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LIVER DISEASES: DEVELOPMENT, CAUSES, AND CONSEQUENCES OF HEPATITIS AND LIVER CIRRHOSIS

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Abstract

Currently, liver diseases, especially hepatitis and liver cirrhosis, are among the most widespread illnesses worldwide. These diseases cause serious harm to human health and significantly reduce the quality of life. The liver is one of the main organs that performs vital functions in the body, and its damage negatively affects the functioning of the entire organism. The purpose of this article is to study the causes, mechanisms of development, and consequences of liver diseases.

Keywords

Liver, hepatitis, liver cirrhosis, fibrosis, hepatocellular, bile, alcohol, fatty liver, liver cancer, viral hepatitis.

The liver functions as a digestive gland in the human body.

It has a reddish-brown color. The liver is well protected under the ribs. The liver is one of the most important internal organs that cleanses the blood from toxic substances, poisons, and other harmful materials. Without this organ, the human body cannot function. A person cannot live without a liver; however, if proper care is not taken, this vital organ can be easily damaged. If a person did not have a liver, they would be poisoned even by simple substances like water or milk.

The liver is the main filter of the human body. About 1.4 liters of blood pass through the liver in one minute. Approximately 100 liters of blood pass through the liver in one hour. Over the course of a day, more than 2000 liters of blood pass through the liver.

Main functions of the liver:

- Stores fats and carbohydrates.
- Produces proteins necessary for blood clotting.
- Converts ammonia into urea, which is important in metabolism.
- Destroys old red blood cells (RBCs).
- Stores vitamins and iron.
- Stores and releases glucose.
- Produces proteins necessary for other body functions.

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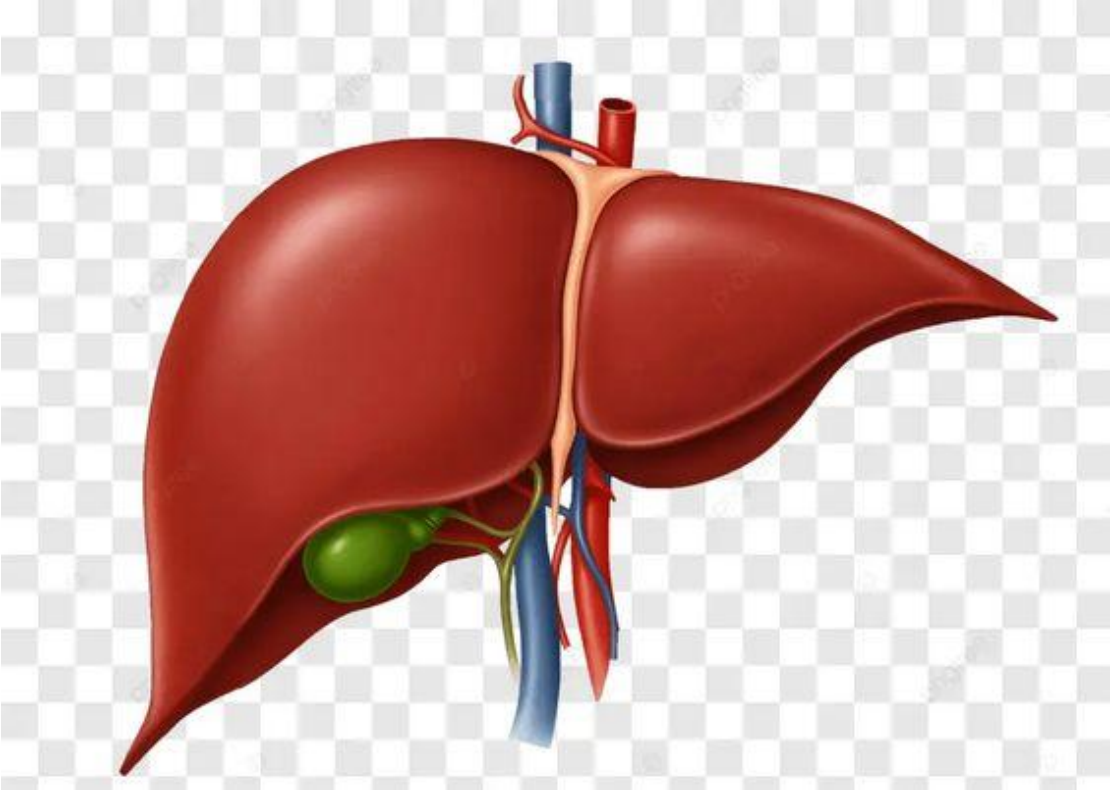
- Cleanses the blood from toxins, drug residues, and harmful substances.

In addition, the liver produces bile, which is necessary for the digestion of fats and helps break down substances. Bile performs many digestive functions, and about 1 liter of bile is produced per day.

A damaged or diseased liver loses these functions and causes serious harm to the body. The liver is one of the few organs capable of regenerating its original size even if only 25% of normal tissue remains. It is the only organ that can restore up to 70% of its lost mass.

Approximately 70% of the liver mass consists of cells called hepatocytes. The liver stores substances such as vitamins, iron, and glucose, and regulates their levels in the blood. Many vitamins, including vitamins D and A, are synthesized in the liver. These vitamins are essential for calcium absorption, proper functioning of the nervous system, strong immunity, and good vision.



Common causes of liver diseases:

These include infectious hepatitis viruses, problems in the immune system such as autoimmune hepatitis, cancer and other tumors, chronic alcohol consumption, and drug abuse. These factors can lead to severe liver damage. Symptoms of liver damage often appear very late. More serious impairment of liver function is manifested by jaundice (yellowing of the body).

Currently, there are more than 100 types of liver diseases. Some of the most common types are viral (infectious) hepatitis.

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Hepatitis is inflammation of the liver, characterized by swelling and redness. It is caused by hepatitis viruses. Hepatitis can be acute or chronic.

In acute hepatitis, the liver enlarges, and a feeling of heaviness and pain appears in the liver area. The patient may experience nausea, vomiting, loss of appetite, and a bitter taste in the mouth. In some cases, acute hepatitis can also occur during pregnancy due to toxicosis. If not treated in time or if the patient does not follow a proper diet, the liver's specialized (parenchymal) tissue may be replaced by connective tissue. In some cases, acute hepatitis may last 2–3 months and develop into chronic hepatitis.

At the early stage of the disease, the patient's condition may not change significantly, and they may continue working. However, as the disease progresses, the whites of the eyes and the skin begin to turn yellow. A patient with hepatitis should rest and keep the liver area warm. The diet should include easily digestible carbohydrates, proteins, and vitamins, while fats should be limited. It is recommended to consume fruits, vegetable juices, sugar, jam, honey, and easily digestible foods such as rice porridge, milk, yogurt, cheese, and cottage cheese.

There are types of hepatitis A, B, C, D, and E. Hepatitis A can be prevented. The most dangerous types are B and C, which can lead to chronic liver cirrhosis and cancer.

Hepatitis A is a viral liver disease that causes inflammation. It is one of the most common liver diseases, is usually easy to treat, and does not become chronic. The incubation period is about 30 days. It is transmitted through contaminated water or food and poor personal hygiene. Symptoms may include fever, nausea, vomiting, diarrhea, jaundice, and abdominal pain.

Hepatitis B is an acute or chronic infectious liver disease caused by the virus of the same name. If patients with chronic hepatitis B are not treated in time, it can lead to liver cirrhosis, liver cancer, and liver failure.

Liver damage may progress from inflammation to cirrhosis and hepatocellular carcinoma. The infection can be transmitted through blood, non-sterile medical instruments (such as needles and dental equipment), unprotected sexual contact, and from mother to child during childbirth. Protective vaccines and therapies are available for HBV.

Hepatitis C is similar to HBV and is transmitted through blood (such as contaminated needles and medical instruments). Its incubation period ranges from 2 weeks to 6 months. Hepatitis C can cause serious liver damage, leading to cirrhosis and hepatocellular carcinoma (a type of liver cancer).

Liver cancer is the growth and spread of abnormal cells in the liver. Hepatocellular carcinoma is the most common type of liver cancer. Cirrhosis and hepatitis B are major risk factors for liver cancer.

Scar tissue cannot perform the functions of healthy liver cells, and the process of fibrosis may develop rapidly or progress over a long period of time. The final stage of fibrosis is cirrhosis.

Cirrhosis is a condition in which the liver becomes scarred, and soft, healthy tissue is replaced by hard scar tissue. It may develop as a result of long-term infections, heart diseases, or continuous liver damage.

Liver cirrhosis is a chronic disease characterized by the irreversible replacement of liver parenchymal tissue with fibrous connective tissue or stroma. A cirrhotic liver may become enlarged or reduced in size, and it appears abnormally dense and nodular. Depending on the

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condition, within 2–4 years, patients in the terminal stage may experience severe pain and may die.

Other conditions that can lead to cirrhosis include diseases related to the bile ducts. For example, primary sclerosing cholangitis and primary biliary cirrhosis block the flow of bile, which increases pressure in the liver and leads to cell damage. In addition, excessive accumulation of iron or copper in the liver, as well as certain hereditary diseases, can also damage liver tissue and lead to cirrhosis.

Cirrhosis often develops slowly, and symptoms may not appear in the early stages. In the early phase, patients may feel healthy, and without specific blood tests or examinations, the disease may go undetected. Symptoms usually appear only after about 80% of the liver has been damaged.

Symptoms of advanced cirrhosis include:

General weakness: Persistent fatigue, lack of energy, and asthenia.

Digestive system changes: Decreased or loss of appetite, nausea, vomiting, and weight loss.

Skin changes: Yellowing of the skin and the sclera of the eyes (jaundice), itching, redness of the palms (palmar erythema), and the appearance of small blood vessels on the skin ("spider" veins or telangiectasias).

Abdominal and leg swelling: Fluid accumulation in the abdominal cavity (ascites) and swelling of the legs and ankles (edema).

Blood clotting disorders: Easy bruising, nosebleeds, or bleeding from the gums.

Mental and nervous changes: Confusion, forgetfulness, reduced attention, and drowsiness due to hepatic encephalopathy.

Pain: Pain or a feeling of heaviness under the right ribs (liver area).

Other signs: Dark urine and pale-colored stools.

Serious complications may also develop, such as:

- Jaundice (yellowing of the skin and eyes)

- Easy bruising

- Bleeding

- Accumulation of excess fluid in the legs and abdomen (ascites and edema)

- Mental confusion or disturbances

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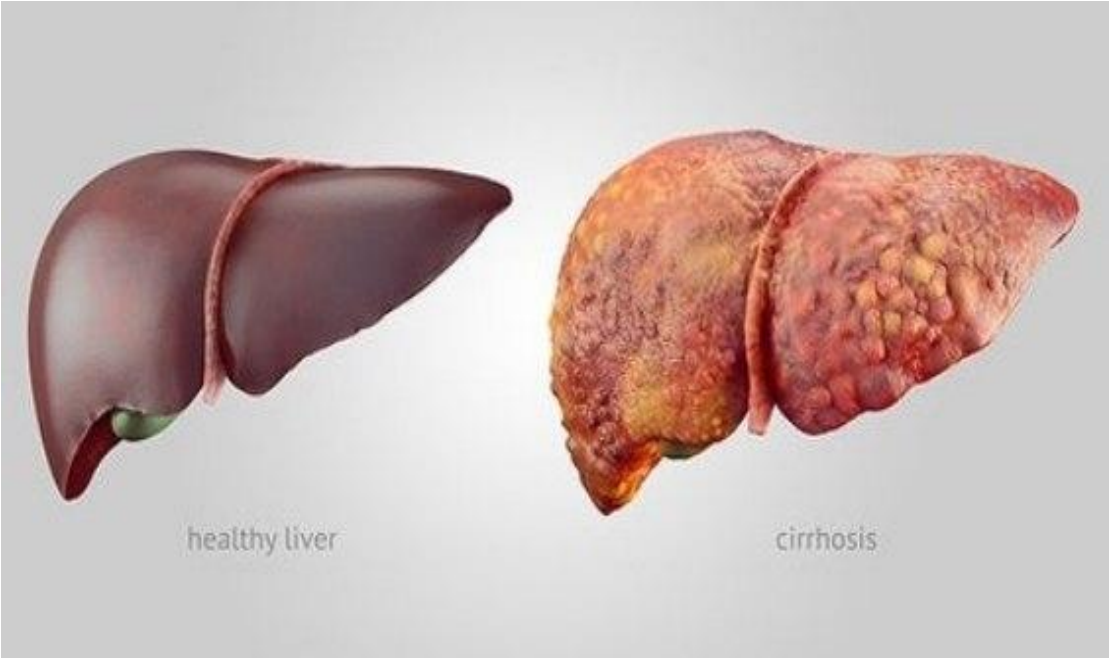

If cirrhosis develops due to alcohol consumption, it is necessary to completely stop drinking alcohol. If the cause is hepatitis, treatment is carried out with medications.

Most types of liver diseases do not show any signs or symptoms in the early stages. Symptoms usually appear when the liver is already damaged or scarred.

Some common signs and symptoms of liver diseases include:

- Chronic fatigue
- Loss of appetite
- Changes in urine color
- Easy bruising
- Swelling of the legs and ankles
- Abdominal swelling and pain
- Yellowing of the eyes and skin, known as jaundice

The liver stores essential vitamins such as A, D, and B12, which are important for the human body. These diseases may develop as a result of poor nutrition, alcohol consumption, and disorders of the nervous system.

Conclusion:

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The liver plays a vital role in the human body by participating in digestion and neutralizing many harmful substances that enter through food, wnater, or air. It also has a significant role in metabolism.

The liver is an essential organ for maintaining human health. Impairment of its function can lead to serious diseases such as hepatitis, cirrhosis, fatty liver, and liver cancer. It regulates the metabolism of proteins, fats, and carbohydrates, and plays an important role in bile production. The liver also synthesizes vitamins and blood clotting factors.

All essential nutrients pass through the liver, where they are processed. In addition, the liver contributes to blood composition by synthesizing many plasma proteins. It also acts as a reservoir, storing a large amount of blood that can be released into circulation when blood cells are destroyed or during shock.

Uncontrolled use of medications, constant stress, depression, unhealthy habits, lack of sleep, and poor nutrition negatively affect the body's protective functions and can damage the liver. Therefore, maintaining liver health through proper nutrition and avoiding harmful habits is very important.

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