Bovine leukemia virus (BLV)

Enzootic bovine leukemia, also known as bovine leukemia, lymphosarcoma, or malignant lymphoma, is a cancer of adult cattle caused by bovine leukemia virus (BLV). A different disease with a similar name, sporadic bovine leukosis, occurs as one of three forms: 1) the juvenile form in calves less than 6 months of age, 2) the thymic or adolescent form in cattle less than 2 years old, or 3) the cutaneous form in cattle 1-3 years old. Sporadic bovine leukosis is <em>NOT</em> caused by BLV. Regardless of the cause, lymphosarcoma is a terminal cancer and also a major cause of carcass condemnation at slaughter. Since sporadic bovine leukosis only occurs rarely, the remainder of this publication discusses enzootic bovine leukosis in adult cattle caused by BLV.

**Clinical Signs**

An important point to always keep in mind is that infection with BLV is <em>NOT</em> synonymous with clinical disease. Lymphosarcoma, the terminal stage of some BLV infections, only occurs in less than 2.5% of BLV-infected cattle, and infection with BLV typically occurs several years prior to the development of lymphosarcoma. All organ systems may be involved in cases of adult lymphosarcoma resulting in highly variable clinical signs, but clinically affected cattle are usually 4-8 years of age. The abomasum, heart, lymph nodes, spinal cord, eyes, and uterus are frequently affected. The location of the disease will dictate the specific clinical signs that occur, but animals with adult lymphosarcoma will often exhibit weight loss, enlarged lymph nodes, low milk production, diarrhea, bloat, respiratory distress, and stumbling or incoordination. While most cattle infected with BLV do <em>NOT</em> exhibit clinical signs, BLV infections are life-long, so even animals without symptoms can serve as viral reservoirs and a source of exposure for uninfected animals.

**Transmission**

BLV is spread through close physical contact and exchange of contaminated biological materials. The virus is present primarily in white blood cells (immune cells) called lymphocytes that can be found in blood, milk, and tumors. The following list includes some of the more common routes of transmission:

- Blood contaminated needles or equipment (dehorners, castration equipment, tattooing pliers, etc.)
- Biting insects
- <em>in utero</em> (4-8% of BLV cows give birth to calves infected with BLV)
- Possibly via colostrum and/or milk from an infected cow. However, infection by contaminated milk is thought to be rare, possibly due to the presence of maternal antibodies in the milk.

**Treatment, Prevention, and Control**

No treatment exists for lymphosarcoma in cattle, so preventing the introduction of BLV and/or good management to reduce the transmission of BLV in infected herds are keys to mitigating the effects of enzootic bovine leukosis. Early recognition of clinical disease is also important as the disease is progressive and clinical signs will worsen with time, and may lead to downer cows, systemic disease and/or death. Appropriate testing for BLV, good herd management (including insect control), and strict hygiene when attempting to decrease prevalence in a herd. Accurate blood tests are available and should be used in consultation with your veterinarian to provide accurate diagnosis and evaluation of
herd infection status. To prevent the introduction or minimize the spread of BLV, it is important to know the current BLV status of the herd to make appropriate management decisions as well as to monitor the effectiveness of prevention and control strategies.

The following general recommendations for preventing the introduction of and/or reducing the transmission of BLV are just a starting point for discussion and need to be tailored for individual farms:

**Preventing the introduction of BLV:**
1. Implement annual herd testing to investigate and document BLV-status.
2. Maintain a closed herd.
3. Test all cattle entering the herd for BLV, isolate them for 30-60 days, and then repeat testing at the end of the isolation period before introducing them to the main herd.

**Reducing the transmission of BLV in a BLV-infected herd:**
1. Use bloodless dehorning methods.
2. Clean and disinfect instruments (dehorning and castration equipment, tattoo pliers, etc.) between uses.
3. Reduce the number of biting insects.
4. Do not feed colostrum or milk from BLV-positive cows or from cows of unknown BLV-status to orphan calves.
5. When processing cattle, perform veterinary and management procedures on BLV-positive cows last.

If you suspect a problem in your herd with BLV and/or just want to check the BLV-status of your herd, contact your veterinarian for further investigation.