

Livestock Health Series

Anaplasmosis

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Introduction

Anaplasmosis, an infectious disease in cattle, is caused by the organism *Anaplasma marginale*. This microscopic pathogen infects red blood cells of affected cattle. It is transmitted from animal to animal by biting flies (horsefly, stable fly), ticks and contaminated needles or surgical instruments (dehorning, castration instruments, tattoo instruments).

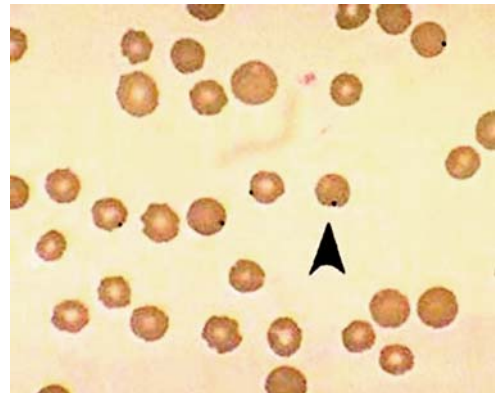
This disease is typically age related, with severe cases affecting mostly older animals. Calves less than one year of age usually show no symptoms of this disease.

Outbreaks generally occur in late summer and early fall. The incubation period is from 21 to 45 days, with an average length of 30 days. Once the red blood cells initially become infected, the organism replicates itself in order to infect more red blood cells. During this period, the infected animal shows little or no signs of illness. At some point, the infected animal's immune system begins to respond and attempts to attack the invader. When this occurs, the immune system destroys the pathogen, but also destroys the infected red blood cells. As a result, the signs of clinical anemia will appear.

Early clinical signs include a rectal temperature of 104°F to 107°F, a decrease in appetite, pale mucous membranes, lethargy, a decrease in milk production and weakness. As the disease progresses, other signs may be noted such as weight loss, yellowed mucous membranes, constipation,

excitation, abortion and death. Death is due to a large number of red blood cells being lost. This inhibits the animal's ability to provide adequate oxygen to the tissues, and death occurs due to anoxia (suffocation).

The picture below, provided by the Oklahoma State University College of Veterinary Medicine, shows the parasite on the edge or the "margin" (as its name *Anaplasma marginale* implies) of the red blood cells.



Age Related

As stated above, the severity of this disease is generally related to the age of the animal. This disease is mild in calves less than one year of age. Cattle 12 to 24 months of age can show acute signs of the disease, but it is rarely fatal. However, animals that are two years and older will show acute signs of the disease, and mortality rates may be as great as 50 percent if animals are left untreated. Some cattle that do survive without treatment may become carrier animals for this disease. They will serve as a reservoir

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and be an underlying source of infection for other susceptible cattle in the herd. Animals in the carrier phase usually show no clinical signs and rarely become ill a second time with the disease.

Diagnosis

Diagnosis for this disease can be made from consistent clinical signs as well as blood staining techniques. When blood from an infected animal is stained and viewed under the microscope, one can often find the parasite in the red blood cells, as shown in the picture on page 1. However, blood from a carrier animal will usually not have a high enough concentration of the parasite to make staining a good identification technique.

Treatment

Tetracyclines are the favored antibiotic treatment for outbreaks of anaplasmosis in cattle. Antibiotic protocols include oxytetracycline (100 mg/ml) given at 11 mg/kg of body weight daily for five days, or long-acting oxytetracycline (200 mg/ml) dosed at 20 mg/kg of body weight every three days for two treatments.

It is important to consider the amount of stress that is placed on an animal with anaplasmosis.

Because of their reduced ability for sufficient oxygenation, when treatment is administered, try to keep handling, transport and stress to a minimum. Over-handling may result in death. Carrier animals can be treated with long-acting oxytetracycline (200mg/ml) given at 20 mg/kg of body weight every three days for four successive treatments.

Prevention

Prevention of this disease can incorporate many factors. Insect control can be difficult, but pesticide applications to the herd may limit the number of potential vectors. Feeding chlortetracycline year round or during the vector season in medicated feed, mineral mix or feed blocks can also be effective in preventing outbreaks.

It also is important to be mindful of contaminated needles or instruments. When performing herd work, change needles often (every 10 to 12 head), and keep castration knives, dehorners or tattoo instruments in disinfectant between uses. Vaccines are also available on the market to help with the control and prevention of this disease.

For more information on anaplasmosis and other diseases affecting cattle, contact your local county Extension office.

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