

Enterovirus Infection in Adults Presenting with Nonspecific Febrile Illness during Summer

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Dear Editor,

Enteroviruses (EVs) are associated with a broad spectrum of clinical presentations, ranging from benign febrile illnesses, such as summer flu to severe, potentially fatal conditions, such as meningitis, encephalitis, myocarditis, and neonatal enteroviral sepsis [1]. All age groups are prone to EV infections, but young children are most susceptible, probably because they lack cross-reactive immunity that develops through repeated exposure to the antigen. Therefore, EV infections are studied mainly in the pediatric population; this leads pediatricians to assume that a child with non-specific febrile illness in summer has an EV infection. However, EV infections are often overlooked when adult patients present with undifferentiated febrile illness during summer months [2, 3]. Herein, we describe two cases of EV infection in adults during summer, confirmed through real-time reverse transcription-polymerase chain reaction (RT-PCR) analysis.

The first case comprised a 57-year-old man complaining of fever and a sore throat in July. He also complained of headache extending from his occipital area to his back. His temperature was 38.6°C and pulse was 78 beats per minute. Physi-

cal examination revealed mild injection with ulceration on his right tonsil and there were no signs of meningeal irritation. EV was detected in the serum, using the AccuPower[®] RT-PCR kit (Bioneer Inc., Daejeon, Korea). Furthermore, EV71, which is well known to cause serious neurological complications, was confirmed through sequencing at Xeno Tech Company (Daejeon, Korea). The second case comprised a 37-year-old man complaining of fever (38.6°C) and nausea in late June. Physical examination yielded unremarkable findings. Laboratory examinations yielded the following values: leukocyte count 7,870 cells/mm³ (79.1% neutrophils), erythrocyte sedimentation rate 2 mm/hr, C-reactive protein 8.07 mg/dL, aspartate aminotransferase 269 IU/L, and alanine aminotransferase 300 IU/L. EV was detected by AccuPower[®] RT-PCR kit, but sequencing was not performed. The patient became afebrile in 48 hours without taking antibiotics and was discharged on hospitalization day 4, as his laboratory findings were normalized.

EVs account for at least 10 to 15 million symptomatic infections each year in the U.S. predominantly in the summer and fall [4]. During the 10-year surveillance period in the U.S.

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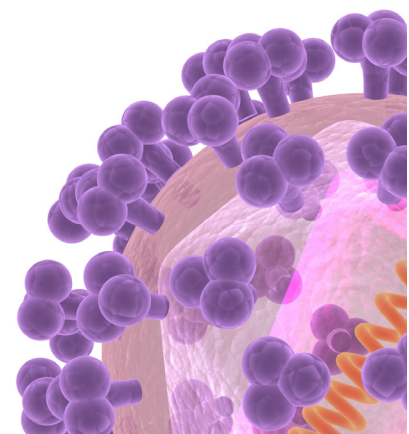
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Armed Forces, meningitis due to EVs was the most common with 2,770 (86.4%) out of all confirmed cases of viral meningitis (3,205) [5]. In a retrospective study in Paris, EV (23.1%) was the second most common viral etiology of meningitis and encephalitis in elderly patient, after herpes simplex virus (35.4%) [6]. The national EV surveillance system of the Korea Centers for Disease Control and Prevention has monitored human EV infections in Korea since 1993. Surprisingly, out of 4,209 patients who were older than 20 years, only 161 (3.8%) EV infections were reported in 1999-2011 [7]. We believe that lack of suspicion may play an important role in under-diagnosis of adult cases of EV infections. Given that EVs are contagious and could cause appreciable morbidity and short-term disability as well as severe neurological complications, early recognition with high index of suspicion of EV infections is very important. Through the present cases, we expect to draw more attention to EV infections in adults.

Conflicts of Interest

No conflicts of interest.

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References

1. Rotbart HA. Enteroviral infections of the central nervous system. *Clin Infect Dis* 1995;20:971-81.
2. Jee Y, Cheon D, Choi W, Ahn J, Kim K, Chung Y, Lee J, Lee K, Noh H, Park K, Lee S, Kim S, Cho K, Kim E, Jung J, Yoon J, Cho H. Updates on enterovirus surveillance in Korea. *Infect Chemother* 2004;36:294-303.
3. Seo YB, Song JY, Choi MJ, Kim IS, Yang TU, Hong KW, Cheong HJ, Kim WJ. Etiology and clinical outcomes of acute respiratory virus infection in hospitalized adults. *Infect Chemother* 2014;46:67-76.
4. Strikas RA, Anderson LJ, Parker RA. Temporal and geographic patterns of isolates of nonpolio enterovirus in the United States, 1970-1983. *J Infect Dis* 1986;153:346-51.
5. Armed Forces Health Surveillance Center (AFHSC). Viral meningitis, active and reserve components, U.S. Armed Forces, 2002-2011. *MSMR* 2012;19:2-6.
6. Parisi SG, Basso M, Del Vecchio C, Andreis S, Franchin E, Dal Bello F, Paqni S, Biasolo MA, Manganelli R, Barzon L, Palù G. Viral infections of the central nervous system in elderly patients: a retrospective study. *Int J Infect Dis* 2016;44:8-10.
7. Hyeon JY, Hwang S, Kim H, Song J, Ahn J, Kang B, Kim K, Choi W, Chung JK, Kim CH, Cho K, Jee Y, Kim J, Kim K, Kim SH, Kim MJ, Cheon DS. Accuracy of diagnostic methods and surveillance sensitivity for human enterovirus, South Korea, 1999-2011. *Emerg Infect Dis* 2013;19:1268-75.