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Enterovirus Detection Status of Patients with Herpangina and Hand, Foot and Mouth Disease in Epidemic Season 2007, Kanagawa Prefecture, Japan

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We report the status of weekly cases and isolated virus from patients with herpangina and hand, foot and mouth disease (HFMD) in the epidemic season of 2007, Kanagawa Prefecture.

Status of weekly reported cases and isolated virus from patients with herpangina: The number of weekly reported patients with herpangina in the Kanagawa Prefecture area (excluding Yokohama city and Kawasaki city) in 2007 exceeded 1.0 case per sentinel clinic at week 25 (June 18 - 24), and peaked at week 30 (July 23 - 29) at 6.82 cases per sentinel clinic; 1.35 cases per sentinel were still seen at week 35 (August 27 - September 2).

For patients with herpangina during the period from January to August 2007, viral isolation was conducted using 6 cell lines (RD-18S, HeLa, Vero, HEp-2, LLC-MK2, VeroE6) and suckling mice for 46 throat swab specimens brought in from pediatric clinics in the Kanagawa Prefecture area (excluding Yokohama city, Kawasaki city, Yokosuka city, Sagamihara city, and Fujisawa city). A total of 14 strains of coxsackievirus A10 (CA10), 2 strains of CA5, 1 strain of CA16, 1 strain of CB2, 2 strains of CB5 were isolated. Two strains of human herpes simplex virus type 1 (HSV-1) were isolated. Based on these results, the major strain was thought to be CA10 for the herpangina observed in this season. According to the annual epidemic data collected and the primary viral strain isolated, the reported peak number of cases per sentinel in the year 2007 was more or less average, and for 4 years, CA10 has been the major strain. Because CA has many pathogenic serotypes causative of herpangina, the serotype of the major virus, which varies year to year, is thought to contribute more substantially to triggering an epidemic (Table 1).

Epidemic status and virus detection status for HFMD: The number of weekly reported patients with HFMD exceeded 1.0 case per sentinel clinic at week 27 (July 2 - 8), and peaked at a relatively moderate number of cases, 3.05, per sentinel clinic at week 30 (July 23 - 29). At week 33 (August 13 - 19),

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Table 1. The highest annual transition of weekly reported cases per sentinel clinic and major isolated virus for herpangina cases (2001 - 2007)

Year	2001	2002	2003	2004	2005	2006	2007 8/31 present
Highest case/sentinel clinic (week)	11.82 (week 27)	6.61 (week 28)	5.84 (week 29)	6.91 (week 29)	8.49 (week 28)	7.07 (week 25)	6.82 (week 30)
major isolated virus (right cell: isolated number)	CA4 7 CA5 7 CA2 6	CA4 4 CA6 3 CA16 2 CA8 1	CA12 9 CA10 8 CA4 4 CA6 1	CA4 5 CA2 3 CA6 3 CA12 1 CA16 1	CA6 15 CA10 3 CA2 1 CA4 1 CA5 1 CA12 1	CA4 22 CA5 3 CA10 2 CA16 1	CA10 14 CA5 2 CA16 1
No. of samples	28	28	32	21	35	40	46

CA, group A coxsackievirus.

Table 2. The highest annual transition of weekly reported cases per sentinel clinic and major isolated virus for hand, foot and mouth disease cases (2001 - 2007)

Year	2001	2002	2003	2004	2005	2006	2007 8/31 present
Highest case/sentinel clinic (week)	1.67 (week 28)	9.69 (week 28)	4.80 (week 29)	1.51 (week 28)	2.80 (week 28)	1.16 (week 30)	3.05 (week 30)
major isolated virus (right cell: isolated number)	CA16 14 CA2 1	CA16 31 EV71 3 CA6 3	EV71 5 CA4 1	CA16 8	CA16 17 EV71 13 CA6 8 CA14 2	CA16 32 EV71 4 CA4 3 CA5 2	EV71 19 CA16 10 CA10 4 CA5 1
No. of samples	24	52	16	14	47	72	48

CA, group A coxsackievirus; EV, enterovirus.

the number of cases reported per week fell below 1.0 case per sentinel clinic. However, in some areas, a regional epidemic was observed. In the Odawara district, a consecutive epidemic was seen, with around 1.0 case per sentinel clinic at week 17 (April 23-29), and a peak was observed at week 30 (July 23 - 29), with 8.50 cases. Furthermore, in the Hadano and Atsugi districts, an epidemic was seen at around week 26 (June 25 - July 1), and at week 30, there were 12.50 cases in the Hadano district and 5.55 cases in the Atsugi district; thus week 30 was considered the peak of the epidemic, and yet at week 35 (August 27 - September 2), the epidemic persisted.

Virus isolation was carried out using the cultured cells from 6 cell lines and suckling mice in order to examine 46 throat swab specimens from HFMD patients. The following isolates were brought in from pediatric clinics: 19 strains of enterovirus (EV) type 71, 4 strains of CA10, 1 strain of CA5, 1 strain of adenovirus type 2 superinfected with CA16, and 1 strain of poliovirus type 1 isolated after the vaccination had been isolated. These results suggest that the HFMD epidemic of this season was a mixed epidemic involving both EV71 and CA16. In the Odawara district, where the epidemic was ongoing at the end of April, EV71 was isolated from the HFMD specimens deposited for analysis until the beginning of July, after which both EV71 and CA16 were isolated. Therefore, the regional epidemic starting from week 17 in the Odawara district was presumed to be caused by EV71. In the Kanagawa Prefecture area, EV71 is seen every other year, i.e., in 2003, 2005, and 2007 (Table 2). It is possible that EV71 could trigger a continuous regional epidemic. A this strain can cause serious meningitis and encephalitis, epidemic trends should be carefully monitored.

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