



Dairy Details

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NORTHERN VALLEY DAIRY PRODUCTION MEDICINE CENTER

Pesky Prototheca

Here's another new challenge for dairy farmers! Prototheca is an emerging mastitis bug that seems to be popping up more often. While we've learned a lot about it through experience and research the last couple years, it still seems like there is more we don't know than what we do know!

What is it?

Most mastitis is caused by bacteria. But, Prototheca is not a bacteria. It is a type of algae. It lives in all sorts of places including manure, soil, and water. Because it's an algae, it doesn't respond to antibiotics. In fact, we have no treatment for Prototheca. Once infected with it, a cow cannot be cured.

Why is it so pesky?

The fact that Prototheca is not treatable is probably the number one reason why it's so pesky. But, it doesn't stop there. Detecting the source of Prototheca is difficult if not impossible. Prototheca has been cultured in bedding, manure, water, and soil, making it very difficult to control it in the environment. Most mastitis pathogens are considered to be either environmental or contagious. Prototheca, however, can be both.

Cows can become infected with Prototheca from their environment in a variety of ways. Contaminated bedding, walking through standing water, splashed water or manure, or from water from sprinklers in the summer are just a few examples of environmental infection means. There also seems to be a lot of transfer between cows in the parlor. This makes it very important to identify Prototheca positive cows ASAP and manage them accordingly.

Once a cow is infected, Prototheca is also sporadically shed in the milk. Positive cows may shed the algae in their milk one day, but not the next. This makes identifying positive cows a headache at times.

There is some seasonality to Prototheca infections. Although our lab does find it year round, "Prototheca Season" seems to occur from about late July through October. We are not sure what causes the seasonality and it probably varies between farms. One theory is that exposure to more water during warm weather increases a cow's exposure to Prototheca.

Lastly, Prototheca is difficult to identify on a milk culture plate without experience and a microscope. It can easily be mistaken for other mastitis bugs such as yeast. A positive must be confirmed by looking at it under a microscope.

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When ingested, Prototheca can pass through the cow's stomachs and intestines and sheds in the manure. It can also live in a cow's lymph nodes for long periods of time. This could be why we see "sporadic shedders" and cows may shed Prototheca long after they become infected.

Prototheca Game Plan

Developing an eradication and control plan with your veterinarian as soon as it is identified on your farm is very important to prevent a major outbreak. Ideally, once a cow is diagnosed with Prototheca (via a cultured a milk sample), she needs to leave the herd ASAP. Culling positive animals is the best way to avoid an outbreak. If cannot immediately sell Prototheca positive cows, create a "Prototheca pen". By separating these cows off from the rest of the herd and milking them last, you prevent contagious spread to the rest of the herd and also decrease environmental contamination.

Many producers will ask if they can just "kill off" or "dry off" the infected quarter? From personal experience on my family's farm, this does not work. 100% of these cows will become positive in another quarter, putting more negative cows at risk.

Another mystery about Prototheca is the variability in levels of Prototheca seen on farms. Some farms will only have a positive here and there, while others will see severe outbreaks with as much as 1/3 of the herd becoming infected. Differences in environment and the number of "silent shedders" is most likely the reason for this variability.

With this being said, if you every find positive Prototheca cows on your farm, CULLING and SEPARATION practices are your friend!

Prototheca Prevention

Tips for decreasing the exposure potential for your cows include:

- Decrease any areas of standing water in cows' environment as much as possible.
- Keep water tanks clean and free of algae. Maybe even consider a water treatment system.
- As with all mastitis pathogens, practice good hygiene and prep procedures during milking and when administering any intra-mammary treatments.
- Do not put mastitis tubes or teat sealant tubes in warm water before administering them. Into the udder. This is a great opportunity to introduce a water loving bug like Prototheca up into a cow's quarter. A good chunk of Prototheca cases seem to occur in cows that have recently been treated with mastitis tubes and fresh cows. They may have increased risk of exposure from inserting the tube into the cow's teat.

Culture, culture, culture!

Monitoring at a herd level AND the individual cow level with milk culturing is extremely important when dealing with Prototheca. Monthly bulk tank cultures can help identify the presence of Prototheca (along with other worrisome bugs such as Mycoplasma and Staph Aureus) before it becomes a larger problem. Culturing all clinical cases of mastitis is a great place to start a culture program, whether or not Prototheca is present on your farm. Prototheca cows may never have visual abnormal milk and clinical mastitis. They may simply be chronically high SCC cows. Culturing your high SCC cows every month may help catch subclinical cows before they are able to shed it to other cows. CMT testing all fresh cows and culturing CMT positive fresh cows, will also help identify subclinical shedders early on.

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