



**THE ORIGIN, CLINIC, INSTRUMENTAL AND LABORATORY EXAMINATIONS OF
VIRAL HEPATITIS: THE EXAMPLE OF HEPATITIS C.**

Esonturdiyeva M.Y.

Tashkent State Medical University

Annotation: according to the World Health Organization, 130-175 million inhabitants worldwide are infected with hepatitis C (HCV) virus, which causes more than 350,000 deaths each year. Chronic HCV is a major cause of cirrhosis, hepatocellular carcinoma (liver cancer), and the last stage of liver disease. In this article, you will get acquainted with the mechanics of infection of the hepatitis C virus (HCV) into the human body, one of the most dangerous viruses currently, with cases of infestation and inflammation that it produces after infection. You can get information about the changes that the hepatitis C virus (HCV) makes in the blood cells of patients and their pathology.

Keywords: HCV, liver cirrhosis, hepatocellular carcinoma, hepatocyte, ALT, AST, anti-HCV, bilirubin levels, thrombocytopenia, autoimmune hypothyroidism, rheumatoid arthritis, glomerulonephritis, and thyroiditis.

Introduction: Hepatitis C is a viral infection affecting the liver that, upon entering the human body, damages liver cells and disrupts their normal function. Since this disease often proceeds asymptotically, it is often diagnosed late and can lead to serious consequences. Hepatitis C virus (HCV) is a blood-borne virus that causes acute and chronic liver diseases. HCV infection in the liver stimulates the immune system, creating an inflammatory state, which, if prolonged, can lead to cirrhosis of the liver, as well as hepatocellular carcinoma (liver cancer). Approximately 130-175 million people are dying worldwide. He suffers from chronic hepatitis C[1].

The process of Hepatitis C entry into the human body: Mainly consists of sequential stages associated with the entry of Hepatitis C virus (HCV) into liver cells and its multiplication within them.

1. Entry of the virus into the body: HCV is usually transmitted through blood, for example, through infected syringes, unsterilized medical instruments, or sexually. The virus enters the body through blood and attaches to liver cells (hepatocytes).
2. Virus entry into the cell: HCV binds to special proteins (receptors) on the cell surface and enters the cell. This process helps deliver the viral genome to the cell.
3. Virus replication: After the virus enters the cell, its RNA (genetic material) begins to multiply in the liver cell. HCV replicates its RNA using intracellular mechanisms and produces new viral particles. These new viruses leave the cell and try to infect other cells.
4. Weakened immune response: HCV can deceive the immune system and remain hidden in cells for a long time. Therefore, many people may not have any symptoms for years after contracting HCV. Due to the inability of the immune system to fully respond, the virus affects the liver for a long time.
5. Liver damage and inflammation: As the virus multiplies in cells, liver cells are damaged and begin to die. This process leads to inflammation and changes in liver tissues. [2]

Changes in the blood of a person infected with the hepatitis C virus and healthy.

Experiment



Samples were collected at the Dhaka Central International Medical College and Hospital in Bangabandhu.

Sheikh Mujib Medical University (BSMMU), renowned diagnostic center, Islamic Bank Hospital, Dhaka, Bangladesh An experiment was conducted from January 2017 to April 2017 in which the Hepatitis C virus infection caused a number of changes in the human body, which were expressed in different manifestations in the blood of both healthy and sick people. Here are the blood tests for hepatitis C and the differences between healthy and sick people:

In the blood of a healthy person:

1. Total white blood cells (leukocytes): Normally present.
2. Liver enzymes (ALT, AST): Normally - the amount of these enzymes is usually around 7-56 U/L (ALT) and 5-40 U/L (AST).
3. Antibodies against Hepatitis C virus: A healthy person does not have such antibodies.
4. Viral RNA: A healthy person's blood does not contain the RNA of hepatitis C virus.

In the blood of an infected person:

1. Total white blood cells: Usually may be increased or decreased, depending on the duration of infection.
2. Liver enzymes (ALT, AST): The levels of these enzymes may increase, indicating liver damage; high levels may occur.
3. Antibodies against Hepatitis C virus: HCV antibodies (anti-HCV) may be present, which indicates infection.
4. Viral RNA: The RNA of Hepatitis C virus can be detected, which indicates the activity of the infection.[3]

In additional cases:

As the disease progresses, changes such as fibrosis or cirrhosis can occur in the liver.

- An increase in the level of bilirubin in blood plasma is also possible, which is associated with impaired normal functioning of the liver. [4]

- It also leads to a decrease in platelets in blood plasma.

Platelets contribute to blood clotting, that is, they play an important role in stopping bleeding. In thrombocytopenia (a decrease in the number of platelets), this process is disrupted, as a result of which even small injuries can lead to more bleeding. If a rupture or bleeding occurs in patients with varicose veins, a low platelet count exacerbates this process and causes heavy bleeding.[5]

Varicose veins can develop not only in the legs but also in internal organs.

In such cases, the weakened walls of varicose veins facilitate blood flow. If thrombocytopenia is present, bleeding may occur faster and the stopping process may slow down, which increases the risk of internal bleeding. [6]

Moreover, prolonged infection with the hepatitis C virus sometimes leads to the body's attack on its own cells (autoimmune reactions). This condition may be associated with diseases such as autoimmune hypothyroidism, rheumatoid arthritis, glomerulonephritis, and thyroiditis. As a result of HCV infection, the immune system's attack on its own cells leads to systemic inflammation and organ damage. [7.8.9]

It is most distressing that such liver diseases are now occurring not only in adults but also in adolescents or early adult children.[10]

Conclusion: Currently, HCV infection remains the leading cause of chronic liver disease and premature death worldwide. Because untreated hepatitis C leads to cirrhosis, liver failure, and liver cancer. Unfortunately, even with treatment, direct-acting antiviruses (DAAs) treat 9 out of 10 patients with Hepatitis C. To date, no country has found a vaccine against Hepatitis C.



REFERENCES:

1. Centers for Disease Control and Prevention, 2016. Viral Hepatitis - Hepatitis C Information. Hepatitis C FAQs For Health Professionals. Accessed April 26, 2016.
2. Pietschmann, T., Brown, R. J. P. (2019). Hepatitis C virus. *Trends Microbiol.* 27, 379–380. doi: 10.1016/j.tim.2019.01.001
3. IOSR Journal of Nursing and Health Science (IOSR-JNHS) e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 6, Issue 5 Ver. I. (Sep. -Oct .2017), PP 41-45
www.iosrjournals.org
4. Frontiers | The association between hepatitis C virus infection status and blood pressure in adults in the United States: NHANES 1999–2012
<https://www.frontiersin.org/journals/cellular-and-infection-microbiology/articles/10.3389/fcimb.2024.1401323/full#B42>
5. Seeff L.B., Everson G.T., Morgan T.R., Curto T.M., Lee W.M., Ghany M.G., Shiffman M.L., Fontana R.J., Di Bisceglie A.M. and Bonkovsky H.L., 2010. Complication rate of percutaneous liver biopsies among persons with advanced chronic liver disease in the HALT-C trial. *Clinical Gastroenterology and Hepatology*, 8:10:877-883.
6. Karasu Z., Tekin F., Ersoz G., Gunsar F., Batur Y., Ilter T. and Akarca U.S., 2007. Liver fibrosis is associated with decreased peripheral platelet count in patients with chronic hepatitis B and C. *Digestive diseases and sciences*, 52:6:1535-1539
7. Gumbert S.C. and Chopra S., 1995: Hepatitis C: a multifaceted disease: Review of extrahepatic manifestations (Review). *Ann Intern Med*, 123:8:615-620.
8. Cacoub P., Poynard T., Ghillani P., Charlotte F., Olivi M., and Piette J.C., 1999. Extrahepatic manifestations of chronic hepatitis C: MULTIVIRC Group: multidepartment Virus C. *Arthritis Rheum*, 42:10:2204-2212.
9. Nocente R., Ceccanti M., Bertazzoni G., Cammarota G., Silveri N.G. and Gasbarrini G., 2003. HCV infection and extrahepatic manifestations (Review). *Hepatogastroenterology*, 50:52: 1149-1154.
10. Iolascon A., d'Apolito M., Servedio V., Cimmino F., Piga A. and Camaschella C., 2005. Microcytic anemia and hepatic iron overload in a child with compound heterozygous mutations in DMT1 (SCL11A2). *Blood*, 107:1:349-54.