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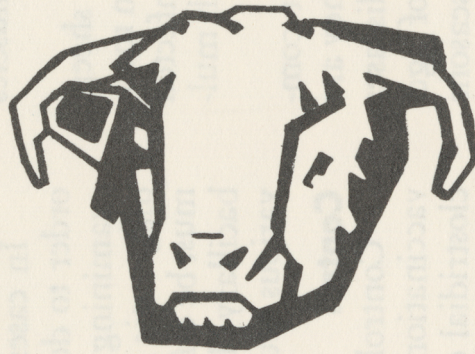
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BLACKLEG

and
**Malignant
Edema**



Cooperative Extension Service: South Dakota
State University and U. S. Department of
Agriculture

BLACKLEG and Malignant Edema

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Blackleg and malignant edema are caused by bacteria of the genus *Clostridium*. Blackleg is caused by *Clostridium chauvei* and occurs in cattle, sheep, and deer and infrequently in swine.

Malignant edema affects most species of warm blooded animals and may be caused by any of a group of clostridial organisms including *C. septicum*, *C. sordellii*, *C. novyi*, and *C. perfringens*.

The clostridia are comparatively large, rod-shaped organisms which will not grow in the presence of oxygen. These organisms are able to form microscopic spores which contain all of the essential ingredients of the bacterium. In the spore form, clostridial organisms are extremely resistant to heat, drying and disinfectants. Under ordinary conditions they are capable of remaining alive on the ground for many years. Clostridial organisms live normally in the digestive tract of many animals and they also escape from the carcasses of animals which die of clostridial infection. Because of the prevalence of the organisms and their extreme resistance to environmental conditions, the clostridia must be considered as an ever-present threat to livestock health.

Spread

When animals are infected by clostridia, the organisms usually do not spread throughout the body of the animal, but multiply in a localized area. In blackleg and malignant edema, the bacteria produce a potent toxin which causes severe tissue destruction in the area of the infection as well as general sickness and death.

It is not known exactly how the blackleg organism enters the animal's body but it is generally thought to pass from the digestive tract into the blood stream and settle in various muscles. Under certain unknown conditions, these organisms multiply in the muscles and produce the disease.

Malignant edema occurs in horses, cattle, sheep, and swine, and is comparable to gas gangrene in man. The disease results when a wound becomes infected by a toxin-producing clostridial organism which multiplies and causes the disease.

Malignant edema and blackleg occur most commonly in animals less than 2 years of age, but they are by no means limited to this age group. Both diseases have been observed in animals over 5 years of age. These infections are most prevalent in warm seasons but may occur any time.

Clinical Signs

Frequently the presence of blackleg or malignant edema in a herd is first indicated by finding one or more dead animals. If infected animals are observed before death, one may note marked lameness, local muscle swelling, and severe depression. Often the animal is unable to rise. A high fever may be present early in the disease but later a subnormal temperature occurs. Death usually comes within 24 to 48 hours after first signs are observed and animals never known to have been ill are often found dead.

In early stages of the disease, the muscle area in which the infection locates is frequently swollen, hot and painful. Later, the area becomes cold and painless, and fluid and gas may be felt beneath the skin. The absence of such lesions does not rule out the possibility that malignant edema or blackleg may be present. These lesions are often small and may be overlooked or they may occur in areas where they are difficult to detect.

Diagnosis

A diagnosis of blackleg or malignant edema may be made on the living animal on the basis of clinical signs and the presence of typical muscle swellings. Post mortem examination may reveal areas of dark, discolored muscle with accumulations of bloody fluid and gas bubbles. A characteristic rancid odor may be present. Post mortem findings may not be conclusive since decomposition of clostridium-infected carcasses progresses rapidly and lesions may be masked by it.

Blackleg most often affects the upper part of an infected leg; however, the infection may localize in any muscle of the body including the tongue, jaw, neck, heart, or diaphragm. Malignant edema lesions may occur anywhere in the muscles of the body and are usually associated with a wound.

In cases where the diagnosis is in doubt, and in order to determine the type of infection present, the examining veterinarian may submit specimens to a diagnostic laboratory. Blackleg and malignant edema must be differentiated from lightning stroke, anthrax, bacillary hemoglobinuria (redwater disease) and various acute poisonings.

Control

Control of these diseases is based upon a proper vaccination program. Vaccines are available for most clostridial organisms and are effective if properly applied. Where the disease is known to be common,

calves may be vaccinated at an early age; however, if vaccinated before they are 6 months old they should be revaccinated. Calves vaccinated after they are 6 months of age usually are protected for several years.

The prevention program in sheep ordinarily consists of vaccinating ewes about 3 weeks before they have their first lamb. Animals so vaccinated are usually permanently protected. Lambs born to immune ewes are resistant to the infections until about 3 weeks of age. Surgery, such as castration or docking, should be carried out within this time in order to take advan-

tage of this period of natural protection. Any sheep vaccinated before 1 year of age should be revaccinated after it reaches this age.

Treatment

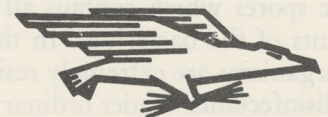
Treatment of animals affected by blackleg or malignant edema is seldom effective. Occasionally, massive doses of antibiotics given early in the course of the disease may save an animal, but a good immunization program is the key to preventing losses due to these infections.

**CONSULT YOUR VETERINARIAN—
HE'S TRAINED TO HELP YOU PREVENT LOSSES FROM DISEASE**

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John T. Stone, Dean of Extension, South Dakota State University, Brookings.
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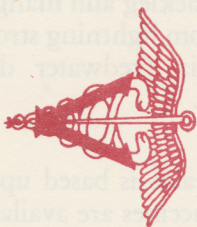
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