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Botulism in Livestock in North Darfur State

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Abstract

Cases suspected to be botulism were known to occur in livestock, especially camels in North Darfur States; signs of the disease are paralysis in the hind quarters. This study was designated to investigate the problem.

A total of 275 samples including 120 carcasses from various animal species, 74 soil samples, 56 water samples, and 25 tissues were collected from six provinces of the state. The tissue samples included small and large intestinal contents, lungs, livers, spleens and lymph nodes, besides ruminal contents and blood samples from cattle, sheep and goats. Water samples were from pools, microdams, bore holes, wells operated by hand pumps, and dams. The soil samples were collected from the same areas. In addition we determined calcium, phosphorous, glucose and protein levels in sera of 600 (100 each) cattle, camels, sheep, goats, horses and donkeys whether infected with the disease or at risk.

The samples were cultured in medium (cooked meat) for isolation of *Clostridium* species and the isolates were identified by conventional biochemical tests. Detection of the botulinum neurotoxin was made by mouse bioassay and typing of the isolates by polymerase chain reaction (PCR), comparing the samples with the known positive *C. botulinum* type C DNA and a negative control. The 22 isolates showed a positive band at 225 bp; the isolates comprised 19 haemolytic and three non-haemolytic *C. botulinum* strains.

The results revealed the presence of *C. botulinum* in all types of the samples investigated. A total of 22 *C. botulinum* type C strains were isolated from the samples: 2 from water samples, 5 from tissues, 7 from carcasses, and 8 from the soil. Other *Clostridium* species which were: 12 *C. tetani*, 8 *C. perfringens*, 7 *C. glycolicum*, 6 *C. bifermentans* and one *C. sordellii* from soil.

The findings indicated that the causative agents of the outbreak were *C. botulinum* strains. Inadequate feeding of animals leads to consumption of soil (pica) and hence to disease. Vaccination and improvement of animal feeding should prevent botulism and lower the risk for soil ingestion.

Keywords: *Clostridium botulinum*, livestock, pica, undernutrition, Sudan