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ASSIGNMENT

* **Why do we have the portal vein or the liver receiving more blood from the vein than it receives from the artery?**

Looking at the control of circulation of the liver, we have this complication due to the double blood supply from the hepatic artery and the portal vein. The majority branches of the hepatic artery pour their blood into the lobular capillary spaces or sinusoids by fine arterioles opening directly into this lobular plexus. The communication between the arterial and portal systems is limited to the plexus of the sinusoids in the lobule; it introduces an important complication in the portal vein especially.

 Another complication is due to fact that the pressure and flow in the portal vein are dependent on the artery at which blood enters it through the veins draining the stomach, intestine and spleen, and therefore on vaso-motor and other changes in those organs, as well as on variations in the tone of the portal branches.

* **Discuss five (5) disease conditions of the liver**

INFECTIONS:

1. **VIRAL HEPATITIS:** Viralhepatitis is an infection that causes liver inflammation and damage. Inflammation is swelling that occurs when tissues of the body become injured or infected. Inflammation can damage organs. The types of viral hepattis include: Hepatitis A, B, C, D and E.

Hepatitis A and hepatitis E typically spread through contact with food or water that has been contaminated by an infected person’s stool. People may also get hepatitis E by eating undercooked pork, deer, or shellfish.

1. Hepatitis B, hepatitis C and hepatitis D spread through contact with an infected person’s blood. Hepatitis B and D may also spread through contact with other body fluids. This contact can occur in many ways, including sharing drug needles or having unprotected sex.
2. The hepatitis A and E viruses typically cause only acute, or short-term, infections. In an acute infection, your body is able to fight off the infection and the virus goes away.
3. The hepatitis B, C, and D viruses can cause acute and chronic, or long-lasting, infections. Chronic hepatitis occurs when your body isn’t able to fight off the hepatitis virus and the virus does not go away. Chronic hepatitis can lead to complications such as cirrhosis, liver failure, and liver cancer

CANCERS:

1. **LIVER CANCER**: The liver sits below the right lung, just under the ribcage. It is one of the largest organs of the human body and has many essential functions, including removing toxins from the body. Liver cancer is cancer that starts in the liver. Some cancers develop outside the liver and spread to the organ, but doctors only describe cancer that starts in the liver as liver cancer. The symptoms of liver cancer do not usually become apparent until the disease reaches an advanced stage.

Liver cancer may cause the following: where the skin and eyes become yellow, abdominal pain, pain close to the right shoulder blade, unexplained weight loss, an enlarged liver, spleen, or both swelling in the abdomen or fluid buildup nausea, vomiting, itching

Liver cancer might also cause swollen veins that are visible under the abdominal skin, as well as bruising and bleeding.

**Stages**

To help guide treatment and define the outlook of liver cancer, healthcare professionals divide its progression into four stages:

* **Stage 1:** The tumor remains in the liver and has not spread to another organ or location.
* **Stage 2:** Either there are several small tumors that all remain in the liver or one tumor that has reached a blood vessel.
* **Stage 3:** There are various large tumors or one tumor that has reached a main, large blood vessel.
* **Stage 4:** The cancer has metastasized, meaning it has spread to other parts of the body.

Treatment:

Surgery that completely removes the tumors is the only way to improve the chance of recovery for people with treatable, early stage liver cancer.

Surgical options include the following:

Partial hepatectomy

When the tumor is small and occupies a limited section of the liver, a surgeon can remove this part of the organ only to stop the cancer growing and spreading.

Many people with liver cancer also have scarring of the liver, however. In this case, a surgeon needs to leave enough healthy tissue after hepatectomy for the liver to function.

If, during surgery, the surgeon decides that this course is not possible and the risk is too great, they may cancel the procedure halfway through.

Only people with otherwise healthy liver function are suitable for hepatectomy. Also, the procedure may not be a viable treatment option if cancer has already spread to other parts of the liver or organs in the body.

Liver surgery of this scale can lead to excessive bleeding and blood clotting issues, as well as infections and pneumonia

HEREDITARY

1. WILSON’S DISEASE: Wilson's disease is a genetic disorder in which excess copper builds up in the body. Symptoms are typically related to the brain and liver. Liver-related symptoms include vomiting, weakness, fluid buildup in the abdomen, swelling of the legs, yellowish skin and itchiness. also known as hepatolenticular degeneration and progressive lenticular degeneration, is a rare genetic disorder that causes copper poisoning in the body. Early diagnosis is crucial for stopping the progression of Wilson’s disease. Treatment may involve taking medication or getting a liver transplant. Delaying or not receiving treatment can cause liver failure, brain damage, or other life-threatening conditions.

## The signs and symptoms of Wilson’s disease

The signs and symptoms of Wilson’s disease vary widely, depending on which organ is affected. They can be mistaken for other diseases or conditions. Wilson’s disease can only be detected by a doctor and through diagnostic testing.

### Liver-related

The following symptoms may indicate copper accumulation in the liver: unexplained weight loss, an enlarged liver, spleen, or both swelling in the abdomen or fluid buildup nausea, vomiting, itching

### Neurological

Copper accumulation in the brain can cause symptoms such as: memory, speech, or vision impairment abnormal walking migraines drooling depression problems in school

In the advanced stages, these symptoms may include muscle spasms, seizures, and muscle pain during movement.

Cause A mutation in the *ATP7B* gene, which codes for copper transportation, causes Wilson’s disease. You must inherit the gene from both parents in order to have Wilson’s disease. This can mean that one of your parents has the condition or carries the gene. It may skip a parent

Treatment

### The first treatment is to remove excess copper from your body through chelating therapy. Second stage

The goal of second stage is to maintain normal levels of copper after removal. Your doctor will prescribe zinc or tetrathiomolybdate if you’ve finished the first treatment or show no symptoms but have Wilson’s disease.

### Third stage

After the symptoms improve and your copper levels are normal, you’ll want to focus on long-term maintenance therapy. This includes continuing zinc or chelating therapy and regularly monitoring your copper levels.

You can also manage your copper levels by avoiding foods with high levels, such as:

* dried fruit
* liver
* mushrooms
* nuts
1. HYPEROXALURIA

**Hyperoxaluria** is an excessive urinary excretion of oxalate. Individuals with hyperoxaluria often have calcium oxalate kidney stone. It is sometimes called **Bird's disease**, after Golding Bird, who first described the condition. Hyperoxaluria can be primary as a result of a genetic defect) or secondary to another disease process.

Excessive intake of oxalate-containing food, such as rhubarb, may also be a cause in rare cases.

The main therapeutic approach to primary hyperoxaluria is still restricted to symptomatic treatment, i.e. kidney transplantation once the disease has already reached mature or terminal stages. However, through genomics and proteomics approaches, efforts are currently being made to elucidate the kinetics of AGXT folding which has a direct bearing on its targeting to appropriate subcellular localization. Secondary hyperoxaluria is much more common than primary hyperoxaluria, and should be treated by limiting dietary oxalate and providing calcium supplementation. RELOXALIASE is being developed by Allena Pharmaceuticals for enteric, idiopathic, pediatric and primary hyperoxaluria.A child with primary hyperoxaluria was treated with a liver and kidney transplant.[[6]](https://en.wikipedia.org/wiki/Hyperoxaluria#cite_note-6) A favorable outcome is more likely if a kidney transplant is complemented by a liver transplant, given the disease originates in the liver.

IMMUNE SYSTEM

1. **AUTOIMMUNE HEPATITIS**

Autoimmune hepatitis is liver inflammation that occurs when your body's immune system turns against liver cells. The exact cause of autoimmune hepatitis is unclear, but genetic and enviromental factors appear to interact over time in triggering the disease.

Untreated autoimmune hepatitis can lead to scarring of the liver (cirrhosis) and eventually to liver failure. When diagnosed and treated early, however, autoimmune hepatitis often can be controlled with drugs that suppress the immune system.

A liver transplant may be an option when autoimmune hepatitis doesn't respond to drug treatments or in cases of advanced liver disease.

Signs and symptoms of autoimmune hepatitis vary from person to person and may come on suddenly. Some people have few, if any, recognized problems in the early stages of the disease, whereas others experience signs and symptoms that may include:

* Fatigue
* Abdominal discomfort
* Yellowing of the skin and whites of the eyes (jaundice)
* An enlarged liver
* Abnormal blood vessels on the skin (spider angiomas)
* Skin rashes
* Joint pains
* Loss of menstrual periods

CAUSES

Autoimmune hepatitis occurs when the body's immune system, which ordinarily attacks viruses, bacteria and other pathogens, instead targets the liver. This attack on your liver can lead to chronic inflammation and serious damage to liver cells. Just why the body turns against itself is unclear, but researchers think autoimmune hepatitis could be caused by the interaction of genes controlling immune system function and exposure to particular viruses or drugs.

Types of autoimmune hepatitis

Doctors have identified two main forms of autoimmune hepatitis.

* **Type 1 autoimmune hepatitis.** This is the most common type of the disease. It can occur at any age. About half the people with type 1 autoimmune hepatitis have other autoimmune disorders, such as celiac disease, rheumatoid arthritis or ulcerative colitis.
* **Type 2 autoimmune hepatitis.** Although adults can develop type 2 autoimmune hepatitis, it's most common in children and young people. Other autoimmune diseases may accompany this type of autoimmune hepatitis.

Autoimmune hepatitis that goes untreated can cause permanent scarring of the liver tissue (cirrhosis). Complications of cirrhosis include:

* **Enlarged veins in your esophagus (esophageal varices).** When circulation through the portal vein is blocked, blood may back up into other blood vessels — mainly those in your stomach and esophagus. The blood vessels are thin walled, and because they're filled with more blood than they're meant to carry, they're likely to bleed. Massive bleeding in the esophagus or stomach from these blood vessels is a life-threatening emergency that requires immediate medical care.
* **Fluid in your abdomen (ascites).** Liver disease can cause large amounts of fluid to accumulate in your abdomen. Ascites can be uncomfortable and may interfere with breathing and is usually a sign of advanced cirrhosis.
* **Liver failure.** This occurs when extensive damage to liver cells makes it impossible for your liver to function adequately. At this point, a liver transplant is needed.
* **Liver cancer.** People with cirrhosis have an increased risk of liver cancer.