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HISTOLOGICAL CHANGES IN THE LIVER IN VIRAL HEPATITIS B AND C

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Abstract:

Viral hepatitis B and C are among the most common causes of chronic liver diseases worldwide and remain a serious public health problem. These infections lead to progressive liver damage, which may result in fibrosis, cirrhosis, and hepatocellular carcinoma. Histological examination of liver tissue plays a crucial role in assessing the degree of inflammation, necrosis, and fibrotic changes caused by hepatitis B virus (HBV) and hepatitis C virus (HCV). This article analyzes the main histological alterations observed in the liver during viral hepatitis B and C, highlighting similarities and differences in pathological changes. Particular attention is given to inflammatory activity, hepatocellular degeneration, fibrosis progression, and architectural remodeling of liver tissue. The study emphasizes the importance of histological evaluation for disease staging, prognosis, and selection of appropriate therapeutic strategies.

Keywords: viral hepatitis B, viral hepatitis C, liver histology, fibrosis, inflammation, hepatocellular damage.

Viral hepatitis B and C are significant causes of chronic liver disease and liver-related morbidity and mortality worldwide. Despite advances in antiviral therapy and preventive measures, these infections continue to pose major challenges to healthcare systems. Both hepatitis B virus (HBV) and hepatitis C virus (HCV) primarily affect hepatocytes, leading to a wide range of structural and functional changes in liver tissue. Histological assessment of the liver remains a key diagnostic tool for evaluating the severity and progression of viral hepatitis. Liver biopsy allows for detailed analysis of inflammatory activity, necrotic processes, and fibrotic transformation, providing valuable information on disease stage and prognosis. Although hepatitis B and C share common pathological features, they also demonstrate distinct histological patterns reflecting differences in viral replication mechanisms and immune-mediated liver injury. Understanding histological changes in the liver during viral hepatitis B and C is essential for accurate diagnosis, monitoring disease progression, and optimizing treatment strategies. Therefore, this article aims to review and analyze the characteristic histological alterations associated with these viral infections.

Histological changes in the liver during viral hepatitis B and C reflect the complex interaction between viral replication and the host immune response. The severity and pattern of these changes vary depending on the type of virus, duration of infection, and individual immune mechanisms. Liver biopsy remains a valuable method for identifying these alterations and assessing disease activity. In viral hepatitis B, histological findings are primarily associated with immune-mediated hepatocellular injury. Common features include portal and periportal inflammation with infiltration of lymphocytes, plasma cells, and macrophages. Hepatocellular necrosis and apoptosis are frequently observed, particularly in the periportal regions, leading to interface hepatitis. A characteristic histological feature of hepatitis B is the presence of "ground-glass" hepatocytes, which result from the accumulation of hepatitis B surface antigen (HBsAg) within the cytoplasm of liver cells. These changes indicate active viral replication and chronic infection. Fibrosis development in hepatitis B occurs as a consequence of persistent inflammation. Initially, fibrotic changes are confined to portal areas; however, with disease progression, fibrous septa extend into the hepatic lobules, disrupting normal liver architecture. Advanced stages may result in bridging fibrosis and eventually cirrhosis, characterized by regenerative nodules and significant architectural distortion.

In contrast, viral hepatitis C demonstrates distinct histological patterns. Portal inflammation is usually mild to moderate, but lymphoid aggregates or follicles within portal tracts are considered a characteristic feature of chronic hepatitis C. Lobular inflammation and hepatocellular degeneration, including ballooning

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degeneration and acidophilic bodies, are commonly observed. Steatosis, particularly macrovesicular fatty change, is more frequently associated with hepatitis C and is believed to be related to both viral and metabolic factors.

Fibrosis in hepatitis C typically progresses slowly but steadily over time. Early fibrotic changes begin in the portal regions and gradually extend into periportal and lobular areas. Chronic infection may ultimately lead to cirrhosis, increasing the risk of hepatocellular carcinoma. The rate of fibrosis progression is influenced by factors such as age, alcohol consumption, co-infections, and metabolic disorders. Comparative histological analysis of hepatitis B and C reveals both overlapping and distinct features. While both conditions involve chronic inflammation, hepatocyte injury, and fibrogenesis, hepatitis B is more often associated with prominent necroinflammatory activity, whereas hepatitis C shows characteristic lymphoid aggregates and steatosis. These differences are important for differential diagnosis and understanding disease pathogenesis.mHistological evaluation provides essential insights into the activity and stage of viral hepatitis B and C. Despite the growing use of non-invasive diagnostic methods, liver histology remains a gold standard for detailed assessment of liver tissue changes and plays a crucial role in guiding clinical management and therapeutic decisions.

CONCLUSION

In conclusion, viral hepatitis B and C cause significant histological alterations in the liver as a result of persistent viral infection and immune-mediated injury. These changes include varying degrees of inflammation, hepatocellular degeneration and necrosis, as well as progressive fibrosis that may ultimately lead to cirrhosis and hepatocellular carcinoma. Although hepatitis B and C share common pathological features, each infection demonstrates distinct histological patterns. Hepatitis B is characterized by prominent necroinflammatory activity and the presence of ground-glass hepatocytes, whereas hepatitis C commonly shows lymphoid aggregates, steatosis, and a more gradual progression of fibrosis. Recognition of these differences is essential for accurate diagnosis and disease staging. Histological evaluation of liver tissue remains a crucial tool in assessing disease activity, predicting prognosis, and guiding therapeutic decisions in patients with viral hepatitis. Despite the increasing use of non-invasive diagnostic techniques, liver biopsy continues to provide valuable information on the severity and progression of hepatic damage. Therefore, understanding histological changes in viral hepatitis B and C is fundamental for improving clinical management and patient outcomes.

REFERENCES

1. Alter MJ. Epidemiology of hepatitis C virus infection. World J Gastroenterol. 2007;13(17):2436–41.
2. Tandon BN, Acharya SK, Tandon A. Epidemiology of hepatitis B virus infection in India. Gut. 1996;38(Suppl 2):S56–9.
3. Goldin RD, Goldin JG, Burt AD, Dhillon PA, Hubscher S, Wyatt J, Patel N. Intra-observer variation in the histopathological assessment of chronic viral hepatitis. Journal of hepatology. 1996 Nov 1;25(5):649-54.
4. Goodman ZD. Grading and staging systems for inflammation and fibrosis in chronic liver diseases. J Hepatol. 2007;47(4):598–607.
5. Ishak K, Baptista A, Bianchi L, Callea F, De Groote J, Gudat F, et al. Histological grading and staging of chronic hepatitis. J Hepatol. 1995;22(6):696–9
6. Bedossa P, Poynard T; The METAVIR Cooperative Study Group. An algorithm for the grading of activity in chronic hepatitis C. Hepatology. 1996;24(2):289–93