

Background:

Laboratory mice are susceptible to infections with two Parvoviruses, *Minute Virus of Mice (MVM)* and *Mouse Parvovirus-1 (MPV)*. *MPV* is more common at 75% prevalence and dual infections may be present as well.

Parvoviruses appear to be transmitted in feces and urine via oronasal exposure with a slow rate of cage-to-cage spread and have tropism for dividing tissues. The mouse virus differs from parvoviruses of other species in that clinical GI disease is not a feature in mice. Following oral inoculation, the virus spreads to intraepithelial lymphocytes and intestinal endothelium and then disseminates to multiple organs including kidney, lymphoid tissue, liver, lung, hematopoietic cells, and lymphoreticular cells. *MVM* is usually limited in duration in infant and adult mice, while *MPV* typically persists, although juvenile mice are thought to transmit the virus more efficiently than adults.

Natural infection of immunocompetent or immunocompromised mice is clinically silent at all ages and is usually only diagnosed via seroconversion. Experimental infection of neonates of some strains such as BALB/c, SJL, CBA, and C3H mice may lead to mortality, although B6 neonates are resistant to disease. Diagnosis can be challenging due to the slow transmission rate and the relative insensitivity of serological tests so care must be taken when introducing new mice into resident colonies.

Research Effects:

MVM is a common contaminant of transplantable tumors and care must be taken to prevent introduction into a colony via infected cell lines.

MVM also has the potential to induce oncolysis as well as immunosuppression.

MPV can cause significant immune disruption including aberrant T-cell proliferation and function, and acceleration of T-cell-mediated rejection of tumors and skin grafts.

Prevention/Control:

Every attempt is made to only acquire animals from approved vendors with documented histories of parvovirus-free mice. Mice coming in from other institutions or non-approved vendors may undergo an extended quarantine and test period. Mice being taken out of the LAR animal spaces to an investigator laboratory for treatments/procedures are kept in a separate holding area and are not returned to the general colony areas.

When parvovirus is detected in a room via our dirty-bedding sentinel program, investigators are consulted to develop an eradication plan. The option of choice is to depopulate. However, this is often not practical and we allow for natural attrition as animals finish on study with the addition of containment controls, including increased PPE, autoclaving materials, showering before entering any other animal spaces, and discontinuation of any breeding.

References:

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Percy DH, Barthold SW. *Pathology of Laboratory Rodents and Rabbits*. Ames: Iowa State University Press; 2007.