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# An Enterohemorrhagic *Escherichia coli* O103 Outbreak at a Nursery School in Miyazaki Prefecture, Japan

Ryoko Muraoka, Michiko Okazaki, Yoko Fujimoto, Nobutoshi Jo, Ritsuko Yoshida, Tomoko Kiyoyama, Yuko Oura, Kazuo Hirakawa, Mayumi Jyukurogi, Kimiko Kawano[1]*, Mika Okada[1], Yoko Shioyama[1], Kazunori Iryoda[1], Hideo Wakamatu[1] and Norihiko Kawabata

*Miyazaki Prefecture Central Public Health Office, Miyazaki 880-0032, and [1]Department of Microbiology, Miyazaki Prefectural Institute for Public Health and Environment, Miyazaki 889-2155, Japan*

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Isolation of enterohemorrhagic *Escherichia coli* (EHEC) O103:H2 has been reported each year since 2000 in Japan; however, O103:H2 is relatively rare in comparison with O157, O26, and O111 (1). Few outbreaks caused by EHEC O103 have been reported (2,3). We describe here an outbreak of EHEC O103:H2 infection at a nursery school in Miyazaki Prefecture, Japan (Fig. 1).

On August 5, 2006, a clinic notified a local health center of a case of EHEC O103 (VT1) infection. The patient was a 1-year-old baby attending a nursery school who developed the initial symptoms on July 29. On August 9 and 10, the health center received reports of isolation of EHEC O103

*Corresponding author: Mailing address: Department of Microbiology, Miyazaki Prefectural Institute for Public Health and Environment, Gakuen Kibanadai Nishi 2-3-2, Miyazaki city, Miyazaki 889-2155, Japan. Tel: +81-985-58-1410, Fax: +81-985-58-0930, E-mail: kawano-kimiko@pref.miyazaki.lg.jp

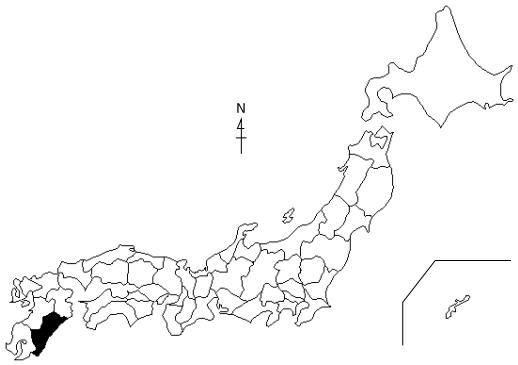


Fig. 1. Location of Miyazaki Prefecture.

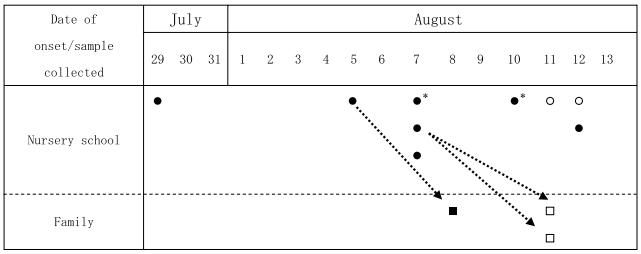


Fig. 2. Daily distribution of patients.
●, Patients at class A and employee at the nursery school; ○, Asymptomatic carriers at class A; ■, Patient in a family; □, Asymptomatic carriers in a family; ●*, They are brothers and attend class A; ⇢, infection route to a family member.

Table 1. Investigated data

| Patient no. | Date of onset[1)] | Sex | Age (y) | Symptom | Attribute |
|---|---|---|---|---|---|
| 1 | July 29 | M | 1 | diarrhea | Class A |
| 2 | Aug. 5 | M | 1 | diarrhea | |
| 3 | Aug. 7 | F | 1 | diarrhea, vomit | |
| 4 | Aug. 7 | F | 2 | loose passage | |
| 5 | Aug. 7 | M | 1 | loose passage | |
| 6 | Aug. 10 | M | 3 | loose passage | (Patient #5's brother) |
| 7 | (Aug. 11) | M | 3 | asymptomatic | |
| 8 | (Aug. 12) | M | 3 | asymptomatic | |
| 9 | Aug. 12 | F | 22 | diarrhea | employee |
| 10 | Aug. 8 | M | 4 | vomit | Class B (Patient #2's brother) |
| 11 | (Aug. 11) | M | 8 | asymptomatic | Elementary school student (Patient #4's brother) |
| 12 | (Aug. 11) | F | 32 | asymptomatic | (Patient #4's family member) |

[1)]: Date in parenthesis of sample collected in case of asymptomatic patients.

from two other patients who attended the same class (class A) at the same nursery school as the first patient, and developed initial symptoms on August 5 and August 7, respectively.

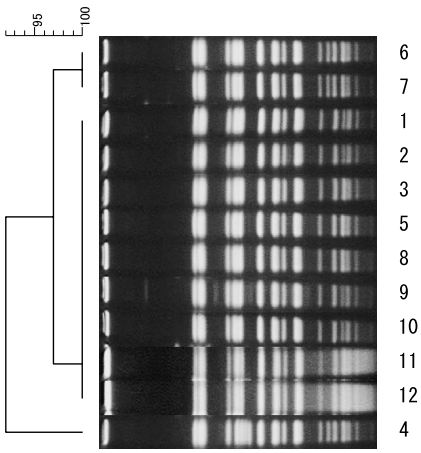


Fig. 3. PFGE pattern of EHEC O103 digested with *Xba*I. The numbers on the right indicate the patient number (Table 1).

We conducted bacteriological investigations of a total of 70 persons: 20 class A children, 3 class B children, 16 nursery school staff members, and 31 family members. EHEC O103 (VT1) was isolated from 12 persons: 8 class A children, one nursery school staff member, and 3 family members (Table 1). Eight of them developed mild symptoms, such as diarrhea and loose passage.

The time course of the outbreak is shown in Fig. 2. New cases appeared on day 7 and after, when the day of the appearance of the first case is defined as day 0. The original infection source was not confirmed, but secondary infections within the nursery school and the affected families were suspected.

The pattern of pulsed-field gel electrophoresis (PFGE) after digestion with *Xba*I was indistinguishable among nine isolates including the first one, while another three differed only by 1-4 bands (Fig. 3). PFGE data suggest that the outbreak was caused by a common EHEC O103 strain.

The last patient stopped excreting the pathogen and no new patients had been reported for 30 days, and we thus concluded that the outbreak was terminated as of September 11.

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