

Abstract

Pathogen surveillance of Enterovirus infections in Korea, 2019

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Enterovirus (EV) are known human pathogens and have been associated with various clinical syndromes from mild manifestations such as hand, foot and mouth disease (HFMD), herpangina, respiratory illness to severe syndromes including aseptic meningitis, encephalitis, myocarditis, acute flaccid paralysis, acute flaccid myelitis, and sepsis.

We analyzed suspected patients with EV infections in Korea in 2019. A total of 1,849 clinical specimens from patients was tested using real-time reverse transcription polymerase chain reaction (Real-time RT-PCR) and conventional RT-PCR targeting the 5' untranslated region and VP1 gene of EV, respectively. Among them, 688 cases (37.2%) were detected to be positive for EV infections by either real-time RT-PCR or conventional RT-PCR, or both. The most frequent EV type was EV-A71 (23.1%, 159/688), followed by echovirus 30 (22.2%, 153/688) and coxsackievirus-A6 (12.9%, 89/688) in laboratory-confirmed cases. The detection rate of EV based on the clinical manifestations was 79.0% (215/272) for HFMD, 50.7% (37/73) for herpangina and 35.5% (258/727) for aseptic meningitis or encephalitis. These surveillance data provide information about recent EV infections in Korea at a national level and may encourage progress toward prevention of these infections.

Keywords: Enterovirus, Enterovirus Infections, Hand, Foot and Mouth Disease, Aseptic Meningitis, Encephalitis, Surveillance data

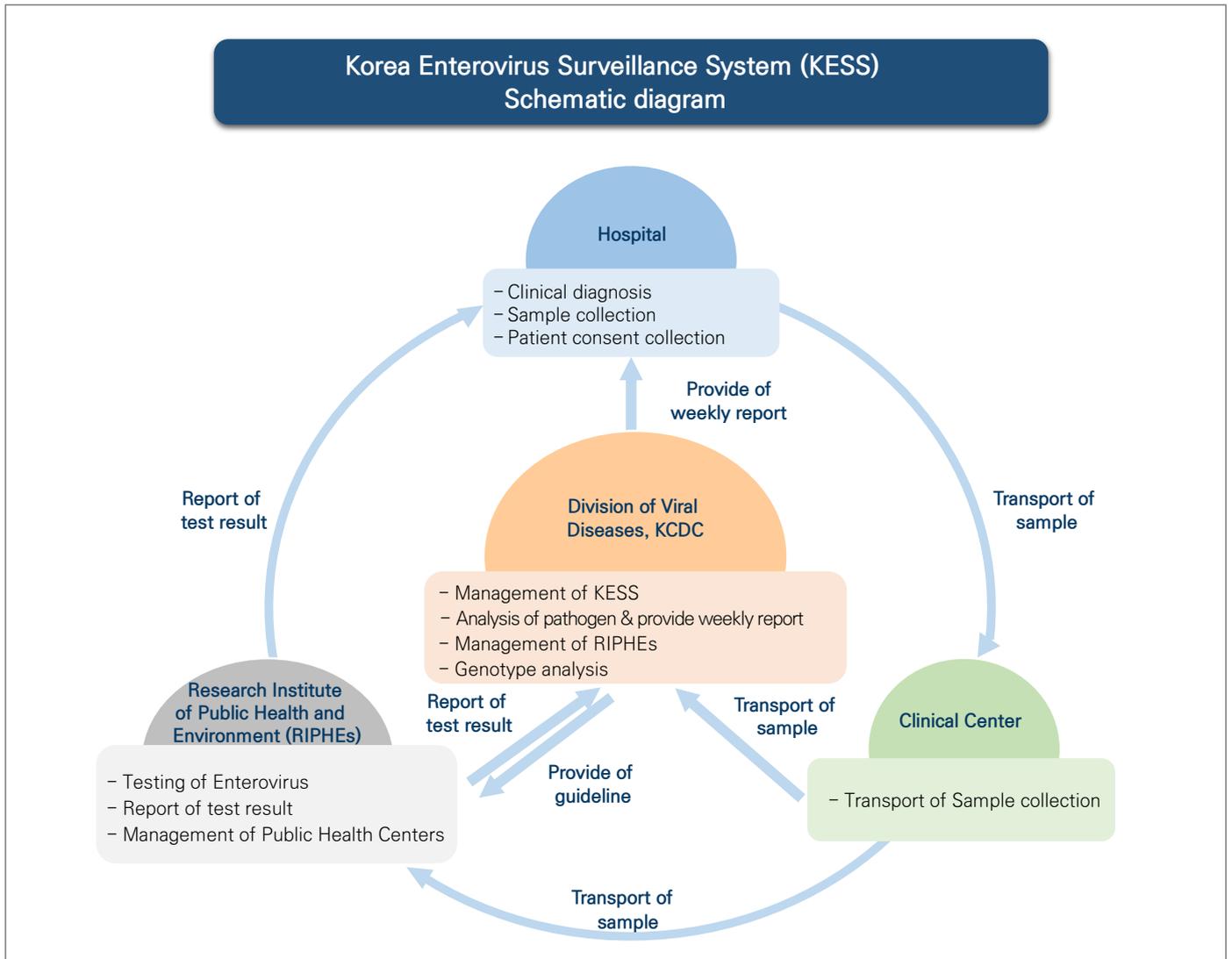


Figure 1. Schematic diagram of Korea Enterovirus Surveillance System (KESS)

Research Institutes of Public Health and Environment (RIPHEs) of Seoul, Busan, Daejeon, Daegu, Incheon, Ulsan, Gwangju, Gyeonggi, Chungbuk, Gangwon, Jeonbuk, Jeonnam, JeJu, Clinical Center and 59 hospitals were participated.

Table 1. Age and gender distribution of Enterovirus in 2019

	No. of tested cases	No. of positive cases	Rate of detection (%)
Total	1,849	(688)	37.2
Age			
< 1 year	474	(130)	27.4
1-4 year	631	(344)	54.5
5-9 year	340	(159)	46.8
10-14 year	115	(39)	33.9
≥ 15 year	266	(12)	4.5
Unknown	23	(4)	17.4
Gender			
Male	1,114	(428)	38.4
Female	724	(255)	35.2
Unknown	11	(5)	45.5

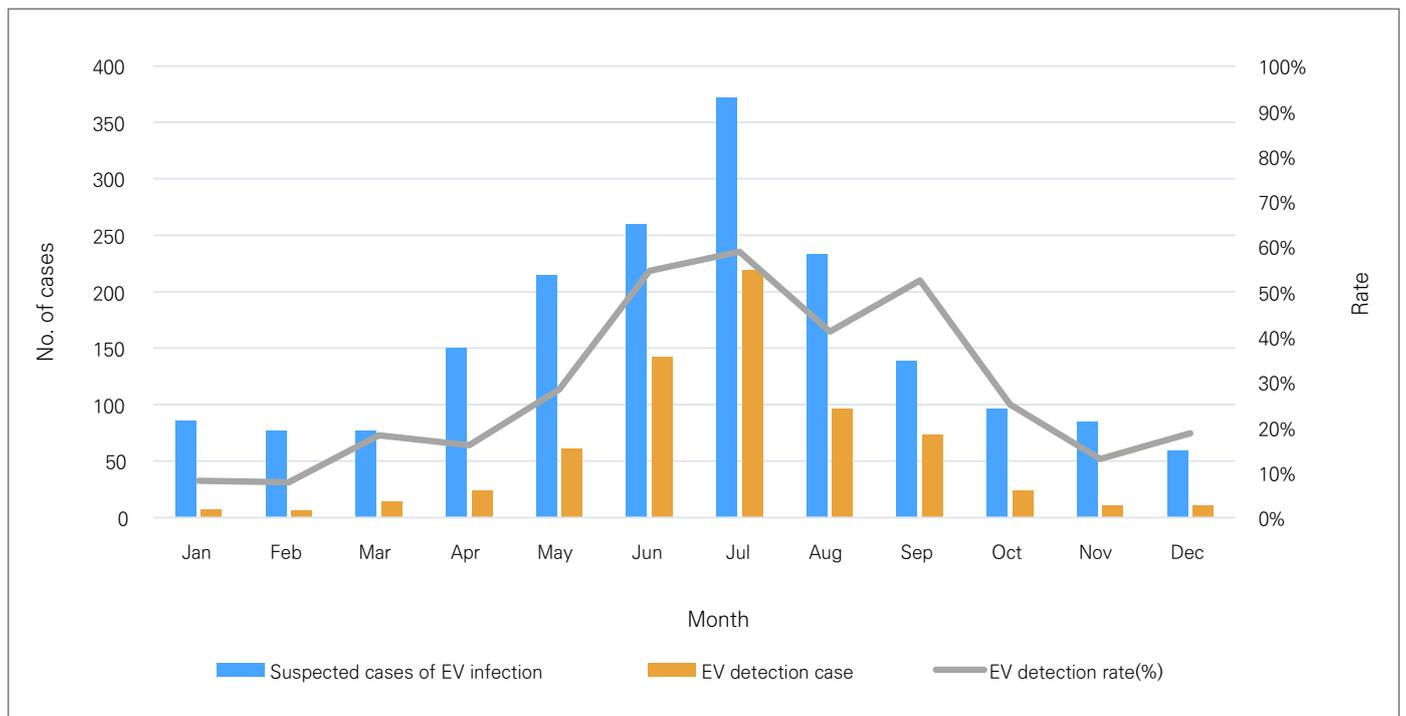


Figure 2. Monthly detection of Enterovirus in 2019

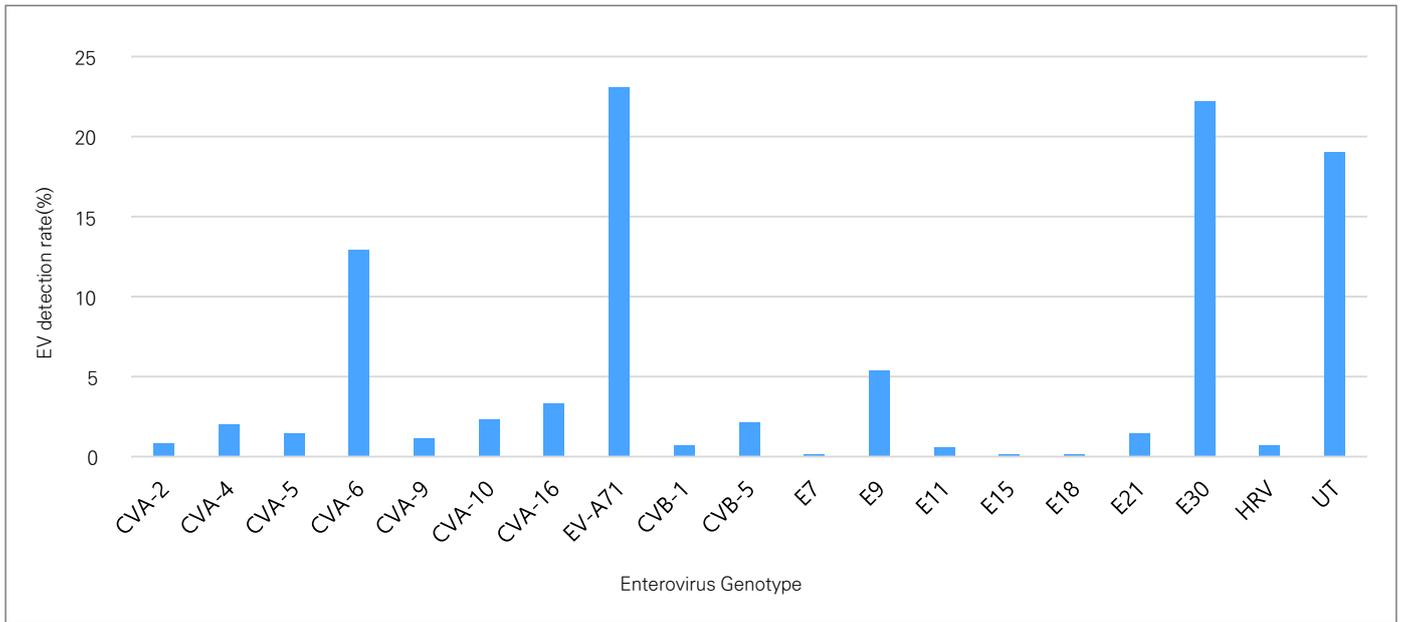


Figure 3. Genotype distribution of enterovirus in 2019

*UT: untypable

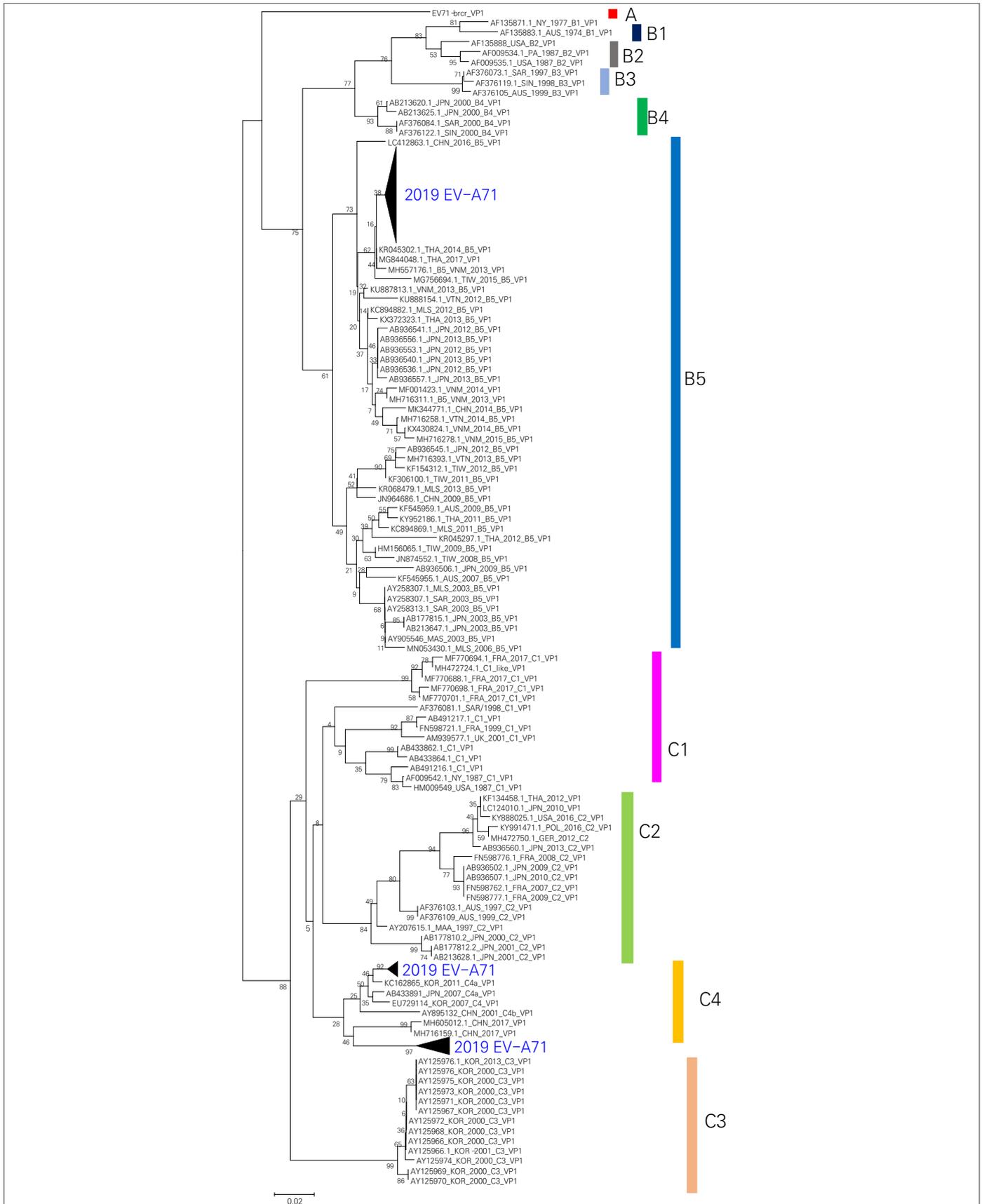


Figure 4. Phylogenetic tree of EV-A71 in 2019

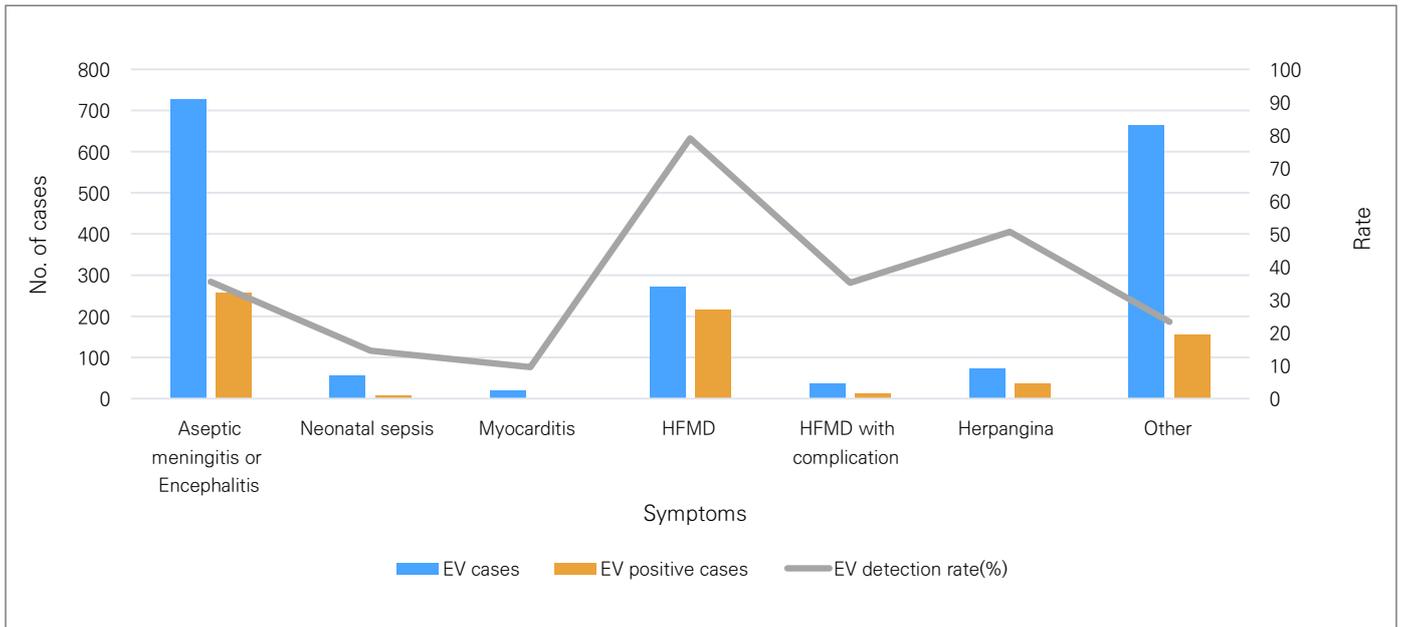


Figure 5. Distribution of clinical symptoms of Enterovirus in 2019

*Other: Fever, Respiratory diseases, gastroenteritis and hepatitis etc.