

Mouse Cytomegalovirus (MCMV)

Classification

DNA virus, enveloped

Family

Herpesviridae

Affected species

Mice

Frequency

Rare in laboratory mice, common in wild mice.

Transmission

The virus is excreted in tears, saliva, and urine. Vertical transmission may occur. Natural infections are localized to the salivary glands.

Clinical Signs and Lesions

No clinical signs are seen in natural infections. The submandibular salivary gland is the primary site of lesions; other salivary glands are rarely involved. Latent infections occur in many tissues, however, related to the viremia of a primary infection. Lesions in natural infections are limited to the salivary glands and infected animals show the characteristic cytomegalic changes with eosinophilic intranuclear and intracytoplasmic inclusion bodies. There may be subtle CNS and myocardial involvement in some strains of mice. Susceptibility to infection is related to age, strain of mouse, and immunocompetency.

Diagnosis

Diagnosis of MCMV may be accomplished through serology (ELISA, IFA, MFIA™) or PCR.

Interference with Research

Natural MCMV infection has not been shown to interfere

with research in any significant fashion. However, experimental inoculation of the virus into mice has been shown to affect the immune system, the reproductive system, and the hematopoietic system.

Prevention and Treatment

Wild mice are the principal virus reservoir and animal houses should be equipped with anti-rodent barriers. Wild-caught mouse colonies should be isolated from laboratory mice and rederived as soon as possible. Regular testing of colonies for antibodies to MCMV should be part of routine health monitoring. Since this is not a common infectious agent among laboratory mice, testing frequency should be determined by the institution. Autoclaving, formalin treatment, and disinfectants effective against herpesviruses will all inactivate MCMV, as will dessication or detergents.

In general, depopulation and restocking with MCMV-free animals is recommended in cases of MCMV infection. Since MCMV spreads through direct contact, strict adherence to microisolator caging technique may keep an outbreak limited to a small number of cages. Vertical transmission is possible, so embryo transfer rederivation allows for a better chance of success than hysterectomy rederivation.

References

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