Jpn. J. Infect. Dis., 61, 2008

Laboratory and Epidemiology Communications

An Enterohemorrhagic *Escherichia coli* O26 Outbreak at a Nursery School in Miyazaki, Japan

Chigusa Sonoda, Asako Tagami, Daizo Nagatomo, Satoko Yamada, Rieko Fuchiwaki, Masaru Haruyama, Yoko Nakamura, Kimiko Kawano[1]*, Mika Okada[1], Yoko Shioyama[1], Kazunori Iryoda[1], Hideo Wakamatu[1] and Yoshio Hidaka

Miyazaki City Health Center Government Office, Miyazaki 880-0879, and
[1]Miyazaki Prefectural Institute for Public Health and Environment, Miyazaki 889-2155, Japan

Communicated by Haruo Watanabe

(Accepted November 27, 2007)

Outbreaks of enterohemorrhagic *Escherichia coli* (EHEC) have frequently occurred in nursery schools in Japan (1,2). We report here an outbreak of EHEC O26:H11 (VT1) infection at a nursery school in Miyazaki Prefecture, Japan (Fig. 1).

On August 18, 2006, a clinic notified the health center of a case of EHEC O26 VT1 infection. The patient was a 7-year-old girl. On August 21, upon investigation of the family, the VT gene was detected in a stool specimen from the patient's 4-year-old sister, who attended a nursery school. Furthermore, five children in the same nursery school had diarrhea. The health center received a report of isolation of EHEC O26 (VT1) from two more children at the same nursery school.

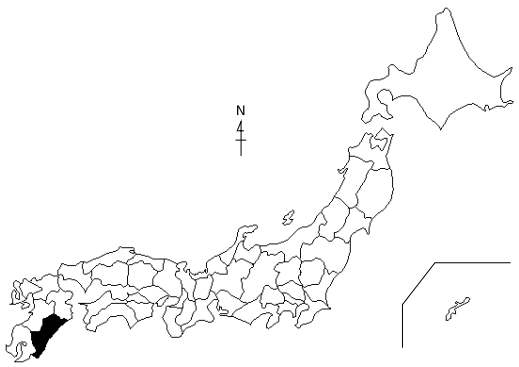


Fig. 1. Location of Miyazaki Prefecture.

*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

Table 1. Detection of EHEC O26:H11

	Nursery school children	Primary school students	Employee	Family members	Total
No. tested	229	45	49	78	401
No. of positive	29	1	0	3*	33

*: One of them was the first patient.

We suspected a mass outbreak of EHEC O26 and conducted bacteriological examination of a total of 401 persons: 229 nursery school children, 45 primary school students who attended the after-school care class, 49 nursery school staff members, and 78 family members of the patients. EHEC O26 (VT1) was isolated from 33 persons: 1 primary school student, 29 nursery school children, and 3 family members (one of them was the first patient) (Table 1). Twenty-seven of those persons positive for EHEC O26 were asymptomatic and 6 developed symptoms, such as diarrhea (67%), abdominal pain (50%), fever (50%), and hemorrhagic stool (33%).

Twenty-six isolates from 26 infected persons were analyzed by pulsed-field gel electrophoresis (PFGE). The PFGE patterns after digestion with *Xba*I were the same for all isolates except for one (Fig. 2, no. 26) which differed from the others by only one band (Fig. 2). The results suggest that this outbreak was caused by a common EHEC O26 strain.

The infection source to the first patient was never identified. As shown in Fig. 3, EHEC O26-positive patients continued to be detected over 2 weeks, suggesting person-to-person transmission from the nursery school children to family members. The percentages of infected children appeared to be higher in children ages 0 to 2 years (Fig. 4).

No patient was reported after September 6, and the last patient stopped excreting the pathogen on September 19. We

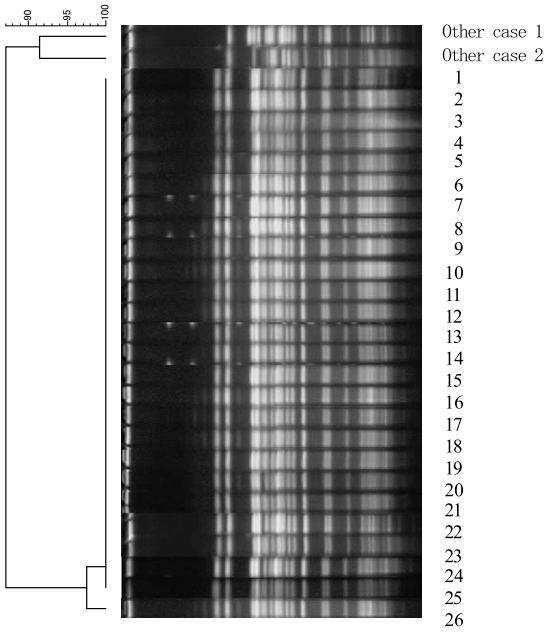


Fig. 2. PFGE pattern of EHEC O26 digested with *Xba*I. Lane 1, the first patient; lane 2, the first patients's sister; lanes 3-26, nursery school children.

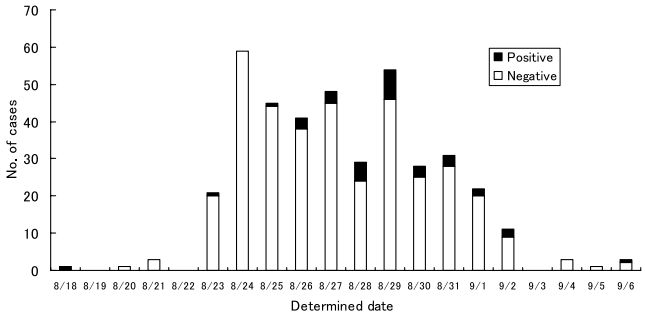
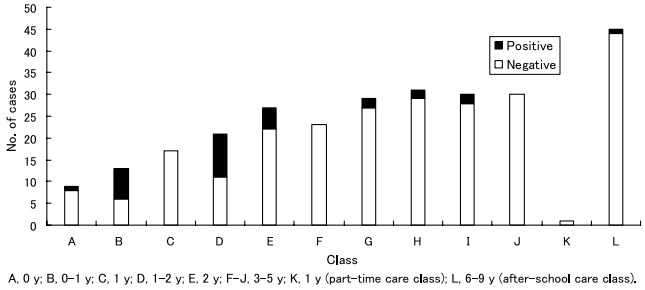


Fig. 3. Daily distribution of EHEC O26 (VT1)-positive patients.



A, 0 y; B, 0–1 y; C, 1 y; D, 1–2 y; E, 2 y; F–J, 3–5 y; K, 1 y (part-time care class); L, 6–9 y (after-school care class).

Fig. 4. Distribution of patients according the classes by age.

concluded that the outbreak was terminated on September 25.

We thank Dr Ichiro Kurane, National Institute of Infectious Diseases for his advice on preparing the manuscript.

This article appeared in the Infectious Agents Surveillance Report (IASR), vol. 28, p. 119-121, 2007 in Japanese.

REFERENCES

1. National Institute of Infectious Diseases and Tuberculosis and Infectious Diseases Control Division, Ministry of Health, Labour and Welfare (2007): Enterohemorrhagic *Escherichia coli* infection in Japan as of April 2007. Infect. Agents Surveillance Rep., 28, 131'-132'.
2. National Institute of Infectious Diseases and Tuberculosis and Infectious Diseases Control Division, Ministry of Health, Labour and Welfare (2006): Enterohemorrhagic *Escherichia coli* infection as of May 2006, Japan. Infect. Agents Surveillance Rep., 27, 141'-142'.