas. Other findings suggestive of cirrhosis in imaging are an enlarged caudate lobe, widening of the liver fissures and enlargement of the spleen [74].

Surgery

In some cases, cirrhosis is diagnosed during surgery when the doctor is able to see the entire liver. The liver also can be inspected through a laparoscope [75], a viewing device that is inserted through a tiny incision in the abdomen [76].

PREVENTION OF LIVER CIRRHOSIS

Avoid Excess Alcohol

If you drink, know your limits and do not exceed them [77]. Keep in mind, though, that alcohol tolerance can vary greatly from one person to the next. Doctors often advise people to set a daily limit of one or two drinks and to avoid drinking every day.

Health Balanced Diet

A balanced diet [78] is one that gives your body the nutrients it needs to function correctly. In order to get the proper nutrition from your diet, you should obtain the majority of your daily calories from: fresh fruits, fresh vegetables, whole grains, legume, nuts, and lean proteins [79].

Low Sodium Diet

Excess salt can cause your body to retain fluids, worsening swelling in your abdomen and legs [80]. Use herbs for seasoning your food, rather than salt. Choose prepared foods that are low in sodium.

Avoid Infections

Cirrhosis [81] makes it more difficult for you to fight off infections. Protect yourself by washing your hands frequently. Also, get vaccinated for hepatitis A [82] and B, influenza [83] and pneumonia [84].

Reduce Risk of Hepatitis

Sharing needles and having unprotected sex can increase your risk of hepatitis B and C [85]. Ask your doctor about hepatitis vaccinations.

MANAGEMENT

Preventing Further Liver Damage

Regardless of the underlying cause of cirrhosis, alcohol [86] and paracetamol [87], as well as other potentially damaging substances, are discouraged. Vaccination of susceptible patients should be considered for Hepatitis A and Hepatitis B.

Transplantation

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Liver transplantation [88] is surgery to remove a diseased or injured liver and replace it with a healthy whole liver or a segment of a liver from another person, called a donor [89]. A successful liver transplant [90] is a life-saving treatment for people with liver failure [91], a condition in which the liver no longer works as it should [92].

Palliative Care

Palliative care is care given to improve the quality of life of patients who have a serious or life-threatening disease, such as cancer. The goal of palliative care is to prevent or treat, as early as possible, the symptoms and side effects of the disease [93] and its treatment, in addition to the related psychological, social, and spiritual problems. The goal is not to cure. Palliative care is also called comfort care, supportive care, and symptom management [94].

CONCLUSION

Many recent studies have provided insight in the area of management of patients with cirrhosis and in improving outcomes. However, further research is still required, and in particular in assessing the most cost-effective strategies. The emergence of rifaximin [95] for use in patients with hepatic encephalopathy [96] will require further study to better understand its cost effectiveness. We will need further studies, including prospective trials, on the subject of the use of NSBB in patients with ascites. Terlipressin [97] appears to be the most effective medical treatment for type 1 HRS, but we need to understand better which patients are likely to respond. Endoscopic variceal [98] band ligation might be effective in primary prophylaxis in large varices; however, beta-blockers [99] in addition to band ligation have been previously shown to be an overall better strategy [100].

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