

FROM THE VET...

A Review of Equine Leptospirosis: An Emerging Cause of Abortion

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Leptospirosis is a zoonotic (meaning can be transmitted to humans) bacterial disease that can infect virtually all mammals and is found world wide. *Leptospira* are small (6-20 microns), motile, coiled bacteria called spirochetes that are shed by an infected animal in their urine and blood. These bacteria are highly invasive to horses. Transmission occurs by coming in direct contact with infected urine or blood or indirectly by drinking infected water or eating a contaminated food source. This bacterium also has the ability to invade mucous membranes of the eye, nose, or mouth or enter the body through cuts or breaks in the skin.

Horses are most commonly infected by drinking contaminated water or eating hay or grain that has been contaminated by infected wildlife.

Once the bacteria has been ingested or crossed the mucous membrane, it migrates into the bloodstream where it circulates through the body and infects

multiple organs, most commonly the eye, kidney, and uterus. In pregnant mares, the bacteria enter the placenta through its diffuse connection with the uterus and then ultimately infects the fetus where severe inflammation and disease occurs leading to the abortion. Leptospirosis abortions usually occur during the 3rd trimester or between 6-11 months of gestation. Data compiled by the Livestock Disease Diagnostic Center at the University of Kentucky shows the vast majority of abortions due to leptospirosis occurs in the months of November thru March, but can happen as early as September and as late as May. In addition to abortions, stillbirths and weak, infected foals have been reported.

Although the leptospirosis causing bacteria is divided into multiple species, serogroups, and over 250 named serovars, only two strains commonly affect horses. Serogroups L. Pomona serovar kennewicki and L. Grippotyphosa serovar grippotyphosa are associated with equine abortions. Wildlife serve as the primary source of infection to the horse. Even though any animal can carry and spread this bacteria, skunks and raccoons are more commonly associated with these two particular strains. Water sources, such as ponds, slow moving or still streams, and standing water in low lying areas, which are easily accessible to wildlife and shared with horses are a potential source of infection. In addition, open grain bins and uncovered hay in barns or lofts can become contaminated by infected wildlife and lead to disease when fed to horses. Clinical signs of horses infected with leptospirosis are extremely vague and often not recognized prior to an abortion. Some signs include a mild fever and anorexia, pinpoint hemorrhages on mucosal membranes,



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anemia, icterus, and depression. Rarely, adult horses show signs of renal failure, although this is more common in foals born infected with leptospirosis. Recurrent uveitis (moon blindness) in equine has also been linked to this bacterium.

Unlike in dogs and cattle, there is no approved vaccine for leptospirosis in horses. In the past, horses have been vaccinated with the approved cattle vaccine, however, this vaccine is directed towards antigens of a different strain of leptospires that does not affect horses and thus is not protective against infection. Currently, horse owners are limited to environmental management and monitoring of serological antibody titers to decrease abortions caused by leptospirosis.

Environmental management tips include: providing a fresh water source for horses and fencing off low lying areas with standing water, keeping grain bins covered at all times to prevent potential contamination by rodents and wildlife, controlling the wildlife population around barns and pastures, and isolating

any mare which has aborted due to leptospirosis from other pregnant mares for a minimum of two weeks.

Serial testing of blood titers for leptospirosis approximately every 3 weeks during the high-risk months (Nov-Mar) is one way to monitor pregnant mares for exposure to this bacterium. It is not uncommon for a high percentage of horses to have a low blood titer level for leptospirosis in the range of 1:400 or 1:800 from previous exposure. Due to limited research in this area, it is not known what antibody level is needed for protection against abortion in the horse. A 4-fold or greater rise in blood titer level between testing intervals is considered likely acute exposure to leptospires and treatment should begin immediately to decrease the likelihood of abortion. Once per day intravenous injection with oxytetracycline at a dose of 10 mg/kg for 5 consecutive days has proven to be effective for treating adult horses. If a mare aborts from leptospirosis, she should be isolated and treated to decrease the amount of time the bacteria is shed in her urine. Hopefully an approved vaccine will be available in the near future for horses to prevent this bacterial disease. Until then, horse owners need to keep this on their list of possible causes of equine abortions.

Remember anytime an abortion occurs, it is a good idea to submit the entire fetus and placenta, if possible, to a diagnostic center to determine the cause. This will allow for changes in environmental or reproductive management of the breeding farm to potentially decrease or prevent future abortions.

