

# **Enterovirus 71 Infections in Children: Current Update**

Tzou-Yien Lin

Professor of Pediatrics

Chang Gung University, College of Medicine

Enterovirus 71 (EV71) usually causes mild infections in children; however, a few of them can develop encephalomyelitis that resulted in fulminant cardiopulmonary collapse. Outbreaks with high mortality continue to threaten health in children in West Pacific and European regions.

Early detection and prompt treatment is the mainstay of management. Currently no antiviral is available and the treatment is mainly supportive. We developed a stage-based management program for frontline pediatricians to provide the best of care and improve the clinical outcome. Meanwhile, neurological and respiratory rehabilitation program remains necessary to ensure the quality of life for some survivors with neurologic & psychiatric sequelae.

Genetic recombination is a well-known phenomenon for enteroviruses. Phylogenetic analysis indicated the intratypic recombination between C and B genotypes of EV71. Comprehensive recombination analysis showed the evidence of genome recombination of subgenotype C4 sequences between structural genes from genotype C EV71 and non-structural genes from the prototype strains of CAV16. This intertypic recombination C4 viruses were first seen in 1998 and became the predominant endemic viruses circulating for at least 18 years.

There has been rapid progress in the development of EV71 vaccine. Three inactivated, adjuvanted subgenotype C4 vaccines show efficacy in the phase III clinical trial and have been approved by China FDA. In Taiwan, we have completed phase II clinical trials for two inactivated subgenotype B4 vaccines and the results showed promising safety and immunogenicity.

The recent advances in our understanding of regulation of viral translation (FBP2 protein and vsRNA), EV71 3D polymerase, and human EV71-neutralizing antibody repertoire, provide new insight into the design of antiviral agents and an attenuated live vaccine.

Importantly we believe the enhancement of international collaboration & information sharing would be an important step toward a world free of EV71 in the near future.