Dr. Colin Palmer

Biography:
Dr. Colin Palmer is an Associate Professor of Theriogenology (Animal Reproduction) at the Western College of Veterinary Medicine. Originally from Nova Scotia, Dr. Palmer worked in mixed practices in Ontario and British Columbia and has owned/operated a practice in Saskatchewan. Dr. Palmer along with his wife Kim and children Lauren, Emily and Carter run a herd of purebred Red Angus cattle under the KC Cattle Co. name.

A Breeder's... Veterinary Perspective

Interstitial Pneumonia in Cattle
A Cause of Considerable Frustration

"Pneumonia," inflammation of the lungs, is manifested in different ways and is not always caused by infection with bacteria or viruses. Most cattle owners have dealt with bronchopneumonia in young calves or stressed, newly weaned animals and are familiar with the use of vaccines to try and prevent it from occurring. Failing that, antibiotics are generally employed as the next line of defence. Interstitial pneumonia is fortunately not as common, but when it occurs, losses can be devastating. Bronchopneumonia and interstitial pneumonia differ in terms of how they affect the lungs and airways, and how they affect the animal. Bronchopneumonia is characterized by the accumulation of inflammatory fluid and cells within the lung's air sacs and larger airways (bronchi) - coughing and nasal discharge caused by the body's reaction to fluid are common and most animals have a fever. With interstitial pneumonia inflammatory fluid accumulates within the walls of the air sacs with only small amounts of fluid accumulation in the air sacs and larger airways – coughing does not occur and fever, if present, is not directly associated with this disease. Regardless of the cause, any upset in the ability to transfer oxygen to the blood within the air sacs spells trouble for the animal.

In the feedlot, acute interstitial pneumonia (AIP) as it is referred to, is a very sporadic yet frustrating killer of cattle that is not well understood. "Acute" means rapid onset just like the swelling that occurs when you bump your head. Far from being a huge killer, it accounts for only about 0.5% to 5% of all feedlot deaths. In southern Alberta feedlots, it is reportedly more common during hot, dry periods in the summer and fall particularly in cattle in the last month of finishing before slaughter. A number of cases have also occurred following snow storms when the animals have been bedded with straw. Since a great deal of time and money has been spent to get the animal to this stage of the production cycle, the sudden occurrence of dead or diseased animals is understandably gut wrenching. Typically, only a few animals in a group will develop AIP, but this can vary with reports of more than half of the group being affected.

In pastured cattle, interstitial pneumonia is labelled as acute bovine pulmonary emphysema and edema, or is simplified to acute bovine pulmonary emphysema. A commonly used and much easier to remember layman's term is "Fog Fever." Occurrences of the pasture form of the disease typically follow the movement of animals from poor pasture or feed to very lush grazing. "Lushness," although hard to define, seems to be the key as it can occur on grass or legume pastures, and when grazing corn. Unlike bronchopneumonia, the most susceptible category of cattle is mature cows, followed by yearlings, with calves being only rarely affected. Like the feedlot situation, cows or perhaps heifers afflicted with interstitial pneumonia will often be in excellent shape - healthy one day and dead the next! Those that are not dead may be close to it.

In either scenario, animals affected with acute onset interstitial pneumonia display laboured breathing and may grunt when trying to exhale. A head down, neck extended, open mouth and drooling stance is common. Most animals will be reluctant to move and if forced, may actually collapse and die. Coughing and fever are not characteristic of this disease; however, elevations in body temperature may be a result of laboured breathing. All of these signs reflect the fact that these animals cannot get their breath, but these symptoms are not exclusive to interstitial pneumonia. Diagnosis still requires a post-mortem examination and careful inspection of the lungs. Reportedly up to half of the cattle affected with this disease may die; therefore, owing to the acute nature of the condition affected animals may simply be found dead in the feedlot or pasture leaving owners scratching their heads. Those that recover usually do so within 2 or 3 days with time and good luck being more beneficial than anti-inflammatory drugs. Antibiotics are of no benefit and their use will eliminate the option of emergency slaughter. Forcibly moving critically affected animals on the brink of respiratory collapse can be enough to push them over the edge and kill them, so be very careful.

There are a few rather minor causes of interstitial pneumonia; however, in the pasture and probably feedlot scenarios 3 methylindole (3MI) production in the rumen from the amino acid L- tryptophan is the key event triggering clinical disease. Injection of 3MI into healthy cattle has been shown to elicit interstitial pneumonia. Poorly understood scenarios in the feedlot or lush pasture situation result in increased consumption of L-tryptophan or increased production of 3MI triggering an inflammatory chain of events with the lungs. Cattle on pasture are typically affected within 10 days of movement to new forage, but cases have been known to occur in animals grazing the same pasture for a period of time; perhaps as a result of a recent onset of lush forage growth. A theory to explain the cases that occur following bedding with straw is that hungry animals that have been off feed as a result of the storm, consume a large quantity of straw that then leads to 3MI production.

Once an outbreak occurs, there is little that can be done. Animals have been known to develop symptoms even a few days after removal from pasture. Monensin (Rumensin®) feeding limits the production of 3MI, and gradual introduction to better forage are probably the keys to prevention. Some affected animals have both interstitial and bronchopneumonia that leads to the question of what role infectious disease may have. If you have animals showing the symptoms of interstitial pneumonia or experience sudden deaths in otherwise healthy animals, having your vet perform a post-mortem examination is a must to confirm the diagnosis and can help you to prevent similar losses in the future.