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Molecular epidemiology of Rotavirus in children with gastroenteritis in Qatar

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Introduction & Objective: Acute gastroenteritis remains a major cause of morbidity and mortality of young children worldwide. The vast majority of diarrhea cases in developing and developed countries are attributable to the viruses and to a lesser extent to bacteria, fungi and toxins. Rotavirus (RV) is recognized as the most important etiological agent leading to acute gastroenteritis globally. In order to determine the burden and characteristics of RV infections in children in Qatar, profiling of circulating genotypes and their correlation with demographics and clinical manifestations were evaluated.

Method: A total of 205 RV-positive fecal samples were collected from children suffering from Acute Gastroenteritis (AGE) during two-year seven months period between June 2016 and January 2019. The age of the subjects ranged between 3 months and 12 years (median of 15 months). Genotyping was performed by amplifying and sequencing both VP4 (P-type) and VP7 (G type) regions. Phylogenetic analysis and evolutionary relationships were performed using MEGA 7.0. Fisher's exact test was used to run statistical analysis for the clinical and demographical characteristics of circulating strains.

Results: Overall, RV infections were relatively higher in males than females with a ratio of 1.7:1 ($P=0.0082$). Most of the RV infections were reported in children between 1-3 years old (54.7%), followed by those <1 year- and > 3 years of age (38.4% and 6.9%, respectively). RV infections occurred throughout the year, with a noticeable increase in summer (42.8 %) and drop in winter (20.1%). RV genotypes G3P [8] (38.5%), G1P [8] (30.2%), G9P [8] (17.3%) and G2P [4] (14%) were the dominant genotypes during the study period. Among the RV-positive cases, 118 (54.3%) had been vaccinated using either of the RV vaccines available. Number of children vaccinated with one and two doses were 49 (41.5%) and 69 (58.4%), respectively. The percentage reduction of disease in a vaccinated group of pediatrics compared to an unvaccinated group of pediatrics was 23%. Of these, 91 (77.1%) experienced diarrhea for less than three days and only eight (6.7%) had diarrhea for more than five days. Only 18 among those who were vaccinated stayed long in the hospital (more than four days) compared to non-vaccinated children. All vaccinated children showed mild to moderate dehydration except for seven children who were then treated with intravenous fluids.

Conclusion: In this study we detected four different rotavirus G genotypes, 2 different P genotypes, 7 different G-P combinations. G3, G9, G2 and P [8] were found to be the predominant genotypes, followed by P [4]. The high infection rate with RV regardless of vaccination requires further assessment.

Biography

Shilu Mathew currently works as a Research Associate at Biomedical Research Center, Qatar University, Doha. Her research interests are Rotavirus, gastroenteritis, epidemiology

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