FLORIDA DEPARTMENT OF HEALTH

Epi Monthly Report

Office of Epidemiology and Disease Control

VOLUME 4. ISSUE 8

AUGUST 2003 PAGE-1

Miami-Dade County HEALTH DEPARTMENT

First confirmed case of West Nile Virus Encephalitis due to mosquito transmission in Miami-Dade County

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Introduction

West Nile Virus (WNV) was reported for the first time in the United States in 1999 due to an epidemic of encephalitis and meningitis in New York City. Since then, WNV has been identified in most jurisdictions in the United States, with more than 3,000 cases reported in this country during the year 2002. Last year, 28 cases of WNV were reported in the State of Florida, and two of these were Miami-Dade residents who contracted the disease through organs received from an infected organ donor.

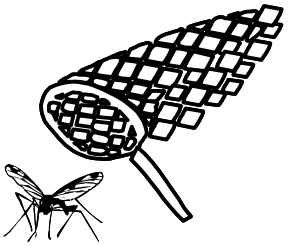
Investigation

On August 7th 2003, a 50 years old Hispanic male was admitted at a local hospital in Miami-Dade due to fever (100.5 ^{O} F), headache, stiff neck, tremor, confusion, weakness in lower extremities, incontinence, and rash. This patient had no history of international travel in recent years. His initial diagnostic tests were negative for bacterial meningitis. On August 8th , the attending physicians sent cerebrospinal fluid (CSF) specimens to the Department of Health (DOH) lab for arboviral testing. On August 14th, the Office of Epidemiology (OEDC), Miami-Dade County Health Department was first notified about this patient due to an ongoing suspicion for a diagnosis of WNV encephalitis.

Investigators of the OEDC immediately started the epidemiological investigation for this case. They contacted the physicians and the infection control practitioner of the admitting hospital, and requested serum specimens for this patient for further testing of arboviruses at the DOH lab. On August 18th the DOH lab reported to the OEDC that the patient's specimens were positive for WNV IgM.

Control Measures

1. The OEDC notified the Mosquito Control Division of Miami-Dade immediately after receiving the lab report of this confirmed case of WNV encephalitis and requested the implementation of mosquito control measures in the implicated residential area.



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2. Notification of the case and dissemination of information about WNV and its testing availability at DOH labs, was sent by fax and e-mail to local hospital infection control practitioners, emergency departments, and local physicians.
3. Media availability was called for the local media, so that information about WNV disease, personal protective measures, as well as means for the elimination of potential mosquito residential breeding sites, could be effectively disseminated to the community.

Current situation of WNV surveillance in Miami-Dade County

A total of seventeen birds, six sentinel chickens and two horses from Miami-Dade have tested positive for WNV infection during the current year. This shows an increase in WNV in our community since last year, when two dead birds and two horses were identified as WNV positive.

Discussion and Opportunities for Improvement

This case investigation highlights the importance of timely reporting, surveillance and disease control activities. Despite the strong communication and dissemination of information about WNV, the availability of resources at MDCHD to raise awareness of clinicians about communicable diseases, especially arboviral diseases, there was a delay by the health care providers in contacting MDCHD about this case. Tardy notification of suspected encephalitis cases to the local health department may delay implementation of effective mosquito control, and other preventative measures in the community, thereby further increasing the risk of local transmission of WNV or other arboviral diseases.

A finding of this investigation was that the DOH lab received specimens from this patient a week before the clinicians notified MDCHD. Two lessons were learned from this event. Firstly, there is a further need for an increased awareness among local physicians and hospitals about the importance of communicating with the local health department. Secondly, there is a need for a better communication between the DOH labs and the county health departments, without interfering with the diagnostic services that these labs provide to the community. This communication gap could be improved if the DOH labs notify county health departments when they receive specimens from local physicians or hospitals requiring diagnostic tests for WNV and other arboviral diseases. This will prevent a late epidemiological investigation and implementation of disease control activities if the requesting institution failed to contact the local health department.

The control and elimination of local transmission of arboviral diseases requires a coordinated and consistent effort from all participants, including physicians, infection control practitioners, epidemiologists, laboratory technicians, the media, and the general public.

References

1. Nash D, Mostashari F, Fine A, et. al. Outbreak of West Nile virus infection, New York City area, 1999. N Engl J Med 2001;14:1858-59.
2. Provisional Surveillance Summary of the West Nile virus epidemic – United States, January-November 2002. MMWR 2002;51:1129-33.

Note: The Florida Department of Health (DOH) Laboratory provides testing for WNV and other mosquito-borne illnesses such as dengue fever, SLE, and eastern and western equine encephalitis (EEE, WEE). EEE, SLE, and dengue can be tested in the CSF. WNV, EEE, SLE, WEE, and dengue can be tested from single or paired sera. It is best to submit both CSF and sera when possible.

If you suspect any of these illnesses in a patient, please report the case to the Office of Epidemiology and Disease Control (305) 324-2413 between 8 am and 5 pm Monday through Friday and (305) 377-6751 after hours. Your reporting is critical in the monitoring and prevention of these diseases. We will also arrange the testing of your patient's specimens at the DOH Laboratory. There is no charge for testing.

Suspected Botulism case investigation in Miami-Dade County August 2003

Juan Suarez , Kiren Mitruka, Fermin Leguen

Introduction

The Office of Epidemiology and Disease Control (OEDC) received a call from an infection control practitioner at a local hospital late in the afternoon of August 5th, 2003. The call was concerning an 80-year-old female tourist, vacationing in a hotel in Miami Beach, who was taken by Fire-Rescue to the hospital in the early morning of August 4th. She was admitted due to symptoms of blurred vision, abdominal pain, nausea, vomiting and diarrhea. Her past medical history included coronary artery disease, atrial fibrillation, diabetes, hypertension, and hypothyroidism. She had no other travel history. On the night of August 3rd the patient consumed a dinner at the hotel that included a Fettuccine Alfredo with mushrooms, cheesecake, bread rolls and water. She was found to be afebrile on presentation and her physical exam was pertinent for the presence of a mildly distended abdomen and the absence of focal neurological deficits. Her initial diagnosis was acute gastroenteritis with a differential diagnosis of cerebral vascular ischemia.

On the morning of August 5th, her neurological symptoms progressed, as she developed a headache with an inability to focus her eyes. She lost all movement of her eyes and was found to have a right gaze preference. She had numbness of her left face with findings of facial plegia; the left side being worse. In addition, she had slurred speech and an ataxic gait. A neurologist and an infectious disease specialist were consulted. Imaging studies of the central nervous system were unremarkable for ischemia. Due to the progression of her clinical syndrome, a diagnosis of botulism was considered. Since it is a reportable condition and *C. botulinum,* a Category A agent of bioterrorism, is under enhanced surveillance by the health departments, the OEDC was called immediately.

Investigation

The investigation began with a telephone conference between the OEDC and the various physicians caring for the patient to determine the need for botulism antitoxin from the CDC. In addition, the hospital infection control practitioner received the botulism alert form (http://www.doh.state.fl.us/disease_ctrl/epi/topics/surv.htm) to document the tests done, patient's symptoms, and provide other information needed for the management of this suspected botulism case. Her clinical course was discussed in detail and it was determined that in fact over the course of the day on August 5th, her neurological symptoms and findings had continuously improved. The physicians decided to defer the request for botulism antitoxin, given the lack of clinical consistency with a diagnosis of botulism at that point.

On August 6th an OEDC epidemiologist and an inspector from the Department of Business and Professional Regulation (DBPR) visited the hotel and restaurant to search for the etiology of the patient's illness. They evaluated the food preparation procedures and the ingredients used in the food consumed by the patient. Interviews with the food service manager and the chef were conducted to assist with this process. The DBPR also conducted a food safety inspection at the restaurant and wrote an inspection report.

No samples of the food consumed were available at the restaurant, but leftover food had been submitted by the patient's family and had been stored at the hospital for possible tests. This food, as well as the patient's serum were tested for botulinum toxin, and the food was additionally cultured for *C. botulinum.* These tests were conducted at the State Bureau of Laboratories in Miami on August 6th.

An interview with the patient that afternoon revealed that she was improving and most of her symptoms had resolved.

Investigation Results

Using various rapid methods, the laboratory tests returned on the night of August 6th as presumptively negative for *C. botulinum* and its toxin. This result was confirmed several days later with absence of

growth of the organism on selective agar plates.

The patient was transferred from the ICU to a regular room for observation later in the afternoon of August 6th. She continued to improve and was discharged home two days later.

The investigation at the restaurant found no major violations. On August 3rd the restaurant had served a small number of the same entrée that the patient consumed, and no other illnesses were reported. Other family members who ate with the patient, but consumed different items, did not develop any symptoms.

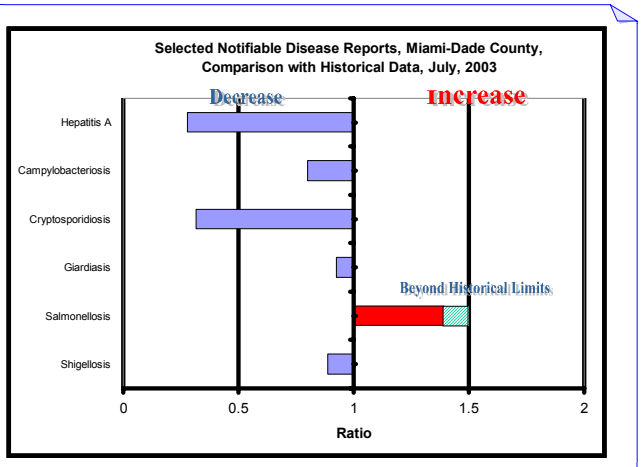
Conclusions, Recommendations and Lessons

This episode was most likely a case of another source of food poisoning rather than botulism. The tests performed and the rapid recovery of the patient is evidence for this. No pathogen has yet been isolated. No additional cases were reported to the OEDC and no other complaints were associated with the restaurant.

Botulism toxin is produced in food that is contaminated with *C. botulinum* spores, which are normally found in the soil. Spores will germinate and produce toxin if they survive food preservation methods and encounter the following conditions: an anaerobic environment, low acid-pH (4.6 - 4.8), minimum temperature of 10° C, and availability of water with limited solute concentration. In addition, the botulism toxin, a heat-labile toxin, will not be inactivated if the food is not adequately reheated (≥ 85 °C for 5 minutes) before consumption. Some examples of foods that have caused outbreaks of botulism in the past include, foil-wrapped baked potatoes left at room temperature for an extended period of time; improperly home-canned foods; and garlic submerged in oil. Temperature control, proper sterilization and pH are essential for prevention of *C. botulinum* growth in stored food.

The investigation of this case demonstrates the preparedness and response of the OEDC. It shows the effectiveness of communication between our office and the local medical community including hospital infection control staff. The rapid reporting, investigation and testing are the basis for a fast determination of disease risk as well as for effective disease control in the community.

Our office assists in the diagnosis and disease control of not only the common reportable pathogens, but also the more uncommon, agents of bioterrorism. We act as a link between local medical providers, state and federal health officials, who continuously provide technical assistance needed for the management of these conditions, thereby further enhancing our capabilities.



To report diseases or for information:

Office of Epidemiology and Disease Control

Childhood Lead Poisoning Prevention Program	(305) 623-3565
Hepatitis	(305) 324-2490
Other diseases and outbreaks	(305) 324-2413
HIV/AIDS Program	(305) 324-2459
STD Program	(305) 325-3242
Tuberculosis Program	(305) 324-2470
Special Immunization Program	(305) 376-1976

Nights, weekends, and holidays
(305) 377-6751

Monthly Report
Selected Reportable Diseases/Conditions in Miami-Dade County, July 2003

Diseases/Conditions	2003 this Month	2003 Year to Date	2002 Year to Date	2001 Year to Date	2000 Year to Date	1999 Year to Date
AIDS *Provisional	74	630	695	847	806	883
Campylobacteriosis	14	78	59	73	90	84
Chancroid	0	0	0	0	0	0
Chlamydia trachomatis	231	2262	2730	1998	1828	2679
Ciguatera Poisoning	0	0	0	0	0	0
Cryptosporidiosis	1	7	3	8	5	7
Cyclosporosis	1	1	1	0	0	0
Diphtheria	0	0	0	0	0	0
E. coli, O157:H7	0	0	0	0	1	4
E. coli, Other	0	0	1	0	0	0
Encephalitis	0	0	1	0	0	0
Giardiasis, Acute	20	97	122	144	96	87
Gonorrhea	98	993	1217	1014	1278	1837
Granuloma Inguinale	0	0	0	0	0	0
Haemophilus influenzae B (invasive)	0	3	0	2	1	1
Hepatitis A	4	25	82	86	46	48
Hepatitis B	6	34	11	30	57	19
HIV *Provisional	141	1017	1224	1010	1084	1107
Lead Poisoning	31	142	155	122	234	173
Legionnaire's Disease	0	4	0	1	0	0
Leptospirosis	0	0	0	0	0	0
Lyme disease	0	2	1	4	3	0
Lymphogranuloma Venereum	0	0	0	0	0	0
Malaria	0	5	8	12	18	13
Measles	0	0	0	0	0	0
Meningitis (except aseptic)	0	3	7	12	16	10
Meningococcal Disease	N/A	N/A	10	12	17	10
Mumps	0	0	0	0	1	2
Pertussis	3	4	4	1	4	8
Polio	0	0	0	0	0	0
Rabies, Animal	0	0	0	1	0	0
Rubella	0	0	0	0	1	0
Salmonellosis	57	254	152	130	146	159
Shigellosis	22	187	126	69	124	88
Streptococcus pneumoniae, Drug Resistant	6	67	72	120	117	68
Syphilis, Infectious	7	100	120	118	78	37
Syphilis, Other	100	627	621	433	453	499
Tetanus	0	0	0	1	0	0
Toxoplasmosis	1	5	14	7	0	2
Tuberculosis *Provisional	14	128	130	117	178	154

* Data on AIDS are provisional at the county level and are subject to edit checks by state and federal agencies.
** Data on tuberculosis are provisional at the county level.