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Infant Botulism

On January 22, 1992 the Section of Epidemiology was notified of a case of suspected infant botulism. J.K., a 5-month old caucasian male from Aniak, was in his normal state of good health until January 15 when his mother noticed he had decreased activity, particularly crawling. On January 17, he appeared weak and had a poor appetite. On January 19, he was seen at the Aniak clinic, diagnosed with otitis media and placed on amoxicillin. Because of increasing weakness and inability to suck, his parents brought him to the Humana Hospital emergency room (ER) on January 21. He had no constipation, diarrhea, respiratory difficulty, or decrease in urination.

In the ER he had normal vital signs and was in no acute distress, although he appeared to be dehydrated. Neurologic exam revealed generalized weakness, bilateral ptosis, and weak gag; he had no tongue fasciculations and had normal reflexes, extra-ocular movements, and swallowing. Except for decreased bowel sounds, the remainder of the physical exam was normal. Laboratory exam showed normal liver function tests, electrolytes, cerebrospinal fluid and urine. Stool was positive for type A *Clostridium botulinum* toxin. He gradually improved and was discharged on February 1.

J.K. was fed only breast milk and rice cereal. He had a 2-year old sibling and his family frequently ate commercial honey. While a specific occasion where J.K. was fed honey could not be recalled, his mother thought it was possible a family member had placed a finger with honey in his mouth.

Infant botulism is the most commonly reported form of botulism in the United States; in Alaska, three infants have been diagnosed with this disease. In contrast to food-borne botulism, where toxin is ingested, infant botulism results from ingestion of *C. botulinum* spores with subsequent intestinal colonization and toxin production. Most infant botulism occurs between 3 and 20 weeks of age. In the United States, infant botulism is usually type A or B while food-borne botulism in Alaska is most commonly type E.

The first symptom is often constipation, followed in several days by progressive muscular weakness, poor suck, weak cry, and difficulty swallowing. Respiratory arrest occurs in half of affected infants. Numerous examples exist of infants presenting with apnea, or becoming apneic during a diagnostic procedure.

Examination may show decreased gag reflex; cranial nerve involvement including ptosis, ophthalmoplegia, and facial nerve palsy; mydriasis; and areflexia and generalized hypotonia. Patients are usually afebrile and have normal cerebrospinal fluid. Electromyography may be helpful in differentiating botulism from other causes of neuromuscular disease.

Diagnosis is made by demonstration of *C. botulinum* toxin in stool and supported by a stool culture positive for *C. botulinum* organisms. It is unusual to find toxin in serum.

There is no specific therapy for infant botulism. Anti-toxin does not affect outcome. Antimicrobials, particularly aminoglycosides, have been shown to increase the incidence of respiratory paralysis. Supportive care, including mechanical ventilation and nasogastric feeding, can be lifesaving.

None of the reported cases of infant botulism in Alaska have occurred in Natives. In studies conducted outside Alaska, affected infants had higher birthweights, their mothers tended to be caucasian, and they were more commonly breast-fed. In two studies, infant botulism was shown to be responsible for a portion of deaths attributed to sudden infant death syndrome but this has not been supported by other investigators.

Approximately 20% of infant botulism cases reported to the U.S. Centers for Disease Control have been associated with ingestion of honey. The sources for the other cases are unknown but hypotheses include soil, household dust, and other foods. **Honey should not be fed to infants less than 1 year of age.** No other specific prevention measures exist.

Because symptoms can progress rapidly, any infant with new onset of progressive weakness, particularly with cranial nerve involvement or constipation, should be evaluated immediately. **Botulism, including infant botulism, is a public health emergency. All suspected cases should be reported immediately to the Section of Epidemiology (561-4406 during business hours; refer to call list after hours).**

Reported by Gerry Schriever, M.D. and contributed by Brad Gessner, M.D., Section of Epidemiology