



Vet Call

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Neospora caninum abortion

Neospora caninum is considered a leading cause of abortion in some beef herds. Cattle can become infected with the parasite if feed or water is contaminated with an infected dog's (or possibly coyote's, fox's, etc.) feces (but not from infected cow feces). However, the most common way the parasite is passed from animal to animal is from an infected dam to her fetus. More than 80% of infected dams will pass the parasite to their fetuses. Once a cow is infected with the parasite by this route, she is considered to be infected for life.

Abortion rates in infected cows

Calves infected during gestation typically are born alive and without apparent problems. Infected heifer calves that enter the herd will subsequently pass the infection to most of their offspring. Although a few infected calves may show signs of nervous system problems (staggering, flexed or hyperextended legs, unable to rise) by 2 weeks of age, abortion at five to six months of gestation is the most common problem recognized with *Neospora* infection.

Neospora infection in a herd can cause a frustrating, but not devastating, higher-than-normal rate of abortion that lasts for many years in herds where the parasite is being passed from dam to fetus. *Neospora* can also cause an abortion storm (high rate of abortion) in herds that are exposed to the parasite for the first time through contaminated feed or water.

Abortion is most likely to occur during the first pregnancy following infection, with future pregnancies less likely to result in abortion. Researchers showed that in a herd of Holstein cows, the abortion rate of infected heifers during their initial pregnancy was 13.1% compared to 1.9% for unexposed heifers. When that same group of animals was evaluated the following year, the infected cows were almost twice as likely to abort as the unexposed cows. By the third lactation, the risk of abortion was not greater for cows infected with *Neospora* as a fetus compared to unexposed cows.

Transmission

Transmission of *Neospora* from dam to fetus is the most common way new animals are infected; however, questions still persist as to how the parasite enters the herd in the

first place.

Purchased females can introduce the infection into a herd with subsequent generations of those additions being infected, but because the disease is not contagious, animals already present in the herd can't become infected by this route.

Herd epidemics of neosporosis (abortion storms) have occurred in closed herds. In these and other cases, an exposure from feed or water contaminated with infected dog feces is the most likely route of entry. An abortion storm consistent with dog-to-herd exposure was reported in a herd of 208 pregnant beef cows where 79% of the cows tested positive for exposure to the parasite on day 14 of the outbreak and 21% (43 of 208) of the herd aborted.

In a dairy herd where the exposure was assumed to be from feed or water contaminated with dog feces, 18% (66 of 360) of the cows aborted.

Diagnostic testing and strategies

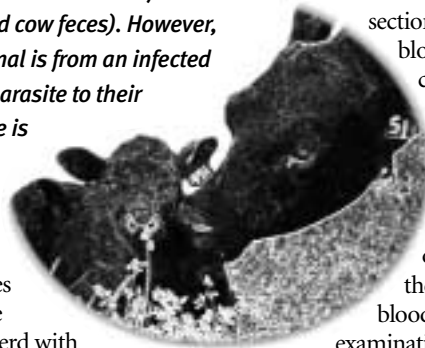
Diagnosis of *Neospora* infection in an aborted fetus is usually based on detection of the parasite in fetal tissue (most commonly brain, liver and heart). Blood tests from blood samples taken from a calf before it suckles colostrum can also identify calves that were infected during gestation. However, a positive tissue or blood test does not prove *Neospora* was the cause of an abortion. Remember, most *Neospora*-infected fetuses survive to term and are normal, so finding evidence of *Neospora* infection in an aborted fetus does not rule out other causes of abortion.

Blood tests of the dams of aborted calves

should be cautiously interpreted. A negative test from the blood of an aborting cow is good evidence that *Neospora* is not the cause of abortion, but a positive sample only indicates that the mother was exposed to the parasite at some point in her life.

Strong evidence for *Neospora* being the cause of an abortion problem would be demonstrated if the parasite were present in a high percentage of aborted fetuses tested, and if there were evidence of increased risk of abortion in cows with positive blood tests compared to cows with negative blood tests. To establish increased risk of abortion in infected cows, the entire herd or a cross section is used to collect samples for blood tests from both aborting cows and non-aborting pregnant cows.

Testing dogs in contact with a herd for infection with *Neospora* does not appear to be helpful in the control of the disease. Not all dogs that spread the parasite show positive on a blood test, and finding the parasite by examination of the feces is very difficult.



Control measures

Suggested control measures focus on reducing the number of infected animals in the herd by culling positive animals and minimizing the opportunity for transmission of the parasite from the environment. A vaccine is licensed for use in the United States to aid in the control of *Neospora*-induced abortions, but studies evaluating its effectiveness are few and not consistently positive.

Whole-herd blood testing and culling of infected cattle will rapidly reduce the number of infected animals. However, culling and replacement can be expensive and use of the vaccine may complicate or eliminate the ability to utilize a test-and-cull strategy.

Exposure of cattle to feed or water contaminated by feces of infected dogs (or possibly coyotes or other wild canines) that are shedding the parasite is the most likely source of environmental transfer of the parasite. All potentially infected tissues (placenta and aborted fetuses) should be removed from the environment and discarded so that canines can't eat them and become infected. Feed storage facilities and water sources should be designed and managed to reduce the chance of fecal contamination by all canines.

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