Feedlot Acute Interstitial Pneumonia

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KEYWORDS

• Bovine • Respiratory • Lung injury • 3-Methylindole • Bacteria

KEY POINTS

- Feedlot acute interstitial pneumonia (AIP) is a sporadically occurring respiratory condition of feedlot cattle that is often fatal; death can occur before any signs of disease are recognized.
- Feedlot AIP disproportionately affects heifers and cattle on feed for more than 45 days; more cases occur during hot, dusty weather, but cases can occur at any time.
- Definitive diagnosis of AIP requires histopathologic evaluation of lung tissue; thus, diagnosis based on clinical signs or gross findings alone may be inaccurate.
- No effective treatment of feedlot AIP has been confirmed. Rational therapies include antibiotics effective against common bacterial respiratory pathogens and aspirin or other nonsteroidal anti-inflammatory drugs, administered at label doses.

INTRODUCTION: NATURE OF THE PROBLEM

In feedlot cattle, AIP is a sporadically occurring respiratory condition that is often fatal. Over the years, the disease has been known by other names, including atypical interstitial pneumonia, pulmonary adenomatosis, or dust pneumonia. Although AIP occurs less commonly than shipping fever (fibrinous bronchopneumonia, also known as bovine respiratory disease [BRD]) in North American feedlots, it can have a serious negative impact for individual feedlots, because cattle that have been on feed for greater than 45 days are most often affected, because no treatment is confirmed to be reliably effective, and because multiple cases sometimes occur within a short period of time.

Clinical Definition

Cattle with AIP have a sudden onset of labored breathing. They are often found standing with the head lowered and neck extended, breathing with an open and frothing mouth and with expiratory grunting. Affected cattle may have a basewide stance in

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the front limbs (Fig. 1). Clinical signs sometimes include fever, but nasal discharge and coughing are not common. If an animal suspected of having AIP is moved for examination or treatment, it is important to move the animal cautiously, because sudden exertion or excitement can precipitate death. Cattle with AIP may be found dead without previous signs of disease having been noticed.

To be precise, AIP is a pathologic definition that can only be confirmed by microscopic (histopathologic) evaluation of lung tissue from an affected individual. A live animal can only be identified to have signs consistent with AIP, because without a lung biopsy AIP cannot be definitively diagnosed in the live animal. In humans and other species with AIP, characteristic clinical signs and diagnostic test results are used to confirm a clinical definition of acute respiratory distress syndrome (ARDS).[1] In other words, AIP is a pathologic diagnosis and ARDS is a clinical diagnosis. Because the term AIP has long been used to reference both antemortem and postmortem cases in feedlot cattle, however, this terminology is used to describe the clinical and pathologic syndrome throughout this article.

Although cattle with AIP exhibit typical clinical signs, these signs are not pathognomonic for AIP. Differential diagnoses for respiratory distress in feedlot cattle include

- Heat stress
- Severe or chronic bronchopneumonia (BRD)
- Anaphylaxis
- Heart failure
- Tracheal edema syndrome
- Necrotic laryngitis

Careful observation may help prioritize the differential diagnoses for a given case. For example, cattle with tracheal edema syndrome or necrotic laryngitis should have prominent noise (stridor) on inspiration. Cattle with heart failure may have peripheral (brisket) edema. During hot weather many feedlot cattle may breathe with an open mouth as part of the normal thermoregulatory process, so open-mouthed breathing alone is not necessarily a sign of respiratory distress.

Because AIP cannot be definitively diagnosed in the live feedlot animal, a diagnosis can only be confirmed by microscopic (histopathologic) evaluation of lung tissue collected at postmortem. Experienced feedlot staff may be able to accurately identify many AIP cases, but even knowledgeable individuals may misdiagnose some AIP cases based on clinical signs or gross pathology alone. Reports indicated that 67%

Fig. 1. Feedlot heifer with clinical signs consistent with AIP, including extended neck, frothing at the mouth, and basewide stance in front legs.