



HEPATITIS: TYPES, TRANSMISSION, PATHOGENESIS, TREATMENT, AND PREVENTION

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Abstract

Hepatitis is an inflammatory disease of the liver primarily caused by viral infections, though autoimmune disorders, toxins, and metabolic conditions may also contribute. Viral hepatitis remains a major global health problem due to its high prevalence and potential progression to chronic liver disease, cirrhosis, and hepatocellular carcinoma. This paper reviews the major types of viral hepatitis, routes of transmission, pathogenesis, clinical features, diagnostic approaches, treatment options, and preventive strategies.

Introduction

The liver plays a crucial role in metabolism, detoxification, and immune regulation. Hepatitis refers to inflammation of hepatic tissue, most commonly resulting from infection with hepatitis viruses A, B, C, D, and E. These viruses differ significantly in epidemiology, transmission pathways, and clinical outcomes. Chronic hepatitis, particularly due to hepatitis B virus (HBV) and hepatitis C virus (HCV), is a leading cause of liver-related morbidity and mortality worldwide.

Types of Viral Hepatitis



Hepatitis A virus (HAV) and hepatitis E virus (HEV) are transmitted primarily via the fecal–oral route, usually through contaminated food or water, and typically cause acute, self-limiting illness. Hepatitis B virus (HBV) and hepatitis C virus (HCV) are transmitted through blood and body fluids, including perinatal transmission, unsafe injections, and sexual contact. Both viruses may cause chronic infection. Hepatitis D virus (HDV) is a defective virus that requires HBV for replication and leads to more severe liver disease in co-infected individuals.

Pathogenesis

Liver injury in viral hepatitis results from both direct viral effects and immune-mediated destruction of infected hepatocytes. Acute infection may resolve spontaneously; however, persistent infection can lead to chronic inflammation, fibrosis, cirrhosis, and hepatocellular carcinoma. HCV and HBV are responsible for the majority of virus-related liver cancers globally.

Clinical Manifestations

Symptoms may include fatigue, anorexia, nausea, abdominal pain, jaundice, dark urine, and pale stools. Many individuals with chronic hepatitis remain asymptomatic for years, with diagnosis often occurring only after significant liver damage has developed.

Diagnosis

Diagnosis is based on serological markers, molecular detection of viral nucleic acids, and liver function tests. Imaging techniques such as ultrasound or elastography and, in selected cases, liver biopsy are used to evaluate disease severity.

Treatment

Acute HAV and HEV infections generally require supportive care only. Chronic HBV infection is managed with nucleos(t)ide analogues or interferon-based therapy to suppress viral replication. HCV infection can now be effectively cured in



most patients using direct-acting antivirals (DAAs). Early treatment significantly reduces the risk of cirrhosis and liver cancer.

Prevention

Effective vaccines are available for HAV and HBV. Preventive measures include safe injection practices, screening of blood products, improved sanitation, health education, and early detection programs. There is currently no vaccine for HCV, making prevention strategies particularly important.

Conclusion

Viral hepatitis continues to pose a substantial global health burden. Expanded vaccination programs, improved access to antiviral therapies, and enhanced public awareness are essential to reduce transmission and prevent long-term complications. Continued research is necessary to develop better diagnostic tools and preventive strategies, especially for hepatitis C.

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