

Corynebacterium bovis

Classification

Small Gram-positive rod with one end wider than the other

Family

Corynebacteriaceae

Affected species

Mice and rats; nude, hairless, and SCID animals

Frequency

Common in some research and testing facilities. It is not known whether wild rodents carry this bacterium.

Transmission

Transmission is between animals by direct contact or *via* fomites such as the gloves of an animal caretaker. *C. bovis* may also be transmitted through transplantable tumor lines. Rarely, immunocompetent animals may be asymptomatic carriers of *C. bovis*, but infections of immunocompetent animals are usually transient.

Clinical Signs and Lesions

Clinical signs associated with *C. bovis* infection in nude or SCID mice include a wide-spread scaly dermatitis, hence the name "scaly skin disease". In nude mice, the signs are most commonly seen on the dorsum, and in SCID mice, the scaling is accompanied by alopecic areas. Microscopically, skin sections reveal epidermal hyperplasia (acanthosis) and an orthokeratotic hyperkeratosis. Macrophages and neutrophils infiltrate the dermis.

C. bovis rapidly causes clinical signs in naïve animals. Lesions that appear 7-10 days after exposure to infection (for example, exposure to infected animals or a contaminated facility) are consistent with, and characteristic of, a new *C. bovis* infection. If animals survive the infection (most do), the hyperkeratosis disappears, but the acanthosis remains, as does a slight increase in inflammatory cells in the dermis. Animals remain infected after clinical signs have resolved and continue to shed organisms. Animals from a colony that is enzootically infected with *C. bovis* are

persistently infected, but may show signs less frequently than would naïve animals.

Diagnosis

C. bovis may be cultured from the skin (site of choice), feces, or oropharynx of affected animals or the contaminated environment. PCR testing is also available for tumor lines, environmental swabs, or affected animals.

Interference with Research

Infection with *C. bovis* may cause weight loss, probably due to dehydration through skin lesions, or from anorexia, and pruritis. It is also associated with decreased transplantable tumor take. Animals infected with *C. bovis* are not suitable for research use.

Prevention and Treatment

Health monitoring for *C. bovis* should be performed regularly for nude, hairless, and SCID animals. Animals should be sourced from regularly tested colonies. Aseptic hysterectomy rederivation with fostering onto clean females or embryo transfer rederivation will remove *C. bovis* from a colony. Animals may also be treated with antibiotics to reduce clinical signs while waiting to rederive or receive new animals. *C. bovis* isolates have been shown to be sensitive to tetracycline, enrofloxacin, and ampicillin.

C. bovis is persistent in the environment, since it is lipophilic and survives well on skin flakes and other organic material. Aggressive decontamination with autoclaving of materials, discarding of non-sterilizable materials, and chlorine dioxide disinfection has been reported as a means of ridding a facility of *C. bovis*. Any environmental decontamination should be verified by PCR or culture of the environment. Anecdotally, it has been necessary for some facilities to close old animal areas and open new ones as the only way to truly remove *C. bovis* from the environment.

technical sheet

References

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