
ORIGINAL ARTICLE

Steatorrhoea in Acute Enteritis

by

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Abstract

Out of a total of 678 patients, 190 infants presenting acute enteritis. 95,7% were below 2 years of age and 86,8% were below 1 year of age. Fat droplets were found in 25 out of 143 patients (17,4%) below 12 months of age.

Sugar intolerance was found in 39 of 86 infants examined (45,3%). The highest prevalence was in the age group of 6-9 months.

The prevalence of concomitant intestinal parasites was low.

Introduction

It is known that acute gastroenteritis can result in a variety of gastrointestinal mucosal abnormalities (Barnes, 1979) such as structural changes, depression of digestive enzymes and alterations of fluid and electrolyte transport, depending on the etiological agent. It is known that Rotavirus infects mature epithelial cells of the small bowel, resulting in its premature shedding and repopulation of the villi immature enterocytes.

These immature enterocytes lack the normal capacity for glucose stimulated sodium transport, glucose transport, Na-K-ATP ase and disaccharidase activities (Hamilton 1979, Ferguson 1979).

Hawaii agent causes shortening of villi, vacuolization of the cytoplasm and mononuclear infiltration of lamina propria.

Bacteria also cause a variety of elaborate enterotoxins causing enhanced mucosal adenylate - cyclase activity resulting in impaired NaCl absorption and increased chloride secretion.

Shigella causes invasion and local destruction, while Salmonella causes tissue invasion and septicaemia.

Intestinal mucosal damage frequently causes temporary malabsorption. Davidson and Barnes (1979) showed structural and functional abnormalities of the duodenum in infants with Rotavirus gastroenteritis.

Disaccharidase deficiencies were found in 14 of the 16 infants examined. Mc

Lean et al. (1978) found that even in mild diarrhoea in infants malabsorption manifested by steatorrhea can occur. This steatorrhea is temporary in nature, with a mean duration of only 5,1 days.

Gribin et al. (1976) found delayed recovery in 21,2% (74 infants) of 348 infants with acute enteritis. Disaccharidase intolerance occurred in 38 infants while in 14 infants mucosal alterations were found in biopsy specimens.

The cause of this delayed recovery in acute enteritis was thought to be due to the mucosal damage itself or to temporary immunodeficiency and sensitisation to food antigens.

Udani in 1976 found sugar intolerance in 5 — 9,3% of all pediatric diarrhoea cases.

In Indonesia, reports of this post-enteritis malabsorption are scanty. Aswitha Budiarto et al. (1977) found post-diarrhoeal steatorrhea in 60,9% of term babies and in 57,9% of infants aged 1 - 12 months.

Mustajab and Muzief (1976) found 63,2% sugar intolerance in infants with acute enteritis while Sutanto et al. (1978) found 46,7%.

Muzief Munir (1981) reported a 4% incidence of protracted diarrhoea in 1186 children with diarrhoea.

The objective of this paper is to report the prevalence of steatorrhea and sugar intolerance in infants and children with acute enteritis visiting the subdivision of Pediatric Gastroenterology, Pirngadi Hospital, Medan, in 1979.

A similar survey for 1980 will be reported elsewhere.

Material and Methods

In 1979, 678 infants and children visited the Subdivision of Pediatric Gastroenterology, Pirngadi Hospital, Medan.

Out of these 678 patients, 190 children presented with acute gastroenteritis. The majority (95,7%) of these enteritis patients are below 2 years of age (Table 1).

TABLE 1: Age Incidence

Age	Number of enteritis patients
0 — 3 months	84
5 — 6 months	32
6 — 9 months	30
9 — 12 months	19
1 — 2 years	17
2 — 3 years	5
3 — 6 years	3
6 — 7 years	2

Screening for steatorrhea has been done with microscopic examination of the stools.

This test was chosen because it was simple, quick, cheap and compared favorably with other screening test (Vaughan et al., 1979).

The amount of droplets in the stools was graded as (+), (++) , (+++) , or (++++) .

Screening tests for sugar intolerance were performed by the "CLINITEST"

method of Karry — Anderson (Anderson and Burke, 1975).

Reducing substances in excess of 0.25% in the stool were considered as indicative of sugar intolerance.

Results

1. Of 143 infants examined, steatorrhea was found in 25 (17,4%); thirteen patients had (+) steatorrhea.

2. Steatorrhea was only found in patients below 12 months of age (Table 2). Grade (++) steatorrhea was most frequently seen in the age group of 0 - 3 months.

3. Sugar intolerance or a clinitest result of (++) or more, was found in 39 infants (45,3%) out of 86 examined. Of these 39 infants, 38 or 97% were below 1 year of age. The age incidence of the sugar intolerance patients is depicted in table 3.

Sugar intolerance was most frequently encountered in the age group of 6 - 9 months.

Of 39 patients (table 4), (++) reducing substances were found in 9 patients, (+++) in 9 patients and (++++) in 21 patients (53,8%),

4. The prevalence of intestinal parasites was low.

Ascaris lumbricoides was found only in 9 patients, Trichuris trichiura in 5, Hookworm in 1, Giardia lamblia in 1 and Entamoeba histolytica in 1 patient.

TABLE 2: Prevalence of steatorrhoea in various age group

A g e	Number of examination	S t e a t o r r h o e a	
		No of cases	%
0 — 3 months	71	11	15,4
3 — 6 months	22	6	27,2
6 — 9 months	28	6	21,4
9 — 12 months	22	2	9,06

TABLE 3: Prevalence of sugar intolerance

A g e	Number of examination	Sugar Intolerance	
		No of cases	%
0 — 3 months	48	13	27,08
3 — 6 months	12	7	58,3
6 — 9 months	11	10	90,9
9 — 12 months	12	8	66,6
1 — 2 years	3	1	33,3

TABLE 4: Results of clinitest

Clinitest	P a t i e n t	
	No of cases	%
(++)	9	23,07
(+++)	9	23,07
(++++)	21	53,8

Discussion

Acute enteritis usually runs its course in 3-5 days. Some cases however may develop into "prolonged diarrhoea", "persistent diarrhoea" or a "post enteritis syndrome". Prolonged diarrhoea does not resolve after 7 days.

The post-enteritis syndrome is a clinical syndrome when a child who has had an attack of acute gastroenteritis subsequently has intermittent or chronic diarrhoea following the return to normal diet (Walker Smith, 1979). These delayed recoveries are thought to be due to post-enteritis malabsorption. And it is intriguing to speculate that these delayed recoveries are caused by mucosal alteration whether demonstrable or not.

Gribin et al. (1976) found demonstrable enteropathy in 14 of 348 infants with acute enteritis.

Apart from its pathogenesis, the duration of this temporary malabsorption is also a very interesting subject.

In Indonesia, clearly more detailed studies are needed to know the prevalence, aetiology and duration of this post-enteritis malabsorption.

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