Vet Call

▶ by **Bob Larson,** *professor of production medicine, Kansas State University*

Listeriosis

There are a few diseases that are more common in colder months. As we move into winter, it is a good time to review one of the important cold-weather diseases — listeriosis. Although listeriosis can occur in grazing animals, it occurs most commonly in animals fed improperly fermented silage or baleage. The two most common problems that listeria causes in cattle are a nervous system problem (often called circling disease) and late-term abortions.

Listeria is important not only because of its effect on cattle, but also because it can be passed to humans.

Signs of listeriosis

Listeriosis is a disease caused by a bacterial organism *(Listeria monocytogenes)* that is very common in soil and the intestine of cattle and other animals. Because of its presence in soil, it is also common on many types of hay, grass and other crops, as well as in surface water. Even though this organism is common on plants and soil, it usually needs a low-oxygen environment to multiply to dangerous levels.

Although listeriosis can occur in grazing animals, it occurs most commonly in animals fed improperly fermented silage or baleage. Silage that still has oxygen present and has a pH greater than 5.5 is considered dangerous. If listeria is present in the feed, up to 10% of the herd may end up showing signs of disease, and many of the affected animals are likely to die.

The two most common problems that listeria causes in cattle are a nervous system problem (often called circling disease) and late-term abortions. Cattle commonly have small puncture wounds in their mouth because of the abrasive nature of forages; and if they are eating listeria-contaminated silage or other feed, the bacteria can invade the cuts and travel up the nerves in the head to the brain.

Depending on what parts of the brain are affected, cattle can show different abnormal behaviors. Cattle will often be uncoordinated and prefer to lean against objects, and some will circle in one direction. Many affected cattle will have paralysis of muscles of the face, so that one ear and eyelid droops, and one side of the mouth and lips droop.

Because throat and tongue muscles can become paralyzed, the animal will drool with the tongue hanging out of the mouth, and feed can become impacted in the cheek. As the paralysis progresses, the animal will fall and be unable to rise and will almost always proceed to death.

Although many, if not all, cattle fed listeria-contaminated feed will become infected, very few will show signs of disease. Some individuals may have a poor immune response to the organism and allow the bacteria to invade through the digestive or respiratory tract into the bloodstream, which can then expose the reproductive tract.

All pregnant animals are susceptible to listeria, and infection can result in placental infection, fetal deaths, abortions, stillbirths and the birth of weak calves. Abortions in cattle are sporadic and usually occur in the last third of pregnancy. If the placenta is retained following abortion, a uterine infection is likely to follow.

Treatment options

Listeriosis is suspected when a herd has one or more animals with nervous system disease and is being fed a silage- or baleage-based diet. Examination of a spinal fluid sample can aid diagnosis, but a final determination of whether the herd's problem is listeriosis or another nervous system disease is done by laboratory examination of the brains of animals that die. Other diseases that cause nervous system problems in cattle include: polioencephalomalacia (polio) due to sulfur, lead or salt toxicosis, infection with *Haemophilus somnus*, ketosis, and rabies. Testing blood samples for antibodies to listeria is not helpful because many healthy animals have been exposed to the organism and would test positive without the organism being the cause of the current problem.

Animals with listeriosis should be treated for several days with appropriate antibiotics as directed by your veterinarian. If treated early enough in the disease process (before nervous system signs are severe), some animals will recover. If an animal is down and unable to rise, treatment will not likely be beneficial, and humane euthanasia is probably preferable to attempted treatment.

During an outbreak of listeriosis, any affected animal should be quickly isolated and treated, and dead animals should be disposed of rapidly. Because no vaccine is available, prevention is dependent on the proper production of silage by paying attention to moisture and packing when filling the silo. The addition of silage inoculants may help reduce the risk of listeriosis by speeding the fermentation process. Hay bales that are used for baleage must be wrapped tightly to minimize oxygen retention and must be wrapped with plastic so that oxygen is excluded. Because listeria organisms need less oxygen to thrive than mold, the presence of mold in silage or baleage does not necessarily indicate a risk of listeria.

Listeria is important not only because of its effect on cattle, but also because it can be passed to humans. Raw vegetables contaminated by soil or manure and not adequately washed can spread the organism to people; and listeria can be passed to people via raw meats, unpasteurized milk, and processed soft cheeses or deli meat from cross-contamination after processing.

For cattlemen and veterinarians, aborted fetuses and necropsy of cattle that die due to listeria present the greatest hazard. Pregnant women should be particularly careful to avoid contact with potentially affected cattle because of danger to the fetus leading to possible abortion or stillbirth.

While human listeriosis is rare, death is common in those who are affected. The young, elderly, and immuno compromised are most susceptible to infection.

E-MAIL: rlarson@vet.ksu.edu