

Septicemic Listeriosis in a Calf

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Introduction:

Listeria monocytogenes is a pathogen which is found throughout the world. It is capable of producing infections in a wide variety of species and has been isolated from numerous mammals as well as birds and fish.³

The clinical manifestations of listeriosis can be classified into three distinct syndromes or types:¹ Encephalitis, uterine infection with abortion, and septicemia with visceral abscesses.⁵ The relative frequency of observation of the different syndromes varies widely between species. The most common form in monogastric animals is septicemia with visceral lesions. The most consistent lesion is hepatic necrosis involving well demarcated focal areas which are infiltrated with lymphocytes, macrophages, and variable numbers of neutrophils.³ Similar lesions may be found in other visceral organs. Additional lesions may include ascites, swollen lymph nodes, and enteritis.

The most common form of listeriosis in ruminants is encephalitis. Uterine infection with *L. monocytogenes* often results in abortion. The least common syndrome is septicemia, which is limited to newborn lambs and calves.^{4,6,7} The disease in these animals is very similar to that described for monogastric animals. It has been shown, in some cases, that infection oc-

curs in the uterus just prior to birth resulting in neonatal infection rather than abortion.⁷ This type of infection is also a serious cause of fetal damage or neonatal death in humans.^{1,8}

The following report concerns a case of neonatal infection of a calf with *L. monocytogenes*.

History:

A group of 20 red angus cows, most of which were heifers, were confined in a lot on a farm in central Iowa prior to parturition. They were fed approximately 30 lbs. of silage per head per day. They calved in March, 1971, and all 20 calves were born within a period of about 2 weeks. The first clinical signs appeared in calves 4 to 5 days after birth, but calves born a few days later seemed to become ill shortly after birth. All 20 calves were involved to some extent in that they seemed somewhat listless. Nine of these developed more severe symptoms which included weakness, emaciation, and diarrhea.

The affected calves were treated with penicillin, tetracycline, electrolytes, and in some cases clostridial antitoxin. Response was slow but all of the calves recovered except one which was submitted for necropsy.

At the height of the outbreak the cows and calves were moved to a pasture. What part this move played in the control of the disease is not known.

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Necropsy Findings:

The calf which was submitted for necropsy was one week old and was moderately dehydrated. The liver was swollen, pale, and had numerous yellow foci about one mm. in diameter. The mesenteric lymph nodes were swollen and soft, and there was mucofibrinous exudate in the ileum and colon with some hemorrhage into the lumen. The synovium of the hock joints was hyperemic and the synovial fluid was opaque and contained small clumps of fibrin. *L. monocytogenes* was isolated from heart, lung, and liver.

Histologically the lesions included multiple focal necrotic hepatitis (Fig. 1). The small necrotic foci were infiltrated with lymphocytes, macrophages, and a few neutrophils. Necrotic foci containing numerous neutrophils were also scattered through the red pulp of the spleen. The mesenteric lymph nodes were edematous and had areas of necrosis in the subcapsular portion of the cortex. Similar changes were observed in the lymphoid nodules in the wall of the ileum. There was superficial necrosis of the mucosa of the ileum and colon, and the lamina propria was infiltrated with numerous lymphocytes and a few neutrophils.

Discussion:

The septicemic form of listeriosis is not frequently observed in ruminants and could easily be overlooked when occurring in newborn calves since the clinical signs could be easily confused with other diseases such as colibacillosis and pneumonia. This case would have been very difficult to diagnose without necropsy and culture results.

The source of infection in this case is not known but *L. monocytogenes* is frequently found in soil, and outbreaks are often associated with the feeding of silage containing *L. monocytogenes*.^{1,2} It is likely, but not confirmed, that infection occurred in utero just prior to birth. No cultures were submitted from other calves in the herd. As a result, although it seems likely that others were infected, proof of listeriosis was obtained only in the one calf which died.

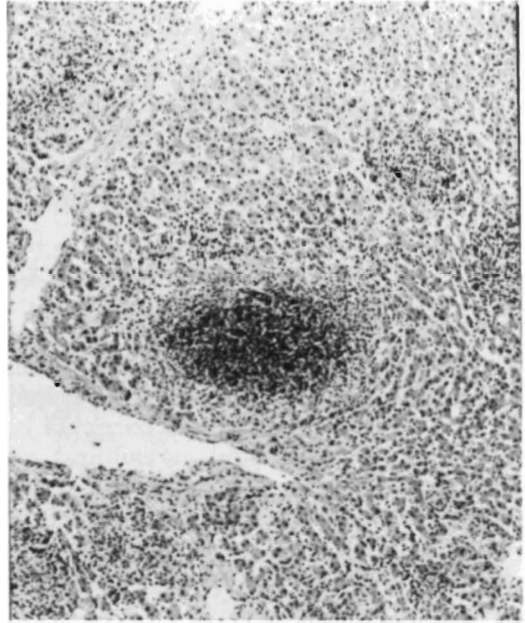


Figure 1. Liver of calf infected with *Listeria monocytogenes*. There are numerous necrotic foci containing inflammatory cells. H&E 70.

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