charles river
accelerating drug development. exactly.

Pasteurella multocida

Classification

Small, Gram-negative rod, bipolar staining

Family

Pasteurellaceae

Part of a larger group of bacteria, the *Pasteurella-Haemophilus-Actinobacillus* complex. The taxonomy of this group is complex and incomplete. Additionally, the members are not all readily speciated by biochemical means.

Affected species

Most mammals can carry *P. multocida*. Of laboratory animals, rabbits are the most severely clinically affected. This organism can infect humans.

Frequency

Uncommon in well-managed rabbit colonies, although sporadic outbreaks occur; carriage is common in pet rabbits, dogs, cats, and livestock. *P. multocida* is rare in laboratory rats and mice. In our experience, occasional initial reports of isolation of *P. multocida* in rats and mice are later found to be incorrect, often when samples from laboratory rodents were processed at a laboratory focused on diagnosis of pet and livestock diseases.

Transmission

P. multocida is transmitted from rabbit to rabbit by direct contact, aerosol, and fomite. Vaginal infection with *P. multocida* is possible, so newborns may become infected at birth, or via direct contact with an infected doe.

Clinical Signs and Lesions

Rabbits can carry *P. multocida* with no clinical signs. The organism is usually carried in the nasopharynx. Many factors can cause an animal to move from carrier state to active infection, and susceptibility to active disease may be affected by pregnancy, genetic makeup, nutrition, husbandry, and stress.

Infection with *P. multocida* may be acute, subacute, or chronic. A survey of clinical signs associated with pasteurellosis in laboratory rabbits showed rhinitis, conjunctivitis, abscesses, and otitis media as the most common presenting signs. Septicaemia, bronchopneumonia, genital infection, arthritis, osteomyelitis, and dacryoadenitis are also possible, as are infections of skin wounds, such as catheter tracts.

The typical presentation of a *P. multocida* infection in a rabbit is a catarrhal or mucopurulent nasal exudate. The exudate may not be visible at the external nares, and in many cases, matted fur around the nares and on the front paws are the only signs noted. Lesions found in target organs noted above can be generally categorized as suppurative at necropsy.

Diagnosis

P. multocida may be diagnosed via culture, PCR, or serology. The nasopharyx is difficult to sample in conscious rabbits, and carrier animals may have negative culture results, due to carriage of the organism in the middle ear or the paranasal sinuses. Serology is available, but does not diagnose active infection. Additionally, because of the antigenic complexity of bacteria, as well as the unresolved taxonomic status of many *Pasteurellaceae*, serology for these bacteria is more likely to produce false positives than is viral serology. Positive serologic results should be confirmed prior to any action.

Interference with Research

P. multocida infection has the potential to interfere with a wide variety of research. Carriers of *P. multocida* are generally not suitable for use in research. Animals with this infection may be clinically ill, rendering them unfit for use. *P. multocida* may disseminate widely in the host and affect a number of organ systems. Routine experimental manipulations of an animal carrying *P. multocida* may result in clinical disease or unanticipated mortality. Other influences of *P. multocida* on the rabbit host have not been described in the literature, although they are undoubtedly present, based on work performed in birds and swine.

Prevention and Treatment

Prevention of *P. multocida* infection consists of exclusion of *P. multocida* carriers from the animal facility. Quarantine or rederivation of incoming animals may be particularly valuable in this respect. Exclusion of pet animals from animal facilities is also important. *P. multocida* is a fragile organism, which does not survive long outside a host (<24 hours in transport media at room temperature).

Treatment is possible, but it is unlikely that antibiotic treatment will resolve a carrier state, especially when the sites of *P. multocida* carriage are considered. Embryo transfer or hysterectomy rederivation may be used to rederive a *P. multocida*-infected colony.

Due to its fragility in the environment, stringent environmental decontamination is not necessary. Regular cleaning and the use of a high-level disinfectant should suffice to rid the environment of *P. multocida*.

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