Louisiana

DEPARTMENT OF HEALT
AND HUMAN RESOURCE
OFFICE OF HEALTH SERVICE
AND ENVIRONMENTAL QUALIT

MONTHLY MORBIDITY REPORT

Provisional Statistics

Reported Morbidity
June, 1978

from the

OFFICE OF PUBLIC HEALTH STATISTIC

INFANT BOTULISM *

GENERAL

Since January 1, 1975, a total of 58 cases of botulism in infants less than 6 months of age have been reported to CDC (1). More than one-half were reported by California where an intensive case finding program has been underway since 1976 (2). Of the 58 cases reported 33 were type A and 25 type B botulism. All but one of the 8 cases east of the Mississippi River were type B, while type A cases predominated in the West.

In general the infants with botulism were products of a normal gestation and delivery and were without congenital defects. They were developing normally and were healthy until onset of illness. Approximately 60% of cases to date were males. The median age at onset was 10 weeks; range 3 - 26 weeks. Breast feeding was the principal milk source of more than 50% of the infants involved. Preliminary results of a case-control study conducted in California show a statistical association with the consumption of honey by type B cases; there was no association with types A and B cases combined.

CLINICAL ASPECTS

Symptoms. After a varying period of normal development, constipation is usually the first symptom followed by poor feeding, lethargy, weakness, pooled oral secretions, and weak or altered cry. Eventually the baby becomes "floppy." Loss of head control is particularly striking.

Signs. Ophthalmoplegia, ptosis, flaccid facial expression, dysphagia, weak gag reflex, generalized muscle weakness, and in some instances, respiratory insufficiency have been reported. The infants have been mentally alert but may appear somnolent.

Severity of Illness. Although it is expected that cases of infant botulism occur at each end of the clinical spectrum (inapparent illness <–> severe illness) the cases diagnosed to date have all required hospitalization. Additional information is needed in order to assess the spectrum of illness in infants (mild lethargy, constipation to sudden respiratory arrest, SIDS).

Pathogenesis. It appears that infant botulism is a toxico-infection, i.e., the illness is due to the action of botulinal toxin elaborated in vivo after multiplication of *C. botulinum* in the infant's intestinal tract (3). Factors which predispose to colonization, multiplication and toxin production by *C. botulinum* in an infant's intestinal tract are unknown. It has been demonstrated that in some cases

*Based on a report prepared by Enteric Diseases Branch, Bacterial Diseases Division, Bureau of Epidemiology, Center for Disease Control, Atlanta, Georgia.

BULLETINS

LEGIONNAIRES' DISEASE

A second sporadic case of Legionnaires' Disease in Louisiana has been confirmed in a 33 year old Shreveport area resident. The first case was diagnosed in 1977 in a southeast Louisiana resident. This second case developed left upper lobe pneumonia with onset May 9, 1978. Prominent symptoms were confusion, a non-productive cough, and fever to 104.5°F. Initial white blood cell count was 11,000. Acute and convalescent serum collected on May 16 and May 25 showed an indirect fluorescent antibody titer increase from 1:64 to 1:4096 against Legionnaires' Disease. The patient was treated initially with gentamicin and carbenicillin with no response, but responded well to erythromycin with complete recovery.

VIBRIO PARAHEMOLYTICUS OUTBREAK - PORT ALLEN

An outbreak of *Vibrio parahemolyticus* food poisoning, affecting over fifty percent of approximately 1700 persons attending a party in Port Allen, Louisiana on June 21, 1978, is presently under investigation. Preliminary findings have confirmed the presence of *Vibrio parahemolyticus* in leftover shrimp served at the party and fecal specimens from a number of ill persons who attended the party have been reported positive for *Vibrio parahemolyticus*. Several factors appear to have contributed to the contamination of the shrimp, including possible inadequate cooking time, recontamination after cooking, and no refrigeration for 8 - 10 hours after cooking. (A detailed report of the investigation will appear next month.)

C. botulinum and botulinal toxin are excreted in the feces of infants for many weeks but eventually their stools become negative for botulinal toxin and microorganism (1).

Treatment. Polyvalent antitoxin was administered to the first case (in 1975) which was thought to be food-borne botulism. However, all subsequent cases have received only supportive care. Immediate access to an intensive care unit is important because respiratory arrest and aspiration have occurred.

The question of the use of antitoxin has not been resolved. In earlier cases, physicians elected not to use antitoxin since their cases were stable or recovering when the diagnosis was established; none of the early cases were fatal. In subsequent cases, since circulating antitoxin had not been detected in serum from any patient tested, and use of antitoxin entails the risk of horse serum administration, physicians have elected to rely solely on supportive therapy. Patients who have received meticulous supportive care which focused on nutritional and respiratory needs have recovered without sequelae, however, there were 2 deaths in cases given only supportive care.

Botulinal toxin reaches the motor end plate via lymphatic and hematologic circulatory systems. Toxin has not been detected in infants tested thus far by the standard mouse neutralization test but it may be continuously absorbed from the GI tract over long periods and be present in very low undetectable levels in the blood at any one time. If toxin is present, even in very low levels during the clinical recognizable phase of the illness, then administration of antitoxin may be helpful and might also be helpful in preventing any additional toxin absorbed from the GI tract from reaching neuroreceptors. Presently though, it is not known whether botulinal antitoxin administered early, or at any time, would ameliorate the disease, shorten hospitalization, or diminish the risk of serious complications.

The administration of oral antibiotics (e.g., penicillin) directed against intraintestinal *C. botulinum* has not been systematically evaluated. In the few cases in which antibiotics were given in an attempt to specifically eradicate the organism, no beneficial clinical effect was discernible. In fact, there are some theoretical reasons to believe that antibiotics may be detrimental. Botulinal toxin is not excreted by the organism but rather is released upon cell lysis. Therefore, a bactericidal drug may possibly release additional toxin which in turn may be absorbed into the circulation causing the clinical condition of the patient to worsen. Also, alteration of the bacterial flora with antibiotics may upset the natural balance of microorganisms and prolong, rather than shorten, the persistence of *C. botulinum*.

Differential Diagnosis. Diseases and conditions which must be differentiated from infant botulism include sepsis, failure to thrive, myasthenia gravis, idiopathic hypotonia, poliomyelitis, brain stem encephalitis, acute infantile polyneurolpathy, dehydration, and various hereditary and metabolic disorders. Pertinent negative findings include:

1. negative tensilon test (may be equivocal),
2. normal cerebrospinal fluid,
3. normal nerve conduction time,
4. normal sensory examination,
5. usually afebrile (may be febrile with pneumonia) and
6. mentally alert (may appear somnolent).

Electromyography reveals a normal conduction time with rapid repetitive stimulation, facilitation is sometimes seen as in adult botulism. A pattern of brief small amplitude abundant potentials (BSAP) has also been noted in some cases of infant botulism (4).

LABORATORY TESTS

Laboratory Confirmation. At present, confirmation of the clinical diagnosis of botulism requires the demonstration of botulinal toxin and/or *C. botulinum* in the feces of the infant. All routine laboratory tests (blood chemistry, hematology, urinalysis, etc.) are normal; the cerebrospinal fluid protein has been slightly elevated in a few cases. Although serum samples are frequently useful for laboratory confirmation of botulism in adults, none of the serum samples from infants with botulism examined to date have been positive for botulinal toxin. However, the possibility that some infants may have circulating toxin in their blood during illness has not been excluded (see treatment section).

Collection and Shipment of Specimens.

1. Specimens
   a. Feces. A passed stool specimen is preferred for botulinal toxin detection and for isolation of *C. botulinum* (5). If available, at least 25 grams (walnut size) should be collected in a sterile container (botulism spores may be present in dust and the environment). However, since it is frequently difficult to obtain stools from infants with botulism, whatever quantity is available should be collected for testing. If a passed stool is not available, a specimen obtained after a sterile (nonbacteriostatic) water enema can be used. The volume of water used should be limited so that toxin in the feces is not diluted unnecessarily. A specimen volume of 15-20 ml collected after an enema is sufficient. The physician should be guided by the clinical condition and the weight and size of the infant in administering an enema. Fecal samples should always be collected before administration of therapeutic botulinal antitoxin if it is used. Submission of serial stool specimens (approximately bi-weekly) during the acute and convalescent stages of illness is encouraged since toxin and *C. botulinum* has persisted in the intestinal tract of some infants for many weeks.
   b. Serum. If possible, serum samples (2 ml or more) for toxin assay should be collected from suspect cases during the acute and convalescent stages of confirmed cases. Convalescent serum should be accompanied

by a corresponding stool specimen so that toxin levels in serum (if any) and stool may be compared.

c. Autopsy Samples. Postmortem samples should include serum samples to test for botulinal toxin and samples of intestinal contents to test for botulinal toxin and *C. botulinum*. Intestinal samples should be taken from different levels (e.g., small bowel, proximal colon, distal colon) of the intestinal tract, if possible.

d. Miscellaneous Specimens. Other specimens which should be collected during an epidemiologic investigation and considered for laboratory testing include foods ingested by the infant or any other suspect item which would have served as a source of *C. botulinum* for the infant, for example, open containers of cereal, honey, syrups, house dusts, etc.

e. Labeling Specimens. All specimen containers should be properly labeled indicating the specimen identification, and date and time of collection. In addition, a properly completed requisition or note describing the specimens should accomplany them to the laboratory. Since some medications can interfere with botulinal toxin testing, a list of medications the infant(s) is presently receiving should also be submitted.

f. Refrigeration of Specimens. Unless examined in the laboratory immediately after collection, all specimens to be examined for botulinal toxin and/or *C. botulinum* should be refrigerated (4°C) until tested.

2. Shipment of Specimens to a Reference Laboratory for Testing.

a. General Considerations. The Louisiana Department of Health and Human Resources does not currently provide laboratory tests for the diagnosis of botulism. Specimens can be submitted to CDC during a botulism investigation with the concurrence of the Epidemiology Unit of the D.H.H.R. (504-568-5006). Specimens shipped to CDC should be placed in a leak-proof container, packed with ice or a suitable refrigerant in a second leak-proof insulated shipping container, labeled "Medical Emergency" and shipped by the most rapid means possible.

b. The following guidelines should be followed in sending specimens to be tested at CDC:

1) Overnight or express delivery is preferred to maintain a quality specimen.

2) Overnight quaranteed service is provided by the U.S. Postal Service from major cities to Atlanta. An advantage of this system is that the package arrives directly at CDC.

3) Air express (Eastern Sprint, Delta Dash, approximately $30) or Air Freight.

c. When shipping specimens to CDC request that shipper (usually hospital laboratory personnel) notify CDC laboratory

Days - 404-633-3311, ext. 3867;
Nights and Weekends - 404-633-2176

of flight, time of arrival of specimens, and Way Bill or receipt identification number. Airlines do not accept responsibility for notifying CDC, even when requested to do so on shipping label. It is suggested that hospital laboratory personnel responsible for sending a specimen contact the CDC Anaerobe Section at ext. 3867 before sending specimens to ensure that they will be sending appropriate specimens in an expeditious manner. Packages should be addressed to

Charles L. Hatheway, Ph.D.
Anaerobe Section,
Center for Disease Control
1600 Clifton Road,N.E.,
Atlanta, Georgia 30333

CITED REFERENCES

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(3) Black RE, Arnon SS: Botulism in the United States, 1976. J Infect Dis 136:829-832, 1977

(4) Clay SA, Ramseyer JC, Fishman LS, Sedgwick RP: Acute infantile motor unit disorder: Infantile botulism? Arch Neurol 34:236-243, 1976

(5) Dowell VR, Jr, McCroskey LM, Hatheway CL, Lombard GL, Lombard GL, Huges JM, Merson MH: Coproexamination for botulinal toxin and *Clostridium botulinum* JAMA 238: 1829-1832, 1977

SELECTED REPORTABLE DISEASES

(By Place of Residence)

STATE AND PARISH TOTALS Reported Morbidity June, 1978	ASEPTIC MENINGITIS	DIPHTHERIA	ENCEPHALITIS	ENCEPHALITIS, POST INFECTIOUS	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	TUBERCULOSIS, PULMONARY	MENINGOCOCCAL INFECTIONS	PERTUSSIS	RABIES IN ANIMALS	RUBELLA*	SEVERE UNDERNUTRITION	SHIGELLOSIS	TYPHOID FEVER	OTHER SALMONELLOSIS	TETANUS	MEASLES	GONORRHEA
TOTAL TO DATE 1977	5	0	4	0	205	64	290	65	4	6	26	4	38	0	44	1	74	8720
TOTAL TO DATE 1978	27	0	1	0	364	100	253	87	4	11	471	6	55	1	49	1	311	11034
TOTAL THIS MONTH	18	0	0	0	104	23	39	21	3	4	45	3	18	0	18	0	13	2126
ACADIA											1						2	14
ALLEN																		5
ASCENSION																		3
ASSUMPTION																		8
AVOYELLES																		5
BEAUREGARD							1											3
BIENVILLE								1					2		1			5
BOSSIER						1	1			1								24
CADDO					2	7	4	2			1		5		2		1	217
CALCASIEU					1	1	1	1	1				2					96
CALDWELL																		3
CAMERON															3			2
CATAHOULA								1										
CLAIBORNE																		
CONCORDIA					1			2										3
DESOTO																		8
EAST BATON ROUGE					4			1			13		2		2			166
EAST CARROLL																		1
EAST FELICIANA											1							2
EVANGELINE																		
FRANKLIN																		3
GRANT																		6
IBERIA											1		1				2	4
IBERVILLE											1							12
JACKSON																		2
JEFFERSON	6				16	3	2				19				2		3	82
JEFFERSON DAVIS						1	1											10
LAFAYETTE						1		1			2				1		1	25
LAFOURCHE					2		1	1										9
LASALLE							1											1
LINCOLN																		9
LIVINGSTON																	1	1
MADISON					4										1			12
MOREHOUSE																		10
NATCHITOCHES																		23
ORLEANS	4				25	4	17	2	1		2		5		4			804
OUACHITA					1		1	2			2						1	97
PLAQUEMINES					1	1		1										7
POINTE COUPEE																		2
RAPIDES							2	1		2								94
RED RIVER																		1
RICHLAND							1											4
SABINE																		5
ST. BERNARD	1				5													6
ST. CHARLES								2				2						3
ST. HELENA																		1
ST. JAMES	1						1											7
ST. JOHN																		7
ST. LANDRY	2				2				1									16
ST. MARTIN					1		2	1			1				1			7
ST. MARY							1											3
ST. TAMMANY	2				30								1					49
TANGIPAHOA					2							1					1	38
TENSAS																		
TERREBONNE	1				2			1										13
UNION																	1	6
VERMILION						3	1											3
VERNON	1				1		1	1							1			86
WASHINGTON					1													49
WEBSTER					1	1				1								17
WEST BATON ROUGE																		14
WEST CARROLL											1							3
WEST FELICIANA					1													
WINN																		2
OUT OF STATE					1													8

* Includes Rubella, Congenital Syndrome

From January 1 through June 30, 1978, the following cases were also reported: 1 - Brucellosis; 3 - Malaria (con
outside the U.S.A.); 1 - Psittacosis; 2 - Leptospirosis.