



SCC DIAGNOSTICS TOOL BOX

QCF-16: MYCOPLASMA MASTITIS

Russ Bey, Ralph Farnsworth, and Jeff Reneau
University of Minnesota, St. Paul

Introduction

The thought of having mycoplasma in your dairy herd strikes fear in the hearts of many dairy owners/producers. However, mycoplasma mastitis is not a new disease; it was first reported in 1961 in Connecticut. Mycoplasma has been isolated from a variety of herds throughout the United States and is responsible for causing a variety of diseases in dairy animals. In young animals mycoplasma species cause ear infections characterized by head tilting, arthritis and pneumonia. Mastitis, arthritis and pneumonia are common infections in adult dairy cattle. The species of mycoplasma causing infection in dairy animals are most frequently *M. bovis* and *M. californicum*. *M. bovis* is the most frequently isolated in the United States and most commonly associated with clinical mastitis.

Mycoplasma organisms causing mastitis are commonly found in the mucous membranes of the respiratory and urogenital tracts of healthy cows. These organisms enter the body as a consequence of stress or another infection. Once inside the body they are responsible for causing mastitis, pneumonia or arthritis. Young animals can be exposed by direct contact with the dam, when they are fed colostrum containing mycoplasma or by contact with human handlers.

Transmission

The introduction of mycoplasma into a negative herd frequently occurs when replacement animals, particularly heifers, with infected udders are brought into the herd. Transfer of mycoplasma infection within the herd occurs at milking time as a result of poor parlor hygiene and by milking machines, hands, contaminated infusion equipment, chapped or cracked teat ends, etc.

Since mycoplasma are part of the normal respiratory tract of clinically healthy animals; transfer from the lungs to the udder by the blood stream is thought to occur. In addition, heifers may become infected at a young age, probably through the ingestion of colostrum or milk containing mycoplasma, between calves through respiratory tract spread, or from clothing and hands of human caretakers. Heifers are thought to have the organism spread from the lungs to the udder establishing an infection which manifests at calving time.

Clinical Signs

Mycoplasma is frequently introduced into herd with the purchase of new animals. Once introduced into the herd cows of all ages and at any stage of lactation are susceptible. In lactating cows the characteristic signs of mycoplasma mastitis are:

1. Clinical mastitis that does not respond to therapy.
2. Mastitis that may appear to rotate from quarter to quarter.
3. Abnormal udder secretions that vary from watery milk with a few clots to sandy colored milk to thick colostrum like milk.
4. Subclinically infected animals may have elevated cell counts. However, many subclinically infected animals have low cell counts.

Infected cows may return to “normal” appearing status yet be shedding high numbers of organisms in their milk. In addition, they may have low SCC, which may help mask their infected and shedding status. These infected cows may remain infected through the dry period shedding high levels of mycoplasma early in their next lactation. Some cows may clear the organism from their udder after the clinical or subclinical episode. Some animals will shed the organism intermittently. This variable duration of shedding and lack of clinical signs contributes to the difficulty in predicting a complete recovery (bacteriologic cure). It must be remembered that dry cows are equally susceptible to mycoplasma infection. These animals frequently show little in terms of clinical signs.

Diagnosis

Diagnosis of mycoplasma infection depends primarily on microbiological culture of udder fluid. Cows with clinical mastitis due to mycoplasma generally shed high numbers of organisms in their milk. Culturing and culling all positive cows at this time is an excellent diagnostic and control procedure.

Samples from subclinical or chronic carrier cows frequently shed organisms intermittently or in low numbers making finding those animals difficult. Another time at which cows shed large numbers of mycoplasma is at calving. Culturing at this time is a good idea if you want to detect which animals are infected. Although culture is the most effective way of identifying mycoplasma-infected animals, but, it is time consuming, as it takes 5-7 days of incubation before a culture can be considered negative. Further complicating mycoplasma culture is that they have special growth requirements and do not grow on ordinary laboratory culture media.

Culture of bulk tank milk is a good method of determining whether mycoplasma is present in a herd. However, with the variable rate of shedding by infected cows, which is often related to stage of infection, one negative culture does not guarantee a herd is free of this disease. Thus, continued culturing using multiple samples is an absolute necessity to help monitor the status of the herd.

Control

There is no effective treatment for mycoplasma mastitis. Control involves the identification of infected animals by culture of milk. This is especially true of clinical mastitis cases.

In general, there are three strategies of dealing with mycoplasma mastitis:

1. Do nothing, this is not advised.
2. Take a very aggressive approach, which is done in California. This involves culturing all animals in the herd and culling any culture positive animals. Continued culture and cull is practiced until the all animals in the herd test negative. One cow should be tested several times due to intermittent shedding before she is considered truly negative. Once negative, the herd is monitored by bulk tank culture using multiple samples.
3. The conservative approach, which is often practiced in the Midwest and Florida. This involves culturing all clinical mastitis cases and culling those immediately. Next a decision may be made to culture all fresh cows at calving. However, it must be decided what is going to be done with the positive animals. Often, establishing a mycoplasma pen may be feasible if the herd is large and a high number of animals are infected. Alternately, these animals may be marked in some way for potential culling at a later date. This could potentially reduce the distribution of the organism in the milking parlor. If the culture positive non-clinical mastitis cows remain in the herd and develop clinical mastitis at a later date, it is recommended that they be culled immediately. In addition to culturing at freshening, culturing at dry-off may also be practiced. If they are, culture positive the same decisions must be made as culturing at freshening.

No matter what type of approach is chosen there are some procedures that must be practiced to limit the spread of mycoplasma within the herd:

1. Review all milking hygiene procedures. Emphasize good pre and post-milking-teat dipping. Wash hands after milking know mycoplasma infected cows.
2. Cull all clinical mastitis cows which are know to be mycoplasma infected.
3. Increase efforts to detect clinical mastitis.
4. Culture all newly purchased animals. If this is not possible, segregate them until such a time they can be cultured, i.e. at calving if they are dry when purchased. Be sure to test all purchased milking cows several times before assuming they are not infected.
5. When treating animals with intramammary products use only commercially labeled and approved products.
6. Use strict hygiene when milking or handling hospital pen animals.

Keep mycoplasma infection in the herd in perspective. Do not let it detract from the real mission of producing high quality milk using proven procedures of targeting teat ends for cleaning prior milking unit attachment as well as other udder hygiene procedures. These processes will help control the spread of mycoplasma and other infectious agents within the herd. In addition, it will help control exposure to environmental pathogens which can rob the dairies bottom line profit.

