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Norovirus Outbreak due to Consumption of Raw Oysters — Alaska, 2009

Introduction

On February 5, the Section of Epidemiology (SOE) was notified by the Department of Environmental Conservation (DEC) of a possible foodborne outbreak in Sitka involving at least 10 people who all attended a Superbowl party (Party A) together on February 1. In collaboration with DEC and Section of Public Health Nursing, we began an immediate investigation.

Methods and Results

Retrospective Cohort Study

We conducted a retrospective cohort study to determine the attack rate and identify risk factors for illness among Party A attendees. We obtained a list of Party A attendees from the party hosts; administered a questionnaire by telephone or in person to participants; recorded demographic information, illness characteristics, and food consumption histories; and calculated attack rates and risk factors for illness. A case of gastrointestinal illness was defined as illness in a Party A attendee who reported vomiting or diarrhea between the evenings of February 1–3, 2009.

We interviewed 48 of 62 (74%) Party A participants; 29% (n=14) met our case definition for gastrointestinal illness. Three menu items served at Party A, including raw Sitka-grown oysters, were associated with illness on bivariate analysis. Only raw Sitka-grown oysters were associated with illness after stepwise multiple logistic regression analysis (adjusted odds ratio = 108; 95% confidence interval = 6–2006). The attack rates among persons who did and did not report consuming raw oysters were 92% (12/13) and 6% (2/35), respectively.

Case-finding Investigation

A case-finding investigation was performed to examine the extent of the outbreak and illness characteristics. This was facilitated through a press release issued on February 11, which prompted persons to call a hotline to report illness. A case was defined as illness in a person who reported vomiting or diarrhea between January 30 and February 7 within 48 hours after consuming raw Sitka-grown oysters. Persons who attended Party A and met this case definition were included in the case-finding investigation case-count.

We identified 35 people who met our case-finding case definition (Figure). Twenty-eight (80%) patients were male; the median age was 50 (range, 29–77) years. In addition to diarrhea (91%) and vomiting (41%), symptoms included self-reported fever (46%), chills (79%), abdominal pain (72%), nausea (76%), watery diarrhea (55%), malaise (93%), bloating (86%), and headache (55%). The median duration of illness was 3 days; range 1–10 days.

Laboratory Investigation

Stool samples were collected from patients and forwarded to the Alaska State Public Health and Virology Laboratories for enteric bacterial and viral testing.

Of the 17 stool specimens tested for bacterial pathogens, all were negative. Of the 11 specimens tested for viral pathogens, eight were positive for noroviruses (genogroup 1 [n=2], genogroup 2 [n=2], genogroups 1 and 2 [n=4]).

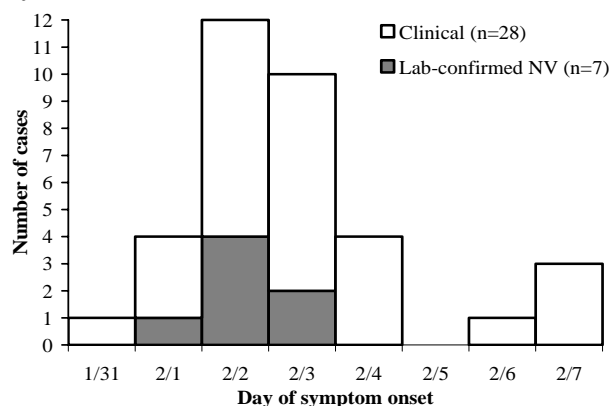
Environmental Investigation

Oysters were traced back to the primary producer and food processing practices were reviewed. Live oysters from the

same lot that were consumed at Party A and water specimens were collected for testing. Environmental samples were sent to the Food and Drug Administration (FDA) Gulf Coast Seafood Laboratory for norovirus testing.

Sanitarians traced oysters consumed by ill persons back to Farm A in Sitka. Two oyster nets (Nets A and B) harvested the week of January 29 were submerged in Sitka Channel (adjacent to several boat harbors) for approximately 24 hours (January 29–30) prior to sale. Dock-side oyster sales commenced January 30. Four additional oyster nets (Nets C–F) were harvested from Farm A on January 31; oysters from these nets were never soaked in Sitka Channel, but were mixed with oysters from Nets A and B. In total, approximately 88 dozen oysters were sold from January 30 through February 4. Four dozen oysters from the combined nets (A–F) were recovered and sent to FDA for testing. All (3/3) oyster samples (consisting of 12–24 oysters per sample) tested were positive for norovirus genogroup 2.

Figure. Norovirus Cases Linked to Consumption of Raw Oysters — Alaska, 2009 (N=35)



Discussion

This gastroenteritis outbreak was due to consumption of raw oysters contaminated with norovirus. Noroviruses are found in the stool or vomit of infected people and can get into ocean water through sewage waste. As filter-feeders, oysters concentrate norovirus present in ocean water into their tissue. In this outbreak, it is unclear if the contaminated oysters were exposed to norovirus at Farm A or in Sitka Channel; however, additional oyster and water samples obtained from Farm A and the channel might help answer this question. The oyster farmer voluntarily suspended oyster sales on February 4, and remaining oysters at local venues were removed from sale or destroyed.

Recommendations

1. Health care providers should educate their patients (particularly children and immunocompromised persons) about the risks associated with eating raw seafood.
2. Persons with norovirus infection should be advised to drink plenty of fluids and wash their hands thoroughly using soap and running water after using the toilet and before eating or preparing food. Clusters of gastrointestinal illness should be reported to the Section of Epidemiology (907-269-8000 during working hours; 800-478-0084 after hours).

References

1. Norovirus: technical fact sheet. Available at: http://www.cdc.gov/nczved/difmd/disease_listing/campylobacter_gi.html
2. Heymann, DL, ed. 2004. Control of Communicable Diseases Manual, 18th ed. American Public Health Association.