

## CONTAGIOUS BOVINE PLEUROPNEUMONIA (CBPP, lung plague)

CPPN is a contagious bacterial disease that afflicts the lungs of cattle, buffalo, zebu, and yaks.

### Etiology:

The causative agent is *Mycoplasma mycoides* subsp. *mycoides* Small Colony - bovine biotype (MmmSC).

Mycoplasmas lack cell walls and are: a) pleomorphic and b) resistant to antibiotics of the betalactamine group, such as penicillin.

### Epidemiology:

- Cattle are the main hosts.
- Infections have also been reported from Asian buffalo, captive bison and yak.
- Sheep & goats can be naturally infected, but with no clear associated pathology.
- Incubation period of the disease is usually **1–4 months**, but can be longer.
- After experimental inoculation into trachea, clinical signs may appear in 2–3 weeks.

### Transmission:

1. CBPP is spread mainly by inhalation of droplets from infected coughing animals, especially if they are in the acute phase of the disease.
2. Organism also occurs in saliva, urine, fetal membranes and uterine discharges.
3. Transplacental infection can occur
4. **Nonclinical** bovine carriers with chronic infection are **major source of infection**, & may retain viable organisms in encapsulated lung lesions(**sequestra**) for up to 2 yrs.
5. Recovered animals harbouring infectious organisms within pulmonary sequestra may become active **shedders** when **stressed** or **immunodepressed**.
6. Outbreaks usually begin as the result of movement and contact of an infected animal with a naive herd.

### Clinical Signs:

#### Acute Infection

- Incubation period: 21 to 180 days
- Initial signs
  - Lethargy, anorexia, fever, cough
  - Extended head/neck
- Later signs
  - Thoracic pain, reluctance to move
  - Elbow abduction, moaning during expiration
  - Increased respiratory rate

- Extended head/neck
- Coughing
- Unusual posture
  - Neck forward
  - Legs far apart
  - Elbows turned out

### **Chronic Infection**

- Less obvious signs of pneumonia
  - Coughing with exercise
  - Emaciation
  - Recurrent mild fever
  - Appear to recover after several weeks
- Calves
  - Polyarthritis +/- pneumonia
- Subclinical cases can be carriers

### **Post Mortem Lesions**

- Lung
  - Thickening
  - Extensive fibrin and fibrosis
  - Marbling
- Thoracic cavity
  - Straw-colored fluid
- Encapsulated
  - May be necrotic
- Joints enlarged

### **Diagnosis:**

- Difficult to distinguish from other respiratory diseases in cattle
- Clinical indicators
  - Unilateral pneumonia
  - Polyarthritis in calves
- Culture
- Immunological tests
- PCR
- Serology
  - Complement fixation
  - Competitive ELISA
  - Immunoblot

### **Differential Diagnosis:**

1. Bovine pasteurellosis (mannheimiosis)
2. Hemorrhagic septicemia
3. Theileriosis (East Coast fever)
4. Bovine ephemeral fever
5. Rinderpest
6. Traumatic pericarditis

### **Treatment:**

- Recommended only in endemic areas
  - Elimination of organism may be impossible
  - Carriers may develop
  - Antibiotics generally ineffective, but **Tylosin** can be used.
- Recommended action in outbreak
  - Slaughter and necropsy suspect animals

### **Control and Vaccination:**

- Quarantine
- Exposed animals
- Test and slaughter Infected animals
- Disinfection with 3% Sodium hypochlorite
- Vaccine efficacy varies
- Immunization with an attenuated vaccine T1/44 strain
  - Eradication
  - Limit of disease spread
  - May not be possible due to economic constraints