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## Successful therapeutic management of listeriosis in red kandhari bullock

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### Abstract

A seven year old red kandhari bullock was referred to the Department of Veterinary Medicine, College of Veterinary and Animal Sciences, Parbhani with history of hyper salivation, inappetance and circling movement since 3 days. The animal was having reduced water intake but normal defaecation. The animal was previously treated at local veterinary polyclinic. On clinical examination the animal showed symptoms of drooling of saliva, right sided circling movement, head pressing, right sided facial paralysis, regurgitation of food material from paralysed side of face, inappetance, congested conjunctival mucus membrane and unilateral nasal discharge. Physical parameters were rectal temperature 102.8 F, respiration rate 20 per minutes, heart rate 80 per minutes and ruminal motility 2 per 3 minutes. Ruminal fluid examination revealed alkaline pH to 5 with defaunation. CSF examination revealed moderate increase in protein content and slight decrease in glucose. Listeriosis positive bullock, was treated with procaine penicillin @ 40,000 IU intramuscularly, repeated eight hourly along with supportive therapy comprising of fluid therapy, mecobalamine, and glucocorticoides. The animal showed early recovery within 6 days.

**Keywords:** Bullock, circling movement, facial paralysis, listeriosis

### Introduction

Listeriosis is primarily a disease of ruminants and the diseases associated with *L. monocytogenes* are characterized by encephalitis and abortion. In ruminants it also produces syndromes of septicemia, spinal myelitis, uveitis, gastroenteritis and mastitis. Encephalitis or meningitis usually occurs sporadically, affecting a single animal in a herd or flock or a few individuals over several weeks [5]. Listeriosis is an intracellular, sporadic bacterial disease found as contaminants of environment and different materials. It can also be isolated from feces of food borne pathogen and they can multiply at higher stage in poorly stored silage and rotting vegetation in which these are aerobic condition and a pH is higher than 5.4 and in some case the disease result from infection of the terminals of the trigeminal nerve. The organism can survive at a refrigerator temperature and it can tolerate pasteurization treatment if the heat applied is insufficient [2]. The infection can be treated by the administration of antibiotics and supportive care. An animal's recovery depends on the duration of the disease and the severity of its clinical signs [3].

### History and Clinical Observations

A seven year old red kandhari bullock was referred to the Department of Veterinary Medicine, College of Veterinary and Animal Sciences, Parbhani with history of hypersalivation, inappetance and circling movement since 3 days. The animal was maintained on grass and soyabean. The animal was having reduced water intake but normal defaecation. The animal was previously treated at local veterinary polyclinic. On clinical examination the animal showed symptoms of drooling of saliva, right sided circling movement, head pressing, right sided facial paralysis, regurgitation of food material from paralysed side of face, inappetance, congested conjunctival mucus membrane and unilateral nasal discharge (Fig. 1-2). Physical parameters were rectal temperature 102.8 ° F, respiration rate 20 per minutes, heart rate 80 per minutes and ruminal motility 2 per 3 minutes.

### Laboratory Investigation

Ruminal fluid examination revealed alkaline pH to 9 with defaunation as sluggish protozoan motility with few number of protozoa. Cerebro spinal fluid (CSF) was collected from the lumbosacral foramen (Fig. 3). CSF examination revealed color – colorless, appearance – clear, cobweb/coagulum – absent, xanthochromia – absent, protein 173.6 mg/dl, glucose -55.6 mg/dl, total leucocyte count 2/cu mm, lymphocyte – 00, polymorph -100%, RBCs 210/cu mm and malignant cells were not seen [7].

### Diagnosis

Diagnosis was done as listeriosis on the basis of history of feeding of silage, characteristic symptoms like facial paralysis, circling movement and CSF examination findings.

### Treatment and Recovery

Listeriosis positive bullock was treated with drug of choice procaine penicillin @ 44,000 IU/kg b.wt. i/m which was repeated eight hourly daily up to recovery. Supportive therapy was also given which comprise mannitol, pheniramine maleate, glucocorticoides, mecobalamine and fluid therapy. The animal gave good response to treatment and showed early recovery within 6 days.



Fig 1: Facial Paralysis in Listeriosis affected animal



Fig 2: Regurgitation of food in Listeriosis affected animal



Fig 3: CSF in Listeriosis affected animal

### Discussion

The organism is common in the environment *L. monocytogenes* has been isolated from 42 species of mammals and 22 species of birds as well as fish, crustaceans and insects. It is truly ubiquitous in the environment and can be commonly isolated from animal feces, human feces, farm slurry, sewerage sludge, soil, farm water troughs, surface water, plants, animal feeds and the walls, floors, drains and so forth of farms and other environments. In temperate climates the prevalence of *L. monocytogenes* in the feces of ruminants appears to vary with the season, being higher in the winter period. *L. monocytogenes* is commonly present in silage but it does not multiply to any significant extent in effectively preserved silage which is characterized by anaerobic storage, high density and a high concentration of organic acids. *Listeria* can multiply in silage above pH 5.0 to 5.5, the critical pH depending on the dry matter content [5].

In most animals, ingestion of the organism, with penetration of the mucosa of the intestine, leads to an inapparent infection with prolonged fecal excretion of the organism and to a subclinical bacteremia which clears with the development of immunity. The organism is a facultative intracellular pathogen that can infect cells, including intestinal cells, by directed endocytosis. It can survive and grow in macrophages and monocytes. Bacterial superoxide dismutase protects against the bactericidal activity of the respiratory burst of the phagocyte and listeriolysin O disrupts lysosomal membranes, allowing the organism to grow in the cytoplasm [5].

In cases without systemic infection centripetal translocation of the pathogen along the trigeminal or other CNs following penetration of the traumatized buccal mucosa may result in encephalitis. Meningitis is thought to be associated with hematogenous translocation of the pathogen through parasitized endothelial cells or leukocytes. Clinical signs are characterized most strongly by an asymmetric disorder of CN function, in particular the trigeminal, facial, vestibular and glossopharyngeal nerves but there is some variation in the involvement of individual CNs depending on the distribution of lesions in the brainstem. Lesions in the sensory portion of the trigeminal nucleus and the facial nucleus are common and

lead to ipsilateral facial hypalgesia and paralysis. Involvement of the vestibular nucleus is also common and leads to ataxia with circling and a head tilt to the affected side. The additional signs of dullness, head pressing and delirium are preferable to the more general effects of inflammation of the brain developing in the agonal stages.

In cattle, the clinical signs are essentially the same but the clinical course is longer. The CSF in cases of encephalitis has a moderately to markedly increased protein concentration and leukocyte count. Neutrophils are the predominant cell type with lymphocytes contributing not more than 20% of cells [8].

Penicillin is considered the drug of choice for treatment of listeriosis but it only has a bacteriostatic effect on *L. monocytogenes* [1]. Penicillin administered @ 44 000 IU/kg bd. wt. every 12 hours or every 24 hours given intramuscularly for 10 to 14 days is among the most commonly used treatments for listerial encephalitis/meningitis [9]. The use of nonsteroidal anti-inflammatory drugs (NSAIDs) to address pain resulting from meningitis may be indicated but warrants close monitoring of the patient's hydration status to prevent renal damage. The use of glucocorticoids has been proposed with the objective to prevent abscess formation in the CNS [4].

The recovery rate depends largely on the time that treatment is started after the onset of clinical signs. If severe clinical signs are already evident death usually follows in spite of treatment. Usually the course of events in an outbreak is that the first case dies but subsequent cases are detected sufficiently early for treatment. Dehydration, acid-base imbalances, and electrolyte disturbances must also be corrected. Cases of spinal myelitis are poorly responsive to treatment.

### Conclusion

*Listeria monocytogenes* organism is commonly present in surrounding of animals and can enter in the body of animal through ingestion of feed and water. Under suitable condition *L. monocytogenes* produce disease in animal. The affected animal show abnormal behavior and nervous symptoms. The recovery from Listeriosis is possible when early diagnosis and proper treatment is given. In present case Listeriosis was successfully treated with penicillin.

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