A Comparative Study Between Infant and Neonate Patients Suffering From Diarrhea In Dhaka City of Bangladesh

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ABSTRACT :

Diarrheal diseases remain important causes of childhood morbidity and mortality in developing countries. Most of the diarrheal diseases in developing countries are symptomatic. For this reason, this study was designed to find out the specific symptoms, treatment pattern and recovery time of the affected children, infant and neonate. A retrospective study was performed on 50 patients suffering from diarrhea. The study period was from January, 2009 - June, 2009 at Institute of Child health of Shishu Sasthya Foundation Hospital, Mirpur-2, Dhaka - 1216. The Information of the anthropometric measurements, type of feeding, duration of diarrhea, number of stools during the last 24 hours, dehydration status etc. were collected from the hospital records. The oral rehydration solution (ORS), antibiotic therapy or antidiarrhoeal drugs were given to the patients having age range <1 month to > 24 months also considered. It was found that among 50 patients, 80% infant was affected by diarrhea. Common symptoms for infants were loose watery stool (84.38%), vomiting (80%), fever (87.5%) and loose motion (81.82%). Most of the infant about 87.5% received antibiotic therapy. The treatment provided other than antibiotic therapy was koloride, NPO (Nothing per oral), ORS (Oral Rehydration Solution) etc. After taking the antibiotic therapies with other treatment, 85% infants and 100% neonates were recovered within 1-3 days. This scenario gives a partial feature of diarrhea disease in developing country like Bangladesh. But the further study is required to find out the full status of the symptomatic childhood diarrhea disease.

INTRODUCTION:

According to World Health Organization (WHO), Diarrhea is defined as the passage of three or more loose or liquid stools per day. Frequent passing of formed stools and the passing of loose, "pasty" stools by breastfed babies is not diarrhea[1].

Diarrheal diseases are the predominant reason of illness of the young children in the developing countries. Most importantly it is the second focusing cause of their death, specifically when their age is in between 0-2 years. As per World Health Organization (WHO), every year globally estimated cases of diarrheal disease are about 1.7 billion. Approximate death of the children having the age below five years is 7.6 billion; in 11% cases, diarrheal disease is identified as the underline cause[1-2]. Malnutritious children below five years old are more prone to diarrhea, which is preventable and treatable[1].

Various pathogens have been identified from different research works throughout the world. The most common pathogens are *Escherichia coli*, *Salmonella species*, *Campylobacter jejuni*, *Enterobacter species* etc. and the Rotavirus is responsible for epidemic of infantile diarrheal disease[3-5]. In Europe, rotavirus infection is more than 50% for gastroenteritis. Hospitalization and one- third of emergency department visit is the common scenario[6]. Again, seasonal changes can influence the bacterial infections. Higher percentage of infections occurs mainly during the rainy season in developing countries. In dry season children less than five years old become more prone to viral infection[4]. A quite common phenomenon in a wide range of infected patients is co infection[3-4].

There are few different classes of diarrheal disease are common. Among them, infant, childhood and adults are commonly affected by community-acquired diarrheal disease. Other classes are hospital-acquired diarrheal disease, traveler's diarrhea or persistent diarrhea, which is available in normal and compromised hosts[7].

To diagnose the diarrheal disease, physicians are always concerned about the epidemiologic settings, information about symptoms, duration of sickness, the number of individuals affected, diet and previous histories of the patients. Fecal specimen's diagnosis is mandatory for severely affected patients. Again, different epidemiologic setting demands different diagnostic and therapeutic strategy[7].

It is observed that multiple pathogens can be involved to

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cause diarrheal disease. In a study in Tunisia, 7%–22% populations were affected by multiple pathogens[7]. But it is quite unfortunate that the main reason of infectious diarrhea is not identified in around 80% of cases in another study[8]; whereas the yield will be increased by improving the diagnostic methods,

The standard treatment procedure of infectious diarrhea is proper rehydration therapy, zinc supplementation, and antimicrobials. Severely malnourished children should be hospitalized during the early phase of the disease[9-10]. Specifically, antimicrobials are reliable medication for severe clinically recognizable infectious conditions such as cholera, shigellosis, typhoid, and paratyphoid fevers, dysentery caused by campylobacter and nontyphoidal salmonella[10].

MATERIALS AND METHOD

Study design: A retrospective study was done on 50 patients suffering from diarrhea from the period January to June, 2009. The objective of the study was to compare the symptoms, treatment pattern and recovery time of the affected children, infant and neonate. The study was conducted in Institute of Child health of Shishu Sasthya Foundation Hospital, Mirpur-2, and Dhaka). The information of the patients collected from the hospital record.

Study Procedure: The age range of the affected populations was <1 month to > 24 months. The information of the anthropometric measurements, type of feeding, duration of diarrhea, number of stools during the last 24 hours, dehydration status, and the history of taking oral rehydration solution (ORS) or antimicrobial and antidiarrheal drugs before admission was recorded.

The common symptoms were loose motion, loose stool, loose motion with vomiting, fever, cough, convulsion, difficulty in respiration, loss of appetite, feeding pattern, pain in umbilical region, and previous clinical history of diarrheal disease. The symptoms were diagnosed on the basis of the presence or absence of organism in stool causes of diarrhea, diet, sociodemographic features etc.

Complete blood count (CBC), stool culture, blood culture, electrolytes were done for the investigation of the study.

Data analysis: The data was entered and analyzed by using Microsoft Excel 2007.

RESULT

Among 50 patients, it was found that 62% was male and 38% was female and 80% infant was affected by diarrhea [Table-1].

Table 1: Sociodemographic details of study population

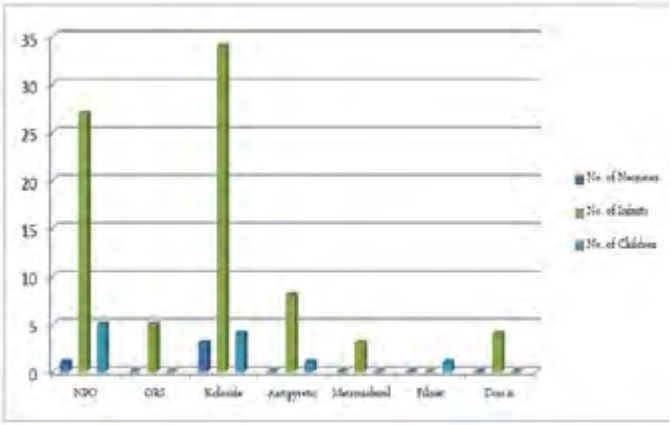
Variables	n (%)
Gender	
Male	31 (62%)
Female	19 (38%)
Child Category	
Neonate(age <1 month)	4 (8%)
Infant (age 1-24 months)	40 (80%)
Children (age >24 months)	6 (12%)

Loose watery stool (84.38%), vomiting (80%), fever (87.5%) and loose motion (81.82%) were found in infant. Whereas, loose motion was predominant symptoms in neonates (18.18%) and vomiting in children (14.29%) were observed [Table-2].

Table 2: Symptoms of the patients

Symptoms	% No of Neonates	% No of Infants	% no of Children
Loose watery stool	6.25	84.38	9.38
Vomitting	5.71	80	14.29
Loose motion	18.18	81.82	0
Fever	0	87.5	12.5
Other	0	80	20

Antibiotic therapy was taken by 87.5% infant [Table-3] and the treatment provided other than antibiotic therapy was koloride (34%) and NPO (27%). Other treatments were ORS (oral rehydration solution) (5%), antipyretic (7%), metronidazole (3%) [Figure: 1].



Here, NPO= Nothing per Oral; ORS=Oral Rehydration Solution

Fig. 1: Treatment of patients (other than antibiotic)

After taking the antibiotic therapies with other treatment, 85% infants were recovered within 1-3 days and 10% recovered within 4-6 days. Whereas, 100% neonates were recovered within 1-3 days [Table- 3 & 4].

Table 3: Percent distribution of antibiotic treatment

Child Category	Antibiotic treatment	Percentage
Neonate	1	6.25
Infant	14	87.5
Children	1	6.25

Table 4: Percent Recovery time for neonates, infants and children

Recovery duration(days)	% No. of Neonates	% No. of Infants	% No. of Children
1-3	100	85	66.67
4-6	0	10	16.67
7-9	0	0	16.67
10-13	0	5	0

Among 50 patients, 14 infants were received anitibiotic treatment. Ciprofloxacin was received by 9 infants. Other patients were taken Ampicillin, Ceftriaxone, Flucloxacillin, Cephradine, Cefotaxim. Only one neonate was treated by Cefixime. [Table: 5]

Table 5: Distribution pattern of Antibiotics to the patients.

Brand name of the antibiotic	Generic name	No. of Neonates	No. of Infants	No. of Children
Ampicillin	Ampicillin		1	
Ciprp A	Ciprofloxacin		1	
Ciprozid	Ciprofloxacin		4	1
Ciprox	Ciprofloxacin		1	
Civox	Ciprofloxacin		2	
Ceftron	Ceftriaxone		1	
Fluclox	Flucloxacillin		1	
Lebac	Cephradine		1	
Maprocin	Ciprofloxacin		1	
Maxcef	Cefotaxim		1	
Taxim	Cefixime	1		

DISCUSSION

Acute infectious gastroenteritis continues to be a leading cause of morbidity and mortality in children below 5 years of age. Among which the majority portion of deaths concentrated in 35 countries which is known as 'low income". The mortality rates of age (< five years) reach 100 per 1000 live births in these countries. A significant proportion of this death is associated with acute diarrhea[11]. In the early 1980s, diarrhea was the leading cause of child mortality, accounting for 4.6 million deaths annually worldwide. Efforts to control diarrhea over the past decades have been based on multiple, potentially powerful interventions implemented more or less simultaneously. Oral rehydration therapy was introduced in 1979 and rapidly became the cornerstone of the program for the control of diarrhea disease[12].

Majority of our study population had an age range in between <1 to >24 months (about 80%), only a few about 8% patients were neonate and rest of the patients were children. In Ghana, *Reither, K. et. al.* performed an study on diarrheal children having age range ≤ 12 years[13].

Most of the admitted patients were male (62%). The patient had various symptom, commonly diarrhea with fever, vomiting, loose motion, loose watery stool were also observed in the children which is comparable with the findings obtained by *Reither K. et. al.*[13].

The children received khichury (mixture of rice, vegetables and lentils), green banana, flattened rice water and green coconut water, breast milk etc. as dietary supplement. Our study population also received a variety of treatment depending on their condition, like NPO (Nothing per Oral) was given to 33 patients, Koloride to 41 patients, antipyretic (Ace, Ace suppository) to 9 patients, and Metronidazol (syrup) was given to 4 patients. This accord with the information provided by *Ciccarelli, S. et. al.* and *Farthing et.al.*[9-10].

Only 16 patients were treated with antibiotic, among them majority (about 87.5%) were infant, 6.25% were neonate, and rest were children. Patients who were receiving antibiotics, 14 were infant and only one children and one neonate received antibiotic. Most commonly used antibiotic was ciprozid and civox (generic name: ciprofloxacin); some other antibiotics like flucloxacin and ampicillin were also used in some patients. Most of the patients received intravenous.

The mean duration of diarrheal symptoms was 3 days in the study performed by *Reither, K. et. al.*[13]. But in our study, the recovery time of the patients were categorized in a range and it was identified that 100% neonate recovered within 1-3 days. Most of the children (about 66.67%) recovered within 1-3 days. In case of infant, majority (about 85%) recovered within 1-3 days, but 5% showed recovery within 10-13 days.

CONCLUSION

The management of dehydration (prevention and treatment) and maintaining the patient's usual diet during and after diarrhea remains the mainstay in the management of diarrhea disease, irrespective of etiology, while antimicrobial therapy is indicated for specific etiologic diarrheas. Antidiarrheal drugs, although commonly used, have not been seen to provide any practical benefit and most of them are contraindicated, particularly for use in children.

For better management of diarrhea in children, every treatment center can formulate their own treatment protocol according to their needs, determined on the basis of epidemiologic knowledge of the disease and socio cultural background, although most centers in developing countries follow WHO recommended treatment guidelines.

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