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## Viral-Associated GN: Hepatitis B and Other Viral Infections

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### Abstract

By definition, viral-associated GN indicates the direct pathogenic relationship between active viral replication and the development of acute GN. This definition is in sharp contrast to the semantic label and pathophysiologic foundation behind postinfectious GN that uniquely develops only during a period of resolved and absent active infection. The primary example of postinfectious GN are the glomerular lesions described after a pharyngeal or cutaneous streptococcal infection and do not represent the clinical or immunologic pattern seen with viral-associated GN. Hepatitis B (HBV) is the most common chronic viral infection in the world affecting >400 million people which is more than double the prevalence of chronic HIV and hepatitis C carriers combined. In addition, 10%–20% of HBV patients may be coinfecting with hepatitis C and 5%–10% will have coinfection with HIV. Being able to distinguish the different types of GN seen with each viral infection is essential for the practicing clinician as each virus requires its own specific antiviral therapy. HBV-induced immune complex disease with renal injury lies on one end of the spectrum of disorders that occurs after a prolonged chronic carrier state. On the opposite end of the spectrum are renal diseases that develop from acute or subacute viral infections. One important glomerular lesion in this category is the association of collapsing FSGS with acute active cytomegalovirus, Epstein-Barr virus, and parvovirus B19 infection. The data supporting or disproving this relationship for each of these viruses will be discussed. A second renal manifestation of acute viral infections often occurs with many different sporadic or epidemic infections such as dengue and hantavirus and can lead to a transient proliferative GN that resolves upon viral clearance. The complex interplay of HBV and all viruses with the immune system provides conceptual lessons on the pathophysiology of immune complex GN that can be applied to all infection-related renal disease and plays an integral role in developing an approach to therapeutic intervention.

**Viral-Associated Glomerulonephritis** **Hepatitis B virus**

**glomerular disease** **Antigen-Antibody Complex** **Antiviral Agents**

**Carrier State** **Coinfection** **cytomegalovirus** **Dengue**

**glomerulonephritis** **HIV Infections** **Hantavirus** **Hepatitis C**

**Herpesvirus 4** **Human** **Humans** **Immune Complex Diseases**

**Immune System** **Parvovirus** **Prevalence** **Semantics**

**Streptococcal Infections**

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