

CILIA-ASSOCIATE RESPIRATORY BACILLUS

Cilia-associated respiratory (CAR) bacillus is a recently identified pathogen of rats, mice and rabbits. It is a gram-negative filamentous rod shaped bacteria of uncertain classification. Recent studies suggest that the rat and rabbit strains are distinct.

Transmission

CAR bacillus is transmitted via aerosol contact of the respiratory system. In rats, it is usually found with *Mycoplasma pulmonis* infections. However, it can cause disease alone.

Clinical Signs

In rats, clinical signs include hunched posture, lethargy, rough coat, and periocular porphyrin staining.

Diagnosis

Diagnosis is usually based on serology, via ELISA or IFA or both. The diagnosis can be strengthened by demonstration of typical lesions in clinically ill animals. Culture of this bacteria is not successful in cell-free media.

Effects on Research

The effects of CAR bacillus on research are not well characterized. However, it can cause increased morbidity and mortality of animals in a colony, interfering with research results. Given the significant clinical signs and respiratory lesions associated with CAR bacillus infection, one may expect that infection could compromise studies of the respiratory system.

Prevention

To prevent this disease, obtain replacement stocks from sources that are known to be free of disease. Personnel working with infected animals should not enter rooms that contain naïve animals. All animals should be placed in microisolator caging environments that are handled with the aid of a laminar flow hood using sterile techniques during handling and observation of the animals.

Eradication

The most effective way to eradicate CAR bacillus infections is to cull the colony and obtain clean replacement stock. However, this is not always a feasible option when working with valuable mice. Caesarian rederivation or embryo transfer can be used to produce offspring that have not been exposed to the virus. Repeated serological evaluations should be performed prior to reintroduction of the mice into a naïve population. A breeding

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moratorium of at least 8 weeks can also be used to prevent the spread of the virus from young weanling animals to younger naïve animals. The animals should be housed in microisolator caging and handled with standard microisolator techniques. This method requires repeated serologic testing and strict adherence to a zero tolerance for breeding policy. It is important to note that transgenic and knockout mice often have altered immune systems that may allow them to sustain the infection for longer periods of time or to develop a carrier state. In these cases, the breeding moratorium would not be the appropriate means of eradication.

References

- Baker, 13G. 1998. "Natural Pathogens of Laboratory Mice, Rats, and Rabbits and Their Effects on Research." *Clinical Microbiology Reviews*. 11:231-266.
- Ganaway, JR. 1986. "Isolation of a newly recognized respiratory pathogen of laboratory rats: The CAR bacillus." Bhatt, PN et al. Academic Press, Inc. pp. 131- 136