FRIEDRICH-LOEFFLER-INSTITUT
FLI
Bundesforschungsinstitut für Tiergesundheit
Federal Research Institute for Animal Health

Bovine Tuberculosis

Susceptible Species

Cattle must be considered as the primary host of bovine tuberculosis. However, other endothermic domestic, zoo and wild animals can become infected. Bovine tuberculosis is transmissible to humans and therefore belongs to the category of zoonoses.

Distribution Area

Bovine tuberculosis is distributed worldwide. Many European countries however are declared officially free from tuberculosis. Pursuant to the definition of the European Union, this means that at least 99.9 % of cattle holdings of a country must have been free from tuberculosis for at least one year. Germany has been officially free from bovine tuberculosis since 1 July 1996. Since then, however, every year tuberculosis-infected animals have been detected in a small number of holdings.

Causative Agent

Bovine tuberculosis is caused by *Mycobacterium (M.) bovis*/*M. caprae*. The causative agent belongs to the Mycobacterium-tuberculosis-complex which among others also includes *M. tuberculosis* (human) and *M. microti* (small rodents).

Transmission

Infected cattle can excrete the causative agent of tuberculosis via the respiratory tract, feces or milk depending on the affected organ system. Clinically inapparent animals also can transmit the pathogen to other animals or humans in their closer vicinity. Transmission via the respiratory tract (snorting, coughing) is a frequent route of transmission upon close contact between animals. For transmission via contaminated food (pasture) large numbers of pathogens seem to be required. Infected raw milk can be a source of infection for calves and humans. Dogs and cats, wild animals or humans can also spread the pathogen. Transmission between humans is possible, but has only rarely been detected.

Bovine Tuberculosis

Symptoms

The infection can be present in cattle for months or even years without causing apparent symptoms. When symptoms occur, they usually are unspecific, such as reduced performance, emaciation, perhaps coughing. In immunosuppressed animals/humans the infection can lead to severe fatal disease. In many cases however tuberculosis in cattle remains unnoticed and is only observed based on tissue changes after slaughtering. Disease in humans in most cases occurs at a higher age.

Diagnostics

In addition to the tuberculin skin test a gamma interferon release assay with blood cells is available for diagnostics in live cattle. Both test methods measure the modified reaction of the infected animal to repeated contact with purified pathogen material. In most other animal species no valid test methods are available for detection in live animals. In beef cattle and other dead animals the pathogen is detected by molecular biological and/or bacteriological methods.

For further information see: Amtliche Methodensammlung (Official Method Collection, in German language)

Similar Clinical Pictures

As tuberculosis usually causes no specific symptoms, all chronic general diseases, reduced performance, weight loss might be caused by infection with tuberculosis. Similar clinical pictures are caused e.g. by Contagious Bovine Pleuropneumonia (*Mycoplasma mycoides*), chronic infestation with liver fluke, pericarditis or pneumonia.

Control

Bovine tuberculosis has been notifiable in Germany since 1965. Its control is regulated by the tuberculosis regulation. Experimental therapy or vaccination is prohibited. After official detection of tuberculosis the official veterinarian initiates measures such as ban and investigation of the holding, diagnostic culling of suspect animals, cleaning and disinfection. The responsible health authority is informed so that persons in danger of infection will receive medical attendance.

For further information see: National Reference Laboratory for Bovine Tuberculosis

Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health
Südufer 10, D-17493 Greifswald – Insel Riems, www.fli.de