

Caseous Lymphadenitis in Sheep and Goats

Caseous Lymphadenitis (CLA) is a bacterial disease of chronic suppurative lymphadenitis of both sheep and goats that has major economic consequences. It is commonly referred to as “Cheesy Gland” or “Lympho”, and is associated with “Thin Ewe Syndrome”.

Cause

CLA is caused by *Corynebacterium pseudotuberculosis*. Abscessation of both internal and external lymph nodes is possible. Goats tend to have abscessation of external lymph nodes, while sheep tend to have internal nodes affected.

C. Pseudotuberculosis is a very short, Gram positive rod that may appear coccoid on a slide preparation. A thick, flocculant, outer lipid layer makes the bacteria highly pyogenic and leads to thick-walled abscess formation. *C. pseudotuberculosis* also produces an exotoxin that has more recently been a target for prevention.

C. pseudotuberculosis can survive within purulent material in shaded areas on fence posts, in shearing barns, etc. for several months, and can be found in sheep feces, surviving in straw, hay, and wood for several weeks. The bacteria can also survive at least 24 hours in commercial sheep dips.

Clinical signs

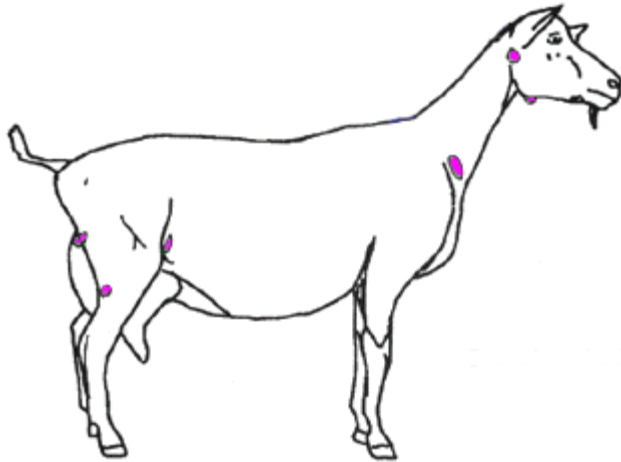
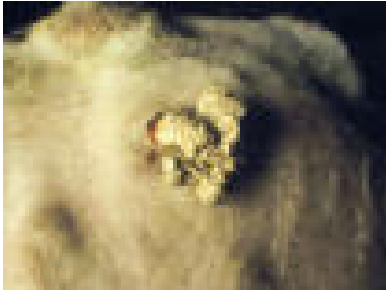


Fig. 3-1. Location of common swellings caused by caseous lymphadenitis. Abscess in the location of external lymph nodes suggest caseous lymphadenitis.

There are two basic forms that are typically recognized: an internal form and an external form. It is likely that most infected animals are affected by both manifestations of the disease. In the external form, most commonly recognized, obvious enlargement of the skin and peripheral lymph nodes can be appreciated, especially the retropharyngeal, mandibular, parotid, prescapular, prefemoral, and popliteal lymph nodes. These lymph nodes and subcutaneous tissues are enlarged with thick, cheesy pus, and may rupture outward spontaneously or during shearing/dipping. In both sheep and goats the pus within the abscesses is initially pale green, but in sheep it becomes thicker and forms

onion-like rings, becoming a firm, calcified mass. If the internal form is present, affected animals show weight loss and poor productivity with decreased fertility, and decreased milk production. They may exhibit mastitis, respiratory distress, chronic cough, or neurologic deficits, depending on the location of internal abscessation.



Pathogenesis

The pathogenesis of CLA begins with the infection of a superficial wound often incurred at shearing. The bacteria spread to the regional lymph node where they can progress to other nodes or internal organs through the lymphatics or vasculature. The onion-like appearance on cross-section of involved lymph nodes is due to stages of necrosis and capsule formation of the abscess.

C. pseudotuberculosis is an intracellular parasite of monocytes and macrophages, the cells that are responsible for engulfing and digesting bacteria and debris. *C. pseudotuberculosis* bacteria are able to survive within these phagocytic cells and multiply, then kill the cell, allowing dissemination of more bacteria. New macrophages phagocytose the bacteria and the process is repeated.

Diagnosis

Typically, diagnosis is based on the appearance of the animal and progression of clinical signs. Often diagnosis is first made at necropsy or carcass condemnation at meat inspection. If draining tracts are identified *C. pseudotuberculosis* organisms can be cultured but are difficult to grow on blood agar plates. Several serological tests have been developed including the hemolysis inhibition test, an ELISA test and an agar gel immunoprecipitation test.

Prevention

Historically CLA has been controlled in herds by culling visibly infected animals and emphasizing hygiene in shearing and handling animals. These methods are effective in reducing the incidence of disease on a farm, and should continue to be implemented.

There are several points of attention for maintaining good hygiene. Preventing wounds by careful blade shearing, maintaining good fencing, and the use of well trained, gentle-mouthed dogs for herding can all reduce the incidence of wounding. Decreasing the infection of wounds by quickly moving animals from higher contamination areas, disinfection of clipper blades and shearing equipment, construction of easily cleanable shearing sheds, and avoidance of dipping sheep until after all wounds have healed may all decrease infection. Shearing sheep youngest to oldest may also help prevent infection of uninfected animals.

Vaccination of sheep and goats can reduce the severity of CLA. Older vaccines provided partial protection and contained inactivated whole-cell, cell-wall extract, or inactivated exotoxin. Newer vaccines contain both inactivated whole cell antigen and detoxified exotoxin. The newer two-component vaccine has been shown to decrease both the number of abscesses in sheep and the number of sheep that develop abscesses. Further, there was a significant reduction of both internal and external abscesses leading to fewer condemned carcasses and reduced environmental contamination and subsequent spread of disease. The vaccine should not be used in naïve flocks/herds. Vaccinated animals will have a positive serological test result, indistinguishable from infected animals.

Lambs should be vaccinated twice before shearing, once at tail docking, and once at weaning, at least 4-6 weeks apart. Adults should receive an annual booster. There is no vaccine licensed for goats.

Additionally, all new animals should be carefully inspected for peripheral lymph node enlargement, draining tracts, or other evidence of disease. If possible animals should be purchased from known CLA-free herds.

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