RESEARCH ARTICLE

MOLECULAR CONFORMATION OF BOVINE BOTULISM BY POLYMERASE CHAIN REACTION

*1Kalaiselvi, G., 2Gunaseelan, L., 3Sukumar, K., 4Vijayakumar, G. and 5 Suresh, P.

1Centralized Research Laboratory, Veterinary College and Research Institute, Namakkal, India
2Faculty of Basic Sciences, Madras Veterinary College, Chennai, India
3,5Department of Veterinary Microbiology, Veterinary College and Research Institute, Namakkal, India
4Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Namakkal, India

Received 17th February, 2018; Accepted 22nd March, 2018; Published 30th April, 2018

ABSTRACT

Botulism intoxication in bovine caused by exposure to botulinum neurotoxins (BoNTs), one of the most potent toxins known, produced by the bacterium Clostridium botulinum. It can affect all mammals. Recent years, an increased frequency of new form of bovine botulism has been observed. A total of 121 Cattles and 10 sheep and goats irrespective of breed, age and sex included in this study. Cultural examination of rumen fluid, dung samples and poultry manure samples, only three cases showed photolytic changes in cooked meat medium and lecithenase activity in Clostridium botulinum isolation agar. The positive bacterial culture showed sub terminal spore in gram staining, acid-gas production in carbohydrate fermentation in lactose and sucrose medium, liquefaction of gelatin and stormy clot fermentation in milk. In case PCR reaction, two samples showed 800bp product size in 2% agarose gel.

Key words: Clostridium botulinum - BONT gene- PCR reaction.

Copyright © 2018, Kalaiselvi et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.


INTRODUCTION

Botulism is a rapid onset, usually fatal disease caused by the botulinum toxin produced by the bacterium Clostridium botulinum. This spore-forming anaerobic organism proliferates in decomposing animal tissue and sometimes in plant material. Botulism is in most cases an intoxication, not an infection, and results from ingestion of toxin in food (Martin2005). There are seven types of Clostridium botulinum, differentiated on the antigenic specificity of the toxins: A, B, C1, D, E, F, and G. Types A, B, and E are most important in people. C is most animal species, notably wild ducks, pheasants, chickens, mink, cattle and horses, and D in cattle. Botulism is the cause of acute recumbency in 50.68 per cent of cattle. About 94.59 per cent of the incidences were directly associated with poultry layer farms (Ottor et al., 2006) The significant clinical findings of botulism in cattle were acute recumbency, abdominal breathing, tripping gait, restless, scanty - unformed dung, elevation of tail, rumen atony and flaccid paralysis progressing to lateral recumbency and death (Pandian et al., 2015) Common sources of toxin include animal carcasses, rotting organic material and poorly prepared silage.

Treatment is rarely attempted but vaccines are available in foreign countries for disease prevention in cattle. A recent study states that fatal botulism in cattle could be managed if treated at the early stage. The researchers of this study themselves accepts that even though modified therapy is successful in treating the affected animals but it cannot be claimed superior to antitoxin administration.

MATERIALS AND METHODS

A total of 121 Cattles and 10 sheep and goats irrespective of breed, age and sex brought to the Teaching Veterinary Clinical Complex, Namakkalor telephonically reported to the same with the history and clinical signs of acute recumbency, respiratory distress and anorexia will be included for the study in and around Namakkal District of Tamil Nadu, India, included for this study. The selected cases were evaluated as per standard procedure. History of using poultry slurry and farmyard manure will be collected from the animal owners. In field visits, details of the grazing area management, fodder and water samples will be collected. Rumen liquor, dung, serum and soil samples will be collected from ailing animals. Rumen liquor, dung, serum and soil samples collected from the farm premises were subjected to bacteriological anaerobic culture in