

Emerging mastitis pathogens

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Abstract

Mastitis means inflammation of the parenchyma of the mammary gland. Many infective agents have been implicated as causes of mastitis. Worldwide, farmers have achieved tremendous success in reducing the incidence of contagious mastitis by adopting the traditional methods of mastitis control. The greatest impact of these control measures has been on infections caused by the contagious bacteria such as *Staphylococcus aureus* and *Streptococcus agalactia*. But this success has not been demonstrated for clinical mastitis caused by other agents. Organisms such as coagulase negative *Staphylococci*, *environmental Streptococci*, *Mycoplasma spp* and *Serratia spp* have increasingly been isolated from dairy herds that had low somatic cell counts.

Keywords: Mastitis, Inflammation, Pathogen, Emerging, Mammary Gland, Farmer, Clinical Mastitis, Contagious.

Mastitis caused by coagulase negative *Staphylococcus* species

Coagulase negative *Staphylococcus* species refers to *Staphylococcus* species that are not *Staphylococcus aureus*. These bacteria are sometimes referred to as “environmental staphs”. They are one of the most frequent organisms isolated from milk samples from herds that have controlled major pathogens. They live on teat skin and can colonize the teat canal. Anything that decreases the patency of the teat skin can allow infections to occur. Both clinical and subclinical infections can occur. Infections are highest immediately after calving, decline in mid lactation and increase again in late lactation until the cow receives dry cow therapy. In clinical mastitis cases somatic cell counts are generally two to three times higher than uninfected quarters but the magnitude of somatic cell count response is usually less than that with other pathogens. This is not a frequent cause of clinical mastitis. Routine dry cow therapy is effective in reducing intramammary infection.

Environmental *Streptococcal* mastitis

Environmental Streptococci refer to species of streptococcus other than *Streptococcus agalactia* that are isolated from bovine mastitis. These organisms are also referred to “non ag” *Streptococci*. They can cause chronic infections that develop very high somatic cell count. They differ from traditional contagious mastitis

organism because the primary route of exposure is from the environment. Infection rates are highest before calving, during early lactation and near dry period. They can cause both clinical and subclinical mastitis. Abnormal milk is the most common symptom. Occasionally there will be swelling of the quarter and less often the cow will show systemic disturbances. Traditional methods of treating and controlling of mastitis are effective.

Mycoplasma mastitis

Mycoplasmas are bacteria like organisms that can cause diseases in animals. They differ from most bacteria by the fact that they lack a cell wall, instead they are enveloped in a membrane. *Mycoplasma mastitis* is classified as a contagious mastitis pathogen. Unlike other forms of contagious mastitis, mycoplasma infection can spread from the respiratory system via the blood or lymph to the udder.

Cows with clinical infections may have abnormal milk that is often brown to tan with flaky sediment. Some milk samples may appear to have a sandy, granular appearance when allowed to settle. The infection may spread from one infected quarter to multiple quarters despite treatment. Frequently the affected cows milk production will drop dramatically. Clinical mastitis symptoms may follow an episode of pneumonia.

Subclinical infections do occur with or without elevated somatic cell counts. There is no approved intramammary antibiotic that is effective.

Serratia mastitis

Serratia species are gram negative bacteria that are commonly found in the environment. Several different species of Serratia can cause mastitis, including *S. marcescens*, *S. liquefaciens* and *S. rubidaea*. Susceptability to infection is highest during the dry period and several outbreaks have been related to adverse weather conditions. Many Serratia infections are subclinical in nature and characterized by elevated somatic cell counts. Clinical signs are most often mild, characterized by flakes and discoloured milk. Cows are rarely systemically ill. Infections tend to be chronic and clinical signs may be intermittent. Isolates of Serratia are resistant to most antibiotics and therapy is not recommended.

Control of the emerging mastitis pathogens

In case of environmental mastitis pathogens there are two ways of looking at prevention.

1. Increase the cow's ability to resist the bacteria or don't interfere with the ability she has.
- Proper maintenance of milking machine function.
 - Comfortable resting places that minimizes

- chances of injury.
 - Proper nutrition.
2. Keep the population of infectious organisms reduced.
- Milking hygiene
 - Environmental hygiene
 - Antibiotic therapy

For mycoplasma infections which is a respiratory pathogen, in addition to all the above, properly ventilated barns are critical.

References

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