

Clinico-Etiological Profile of Hospital Acquired Diarrhea in Children below 15 Years Admitted Attertiary Care Centre-A Cross Sectional Study

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ABSTRACT:

Background-Children who are malnourished or have impaired immunity as well as people living with HIV are most at risk of life-threatening diarrhoea. Diarrhoea is defined as the passage of three or more loose or liquid stools per day. Frequent passing of formed stools is not diarrhoea, nor is the passing of loose, "pasty" stools by breastfed babies.

Aim and objectives- To study the aetiology and prevalence of hospital acquired diarrhoea in children.

Materials and method- age between 1 to 15 years old who were admitted to the pediatric ward over a period of an year for the reasons other than diarrhoea and stayed for more than 3 days in the ward (followed by the criteria of Centre for Disease Control and Prevention [CDC]) Detailed history of the patients were obtained which includes lab investigations also.

Results-Total 150 subjects were included into the study in which 62% were males and 38% were female patients. 38.66% patients were in the age group of 1-4 years who suffered with hospital acquired diarrhoea. Enteropathogenic Escherichiacoli was the main causative infectious agent in 20.66% of patients.

Conclusion- Routine general stool examination, stool culture/sensitivity for detection for microbial infection and CI difficile should done by ELISA methods for all patients with hospital acquired diarrhea to identify the causative agent. The healthcare strategies and campaign should be improved to reduce the number of such diseases.

Keywords- Children, Hospital acquired diarrhoea, Enteropathogenic Escherichiacoli.

INTRODUCTION-

Diarrhoeal disease is the second leading cause of death in children under five years old, and is responsible for killing around 525 000 children every year. Diarrhoea can last several days, and can leave the body without the water and salts that are necessary for survival. In the past, for most people, severe dehydration and fluid loss were the main causes of diarrhoea deaths.¹ Now, other causes such as septic bacterial infections are likely to account for an increasing proportion of all diarrhoea-associated deaths. Children who are malnourished or have impaired immunity as well as people living with HIV are most at risk of life-threatening diarrhoea.² Diarrhoea is defined as the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual). Frequent passing of formed stools is not diarrhoea, nor is the passing of loose, "pasty" stools by breastfed babies. Diarrhoea is usually a symptom of an infection in the intestinal tract, which can be caused by a variety of bacterial, viral and parasitic organisms.³ Infection is spread through contaminated food or drinking-water, or from person-to-person as a result of poor hygiene.

There are no specific treatments/vaccinations to prevent infection with the organisms that commonly cause diarrhoea in Queensland except rotavirus.⁴ The most important way to prevent illness is to ensure that food is properly stored, prepared and cooked and to maintain good hygiene standards. In this study we made an attempt to study the etiology and prevalence of hospital acquired diarrhea in children.⁵

MATERIAL AND METHODS:

This is a cross sectional study which is carried out in a department of pediatrics. A total of 150 patients were included in the study with the age between 1 to 15 years old who were admitted to the pediatric ward over a period of an year for the reasons other than diarrhea and stayed for more than 3 days in the ward (followed by the criteria of Centers for Disease Control and Prevention [CDC]) Detailed history of the patients were obtained which includes lab investigations also. For the detection of Clostridium ELISA was performed while difficile toxins and latex agglutination test were done for detection of human rotavirus antigen.

RESULTS-

Total 150 subjects were included into the study in which 62% were males and 38% were female patients. 38.66% patients were in the age group of 1-4 years who suffered with hospital acquired diarrhoea. Enteropathogenic Escherichiacoli was the main causative infectious agent in 20.66% of patients.

Table1: showing the total no of children according to their gender

	No.ofCases	Percentage(%)
Male	93	62%
Female	57	38%
Total	150	100%

Table2: showing age groups distribution of children with hospital acquired diarrhea

Agegroup	No.ofCases	Percentage(%)
1-4	58	38.66
4-8	39	26.0
8-12	28	18.66
12-16	25	16.66
Total	150	100

Table3: Age distribution of infectious agents in stool samples of children with nosocomial diarrhea diagnosed

Infectiousagent	Isolatesbyagegroup				total	%
	1-4	4-8	8-12	12-16		
EnteropathogenicEscherichiacoli	6	10	6	3	25	20.66
Clostridiumdifficile	5	5	4	1	15	12.39
Salmonellaenteritidis	1	2	3	1	7	5.78
Klebsiellaoxytoca	2	0	2	0	4	3.30

Pseudomonasaeruginosa	3	4	2	0	9	7.43
Proteusmirabilis	2	1	2	0	5	4.13
Shigellaflexneri	2	2	0	2	6	4.95
Entamoebahistolytica	5	3	3	2	13	10.74
Cryptosporidiumparvum	3	2	1	0	6	4.95
Giardialamblia	1	1	3	2	7	5.78
Candidaalbicans	3	2	0	0	5	4.13
Rotavirus	7	6	4	2	19	15.70
Total	40	38	30	13	121	100.0

DISCUSSION-

Hospital acquired diarrhoea is an acute diarrhoea defined by the place of infection and the time of onset after 72 hours. The 3-day cut-off period is used in order to exclude the bacteria which may be acquired from the community and stay dormant in the body without showing any clinical evidences.⁶ A study reported from Brazil a higher prevalence of hospital acquired diarrhoea among children was around 40% which is less than this study as it shows higher prevalence whereas in south India the prevalence was to be 20% among hospitalized children with the age less than 36 months.^{7,8}

The differences in the prevalence in the different parts may be due to the different factors like hygiene practices, sanitation level of the hospitals and type of microorganisms endemic in the area. Staying for the longer period in hospital with the limited routine infection control may also increase the possibility of exposure to potential pathogens. Many care givers had diarrhea also poses the one of the risk factor to the patients.^{9,10} In this study showed that a high prevalence of cases were in children with the age below 5 years and this prevalence was in accordance with other studies from Iraq¹¹ and Saudi Arabia.¹² In India there are many studies which showed that the incidence of diarrhea among children was high in the age between 4 months and 2 years.¹³ Many of them showed that gastrointestinal system is most frequent site.¹⁴ In this study EPEC was the commonest isolated organism and rotavirus were most common viral agent causing infectious diarrhea in children which is similar to the study performed by Jindal et al¹⁵ as it showed 21.4% of cases of infectious diarrhea were due to EPEC. A study from Turkey by Oguz Fetal¹⁶ showed *C. Difficile* as 20.7% which is similar to the present study. In the present study there was no clinical evidence of cholera due to *Vibrio cholerae* and diarrhea with food poisoning due to *Staphylococcus aureus* was found. Other bacteria like *Campylobacter jejuni* and *Yersinia enterocolitica* were also not found that are sometimes involved in hospital acquired diarrhea among children.

CONCLUSION-

There was high prevalence of hospital acquired diarrhea and the infectious causes were more than the non-infectious causes, with bacterial predominance among the infectious agents. Therefore the routine general stool examination, stool culture/sensitivity for detection of microbial infection and *C. difficile* should be done by ELISA methods for all patients with hospital acquired diarrhea to identify the causative agent. The healthcare strategies and

campaign should be improved to reduce the number of such diseases.

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