BOVINE RESPIRATORY DISEASE COMPLEX

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You are called out to the farm of one of your regular dairy clients because some of the replacement heifers they bought at a public auction in Tennessee one week ago are now sick and a few are dead.

When you arrive at the farm, you find that about a third of the group is affected with increased respiratory rate and effort and harsh lung sounds.
Since a few of them have recently died, you do a necropsy and find . . .

. . . which makes you highly suspicious of Bovine Respiratory Disease Complex
So what is BRD?

- Formerly known as “shipping fever” because of its association with transportation, although this is really no longer a major cause.
- Also known as undifferentiated bovine respiratory disease or undifferentiated fever.
- Overall, it describes cattle that are febrile with dyspnea, coughing, nasal discharge, varying degrees of depression, inappetence to anorexia and evidence of pneumonia on thoracic auscultation.
- It usually manifests and severe, acute, fibrinopurulent or fibrinonecrotic pneumonia, and is often fatal.
- Usually occurs about 7-10 days after assembly at a feedlot.
Atypical Interstitial Pneumonia

- Uncommon manifestation of BRD
- Associated with epidemics of Bovine Respiratory Syncytial Virus
- Consists of bronchitis and bronchiolitis of the cranioventral lung lobes combined with widespread edema and emphysema
- BRSV infection in the cranioventral lung lobes and accompanying cytopathologic findings are not thought to cause the widespread edema and emphysema, but an immune-mediated mechanism might play a role.
Factors associated with disease

- Stressors
  - Weather, castration, weaning, vaccination, transportation, dehorning, ear tagging, new social groups, etc.

- Loss of body weight (shrink)
  - Common in shipped cattle and cattle in hot environments due to fasting, and loss of fluid and electrolytes from the GI tract without usual replacement.
  - More than 7% total body weight lost increases the risk of health problems.
Factors of disease (continued)

- **Level of immunity**
  - Preconditioning (helps protect against disease)
    - Vaccination, castration and weaning of calves before shipping to establish good immunity and space out stressful events.
  - Persistently infected calves
    - Infected at birth or in utero with BVDV which causes chronic immunosuppression and places them in a position to show other diseases clinically and infect other cattle, decreasing herd immunity.

- **Age**
  - Morbidity and mortality of BRD are much lower in yearlings than in calves.

- **Commingling**
  - New pathogens and new social structure at the same time
Common Pathogens: Bacteria

*Note: infections involving multiple organisms are the RULE rather than the EXCEPTION*

- Mannheimia haemolytica
- Pasteurella multocida
- Mycoplasma bovis, dispar
- Haemophilus somnus
- Arcanobacterium pyogenes (chronic infections and abscessations)
Common Pathogens: Viruses

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- Bovine Viral Diarrhea Virus (BVDV)
- Infectious Bovine Rhinotracheitis (IBR)
- Parainfluenza type 3 (PI3)
- Bovine Respiratory Syncytial Virus (BRSV)
- Bovine Herpes Virus 1 (BHV-1)
- Bovine coronavirus (usually an enteric pathogen)
Treatment and clinical management

- Identifying and removing affected cows to the sick pens is the most important step.
- Antibiotics such as sulfadimethoxine, oxytetracycline, and ampicillin can be given daily for at least 3 days as initial treatment when no culture is taken. Florfenicol is also effective at two doses of 20mg/kg 48 hours apart.
- Virus isolation from nasal swabs.
- Antemortem culture and susceptibility testing of serum or blood with appropriate antibiotic therapy.
- Postmortem culture and susceptibility testing, followed by appropriate treatment of remaining clinically affected animals.
Control of disease

- Successful integration of management techniques is essential.
- Vaccination against *Pasteurella* bacterins and respiratory viruses
- Stress minimization
- Good ventilation and protection from the elements
- Resting periods during shipping where good quality hay and water is available.
- Grouping cattle by age and size
- Metaphylaxis
Metaphylaxis

- Objectives: Administer antibiotic to BRD susceptible cattle in order to reduce morbidity and mortality, improve performance, reduce hospital crowding, and improve profits.
- Antibiotic is given orally in feed or water or parenterally.
- A study from the AABP annual conference from 2009 showed no advantage to adding oral chlortetracycline to the rations of calves metaphylactically treated with parenteral tulathromycin.
What to tell your client

- Separate clinical heifers and treat with antibiotic that covers cultured bacteria from necropsied cow.
- 5-10% of affected cows are expected to die.
- In the future, buy heifers directly from one or two farms with good calf health programs.
- Improve ventilation and avoid overcrowding
- Preconditioning calves from the farm can increase profit as well.
And in the feedlot setting . . .

- Preconditioned, uniform and older animals gain better and typically have a higher growth yield with fewer health problems overall.
- But they also come with a higher purchase price and higher feed cost per unit gain.
- So profit margin is often smaller than for calves coming from public auction sale yards.
- However, their risks are greater.
Works cited