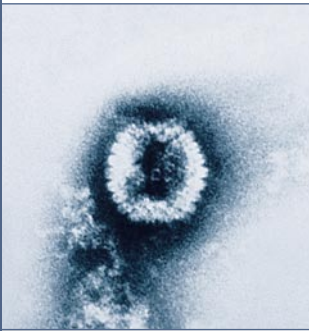


Human Herpesvirus 7 Overview

ABOUT THE VIRUS

Human herpesvirus 7 (HHV-7), a member of the Herpesviridae family, was discovered in 1990. It is a member of the Betaherpesvirinae subfamily, along with HHV-6 and cytomegalovirus (CMV). Of the three viruses, HHV-7 is the least pathogenic. Other viruses in the herpesvirus family that infect humans include: HSV-1, HSV-2, CMV, EBV, HHV-6, HHV-7 and HHV-8. All are linear, double-stranded DNA viruses that have a lipid envelope and share the ability to establish lifetime latency in their host following infection. HHV-7 establishes its latency in lymphocytes.



Transmission electron micrograph of a virus member from the Herpesviridae family. Image courtesy of CDC.

CLINICAL MANIFESTATIONS

Similar to HHV-6, an HHV-7 primary infection causes roseola infantum in infants and young children, an undifferentiated, febrile illness that typically lasts about 6 days. Symptoms include a rash on the neck and trunk, mild upper respiratory infection and cervical lymphadenopathy. Complications include febrile seizures, meningitis, encephalitis, and neurological complications in individuals with active CNS infection. Otitis and gastroenteritis have also been reported in these patients.

HHV-7 is typically acquired prior to age 5 and thought to affect over 95% of the population. After primary infection, HHV-7 establishes latency in the host, predisposing individuals to reactivation during periods of time when their immune systems are not functioning properly.

As a result of a high prevalence rate of HHV-7 in the general population, it is thought that viral reactivation or enhancement of replication takes place after a transplant, due to the significantly immunocompromised nature of the patient immediately post-transplant.

Reactivation typically takes place within 2-8 weeks following the transplant. Post-transplant infections have been documented in a wide variety of transplant patients, including both solid organ and hematopoietic stem cell transplant (HSCT) patients. The incidence of HHV-7 infections post liver transplantation has been reported to be as high as 45%.

The role of HHV-7 in transplant patients is not clearly defined, although there is mounting evidence that the effects of HHV-6 and HHV-7 reactivation in transplant patients may be mediated by their interaction with CMV. Co-infection with these three viruses is being evaluated on an ongoing basis to fully define their roles in predisposing transplant patients to illnesses caused by CMV infections. HHV-7 may also facilitate other opportunistic infections, such as fungal infections. Some studies have linked reactivation of HHV-7 with episodes of acute rejection.

LABORATORY DIAGNOSIS

Serology is not a useful diagnostic tool because of the high prevalence of HHV-7 in the population. HHV-7 can be cultured in specialized diagnostic virology laboratories, however, due to the appearance of HHV-7 infection as a possible precursor to CMV reactivation, a more timely and sensitive method of diagnosis is warranted. Quantitative real-time PCR testing is a rapid and sensitive alternative to culture for HHV-7; allowing for monitoring of overall viral burden (viral load) and can be used to monitor the infection over time and the response to intervention.

TREATMENT

There is little data available regarding the use of antiviral drugs to prevent or treat HHV-7 infection post-transplantation. Some in vitro studies suggest that ganciclovir may have limited effectiveness.

Selected References

- Caserta MT, Mock DJ, Dewhurst S. Human herpesvirus 6. *Clin Infect Dis*. 2001;(33):1-5.
- Emery VC. Human herpesvirus 6 and 7 in solid organ transplant recipients. *Clin Infect Dis*. 2001;(32):1357-1360.
- Griffiths PD, Clark DA, Emery VC. β -Herpesviruses in transplant recipients. *J Antimicrobial Chemo*. 2000;(45):29-43.
- Knipe D, Howley P. *Fields Virology*. 5th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2006.
- Ljungman P. β -Herpesvirus challenges in the transplant recipient. *J Infect Dis*. 2002;186(Suppl 1):S99-109.
- Razonable RR, Paya CV. The impact of Human herpesvirus-6 and -7 infection on the outcome of liver transplantation. *Liver Transplant*. 2002;(8):651-658.
- Stoeckle MY. Human herpesvirus 6 and Human herpesvirus 7. In: *Mandell GL, Bennett JE, Dolin, eds. Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases*. Vol 2. 4th ed. New York, NY: Churchill Livingstone; 1995:1377-1379.