

Epi Monthly Report

Office of Epidemiology and Disease Control



Miami-Dade County
HEALTH DEPARTMENT

Histamine Poisoning from Marlin Fish in Miami-Dade County, May 2003

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Background

The Miami-Dade County Health Department's (MDCHD) Office of Epidemiology and Disease Control (OEDC) was notified on May 5, 2003 through the after hours on-call service of a group of people with symptoms of rashes and allergic reactions. The call was followed shortly by a call from a local hospital infection control stating that these patients had come to their emergency room. The initial call was from the owner of a catering service who stated that the ill people had consumed Marlin fish at lunch on that day. The ill group was part of a film company that was filming on location in Miami Beach.



Methods

The OEDC sent an epidemiologist to interview the ill on May 6, 2003 at the film site. Medical records were provided to the investigator by the hospital infection control department. The Department of Business and Professional Regulation (DBPR) sent inspectors to the catering service site. The Department of Agriculture and Consumer Services (DOACS) sent inspectors to the distributors of the

Marlin fish and performed a trace of the product's origin. They also took samples of Marlin fish at various points in the distribution system to test for histamines. A sample of the fish from the day's lunch was sent by the film company's staff to a private laboratory for testing.

Case Definition

A case of histamine poisoning for the Miami cluster of this outbreak was defined as a person who consumed Pacific Marlin fish (imported from Costa Rica) at the catered lunch on May 5 and developed an allergic reaction with three or more of the symptoms listed in table 1 (page 2).

Results

On May 5, 2003, about 90 people from the film group ate the catered lunch. Of these, 24 ate the Marlin fish. Twenty-three (96%) developed symptoms, and of these, 13 were treated at the hospital emergency room.

The remaining 11 who ate the fish, including one who did not have symptoms, were sent by the film company to the emergency room for observation as a precaution.

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A total of 15 people who had symptoms were interviewed on May 6, 2003. Table 1 shows the symptom frequency among the ill interviewed.

The mean incubation was 27 minutes with a range of 5 to 120 minutes. The duration of symptoms was up to about seven hours in those who delayed treatment. Treatment included none for those with milder symptoms, to IV's, oxygen, Benadryl, steroids and pain-killers. Some received a six-day regimen of steroids in decreasing dosage. Of the 13 who were treated at the hospital, no one was kept overnight. The ill staff included a variety of different jobs: the cast, support and administration. Staff who ate the other items in the menu reported no illness. On May 6, all the ill were eating normally at the catering site. One patient continued to feel weak for about a week after exposure but had no other symptoms.

The DBPR conducted an inspection of the catering facility at the film site on May 7, 2003 and issued a warning because the caterer had no license to operate in Florida. However, no major violations were seen in the operation. The DBPR also visited five restaurants identified by the DOACS traceback and placed a stop on the sale of any Marlin fish.

The DOACS conducted a traceback of the product of origin and identified the main distributor / importer of the fish, the originating country of Costa Rica and various restaurants and secondary distributors of the fish. Additionally, they tested the product at various points to determine levels of histamine. They found a number of positive samples at levels as high as 5800 parts per million of histamine in the fish.

The Florida Department of Health (DOH) issued a joint press release with the DOACS dated May 11, 2003 warning consumers about the contaminated Marlin and asking them not to eat any from the specific shipment to the importer. The press release also had information about scombroid poisoning (histamine poisoning).

A leftover Marlin fish sample from that consumed by the film group was tested at a private laboratory and a level of 659.76 mg of histamine / 100 gm of fish was found.

Table 1. Symptoms among the interviewed cases in the cluster of histamine poisoning in Miami-Dade County, May 2003 (n=15)

SYMPTOMS	NUMBER	% OF INTERVIEWED
Headache	12	80
Nausea	10	67
Diarrhea	7	47
Redness in skin	7	47
Vomiting	6	40
Rash	6	40
Hot flashes	6	40
Itching	4	27
Low blood pressure	3	20
Burning sensation	2	13
Lightheadedness	2	13
Dizziness	1	7
Pins and needles	1	7
Tingling	1	7
Chills	1	7
Blurred vision	1	7
Swelling	1	7

Conclusions and Recommendations

These cluster of histamine poisoning cases in Miami-Dade was followed by a documented cluster in Collier County on May 9, 2003. The outbreaks were traced to the same source of Marlin fish.

Temperature controls are essential to prevent the formation of histamine in fish which is a metabolic byproduct of bacteria. Improper handling of the fish at any point from the boat to the consumer may cause production of histamine.

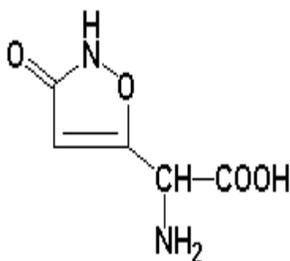


No additional cases or clusters have been reported to the OEDC since the Collier cluster. All patients recovered within a day of exposure. Significant economic losses were incurred by the film company, the distributors of the fish and to a lesser extent the restaurants that received the fish.

Scombrototoxic fish poisoning also known as scombroid or histamine fish poisoning, is caused by bacterial spoilage of certain finfish such as tuna, mackerel, bonito, and, rarely, other fish. As bacteria break down fish proteins, byproducts such as histamine and other substances that block histamine breakdown build up in fish. Eating spoiled fish that have high levels of these histamines can cause human disease. Symptoms begin within 2 minutes to 2 hours after eating the fish. The most common symptoms are rash, diarrhea, flushing, sweating, headache, and vomiting. Burning or swelling of the mouth, abdominal pain, or a metallic taste may also occur. The majority of patients have mild symptoms that resolve within a few hours. Treatment is generally unnecessary, but antihistamines or epinephrine may be needed in certain instances. Symptoms may be more severe in patients taking certain medications that slow the breakdown of histamine by their liver, such as isoniazide and doxycycline.

Scombrototoxin

Toxin produced by the growth of certain bacteria and the subsequent action of their decarboxylase enzymes on histidine and other amino acids in food.



Additional information can be reprinted from:
FDA's Bad Bug Book at:
<http://www.cfsan.fda.gov/~mow/chap38.html>

Scombroid Fish Poisoning from Marlin Fish in Collier County, May 2003

Terzagian, Robin

Background

On May 9, 2003 the Collier County Health Department (CCHD) received a call from their Emergency Medical Service about what appeared to be an allergic reaction among several people at a drug rehabilitation/eating disorder treatment center. Symptoms included rashes, nausea, vomiting, diarrhea, headache and tingling. Twelve people were transported to the ER where they were treated and released. Initially, it was unclear whether this was an intentional poisoning or a food-related illness. Once information was gathered, the illness appeared to be food-related. Based on the food consumed (Pacific marlin), signs and symptoms, scombroid fish poisoning was suspected.

Methods

The Collier County Health Department conducted an onsite investigation at the treatment center on May 9, 2003. A standardized foodborne illness complaint form was administered to obtain information about illness and food consumption. A case was defined as a person who experienced an allergic reaction of histamine poisoning (rashes, tingling, headaches, itching, nausea, vomiting and/or diarrhea) after consuming Pacific marlin from a Miami distributor, who imported from Costa Rica. An inspection of the facility kitchen was performed and leftover food samples were collected and submitted to the Florida Department of Agriculture and Consumer Services for laboratory analysis. On May 12, 2003 the Collier County EIS Epidemiologist and the Regional Environmental Epidemiologist returned to the treatment center to complete the epidemiological investigation. Resulting data was analyzed in EpiInfo 2002 computer software.



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Results

A total of 70 people were interviewed. Of those, only 21 people ate the marlin, 15 of them became ill (attack rate 71%). The predominant symptoms reported were headache, dizziness, cramps, diarrhea, fatigue, nausea, rashes and weakness (see Table 1 for more details). The incubation period ranged from 1 - 180 minutes, median 30 minutes. Duration of symptoms ranged from 60 – 360 minutes, median 120 minutes. The ages of the cases ranged from 26 – 56 years, median 45 years. Females accounted for 53% of the cases. Of the 15 cases, 12 (80%) went to the ER, where they were treated and released.

The onsite investigation revealed the marlin that was served on May 9, 2003 was previously cooked and served on May 3, 2003. The facility received 35.6 lbs. of marlin on May 3, 2003. The marlin was delivered fresh, on ice with the skin on. It was filleted and grilled on May 3, 2003 and served that evening. Leftovers were refrigerated and then put into the freezer on May 5, 2003. It was placed in the refrigerator on May 7, 2003 to thaw for lunch on May 9, 2003. On May 9, 2003, it was reheated in the oven with teriyaki sauce, pineapple, fresh mushroom and onions on top. Initially, it was reported that no illness from the May 3 dinner occurred. However after reviewing the questionnaires, it was discovered that 1 person had an allergic reaction after consuming the marlin dinner that evening, for which treatment was documented. The Regional Environmental Epidemiologist and the EIS Epidemiologist requested the facility to review all of the client's charts to determine if there were other illnesses that may have occurred from the marlin dinner on May 3, 2003. No other illnesses or treatment were noted in the client's records. However, a client anecdotally reported that others had symptoms after the May 3 dinner and stated: "This has happened twice now." The number of fillets that were prepared and consumed on either day is unknown.

The 2 leftover fish samples that were collected on May 9, 2003 contained very high levels of histamine. The Florida Department of Agriculture and Consumer Services reported 5200 ppm of histamine in the first sample and 3600 ppm in the second sam-

ple. According to the Food and Drug Administration guidelines, histamine levels of 50 ppm are considered to be poisonous. The laboratory results confirmed the initial diagnosis of scombroid poisoning, which is caused by high histamine levels.

A traceback investigation by the Florida Department of Agriculture and Consumer Services began on May 6, 2003 due to a prior cluster of illnesses (23/24) that was reported in Miami-Dade County on May 5, 2003 from the consumption of Pacific marlin. The traceback investigation revealed the marlin originated from Costa Rica. A Miami distributor purchased 1,045 lbs and then sold different quantities to 4 wholesalers and 2 restaurants.. Two blue marlin steaks were collected from the Miami distributor on May 6, 2003 and were submitted to the Florida Department of Agriculture and Consumer Services for laboratory analysis. Results of their analysis revealed a high level of histamine, 5800 ppm in sample 1, which also had a noticeable odor of decomposition. There was no histamine found in sample 2. The traceback investigation linked the fish consumed in Collier County to the fish consumed in Miami-Dade. The Department of Health issued a press release on May 11, 2003 on the scombroid outbreak informing consumers in Collier and Miami-Dade counties to avoid eating marlin purchased from Matica Inc. So far, the Department of Agriculture and Consumer Services has accounted for about 90% of the Pacific marlin.

Scombroid fish poisoning is a type of food intoxication caused by the ingestion of certain fish species that have begun to spoil with the growth of certain types of food bacteria. The toxin forms in a food when certain bacteria are present and time and temperature abuse permit their growth. The suspect toxin is an elevated level of histamine generated by bacterial degradation of substances in the muscle protein.



Freezing, cooking, smoking, curing or canning do not destroy the potential toxins. Distribution of the toxin within an individual fish fillet or between cans in a case lot can be uneven, with some sections of a product causing illnesses and others not. Fish that have been implicated in scombroid poisoning include the tunas (e.g., skipjack and yellow fin), mahi-mahi, bluefish, sardines, mackerel, amberjack, and abalone. Common sensory examination by the consumer cannot ensure the absence or presence of the toxin. Chemical testing is the only reliable test for evaluation of a product.

The onset of intoxication symptoms is rapid, ranging from immediate to 30 minutes. The duration of the illness is usually 3 hours, but may last several days. Initial symptoms may include a tingling or burning sensation in the mouth, a rash on the upper body and a drop in blood pressure. Frequently, headaches and itching of the skin are encountered. The symptoms may progress to nausea, vomiting and diarrhea and may require hospitalization, particularly in the case of the elderly or impaired patients. Diagnosis of the illness is usually based on the patient's symptoms, time of onset, and the effect of treatment with antihistamine medication.

Conclusion

This small cluster of scombroid fish poisoning was associated with the consumption of Pacific marlin, from Costa Rica. The 2 clusters of illnesses that occurred in Miami-Dade and Collier counties, the trace-back investigation linking the marlin from the same lot, and the high levels of histamine from the raw product (which also had a noticeable odor of decomposition) sampled from the Miami distributor on May 6, 2003 suggests that this outbreak resulted from improper fish handling from somewhere along the distribution chain. Studies have shown toxic histamine levels can be generated within less than 6 to 12 hours exposure without ice or refrigeration.

Recommendations

- ◇ To prevent histamine formation it is imperative that the fish be held below 41°F. during all phases of handling, from the time

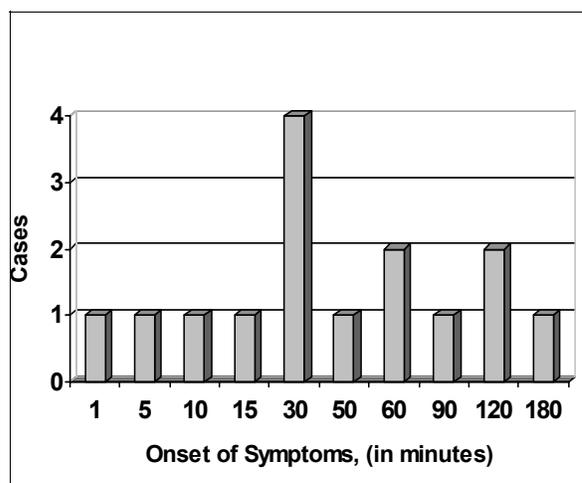
the fish has been caught until preparation for consumption. Immediate freezing or irradiation will also prevent this spoilage.

- ◇ Ensure the fish is from an approved source.
- ◇ Check the temperature of the fish upon receiving and look for visible signs of spoilage (if the fish does not appear fresh or if the temperature is not within proper range, do not accept the product).

Table 1: Frequency of Symptoms in the Collier County Cluster (n=15)

Symptoms	Frequency	Percent
Headache	12	80
Dizziness	10	67
Cramps	9	60
Diarrhea	9	60
Fatigue	9	60
Fever	9	60
Rash/Flushed	9	60
Weakness	9	60
Chills	8	53
Sweating	6	40
Numbness/Tingling	5	33
Prostrated	5	33
Vomiting	2	13
Fever	0	0

Chart 1: Number of Cases By Time of Onset, Collier County, 2003



DOH RELEASE

May 11, 200

The Florida Department of Health (DOH), Department of Agriculture and Consumer Services (DOACS) and the Department of Business and Professional Regulation (DBPR) are investigating two outbreaks of scombroid poisoning. Scombroid fish poisoning occurs when people eat spoiled fish containing high levels of histamine. Histamine was confirmed in both outbreaks by the DOACS laboratory.

The outbreaks have been linked to the consumption of marlin in Miami-Dade and Collier counties. DOH recommends that consumers in these two counties avoid eating marlin purchased from importer Matica Inc. on or after April 15, 2003. The advisory applies only to the referenced shipment received by Matica Inc.

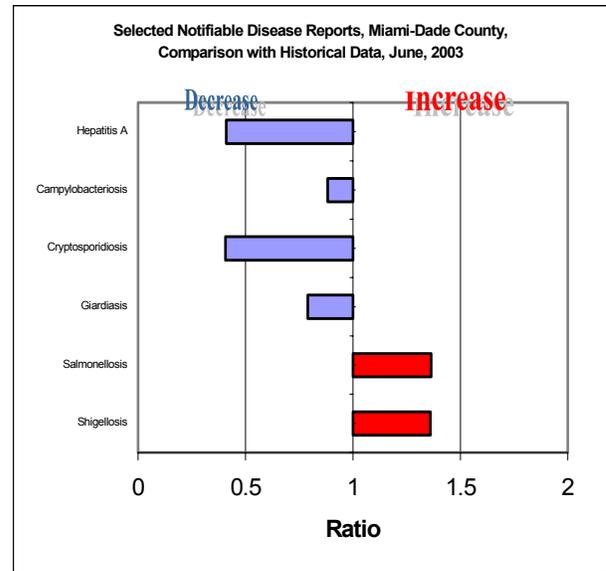
Matica Inc. purchased 1,045 lbs of marlin fillets from Industrias Marinas Cristal S.A. in Costa Rica. Matica then sold marlin to the following distributors and other customers: Collins Fish and Seafood, Crazy Tuna Inc, Anita Cruz Seafood, and Sea Bass. DOACS and DBPR are in the process of tracing back the shipment of marlin. So far, about 90 percent of the product has been accounted for and removed from the marketplace.

The onset of intoxication symptoms is rapid, ranging from immediate to 30 minutes. The duration of the illness is usually 3 hours, but may last several days. Initial symptoms may include a tingling or burning sensation in the mouth, a rash on the upper body and a drop in blood pressure. Frequently, headaches and itching of the skin are encountered. The symptoms may progress to nausea, vomiting, and diarrhea and may require hospitalization, particularly in the case of elderly or impaired patients. All humans are susceptible to scombroid poisoning; however, the symptoms can be severe for the elderly and for those taking medications such as isoniazid.

If you begin to feel the symptoms described above after eating fish, please contact your personal physician for diagnosis and treatment.

For more information on scombroid poisoning, go to: <http://www.cfsan.fda.gov/~mow/chap38.html>

For information on the distribution of the shipment of marlin please call DOACS at 1.800.342.5869.



*Ratio of current month total to mean of 15 month totals (from previous, comparable, and subsequent month periods for the past 5 years).

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



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Third Bird Confirmed and two sentinel chickens tested Positive for West Nile Virus in Miami-Dade.



The Miami-Dade County Health Department has been monitoring for West Nile Virus activity. The Miami-Dade County Health Department has been advised that a third bird and two sentinel chickens from our county have tested positive for West Nile Virus. To date in Miami-Dade County there have been no reported cases of West Nile Virus in humans.

The Miami-Dade County Health Department continues to advise the public to remain diligent in their personal mosquito protection efforts by following the guidelines below:

DOH officials continue to stress the "5 D's" for prevention:

- ◇ *Dusk and Dawn (avoid being outdoors when mosquitoes are seeking blood, for many species this is during the dusk and dawn hours)*
- ◇ *Dress (wear clothing that covers skin)*
- ◇ *DEET (use mosquito repellents including DEET [N, N diethyl-m-toluamide] on skin and pyrethrins on clothing when you are outside)*
- ◇ *Drainage (check your home to rid it of standing water in which mosquitoes can lay their eggs).*

Elimination of breeding sites is one of the keys to prevention.

Tips on Eliminating Mosquito Breeding Sites

- *Clean out eaves, troughs and gutters.*
- *Remove old tires or drill holes in those used in playgrounds to drain.*
- *Turn over or remove empty plastic pots.*
- *Pick up all beverage containers and cups.*

- *Check tarps on boats or other equipment that may collect water.*
- *Pump out bilges on boats.*
- *Replace water in birdbaths and pet or other animal feeding dishes at least once a week.*
- *Change water in plant trays, including hanging plants, at least once a week.*
- *Remove vegetation or obstructions in drainage ditches that prevent the flow of water.*

For more information on WNV, EEE and SLE, visit DOH's Web site at <http://www9.myflorida.com/Environment/hsee/arbo/index.htm> or call the Bureau of Environmental Epidemiology at (850) 245-4299.

Additionally, information on WNV and EEE in horses can be found at the Department of Agriculture and Consumer Services' website, <http://www.doacs.state.fl.us/ai.html>, or by calling (850) 410-0900. The Florida Fish and Wildlife Conservation Commission maintains a website for reporting dead wild birds at <http://wildflorida.org/bird>.



Congratulations and Farewell to Dr. Mary Jo Trepka



This is a Proclamation presented to Dr. Trepka by the Mayor of Miami Dade County, Alex Penelas, and County Commissioner, Jimmy Morales, celebrating her accomplishments in serving the public.



Certification of Appreciation presented to Dr. Trepka by Olga Connor Director of Public Health Informant, Miami-Dade County Health Department.

Our Director of the Office of Epidemiology and Disease Control, Dr. Mary Jo Trepka has accepted a position as Associate Professor at Florida International University in the School of Public Health. Her last day with us at the Miami-Dade County Health Department will be August 1st. The new director of our Epidemiology Program in her stead, will be Dr. Fermin Leguen .

We regret that Dr. Trepka is leaving but are looking forward to continuing our work under the leading of Dr. Leguen



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Monthly Report

Selected Reportable Diseases/Conditions in Miami-Dade County, June 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}	86	556	585	700	708	786
Campylobacteriosis	15	64	47	46	50	61
Chancroid	0	0	0	0	0	0
<i>Chlamydia trachomatis</i>	208	1842	2269	1745	1579	2302
Ciguatera Poisoning	0	0	0	0	0	0
Cryptosporidiosis	1	6	3	7	1	5
Cyclosporiasis	0	0	0	0	0	0
Diphtheria	0	0	0	0	0	0
<i>E. coli</i> , O157:H7	0	0	0	0	1	0
<i>E. coli</i> , Other	0	0	1	0	0	0
Encephalitis	0	0	1	0	0	0
Giardiasis, Acute	16	77	97	110	27	54
Gonorrhea	96	837	1017	856	1090	1582
Granuloma Inguinale	0	0	0	0	0	0
<i>Haemophilus influenzae</i> B (invasive)	0	3	0	2	1	0
Hepatitis A	5	21	64	68	41	36
Hepatitis B	12	28	11	24	45	18
HIV ^{Provisional}	154	814	874	694	714	693
Lead Poisoning	30	111	123	99	203	124
Legionnaire's Disease	4	4	0	0	0	0
Leptospirosis	0	0	0	0	0	0
Lyme disease	1	2	0	1	3	0
Lymphogranuloma Venereum	0	0	0	0	0	0
Malaria	0	5	5	10	15	12
Measles	0	0	0	0	0	0
Meningitis (except aseptic)	0	3	6	5	11	7
Meningococcal Disease	N/A	N/A	8	9	11	6
Mumps	0	0	0	0	1	2
Pertussis	0	1	3	1	4	7
Polio	0	0	0	0	0	0
Rabies, Animal	0	0	0	0	0	0
Rubella	0	0	0	0	0	0
Salmonellosis	45	197	119	80	68	110
Shigellosis	33	165	99	40	59	49
<i>Streptococcus pneumoniae</i> , Drug Resistant	15	59	63	85	102	57
Syphilis, Infectious	11	93	95	99	72	34
Syphilis, Other	75	527	526	327	409	444
Tetanus	0	0	0	1	0	0
Toxoplasmosis	0	4	11	6	0	0
Tuberculosis ^{Provisional}	10	114	121	95	119	126

* 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.

