Enzootic Bovine Leukosis

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Introduction

- a.k.a. bovine lymphosarcoma, leukemia, and malignant lymphoma
- Viral disease of adults => neoplasia of lymphocytes and lymph nodes
  - Most common neoplastic disease of cattle
  - Cause for carcass condemnation at slaughter
- High prevalence of infection => low incidence of fatal lymphosarcoma
Etiology

Bovine Leukemia Virus (BLV)
- Oncovirus in family Retroviridae
- Virus present in lymphocytes
- Incubation period is 4-5 years
Transmission

- Horizontal transmission is most common
  - Usually iatrogenic
    - Contaminated needles, dehorners, etc.
  - Infected secretions of closely confined cattle
  - Biting flies and bats may also transmit

- Vertical transmission may be transplacental or via colostrum/milk
Pathogenesis

Four outcomes to BLV exposure:

- No infection
- Latent infection
- Infection with benign lymphocytosis
- Infection with malignant lymphosarcoma +/- lymphocytosis
  
  Occurs in <5% of BLV-infected cattle
Clinical Findings

Most infected cattle never progress beyond a persistent benign lymphocytosis.

Of clinical cases:
- Commonly in cattle 3-6 years of age
- 5-10% are peracute => sudden death
- Others present with loss of body condition, anorexia, pallor, decreased milk production, and weakness +/- failure of neoplastic organ(s)
Clinical Findings continued

- 75-90% have superficial lymphadenopathy
  - Other commonly affected tissues: abomasum, heart (esp. right atrium), skin, uterus, kidneys, spleen, spinal meninges, retrobulbar lymphatics

- Onset of illness and detectable tumors => death in weeks to months
Lesions
Diagnosis

Clinical signs
- Difficult to diagnose definitively
- Differentiate from TB via tuberculin test

AGID
- Good screening test
- Serum and milk samples
Diagnosis continued

ELISA
- More sensitive than AGID
- Serum and milk samples

PCR
- Differentiates between colostral antibodies and true infection in neonates
**Treatment and Control**

- **No treatment**

- **Eradication program**
  - Voluntary in U.S. and Canada
  - High prevalence of infection, so not economically sound
  - Cannot export seropositive cattle to many countries
Control continued

Recommended eradication program

- AGID to identify infected adults
- PCR to identify infected calves
- Cull/slaughter seropositives immediately
- Retest herd 30-60 days later
- Repeat until herd completely negative
- Retest “negative” herd every 6 months
- Eradicated when negative for 2 years
Prevention

- Keep newborns from contacting maternal blood post-partum
  - Do not feed bloody milk to calves
- House & feed/water calves individually
  - Handle youngest first & sick calves last
- Avoid iatrogenic transmission
- Control biting insect vectors
- Test imports to herd for BLV
References


References continued


Thank you!