

Rotavirus Strain Distribution in Enugu South East Nigeria Pre-Rotavirus Vaccine Introduction

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Background

Globally, group A rotaviruses are the most common cause of acute gastroenteritis among children less than 5 years of age. This study reports baseline data on the rotavirus G and P genotypes/strains across Enugu Nigeria before the introduction of rotavirus vaccination.

Method

A total of 3497 stool samples were collected from children <5 years old with diarrhoea admitted to University of Nigeria Teaching Hospital, Tender Care Hospital and Mother of Christ Special between January 2011 and December 2017 and tested for the presence of group A rotavirus by enzyme immunoassay. Randomly selected rotavirus positive samples were further characterized using semi-nested reverse transcriptase polymerase chain reaction to determine rotavirus G and P genotypes.

Results

One thousand six hundred and eighty-one out of the 3497 (48.0%) samples analyzed were positive for rotavirus. Nine hundred and eighty-four (28.0%) were subjected to RT-PCR. The G-types detected were G12 (24.3%), G1 (22.8%), G3 (16.7%), G2 (6.9%), G10 (5.7%), G9 (4.9%), G4 (1.0%) G Mix (14.3%) and GNT (2.8%). The P-types detected were P[8] (38.5%), P[6] (36.0%), P[4] (8.0%), P[10] (0.4%), P Mix (15.5%) and PNT (1.5%). The most dominant strain for the 7 year period was G12P[8] (19.4%) followed by G3P[6] (14.8%) and G1P[8] (11.0%). The G12P[8] strain - dominated in 2011 (24.0%), 2012 (46.4%) and 2013 (27%) followed by G3P[6] (20.9%), G2P[4] (14.8%), G10P[6] (15.7%), G3P[6] (7.1%) and G10P[6] (9.6%), G3P[6] (8.4%) respectively. However, G1P[8] was the dominated strain in 2014 (18.3%), 2015 (22.0%) and 2017 (23.9%) while G3P[6] (14.8%) was commonly detected in 2016. Majority of the strains detected during the 7 years were in January (49.1%) and the dominant strain was G12P[8] (12.3%).

Conclusions

This study highlights the existence of significant diversity of rotavirus strains with unusual G and P combinations. These data will be useful for making an informed decision about the introduction of rotavirus vaccine in Nigeria and provides baseline data for future vaccine studies.