



Cattle Producer's Handbook

Animal Health Section

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Bovine Anaplasmosis

J. L. Zaugg, D.V.M., Caine Veterinary Teaching Center
University of Idaho

Anaplasmosis, also known as yellow bag or yellow fever, is an infectious parasitic disease of cattle caused by the microorganism *Anaplasma marginale*. This parasite infects the red blood cells and causes severe anemia, weakness, fever, lack of appetite, depression, constipation, decreased milk production, jaundice, abortion, and sometimes death. The incubation time for the disease to develop varies from two weeks to over three months but averages three to four weeks.

Adult cattle are more susceptible to infection than calves. The disease is generally mild in calves under a year of age, rarely fatal in cattle up to two years of age, sometimes fatal in animals up to three years of age, and often fatal in older cattle.

Once an animal recovers from infection, either naturally or with normal therapy, it will usually remain a carrier of the disease for life. Carriers show no sign of the disease but act as sources of infection for other susceptible cattle. Occasionally, however, some animals will spontaneously clear themselves completely of the infection and become as susceptible to the disease as they were originally.

Importance

Some 40,000 animals die annually in the western states from anaplasmosis. Death and financial losses associated with abortions, weight loss, and milk reduction in surviving animals, and the cost of treatment and prevention, make anaplasmosis second only to brucellosis in importance to the cattle industry.

Distribution

Anaplasmosis occurs in most parts of the world. It is recognized in 40 of the 50 United States and is particularly important in the gulf coast and western states. The most recent complete disease prevalence survey in

the West was conducted in Idaho. In that study, nearly 13 percent of the cattle sampled tested positive for anaplasmosis encounters. Because of the principal means of disease transmission, cattle maintained under range conditions are at greater risk of disease exposure than those on irrigated pasture or in drylots.

Disease Transmission

Anaplasmosis is spread primarily by ticks and insects and by man through careless use of instruments. The infection is also infrequently passed from an infected cow to her unborn calf. Although colostrum ingestion and absorption is essential for new calves, colostrum antibodies do not increase the natural resistance calves have against the disease.

The Rocky Mountain wood tick (*Dermacentor andersoni*) is the most common tick vector in the spread of anaplasmosis. Other ticks can also be involved, however. Horseflies, deerflies, and mosquitoes can also carry small quantities of blood from infected animals to susceptible ones. Some horseflies are known to have carried infective blood a distance of two miles to infect other animals when they took another blood meal.

Because of the importance of ticks and insects in anaplasmosis transmission, most new disease cases are seen in late spring and early summer. However, disease transmission has been recorded in cattle under desert mountain range conditions every month of the year. Therefore, anaplasmosis should be suspected when animals are anemic regardless of the season.

Anything capable of transferring small quantities of blood between animals can effect disease transmission. Castration, eartagging, dehorning, tattooing instruments, and vaccination needles, without proper sterilization, easily spread the disease within a herd.

Wild Animal Hosts

Anaplasma marginale has been shown, at least experimentally, to infect such wildlife species as American bison, mule deer, white-tailed deer, black-tailed deer, elk, pronghorns, and bighorn sheep. With the exception of the black-tailed deer in California, none of the wildlife species studied show severe signs of illness when they are infected. They probably become infected from their association with cattle, and these wildlife species do not pose a threat as reservoirs of infection for susceptible cattle as previously believed. In fact, blood taken from experimentally infected deer actually served as an effective vaccine to protect cattle.

Prevention

Presently, there are no commercially available vaccines against anaplasmosis for general use in the United States. (A live vaccine is available for use in California only. Vaccinated animals may leave California only for slaughter.) Prior to 1997, two killed-product vaccines were in use, but both have since been discontinued. It is hoped that an effective vaccine will soon be back on the market.

Without vaccine, increased attention is necessary for early disease detection to allow for effective treatment before loss occurs. Such attention must be particularly directed at bulls or replacement heifer/cows obtained from outside of the local geographic area. Those animals may be from a non-endemic area and thus be more susceptible to illness when first encountering anaplasmosis agents.

Diagnostic Tests

Three tests are routinely used to detect the presence of anaplasmosis antibodies in blood. They are the complement fixation (CF), fluorescent antibody (FA), and the rapid card agglutination (RCA) tests. The most common and simplest to use is the RCA test. Other, much more

sensitive tests are being developed and should be available for routine use shortly.

Treatment

Once an infection has been diagnosed, the most effective treatment is the administration of oxytetracycline. One intramuscular injection of 9 mg/lb of body weight of long-acting oxytetracycline during acute infection will usually prevent death if the disease is not too far advanced. In severe cases, however, the stress of capture and treatment may kill the animal. These animals may do best by just being provided with easy access to food and water. Blood transfusions may help in some situations but not as a general treatment.

Carrier cattle may be cleared of infection. Such animals revert to a negative status when subjected to CF, FA, or RCA tests. Unlike those few animals that naturally, spontaneously clear themselves, those cleared via chemicals remain resistant to severe illness when re-exposed.

Methods employed to clear *Anaplasma*-positive animals include feeding chlortetracycline at 5 mg/lb of body weight for 60 days. This has the advantage of requiring little additional labor but has also the disadvantage of not being sure that each animal consumes the necessary antibiotic.

Another method is the intramuscular injection of long-acting oxytetracycline at the rate of 9 mg/lb of body weight for four treatments at three-day intervals. (Treated cattle must not be slaughtered for food for at least 28 days after the last treatment.)

Once an anaplasmosis-free herd is obtained, all herd additions must be either natural increases, be from anaplasmosis-free herds, or be tested negative or cleared before adding to the herd. Management practices must be adequate to prevent intermingling with other cattle. To assure a disease-free status, at least 20 percent of the herd must be retested annually with negative results.

