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Molecular analysis of viral pathogens causing diarrhea in Filipino children

Maria Luisa G Daroy, Lindsay Sydney Fajardo, Maria Celeste C Cortes, Maria Victoria C Ribaya, Kamruddin Ahmed and Filipinas F Natividad
St. Lukes Medical Center, Philippines

Rotaviruses and noroviruses are two important etiologic agents of acute diarrhea in the world, with an especially pronounced impact in the developing regions of Asia and Africa. Rotaviruses are non-enveloped RNA viruses, with an outer capsid composed of the VP7 glycoprotein and the VP4 attachment protein, coded by gene segments 9 and 7, respectively. These proteins are the basis of a binary system of classifying rotaviruses into G and P genotypes, respectively. Two vaccines against rotavirus target the most prevalent genotypes, G1P[8], G2P[4], G3P[8], and G4P[8] but not emerging genotypes such as G9 and G12. Noroviruses are single-stranded RNA viruses that are classified into 5 genogroups (GI-GV), of which I, II and IV are found in humans. At present there is still no vaccine against noroviruses. This study was performed to determine the genotypes of both rotaviruses and noroviruses in 105 samples collected from children who presented with diarrhea at 2 hospitals in the Philippines in 2010-2013. Thirty-six samples (34.38%) were positive for rotavirus group A by enzyme immunoassay and RT-PCR, and 25 (23.81%) were positive for norovirus by RT-PCR. Rotavirus genomic RNA from 34 samples was electropherotyped using PAGE which identified 8 electropherotypes in 26 samples. Predominant genotypes in rotavirus-positive samples were G1P[8] with 22 (61.1%) of the samples, followed by G2P[4] with 6 (16.6%), G3P[8] with 5 (13.8%), G9P[8] with 2 (5.55%) and G4P[8] with 1 (2.7%). The norovirus-positive samples were made up of 3 (12%) belonging to genogroup I, and 22 (88%) to genogroup II. The latter group includes the Sydney strain presently causing outbreaks in different countries worldwide. Amplified DNA from the gene segment 9 of rotavirus and VP1 gene of norovirus were sequenced by Sanger dideoxy method. Phylogenetic analysis showed clustering of our isolates with those isolated in 2005-2012 from the Asia-Pacific region.

Biography

Maria Luisa G Daroy is Scientist at the Research and Biotechnology of St. Luke's Medical Center and Assistant Professor in the MS Molecular Medicine Program of the St. Luke's College of Medicine-WHQ Memorial. She has published 20 papers on dengue, Japanese encephalitis, eye infections, genetic markers of various diseases, and microbiology. She is Chair of the Board of Examiners of the Philippine Academy for Microbiology and authored a chapter of a book on Philippine microbiology research. Current researches include dengue, chikungunya, diarrhea, CNS infections, pathogen genomics, plant antivirals, molecular diagnostics, dengue POC, and genetics of CVD, diabetes, thyroid cancer, and dementia.

mldaroy@yahoo.com