



Coxiellosis in Sheep and Goats

Introduction

Coxiellosis, commonly known as **Q Fever**, is an infectious disease of animals and humans caused by the bacteria *Coxiella burnetii*. Sheep, goats, and cattle can all shed this bacteria in feces, urine, milk, birthing fluids and placenta. *Coxiella burnetii* is a zoonotic disease, meaning it can cause disease in humans. This occurs mainly by accidental inhalation or ingestion of animal fluids or feces containing the infectious organism. Once shed into the environment, the bacteria is very hardy, maintaining its infective status for many years. It survives in dust, and breathing in dusty environments can put people at risk.

Ruminants that carry the *Coxiella* organism and shed it into the environment usually do not show signs of illness. However, the disease may occasionally be a cause of abortions, stillbirths,

and birth of weak offspring. This is especially common in sheep and goats. The placenta, fetuses, and uterine fluids from infected animals contain high numbers of infective bacteria. **Workers handling aborted materials or stillborn lambs or kids, or those assisting with difficult births should wear appropriate personal protective equipment (obstetric sleeves, gloves, face masks, etc). One should never assist a lambing ewe or kidding goat with bare hands.**

Diagnosis

The diagnosis of coxiellosis within a livestock herd is difficult because infected animals may not shed the bacteria all the time and may not even have antibodies in their systems. Diagnosis of abortions secondary to coxiellosis requires advanced testing of the fetuses and placentas from aborting animals.

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Veterinary diagnostic labs typically identify the organism by the use of specific stains applied to microscopic sections of tissues or through the detection of the organism's DNA through the use of PCR.

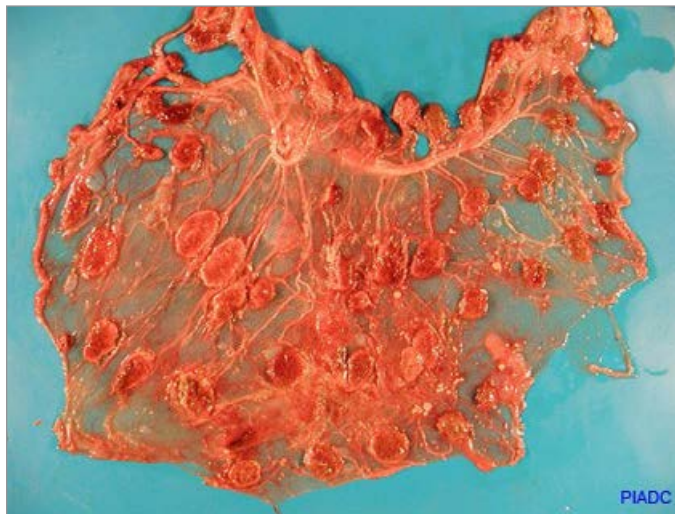


Figure 1. Placenta infected with *Coxiella burnetii*. Notice the thickened tan areas of the placenta.

Sheep that abort due to coxiellosis rarely have repeat abortions. Infected goats, however, may have recurrent abortions due to the disease. Once infected with coxiellosis, does and ewes will continue to shed the bacteria into the environment, with highest levels being shed in the placenta and uterine fluids.

Antibody titer levels to coxiellosis only indicate exposure to disease. They do not mean the animal is currently infected, and at times seronegative animals can concurrently shed organisms. For this reason, serology for coxiella is not very helpful in the management of the disease.

Enzyme linked immunosorbent assay (ELISA) is the preferred test for large-scale screening of herds.[1] Serum, plasma, and milk of ruminants are all considered acceptable samples for testing.

Treatment and Control

There is currently no licensed vaccine on the market in the United States for the prevention

of coxiellosis. If a herd is experiencing an epidemic of abortions (>10% of animal aborting) due to infection with coxiellosis, injectable oxytetracycline therapy may be used. In-feed antimicrobials do not reach effective levels in the reproductive tissue or fetus and therefore are not recommended for use in the interest of antimicrobial stewardship.[2] It is important to note that tetracycline use is not a cure-all. While the number of animals aborting may be reduced, the incidence of coxiellosis-related abortions will not be eliminated.

Once coxiellosis is confirmed on a premise, infections should be considered endemic in the population.[3] Though difficult, prevention of coxiellosis within herds is not impossible. Good management techniques including quarantine and testing of all incoming or purchased animals before they enter the herd. Other factors that have been shown to lower the risk of seropositivity in ruminants include:

- the use of stringent hygiene measures for visitors
- limited introduction of new animals
- prompt removal of birth materials post-partum
- frequent cleaning and changing of bedding

Q Fever in Humans

As mentioned before, most human infections with *Coxiella burnetii* result from inhalation of aerosolized bacteria or through the ingestion of contaminated unpasteurized milk. Approximately half of human exposures are asymptomatic; the other half will experience flu-like symptoms 2 to 6 weeks following exposure.[4,5] Most humans fully recover; only a small percentage require antibiotics. Because of the non-specific clinical signs and self-limiting course of the disease, the incidence of this disease is likely severely underestimated. Chronic forms of Q fever can exist in <5% of the population and can develop months to years following an acute infection.[5] Consult your physician if you have more questions about coxiellosis in humans.

References

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