

Mycoplasma pulmonis

AKA: Chronic Respiratory Disease

Prevalence

- Rats and mice considered to be the primary hosts (more common in rat colonies)
- Occasionally found in rabbits, guinea pigs, and hamsters

Significance

- Very high
- Has been shown to interfere significantly with many research protocols
- Decrease in fertility when *M. pulmonis* is present in the reproductive tract:
 - Can cause infertility, pup infection, low birth weight, abortion, and foetal death

Disease

- Often sub-clinical in younger animal
- Gram negative bacterium - stains poorly
- Clinical presentation is common in older animals and in pet rats:
 - Rats - 'Snuffling' or sneezing, nasal discharge, weight loss, hunched posture, ruffled coat, inactivity, head tilt and accumulation of porphyrin pigment around the eyes and external nares
 - Mouse – Chattering. Athymic and immunodeficient mice are more susceptible to pneumonia and death
- Colonizes the luminal surface of respiratory epithelium
- Arthritis has been seen associated with *M. pulmonis*
- *M. pulmonis* can affect the reproductive tract leading to endometritis and perioophoritis

Transmission

- Intrauterine:
 - Neonatal mice can become infected during the first few weeks when contacted with Infected mothers
- Direct contact with infected mice - venereal transmission is possible
- Transmitted horizontally via aerosol

Isolation and Diagnosis

- Preferred - ELISA testing of serum or DBS samples used to screen colonies (in sub-clinical infections seropositivity may be sporadic):
 - Confirmation with fluorescent immunoassay (IFA)
- Culture isolation from upper respiratory tract, lung lesion, and middle ear exudate

- Histopathologic lesions found with infected rats
- PCR assay for *M. pulmonis* detection

Strains

- Many different strains of a single serotype
- Strains vary in virulence

Screening

- Quarterly health monitoring as part of the routine evaluation.

Duration

- Persistent.

Durability

- Sensitive to environmental conditions - does not survive well outside the host
- Particularly sensitive to desiccation
- *M. pulmonis* can be freeze dried and/or stored at -70°C to be preserved indefinitely

Prevention and Control

- Pathogen exclusion:
 - Regular health monitoring of supplier sub-populations
 - Transport in filter boxes, quarantine at receiving institution with serology testing 2 weeks post arrival
 - Maintenance under strict barrier protocol
 - Screening of transplantable tumours and other murine derived biological material prior to experimental use
- Post infection:
 - Caesarean rederivation
 - Use dams that are several months old and serologically negative and/or maintained on antibiotics to suppress *M. pulmonis* as much as possible prior to caesarean operation
 - Use separate isolators for each foster mother and litter
 - Test placental membranes of each donor for the presence of *Mycoplasma*

Reading

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