

Caseous Lymphadenitis



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Introduction

Caseous lymphadenitis, commonly referred to as CL, is a contagious disease of sheep and goats caused by the bacterium *Corynebacterium pseudotuberculosis*. It is manifested by abscesses of the lymph nodes and occasionally of the internal organs. Caseous lymphadenitis is spread through contact with an infected animal or contaminated environment. Once in the environment, this bacteria can survive for long periods of time and infect other animals.

Public Health Significance

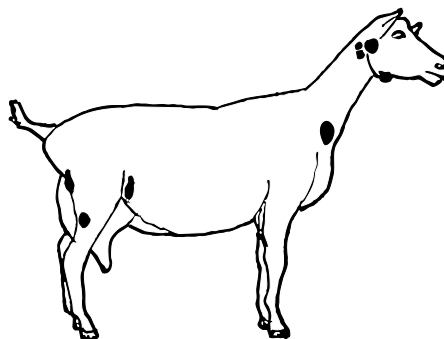
C. pseudotuberculosis can infect people, especially those who are occupationally exposed, such as farmers, abattoir workers and shearers, but human cases are rare. Infection through breaks in the skin can be prevented by wearing disposable gloves when handling infected animals. Infection can also spread to people drinking raw milk from infected animals. Only adequately pasteurized milk should be consumed.

Key Points

- Source of infection is discharge from skin or lung abscesses.
- Infection can occur through intact skin, mucous membranes, skin wounds and inhalation.
- In sheep, the main mode of transmission is through shearing and dipping. In goats, it is mainly through direct contact with infected animals or contaminated environment.
- Clinical signs are abscessed or enlarged lymph nodes evident close to the skin or, in cases of internal disease, chronic weight loss or lung disease.
- Control programs include culling affected animals, good hygiene, avoiding or managing risk factors and vaccination.

Disease Characteristics

The disease can be found in any age animal, but the incidence increases with age in both sheep and goats. There are two forms of the disease: a superficial form and an internal (or visceral) form. The superficial form involves abscesses of the lymph nodes closest to the skin surface, most commonly affecting those around the head and at the origins of the limbs. The internal form involves abscesses of internal lymph nodes and organs and is usually associated with chronic weight loss and debilitation ("thin ewe" and "thin doe" syndromes). The superficial form is the most common. The following drawing indicates the common locations of abscessed lymph nodes seen in animals with caseous lymphadenitis.



Transmission

The source of infection is discharge from ruptured abscesses. It can drain directly into the environment or onto other animals from superficial abscesses, or it can drain from lung abscesses into the airways and become aerosolized.

These bacteria can survive in the environment for months. Infection is more likely if there are breaks in the skin, but the bacteria can enter through intact skin or be inhaled. Examples of contaminated environmental sources that can continually transmit the organism include soil, shearing equipment, shearing shed boards, holding pens, hay and straw, plunge or shower dipping solutions and dust from contaminated sheds and yards.

Risk Factors

- Direct contact with infected animals, as well as equipment and the environment, are major mechanisms for transmission. Social contact, head butting, use of common neck collars, contaminated feed bunks and trauma from browse or sharp objects such as nails and wire are important risk factors.
- Shearing is the most important risk factor in sheep and Angora and Cashmere goats.
- Castration and docking wounds and contact of the sternum to the ground when lying down are risk factors in environmental transmission.
- Dipping for ectoparasite control is also an important risk factor. The bacteria can persist in re-used and recycled dipping fluids for at least 24 hours. Sheep dipped in infected fluid within two weeks after shearing are especially susceptible due to easy access to the skin surface.

Diagnosis

The presence of abscessed lymph nodes and culture of *C. pseudotuberculosis* from the contents confirms the diagnosis of superficial caseous lymphadenitis. A blood test is available, but it is a better herd screening test than one for individual animals. Age, colostrum, and other factors can influence the results of the blood test and repeat tests may be necessary to interpret the herd status.

Treatment

There are no antibiotics that can effectively penetrate the wall of the abscess, so treatment consists of lancing the abscesses or surgical removal of affected lymph nodes. These treatments are not a cure and abscesses can still occur later.

Any treatment attempts should be accompanied by adequate control measures to prevent spread. All affected animals should be immediately isolated, and options should be discussed with a veterinarian.

Once the animal is isolated, the abscess can be lanced, drained, and flushed daily with a disinfectant. The drained pus should be burned along with any contaminated bedding. Another option is lymph node removal, which reduces spread to the environment and to other lymph nodes in the animal's body. This requires veterinary expertise due to dangers associated with anesthesia and dissection near large blood vessels and major nerves. It is expensive and does not guarantee a cure.

Control and Eradication

- A key factor for success in CL control is the ability to detect infected animals quickly.
- Isolate all infected animals before rupture of abscesses. Once an animal develops a caseous lymphadenitis abscess, it is infected for life, regardless of treatment. These animals must be permanently isolated from uninfected animals. If an animal has had recurrent bouts, it should be culled.
- Purchase additions from CL-free flocks or herds and keep them isolated from infected animals.
- Clear areas of sharp objects and control ectoparasites to reduce the incidence of breaks in the skin.
- Remove lambs/kids born to infected animals immediately after birth.
- Shear all infected animals last, and shear from youngest to oldest, since older animals are more likely to be infected. Immediately disinfect any equipment or any areas that get contaminated with pus. Disinfect all shearing cuts.
- Decrease crowding in holding pens after shearing.
- Do not dip animals for two weeks after shearing and prevent contamination of dipping solution. Consider adding a bactericidal agent to the dip.
- Tattoo and docking implements, ear taggers and similar equipment should be disinfected before and after use and between uses on different animals. Treat any wounds promptly with disinfectant and dip all newborns' umbilical cords at birth.
- Cull animals with chronic respiratory disease or wasting disease.
- Consider vaccination of the entire herd/flock.

Eradication is very difficult and involves initial culling of all animals showing clinical signs followed by culling of all remaining animals that test positive using an enzyme-linked immunosorbent assay. (Pregnant females can be isolated and allowed to give birth before culling.) Couple the culling protocol with rigorous disinfection, removal of bedding and topsoil and isolation of uninfected individuals from the previously used areas for at least six months. Continue culling and repeat testing every six months to one year as directed by a veterinarian. Care should be taken not to reintroduce the disease through herd or flock additions.

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