

Foot Rot in Cattle ¹

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Foot rot is a term loosely used to describe lameness associated with the bovine foot. However, true foot rot is characterized by acute inflammation of the skin and adjacent soft tissues of the interdigital cleft or space. It is accompanied by diffuse swelling, varying degrees of lameness and in most cases, by a foul-smelling necrotic lesion of the interdigital skin. Foot rot is the term commonly used in the United States for this lameness disorder, but internationally the disease is better known as foul, foul-in-the-foot, interdigital phlegmon, interdigital necrobacillosis, or infectious pododermatitis. It is a frequent problem of beef and dairy cattle, especially in poorly drained, muddy pens or lots and pastures. Normally, occurrence is sporadic, affecting only 1 or 2 animals at a time, but it may affect larger numbers of cattle in outbreak situations or problem herds.

Causes and Contributing Factors

For many years *Fusobacterium necrophorum* or *Bacteroides melaninogenicus* were considered the primary causes of foot rot with *F necrophorum* most commonly isolated. Recently with improved technology and taxonomic changes there is evidence that the companion organism *Porphyromonas levii*

(formerly considered in the *Bacteroides* genus) may play an important role with *F necrophorum* in foot rot infections.

Healthy epithelium (skin) is resistant to bacterial organisms, whereas diseased or injured epithelial tissues are susceptible to infection. High rainfall with wet feces and mud can soften the interdigital skin, making it susceptible to injury. Infectious agents gain entry through the skin as a consequence of injury caused by sharp pieces of stone, metal, wood, stubble, thorns, and frozen manure. Other factors that may encourage damage to the interdigital skin may include irritation and erosion of the interdigital skin caused by interdigital dermatitis, believed to be in part a consequence of the constant exposure of feet to mud and manure.

Clinical Signs and Diagnosis

The earliest and most obvious clinical sign of foot rot is lameness, which increases in severity as the disease progresses. Once the infectious organisms become established, they cause inflammation and necrosis of tissue, resulting in slight to severe swelling and pain. The swelling is usually more

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evident in the interdigital space and around the coronet (or skin horn junction). The swelling is usually sufficient to cause separation of the digits. A break or fissure in the interdigital space develops which may extend from the front of the foot to the bulbs of the heel. These lesions are sometimes difficult to see unless the foot is elevated and properly restrained for examination. The interdigital lesion is often necrotic along its edges and has a characteristic fetid or foul odor, hence the name foul-in-the-foot.

The signs of foot rot in cattle include lameness with holding or raising a foot, reluctance to move, impaired locomotion, loss of appetite, weight loss, low-grade fever and reduction in milk yield for lactating cows. Hind feet are affected most often and cattle tend to stand and walk on their toes. If left untreated, lameness becomes increasingly severe with infection extending to the distal and proximal interphalangeal joints and other deeper structures of the foot.

Diagnosis of foot rot is made by observation of the animal and physical examination of the foot for the characteristic gross lesions. Cattle producers often diagnose any lameness associated with foot swelling as foot rot, but a more careful examination may reveal other causes of the swelling and lameness.

Treatment

The affected foot should be cleaned and inspected for characteristic clinical signs and to rule out other causes for the swelling and lameness such as foreign bodies, infectious arthritis, or wounds caused by trauma. Historically, an antiseptic and bandage were applied after cleaning and trimming the foot, but topical treatment and bandaging are considered less important than systemic therapy. Prompt diagnosis and initiation of antimicrobial therapy are essential to achieve a satisfactory response. The treatment of choice is parenteral antibiotics administered for three to five days. In commercial beef cattle that are difficult to handle, feed additives such as chlortetracycline and oxytetracycline have been used for control and treatment of large numbers of cattle with the disease. Although this is

convenient, there are no feed-grade antimicrobials labeled for control or treatment of foot rot. According to the Animal Medicinal Drug Use Clarification (AMDUCA) extralabel use of feed additives is prohibited in the United States. Readers are advised to seek advice from a veterinarian for specific recommendations. In some severe cases where the infection has extended into deeper tissues of the foot, surgical correction including amputation of the affected claw may be indicated. Recovered cattle can usually function well with one claw.

Prevention

Preventive measures include removing sources of injury and keeping feet dry and clean. Mudholes should be filled and stagnant pools drained or fenced off. Lots should be well drained and manure removed frequently to reduce the amount of muddy filth. In areas where cattle walk frequently, such as in lanes or gateways, grading or filling in low areas to provide a well-drained pathway for walking may help to prevent foot rot cases. Pouring a concrete pad around feed bunks and water troughs will help keep feet dry. In dairy cows, beef cows and bulls, regular foot care including claw trimming as needed helps prevent foot diseases and injuries. Animals may also be walked through a foot bath containing copper sulfate, zinc sulfate or formalin (where permitted). Footbaths are more commonly utilized in dairies and may be impractical for most beef herds.

Historically organic iodide (EDDI) was added to salt mixtures to reduce the incidence of foot rot. Although organic iodide can be effective, the current US Food and Drug Compliance policy guide states that all therapeutic and prevention claims for EDDI are considered as unapproved new animal drugs, thus restricting their use.

Foot rot can be a cause of economic losses in beef and dairy herds. Early treatment, control and prevention under the direction of a veterinarian will help to keep losses to a minimum.