

Haemophilus somnus in Feedlot Cattle: A Part of the BRD Complex

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The diseases that affect feedlot cattle have for a great period of time been difficult to prevent, diagnose and treat because of their complexity, the existence of multiple entities and their usually being predisposed by a variety of stresses. Thus, through the years, such terminology as hemorrhagic septicemia, transport illness, stockyard's disease, and one term still in use—namely, “shipping fever”—have been used to describe the disease complex. Now, most authorities dealing with the respiratory diseases of feedlot cattle term the disease complex as the bovine respiratory disease (BRD) complex.

The disease entities associated with the bovine respiratory disease complex originated with the description of the pasteurella organism, followed by the viral agents, namely, infectious bovine rhinotracheitis, parainfluenza 3, and, according to some authorities, the bovine diarrhea virus. Other agents, such as mycoplasma and chlamydia, have been studied and are thought to be a definite part of the BRD complex.

Haemophilus somnus has repeatedly been reported as an important part of the BRD complex, as well as being incriminated in a general septicemia manifesting itself in laminitis, pleuritis, vascular endothrombosis, enteritis and nephritis. The disease was first described by Colorado researchers in 1956 as infectious thromboembolic meningoencephalitis (TEME). This particular form of the disease is manifested not only in feedlot cattle but in dairy and beef herds.

Later the organism was associated with pneumonia and diphtheria and has been found by diagnosticians to be involved in the BRD complex and is frequently involved in post-vaccination breaks and “wrecks” where a high morbidity and mortality occurred.

The organism *Haemophilus somnus* has been found difficult to culture by diagnosticians, particularly in animals treated with antibiotics and most all sick feedlot cattle are heavily treated with antibiotics. It is microaerophilic, requiring reduced oxygen tension and increased CO₂ and is very slow-growing. It forms very small colonies and is a gram-negative rod with a multitude of shapes. The organism provides its own environment, so frequently pasteurella, corynebacterium, clostridium, and moraxella accompany *H. somnus* in lesions found in the BRD complex.

Acutely or chronically infected cattle carry the organism in the respiratory tract and the mode of transmission is primarily in respiratory secretions. The incubation period will vary from 2 to 10 days, but most frequently occurs 6 to 8 days after arrival in the feedlot.

H. somnus has been found to be involved in acute pneumonia, acute laryngitis, tracheitis and pleuritis. Besides the thromboembolic meningoencephalomyelitis (TEME), it has been found to produce myocardial infarcts.

Hemorrhages in skeletal muscle and in the gastrointestinal tract are frequently found. Chronic arthritis is a common aftermath of acute infection.

Typical clinical signs resemble other aspects of the BRD complex with temperatures running up to 105-106° with respiratory infections in the majority of animals. In the early stages of disease, antibiotics give a good response, but if therapy is not kept up for several days, relapses occur. When the septicemic form develops, antibiotic treatment is not as effective, thus early treatment is imperative. Mortality up to 40% may occur, thus “wrecks” (high mortality) occur when treatment is delayed.

An accurate diagnosis is accomplished only with a complete necropsy followed by histopathology and bacterial and viral isolation. Researchers have shown that *H. somnus* apparently produces an endotoxin which produces damage to vascular endothelium. Thus, in the acute stages, pneumonia, fibrinous pleuritis, pericarditis, laryngitis and meningitis are found. Typical foci of hemorrhage and necrosis in the brain are pathognomonic for TEME. Extensive necrotic tracheitis is encountered in *H. somnus* infections. Polyploid tracheitis lesions cause the chronic cough in recovered cattle. Feedlot veterinarians have observed footrot-like cases following the respiratory outbreaks.

In submitting specimens to a laboratory, submit nasal swabs from 5 to 10 acutely ill, untreated calves and freeze immediately. Obtain clear serum from clotted blood specimens from tagged animals. Collect convalescent samples 2 to 4 weeks later for serum neutralization titers. Swabs should be obtained from acutely ill animals that have been necropsied. Submit swabs from the trachea, pleural and pericardial, and cerebrospinal fluids and submit a portion of lung tissue.

Most diagnostic laboratories have the ability to diagnose *H. somnus* from properly collected and preserved specimens. The biggest problem in diagnosis is the submission of tissues from cattle treated recently with antibiotics in the early stages of disease. This apparently is the reason why some laboratories have difficulty in diagnosing the disease.

A bacterin recently released by Bio-Ceutic Laboratories, called Somnugen, has been found to be an effective immunizing agent. A 2 ml dose followed by another 2 ml dose in 21 days is recommended. It is especially recommended for "put-together" groups of cattle. Two doses are particularly recommended for cattle that are to be severely stressed and co-mingled with cattle from different production sites. The bacterin can be used simultaneously with other vaccines. It is now used in preconditioning programs.

The research that occurred in the isolation and identification of *H. somnus* as a primary pathogen in cattle and the production of an effective im-

munizing agent is considered one of the major breakthroughs in preventing the bovine respiratory disease complex.

References

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