Outbreak of Norovirus Associated with La Tropicana Restaurant — Douglas County, June 2015

Background

On June 3, 2015 at 11:55 a.m., an ill individual contacted the Lawrence-Douglas County Health Department (LDCHD), reporting that she and other members of her 12-person dining party became ill after eating at La Tropicana (434 Locust St, Lawrence, KS, 66044) on June 1 at 6:30 p.m. An anonymous individual from the same dining party also reported this information to the Kansas Department of Agriculture (KDA), who notified the Kansas Department of Health and Environment's Infectious Disease Epidemiology and Response section (KDHE) at 12:04 p.m. to report the possible outbreak.

A restaurant inspection was conducted by KDA at 5:00 p.m. the same day, June 3, to implement prevention and control measures. The following morning at 8:00 a.m., after confirming LDCHD had a way to contact a member of the party that made the anonymous complaint, LDCHD and KDHE began an epidemiological investigation to determine the cause and scope of illness.

On June 9, KDA was contacted by two individuals who reported illness after dining together at La Tropicana at 12:00 p.m. on June 2.

Methods

LDCHD worked with a representative to obtain contact information for all individuals in the dining party of 12. LDCHD contacted those 12 individuals from the June 3 dinner, both individuals who reported illness after the June 2 lunch, and the 11 restaurant employees identified by KDA, and attempted to interview them via telephone using a questionnaire created by KDHE.

An ill person was defined as any individual experiencing vomiting or diarrhea (three or more loose stools in a 24-hour period) within 60 hours of eating at La Tropicana on June 1 or June 2.

One stool specimen was collected through LDCHD and shipped to the Kansas Health and Environmental Laboratories (KHEL) for norovirus testing via polymerase chain reaction (PCR).

KDA conducted an inspection of the facility on June 3. On June 5, KDA compiled a list of individuals of who paid with a credit card at La Tropicana from May 30 through June 3. However, no contact information was available for these patrons. On June 16, paper questionnaires were distributed by KDA to staff at La Tropicana for completion, as telephone calls by LDCHD had not been returned.

Results

LDCHD interviewed 8 of the 12 individuals who ate dinner on June 1, and KDA interviewed both individuals who ate lunch on June 2. All 10 reported illness. Ill persons ranged in age from 12 to 71 years (median age, 50 years). Five (50%) ill persons were female. All were Kansas residents except for two Illinois residents and one Missouri resident.

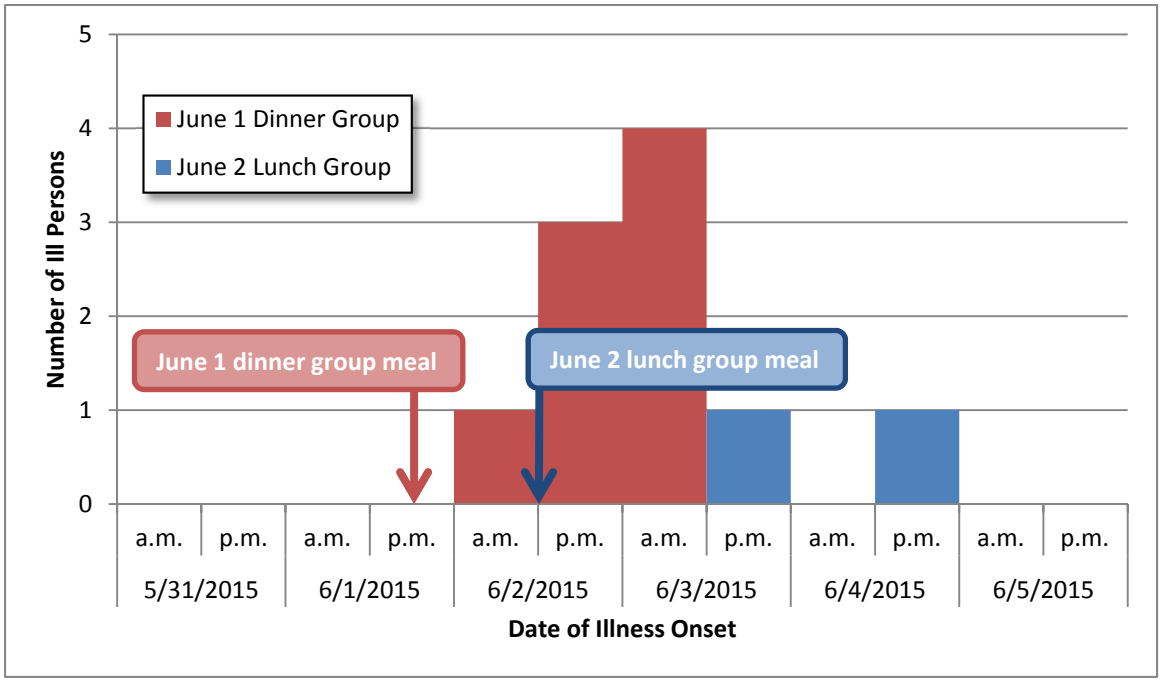
Diarrhea, abdominal pain, nausea, vomiting, and chills were the most commonly reported symptoms. Cases also reported muscle aches and fever (Table 1). No one reported visiting a physician or an emergency department.

Table 1: Clinical information for ill persons (n=10)

Symptoms	*Cases with Symptoms (%)*	
Diarrhea	9	(90%)
Nausea	9	(90%)
Abdominal Pain	9	(90%)
Vomiting	8	(80%)
Chills	8	(80%)
Muscle Aches	6	(60%)
Fever	4	(40%)

The illness incubation times ranged from 5.5 to 55 hours. The median incubation period was 31.25 hours (Figure 1).

Figure 1: Ill persons by date of illness onset (n=10)



The duration of illness was reported for 7 (70%) cases, and ranged from 8 to 96 hours (median length, 36 hours).

The stool specimen tested positive for norovirus genogroup I at KHEL.

The June 3 restaurant inspection by KDA revealed one priority violations and two priority foundation violations. Diarrheal illness was reported by 4 of the 11 employees — three servers reported illness onset on June 2 and June 3, and one cook reported illness onset on May 31. The dates and times each employee worked was not reported. It was noted that bare hand contact was necessary to retrieve a utensil inside of the dry bean container, and that clean forks located at the wait station were stored upside down, requiring staff to touch the food surface end of the forks to remove them from their container. Information was provided to educate staff on foodborne illness and personal illness restrictions. On June 10, KDA revisited the facility to provide information about norovirus, and requested the implementation of a norovirus cleaning protocol.

Conclusions

Ten individuals became ill with gastroenteritis after consuming food and drink at La Tropicana restaurant on June 1 and June 2. Norovirus was confirmed as the causative agent in the only ill individual who provided a stool specimen. Although one positive laboratory result is insufficient

to confirm norovirus as the etiologic cause of the outbreak, the clinical information provided by the other ill individuals is consistent with norovirus infection. Additionally, four restaurant employees reported gastroenteritis symptoms consistent with norovirus infection, including a cook whose date of illness onset was May 31.

Although the restaurant was associated with illness, the vehicle of transmission could not be confirmed.

Norovirus is a highly contagious pathogen with a very low infectious dose, estimated to be between 10-100 viral particles[1]. Transmitted primarily through the fecal-oral route, norovirus particles may be spread through direct contact or through consuming fecally-contaminated food or water. Spread via aerosolized vomitus is also possible. The incubation period is normally 24 to 48 hours, and can range from 10 to 50 hours.[2] Once infected, norovirus shedding can begin prior to the onset of symptoms and can persist for weeks after clinical symptoms have ceased. Norovirus has been detected in fecal specimens 3 to 14 hours before the onset of clinical symptoms and could be detected for 13 to 56 days after exposure to the virus[3]. Approximately 20% of norovirus infected individuals do not have clinical symptoms[4]. However, these individuals can still shed norovirus and can be potential sources of contamination.

Investigations of foodborne norovirus outbreaks have implicated multiple food items, including oysters, salads, sandwiches, cakes, frosting, raspberries, drinking water, ice, and other food items that were contaminated after cooking or that were ready to eat[5].

The epidemiological investigation was limited by several factors. First, the scope of illness was not fully determined. More extensive case finding could have been useful in determining the full extent of the outbreak. Credit card receipts showed that 97 transactions occurred from May 31, the first date that an employee reported illness, through June 3; however, phone numbers or email addresses for the individuals who paid via credit card were not available. With no way to contact additional ill and non-ill patrons, a case-control study could not be conducted to determine if one or multiple menu items were the source of illness. Second, inaccuracies may be present in interviewees' food and symptom histories due to recall bias. Third, not all cases were able to be interviewed, or did not answer all of the questions on the questionnaire. The dates and times each employee worked and their specific job duties were not obtained, making it difficult to determine if norovirus was transmitted by a specific employee or through a specific food vehicle. Finally, collection of additional stool specimens from restaurant visitors and employees would have been useful in confirming norovirus as the cause of the outbreak.

Intervention by KDA may have prevented foodhandlers from working while ill after the inspection. The implementation of a norovirus-specific cleaning protocol provided by KDA may have also helped to prevent further transmission.

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