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Association of *Helicobacter pylori* biofilm with enterovirus 71 prolongs viral viability and survival

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Viruses are unable to replicate outside their hosts, and thus the transition time during which a virus leaves its host and infects the next susceptible host is critical for virus survival. Closely associated with hand, foot and mouth disease with occasional neurologic complications, enterovirus 71 (EV71) is stable in aqueous environments. However, its survival in the environment and interactions with bacteria are not well-established. On the other hand, *Helicobacter pylori* is a well-known and highly successful gut bacterial pathogen that infects 50% of individuals, with its capacity to form biofilms being linked with its transmission. We hypothesized that bacterial biofilm may play a significant role in the survival of EV71 in the external environment. In this study, we examined the interactions of EV71 with the biofilm of *H. pylori*. The results reveal that EV71 associated with *H. pylori* biofilm as observed under confocal and scanning electron microscopy. Furthermore, the presence of biofilm prolonged viral viability as demonstrated by virus plaque assays. Interestingly, the viability of the virus was dependent on the quantity of *H. pylori* biofilm formation. Taken together, the ability of bacterial biofilm in extending EV71 viability for prolonged periods may partially contribute to EV71 outbreaks, and implies that the association of the virus with bacterial biofilm may serve as a potential pathway of EV71 transmission.

Biography

Vincent TK Chow, MD, PhD, FRCPath completed his postgraduate studies at the National University of Singapore (NUS) and the University of London, UK. He is an Associate Professor of Microbiology and Principal Investigator of the Host And Pathogen Interactivity Laboratory, NUS. Dr Chow has published more than 250 papers in international journals, and has been awarded several research prizes and patents.

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