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CLINICAL AND EPIDEMIOLOGICAL ASPECTS OF HEPATITIS C IN CHILDREN WITH HEMATOLOGICAL MALIGNANCIES: A REVIEW

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Abstract

Hepatitis C virus (HCV) infection remains an important healthcare challenge among pediatric patients with hematological malignancies. Although advances in blood donor screening have significantly reduced the incidence of transfusion-transmitted infections, children undergoing treatment for leukemia, lymphoma, and other hematological cancers continue to be at increased risk of HCV exposure. Chronic HCV infection may adversely affect liver function, complicate chemotherapy administration, and influence long-term survival. This review summarizes current data regarding the epidemiology, clinical manifestations, laboratory characteristics, diagnosis, and management of hepatitis C in children with hematological malignancies.

Keywords: hepatitis C virus, children, leukemia, lymphoma, hematological malignancies, chronic hepatitis C, epidemiology, pediatric oncology.

Introduction. Hepatitis C virus infection is one of the leading causes of chronic liver disease worldwide. Although the prevalence of HCV infection among children is lower than in adults, pediatric patients with hematological malignancies remain a vulnerable population due to frequent blood transfusions, intensive chemotherapy, and prolonged immunosuppression [1]. The introduction of effective blood screening programs has reduced transmission rates; however, HCV infection continues to be detected among survivors of

childhood cancer and remains an important cause of chronic liver disease in this group [2].

Epidemiology. The prevalence of HCV infection among children with hematological malignancies varies considerably between countries. Earlier studies reported infection rates ranging from 15% to 50% among children receiving repeated blood transfusions before implementation of routine donor screening [3]. Children with acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), Hodgkin lymphoma, and non-Hodgkin lymphoma have historically demonstrated the highest prevalence of HCV infection because of extensive transfusion requirements [4].

Recent studies indicate a substantial decline in incidence; nevertheless, chronic HCV infection remains a concern among long-term survivors of childhood cancer [5].

The major risk factors associated with HCV infection in pediatric oncology patients include: multiple blood transfusions; bone marrow transplantation; prolonged chemotherapy; central venous catheterization; repeated invasive procedures [6]. Immunosuppression resulting from antineoplastic therapy may facilitate viral persistence and progression to chronic infection.

Clinical manifestations are often mild or absent. Most infected children remain asymptomatic for many years [2]. Common clinical findings include: hepatomegaly, fatigue, mild abdominal discomfort, elevated liver enzymes.

In some patients, chronic hepatitis may progress to significant hepatic fibrosis during long-term follow-up [7].

Diagnosis relies on serological and molecular methods. The primary laboratory investigations include: Anti-HCV antibodies; HCV RNA detection by PCR; Alanine aminotransferase (ALT); Aspartate aminotransferase (AST);

Liver fibrosis assessment. PCR remains the most sensitive method for confirming active infection, especially in immunocompromised children who may have delayed antibody production [8]. Several studies have shown that elevated ALT levels correlate poorly with the severity of liver injury, emphasizing the importance of comprehensive diagnostic assessment [4].

Impact on Oncological Outcomes. Chronic hepatitis C may influence cancer treatment through hepatotoxicity and treatment interruptions. Liver dysfunction can limit the use of certain chemotherapeutic agents and increase the risk of adverse effects [6]. Long-term studies suggest that successful management of HCV infection contributes to improved quality of life and reduces the risk of chronic liver disease among childhood cancer survivors [7,9,10].

Modern Therapeutic Approaches. The development of direct-acting antiviral agents (DAAs) has dramatically improved treatment outcomes. Current therapeutic regimens achieve sustained virological response rates exceeding 95% in pediatric patients [8]. Modern treatment strategies allow safe antiviral therapy in children and may prevent progression to cirrhosis and other long-term complications.

Conclusion

Hepatitis C remains an important clinical problem among children with hematological malignancies despite significant improvements in transfusion safety. Early diagnosis, careful monitoring, and timely antiviral therapy are essential for preventing chronic liver disease and improving long-term outcomes. Continued surveillance and multidisciplinary collaboration are necessary to optimize the care of pediatric oncology patients affected by HCV infection.

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