



## Probiotics and antisecretory agents though costly are effective alone in mild to moderate non bacterial acute gastroenteritis

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### ABSTRACT

**Objectives:** To evaluate the utilization of Probiotics and Racecadotril for the patients of acute gastroenteritis (AGE) and subsequently their health outcome at an Infectious Disease Hospital and to observe the relationship among demographic profile of the patients as well as antisecretory consumed exerting impact on AGE.

**Materials and Methods:** A retrospective study was undertaken collecting total 459 patient's data from patient admission ticket of an infectious disease hospital. Mainly drugs used and outcome of the patients were recorded. Of all patients 190 were found to be treated with fluid and probiotics, 150 with fluid plus probiotics plus ofloxacin and ornidazole, 49 with fluid plus racecadotril, 40 with fluid plus racecadotril plus ofloxacin and ornidazole and only 30 patients got fluid plus ofloxacin and ornidazole. Data were statistically analyzed in respect of demographic profile, drugs used and clinical features of the patients.

**Results:** Best outcome was observed in patients treated with fluid and probiotics where 189 patients were cured. 146 out of 150 patients got cured with ofloxacin and ornidazole in addition. All 49 patients having racecadotril and fluid recovered. Fluid plus racecadotril plus ofloxacin and ornidazole cured 38 of 40 patients. 27 of 30 patients were cured with fluid plus ofloxacin and ornidazole.

**Conclusion:** Probiotics and antisecretory agents like Racecadotril are costly but are very effective along with fluid and electrolyte to prevent AGE.

**Key Words:** Gastroenteritis, probiotics and racecadotril.

### Introduction

Acute gastroenteritis (AGE) is the sudden onset of diarrhoea with or without vomiting, usually three or more bouts of diarrhoea or vomiting and diarrhoea<sup>[1]</sup>. The most common cause of gastroenteritis is a virus. Gastroenteritis can be caused by many different kinds of viruses<sup>[2]</sup>. The main types are rotavirus and norovirus. Although not as common, bacteria such as E. coli and

salmonella can also trigger the stomach flu. Rotavirus causes about 30-50% of diarrheal diseases in young children<sup>[3]</sup>. Three to five billion cases of gastroenteritis resulting in 1.4 million deaths occur globally on an annual basis and children and those in the developing world are most commonly affected<sup>[4,5]</sup>. Rehydration is only treatment in those with mild to moderate dehydration. Along with rehydration some

physicians use antibiotics like fluoroquinolones, metronidazole etc. Opioid analogue like loperamide is also used sometimes<sup>[6]</sup>. But recently probiotics and anti secretory agents like racecadotril have drawn a great attention. Major probiotic mechanisms of action include enhancement of the epithelial barrier, increased adhesion to intestinal mucosa and concomitant inhibition of pathogen adhesion, competitive exclusion of pathogenic microorganisms, production of anti-microorganism substances and modulation of the immune system<sup>[7]</sup>. Not only that they may restore normal bacterial microflora and affect the functioning of the GI tract by a variety of mechanisms. Commonly used probiotics are *Saccharomyces boulardii*, *Saccharomyces boulardii*, *Saccharomyces boulardii* etc<sup>[8]</sup>. Racecadotril is a prodrug gives rises to an active metabolite Thiopran which exerts the bulk of its inhibitory actions on enkephalinase<sup>[9]</sup>. Racecadotril has an antisecretory effect and it reduces the secretion of water and electrolytes into the intestine<sup>[10]</sup>. Acute gastroenteritis is still a problem in rural parts of India in spite of frequent public awareness programs and availability of above said drugs. Irrational prescription to treat AGE is another trouble. So a retrospective observational study on AGE was undertaken in an infectious disease hospital.

### Materials and Methods

An observational open label, data based retrospective study carried out at Satyabala Infectious Disease Hospital, Howrah, West Bengal, India. Data were collected from the hospital records of the AGE patients treated here. Study materials were patients' admission tickets, history sheets and bed head tickets gathered from the record section. Before conducting this study a written consent from the hospital superintendent was obtained and the study protocol was duly approved by the Institutional Ethics Committee. Total 6 months data from September, 2015 to January, 2016 were collected on case record form.

Collected data were analyzed in respect of demographic profile, treatment received by the patients, clinical features and outcome of the patients. Graph Pad InStat3 was applied for statistical analysis of the collected data.

### Results

Total 459 patients data were collected in 5 months duration [table 1]. Main bulk of the patients came from the age group of 1 to 24 years (44.88%) with male preponderance (61%) [table 1]. 67.32% patients came from rural area [table 1]. Inflow of patients was maximum in the month of September, 2015 (26.58%) [table 1]. 41.39% patients were treated with fluid plus probiotics, 32.68% patients with ofloxacin and ornidazole in addition, 10.68% patients with fluid plus racecadotril, 8.71% with ofloxacin plus ornidazole along with just previous medications and only 6.54% got fluid, ofloxacin and ornidazole [table 2]. Best outcome was observed in patients treated with fluid plus racecadotril only where 100% cure rate was achieved [table 2]. Next best outcome 99.47% was achieved in patients treated with fluid plus probiotics only [table 2]. Poorest treated with fluid, ofloxacin and ornidazole showed the poorest outcome with 90% cure rate [table 2]. Patients also got other drugs like ondansetron (45.33%), hyoscine (10.68%), pantoprazole (88.67%) and zinc solution (78.65%) [table 3]. Diarrhoea only (45.1%) was found to be the main clinical feature [table 4]. 32.9% patients presented with diarrhoea and vomiting whereas signs of dehydration along with diarrhoea and vomiting were recorded in 22% cases [table 4]. Most patients (50.11%) showed positive response after treating for 13 to 24 hours.

**Table 1 :** Demographic profile of AGE patients (n=459).

Parameters	Patients No. (%)	Parameters	Patients No. (%)
Age (years)		Sex	
1-24	206 (44.88)	Male	280 (61)
25-34	81 (17.65)	Female	179 (38.9)
35-44	67 (14.5)	Educational Status	
≥ 45	105 (22.88)	Educated	40 (8.71)
Month wise data		Illiterate	10 (2.18)
September	122 (26.58)	Partially educated	409 (89.11)
October	115 (25.05)	Residence	
November	103 (22.44)	Rural	309(67.32)
December	68(14.81)	Urban	150 (32.68)
January	51(11.11)		

**Table 2:** Treatment received by Patients (n = 459)

Treatment	Patients No.(%) n =459	Outcome No.(%)		
		cured	referred	death
Fluid+Probiotics	190 (41.39)	189 (99.47)	1(0.53)	0
Fluid+Probiotics+ Ofloxacin& Ornidazole	150( 32.68)	146 (97.33)	4(2.67)	0
Fluid+Racecadotril	49 ( 10.68)	49 (100)	0(0)	0
Fluid+Racecadotril+ Ofloxacin+ Ornidazole	40 ( 8.71)	38 (95)	2(5.00)	0
Fluid+Ofloxacin Ornidazole	& 30( 6.54)	27 (90)	3(10.00)	0

**Table 3:** Other treatment received (n=459)

Treatment	Patients No.(%)
Ondansetron	209(45.53)
Hyoscine	49(10.68)
Pantoprazole	407(88.67)
Zinc Solution	361(78.65)

**Table 4:** Key clinical features of the patients (n=459)

Clinical features	Patients No. (%)
Diarrhoea	207 (45.1)
Diarrhoea+ Vomiting	151 (32.9)
Diarrhoea+ Vomiting+ Dehydration	101 (22)

**Table 5:** Patients showing positive response after treatment in hours

Time period	Patients No. (%)
<6 hours	54 (11.76)
6 – 12 hours	106 (23.09)
13 – 24 hours	230 (50.11)
25 – 48 hours	61 (13.29)
> 48 hours	8 (1.74)

## Discussions

This study gave some idea regarding doctor's prescription in AGE patients. We observed unnecessary use of antibiotics in AGE like ofloxacin, ornidazole etc was very common trend. Not only that this study also showed without antibiotics 239 of 459 patients got cured. It means importance should be given on correction of body fluid and electrolyte. Males were much more affected to females. As male persons are the sole earning member in the family they have to go

outside for living. So they are more prone to contaminated water and food consumption. More cases were recorded in early months of study (late monsoon) but the strait continued till late winter. It may be due to nearing of winter season the stagnant water dries up and humidity falls. AGE was more prevalent in rural area due lack of hygiene, poor sanitation and contaminated water consumption.

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