

Molecular Characterization of Rotavirus Detected in Diarrhoeic Children 0-5 Years of Age in Kano State Nigeria

¹Aminu Wada-Kura, ²Michael Bowen, ²Mathew Diah Esona, ³Maryam Aminu

¹National Biotechnology Development Agency Abuja, ²Department of Viral Infections, Centers for Disease Control and Prevention, Atlanta, GA, U.S.A, ³Department of Microbiology, Faculty of Science, Ahmadu Bello University, Zaria, Nigeria

Background

Rotavirus (RV) is the most common cause of severe diarrhoeal illness in infants and young children 0-5 years of age in both developing and developed countries. Rotavirus infection has been estimated to result in 453,000 deaths of young children in developed and developing parts of the world. However, limited data exist on rotavirus (RV) infection in Kano, North-Western Nigeria.

Method

This Study was aimed at determining the prevalence and genotyping of rotavirus among these children using Enzyme Linked ImmunoSorbent Assay (ELISA) and Reverse Transcription-Polymerase Chain Reaction (RT-PCR). A total of 285 stool samples were collected from infants and children 0-5 years of age, who reported with diarrhoea in six different hospitals in Kano, Nigeria. The diarrhoeic stools were analyzed for RV antigen (ELISA) and the (RV) positive stools were further subjected to VP7 and VP4 genotyping using gene specific primers RT-PCR.

Results

Rotavirus was detected in 36.5% 104/285 of the diarrhoeic children. The infection occurred throughout the study period with higher peaks in the drier month of April 77.6% 38/49 and lowest in July 12.2% 5/41 Pearson Chi Square analysis: ($\chi^2 = 27.720$, $P < 0.05$, $df = 1$). The highest prevalence of RV infection was in children 41-50 months 50% 3/6 The RV was detected more in male 37.2% 61/164 than female 35.4% 43/121 children and no statistically significant difference was observed $P > 0.05$. Three different rotavirus P-genotypes P8, P4, and P6 were detected in this study and P6 48% was the most commonly detected. Mixed infection were detected and consisted only of P8+P6. Six different G-genotypes were detected. The predominant genotype was G2 35.0% 36/103. The most common G and P combination was found to be G2P6 with 19.4% 20/103 frequency of occurrence. A single GNT8+6 mixed combination of rotavirus strains was also detected during the study. Strains such as G6, G9 and G12 were also detected at low levels.

Conclusion

Rotavirus was found to be an important cause of diarrhoea in children 0-5 years of age in Kano, North-Western Nigeria.