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Texas Preventable Disease NEWS

contents:

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QUASI-CHOLERA IN TEXAS

Lest the word "cholera" begin to lose its meaning, it is worthwhile to clarify the differences between cholera and other *Vibrio* infections. Many *Vibrio* species (ie, *Vibrio cholerae* 01, *V. cholerae* non-01, *V. hollisae*, *V. mimicus*, *V. parahaemolyticus* and possibly *V. fluvialis* and *V. alginolyticus*) have been associated with gastroenteritis (Figure 1.) Infections with *V. hollisae*, *V. mimicus*, and *V. parahaemolyticus* are clearly not cholera. Likewise, infections caused by non-01 *V. cholerae* are not considered **true** cholera infections. More difficult to understand is the fact that some infections with *V. cholerae* serogroup 01 are not considered cholera either. True cholera is caused only by **toxin-producing** *V. cholerae* **serogroup 01.** We propose the word quasi-cholera ("resembling cholera") to describe symptomatic infections by non-01 *V. cholerae* organisms to distinguish them from true cholera.

The major epidemiologic difference between non-01 and 01 *V. cholerae* organisms is that non-01 *V. cholerae* usually causes sporadic illnesses whereas *V. cholerae* 01 can cause continuing epidemics such as those in third world countries. For this reason, true cholera is an internationally quarantinable disease, while other vibrio infections are not subject to such quarantine. Because of superior sewage sanitation in the US, even *V. cholerae* 01 infections would not be expected to occur in epidemic proportions here.

Confusion about the different types of *V. cholerae* often occurs because most microbiology laboratories do not have the capabilities for toxin or serum agglutination testing. If *V. cholerae* is isolated from a patient's stool, it should be sent to the Bureau of Laboratories, Texas Department of Health (TDH) for 01 antiserum testing. The isolate will then be forwarded by the TDH to the Centers for Disease Control in Atlanta for toxin testing. Until both of these tests are run, it is not possible to determine whether or not a person has true cholera.

True cholera also differs from other *Vibrio* infections in its frequency of occurrence in Texas. Infections caused by toxin-producing *V. cholerae* 01 are infrequent in the US and have been reported only in 1973 (1 case), 1978 (11 cases), and 1981 (18 cases). Three of these cases were isolated occurring in 1973 and 1981.[1,2] The 11 infections in 1978 occurred in Louisiana and were associated with eating crabs.[3] In 1981, an outbreak of toxigenic *V. cholerae* 01 infections occurred aboard an oil rig in the Texas Gulf Coast waters.[4] The index case developed diarrhea on the same day an inadvertent cross-connection was opened between the rig's potable water supply and the bayou water into which sewage was emptied. Fifteen crew members became ill after eating rice that had been unintentionally rinsed with this sewage-containing water. The rice had been kept at a temperature warm enough to allow the cholera organisms to multiply.

Unlike 01 *V. cholerae*, non-01 *V. cholerae* infections occur sporadically and are recognized every year in Texas. Only true cholera is reportable in Texas. However,

since 1983, the Bureau of Epidemiology has interviewed individuals whose Vibrio isolates have been sent to our laboratory.

In 1983, six individuals were reported to the TDH as having quasi-cholera. Five had eaten raw oysters within 48 hours of onset (Houston - 3, Fort Worth - 1, and San Antonio - 1); a food history was not available on the sixth person. Onsets of these illnesses were in April, May, October, and November.

To date this year, 12 cases of quasi-cholera have been reported: 2 in April, 1 in August, and 9 in October. Seven of the October cases were reported following publicity about the two initial cases of "cholera" in Houston. Of the 1984 cases, ten were related to the ingestion of raw oysters, and histories were unavailable on two cases. Oysters had been ingested in Houston (1 case in April, 8 cases in October) and San Antonio (1 case in October).

In addition to the 1984 quasi-cholera cases, an outbreak of gastroenteritis related to the ingestion of seafood occurred in September; V. parahaemolyticus was isolated from one acute stool specimen. Seventy-one percent of the individuals who attended a wedding rehearsal dinner in Galveston County developed a diarrheal illness within four days of the meal. The ingestion of large amounts of chicken with crabmeat sauce was associated with illness. Though V. parahaemolyticus was isolated from only one guest, it was the likely cause of the outbreak.

Reports in the literature indicate that gastrointestinal illnesses caused by V. cholerae 01, non-01 V. cholerae, V. hollisae, V. mimicus, and V. parahaemolyticus have been associated with raw or partially cooked seafood. Since most of these organisms live freely in the Gulf Coast environment, sewage contamination is not a prerequisite for finding them in coastal waters. Why, then, if these organisms are present in the environment and possibly seafood, do so few individuals become ill?

Several factors prevent illness in the majority of people who eat shellfish:

1. A large number of Vibrios are necessary to produce illness. If seafood is transported and stored at proper temperatures, it usually does not contain a sufficient number of organisms to cause illness.

2. Certain host defenses, such as a normal amount of gastric acid, reduce multiplication of Vibrio organisms. Persons who are achlorhydric are more susceptible to smaller numbers of organisms.

3. When seafood is kept at a temperature of $<40°F$ (4°C) before cooking, the organisms will not have an opportunity to multiply to the numbers necessary to cause illness.

4. When cooked seafood is maintained at temperatures $>140°F$ (60°C), multiplication of organisms usually does not occur.

5. The prevention of the cross-contamination of cooked seafood with uncooked seafood or contaminated surfaces or hands keeps organisms from being transferred from raw to cooked seafood. Even if cooked seafood does not contain organisms initially, it can acquire them if improperly handled.

6. When a person ingests Vibrios, factors such as dose of Vibrios ingested, host defenses, type and amount of food ingested, etc., determine whether a person will develop gastrointestinal symptoms. Not everyone who is infected with Vibrios will develop a symptomatic illness.

WARNING!

PARENTS OF VERY SMALL CHILDREN ARE CAUTIONED NOT TO HANG GLASS CHRISTMAS TREE ORNAMENTS ON THE LOWER BRANCHES OF THE TREE WITHIN REACH OF THESE CHILDREN. IT IS FAIRLY EASY FOR A CHILD TO REMOVE AN ORNAMENT, PLACE THE ORNAMENT IN ITS MOUTH, AND BITE. THE POTENTIAL CONSEQUENCES ARE OBVIOUS.

(BUREAU OF EPIDEMIOLOGY)
(TEXAS DEPARTMENT OF HEALTH)

In summary, though the incidence of Vibrio infections in persons who eat seafood is not known, it is suspected to be very low. **True** cholera, in particular, is extremely unusual and has not been documented in the United States since 1981. Isolation of a Vibrio cholerae organism by a local laboratory is not cause for panic. Actions to be taken include delivering the organism to the TDH laboratory as soon as possible for antiserum testing and obtaining a history of seafood consumption, travel to the Gulf Coast, and the names of others known to be ill. Whether the organism is an 01 or non-01, an investigation will be conducted by the Bureau of Epidemiology and the Shellfish Sanitation Control Division. Further environmental and case contact follow-up is not necessary unless the organism is a toxigenic 01.

This article was written by Deborah L. Martin, RN,MN, Nurse Epidemiologist, Bureau of Epidemiology, Texas Department of Health, Austin, Texas.

REFERENCES:

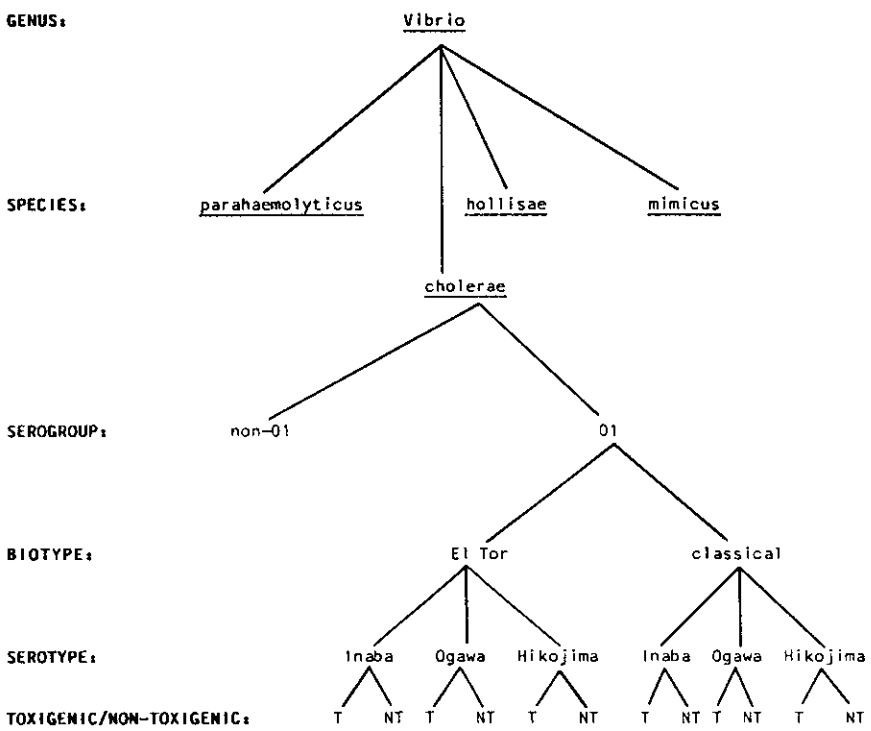
1. Weissman JB, DeWitt WE, Thompson J, et al. A case of cholera in Texas, 1973. Am J Epidemiol 1974;100:487-98.

2. Shandera WX, Hafkin B, Martin DL, et al. Persistence of cholera in the United States. Am J Trop Med Hyg 1983;32:812-7.

3. Blake PA, Allegra DT, Snyder JD, et al. Cholera - a possible endemic focus in the United States. N Engl J Med 1980;302:305-9.

4. Johnston JM, Martin DL, Perdue J, et al. Cholera on a Gulf Coast oil rig. N Engl J Med 1983;309:523-6.

Figure 1. Diarrhea-producing vibrios



SCOMBROID POISONING OUTBREAKS

Scombroid poisoning is a relatively rare form of food poisoning in Texas. Illness usually occurs within 30 minutes to 3 hours of eating fish contaminated with certain marine bacteria. Two such outbreaks have occurred recently in Texas. Eleven persons attended a dinner in Dallas on August 14, 1984. Within 15 to 20 minutes after consuming a fish meal, four of these individuals developed headaches, flushing of the face, nausea, and diarrhea. Analysis of tuna served at this meal revealed elevated levels of histamine (338 milligrams/100 grams).

A second outbreak occurred on September 9, 1984, in Harris County. Seven persons attended a lunch that included a tuna steak special. Less than three hours after the meal, all seven developed diarrhea. Early symptoms included headache, flushing of the face or body, nausea, and difficulty breathing. Although elevated histamine levels were not found in specimens of leftover tuna fillet submitted by the restaurant for analysis, the symptoms and incubation period leave little doubt that this outbreak was also due to scombroid poisoning.

Scombroid fish poisoning derives its name from the suborder Scombroidei which includes mackerels, tunas, and bonitos. Most outbreaks are related to these fish although at least one other fish, mahimahi (dolphin fish), has caused outbreaks. All fish that cause scombroid poisoning have one thing in common: a high level of free histidine in their muscle tissues. Breakdown of this amino acid by bacterial enzymes apparently results in production of a toxin that causes disease. Scombroid poisoning should be considered and appropriate food histories obtained from patients with a sudden onset of a histamine-like or allergic reaction shortly after eating a meal.

These outbreaks were reported, respectively, by Thomas Hampton, MD, and Kay Bateman, RN, of Dallas and Mark Canfield, MS, Staff Epidemiologist, Harris County Health Department.

REFERENCE:

1. Lerke PA, Warner SB, Taylor SL, Guthertz LS. Scombroid poisoning: report of an outbreak. Western Journal of Medicine 1978;129:381-6.

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