

Citrobacter rodentium

Prevalence

- Common pathogen in athymic nude mouse. Rare in Australia.

Significance

- C. bovis infected mice considered unsuitable for research purposes.
 - Decreases tumour growth.
 - Interferes with Xenografts.
 - Alter Natural Killer cell activity.
 - Increases water consumption.
 - Increased toxicity of chemotherapeutic agents.

Disease

- Gram positive bacilli
- Causes hyperkeratosis (white, flaky skin, diffuse), weight loss, hyperemia of conjunctiva, hunched posture, laboured breathing.

Diagnosis

- Sites suitable for isolation of corynebacteria-
 - Oral cavity, faeces, caecum, genitals, respiratory system.
- Bacterial culture of oral swabs and skin lesions.
- PCR as confirmatory test, skin lesions and/or faeces.
- Histopathology- diffuse chronic hyperplastic and hyperkeratotic dermatitis.

Strains

- Balb/c, B6, DBA/2, C3H/HeN, Swiss- low-level transient infections.
- Foxn1nu, Hirsute SCID (Pkrdcscid) – scaly skin lesions.
- Athymic Nude mice- fully susceptible.

Screening

- Bacterial culture of enteric and oropharyngeal flushes/swabs and skin lesion swab.

Transmission

- Direct contact with infected mice or contaminated fomites.

Duration

- Eradication of C. bovis infections is problematic. Infection may be caused by multiple factors and are therefore difficult to control.

Durability

- Continual airborne contamination may lead to persistent infection in related colonies
- Infection spreads quickly
- Morbidity high, can exceed 80% but mortality low at 1%

Prevention and Control

- Sentinel animal bacterial cultures to rule out *C. bovis*. Disease investigations with bacterial culture, PCR and histopathology.

Treatment

- Colony depopulation
- Extensive environmental decontamination
- Barrier systems
- Restricted access and scrubbing
- Autoclaving and disinfecting equipment
- Disinfecting supplies/equipment before room entry/exit also provide protection

Reading

- Pathogenesis of *C. bovis* Strains in Immunodeficient Mice. VS Dole, Abstracts of Scientific Presentations, 2012 AALAS National Meeting, Minneapolis, Minnesota.
- *Corynebacterium bovis*: Epizootiologic Features and Environmental Contamination in an Enzootically Infected Rodent Room. JAALAS 2012 51(2):189-198.
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- Infectious Diseases of Mice and Rats National Research Council 1991.
- Handbook of Laboratory Animal Bacteriology, 2nd Ed., Axel Kornerup Hansen & Dennis Sandris Nielsen, 2015.
- Detection of *Corynebacterium bovis* infection in athymic nude mice from a research animal facility in Korea., JVetSci 2014 15(4):583-586.