

LIVER DISEASES: HEPATITIS B, C, D, AND CIRRHOSIS

Sotvoldiyeva Zarifaxon Rustamjon kizi

Kokand University Andijan Branch

Faculty of Medicine, Department of Therapeutic Medicine

Student of Group 24-17

+998901457673, zns777@gmail.com

Scientific Supervisor: Maripjonov Jasurbek Ma'mirjon ugli

Lecturer at Kokand University Andijan Branch; jasurbekmaripjonov122@gmail.com;
<https://orcid.org/0009-0001-3523-4865>

Abstract: This article provides extensive information about hepatitis B, C, D, and liver cirrhosis. The origins, clinical course, diagnostics, treatment methods, and prevention measures of these viral diseases are described in detail. The global epidemiology, statistical indicators, and the impact of liver diseases on human health are highlighted. The article also focuses on modern treatment methods and innovative approaches.

Keywords: Hepatitis B, Hepatitis C, Hepatitis D, Liver Cirrhosis, Viral Hepatitis, Liver Failure, Antiviral Therapy, Prevention, Diagnosis.

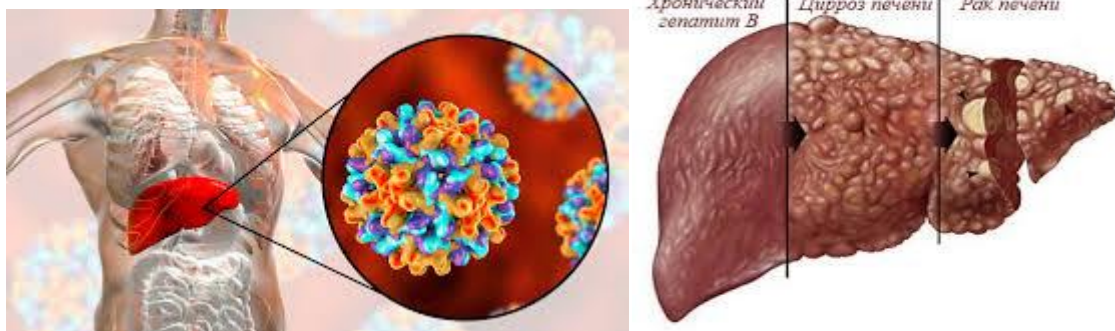
The liver is one of the most important organs of the body, and its main functions include detoxifying the blood, regulating metabolism, and synthesizing vital proteins. Viral hepatitis B, C, D, and liver cirrhosis are serious diseases of this organ that can lead to dangerous consequences for human life. According to the World Health Organization (WHO), millions of people suffer from these diseases every year.

Hepatitis B

Hepatitis B virus (HBV) is a virus that spreads through the hematogenous route, causing inflammation of the liver. Viral hepatitis B primarily spreads through blood, sexual contact, and perinatal transmission from mother to child. Worldwide, more than 296 million people are carriers of this virus. Hepatitis B is a viral infection caused by HBV (Hepatitis B Virus), which belongs to the Hepadnaviridae family. The disease affects the liver and can occur in either acute or chronic forms. Hepatitis B is widespread globally, with millions of new cases being diagnosed each year. When the virus enters the body, it multiplies in liver cells, leading to inflammation and damage to these cells.

Hepatitis B virus is transmitted through the hematogenous route, meaning:
Through blood (contaminated needles, syringes, medical or cosmetic instruments)
Through sexual contact
From mother to child (perinatal route): The disease is often transmitted to the baby during childbirth or through breastfeeding. Additionally, the virus can also spread through household items (toothbrushes, nail clippers).

Hepatitis B infection can occur in either acute or chronic forms:
 Acute hepatitis B: The disease usually lasts up to 6 months. Symptoms include jaundice, fatigue, nausea, loss of appetite, and abdominal pain.
 Chronic hepatitis B: If the virus remains in the body for more than 6 months, the disease progresses to a chronic form. Chronic hepatitis B can lead to liver cirrhosis and liver cancer.
Diagnosis :To diagnose Hepatitis B, the following laboratory tests are conducted:
 HBsAg: Hepatitis B surface antigen, indicates the presence of the disease.
 Anti-HBc: Indicates either acute or past infection.
 HBV DNA: Measures the amount of virus in the blood.

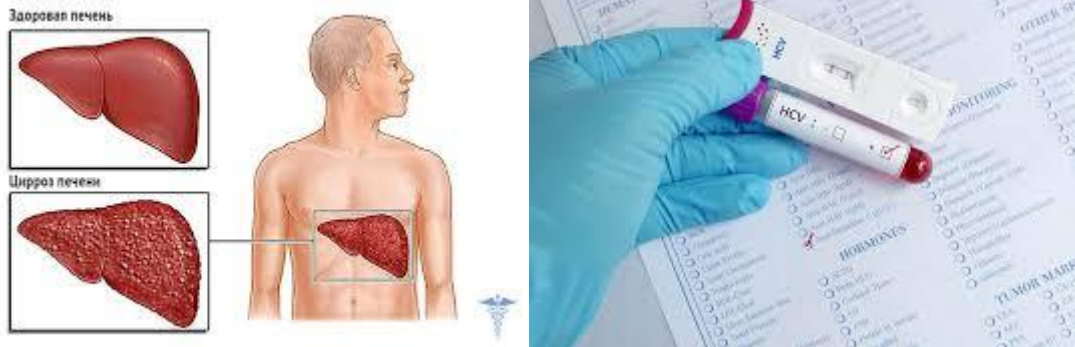


Liver enzymes (ALT, AST) – used to assess liver damage.

Treatment: In the acute form of Hepatitis B, no specific antiviral treatment is required, and symptomatic support is provided to patients. In the chronic form, the following medications are used to suppress the virus:

Interferons and nucleoside and nucleotide analogs (Entecavir, Tenofovir) (Peg-IFN)
 Patients with chronic Hepatitis B should be regularly monitored under medical supervision. The most effective way to prevent Hepatitis B is vaccination. It is recommended that all newborns and individuals in high-risk groups receive the HBV vaccine. Additional preventive measures include:
 Reducing the risk of bloodborne transmission
 Protected sexual intercourse Following personal hygiene rules

Hepatitis B is a serious disease with a high risk of progressing to chronic form. However, it can be prevented as effective vaccines are available. Timely diagnosis and appropriate treatment can reduce the severity of complications associated with the disease.



Hepatitis C

Hepatitis C is a viral disease that damages the liver, caused by the Hepatitis C Virus (HCV). The disease is primarily transmitted through blood and has a very high potential to progress to a chronic form. Hepatitis C can develop silently in the human body for years, ultimately leading to liver cirrhosis and liver cancer. According to the World Health Organization (WHO), more than 58 million people worldwide are infected with this virus, with 1.5 million new cases diagnosed each year.

How is hepatitis C transmitted?

HCV is mainly transmitted through blood, and the following factors increase the risk of infection: Use of non-sterilized needles and medical instruments (injections, dental procedures, tattoos, and piercings)

Blood transfusions or organ transplants (if the donor is a virus carrier)

Injecting drugs

Sexual contact (rare, but risk exists)

Perinatal transmission from mother to child The virus can also spread through household items (toothbrushes, razors, nail clippers), but this is rare.

Hepatitis C infection can develop in either an acute or chronic form:

Acute hepatitis C develops within the first 6 months. Sometimes, patients have no symptoms, or mild flu-like symptoms may appear.

Chronic hepatitis C – if the virus remains in the body for a long time, it progresses to a chronic form in 80% of cases. This can lead to liver failure, cirrhosis, and liver cancer.

Symptoms of Hepatitis C

Many patients experience the disease without noticeable symptoms, but the following signs may occur:

Chronic fatigue

Loss of appetite

Nausea and vomiting

Pain in the upper right abdomen

Jaundice (yellowing of the skin and eyes)

Abdominal swelling (ascites) and other signs of liver cirrhosis

Due to the slow progression of the disease, people often realize they have it late.

Diagnostic tests for Hepatitis C include:

1. HCV antibody test – indicates if the body has been exposed to the virus.
2. HCV RNA test – confirms the presence of the virus.
3. Liver enzyme test (ALT, AST) – assesses the degree of liver damage.
4. Fibroscan (elastography) or liver biopsy – used to determine the extent of liver damage.

Modern medicine has made Hepatitis C a treatable disease. Today, direct-acting antiviral (DAA) drugs can cure the disease within 8-12 weeks. If chronic Hepatitis C progresses to cirrhosis or liver cancer, a transplant may be required.

There is currently no vaccine for Hepatitis C, but the following preventive measures can help reduce the risk:

Use of sterilized medical and cosmetic equipment

Not sharing needles and syringes

Practicing protected sexual intercourse

Maintaining liver health, avoiding alcohol, and harmful substances

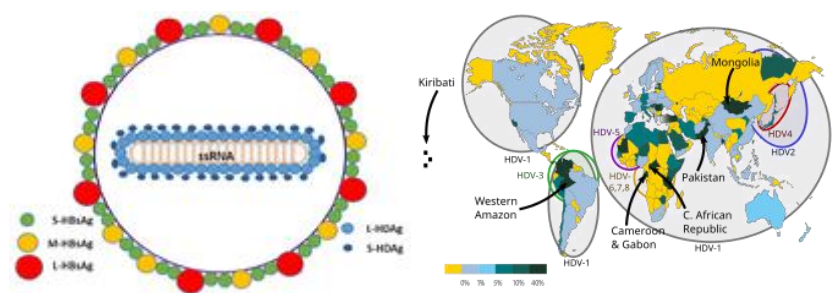
Hepatitis C is a serious disease, and most patients experience it without symptoms for years. However, with modern antiviral medications, it can be completely cured. Timely diagnosis and proper treatment can prevent severe complications of the disease. Therefore, individuals in high-risk groups are advised to regularly undergo tests.

Hepatitis D

Viral Hepatitis D is a liver infectious disease caused by the Hepatitis Delta Virus (HDV). HDV is one of the five known hepatitis viruses: A, B, C, D, and E. HDV is considered a

satellite disease (a type of subviral agent) because it can only spread in the presence of Hepatitis B Virus (HBV). Hepatitis D infection can occur through co-infection with HBV (simultaneous infection) or superinfection in chronic Hepatitis B patients or HBV carriers.

Hepatitis D is one of the rarer but most dangerous types of viral hepatitis, caused by the Hepatitis D Virus (HDV). This virus cannot exist independently in the body and can only develop when Hepatitis B Virus (HBV) is present. Therefore, Hepatitis D is found only in individuals infected with HBV and leads to a more rapid progression of liver diseases.



Hepatitis D has been detected in 12–15 million people worldwide, with its highest prevalence in Central Asia, Africa, the Middle East, and South America. This virus significantly increases the risk of cirrhosis and liver cancer in patients infected with HBV. The Hepatitis Delta virus was initially described in patients with a more severe form of the infectious disease caused by Hepatitis B virus. Hepatitis D infection can occur simultaneously with Hepatitis B infection (co-infection) and is more likely to occur in cases of chronic Hepatitis B (superinfection). In both cases, the disease symptoms are more pronounced than those of Hepatitis B alone. In patients with both Hepatitis B and Hepatitis D, the likelihood of developing end-stage liver failure due to acute infection, rapid progression of cirrhosis, and the addition of hepatocellular carcinoma in chronic infections is significantly higher.

Hepatitis D is a rare but highly dangerous type of viral hepatitis, caused by the Hepatitis D Virus (HDV). This virus cannot exist independently in the body and can only develop in the presence of Hepatitis B Virus (HBV). Therefore, Hepatitis D occurs only in individuals infected with HBV and leads to a more rapid progression of liver diseases.

How does Hepatitis D spread?

Hepatitis D virus spreads through blood, and its transmission routes are similar to Hepatitis B: Use of injectable drugs (non-sterile needles, syringes)

Blood transfusions (if the donor is infected with both HDV and HBV)

Sexual contact (less common, but still a risk)

From mother to child (perinatal transmission)

Through non-sterile medical and cosmetic instruments (tattoos, dental procedures, manicures/pedicures)

Hepatitis D can only develop when Hepatitis B is present. Cirrhosis of the liver is a chronic, progressive disease of the liver, where the liver tissue becomes inflamed, and part of it is replaced by connective tissue. Acute liver inflammation—such as in Hepatitis B, C, D, and during the transition from acute to chronic hepatitis—can also occur in infectious diseases like malaria, tuberculosis, toxoplasmosis, brucellosis, chronic inflammation of the gallbladder and bile ducts, regular poisoning from various chemicals, alcoholism, and other causes.

Cirrhosis of the liver is a slow-progressing chronic disease. Its manifestations vary depending on the stage and form of the disease. Despite the liver becoming hardened and its function impaired, the individual may not notice symptoms for a long time. As the disease progresses, patients become weak, lose weight, lose appetite, become bloated, experience nausea, sometimes vomiting, diarrhea or constipation, abdominal distension, fever, and fluid accumulation in the abdomen (ascites). Nosebleeds, itching of the skin, occasional yellowing, and anemia may occur. The liver, and particularly the spleen, may enlarge and harden. The best protection against this disease is vaccination against HBV.



Conclusion

Hepatitis B, C, and D are dangerous viral diseases that damage the liver and can lead to cirrhosis and liver cancer. These viruses are primarily transmitted through blood and often remain asymptomatic for a long time.

Hepatitis B can be prevented through vaccination, but if it progresses to the chronic stage, the risk of liver failure is high. Hepatitis C currently has no vaccine, but it can be treated in 99% of cases with modern antiviral drugs (DAA). Hepatitis D occurs only in individuals infected with Hepatitis B and is the most rapidly developing and severe form. Efforts are being made to treat it with Peg-Interferon and the new drug Bulevirtide. Liver cirrhosis occurs at the later stages of these viral infections, resulting from liver tissue scarring and the development of liver failure. The final stage of cirrhosis can only be treated with a liver transplant.

Early diagnosis and treatment prevent the severe consequences of the disease!

References:

1. World Health Organization. Global hepatitis report. 2022.

2. European Association for the Study of the Liver (EASL). Clinical practice guidelines for hepatitis B and C.
3. John F. Butterworth, David C. Mackey. "Morgan & Mikhail's Clinical Anesthesiology". 2020.
4. Harrison's Principles of Internal Medicine, 21st Edition.