Livestock Health Series

Caseous Lymphadenitis in Small Ruminants

Introduction

Caseous lymphadenitis (CL) is a contagious disease of small ruminants caused by the bacterium Corynebacterium pseudotuberculosis. The disease is found throughout the world and is a major concern for sheep and goat producers in the United States as it causes economic loss from wool and hide loss, carcass condemnation and death. CL is characterized by abscesses of subcutaneous lymph nodes (external form) and abscesses of internal lymph nodes or organs (internal form).

Transmission

Bacteria that cause CL enter through skin wounds or mucous membranes and then localize in the lymph nodes to proliferate. Once in the lymph nodes, the animal’s natural immune defenses wall off the quickly-dividing bacteria, thus forming an abscess.

The disease becomes contagious when a subcutaneous abscess from an infected animal ruptures and releases the concentrated bacteria into the environment. The abscesses contain a thick, yellow to white discharge that has a soft, pasty consistency, much like toothpaste, or a crumbly consistency, much like feta cheese.

Animals with the internal form can spread the bacteria through nasal discharge and secretions from coughing. Once in the environment, the bacteria can then be transmitted from animal to animal via contaminated pens, water buckets, shearing clippers and feed bunks.

The bacteria can survive for several months in the environment, so biosecurity protocols should be in place when treating and handling animals potentially infected by this organism. Disposable gloves and boot covers should always be worn during interaction with suspect animals and hands, and clothes should always be washed directly after contact.

Clinical Signs

The most obvious symptom of the disease is swelling corresponding with the abscessed lymph node just under the skin (external form). Sometimes, the bacteria can enter the bloodstream to cause abscesses in internal organs, such as the liver, lungs, kidney or reproductive tract, resulting in a thin and sickly animal with no other obvious clinical signs (internal form). The lymph nodes around the head and neck region are most commonly affected, but any lymph node in the body can become a target for disease (Figure 1). Some animals may have a fever, loss of appetite and lethargy.

Most common sites for lymph node abscesses associated with CL

Corynebacterium can also infect people, making the disease zoonotic.
with the initial infection. Because the internal form of
CL does not exhibit obvious clinical signs, thin and
generally poorly-performing animals are often suspect
for having the disease. Mortality in infected sheep
and goats is low, but production losses in weight gain,
milk production, reproductive efficiency and carcass
quality may be significant.

Diagnosis
A diagnosis of CL is usually made based on
the appearance of enlarged lymph nodes on the animals.
Other bacteria such as Staphylococcus aureus and
Pasteurella multocida can cause similar abscesses, so
a definitive diagnosis must be made by culturing and
identifying Corynebacterium isolated from an abscess
sample. The disease is difficult to diagnose in animals
with the internal form because abscesses are not
readily available for sampling. Blood tests exist for
determining if the animal has developed antibodies to
CL, but if tested too early, there can be a false nega-
tive result. Also, if the animal was ever vaccinated for
CL, the blood test result can be falsely positive.

Treatment and Control
Treating CL with pharmaceuticals is difficult
because antibiotics do not penetrate walled-off
abscesses effectively. Surgical treatment by making an
incision over the abscess to allow drainage is preferred;
however, this procedure must be done carefully to
prevent exposure of the infectious drainage to the
environment. Furthermore, the discharge that is
obtained from the abscess should be disposed of in
such a way as to avoid contamination of the facilities
and remaining animal population.

Ideally, the animal should be treated in an area
where there is little traffic from humans and animals.
After treatment, the affected animal should be isolated
until the open surgical wound heals. In a case where
the abscess has ruptured, it should be drained immedi-
ately and the infected animal moved to an isolation
pen to minimize contamination of the environment. In
sheep, abscesses may not be noticed until shearing
when the shearer inadvertently clips the wall of an
abscess, causing it to ooze. If this occurs, shearing
should be stopped and the clippers, blades and general
area should be disinfected after moving the animal to
an isolated area.

There are Corynebacterium pseudotuberculosis
vaccines for goats (bacterin) and sheep (bacterin with
toxoid). Immunization will not prevent the disease, but
numerous studies have shown a significant reduction
in the numbers of abscesses in animals vaccinated for
CL when experimentally infected with the disease-
causing bacteria. However, injection site lesions and
abscesses have been reported as a side effect of these
vaccines. Therefore, vaccination of animals may be
reserved for farms with an identifiable problem of CL
on the property.

Meanwhile, animals should be regularly observed
for signs of disease and managed with best practices.
New animals should be kept from the rest of the flock
and observed for any signs of disease for at least
three weeks. Any animals identified as being affected
by the disease should be culled after appropriate
treatment. To develop a sound vaccination schedule
and biosecurity plan, consult with your veterinarian.

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