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Outbreak of Food Poisoning by *Yersinia enterocolitica* Serotype O8 in Nara Prefecture: the First Case Report in Japan

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Yersinia enterocolitica is an enteric pathogen for humans. In Japan, 14 outbreaks of food poisoning by *Y. enterocolitica* have been reported. Isolation of serotype O8 from humans and rodents has been reported sporadically since the first isolate in Aomori Prefecture in 1990 (1). However, there has been no previous report of a food poisoning outbreak by *Y. enterocolitica* serotype O8 in Japan.

On 3 August 2004, a local public health bureau in Nara

Prefecture received a report of a food poisoning case at a nursery school. Of 182 nursery school children, 42 were infected; none of the 20 staff members were infected. Symptoms included fever in 42 patients (100%), of whom 22 patients (52%) had a fever higher than 39°C; strong abdominal pain, particularly near the end ileum (23 patients, 56%); diarrhea (15 patients, 37%); and vomiting (5 patients, 12%). From clinical symptoms and bacterial isolations, the patients were diagnosed as having been infected with *Y. enterocolitica*.

At the Nara Prefectural Institute for Hygiene and Environment, stool specimens were processed using two culture methods: direct inoculation of Cefsulodin-Irgasan-Novobiocin (CIN) agar, and an alkali method after enrichment for 3 weeks

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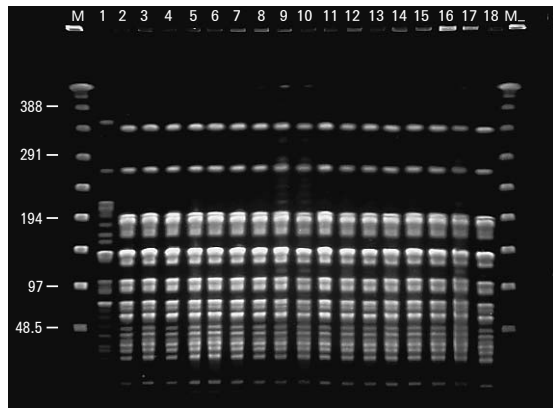


Fig. 1. PFGE patterns of *NotI*-digested genomic DNA of *Y. enterocolitica* serotype O8 strain and isolates. Lane 1, strain ATCC 9610; lane 2, isolate from the salad; lane 3, an isolate from raw materials of the salad; lanes 4-18, isolates from patients; lane M, λ DNA ladder.

in phosphate-buffered saline at 4°C (2). Typical colonies were selected and determined to be serotype O8 by the agglutination test (Denka Seiken Co. Ltd., Tokyo, Japan) and to be biotype 1B (3). *Y. enterocolitica* serotype O8 was isolated from 16 of 32 patients, none of the 17 childcare workers, and none of the 3 cooking staff members from whom stool samples were taken. In addition, 5 strains were obtained from medical facilities. *Y. enterocolitica* serotype O8 was also isolated from salads containing apples, cucumbers, ham, potatoes, carrots, and mayonnaise, which were served during lunch at the nursery school on 23 July.

The strains were examined for genes encoding *yst* (a heat-stable enterotoxin of *Yersinia*), *ail* (attachment invasion locus) and *virF* (virulence regulon transcriptional activator) using polymerase chain reaction (4-6). All isolates had all three genes. Pulsed-field gel electrophoretic (PFGE) patterns of the isolates were analyzed using a gene path typ-

ing system (Program No. 13; Nippon Bio-Rad Laboratories, Inc., Tokyo, Japan) with *NotI* or *XbaI*. Typical PFGE patterns of *NotI*-digested chromosomal DNAs are shown in Fig. 1. Isolates from the 16 patients and the salad, and the 5 strains from medical facilities yielded identical patterns.

From these results, we concluded that this food poisoning was due to *Y. enterocolitica* serotype O8.

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