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Clean Facilities, Healthy Calves

The best coccidiosis prevention is a clean calving area.

by Heather Smith Thomas

Most ranchers have seen it, and many have treated calves for it. A typical sign of coccidiosis is watery brown diarrhea with a little blood in it — and the calves may be unthrifty for a while. A common sign is the calf straining repeatedly after passing loose feces, due to the severe irritation to the lining of the large intestine.

This intestinal disease is caused by protozoa. Most cattle have encountered these parasites and have developed some immunity but continue to shed a few oocysts in their feces. Calves are most vulnerable to this disease because they do not have much immunity, and if they ingest a high number of protozoa in a dirty environment, they may break with coccidiosis. The oocysts accumulate on the ground and become infective to other cattle. Oocysts are long-lived in favorable environmental conditions.

Veterinary researcher Gary Zimmerman, Livingston, Mont., says there are several different genera and many species of pathogenic coccidia, but only a few of these affect cattle. “There are also different susceptibilities in individual animals to the various coccidia,” he says. “Some

may be a little more pathogenic than others. And if new animals are brought into the herd, they may bring new coccidia that the rest of the herd have not yet been exposed to.”

All cattle have subclinical infections of coccidia held in check by the host immunity. “There is no cross-species immunity, however. A calf that’s been exposed to one species and developed immunity will not have immunity to the others,” he says.

There are many types of coccidia, affecting different species of animals. This disease is host specific, meaning that lambs won’t get it from cattle and cattle can’t get it from birds, even though poultry and wild birds are often affected. If calves get coccidiosis, they got it from other cattle. “Some producers have the belief that cattle can get

coccidiosis from birds, but this is not true,” Zimmerman says.

The protozoa are commonly shed by cattle, and coccidiosis is a disease that some ranchers have to deal with nearly every spring and sometimes in the fall. If a group of calves becomes exposed to a high level of contamination, they all will be infected, but only some will show clinical signs.

“There may be only a few that break with diarrhea, but in some instances morbidity (proportion of the group showing disease) may be as high as 75%,” Zimmerman says. “Morbidity and mortality rates of coccidiosis are quite variable, depending on various herd factors such as overall health as well as nutritional and immune status, and external factors such as crowding, weather, exposure to other disease agents, and other stressors. Mortality rate in a group is usually much lower than

morbidity, but we’ve seen it as high as 24%. Even if none of the animals die, economic impact can be devastating,” says Zimmerman.

Diarrhea in young animals can be serious, especially if they become dehydrated. Sometimes it’s not easy to tell whether the cause of scours is bacterial, viral or due to a protozoal parasite like coccidia or cryptosporidia, but the age of the animal and the appearance of the feces can be a clue, according to Russ Daly, DVM, Extension veterinarian and associate professor at South Dakota State University.

Coccidiosis can be a big problem in baby calves in certain situations and weather conditions but can also be serious in pens of weaning-age calves or even yearlings in a feedyard in a contaminated environment. Adult animals rarely show signs of disease through diarrhea unless their immune systems are extremely compromised.

“In some ways coccidiosis in young animals is similar to the other scours organisms we deal with,” Daly says. “Significant exposure to coccidia can occur soon after birth. Disease showing up in a herd depends on how much exposure there is for the babies.”

Daly says one big difference between coccidiosis and scours caused by viruses or bacteria is the incubation period. “The protozoa take longer to damage the intestinal lining to the point that the calf breaks with diarrhea,” he says. Even though the calf may pick up the oocysts of coccidia soon after birth, those immature protozoa must go through several stages as they multiply within cells in the intestinal lining. Then they break out of the cells to be shed in the feces, destroying those cells in

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the process and contaminate the environment and infect other young animals. This process takes at least three weeks from the time the calves ingest the oocysts until they show diarrhea.

“It is rare to see calves younger than 28 days of age with coccidiosis,” Daly explains. “If the scour problem is happening before that, such as calves that are only a few days or 1 to 2 weeks of age, you know it’s not coccidiosis. The exposure to pathogens, in the calving herd, is often right around the time of birth. So, we can use the age of the sick calf, incubation period, as a guide to help us determine the cause,” Daly explains.

Prevention and treatment

For prevention, Daly says to focus on where calves are born and spend their first few hours of life. “If the herd is confined for calving in a dirty environment, the babies are more likely to become sick,” he says. “Most control measures involve managing that exposure, such as using the Sand Hills calving system (periodically moving the calving herd to clean ground), and paying attention to calving barns and facilities,” Daly says. Calving barns must be kept clean, and cattlemen shouldn’t put cows calving in the same fields where cows were wintered and fed. In a fall-calving herd, the cleanest place to calve is on pasture that hasn’t been used by cattle recently.

“Just like the other scours-causing organisms, coccidia are shed in small numbers by the cows,” Daly says. “If they build up over time in the environment, newborns will encounter a higher level of pathogens. This is also why disease incidence often becomes worse a little later on in the calving season, after some of the babies have become sick and spread great numbers of these organisms via scouring feces.”

The coccidia live for a very long time in the environment and can be picked up by young animals via contaminated feed and water, nursing a dirty udder or by licking themselves after lying on dirty ground or bedding.

“We do have medications to treat coccidiosis,” he says. “This disease is not like rotavirus or coronavirus in which we don’t have specific medications and mainly just give supportive care like fluids and electrolytes. For coccidiosis we have drugs like amprolium and certain sulfa drugs that can be used for sick calves,” Daly says.

These are coccidiocidal compounds that actually kill the coccidia. There are also drugs for prevention which are called coccidiostats because they hinder multiplication of the coccidia. These include decoquinate and the ionophores.

With older calves, such as a group of weaned calves in a feedlot, medication can be added to feed or water to help prevent sickness. When the whole group is treated, this precaution can keep them from developing diarrhea.

“This is often a good practice, especially around the time of weaning, for calves to receive some of these medications in the feed or water to help reduce the concentration of those organisms in the body,” Daly says. “It seems like stress and weather can trigger flare-ups of coccidiosis, so treating the group at weaning can often prevent the disease.”

A calf that might have been able to handle some exposure under good conditions may not be able to fight it off when stressed if the immune system is compromised.

“In older calves there are several types of medication that can be put in feed, such as Rumensin, Bovatec, Deccox, etc. It’s harder to use these for baby calves. Some people feed Rumensin to their cows to try to minimize shedding of oocysts from the cows for a while prior to calving, thinking this will reduce exposure for the calves. There is no good research to show that this works to reduce coccidiosis in calves. Rumensin is labeled for cows and does improve feed efficiency. It may translate into healthier calves just because of increased milk production and a more feed-efficient mother, but we don’t know if it actually helps prevent coccidiosis in the calves.”

The best prevention is to keep the calving area clean. “We have medication that may reduce or cut down the amount of oocysts shed from the cow, but we don’t have a drug that will halt all shedding,” Daly says. “Cows left in the same environment for a long enough period will still expose the calves to coccidia. People should not think they can prevent this disease in calves just by treating the cows.”

Daly says wet weather seems to make it easier for the oocysts to survive longer in the environment, creating perfect conditions for calves to pick up higher doses and to become sick. If the feedlot or calving area is wet and muddy with a lot of fecal matter, calves may pick up a high dose of these pathogens.

One sign of coccidiosis is blood in the feces. “This can vary, however. There may be a great amount of blood, or none. If we see blood in the feces of a calf that’s about a month of age, however, this is a pretty good clue that it’s coccidiosis because there are not very many other diseases that would cause this, at that age,” he says.

Coccidiosis is usually easy to diagnose with a fecal sample, according to Daly. The

Complex disease

Virginia Tech Professor of Parasitology Anne Zajac has done a lot of research on coccidiosis and says it continues to be a common disease in younger animals that have not been exposed before. One of her graduate students, Aaron Lucas, who is now in private practice in northern Virginia, did a study on the effects of stress on the development of coccidiosis, since cattle are exposed to these pathogens from the time they are born — even though disease symptoms are not seen until later.

“Everyone feels it’s due to stress, including weaning stress, transportation, etc.,” Zajac says. “Dr. Lucas’ findings led him to feel that it’s not just stress alone that precipitates this disease, but stress in conjunction with exposure level. Sometimes a high level of exposure overwhelms the calf’s immune system.”

He did a study using different weaning systems, including some that were lower stress than others such as fenceline weaning and nose flaps as opposed to corral weaning, thinking some of the highly stressed calves would break with coccidiosis. “None of them did,” Zajac explains. “Probably there wasn’t a high level of exposure where they were being kept. It’s a complex group of factors that determine when and where you might see the disease and where you don’t.”

Zajac says ranchers often feel that coccidiosis is a fairly easy diagnosis to make when they see scouring especially if there is blood in the feces. “What confuses us sometimes is that we tend to lump a lot of things into calling this coccidiosis,” she says. “Even with diagnostic tests it is hard to make a definitive diagnosis because all calves have oocysts in their manure, and numbers aren’t always revealing. It can be difficult to correctly identify this disease. This also confuses what people think works and doesn’t work for controlling or treating it. Perhaps they used Bovatec and thought it didn’t work, but it might not have been coccidiosis.” **HW**

veterinarian can do a fecal float to determine if oocysts are present. “Once in a while, however, we see a situation where there is damage in the intestines due to coccidiosis and the calf is scouring, but the life cycle of the organism hasn’t yet progressed to the point where we can find oocysts being shed,” he says. The fecal sample may look normal; the oocysts might not show up in the feces for another day or so.

If coccidiosis is suspected, however, the calf should be treated with appropriate drugs, along with good supportive care to replace the fluids and electrolytes being lost. In some cases calves lose so much fluid

that they dehydrate dramatically. Some may need IV fluids and electrolytes. If they are anemic from blood loss or weak and dehydrated because the intestine is too damaged to absorb fluid and nutrients, they definitely need supportive treatment.

Severity of the disease may depend on the level of exposure and how much resistance the animals have. Young animals are especially vulnerable. “There is no vaccine for this disease; it’s hard to create a vaccine against a protozoan infection,” Daly says. “It’s best to try to manage the environment to minimize exposure and reduce the number of calves that might get sick.” **HW**

Nervous signs

Occasionally a calf with coccidiosis will show nervous signs, which may vary from minor twitching to incoordination, loss of balance or seizures — which may be intermittent or continuous.

“The syndrome of nervous coccidiosis is not completely understood,” says Veterinary researcher Gary Zimmerman, Livingston, Mont. “Some researchers believe the actual cause is not due to the coccidia but to mineral depletion in the body resulting from the damaged and compromised intestinal tract. Neurotoxins have also been suggested as a cause. Nervous signs may occur in about 10% of calves with enteric coccidiosis but may occur in up to 30%.”

The nervous form can be difficult to treat. None of the standard treatments for coccidiosis do much good. The calves may respond and look better, and the producer thinks the drug worked, but it’s probably the supportive treatment — IV fluids, dextrose, etc. — that helped the most. Supportive therapy is crucial for these calves. The drugs may help, however, by removing the coccidia. Cattlemen will want to remove anything that might cause potential problems in the gut so it will be able to absorb fluid and nutrients.

Nervous enteritis may show up in a few calves during a severe outbreak. Some animals may become so weak from diarrhea, dehydration and anemia that they stagger or go down and have trouble getting up, and these cases may be mistaken for nervous coccidiosis.

“The actual nervous coccidiosis syndrome is fairly dramatic, however,” Zimmerman says. “It’s like a seizure. If these animals become excited they go into convulsions. They drop to the ground and kick their legs. The muscles become rigid. If a calf goes down like that, you should give him thiamin and dextrose IV and some oral electrolytes and get him upright so he won’t bloat, and leave him alone. If you come back an hour later, he’s usually gotten up and rejoined the herd, and you won’t know which one he is unless you wrote down his tag number.”

Zimmerman says this may seem like a miracle cure, but in reality that calf simply got over the seizure. “Convulsions may be dramatic, but if you let these individuals be calm and quiet, they become normal again,” Zimmerman says. “Death rate when you see central nervous system signs is fairly high, however. More than 50% of them generally die within the next few days.” **HW**