

Black leg

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ABSTRACT

Black leg, also called blackquarter is a clostridial disease caused by *Clostridium Chauvoei*. It mainly affects cattle and sheep. Animals with age of 6 months to 2 years are mainly susceptible. This bacteria is found mainly in the sandy regions. It is normally present in animal body and cause disease when injury occur in the muscle. Clinical signs depends on the severity of the infection. Common signs are lameness followed by swelling and pain in the affected limb. Toxins are produced by bacteria which causes severe damage to affect muscle. Death can occur in this disease without showing any clinical sign. Broad spectrum antibiotics can be administered such as penicillin and oxytetracycline. Preventive measures include vaccination and proper hygiene of animals. It can cause severe economic losses so preventive measures should be strictly adopted.

Introduction

Blackleg is a devastating bacterial disease that affects livestock, particularly cattle and sheep, and is caused by the bacteria *Clostridium chauvoei* [1]. This highly contagious disease is characterized by sudden onset and rapid progression, leading to severe muscle damage, and in severe cases, death. Blackleg can cause significant economic losses for farmers and has a profound impact on animal welfare. The bacteria responsible for the disease are commonly found in soil and manure, and can enter the body through wounds or ingestion. The disease is most prevalent in areas with high rainfall, warm temperatures, and alkaline soil conditions, which provide an ideal environment for the bacteria to thrive. Vaccination is the most effective method of preventing blackleg [2], but prompt treatment with antibiotics and surgical intervention may also be necessary in some cases. Given the devastating consequences of blackleg, it is essential for livestock owners to be vigilant and take appropriate preventive measures to protect their animals.

History of black leg

The disease was first described in the late 1800s, and its name "blackleg" refers to the dark, necrotic (dead) tissue that develops in the muscles of infected animals. In the early years of the 20th century, blackleg was a major problem in Europe and North America, where it caused significant losses in livestock production. The causative bacterium, *Clostridium chauvoei*, was first isolated and identified in the early 1900s, which allowed for the development of vaccines and other control measures. However, despite these efforts, outbreaks of blackleg continued to occur, particularly in areas with poor sanitation and management practices. In the mid-20th century, the development of antibiotics and improved management practices, such as better hygiene and nutrition, led to a decline in the incidence of blackleg [3]. However, the disease remains a significant concern in many parts of the world, particularly in developing countries with limited resources for disease control and prevention. Today, blackleg remains a major challenge for livestock producers, and ongoing research is focused on improving the efficacy of vaccines and developing new treatment and prevention strategies. While progress has been made in reducing the impact of this disease, continued vigilance and investment in disease control measures will be necessary to ensure the long-term health and productivity of livestock.

Clinical signs and symptoms

The clinical signs and symptoms of blackleg in cattle and sheep can vary depending on the severity of the disease. In some cases, the disease may progress rapidly, with few clinical signs observed before sudden death. However, in most cases, a number of signs and symptoms will be apparent before the animal's condition deteriorates. One of the most common signs of blackleg is lameness [4], which may be accompanied by swelling and pain in the affected limb. The animal may also show signs of stiffness or reluctance to move, particularly if the infection has spread to multiple limbs. Another common symptom of blackleg is fever, which may be accompanied by lethargy and a loss of appetite. The animal may also exhibit respiratory distress, particularly if the infection has spread to the lungs. As the disease progresses, affected muscles may become swollen, painful, and firm to the touch. The affected tissue may also turn dark in color, giving the disease its name "blackleg." In severe cases, the animal may show signs of shock [5], with pale or white mucous membranes, weak pulse, and rapid breathing. If left untreated, blackleg can rapidly progress and lead to death within 24 to 48 hours of the onset

of clinical signs. Therefore, prompt diagnosis and treatment are essential for successful outcomes. If you suspect blackleg in your livestock, you should contact your veterinarian immediately.

Transmission cycle

The transmission cycle of blackleg typically involves the following steps:

1. Ingestion or entry of the bacteria into the animal's body: The bacteria can enter the animal's body through ingestion of contaminated feed or water, or through wounds in the skin. The bacteria can also gain entry through surgical procedures or injections.
2. Bacteria colonization and multiplication: Once the bacteria enter the animal's body, they rapidly multiply and produce toxins that damage the animal's tissues, particularly the muscles.
3. Spreading of the bacteria and toxins: The bacteria and toxins can spread rapidly through the animal's body, causing widespread tissue damage and inflammation. This can lead to the formation of gas-filled pockets in the muscles, which can cause the affected area to feel spongy or fluctuant.
4. Shedding of bacteria: As the animal's tissues become necrotic (dead), the bacteria can be shed into the environment through bodily fluids or carcasses.
5. Contamination of the environment: Once shed, the bacteria can persist in the environment, contaminating soil and manure for extended periods.
6. Infection of new animals: Other animals can become infected by ingesting or coming into contact with contaminated feed, water, or soil, or by wounds made by contaminated instruments or equipment.

Diagnosis and Treatment

Diagnosis of blackleg typically involves a combination of clinical signs, history, and laboratory tests. Here are the common methods used for diagnosis:

1. Clinical evaluation: A veterinarian will assess the animal's clinical signs, including lameness, swelling, pain, fever, and necrotic muscle tissue. The history of sudden onset and rapid progression of symptoms is also indicative of blackleg.
2. Physical examination: The veterinarian will perform a thorough physical examination, palpating the affected area and looking for signs of muscle swelling, gas pockets, or crepitus (a crackling sound) in the affected tissues.
3. Laboratory tests: To confirm the diagnosis, samples of affected tissue, such as muscle or fluid, may be collected for laboratory analysis. This may include bacterial culture and identification, as well as toxin detection tests.

Treatment of blackleg involves a combination of medical interventions and supportive care:

1. Antibiotics: Prompt administration of broad-spectrum antibiotics, such as penicillin or tetracycline, is essential to combat the bacterial infection. This helps prevent further spread of the bacteria and toxins.
2. Surgical intervention: In severe cases, surgical intervention may be necessary to remove affected tissues or gas pockets. This can help reduce the progression of the disease and improve the animal's chances of recovery.
3. Supportive care: Animals affected by blackleg may require supportive care to manage pain, reduce inflammation, and maintain

hydration and nutrition. This may include pain medications, anti-inflammatory drugs, and fluid therapy.

4. **Vaccination:** Vaccination is a crucial preventive measure for blackleg. Vaccines containing inactivated *C. chauvoei* bacteria or its toxins are available and should be administered according to the recommended schedule. Vaccination helps stimulate the animal's immune response, providing protection against future infections.

References

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