

Pasteurella pneumotropica

Classification

Gram-negative coccobacillus

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

Rats and mice are the primary carriers, although guinea pigs, hamsters, and gerbils may also be infected.

Frequency

Common in laboratory populations. Prevalence in the wild is unknown, although likely to be common.

Transmission

P. pneumotropica is transmitted by direct contact with infected animals or their secretions. Humans are not commonly carriers, nor does the organism multiply or live for long periods in the environment.

Clinical Signs and Lesions

Infection of immunocompetent and most immunodeficient animals with *P. pneumotropica* is asymptomatic. Rarely, clinical signs are seen if infected animals are stressed, or, as with any other opportunistic agent, there is a convenient port of entry. Nude mice with *P. pneumotropica* may develop retrobulbar abscesses of the lacrimal gland, sometimes associated with a penetrating foreign body. *P. pneumotropica* has been found associated with conjunctivitis, rhinitis, otitis, and cervical lymphadenitis in mice and rats. In immunosuppressed animals infected with *Pneumocystis* or other pathogens, *P. pneumotropica* co-infection may lead to suppurative bronchopneumonia. Co-infection with *P. pneumotropica* has been shown to exacerbate respiratory disease in mice with *Mycoplasma* or Sendai virus infections.

Diagnosis

P. pneumotropica is best detected by culture or by specific PCR. Cultures should be taken from the usual colonization sites: the nasopharynx, the vagina, and the intestines. *P. pneumotropica* may also be isolated from the conjunctiva in some cases. Screening mice via serology is not recommended, as animals with subclinical infections are often negative via serology, and animals infected with other Pasteurellaceae may show cross-reactivity.

Interference with Research

Animals carrying *P. pneumotropica* may be suitable for research, unless clinically ill. This is an organism best excluded from colonies of immunodeficient animals, however.

Prevention and Treatment

Prevention of *P. pneumotropica* infection consists of exclusion of *P. pneumotropica* carriers from the animal facility. Quarantine or rederivation of incoming animals may be particularly valuable in this respect. Exclusion of wild or feral animals from animal facilities is also important. *P. pneumotropica* is a fragile organism, which does not survive long outside a host. It may be difficult to transmit to healthy animals using dirty bedding, which may make sentinel monitoring programs unreliable.

Treatment is possible, but it is unlikely that antibiotic treatment will resolve a carrier state. *P. pneumotropica* may be transmitted to fetuses *in utero*, through contact with infected uterine tissue. Embryo transfer, rather than hysterectomy rederivation, may be the best choice for a *P. pneumotropica*-infected colony. Hysterectomy rederivation may be accomplished by treating animals with antibiotics before surgery, careful attention to aseptic technique, and taking precautions such as dipping the removed uterus in a disinfectant before removing the pups.

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. pneumotropica*.

technical sheet

References

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