INTERSTITIAL PNEUMONIA IN CATTLE

- This classification represents a group of respiratory diseases characterized by an acute onset of severe respiratory distress and a combination of lung lesions that include pulmonary edema and congestion, interstitial emphysema, alveolar epithelialization, and hyaline membrane formation.
- Lungworm infection in cattle can also result in an atypical interstitial pneumonia.

CONTAGIOUS BOVINE PLEUROPNEUMONIA

ETIOLOGY:

- The causal organism is *Mycoplasma mycoides mycoides* small colony type.
- Susceptible cattle become infected by inhaling droplets disseminated by coughing in affected cattle. Small ruminants and wildlife are not important in the epidemiology.
- Sheep and goats can be naturally infected but have no associated pathology. The organism can also be found in saliva, urine, fetal membranes, and uterine discharges. Transplacental infection of the fetus can occur. Viability of the organism in the environment is poor.
- The incubation period varies, but most cases occur 3–8 wk after exposure.

- In some localities, susceptible herds may show up to 70% morbidity, but much lower infection rates (~10%) associated with clinical signs are more common. Mortality is likely to be ~50% in herds experiencing the disease for the first time.
- Of recovered animals, 25% may become carriers with chronic lung lesions in the form of sequestra of variable size. Because carriers may not be detectable clinically or serologically, they constitute a serious problem in control programs.
- Breed susceptibility, management systems, and general health of the animal are important factors that influence the infection.

CLINICAL FINDINGS:

- In acute cases, signs include fever up to 107°F (41.5°C); anorexia; and painful, difficult breathing. In hot climates, the animal often stands by itself in the shade, its head lowered and extended, its back slightly arched, and its elbows turned out.
- Percussion of the chest is painful; respiration is rapid, shallow, and abdominal. If the animal is forced to move quickly, the breathing becomes more distressed and a soft, moist cough may result.

- The disease progresses rapidly, animals lose condition, and breathing becomes very labored, with a grunt at expiration.
- The animal becomes recumbent and dies after 1–3 wk. Chronically affected cattle usually exhibit signs of varying intensity for 3–4 wk, after which the lesions gradually resolve and the animals appear to recover.
- Subclinical cases occur and may be important as carriers. Infected calves may present primarily with polyarthritis that is seen as swelling of joints and lameness.

LESIONS:

- The thoracic cavity may contain up to 10 L of clear yellow or turbid fluid mixed with fibrin flakes, and the organs in the thorax are often covered by thick deposits of fibrin.
- The disease is largely unilateral, with more than 80%–90% of cases affecting only one lung. The affected portion is enlarged and solid.
- On section of the lung, the typical marbled appearance of pleuropneumonia is evident because of the widened interlobular septa and subpleural tissue that encloses gray, yellow, or red consolidated lung lobules.

- Microscopically, this is a severe, acute, fibrinous pneumonia with fibrinous pleurisy, thrombosis of pulmonary blood vessels, and areas of necrosis of lung tissue; the interstitial tissue is markedly thickened by edema fluid containing much fibrin.
- In chronic cases, the lesion has a necrotic center sequestered in a thick, fibrous capsule, and there may be fibrous pleural adhesions. Organisms may survive only within the inner capsule of these sequestra, and these animals may become carriers.

DIAGNOSIS:

- Diagnosis is based on clinical signs and the characteristic gross pathologic lesions of the lungs. Complement fixation, latex agglutination, or competitive ELISA tests can be used to aid definitive diagnosis.
- Confirmation is often by isolation of the mycoplasma followed by growth inhibition or immunofluorescence test using hyperimmune rabbit sera against the mycoplasma, or increasingly by PCR. Confirmation of serologic reactions can be made by immunoblotting test.
- As soon as an outbreak is suspected, slaughter and necropsy of presumptively infected cattle is advisable.

CONTROL:

- The disease is reportable by law in many countries from which it has been eradicated by slaughter of all infected and exposed animals. In countries where cattle movement can readily be restricted, the disease can be eradicated by quarantine, blood testing, and slaughter.
- Where cattle cannot be confined, the spread of infection can be limited by immunization with attenuated vaccine (eg, T1/44 strain). However, the vaccine is effective only if herd coverage within a country is high.
- Tracing the source of infected cattle detected at abattoirs, blood testing, and imposition of strict rules for cattle movement also can aid in control of the disease in such areas.

- Treatment is recommended only in endemic areas because the organisms may not be eliminated, and carriers may develop.
- Tylosin (10 mg/kg, IM, bid, for six injections) and danofloxacin 2.5% (2.5 mg/kg/day for 3 consecutive days) have been reported to be effective.