



A Monthly e Magazine
ISSN:2583-2212
Jan 2024 Vol.4(1), 442-445

Popular Article

Botulism

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<https://doi.org/10.5281/zenodo.10590075>

Introduction

It is a toxemic paralytic disease of man, animals and birds caused by the ingestion of toxin of *Cl. botulinum* a soil saprophyte and common inhabitant of digestive tract of animals (Smith et al., 1988).

Synonyms. Limber neck; Lion disease.

Distribution

The disease is worldwide in distribution. Type-B has been recorded in the soil of Belgium, Denmark, England, Netherland and Switzerland whereas Type-C and D have been recognized in the soil of North America, Australia, Europe and certain parts of Africa. The disease has been reported from most of the tropical countries.

Etiology

The disease is caused by *Clostridium botulinum*. It is an anaerobic, large bacillus measuring 4-8 μ x 1-1.5 μ . There are several type of toxins which are liberated by *Cl. botulinum*. Toxins type A, B, C, D, E and F have been shown to be pathogenic for mammals. The C toxin has been further divided to type Ca and Type Cb. The organism is not able to produce toxin in the alimentary tract of animals. Preformed toxin is the sole source of intoxication.

Susceptible Hosts

Horse, cattle, sheep, goat, chick, duck, goose, turkey, pheasants, water fowls and man are



susceptible. Dog is rarely affected.

Mode of Transmission

- Clostridium botulinum is a common inhabitant of the alimentary tract of herbivorous animals.
- The pasture gets contaminated with excreta of such animals.
- The organism multiplies in the decaying animal and decomposed plant materials.

The organisms do not produce toxin within the animal's body. But preformed toxin is the main source of disease transmission. Decomposed hay and silage may also act as source of infection (Blood et al., 1983). Horse may become affected by eating hay and silage contaminated by toxic fluid exuding from decomposed cat or rat carcasses.

Man may become infected by eating imperfectly preserved ham, sausages or other meat products. Decomposed vegetables may also act as contributory factor.

Pathogenesis

The ingested toxin is readily absorbed and ultimately reaches the nerves.



The neurotoxin exerts the effect by localization in the peripheral nervous system.



This ultimately gives rise to various clinical signs attributable to motor nerve paralysis (Payling Wright, 1955).

Clinical Findings

- The disease appears as per-acute, acute, sub-acute or chronic form.
- The incubation period varies from 2 to 6 days depending on the amount of toxin ingested.
- The cardinal manifestation is partial or complete paralysis of muscles of locomotion.
- There is profuse salivation.
- The animal is unable to chew and swallow and the excessive salivation is due to paralysis of the muscle of pharynx and throat.
- The tongue protrudes from mouth and paralysed. Recovery seldom occurs.
- The disease ends fatally.





Lesions

There are no characteristic macroscopic or microscopic lesions.

Diagnosis

- a. In the field, diagnosis can be made based on clinical findings and negative post mortem lesions.
- b. In the laboratory, suspected food may be tested for toxin.
- c. For isolation of causal organism material is inoculated in 1 ml tubes containing fresh broth and meat particles. The tubes are then heated in water bath at 80°C for 1/2 hour. Then it is placed in incubator at 37°C temperature. After about 5 days, the culture fluid is tested for toxicity by inoculation in guineapig.
- d. Toxin can be demonstrated by electrophoresis and FAT.
- e. Identification of toxin is the conclusive evidence of the disease.

Treatment

No reliable treatment is available. Antitoxin if, available can be tried.

Control

Prevention is the best method of control. For this, the following measures can be adopted.

- Access to contaminated feeds and carcasses are to be avoided as far as practicable.
- Cattle and sheep grazing phosphorus deficient pasture, should be provided with adequate phosphorus.



- When the above methods are difficult to follow vaccination is to be resorted. Type specific of combined bivalent toxoid can be used. This toxoid is not prepared in India and can be brought from abroad.

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