

ENVIRONMENTAL STREPTOCOCCI

Overview

Environmental streptococci are considered to be major mastitis pathogens because they typically cause high somatic cell counts (SCC) and persistent infections that result in bacteria shed in the milk.

Diagnosis

Environmental streps cause about 20-25% of clinical mastitis cases. Just like other mastitis-causing pathogens, these infections cannot be diagnosed just by looking at the appearance of the case. Milk samples must be taken from quarters with suspected infections and sent to a diagnostic laboratory.

In the lab, a catalase test can differentiate environmental streps from staphylococci. Both are gram positive cocci, but streptococci are catalase negative. The CAMP test is used to differentiate environment streps from *Streptococcus agalactiae*.

Environmental streps can also be diagnosed using on-farm culture labs because they will grow with a characteristic (easy to spot) appearance on select medias. For example, the Esculin reaction simply darkens streptococci making it easy to identify in the culturing agent.

Environment Strep. vs Strep. Agalactiae

It is important to distinguish environmental streptococci from *Streptococcus agalactiae* in order for proper treatment and control. Strep. ag is an 'obligate udder pathogen', meaning it lives only in the udder of cows and is always spread in a contagious manner. Whereas, environmental streps are organisms that are ubiquitous in the cow's physical surroundings and are transmitted through the environment.

Symptoms

Environmental strep infections occur in the same way as other bacterial infections of the udder. The mammary gland becomes infected when the exposure at the teat end exceeds the ability of the immune defenses to resist that infection. These bacteria can cause both clinical and subclinical infections. About one-third of the subclinical infections will become chronic and persist for long periods with increased SCC. About half of the cows with subclinical infections will develop clinical symptoms. These include: abnormal milk, swollen quarters, and other systemic signs that cannot be distinguished from other types of bacteria, such as coliform infections.

Sources

There are many sources in the cow's environment that can become contaminated.

1. Pathogens are shed in the feces of cows.
2. Many of the bedding sources, such as straw, are known to support growth.
3. Environmental streps grow well in cool temperatures and in pasture-based systems.
4. Strep infections may also be acquired during the cow's dry period and persist to cause symptoms in the next lactation.

Control

Environmental mastitis prevention programs should focus on the initial infection. Improving cow hygiene and their environment in the dry and periparturient periods can effectively reduce teat exposure to potentially contaminated sources. Cows that are dry, early fresh, older, high producing and those in negative energy balance are highly at risk of infection due to their lowered immune defense and ability to respond to challenges in the environment.

Treatment

Clinical Cases

Cows with clinical symptoms caused by environmental streptococci require appropriate antibiotic treatment. Intramammary products with a proven gram positive spectrum are recommended. Research has also shown that some strep cases respond better with a moderately longer duration therapy, such as a five-day treatment protocol.

If clinical cases are not treated, the symptoms may resolve (appear normal) but cases may have simply reverted to a subclinical state. Farms that do not treat clinical mastitis often develop problems with chronic strep infected cows which may lead to a higher bulk tank SCC, an increased prevalence of subclinical infections and, ultimately, lower milk production.

Subclinical Cases

Treatment of subclinical infections is most likely not profitable for most farms. Prevention of the initial infection results in the best economic outcomes.

For more information
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