Background:

Mouse Hepatitis Virus, a coronavirus specific to mice, is a highly contagious disease, although it does not persist in the environment.

MHV is transmitted via aerosols, fomites, and direct contact. It can also contaminate cell cultures and transplantable tumors and be introduced into colony mice via those routes. Infection in immunocompetent mice is usually asymptomatic, but depends on the mouse's age and strain, and the tropism/virulence of the infecting virus strain.

MHV has two types of tropism- respiratory/polytropic and enterotropic. The polytropic strains are uncommon in natural infections but are more likely to contaminate cell lines and tumors. After the initial replication in nasal mucosa, polytropic strains disseminate to other organs, particularly the liver and lymphoid organs. Enterotropic strains are more commonly found in mouse colonies and infection is limited to the intestines with high viral shedding in the feces. For either tropism, disease is more severe in immunodeficient mice where it can also cause a chronic carrier state.

Serology for *MHV* is sensitive and specific, however transmission to sentinel mice via dirty bedding transfers may be less reliable and seroconversion may not always occur. PCR testing of feces is best for immunodeficient mice due to the prolonged shedding periods.

Research Effects:

The effects of this virus on research are numerous, particularly in immunodeficient mice. Since *MHV* infects the lymphatic system, it can have significant and prolonged effects on immune responses including modulating the course of other viral, bacterial, and parasitic infections. It may also modify the hepatic enzyme system, produce anemia, leukopenia and thrombocytopenia, and decrease the incidence of diabetes in susceptible strains.

Control/Prevention:

Every attempt is made to only acquire animals from approved vendors with documented histories of *MHV*-free mice and all researchers using mouse origin materials are strongly urged to perform testing on those tissues prior to introduction into experimental mice. When *MHV* is detected in the colony, immediate quarantine procedures are put into place. Depopulation and decontamination of affected rooms is the ideal treatment, however, other options are discussed with affected researchers and prolonged quarantine and/or test and cull procedures may be decided upon in certain cases.

References:

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