

Sialodacryoadenitis Virus (RCV, SDAV)

Classification

RNA virus, enveloped

Family

Coronaviridae

Affected species

Rats

Frequency

Uncommon in modern laboratory animal facilities, but common in pet rats; the prevalence in wild rat populations is unknown.

Transmission

Sialodacryoadenitis virus (SDAV) is transmitted via aerosol or contact with infected nasal or salivary secretions. The virus is highly infectious. The virus does not persist in immunocompetent hosts.

Clinical Signs and Lesions

Most rats will show clinical signs within a few days of their first exposure to SDAV. SDAV has a tropism for tubuloalveolar glandular tissue of serous or mucous/serous glands. Consequently, SDAV infection results in damage to lacrimal, salivary, and Harderian glands. In epizootic infections, animals present with sniffing, sneezing, photophobia, chromodacryorrhea, and submandibular swelling. Morbidity is high, but mortality is low. In enzootically infected colonies, clinical signs are absent or very mild. Sequelae to SDAV infection include megaloglobus, corneal ulceration, and hyphema secondary to the damage to the lacrimal glands. Other strains, historically referred to as rat coronavirus (RCV), have a respiratory tropism and can cause inflammation, generally mild, of the respiratory tract from the nose to the lungs. Immunodeficient rats can be persistently infected, and the infection presents with severe clinical signs and may be fatal.

Diagnosis

Enzootic SDAV infections are usually diagnosed by the use of serology (ELISA, IFA, MFIA™). Epizootic infections may be diagnosed by a combination of the pathognomonic

clinical signs and histopathology in animals in the first week of infection, and serology after 7-10 days of infection. PCR is also available for salivary or lacrimal tissue of acutely infected rats.

Interference with Research

Naïve animals infected with SDAV become ill, rendering them unfit experimental subjects. Animals are usually anorectic and lose weight. SDAV may affect reproduction by increasing pre- and post-natal mortality. Post-infection, animals may have damage to the eyes as a consequence of diminished tear production. Active SDAV infection predisposes to anesthetic-related mortality.

Prevention and Treatment

Strict control of movement of animals, materials, and people into the animal house is useful in preventing contamination with SDAV. Regular serologic testing of resident animals and quarantine of suspect incoming animals is advised.

If an SDAV infection is detected in an animal facility, depopulation, thorough cleaning, and restocking is recommended. As an enveloped virus, it probably does not remain infectious in the environment for more than a few days and is susceptible to detergents, disinfectants, drying, and ethanol. If animals must be kept, euthanasia of all non-essential animals and a strict quarantine (negative pressure isolators work well in this case) is recommended until the animals can be rederived. Hysterectomy rederivation or embryo transfer are recommended to rederive infected colonies. "Burn out" of an SDAV infection through deliberate spread of infection and cessation of breeding until all rats are infected and have had time to clear the virus has also been shown to be effective for immunocompetent rats.

References

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