

Herpesviridae

Herpesviruses are morphologically similar, with a double stranded DNA core and an icosahedral capsid, surrounded by a granular zone composed of globular proteins (tegument) and encompassed by a lipid envelope. Viral replication and encapsidation occur in the nucleus. Intranuclear inclusion bodies are a characteristic feature of infection.

Gallid Herpesvirus 1 (Infectious Laryngotracheitis Virus)

Infectious laryngotracheitis virus (ILTV) usually occurs as an acute disease in chickens. The virus produces signs of respiratory distress and coughing that often produce a bloody discharge. ILTV is primarily a disease of chickens and is most common in birds 4–18 months of age.

Etiologic Agent

ILTV is a typical alphaherpesvirus that is also designated as gallid herpesvirus 1 (GaHV-1). There is one serotype of the virus, but genetic variation occurs among strains from different regions.

Reservoir and Transmission

Chickens are assumed to be the primary reservoir and mode of transmission, which occurs by direct contact through droplet infection of the ocular and respiratory secretions. Mechanical transmission can occur via contaminated equipment and litter. Egg transmission of ILTV has not been demonstrated. A carrier state can develop in birds with sublethal disease, and ILTV has been isolated from chickens 2 years after infection.

Pathogenesis

ILTV in natural conditions enters through the upper respiratory tract and eye. In the natural disease, the greatest concentration of ILTV is found in the trachea, and the virus replicates only in the nasal cavity, trachea, and lower respiratory tract. Viremia has not been reported.

Laboratory Diagnosis

Virus can be isolated from tracheal and lung tissue in embryonated chicken eggs, cell culture, and ILTV DNA can be demonstrated by PCR. ELISA-based serology is widely used.

Gallid Herpesvirus 2 (Marek's Disease Virus)

Gallid herpesvirus 2 (GaHV-2) is an alphaherpesvirus, and virulence varies greatly among strains.

Disease

Marek's disease (MD) may involve numerous tissues. Most frequently peripheral nerves are affected. Progressive paralysis of one or more extremities, incoordination, drooping wings, and lowered head position are the most common signs of MD. Mortality varies from 10% with mild MD to more than 50%. MD is a major disease of domestic chicken flocks worldwide. The virus is not transmitted *in ovo*

Laboratory Diagnosis

On necropsy, gross lesions are common in peripheral nerves and the spinal roots. Confirmatory diagnosis is made by viral isolation or by antigen detection using

fluorescent antibody, or by detection of viral DNA by PCR. Antibodies can be detected by ELISA assays.

Prevention and Control

Commercial vaccines are available and have been effective in reducing the incidence of MD. Vaccination does not prevent infection or shedding of virulent MDV, but it does prevent tumor formation, particularly in visceral organs. Peripheral nerve lesions continue to occur, but at reduced rates. Turkey herpesvirus strains are antigenically related viruses that have been routinely used for vaccination, but the emergence of more virulent strains of GaHV-2 has resulted in vaccine failures.