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A Norovirus Outbreak of Gastroenteritis Linked to Packed Lunches

Naomi Sakon*, Kenji Yamazaki, Tomoko Yoda, Masashi Kanki, Toru Otake and Teizo Tsukamoto

Department of Infectious Diseases, Osaka Prefectural Institute of Public Health, Osaka 537-0025, Japan

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A foodborne outbreak that occurred in Osaka in December 2004 was linked to a catering company that prepared packed lunch boxes. Norovirus (NoV) was found as the causative agent of gastroenteritis, which involved 91 staff members of 8 different companies. Catering staff were also found to be positive for NoV.

On the 5th of December 2004, the Nara City Public Health Center received a report of an outbreak of gastroenteritis from "H" company (Table 1). Interviews were conducted and questions were asked about the victims' symptoms, foods eaten, eating place, etc. A common meal, i.e., contaminated packed lunch boxes, was suspected to be the cause of this illness. The meal was prepared on the 3rd of December by a catering company located in Osaka that makes about 8,000 box lunches per day. Box lunches made on the 3rd of December were catered to 221 companies, which included 4,300 box lunches in Osaka, Nara and Hyogo. Ninety-one staff members in 8 companies became ill, showing signs of diarrhea, vomiting and tenesmus (Table 1). Twenty-three stool specimens were collected from ill people and examined for causative agents of gastroenteritis in the Osaka Prefectural Institute of Public Health Laboratory. NoV GI was detected in 21 of these samples by reverse transcriptase-polymerase chain reaction (RT-PCR) using G1F1/G1SKR primers (directed against the N-terminal of the capsid region). The suspected contaminated box lunches had been prepared between 3:30 and 4:30 a.m.; however, there was also the possibility that the lunches had been contaminated by secondary workers. Therefore, stool samples were collected from 16 of 71 secondary workers that had worked around midnight on the 3rd of December and were examined for the presence of NoV. Three of the 16 samples were collected on the 8th of December and the remaining 13 on the 13th of December. NoV GI was positive in 6 of the 16 (38%) samples. Four of 6 staff members boiled or grilled food, while the other 2 filled the lunch boxes. However, it remains unknown whether the 2 staff members that filled the contaminated lunch boxes were positive for NoV at that time.

A comparison of the nucleotide sequence of positive samples from patients and staff members and those of reference strains of NoV GI (1,2) showed 98 - 99% identity with SaitamaKu19aGI/01/JP, which belongs to GI.12.

It was concluded that this NoV outbreak was due to contaminated box lunches. This result indicates the difficulty involved in controlling and preventing NoV transmission; it also highlights the importance of worker health management and hygiene programs for catering staff.

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Table 1. Number of illness and detection of NoV by companies who received the packed lunch

Company	No. of packed lunch	No. (%) with symptoms	No. of stool samples examined	No. of sample positive
A	14	11 (78.6)	8	7
B	3	2 (66.7)	1	1
C	30	13 (13.3)	5	5
D	10	7 (70.0)	4	4
E	7	3 (42.9)	1	1
F	2	2 (100.0)	0	0
G	8	6 (75.0)	4	3
H	88	47 (53.4)	10	7
Total	162	91 (56.2)	33	28 (84.8%)

*Corresponding author: Mailing address: Department of Infectious Diseases, Osaka Prefectural Institute of Public Health, 1-3-69 Nakamichi, Higashinari-ku, Osaka 537-0025, Japan. Tel: +81-6-6972-1321, Fax: +81-6-6972-2393, E-mail: nsakon@iph.pref.osaka.jp