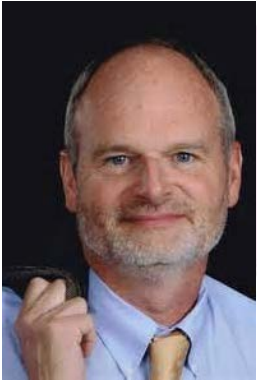


SgN Immunology Seminar



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Environmental Enteropathy, Malnutrition and Oral Vaccine Response

Environmental enteropathy (EE) is a poorly defined state of intestinal inflammation without overt diarrhea that occurs in individuals exposed over time to poor sanitation and hygiene. It is characterized pathologically by small intestine villous blunting and inflammation. In children from low-income countries it is implicated as a cause of malnutrition, oral vaccine failure and impaired cognitive development. We sought to test non-invasive biomarkers for their ability to measure the contribution of EE to vaccine failure and predict the development of malnutrition. 700 children from an urban slum in Dhaka Bangladesh were enrolled in the first week after birth and followed until one year of age. Children received twice weekly household visits, serial laboratory studies, and surveillance for enteric infections. All EPI recommended vaccines were administered and medical care provided.

We discovered that enteric infection was universal even in the absence of diarrhea, with an average of two enteropathogens infecting each child at the 6 and 10 week ages when the first two doses of OPV were given. Oral polio vaccine (OPV) failure at 18 weeks was associated with nonpolio-enterovirus infection, intestinal injury and inflammation, and systemic inflammation. Malnutrition at one year of life was predicted at 18 weeks also by the presence of intestinal injury and inflammation, and systemic inflammation. We concluded that nonpolio-enterovirus was associated with OPV failure, and that EE, as defined by biomarkers of inflammation and intestinal injury, contributed to both OPV underperformance and malnutrition. The discovery of biomarkers of EE in infants may offer a way to risk-stratify children for early intervention to prevent malnutrition.

Host
Dr Florent
Ginhoux
Singapore
Immunology
Network, A*Star

Date
Monday
15 December
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Time
11am – 12pm

Venue
SgN Seminar
Room
Immunos
Building
Level 4
Biopolis