

ORIGINAL ARTICLE

Gastroenteritis in Patients Hospitalized at the Pediatric Ward of Dr. Pirngadi Hospital Medan

by

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Abstract

In 1989, of 2350 patients hospitalized in the paediatric ward of Dr. Pirngadi Hospital, Medan, 829 (35.3%) were gastroenteritis cases, with male more than female.

Most of the patients with gastroenteritis were found in the age group of under 1 years (521 cases = 62.8%). The highest prevalence was found in January, February and March.

Mild, moderate and severe dehydration were encountered in 2.7%, 83.1% and 14.2% cases respectively.

Eighty for (10.1%) cases had been treated with oralit before admission. Only 49.1% of those patients with gastroenteritis under two years of age were breast fed.

The patients of under five year old were 791 (95.4%) cases; 259 (32.7%) cases were malnourished.

The overall mortality rate of these patients with gastroenteritis was 5.9% (49 cases). The age specific mortality rate was highest in the age group of 6 - 12 months. Usually patients died with gastroenteritis had complications or associated diseases.

Introduction

Acute or chronic gastroenteritis remains one of health problems in most of developing country, including Indonesia. In Indonesia, the mortality rate of diarrhea occur in 200,00 - 250,00/year; and 20% of them were chronic cases [1].

In addition to mortality and morbidity, either acute or chronic diarrhea may also be the main cause of malnutrition producing the majority of hospitalized patients.

The disease is usually self limited after rehydration so that most of the patients need only 2 - 3 days of hospitalization [1,2].

According to the ranking of contagious diseases in Indonesia, gastroenteritis in infants and under five year children is the second place after upper respiratory diseases. The results of a Review Program by the Department of Health, Republic of Indonesia /WHO/UNICEF/USAID in 1983 and 1986 and the Sensus

of Family and Home demonstrated that the episodes of diarrhea in infants and children of under five years old ranged from 2 to 3 times yearly [1,3].

It is planned by the government that the program of diarrheal eradication in the last five year development program is designated to minimize the morbidity rate of diarrhea in under five children from 2.1 to 1.6 times/year; while the mortality rate of diarrhea in infants is to be decreased from 12 to 9 in 1000 live-births; and 5 to 3.8 in 1000 under-five children. The mortality rate of diarrhea in hospitalized patients is to be decreased to less than 1% [4].

This article is to evaluate the pattern of gastroenteritis at the Pediatric ward of Dr. Pirngadi Hospital/School of Medicine, University of North Sumatera, Medan in the year of 1989, including the aspects of age, sex, degree of dehydration, duration of treatment, diet and mortality to be the descriptive issues for further study.

Materials and Methods

This study was conducted by reviewing the medical records of patients who had gastroenteritis with or without associated diseases/complication, in a period of 1 January to 31 December 1989. The patients who were admitted to the subdivision of Perinatology had been excluded from this study.

The diagnosis of gastroenteritis was made by the frequency of stool passages more than 3 times/hour, accompanied by the changes in the form and consistency of stools with or without vomiting.

The rates of dehydration were defined by the criteria recommended by WHO [5].

The nutritional status of patients was determined after rehydration according to the criteria recommended by the Directorate of Nutrition, Department of Health,

Republic of Indonesia; and the result from the Nutritional Anthropometric Seminar 29 - 30 May 1975 [6].

Age, sex, diet and oralit administration before admission were tabulated, including mortality and type of gastroenteritis (pure, chronic) and associated diseases. Pure gastroenteritis was defined when only gastroenteritis with mild to severe dehydration without acidosis; while acidosis, hypocalcemia, hyponatremia, hypernatremia etc. Were included in gastroenteritis with complication. Acidosis was only evaluated clinically, because blood gas analysis was done only in a small number of cases. Chronic gastroenteritis was defined when it occurred for 2 weeks or longer before admission. Gastroenteritis with associated diseases was defined when gastroenteritis was fol-

lowed by other diseases such as pneumonia, malnutrition, convulsion etc.

The degree of dehydration was meas-

ured by the criteria recommended by WHO [5], while acidosis and shock were included in complication.

Results

During the year of 1989, 2350 patients were admitted to the ward of Paediatrics, Dr. Pirngadi Hospital/ the School of Medicine, University of North Sumatera, Medan. Of these, 829 (35.3%) were patients with gastroenteritis. The

majority of patients with gastroenteritis were seen in the months of January (85), July (85) and August (85); while the percentages of patients were 43.6%, February (41.2%) and March (42.5%) (Fig. 1).

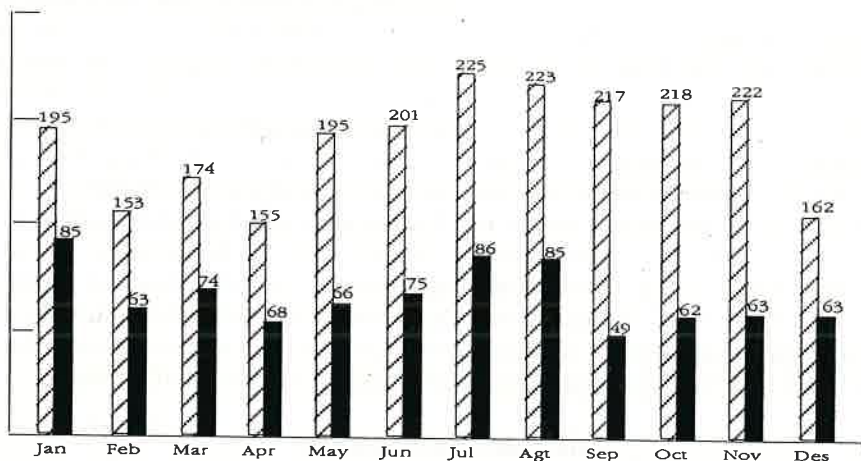


Figure 1 : Distribution of patients with gastroenteritis according to the months.

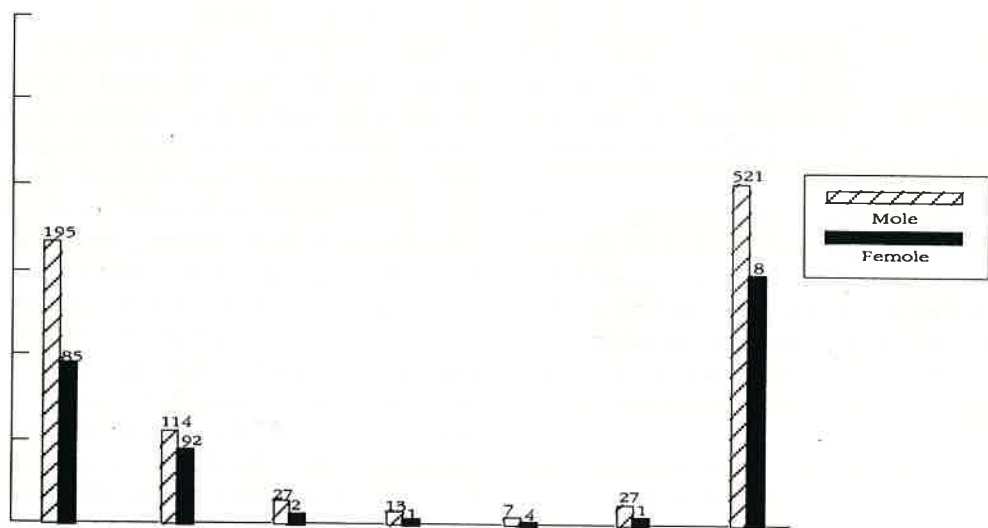


Figure 2: Distribution of patients with gastroenteritis according to age and sex

Figure 2 illustrated that these cases with gastroenteritis were more frequent in males than females, 521 (62.8%) and 308 (37.2%) respectively. The majority patients with gastroenteritis were found in the age group of below 12 months, they were 521 cases (62.8%), while those who were 2 years old (infantile diarrhea) were 727 cases (87.7%).

Table I shows the percentage of patients with gastroenteritis. Mild dehydration was seen in 22 cases (2.7%), moderate dehydration in 689 cases (83.1%) and severe dehydration in 118 cases (14.2%). According to their age, the highest percentage of patients with gastroenteritis

who had severe dehydration appeared in neonatal period (18.6%).

From 829 patients with gastroenteritis, 601 (72.5%) were cured; 179 (21.6%) discharged on request and 49 (5.9%) died.

From 601 patients who were cured, the average duration of hospital treatment based on dehydration rates was 1.4 days for mild dehydration, 2.3 days for moderate dehydration and 3.9 days for severe dehydration.

Duration of treatment was average 2.5 days; while duration for longer than 7 days was found in 17 cases (2.8% of all patients) (Table II).

Table I. Dehydration in patients with gastroenteritis according to age

Age (month)	Dehydration						Total
	Mild		Moderate		Severe		
	N	(%)	N	(%)	N	(%)	
0-1	1	4.5	31	4.6	22	18.6	54
1-2	3	13.6	11	1.8	3	2.3	17
2-3	-	-	11	1.8	7	5.9	18
3-4	2	9	23	3.3	5	4.1	30
4-5	-	-	26	3.8	6	5.0	32
5-6	1	4.5	42	6.2	10	8.5	53
6-7	-	-	38	5.5	7	5.9	45
7-8	5	22.7	46	6.8	9	7.6	60
8-9	2	9	48	6.9	11	9.2	61
9-10	1	4.5	44	6.4	1	0.8	46
10-11	-	-	29	4.2	7	5.9	36
11-12	4	18	49	7.2	16	13.5	69
12-24	-	-	204	29.6	2	1.7	206
24-36	-	-	35	5.2	4	3.9	39
36-48	-	-	11	1.6	1	2.3	14
48-60	-	-	10	1.6	1	0.8	11
>60	3	13.6	31	4.6	4	3.9	38
Total	22	2.7	689	83.1	118	4.2	829

Table II. Duration of treatment in 601 patients with gastroenteritis based on degree of dehydration who were cured

Duration of treatment (days)	Dehydration							
	Mild		Moderate		Severe		Total	
	N	(%)	N	(%)	N	(%)	N	(%)
1	13	72.2	147	28.5	-	-	60	26.6
2	2	11.2	198	38.4	25	36.8	225	37.4
3	3	16.6	102	19.8	18	26.5	23	20.5
4	-	-	34	6.7	11	16.2	45	7.5
5	-	-	14	2.7	1	1.4	15	2.5
6	-	-	13	2.5	3	4.4	16	2.7
7	-	-	4	0.8	7	10.3	11	1.8
8	-	-	2	0.4	-	-	2	0.3
9	-	-	1	0.2	-	-	1	0.2
12	-	-	-	-	2	2.9	2	0.3
24	-	-	-	-	1	1.5	1	0.2
Total	8	100.00	515	100.00	68	100.00	601	100.00
Average of treatment (days)	4		2.3		3.9		2.5	

Table III. Relationship between oralit before admission and degree of dehydration in patients with gastroenteritis hospitalized during the year 1989

Oralit	Dehydration							
	Mild		Moderate		Severe		Total	
	N	(%)	N	(%)	N	(%)	N	(%)
(+)	-	-	80	95.2	4	4.8	84	10.1
(-)	22	3	609	81.7	114	15.3	745	89.9
Total	22	2.7	689	83.1	118	14.2	829	100.00

Table III only 84 (10.1%) patients had oralit before admission and 4 (4.8%) of them had severe dehydration; while those who had no oralit were with severe dehydration in 15.3% (114 from 754 cases).

Seven hundreds and twenty seven patients in this study were below 2 years old and 357 (49.1%) of them were breast fed, 307 (42.2%) milk formula and 63 (8.7%) human milk and milk formula (Table IV).

Out of 829 patients with gastroenteritis, 791 (95.4%) patients were under five years old. Of 791 patients who were under five years old, 259 (32.7%) had malnutrition : 168 (21.2%) moderate and 91 (11.5%) severe (Fig. 3).

The mortality rate of patients with gastroenteritis of all ages in this study was 5.9 (in 49 cases). The mortality rate according to the type of gastroenteritis was as follows : gastroenteritis with complication in 35 cases (4.2%); chronic gastroenteritis in 14 cases (1.7%) and pure gastroenteritis in 0%. The highest mortality according to age was found in the age group of 6 - 12 months (38.7%) followed by the age group of 0 - 6 months (32.6%) (Table V).

Table IV. Diets in 727 infantile gastroenteritis (under two years of age) before admission

Diets	N	%
Breast feeding	357	49.1
Milk formula	307	42.2
Breast feeding and milk formula	63	8.7
TOTAL	727	100.00

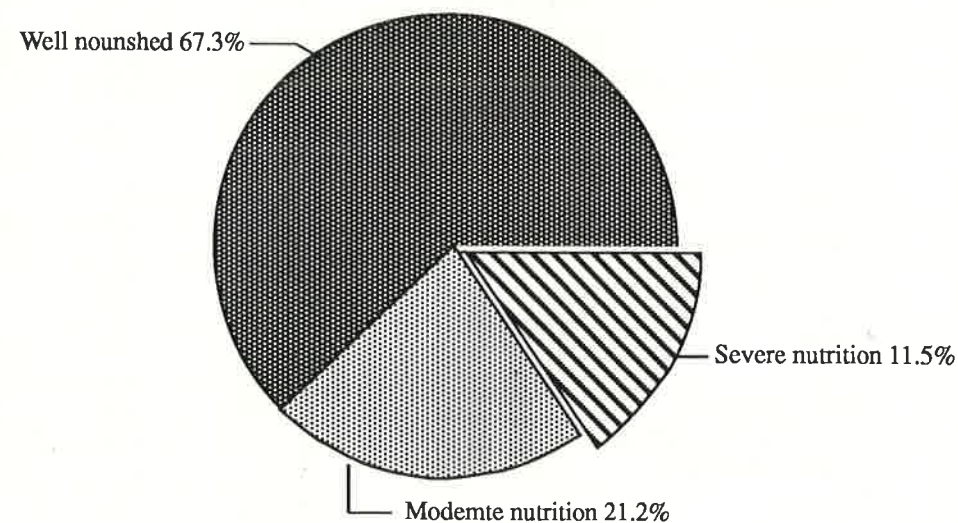


Figure 3 : Nutritional in patients with gastroenteritis in the age group of under five years, during 1989

Table V. *Distribution of patients with gastroenteritis who died according to age and type of gastroenteritis*

Age (month)	Type of gastroenteritis						N	%	Total
	Pure		Chronic		Complication				
	N	%	N	%	N	%			
6	-	-	2	14.3	14	40	16	32.6	204
7 - 12	-	-	8	57.1	1	31.4	19	38.7	317
13 - 24	-	-	8	21.4	5	14.3	8	16.3	206
25 - 36	-	-	1	7.1	2	5.7	3	6.1	39
37 - 48	-	-	-	-	-	-	-	-	14
49 - 60	-	-	-	-	2	5.7	2	3.7	11
> 60	-	-	-	-	1	2.9	1	2.6	38
Total mortality	-	-	14	1.7	35	4.2	49	5.9	
Total	44		91		694				829

Table VI. *The accompanying diseases/complications in 829 patients with gastroenteritis*

No	Accompanying diseases/complications	N	%
1	Malnutrition	259	31.2
2	Respiratory disease	253	30.5
3	Stomatitis	60	7.2
4	Acidosis with or without shock	55	6.6
5	Seizures/encephalitis	24	2.9
6	Anemia	22	2.6
7	Parasite infection	16	1.9
8	Encephalopathy	16	1.9
9	Otitis media	6	0.7
10	Morbilli	4	0.5
11	Sepsis	3	0.4
12	Bullous impetigo	3	0.4
13	Intracranial hemorrhage	2	0.3
14	Purulent meningitis	1	0.1
15	Others	8	0.9

Most of the patients had complication and accompanying disease such as malnutrition, respiratory diseases, seizures etc. (Table VI).

Discussion

In this study, 829 (35.3%) of 2350 patients admitted to the Pediatric ward of Dr. Pirngadi Hospital, Medan, were gastroenteritis. The previous studies from the other hospitals in Indonesia reported the percentage of patients with gastroenteritis ranged from 40 to 45%.

Five hundreds and twenty one (62.8%) patients with gastroenteritis were found in the age group of younger than 1 year. And the age of under 2 years had been in 727 (87.7%), they seemed to be more in the age group of under 2 years.

Most of patients were found in January, July and August; while the percentages of patients based on the over all of admission was higher in January, February and March.

Marbun [7] found that the highest percentage of admission was in the month of May. Sunoto [3] described that in Indonesia diarrhea may occur along the year.

The condition of patients of admission to the hospital showed the severe dehydration in 14.2%, moderate in 83.1% and mild in 2.7% respectively. In general population, it is estimated that 90% had mild dehydration, 9% moderate and 1% severe; where 10% of the had complications or the accompanying diseases.

This condition revealed that most of the patients were admitted to the hospital with gastroenteritis accompanied by complications [8].

Only 84 cases (10.1%) of all patients with gastroenteritis in this study had oralit before admission and 4 cases (4.8%) of them had severe dehydration. The previous studies reported that in 1983 only 8.1% of cases had been treated with oralit at home for all hospitalized patients with gastroenteritis [9]. The lower percentage of oralit administration in patients with diarrhea before admission might be due to the misperception in the

community about oralit and they believe that oralit is a diarrheal drugs.

Breast feeding in the patients with the age younger than 2 years only in 49.1% of 727 patients. This must be well-considered because the promotion of breast feeding is the first strategy to prevent diarrhea [3].

The results of review by Feachem and Koblinsky [10] in 1984 had concluded theoretically the use of human milk in the first 6 month of life may decrease the morbidity by 8-20% and mortality by 24-27%. And for the age group of under five years it may decrease morbidity and mortality by 1-4% and 8-9%, respectively.

Seven hundreds and ninety one (95.4%) patients were under five years old and 259 (32.7%) had malnutrition, including 21.2% moderate and 11.5% severe malnutritions. In this study, it is seen that most of the patients with gastroenteritis who had severe malnutritions were accompanied with complications or accompanying diseases.

The average duration of treatment for those patients with gastroenteritis in this study was 2.6 days, consisting of 1.4 days for mild dehydration, 2.3 days for moderate dehydration and 3.9 days for severe dehydration.

The treatment for more than 7 days were only in 17 (2.8%) cases. This study suggested that the persistence diarrhea seemed to be no problem, at least in the patients at Dr. Pirngadi Hospital, Medan.

In this study, the mortality rate of the patients with gastroenteritis was 5.9% (49 cases) with the age specific fatality rate highest in the age group of 6-12 months (38.7%).

The previous study [3] reported the total mortality rate 14.5% with the highest in the age group of 0-6 years; Pasaribu, [9] reported that mortality rate 13% with the age specific fatality rate highest in 0-1

years; Lubis [11] reported the mortality rate of 7.08% with the age specific fatality rate highest in 0-1 years.

No significant difference in the age specific fatality rates but the total mortality rates seemed to be decreased from year to year; nevertheless, it is not impossible that the mortality rate in this study would be higher because of failure

to follow those patients after discharged and we were unable to detect their outcomes.

In overall, the patients with gastroenteritis who died were consisting of 2.7% with complications, 1.8% with chronic gastroenteritis and 1.4% with accompanying diseases. Patients with pure gastroenteritis in this study showed no fatal case.

Conclusions

1. The incidence of gastroenteritis remains high (35.3%).
2. The average of duration of treatment was 2.5 days.
3. Breast feeding and oral rehydration procedure must be promoted for the diarrheal prevention.
4. Patients with gastroenteritis who died usually had complications or accompanying diseases.

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