

Rotavirus infections in children under the age of five years in Pretoria, South Africa between July 2016 – December 2017

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Background

Gastroenteritis is a leading cause of mortality in children. The aim of this study was to investigate the susceptibility to, prevalence of and relationship between gastroenteritis viruses in the paediatric population.

Methods

From July 2016 to December 2017 blood, stool and saliva specimens were collected from 205 children (<5 years) hospitalised with gastroenteritis at Kalafong Tertiary Provincial Hospital. Data on rotavirus vaccination was obtained through questionnaires. Stool specimens were screened for five gastroenteritis viruses using the Allplex Gastrointestinal Panel I (Seegene). Noro-, sapo- and rotavirus strains were genotyped based on conventional RT-PCR, nucleotide sequencing and phylogenetic analysis. FUT2 genotyping was performed using a real-time PCR.

Results

At least one gastroenteritis virus was detected in 47% (96/205) of stool specimens. Rotavirus predominated (22.4%, 46/205) followed by norovirus (15.6%, 32), adenovirus (7.3%, 15), sapovirus (4.4%, 9) and astrovirus (1.5%, 3). The median age of the study population was 15 months, with rotaviruses detected in children with a median age of 10.8 months. Nine rotavirus genotypes were identified in 43 specimens. Rotavirus G3P[4] predominated with G1P[8], G2P[4], G2P[6], G3P[8], G8P[4], G8P[6], G9P[6], and G9P[8] also detected. Most children (37/46) infected with rotavirus were fully vaccinated, while seven received the first dose only and two were unvaccinated. FUT2 genotyping of the children showed a 69:31 ratio between secretors and non-secretors. Only six non-secretor children were infected with rotavirus, representing 4 genotypes (G2P[4], G2P[6], G3P[8], and G8P[6]). Norovirus infections represented six genotypes (GI.3, GII.2, GII.3, GII.4, GII.7 and GII.21), with GII.4 being most prevalent

Conclusion

Rotavirus is still the leading cause of gastroenteritis hospitalisations in children despite introduction of a vaccine. The preliminary data suggest that rotavirus preferentially infects secretors, with the exception of specific genotypes.