

Canine Brucellosis

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Canine Brucellosis, caused by the organism *Brucella canis*, is the only bacterial organism proven to cause infertility in female dogs, and is of special concern in kennels. It causes abortions and stillbirths in bitches, and inflammation of the testicles and related structures, along with sperm abnormalities in dogs. Although spayed or neutered animals do not show reproductive signs, they may demonstrate infection of the intervertebral disks (discospondylitis), eyes (anterior uveitis), kidneys (glomerulonephritis), and meninges (meningoencephalitis). Only domestic and wild canines are susceptible to *B. canis*; other domestic animals appear resistant when experimentally infected.

There are several routes of natural transmission, most commonly ingestion or inhalation of the organism in aborted materials. Sources of exposure also include vaginal discharges, urine, milk, and semen. Venereal and transplacental infection also occur. The highest concentration of *B. canis* organisms is in vaginal discharge, and continues up to six weeks after abortion. Urinary shedding begins a few weeks after the onset of infection, and lasts for at least three months. Transmission via fomites (non-living objects) can also occur, but *B. canis* is susceptible to common disinfectants even though it can live a long time outside the host in soil, dust, and organic material.

Signs of disease are usually not obvious, as it does not interfere with normal estrous cycling in intact bitches. There is no age or breed disposition. Conception failure, resorption of embryos, and late-term abortions are most common, without signs of illness in the dam. If the pregnancy reaches full-term, then both live and dead puppies may be born. Most live puppies die within hours to days, and if they survive, they will demonstrate some or all of the following: fever, swollen lymph nodes, seizures, enlarged spleen, bone infections, skin infections, eye inflammation, and bleeding.

Canine Brucellosis should be considered in all dogs with reproductive problems. The Rapid Slide Agglutination Test (RSAT) is a commercial test that can be used for pre-breeding screening. Infected animals may be more difficult to diagnose, and it is best to use more than one diagnostic tool if the illness is suspected. A definitive diagnosis can be made via culture of samples from the genital tract or milk, urine, and aborted fetuses. Additional tissues that can be cultured include lymph nodes, spleen, prostate, testis, liver, uterus, bone marrow, and clinically affected vertebrae or eyes. Antibiotic therapy will interfere with culture results.

The disease is zoonotic, which means that it can be transmitted to humans, and may be difficult to diagnose due to low suspicion of infection. Some infected people remain asymptomatic, while others develop non-specific flu-like symptoms such as fever, chills, headache, malaise, back pain, night sweats, and enlarged lymph nodes, liver, and spleen. Some recover spontaneously, while others have flu-like symptoms that wax and wane. Other complications include arthritis, chronic fatigue, testicular inflammation, neurologic signs, anemia, abscesses, kidney infection, and heart inflammation, which cause a wide variety of symptoms. However, the fatality rate is low, approximately 2% - 5% in untreated individuals. Treatment in humans is usually with a prolonged course of two antibiotics; however, relapses may be seen.

Prevention of the organism from entering populations of breeding dogs is of utmost importance. Since the organism can be spread by mating with fresh, chilled, or frozen semen, or by contact with aborted fetus tissues, normal vaginal discharge, and urine, pre-breeding screenings play an important role in prevention of disease transmission. Uninfected animals living with infected animals were found to acquire the disease within six months.

No treatment is certain to eliminate *B. canis* from infected dogs. A combination of two antibiotics used long-term, plus neutering, may appear to cure the dog, but the disease can recur during periods of stress. Intact animals **must not** be used for breeding, even if treated with antibiotics! Euthanasia must also be considered, especially when infected animals live in a household with an immunocompromised individual.

Canine Brucellosis is often overlooked during dog breeding. While pre-breeding screening is important, we must remember that dogs often come in contact with urine and vaginal secretions at shows, which could potentially spread the disease. Because of its zoonotic potential, *B. canis* infection must always be suspected in bitches that have reproductive problems, especially late-term abortions. Wear gloves when handling aborted fetuses and associated tissues, and disinfect the area with a common kennel disinfectant after cleaning up all organic debris. The fetuses may also be saved for culture and diagnosis. If the diagnosis is confirmed, then neutering and long-term treatment with antibiotics or euthanasia are the two options to help prevent further spread of the Canine Brucellosis.

References:

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