



Original Research Article

Detection of human Rotavirus and Bacterial Enteropathogen in Acute Gastroenteritis in children below 5 years of age in Wardha

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ABSTRACT

Keywords

Rotavirus
diarrhoea,
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The most common pathogen found to be associated with diarrhoea in children below 5 years of age in developing countries is Rotavirus. This study was carried over a period of two years. Stool specimens were collected from patients aged below 5 years with gastroenteritis. Presence of rotavirus in stool specimens was detected by ELISA. During the study, a total of 213 stool collected from children, Out of 213 patients, 25 were positive for rotavirus in stool samples. The peak occurrence of rotavirus infection was found between 13-24 months followed by just lower in 0-6 months of age group. The overall occurrence of rotavirus gastroenteritis cases more in male than female child. *E.coli* was the predominant isolates followed by *Klebsiella* and *Staphylococcus aureus* in stool specimen of children suffering from gastroenteritis.

Introduction

The most common pathogen found to be associated with diarrhoea in children <5 years of age is Rotavirus [Glass R I et al 2006]. Worldwide, annual death due to rotavirus infection is approximately 600000 and more than 150000 occur in India [Jain et al 2001, Cunliffe NA et al 1998]. In India, rotavirus accounts for 20-40% of childhood acute gastroenteritis[Naik TN 2004]. Data of prevalence and morbidity of rotavirus infection among children below 5 years, particularly in central India, Wardha are limited.

Therefore, the aim of the present study

was the detection of rotavirus infection and as well as isolation of bacterial isolates from children below 5 years of age who were suffering from acute gastroenteritis .

Materials and Methods

A total of 213 children under 5 years of age with acute gastroenteritis, admitted into pediatric wards of Aacharag Vinoba Bave Hospital, Sawangi, Wardha, during the period July 2010 to July 2012 were included. Fresh samples were collected in sterile bulb within 24 hr. of their admission.

And transported immediate to laboratory and were then processed for bacterial, parasitological, and viral studies to laboratory. All the stool samples were examined macroscopically and microscopically for the presence of any ova and/or cyst. For bacterial pathogens, samples were inoculated on MacConkey's agar and blood agar and incubated at 37°C for overnight. The bacterial enteropathogens were identified by standard laboratory methods. All stool samples were screened for rotavirus using a commercial IVD Research Inc. Quality diagnostic kit, Carlasbad, USA for the detection of Vp6 antigen [Saravanan P et al 1997].

Results and Discussion

Rotavirus was detected by ELISA in 25 of 213 children. The rotavirus associated with bacterial pathogens were 36% patients in various age group. The total percentage of rotavirus detection was 11.73 %. The rotavirus as sole pathogen accounted for 64% of the acute gastroenteritis in the below 5 years children. The highest incidence was in the 13-24 months and just lower in 0-6 months of children. The age wise distribution of

rotavirus diarrhoea cases is presented in table No1.

Rotavirus is among the most common cause of acute gastroenteritis in children below 5 years. Although a vaccine has become available, rotavirus vaccine was not given to children residing in Wardha which were enrolled in this study.

Rotavirus infections in human being are well documented with variable degree of prevalence. In the present study, 11.73 % rotavirus infection was detected among acute gastroenteritis cases in Wardha. Similar prevalence rate of 11.2% found in children in Bangalore and Mysore by Aijaz S et al and Yachha Sk et al in north India reported 11.5% .

Sex wise incidence of rotavirus infection among male and female was 68% and 32 %, respectively. It is indicated that, male children was more susceptible to acute gastroenteritis than female. and however, no association of rotavirus infection could discerned between male and female child which is reported in Chennai [Saravanan P, Ananthan S 2004]

Table No.1 Rota virus positive in diarrhogenic patients below 5 years group. (n=213)

| Characteristics | Rotavirus Positive | | Rotavirus Negative | |
|-----------------|--------------------|--------|--------------------|--------|
| | Positive | % | Negative | % |
| 2 – 24 (n=143) | 19 | 13.2% | 124 | 86.7% |
| 25 – 60 (n=70) | 06 | 8.5% | 64 | 91.4% |
| Total = 213 | 25 | 11.73% | 188 | 88.26% |

Table No.2 Comparison of clinical presentation in rotavirus positive and negative patients .

| Clinical presentation | | Rotavirus Positive (%) (n=25) | Rotavirus Negative (%) (n=188) |
|---------------------------------|--------|----------------------------------|-----------------------------------|
| Fever during hospital admission | Yes | 100 (100) | 158 (84) |
| | No | 00 (00) | 30 (15) |
| Vomiting | Yes | 14 (56) | 88 (47) |
| | No | 11 (44) | 99 (53) |
| Degree of Dehydration admission | None | 00 (00) | 9(4.7) |
| | Some | 12 (48) | 163(87) |
| | Severe | 13 (52) | 9(5) |

Table No.3 Rate of isolation of bacterial enteropathogens, Parasites and detection of Rotavirus according to age groups (in months)

| Age | 0-6 (n=73) | 7-12 (n=19) | 13-24 (n=55) | 25-36 (n=34) | 37-60 (n=32) | Total (n=213) |
|------------------------|---------------|----------------|-----------------|-----------------|-----------------|------------------|
| E.coli | 69 | 13 | 47 | 27 | 24 | 180 |
| Klebsiella spp. | 01 | 02 | 02 | 04 | 07 | 16 |
| Staphylococcus | 00 | 01 | 00 | 00 | 00 | 01 |
| E.histolytica | 00 | 00 | 01 | 01 | 00 | 02 |
| Rotavirus | 07 | 03 | 09 | 03 | 03 | 25 |

In present study the rotavirus diarrhoea were reported higher in 13-24 months age group . similar result was found by Sanjay Chavan et al 2013. No deaths were recorded among the rotavirus positive acute gastroenteritis. Even rotavirus vaccine was not in use in Wardha population. This study in central India, wardha found rotavirus infection is 11.73% of children below 5 years with acute gastroenteritis, predominantly in the age group < 2 years. There was higher rate of fever in rotavirus cases. No deaths were recorded among the rotavirus cases and bacterial cases.

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