

Malignant Catarrhal Fever in Northern Colorado Dairies

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Malignant catarrhal fever (MCF) is a disease that is rarely considered a threat to dairy cattle throughout the United States. Recently, however, this fatal disease has become more prevalent in Colorado dairies. MCF is caused by a virus carried by sheep called Ovine Herpesvirus type 2 (OHV2). OHV2 can be found in nearly all sheep across the nation. The virus does not affect sheep clinically. In cattle, bison, and other domestic as well as wild ruminants, the virus causes a widespread vasculitis (inflammation of the blood vessels) and nearly always leads to death.

The vasculitis can manifest itself in many ways. The most common form of the disease in Colorado involves primarily the head and eyes along with other mucous membranes. Often the first sign of illness is cloudy eyes or what is called "corneal opacities". The opacity starts at the periphery of the eye and then moves to cover the whole cornea. At this stage, the eyes will begin to look cloudy or white. Blindness often follows the visible changes in the eyes. Affected cattle can also have some or all of the following signs: excessive salivation, discharge from the eyes or nose, sloughing or erosions of the lining of the nose or mouth, erosions along the teats or coronary bands of the feet, enlarged lymph nodes, or bloody urine. The vulva may be red and the mucosa falling off. Cattle are likely to be depressed, off feed, and have a fever of 103-107 degrees F. There are two other forms of the disease, which are the gastrointestinal form, with a major clinical sign of diarrhea, and pulmonary form, which looks clinically like severe pneumonia. By the time clinical signs are seen the disease is in its final stages and there is no effective treatment for the animal.

Diagnosing MCF is most accurately performed by examining tissues from the animal after it has died or been euthanized. There are two blood tests for the diagnosis of OHV2 infection. The first is an enzyme-linked immunosorbent assay (ELISA) that looks for antibodies to OHV2. This test only tells if the animal has been exposed to the virus and mounted an immune response. It doesn't tell if there is currently virus in the blood. The other more widely used test is a polymerase chain reaction (PCR) which identifies the viral DNA in infected cells within the blood. OHV2 is a gammaherpes virus which infects lymphocytes. Herpesviruses tend to hide latently in tissue reservoirs and express themselves during times of stress. Therefore, an animal can be infected with OHV2 without showing clinical signs of MCF. If an animal is showing clinical signs of MCF and is OHV2 PCR positive, however, there is a very high likelihood that the animal has this disease. With this confirmation euthanasia is recommended.

Since MCF is caused by a viral pathogen it is unresponsive to antibiotics. Other than supportive care there is no treatment for the disease. Therefore, the management emphasis should be on identifying risk factors, correctly diagnosing the disease, and culling affected members of the herd. Proximity to sheep, the known carriers of OHV2, is the biggest risk factor for disease. Aerosol transmission from sheep can occur over a distance of at least 70 meters. No direct contact is needed between sheep and cattle for transmission to occur. It is currently believed that cattle do not transfer the disease amongst themselves. Recent research, however, suggests that cattle to cattle transmission either through the colostrum of an infected dam or direct transmission from airborne viral particles.

Accurately diagnosing the disease can be difficult since the organism has never actually been isolated and grown. MCF can look like other more common cattle disease especially pinkeye (*Moraxella bovis*), infectious bovine rhinotracheitis (IBR), or Bovine Virus Diarrhea (BVD). Pinkeye lesions generally start in the center of the cornea and work toward the periphery of the eye as they progress. Cattle with pinkeye generally respond to antibiotic therapy. In contrast, MCF lesions start peripherally, move to the center of

the eye, and do not respond to treatment with antibiotics. IBR ocular lesions resemble MCF lesions, but the ocular form of IBR is rarely seen in Colorado and IBR is rarely fatal. Virus isolation can be performed on ocular swabs, and antibodies can be detected in the blood for diagnosis of IBR. Bovine virus diarrhea (BVD) can cause oral ulcers, increased salivation, and diarrhea as MCF does but it does not cause eye lesions. There are PCR, ELISA, virus isolation, and serological tests to diagnose BVD.

MCF is a possible diagnosis if there is an outbreak or isolated incidence of blindness, cloudy eyes, fever, and/or increased salivation in your cattle. Since the disease is untreatable it is important to protect your cattle by maintaining distance between them and neighboring sheep. Early diagnosis and culling may help prevent spread to other animals. Ovine herpesvirus type 2, the presumed causative agent, can be identified by PCR. This test is offered by both the Colorado and Wyoming State Diagnostics Laboratories. Your local veterinarian can take a blood sample from animals on the farm and have results within a week.