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Why does the hepatic portal vein supply more blood to the liver than the artery?

The hepatic portal vein is a vessel that moves blood from the spleen and gastrointestinal tract to the liver. It is approximately three to four inches in length and is usually formed by the merging of the superior mesenteric and splenic veins behind the upper edge of the head of the pancreas. In some individuals, the inferior mesenteric vein may enter this intersection instead. In most people, the portal vein splits into the right and left veins before entering the liver.

The liver receives a dual supply of 75% blood from the hepatic portal vein and 25% from the hepatic artery. The hepatic portal vein carries venous blood drained from the spleen, gastrointestinal tract and its associated organs; the hepatic arteries supply arterial blood to the liver and account for the remainder of its blood flow.

Oxygen is provided for both sources; approximately half of the liver's oxygen demand is met by the hepatic portal vein, and half is met by the hepatic arteries. Blood flows through the liver tissue and empties into the central vein of each lobule. The central veins coalesce into hepatic veins that collect the blood leaving the liver and bring it to the heart.

What are the diseases of the liver?

Your liver is an important organ that performs hundreds of tasks related to metabolism, energy storage, and detoxification of waste. It helps you digest food, convert it to energy, and store the energy until you need it. It also helps filter toxic substances out of your bloodstream.

Liver disease is a general term that refers to any condition affecting your liver. These conditions may develop for different reasons, but they can all damage your liver and impact its function.

What are the general symptoms?

Liver disease symptoms vary, depending on the underlying cause. However, there are some general symptoms that may indicate some kind of liver disease.

These include:

yellow skin and eyes, known as jaundice

dark urine

pale, bloody, or black stool

swollen ankles, legs, or abdomen

nausea

vomiting

decreased appetite

ongoing fatigue

itchy skin

easy bruising

What are some common liver problems?

Many conditions can affect your liver. Here's a look at some of the main ones.

Hepatitis

Hepatitis is a viral infection of your liver. It causes inflammation and liver damage, making it difficult for your liver to function as it should.

All types of hepatitis are contagious, but you can reduce your risk by getting vaccinated for types A and B or taking other preventive steps, including practicing safe sex and not sharing needles.

There are five types of hepatitis:

Hepatitis A is typically spread through contact with contaminated food or water. Symptoms may clear up without treatment, but recovery can take a few weeks.

Hepatitis B can be acute (short-term) or chronic (long-term). It's spread through bodily fluids, such as blood and semen. While hepatitis B is treatable, there's no cure for it. Early treatment is key to avoiding complications, so it's best to get regular screenings if you're at risk.

Hepatitis C can also be acute or chronic. It's often spread through contact with blood from someone with hepatitis C. While it often doesn't cause symptoms in its early stages, it can lead to permanent liver damage in its later stages.

Hepatitis D is a serious form of hepatitis that only develops in people with hepatitis B – it can't be contracted on its own. It can also be either acute or chronic.

Hepatitis E is usually caused by drinking contaminated water. Generally, it clears up on its own within a few weeks without any lasting complications.

Fatty liver disease

Fat buildup in the liver can lead to fatty liver disease.

There are two types of fatty liver disease:

alcoholic fatty liver disease, which is caused by heavy alcohol consumption

nonalcoholic fatty liver disease, which is caused by other factors experts are still trying to understand

Left unmanaged, both types of fatty liver disease can cause liver damage, leading to cirrhosis and liver failure. Diet and other lifestyle changes can often improve symptoms and reduce your risk of complications.

Autoimmune conditions

Autoimmune conditions involve your immune system mistakenly attacking healthy cells in your body.

Several autoimmune conditions involve your immune system attacking cells and your liver, including:

Autoimmune hepatitis. This condition causes your immune system to attack your liver, resulting in inflammation. Left untreated, it can lead to cirrhosis and liver failure.

Primary biliary cirrhosis (PBC). This results from damage to the bile ducts in your liver, causing a buildup of bile. PBC can lead to eventual cirrhosis and liver failure.

Primary sclerosing cholangitis. This inflammatory condition causes gradual damage to your bile ducts. They eventually become blocked, causing bile to build up in your liver. This can lead to cirrhosis or liver failure.

Genetic conditions

Several genetic conditions, which you inherit from one of your parents, can also affect your liver:

Hemochromatosis causes your body to store more iron than it needs. This iron remains in your organs, including your liver. This can lead to damage over a long period of time if not managed.

Wilson's disease causes your liver to absorb copper instead of releasing it into your bile ducts. Eventually, your liver may become too damaged to store more copper, allowing it to travel through your bloodstream and damage other parts of your body, including your brain.

Alpha-1 antitrypsin (AT) deficiency occurs when your liver can't make enough alpha-1 antitrypsin, a protein that helps prevent enzyme breakdowns throughout your body. This condition can cause lung disease as well as liver disease. There's no cure, but treatment can help.

Cancer

Liver cancers first develop in your liver. If cancer starts elsewhere in the body but spreads to the liver, it's called secondary liver cancer.

The most common type of liver cancer is hepatocellular carcinoma. It tends to develop as several small spots of cancer in your liver, though it can also start as a single tumor.

Complications of other liver diseases, especially those that aren't treated, may contribute to the development of liver cancer.

Cirrhosis

Cirrhosis refers to scarring that results from liver diseases and other causes of liver damage, such as alcohol use disorder. Cystic fibrosis and syphilis may also lead to liver damage and, eventually, cirrhosis.

Your liver can regenerate in response to damage, but this process usually results in the development of scar tissue. The more scar tissue that develops, the harder it is for your liver to function properly.

In its early stages, cirrhosis is often treatable by addressing the underlying cause. But left unmanaged, it can lead to other complications and become life-threatening.

Liver failure

Chronic liver failure typically happens when a significant part of your liver is damaged and can't function properly. Generally, liver failure related to liver disease and cirrhosis happens slowly. You may not have any symptoms at first. But over time, you might start to notice:

jaundice

diarrhea

confusion

fatigue and weakness

nausea

It's a serious condition that requires ongoing management.

Acute liver failure, on the other hand, happens suddenly, often in response to an overdose or poisoning.