

Incidence of Rotavirus in Acute Childhood Diarrhoea in the University of Benin Teaching Hospital, Benin

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SUMMARY

Abiodun P O. Incidence of Rotavirus in Acute Childhood Diarrhoea in the University of Benin Teaching Hospital, Benin. *Nigerian Journal of Paediatrics*, 1989; 15:0. Examination of stools of 88 children with acute diarrhoea admitted to the University of Benin Teaching Hospital, using the Enzyme-linked Immunosorbent Assay (ELISA) method, showed that rotavirus was associated in 59.1% of cases. No sex difference was found. The majority of children with rotavirus diarrhoea were aged under 24 months.

Introduction

DIARRHOEAL diseases still constitute a great danger to children the world over leading to a high morbidity and mortality. Estimates have it that 3–5 billion diarrhoeal episodes are reported annually,¹ and it is further estimated that in developing countries, diarrhoeal episodes result in 4–5 million deaths annually.² Even in developed countries, the mortality of infants hospitalised for diarrhoea still exceeds 1%.^{3 4}

In earlier reports from developed countries, pathogenic organisms were isolated

from children with acute diarrhoea in only 10–16% of cases.⁴ Recent advances in bacteriological and virological techniques have however, led to a sharp increase in the isolation rate of microorganisms associated with childhood diarrhoea.⁵ In particular, the rotavirus has now been identified as a very important causative agent of diarrhoea worldwide.^{5–10} Despite the important contribution to morbidity and mortality in this country^{11 12} and other developing countries,² most of the available reports of the aetiological agents of diarrhoea in Nigeria have been concerned mainly with bacteriological and parasitic agents.^{13–17} The aim of this study therefore, was to examine the incidence of rotavirus in acute gastroenteritis of children using a newly available method, Enzyme-linked Immunosorbent Assay (ELISA).

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Patients and Methods

Fresh stool specimens were collected from each of 88 children (45 males, 43 females) aged between three and forty eight months, who were admitted consecutively with acute diarrhoea to the Children Emergency Room of the University of Benin Teaching Hospital between November, 1983 and October, 1984. One gram of each fresh stool specimen was suspended in phosphate buffered solution (PBS) to make a 10% solution and centrifuged at about 200g for 20 minutes to remove bacteria and suspended materials. The supernatants were stored at -20°C until the time for assay. Storage for up to 4 week in our laboratory at this temperature did not affect the assay. The stools were examined for rotavirus using the Enzyme-linked-Immuno-sorbent-Assay (ELISA) method, making use of commercial kits (*Behringwerke AG, Marburg, West Germany*). The prevalence of rotavirus was analysed with regards to age and sex distribution as well as monthly variations.

The statistical method used where applicable, was the Chi square.

Table

Age Distribution of Children with Rotavirus-Associated Diarrhoea

Age	No Examined	No Positive	% Positive
3-6 months	15	12	80
7-12 months	30	17	56.7
13-24 months	27	17	63
> 24 months	16	6	37.5
Total	88	52	59.1

Results

Of the 88 stool specimens examined, rotavirus antigen was found in 52 (59.1%) of the children (Table). No sex difference could be found in the distribution of rotavirus. Diarrhoea was associated with rotavirus in 80% of the children between the age of 3-6 months, although the number of children was too small to make a categorical statement on the incidence in this age group. While children aged 3-24 months had an incidence of 83.5% of cases associated with rotavirus, this was sharply reduced to 37.5% in those above the age of 2 years (Table). There was a fairly even monthly distribution of rotavirus associated diarrhoea during the 12 month study period.

Discussion

This study confirms reports from other parts of the world of the high prevalence of rotavirus as an agent of diarrhoea in childhood.⁵⁻¹⁰ The incidence of 59.1% of rotavirus associated diarrhoea in our hospital compares well with that in an earlier study by Dossetor, Christie and Totterdell, who found an incidence of 60% in Northern Nigeria over a three-month period.¹⁸ The incidence of rotavirus associated gastroenteritis varies in different parts of the world.⁵⁻¹⁰ In temperate areas, up to half the annual cases of diarrhoea could be associated with rotavirus increasing to 75% in periods of peak prevalence.⁸ In reports from tropical countries, the incidence ranges from 26-60%.^{10, 18, 20, 21} Variations have also been reported from different areas within the same country.²⁰ Generally, the incidence in the general community is reportedly less than in hospital based studies.

Our study shows that there was no significant monthly variation in the inci-

dence of rotavirus associated diarrhoea in this part of the country within the study period. Several other studies have demonstrated that although sharp variations could be found in temperate areas with peak prevalence in winter,^{8 22 23} rotavirus is a year round pathogen in warmer climates^{9 21 24}

Our study shows that the incidence of rotavirus gastroenteritis was highest in children 3–24 months (63.8%) with a sharp decline above this age. The fact that 88% of positive findings were in children under 24 months confirms that rotavirus infection is predominantly a disease of children in this age group.

In an earlier study covering a period of five years, bacterial agents, most of which were insensitive to commonly used antimicrobial agents in cases of childhood diarrhoea in this country, were isolated in only 13.2% of 1223 cases of childhood diarrhoea in our hospital.¹⁷ This coupled with the high prevalence of rotavirus, would tend to support the restriction of the use of antibiotics to only selected cases of acute childhood diarrhoea even in developing countries.

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Our study shows that the incidence of rotavirus gastroenteritis was highest in children under 24 months of age. The fact that 88% of positive faeces were in children under 24 months of age suggests that rotavirus infection is predominant in this age group. In an earlier study covering a period of five years, bacterial agents, most of which were insensitive to commonly used antimicrobial agents in cases of childhood diarrhoea in this country, were isolated in only 13.2% of 1233 cases of childhood diarrhoea in our hospital. This coupled with the high prevalence of rotavirus would tend to support the restriction of the use of antibiotics to only selected cases of acute diarrhoea, unless even in developing countries.

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