Leptospirosis in cattle

Introduction

Leptospirosis is a bacterial disease that affects farm animals, wildlife and humans. There are many different strains or serovars, carried by rodents and many other wild animals including rabbits, skunks and birds. Cattle, pigs and dogs are the main domestic animal carriers of leptospirosis.

Leptospirosis in cattle is generally caused by one of two strains: Leptospira hardjo or Leptospira Pomona. These two bacteria infect the kidney and genital tract of cattle.

Transmission

Transmission of leptospiira often involves direct contact with infected urine, placenta or milk. It can be transmitted venereally or transplacentally. The most common transmission is through direct or indirect contact with infected urine. Dairies commonly have leptospiira contaminations in their environment. Dairy feeder calves are probably the largest carriers of leptospiira in commercial feedyards. Dairy calves commonly suckle the sheaths and scrotums of other calves in the pen. This would be a direct contamination of infected urine from carriers by this suckling habit.

Leptospiira can also survive in the environment. Leptospiira favors moist environments and moderately warm temperatures. Leptospiira can survive for extended periods in stagnant water (i.e. waterholes in pens). Survival of leptospiral is brief in dry soil, cold temperatures or very hot temperatures. Therefore leptospiira outbreaks are most common in dairy calves in the fall and spring.

Pathogenesis

Leptospiira enter the body through exposed mucous membranes in the mouth, eyes, skin abrasions or gastrointestinal tract. The incubation period for leptospirosis is 4 to 20 days. The leptospires circulate in the blood for 7 days. The leptospires replicate in the liver, kidneys, lungs, genital tract and central nervous system. The bacteria remain in the kidneys and may be shed in the urine for a few weeks to many months after infection.

Clinical signs

Leptospirosis is less common in cattle under 15 months of age than in older animals. The clinical signs of infected calves include high fever, hemolytic anemia (breakdown of red blood cells), hemoglobinuria (blood/hemoglobin in urine), jaundice (yellowing of tissues), meningitis and death.

Diagnosis
Serological evaluation of a herd or pen can infer antibody production against leptospira. Urine can be tested using dark-field microscopy and/or immunofluorescence. However, these tests are expensive and the dark-field microscopy isn’t very sensitive. The gold standard is bacterial culture. Leptospira can be isolated from blood, urine, kidney, liver or any other tissue infected by the bacteria.

Treatment

Leptospira is a bacterium that is susceptible to dihydrostreptomycin or long-acting oxytetracycline. We are currently recommending a mass-treatment of the pen with Tetradure 300 at 5 cc/cwt subcutaneously. This new oxytetracycline has blood levels above MIC (minimum inhibitory concentration) for eight days. Cattle should also be vaccinated with an IBR/Lepto vaccine at the time of mass-treatment.

Prevention

There are two avenues of prevention for leptospirosis: 1) vaccination and 2) environmental sanitation. Since dairy cattle are the highest risk for leptospirosis, we are recommending that all dairy calves receive a leptospirosis vaccination upon arrival. There are many different brands available and none seem to be better nor worse than the others. Vaccination will not stop an infected animal from shedding the bacteria however it will help reduce the infection of naïve calves. Environmentally, we need to be sure that we remove areas of stagnant water in the feeding and hospital pens. Especially, if there are dairy calves in the pen.

Zoonosis

Leptospirosis is a human pathogen. The bacteria can get into your body through cuts and scratches, the lining of your mouth, throat and eyes after contact with infected urine, blood or contaminated water. Care should be taken when necropsying animals suspected of being infected with leptospira.

How can we prevent exposure?

1) Cover all cuts and broken skin before and during work
2) Wear protective clothing and eyewear when necropsying
3) Wash you hands after handling any animal before eating, drinking, smoking, dipping, or chewing tobacco

Human clinical signs of leptospirosis:

1) fever and flu like symptoms
2) lethargy, aching joints, headaches
3) long period of sickness with the potential for renal failure

*Please contact Cactus Veterinary Services if similar clinical signs or necropsy lesions are noticed.

Literature cited
