

〈誌上発表〉

・ K. Kawano, M. Okada, T. Haga^{*1}, K. Maeda^{*2}, Y. Goto^{*1}

Relationship between pathogenicity for humans and *stx* genotype in Shiga toxin-producing *Escherichia coli* serotype O157

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^{*1} : University of Miyazaki

^{*2} : Yamaguchi University

To examine the reason why people infected with Shiga toxin (Stx) producing *Escherichia coli* (STEC) O157 strains develop varying clinical manifestations, 65 STEC O157 isolates originating from 64 different occurrences of infection in Miyazaki Prefecture in 2001-2003 and their 79 infected individuals were analyzed by *stx* genotyping, quantitative analysis of reversed passive latex agglutination (RPLA), genomic DNA analysis using pulsed-field gel electrophoresis (PFGE), and clinical manifestations. The isolates were found to carry the following *stx* genes: *stx2vha* alone (60.0%), *stx1/stx2* (27.7%), *stx1/stx2vha* (6.1%), *stx2* alone (3.1%), and *stx2/stx2vha* (3.1%). No strain carried the *stx1* gene alone. STEC strains carrying *stx2* were more frequently associated with clinical manifestations of hemolytic-uremic syndrome (HUS) or bloody diarrhea than those carrying *stx2vha*. Clusters of PFGE banding patterns were correlated well with the *stx* genotypes. We conclude that *stx* genotype is one of the important factors of clinical outcome of STEC O157 infection and that pathogenicity for humans was higher in the *stx2* genotype strains than in the *stx2vha* genotype strains, as reported previously by other researchers. Further, we newly found that four clusters identified by PFGE using restriction enzyme *Xba*I, *stx* genotypes and clinical manifestations were well correlated with each other.

・ Ryoko Muraoka^{*1}, Michiko Okazaki^{*1}, Yoko Fujimoto^{*1}, Nobutoshi Jo^{*1}, Ritsuko Yoshida^{*1}, Tomoko Kiyoyama^{*1}, Yuko Oura^{*1}, Kazuo Hirakawa^{*1}, Mayumi Jyukurogi^{*1}, Kimiko Kawano,

Mika Okada, Yoko Shioyama, Kazunori Iryoda, Hideo Wakamatu and Norihiko Kawabata^{*1}

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

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^{*1} : Miyazaki Prefectural Central Public Health Office

An outbreak of EHEC O103:H2 infection was occurred at a nursery school in Miyazaki Prefecture, Japan was described here.

On August 5, 2006, a clinic notified the health center of a case of EHEC O103 (VT1) infection. We conducted bacteriological investigation on a total of 70 persons: 23 children, 16 nursery school staff members, and 31 family members. EHEC O103 (VT1) was isolated from 12 persons: 8 children, one nursery school staff member, and 3 family members. Eight of them developed mild symptoms, such as diarrhea and loose passage. In time course of the outbreak, 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 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, and other three differed only by 1-4 bands. 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 concluded that the outbreak was terminated as of September 11.

・ 村岡涼子^{*1}, 岡崎美智子^{*1}, 藤本洋子^{*1}, 城信俊^{*1}, 吉田りつ子^{*1}, 清山智子^{*1}, 大浦裕子^{*1}, 重黒木真由美^{*1}, 平川一夫^{*1}, 川畑紀彦^{*1}, 河野喜美子, 岡田美香, 塩山陽子, 井料田一徳, 若松英雄

○保育園における腸管出血性大腸菌 O103 による集団感染事例－宮崎県
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^{*1} : 中央保健所

2006年8月、宮崎県において、腸管出血性大腸菌（EHEC）O103:H2（VT1産生）による保育園集団感染事例が発生した。保健所では、連絡を受けた8月5日以後、園児23名、職員16名、家族31名の合計70名の検便を実施し、園児8名、職員1名、患者家族3名の計12名から、EHEC O103:H2（VT1産生）を検出した。12名の感染者のうち有症状者は8名であったが、主要症状は下痢、軟便と比較的軽症であった。初発患者の発症7日後から、保育園内及び家族内で、次々と発症が見られていることから、今回の事例では、初発患者の発生原因は特定できなかったが、2例目以降の感染は、保育園及び家族内でヒト-ヒト感染により広がったと推測された。またパルスフィールド・ゲル電気泳動法（PFGE）による遺伝子解析（制限酵素 *Xba*I 使用）により、分離株12株は、同じ、あるいは、1～4本異なるDNA切断パターンを示し、これらは同一由来の菌であると考えられた。

本事例発生期間中、保健所は保育園に対し、調理や食事等についての指導や感染予防・消毒等についての指導を行い、毎日の園児の健康確認、玩具及び部屋の消毒の徹底を指導した。また、集団発生への対応のため、保健所職員により当保育園保育士全員への説明会を行った。最終的に、類似患者発生が見られなくなり、また患者及び接触者の病原体消失が確認されたことにより、9月11日に本集団事例を終息した。

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

An Enterohemorrhagic *Escherichia coli* O26 Outbreak at a Nursery School in Miyazaki, Japan
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^{*1}: Miyazaki City Health Center Government Office

An outbreak of EHEC O26:H11 (VT1) infection was occurred at a nursery school in Miyazaki Prefecture, Japan, and we reported here about its outline..

On August 18, 2006, a clinic notified the health center of a case of EHEC O26 VT1 infection. The

patient was a primary school 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.

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 attend the same after-school care class as the first patient, 49 nursery school staff members, and 78 family members of the patients. EHEC O26 (VT1) was isolated from 33 persons: 1 primary school student (the first patient), 22 nursery school children, and 3 family members.

Twenty-six isolates from the 26 patients of all 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 which differed from the others by only one band. The results suggest that this outbreak was caused by a common EHEC O26 strain.

The infection source to the first patient was not identified. EHEC O26-positive patients continued to be detected over 2 weeks, suggesting person-to-person transmission from the nursery school children to family members.

No patient was reported after September 6, and the last patient stopped excreting the pathogen on September 19. We concluded that the outbreak was terminated on September 25.

・ 園田千草^{*1}, 田上麻子^{*1}, 長友大三^{*1}, 山田哲子^{*1}, 淵脇里江子^{*1}, 春山優^{*1}, 中村洋子^{*1}, 日高良雄^{*1}, 河野喜美子, 岡田美香, 塩山陽子, 井料田一徳, 若松英雄

○保育園における腸管出血性大腸菌 O26 による集団感染事例－宮崎県
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^{*1}: 宮崎市保健所

2006年8月、宮崎県において、腸管出血性大腸菌（EHEC）O26:H11（ベロ毒素（VT）1