

## Question

1. why do we have the portal vein or the liver receiving more blood from the vein than it receives from the artery?

The **portal vein** or **hepatic portal vein (HPV)** is a blood vessel that carries blood from the gastrointestinal tract, gallbladder, pancreas and spleen to the liver. This blood contains nutrients and toxins extracted from digested contents. Approximately 75% of total liver blood flow is through the portal vein, with the remainder coming from the hepatic artery proper. The blood leaves the liver to the heart in the hepatic veins. The portal vein is not a true vein, because it conducts blood to capillary beds in the liver and not directly to the heart. It is a major component of the hepatic portal system, one of only two portal venous systems in the body – with the hypophyseal portal system

among the other.

The portal vein is usually formed by the confluence of the superior mesenteric to splenic veins and also receives blood from the inferior mesenteric left and right gastric veins and cystic veins.

Conditions involving the portal vein cause considerable illness and death. An important example of such a condition is elevated blood pressure in the portal vein.

This condition, called portal hypertension, is a major complication of cirrhosis. Unlike most veins, the portal vein does not drain into the heart. Rather, it is part of a portal venous system that delivers venous blood into another capillary system, the hepatic sinusoids of the liver. In carrying venous blood from the gastrointestinal tract to the liver, the portal vein accomplishes two tasks: it supplies the liver with metabolic substrates and it ensures that substances ingested are first processed by

the liver before reaching the systemic circulation. This accomplishes two things. First, possible toxins that may be ingested can be detoxified by the hepatocytes before they are released into the systemic circulation. Second, the liver is the first organ to absorb nutrients just taken in by the intestines. After draining into the liver sinusoids, blood from the liver is drained by the hepatic veins.

2. discuss five (5) disease conditions of the liver

### **Hepatitis**

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

All types of hepatitis are contagious, but can reduce the risk of getting it 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 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.

## **Autoimmune conditions**

Autoimmune conditions involves the immune system mistakenly attacking healthy cells in the body.

Several autoimmune conditions involving the immune system attacking cells and the liver, including:

- Autoimmune hepatitis. This condition causes the immune system to attack the 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 the 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 the bile ducts. They eventually become blocked, causing bile to build up in the liver. This can lead to cirrhosis or liver failure.

## **Genetic conditions**

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

- Hemochromatosis causes the body to store more iron than it needs. This iron remains in the organs,

including the liver. This can lead to damage over a long period of time if not managed.

- Wilson's disease causes the liver to absorb copper instead of releasing it into the bile ducts. Eventually, the liver may become too damaged to store more copper, allowing it to travel through the bloodstream and damage other parts of the body, including the brain.
- Alpha-1 antitrypsin (AT) deficiency occurs when the liver can't make enough alpha-1 antitrypsin, a protein that helps prevent enzyme breakdowns throughout the body. This condition can cause lung disease as well as liver disease. There's no cure, but treatment can help.

## **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.

The 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 the 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 the liver is damaged and can't function properly. Generally, liver failure related to liver disease and cirrhosis happens slowly. It may



not have any symptoms at first. But over time, it starts to get visible:

- 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.