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Conference report

Establishment of Asia-Pacific Network for Enterovirus Surveillance

Mu-Lin Chiu [a], Shu-Ting Luo [a], Ya-Yen Chen [a], Wan Yu Chung [a], Veasna Duong [b], Philippe Dussart [b], Yoke-Fun Chan [c], David Perera [d], Mong How Ooi [d,e], Nguyen Thi Thanh Thao [f], Huu Khanh Truong [g], Min-Shi Lee [a,*]

[a] National Institute of Infectious Diseases and Vaccinology, National Health Research Institutes, Zhunan, Taiwan
[b] Virology Unit, Institut Pasteur du Cambodge, Cambodia
[c] Department of Medical Microbiology, Faculty of Medicine, University Malaya, Malaysia
[d] Institute of Health & Community Medicine, Universiti Malaysia Sarawak, Malaysia
[e] Sarawak General Hospital, Sarawak, Malaysia
[f] Enterovirus Unit, Pasteur Institute in Ho Chi Minh City, Viet Nam
[g] Department of Infectious Diseases, Children Hospital 1, Ho Chi Minh City, Viet Nam

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ABSTRACT

Enteroviruses (EV), the major pathogens of hand, foot, and mouth disease (HFMD) and herpangina, affect millions of children each year. Most human enteroviruses cause self-limited infections except polioviruses, enterovirus A71 (EV-A71), enterovirus D68 (EV-D68), and several echoviruses (Echo) and coxsackieviruses (CV). Especially, EV-A71 has repeatedly caused large-scale outbreaks in the Asia-Pacific region since 1997. Some Asian countries have experienced cyclical outbreaks of severe EV-A71 infections and initiated development of EV-A71 vaccines. Five EV-A71 vaccine candidates have been clinically evaluated and three of them were approved for marketing in China. However, none of the China-approved products seek marketing approval in other countries.

This situation supports a role for collaboration among Asian countries to facilitate clinical trials and licensure of EV-A71 vaccines. Additionally, enterovirus D68 outbreaks have been reported in the US and Taiwan currently and caused severe complications and deaths. Hence, an Asia-Pacific Network for Enterovirus Surveillance (APNES) has been established to estimate disease burden, understand virus evolution, and facilitate vaccine development through harmonizing laboratory diagnosis and data collection. Founded in 2017, the APNES is comprised of internationally recognized experts in the field of enterovirus in Asian countries working to raise awareness of this potentially fatal and debilitating disease. This article demonstrated the summaries of the first expert meeting, 2017 International Workshop on Enterovirus Surveillance and Vaccine Development, held by APNES in Taipei, Taiwan, March 2017.

1. Introduction

Enteroviruses (EV), the major pathogens of hand, foot, and mouth disease (HFMD) and herpangina, affect millions of people each year worldwide, especially among infants and young children [1–3]. The genus ***Enterovirus*** belongs to the family *Picornaviridae* and consists of 13 species, including four species causing human infections (*Enterovirus* species A ~ D). Human EV could be classified into more than 100 serotypes. Most human enteroviruses cause self-limited infections except polioviruses, enterovirus A71 (EV-A71), enterovirus D68 (EV-D68), and several echoviruses (Echo) and coxsackieviruses (CV) which could result into neurological complications. Especially, EV-A71 has repeatedly caused large-scale outbreaks of severe HFMD in the Asia-Pacific region since 1997 [4]. The rapid progression of severe complications, such as central nervous system disease and cardiopulmonary failure, can lead to death within 24 to 48 hours [5]. The overall household transmission rate of EV-A71 was 52%, and particularly high at 84% among children under 6 years of age [6]. Patients with uncomplicated EV illness bring significant economic and medical impacts on society with at least 1–4 days of missed school or lost work, and direct medical costs of $69–771 USD per case and indirect costs of $63–422 USD per case mainly attributable to parental missed work [7].

EV-A71, one of the EV-A viruses, is the major etiologic agent of HFMD and herpangina. Based on phylogenetic analysis of VP1 genes, EV-A71 viruses are divided into 8 genogroups A to H

* Corresponding author.
E-mail address: minshi@nhri.edu.tw (M.-S. Lee).

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