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Mass Food Poisoning Caused by Beef Offal Contaminated by *Escherichia coli* O157

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On March 9-12, 2005, a mass food poisoning caused by beef offal contaminated by *Escherichia coli* O157:H7 (*E. coli* O157) broke out in Kumamoto City. In this outbreak one yakiniku (broiled meat) restaurant was implicated.

The first reported case was a family with three members who had dinner at the restaurant on the evening of March 12. One family member developed diarrhea and fever on the morning of March 14. The patient visited a clinic, and *E. coli* O157 was isolated from the stool specimen. The Kumamoto City Health Center then investigated stool specimens from the two asymptomatic persons of the family and isolated *E. coli* O157 from both of them.

The second case was a family with four members who had dinner at the same restaurant on the evening of March 9. Two of them developed abdominal pain on the afternoon of March 14. *E. coli* O157 was isolated from one of them when a patient visited a clinic, and it was reported to the health center on March 22. Upon investigation, *E. coli* O157 was isolated from the other family member who became ill but not from the two asymptomatic family members.

The third case was a group with 13 members of the same work place. They had dinner at the same restaurant on the evening of March 11, and five of them developed abdominal pain and diarrhea in March 13-15. *E. coli* O157 was isolated from one of them when a patient visited a clinic. It was reported to the health center on March 24. Upon investigation, *E. coli* O157 was isolated from two among the remaining four symptomatic patients and two among eight asymptomatic members.

Upon the report of the second case, the city health center investigated the broiled meat restaurant. Two specimens of seasoning, 11 swabs of the kitchen and two stool specimens of cooks were brought into our institute. Pulsed-field gel electrophoresis (PFGE) conducted in our laboratory revealed that five isolates tested in the above three cases had a similar pattern.

Hearing the announcement of the above cases by the Kumamoto City health authority, a doctor in a clinic reported the fourth case. Five family members had used the same restaurant, and one of them had been admitted to a hospital with complaints of abdominal pain and hemorrhagic diarrhea. Thus, in total, four groups were implicated in the mass

Table 1. Results of the outbreak

	No. of persons exposed	<i>E. coli</i> O157 positives	
		symptomatic	asymptomatic
Case 1	3	1	2
Case 2	4	2	0
Case 3	13	3	2
Case 4	5	(1)*	0

*Isolation of *E. coli* O157 was not attempted.

poisoning and seven patients among 24 exposed people developed symptoms (Table 1). PFGE analysis conducted by the National Institute of Infectious Diseases revealed nine (including one isolate from the cook) out of 11 isolates showed an indistinguishable pattern. The other two isolates were different from them by one or two bands. The antibiotic sensitivity of all of the isolates was identical.

All those implicated in the mass poisoning had consumed the beef offal. The restaurant served raw offal dipped in seasoning to the clients, and the clients broiled it by themselves. As the patients were treated only on March 9-12, during which time the same offal bought in on March 9 was served, the offal was probably responsible for the food poisoning. One of the patients was a child who did not eat the offal. Probably the infection was caused by the contaminated chopsticks used by the parent to feed her child. One of the cooks who was positive for *E. coli* O157 was probably not the infection source because there were no cases later than March 13.

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