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Acute Interstitial Pneumonia (AIP)* In Range Cattle

*Also called Acute Bovine Pulmonary Edema and Emphysema (ABPEE),
Atypical Interstitial Pneumonia, Fog Fever, and Acute Bovine Pulmonary Emphysema

AIP is an acute respiratory disease of range cattle that occurs following movement from poor pasture to lush pasture/forage. Yearlings are less susceptible than mature cows, and calves are almost never affected. It appears that sheep (and horses) are not susceptible or are much less susceptible to AIP.

The disease occurs within 10 days of movement to improved forage. Pastures of any sort (grass or legume) as well as annual crops (corn, sudan grass, etc.) can support AIP. AIP also can be seen when animals preferentially graze lush growth in lowland meadows or water discharge areas, even if the remainder of the pasture is not exceptionally green.

It is the “lushness” and abrupt change that is important, not the forage species. Unfortunately, no work has been done to better define “lushness” or to determine risk of AIP under field conditions.

Signs and treatment

Clinical signs of AIP are observed as an acute onset of difficult breathing. Open mouth breathing with salivation, extension of the head and neck, and obvious distress occur. Animals have difficulty exhaling, and a “grunt” on expiration may be noted. These animals are reluctant to move, and forced movement may result in collapse and death.

Coughing is not a feature of this disease. Affected cattle may have a fever (rectal temp >102.5F) due to the increased work of breathing. In environmental conditions particularly suitable to the development of AIP, animals may be found dead.

Morbidity, or the percentage of a group affected with AIP, varies widely, but it can be high and can affect 50% or more of the group. In general, of cattle clinically affected with AIP, about 30% will die, regardless of treatment.

There is no treatment shown to be particularly effective. Generally, treatment is administration of diuretics, anti-inflammatories, and antibiotics. Producers should work with their veterinarians ahead of time to have treatment protocols in place and treatment materials on hand. Then, if cases are observed, the animals can be promptly treated.

Often, cattle may be affected so severely that handling or sorting them may cause them to collapse. In such cases, and since the treatments are probably only of marginal value, it is best to avoid prolonged forced movement. Instead, offer shade and comfort where the cattle are. Within 2-3 days, individual animals either recover or die.

Commonly, cattle may be removed from pasture when AIP is diagnosed. However, new cases of AIP may be seen in the days following removal.

Should animals die, a veterinarian should be contacted, especially in the event of multiple animal deaths. A necropsy may be required. Often, herd history and knowledge of the local area, coupled with observations made at necropsy, allow the veterinarian to make a diagnosis. When unsure, tissue samples should be sent to a veterinary diagnostic lab for evaluation. Other diseases may have an appearance similar to AIP.

Pathogenesis

AIP occurs when L-tryptophan, a naturally occurring amino acid, is converted to 3-methyl indole (3-MI) in the rumen. 3-MI is absorbed and leads to toxic changes in the lungs. Cattle on a poor level of nutrition apparently have a rumen flora that preferentially converts L-tryptophan to 3-MI.

When cattle are moved to lush pastures, the consumption of L-tryptophan increases, with subsequent 3-MI production. This is only a temporary circumstance. 3-MI production appears to peak 3-4 days after the move to lush pasture and then declines so that by day 10 it is back to normal levels. This explains why AIP is observed only early after movement to lush pasture.

Prevention

There are two main prevention strategies—dietary management and medical management. Dietary management involves adaptation and/or limiting access to lush pasture, while medical management focuses on use of ionophores to limit disease.

Choice of prevention strategies will depend on the producer and his/her limitations and risk tolerance. Many producers will choose to use medical management, hoping that the ionophore delivery “covers” them to some degree, and then will practice careful observation for 10 days following turn-out.

Dietary management options:

1. Adapt cattle to a higher plane of nutrition by feeding a full diet of high quality hay for 2-3 weeks prior to moving to lush pasture.
2. Limit grazing in the lush pasture to a few hours per day, increasing gradually over a period of 10 days.

3. Feed 2-3 lb of low quality hay per head per day for the first 10 days following the move to lush pasture. The quality of the hay is not important, but the cattle must consume it, and this is likely to be a problem.
4. Graze (or clip) pasture periodically throughout the season so it does not become too lush.
5. Graze the pasture initially with low risk animals (yearlings or sheep) to remove some lush growth.
6. Limit access to lush forage by section grazing, allowing access to only a small portion of the pasture for the first 10 days.
7. Use some combination of the above.

Medical management:

1. Administer monensin at a dose of 200 mg/head per day, starting 1 day before movement to lush pasture, and continuing for at least 10 days.
2. Administer lasalocid at 200 mg per head per day, starting 6 days before movement and continuing for at least 10 days after movement.

Experimental work has shown these compounds effective in reducing AIP. However, it is important that cattle receive the daily ionophore dose. Practically, it is difficult to assure ionophore consumption in pasture situations. Reliance on ionophore-containing salt blocks is unlikely to provide a sufficient dose to most cattle. Alternative delivery systems, such as inclusion of the daily dose in a supplement, may be more desirable.

Because ionophore consumption is likely to fluctuate, a combination of medical and dietary management is probably most effective.

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