

## b Botulism — a public health emergency

### Case presentation

A 42-year-old male presented to a local hospital on the 8 January 2016 with sudden onset of slurred speech and difficulty in swallowing. On examination he was noted to have bilateral cranial nerve weakness, but no sensory loss or lower limb weakness. He was afebrile, fully conscious and cooperative. The following day his condition deteriorated rapidly with bilateral arm weakness; later that afternoon he developed respiratory failure requiring intubation and ventilation. He subsequently had a cardiac arrest and demised.

Due to the nature of his presentation the clinician considered botulism as part of the differential diagnosis. The patient had reported abdominal cramps and diarrhoea a week prior to presentation which resolved after treatment with buscopan. A detailed food history was not available. No other persons were affected. Serum was sent to NICD Special Bacterial Pathogens Unit for botulism toxin testing. The mouse bioassay, which is the reference method for detection of botulinum neurotoxin (1) was negative after 21 days.

### Discussion

Foodborne botulism is the most common presentation of botulism. Growth of the organism and production of botulinum toxin in foods only occurs under particular conditions, namely anaerobic, low-salt, low-acid conditions. Proper refrigeration at temperatures below 3°C retards the growth of *Clostridium botulinum*. The organism is susceptible to high salt, high oxygen, and low pH levels. The spores are heat-tolerant and will survive boiling water for an extended period of time (2), but the botulinum toxin is denatured and thus deactivated by thorough cooking at temperatures greater than 80°C. *C. botulinum* produces 7 immunologically distinct toxins, which are designated by the letters A–G. Several related clostridial species (e.g., *Clostridium baratii* and *Clostridium butyricum*) also produce botulinum toxins.

In South Africa there is little public awareness and medical knowledge about botulism (3). The diagnosis of botulism can be made rapidly if the

presenting symptoms are associated with ingestion of a unique food item. A detailed history of food is essential. A single case of foodborne botulism represents a public health emergency that may warrant a thorough outbreak investigation because the contaminated food may still be available to cause illness in others. Therefore, it is critical for clinicians who suspect botulism to discuss the case immediately with local department of health communicable disease outbreak response teams and the clinical microbiologist. Investigation of a suspected case of botulism includes an immediate search for other possible cases and identification of suspected food exposures, as well as confirmation of the diagnosis. If a number of people are affected, a rapid and detailed epidemiological investigation is warranted to assure the source is identified and controlled. Diagnostic testing of both case specimens (serum, vomit, stomach contents, stool) and foods should be performed.

### References

1. Botulism. NICD Communiqué. 2015;14 (3)
2. Schantz EJ, Johnson EA. Properties and use of botulinum toxin and other microbial neurotoxins in medicine. *Microbiol Rev.* 1992 Mar;56(1):80-99.
3. Frean J, Arntzen L, van den Heever J, Perovic O. Fatal type A botulism in South Africa, 2002. *Transactions of the Royal Society of Tropical Medicine and Hygiene.* 2004;98(5):290-5.

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