WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 6.805
Volume 5, Issue 8, 1122-1129. Research Article ISSN 2277– 7105

A PROSPECTIVE DRUG UTILISATION EVALUATION OF ACUTE GASTROENTERITIS IN PEDIATRIC PATIENTS IN A TERTIARY CARE TEACHING HOSPITAL

Dr. Pathan Amanulla Khan*[1], Naureen Fatima[2], Juwerriah Nishaat[3] and Neda Fatima[4]

[1]Clinical Pharmacist, Wood Lands Multispecialty Hospital, Barkatpura, Hyderabad, India.

[2]Pharm D 4th year, Department of Pharmacy, Anwar Ul Uloom College of Pharmacy, Hyderabad, India.

[3]Pharm D 4th year, Department of Pharmacy, Anwar Ul Uloom College of Pharmacy, Hyderabad, India.

[4]Salar-e-Millat Sultan Salahuddin Owaisi Research Centre for Cellular and Molecular Medicine, Princess Esra Hospital, Hyderabad, India.

Article Received on
06 June 2016,

Revised on 27 June 2016,
Accepted on 17 July 2016

DOI: 10.20959/wjpr20168-6793

***Corresponding Author**
Dr. Pathan Amanulla Khan
Clinical Pharmacist, Wood Lands Multispecialty Hospital, Barkatpura, Hyderabad, India.

ABSTRACT

Acute gastroenteritis (AGE) continues to be a leading cause of morbidity and mortality in the pediatric population globally. The aim of the study was to assess the AGE prescriptions in pediatric patients. The study was carried out at a 450 bedded teaching hospital at Chitradurga, Karnataka for a period of one month. During the study period, total 51 pediatric patients were screened. The study result shows that among 162 drugs, most common drugs are Cephalosporin 44(27.16%) and Aminoglycosides 4(2.46%), other antibiotics 8(4.93%), Antigastrics 46(28.39%), NSAIDs 19(11.72%), Zinc syrup 14(8.64%), and IVF 46(28.39%). Our study concluded that commonly used antibiotics in our set up were Cephalosporin, commonly used antigastric drug was Ranitidine and usage of IV Fluids in severe dehydration and Antiemetic frequently used was Ondansetron. Zinc syrup was added to prevent further occurrence for two to three months and decrease morbidity in the patients.

KEYWORDS: Prescription, AGE, Antibiotics, Cephalosporins and Pediatric.

INTRODUCTION

Acute gastroenteritis (AGE) is one of the leading cause of the mortality and morbidity in the pediatric population globally. Gastroenteritis accounts for more than 1.5 million pediatric outpatient visits and 220,000 hospitalizations in the United States annually. The American Academy of Pediatrics (AAP) defines AGE as "diarrheal disease of rapid onset, with or without accompanying symptoms or signs such as nausea, vomiting, fever or abdominal pain."[1] Loss of intestinal fluid caused by gastroenteritis may lead to severe dehydration, shock and death, even diagnosing degree of dehydration is one of the challenges that are faced in the management of AGE, especially in children less than five years of age.[2] In India, diarrheal diseases are the second leading cause of child mortality (20%)[1]. The etiological factors include viruses (70-80%), bacteria (10-20%) and others (<10%) particularly in developing countries[3]. First-line treatment is with oral rehydration solution (ORS) which is often underutilized in the management of diarrhea in children. Antidiarrheal compounds are generally not recommended because of their potentially harmful effects. The primary goal of the study was to assess the prescriptions of the patients who are suffering from the AGE with or without co-morbid conditions in the pediatric population. Then the secondary goal was to assess the rational drug therapy that has been undertaken during the treatment.

OBJECTIVES

- To assess the AGE Prescriptions
- To assess the polypharmacy
- To assess the monotherapy & polytherapy of antibiotics

METHODOLOGY

Study site: The study was conducted in the Basaveshwar Medical College Hospital and Research Center, Department of Pediatrics at a 450 bedded tertiary care teaching hospital.

Study period: The study was carried out for a period of one month that is from November 2012 to December 2012.

Study design: The prospective-observational study.

Study sample: During the study period a total of 51 pediatric inpatients were analyzed for the study.

Study criteria

Inclusion Criteria: All the patients suffering with the AGE who are admitted to the Pediatric ward during the study period.

Exclusion Criteria: The patients admitted to the Pediatric wards that are diagnosed as other than AGE.

Study procedure

During the study period, a total of 51 pediatric inpatients were screened for the study. For the conduction of the study, a Data Collection form was prepared according to the objectives which contained the information like IP number, age, sex, weight, Date of Admission, Date of Discharge, chief complaints, final diagnosis, treatment given and discharge medication. Initially a pilot study was carried out for a period of three days in the pediatric department to find the scope of study in this department.

RESULTS

During the study period a total of 51 pediatric inpatients of AGE were screened and analyzed for the study.

1. Gender Categorization

Out of 51 observed pediatric inpatients, the male patients are 28(54.90%) and the female patients are 23(45.10%).[Fig 1]

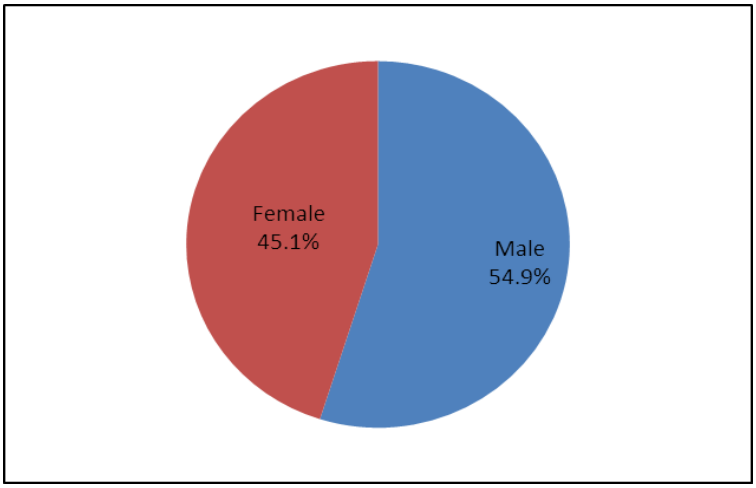

Fig 1: Gender wise distribution

2. Clinical Features categorization according to age and gender

The major reasons for the admission were diarrhea (84.28%) mainly in the children of less than one year of age (43.12%) followed by the children of 1-12years of age (35.28%) followed by Vomiting (80.36%) which is found majorly in the children of less than one year age (35.28%) followed by the children of 1-12years of age (11.76) and the other reasons are fever (47.04%) and dysentery (5.88%) etc.[Table 1]

Table 1: According to age and gender wise distribution

Age	Vomiting				Fever				Diarrhea			
	Male		Female		Male		Female		Male		Female	
	No	%	No	%	No	%	No	%	No	%	No	%
<1yr	7	13.72	11	21.56	6	11.76	7	13.72	10	19.6	12	23.52
1-12yrs	10	19.6	7	13.72	6	11.76	3	5.88	11	21.56	7	13.72
12-18yrs	4	7.84	2	3.92	1	1.96	1	1.96	3	5.88	0	0
Total	21	41.16	20	39.20	13	25.48	11	21.56	24	47.04	19	37.24

3. Diagnosis Categorization

Among the patients, 43.12% were diagnosed as AGE with dehydration, 23.52% as AGE, 5.88% as AGE with URTI, 3.92% of Acute gastritis and 13.72% of AGE with co-morbid conditions [which included 1.96% of AGE with IDA, 1.96% of AGE with sepsis, 1.96% of AGE with dehydration with papular urticaria, 1.96% of AGE with dehydration with UTI, 1.96% of AGE with dehydration with abdominal hypertrophy, 1.96% of Drug induced AGE with viral fever and 1.96% of AGE with apthous ulcer]. In general AGE with dehydration is majorly diagnosed condition in our study. [Fig 2]

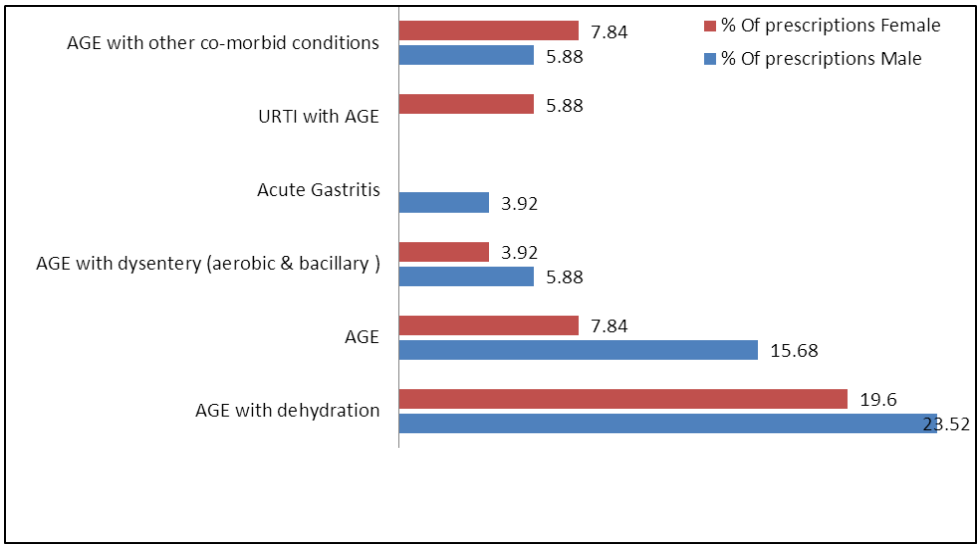

Fig 2: According to disease wise distribution

4. Polypharmacy

Out of the 51 prescriptions analyzed, the combinational therapy of Antibiotics and anti-gastric drugs was found to be in 43(84.3%) prescriptions among which Cephalosporins with Ranitidine was majorly prescribed (72.84%). The combinational therapy of Antibiotics with NSAID's was found to be in 20(39.21%) prescriptions among which Cephalosporins with Paracetamol was majorly prescribed (37.25%)and 11(21.56%) prescriptions had the combination of Cephalosporins with anti-emetics (Ondansetron). [Table 2]

Table 2: According to drugs wise distribution (combination)

Combinations	No. of prescriptions	% (percentage) of prescriptions
Antibiotics + Anti-gastric drugs	43	84.31
Antibiotics + NSAIDs	20	39.21
Antibiotics + Antiemetics	11	21.56

5. Antibiotic therapy

Majority of the patients were treated with single antibiotics (64.7%). Two antibiotics were prescribed in 17.64% of cases and three antibiotics in the 5.88% of the cases. In 11.76% of cases, no antibiotics were prescribed. [Fig 3]

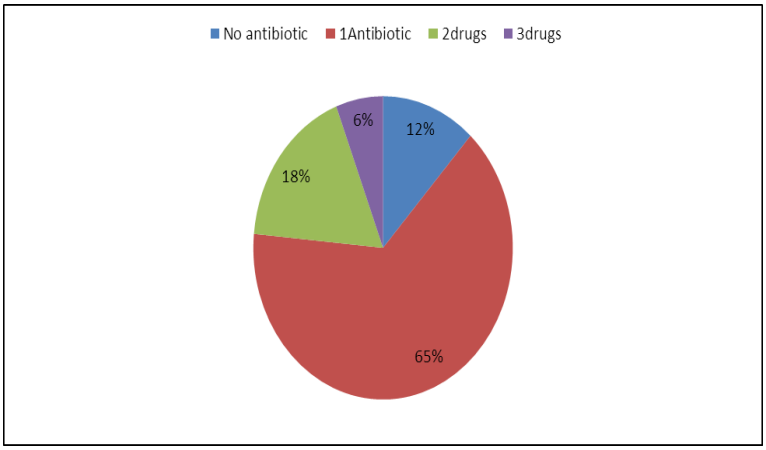

Fig 3: According to antibiotics combination therapy distribution

DISCUSSION

Out of the 51 prescriptions analyzed, the combinational therapy of Antibiotics and anti-gastric drugs was found to be in 43(84.3%) prescriptions among which Cephalosporins with Ranitidine was majorly prescribed (72.84%). The combinational therapy of Antibiotics with NSAID's was found to be in 20(39.21%) prescriptions among which Cephalosporins with Paracetamol was majorly prescribed (37.25%) and 11(21.56%) prescriptions had the combination of Cephalosporins with anti-emetics (Ondansetron). Majority of the patients

were treated with single antibiotic (64.7%). Two antibiotics were prescribed in 17.64% of cases and three antibiotics in the 5.88% of the cases. In 11.76% of the cases, no antibiotics were prescribed. Out of 51 prescriptions, anti-gastric drugs were prescribed in 46(90.16%) prescriptions among which Ranitidine was prescribed in 42(82.35%) cases and Pantoprazole in 4(7.84%) cases. Along with the above discussed drugs, the other classes of drugs which were also prescribed were Zinc preparations (27.44%), Sacrolyte sachet (17.64%), Anticholinergics (3.92%), Anti-diarrheal (1.96%), Anti-fungals (1.96%).

M Izzuddin Poo(2002)[4] studied regarding admission to Hospital with childhood AGE which reveals that incidence of AGE was found to be more in the age group of 1-5years(57%) followed by children of less than one year of age found to be in 29% but our study shows that out of 51 patients, the incidence of AGE was found to be more in the age group of 1-12years in case of males(25.49%) and the incidence of AGE was found to be more in the age group of less than 1year of age in case of females(25.49%). ***Jambulingappa et al (2011)***[1], studied Prescription pattern in AGE among Pediatric inpatients which reveals that Aminoglycosides (50%) were the most commonly prescribed antibiotics followed by the Cephalosporins(38.8%), where as our study revealed that Cephalosporins(86.27%) were widely prescribed followed by Antiprotozoal(7.84%). Similar studies conducted by ***W S Lee (1996)***[6], revealed that the most commonly prescribed drugs were antibiotics (43%) among which Amoxicillin and Cotrimoxazole were the frequently prescribed drugs. ***Pudjiarto et al (2004-06)***[5] studied Compounding Polypharmacy prescriptions which revealed that, Cotrimoxazole (33.78%) was the majorly prescribed antibiotic for diarrhea where our studies revealed that Cephalosporins (95.34%) were majorly prescribed antibiotic for diarrhea in AGE. ***Jesse J. Sturm et al (2010)***[7], studied Ondansetron use in the Pediatric Emergency Department and revealed that the Ondansetron use reduces hospital admissions for suspected gastroenteritis and vomiting, where our study reveals that ondansetron was prescribed only in 15(29.4%) cases. ***American Academy of Pediatrics (AAP), Centers for Disease Control and Prevention (CDC), European Society for Pediatric Gastroenterology and Nutrition,*** and the ***World Health Organization (WHO)*** all strongly support the use of Oral Rehydration Therapy as the first-line therapy for the treatment of AGE, except in cases of severe dehydration[11] where our study reveals that Oral Rehydration Therapy was prescribed only in 9(17.64%) cases.

CONCLUSION

Our study concludes that, the AGE was mainly seen in the population of less than one year of age among females where in case of males it was more in 1-12years of age. The average number of drugs per prescription was 4.03% and the most commonly prescribed drugs in the AGE prescriptions were antibiotics (cephalosporins), anti-gastric drugs (ranitidine) and IV fluids, even most of the patients were prescribed with single antibiotic therapy. During the study period it was noticed that the empirical treatment was followed in the treatment of AGE without evaluating the causative organism which may be irrational. The Clinical Pharmacist can also play a major role by evaluating the prescriptions so as to provide better patient care.

REFERENCES

1. Jambulingappa KL, Gurusiddappa SK, *et al*, Prescribing Pattern of Acute Gastroenteritis Among Pediatric Inpatients In A Teaching Hospital. Pharmacology online 2011; 2: 1000-6.
2. Westhuizen AV, Mother & Child Health: Gastroenteritis in Children. Prof Nurs Today 2011; 15(5): 34-46.
3. Evidence-based clinical care guideline for medical management of acute gastroenteritis in children aged 2 months through 5 years (AGE) published by Cincinnati Children's Hospital Medical Center [http://www.cincinnatichildrens.org/svc/alpha/h/health-policy/ev-based/gastro.htm,] Guideline 5, pages 1-15, October 31, 2005.
4. M Izzuddin Poo, Lee W S, FRCP, Admission to Hospital with Childhood Acute Gastroenteritis in Kuala Lumpur. Medical Journal of Malaysia 2007; 62(3): 189-93.
5. Pudjiarto P, Sakinah F, Kurniawan Y *et al.*, Compounding Polypharmacy Prescription in Indonesia. Concern & Caring Parents Foundation. 2007.
6. Lee SP, Lee WS, Boey CCM, Pre -Admission Management of Acute Gastroenteritis in Children: Too Much or Too Little? Medical Journal of Malaysia 1999; 54(1): 22-5.
7. Sturm JJ, Hirsh DA, Massey R, *et al.*, Ondansetron Use in the Pediatric Emergency Department and Effects on Hospitalization and Return Rates: Are We Masking Alternative Diagnoses? Annals of Emergency Medicine, 2010; 55(5): 415-22.
8. Sunil K Sood. Food Poisoning Treatment & Management. 2009 [http://emedicine.medscape.com/article/964048-treatment]
9. Bhatnagar S, Bhandari N, Mouli U C *et al*, Consensus Statement of IAP National Taskforce: Status Report on Management of Acute Diarrhea. INDIAN PEDIATRICS 2004; 41: 335-48

10. Evidence-based care guideline for prevention and management of acute gastroenteritis in children of age 2 months to 18 years published by Children's Hospital Medical Center [http://www.cincinnatichildrens.org/service/j/anderson-center/evidence-based care/gastroenteritis/] Guideline 5, pages 1-20, Dec 21, 2011
11. Chow CM, Leung AKC, Hon KL, Acute gastroenteritis: from guidelines to real life. Clinical and Experimental Gastroenterology 2010; 3: 097-112.