An Overview of Type E Botulism in China

SI-WU FU*,1 AND CHEN-HUAI WANG+

*Department of Microbiology, Medical College, Northwest University for Nationalities;

+Lanzhou Institute of Biological Products, Lanzhou 730030, Gansu, China

The geographical distribution of *C. botulinum* type E and its associated disease, type E botulism in China, is different from that in other areas of the world. Cases of type E botulism generally arise in costal regions. In China, however, type E botulism is found primarily in the Qinghai-Tibet plateau of northwest China far from the ocean, at an altitude of approximately 4-5 km. The foods most commonly associated with the disease are fermented grain and beans as well as raw meat. A suspected outbreak of type E botulism poisoning in the central costal region of China in the 1990s prompted the collection and analysis of samples of mud, sand, and fish from the region. The toxin produced by type E botulinum was found in these samples. Surprisingly, though, upon further analysis, the strain isolated from the samples was identified not as type E *C. botulinum*, but as the neurotoxigenic bacterium *Clostridium butyricum*.

Key words: Clostridium botulinum; Botulism; Geographical distribution

REFERENCES

- Wu C R, Lian Z H, Chen W J, et al. (1958). Botulism: A report for Qapqal disease. Nat Med J of Chin 44(10), 932-942. (In Chinese)
- Kushnir, E D, Breen T M, Paikina S S (1937). Sources of infection of sturgeons (red fish) with *Bacillus botulinus*. Zh Mikrobiol Epidemiol Immunobiol 19, 80-85.
- Gunnison, J B, Cummings J R, Meyer K F (1936). Clostridium botulinum type E. Proc Soc Exp Biol Med 35, 278-280.
- Smith L D S, Sugiyama H (1988). Botulism: the organism, its toxins, the disease. 2nd ed. Springfield III: Charles C. Thomas.
- Wang Y C, Wu Y Y, Wang C H (1973). A strain of *C. botulinum* type E isolated from raw beef. *Acta Microbiol Sin* 13(2), 107-109. (In Chinese)
- Wu W J, Zou J M, Zhu H S (1979). The first outbreak of type E botulism in Henglongjiang. *Chin J Prev Med* 13(2), 88-90. (In Chinese)
- Zhu F L (1997). Analysis of botulism in Qinghai province in 1960-1995. Chin J Food Hyg 9, 43-45. (In Chinese)
- Zhao W B, Lin H Y, Qian L L, et al. (1995). Investigation of a botulism of type E. Chin J Health Lab Technol 5(1), 62-63. (In Chinese)
- Dolman C E, Iida H (1963). Type E botulism: its epidemiology, prevention and specific treatment. Can J Pub Health 54, 293-308
- 10.Jin H, Chen X S (2005). Investigation of a botulism caused by botulinum toxin type E in high latitude areas. *Chin J Health*

- Lab Technol 15(4), 499. (In Chinese)
- 11. Zhao J, Xue Q (2006). Investigation of a botulism caused by botulinum type B and E. *Mod Prev Med* **33**(1), 91-93. (In Chinese)
- Cai Q H, Zhang G (2006). Investigation of two botulism type E in Ganzi, Sichuan. J Prev Med Inform 22(3), 345-346. (In Chinese)
- 13. Yang W M, Zhao W G (2003). Investigation of a botulism caused by botulinum toxin type E. *J Huaihai Med* **21**(2), 142-143. (In Chinese)
- 14.Li Z G, Li S Q, Jiang H T (1989). Report of a botulism type E. J Chin Pub Med 5(10), 15-16. (In Chinese)
- 15.Xia H Q, Wu J G (1982). Botulism. Urumqi: Xinjiang People's Publishine House.,1-55. (In Chinese)
- 16.Gao Q Y, Liu H D, Yao J H, et al. (1984). Investigation of the distribution of toxin-producing C. botulinum in coastal areas. Chin J Prev Med 18(3), 129-131. (In Chinese)
- 17.Meng X, Karasawa T, Zou K, et al. (1997). Characterization of a neurotoxigenic Clostridium butyricum strain iaolated from the food implicated in an outbreak of food borne type E botulism. J Clin Microbiol 35, 2160-2168.
- 18.Zou K Y, Kuang X, Meng X Q, et al. (1996). Research on strain of neurotoxigenic Clostridium butyricum isolated from food causing an outbreak of food-borne type E botulism. Prog Microbiol Immunol 24(3), 1-5. (In Chinese)
- 19.Zou K Y, Kuang X, Meng X Q, et al. (1997). Distribution of neurotoxigenic C. butyricum in Weishan Lake areas. Prog Microbiol Immunol 25(3), 4-8. (In Chinese)

(Received November 2, 2007 Accepted March 11, 2008)

¹Correspondence should be addressed to Si-Wu FU. Tel: 86-0931-2938150. Fax: 86-0931-2938100. E-mail: yxfsw@xbmu.edu.cn Biographical note of the first author: Si-Wu FU, male, born in 1967, professor, medical doctor at the Medical College, Northwest University for Nationalities, majoring in anaerobic bacterium.