Short Communication

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Journal of Transmitted Disease and Immunity

2022
Vol 6. No. 3

Influence of the gut microbiota on the mucosal antibody response to Poliovirus vaccine

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Abstract

Identification of mechanisms that improve mucosal antibody response to poliovirus vaccine and limit poliovirus replication is crucial for achieving the aim of global polio eradication. Since 2016, trivalent OPV using in developing areas has been required to switch to the bivalent OPV in association with one or two dose of IPV administered. Compared with IPV, oral poliovirus vaccine (OPV) not only induces serum antibodies against paralysis, but also induces a high level of intestinal immunity to prevent fecal-oral spread of poliovirus, which is the primary transmission route. Thus, after cessation of poliovirus type 2 (PV2), several studies indicated that mucosal neutralizing activity to PV2 decreased and virus shedding increased after a one-dose challenge with monovalent OPV (mOPV) type 2 in the bivalent OPV (bOPV) and bOPV-IPV groups compared with the tOPV group. In this study, we examined the levels of mucosal immunity to poliovirus in China by measuring the IgA antibody levels in stool samples collected from infants after sequential vaccination combining inactivated polio vaccine (IPV) with OPV. And then the pre-vaccination bacterial microbiota was identified using 16s ribosomal RNA sequencing. Our study shows that the new routine vaccination schedule reduced the induction probability of anti-poliovirus type 2 IgA as a result of the lack of type 2 components in bOPV. These results also detect Clostridia enteropathogens that could be linked with the decreased IgA conversion rate to poliovirus vaccine, which is a biomarker of mucosal antibody response. In addition to, rich diversity of the intestinal microbiota was a disadvantage in terms of the mucosal antibody response to OPV vaccine.

Received: May 05, 2022; **Accepted:** May 11, 2022; **Published:** May 22, 2022

Biography

Ting Zhao is a Research Assistant of Immunology at Chinese Academy of Medical Sciences and Peking Union Medical College. She is a Biotechnology Undergraduate Major by training at Yunnan University. She holds a Master's degree in Immunology and earned her Doctorate in Immunology at Chinese Academy of Medical Sciences and Peking Union Medical College (China). She is especially interested in the mechanism of virus infection and the development of new vaccine. Her previous work is focused on Enterovirus 71 and development of Enterovirus 71 vaccine, especially about the neonatal rhesus macaque model of Enterovirus 71 infection model. Currently, her focus is on the comparative study of poliovirus immunization strategies in China during atransitionalperiod

