

ORIGINAL RESEARCH

Comparative evaluation of efficacy of Nitazoxanide and probiotics for the treatment of acute rotavirus diarrhea in paediatric patients: An observational study

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ABSTRACT:

Background: Acute diarrhea remains one of the most important health issues worldwide, with high morbidity and mortality rates, accounting for more than two million deaths annually. Hence; we planned the present study to assess and compare the efficacy of Nitazoxanide and probiotics for the treatment of acute rotavirus diarrhoea in paediatric patients. **Materials & methods:** A total of 50 patients with acute rotavirus diarrhoea were included in the present study. All the patients were divided into two study groups with 25 patients in each group. Group 1 included subjects who were treated with Nitazoxanide therapy while group 2 included subjects who were treated with probiotics therapy. Microbial stool cultures were used as a standard for assessing the efficacy of both the treatment regimens. Collection of stool specimens was done in aseptic storage bins and was transported to central laboratory for further assessment. Yield of any enteric pathogens from stool samples was considered to be a positive stool culture. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. **Results:** Success rate among both the study groups was found to be in approximation with each other. Non- significant results were obtained while comparing the success rate of both the treatment therapies. **Conclusion:** Both the treatment regimens are having equal effective therapeutic potential in treating diarrhoea in paediatric patients.

Key words: Antibiotic, diarrhoea, Regime

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INTRODUCTION

One of the major health problem encountered worldwide among children is Diarrheal disorders. Acute diarrhea remains one of the most important health issues worldwide, with high morbidity and mortality rates, accounting for more than two million deaths annually. Acute diarrhea is the commonest infectious disease in developing countries, mostly affecting children younger than five years old.^{1- 3} Whereas most cases of acute diarrhea are caused by virus, such as rotavirus and enteric adenovirus, and tend to present in a mild and self-limiting fashion, with the optimal treatment consisting solely of oral rehydration and nutritional support, practitioners in ambulatories or emergency rooms, especially in developing countries, are frequently faced with life-threatening presentations, characterized by signs of severe dehydration, toxemia, marked leucocytosis with high percentages of immature forms, high-grade fever, severe

welfare depression, tenesmus, gross fecal blood loss and dissemination of infection.^{3- 5} Hence; we planned the present study to assess and compare the efficacy of Nitazoxanide and probiotics for the treatment of acute rotavirus diarrhoea in paediatric patients.

MATERIALS & METHODS

The present study was conducted in the department of paediatric medicine of the medical institute and it included assessment and comparison the efficacy of Nitazoxanide and probiotics for the treatment of acute rotavirus diarrhoea in paediatric patients. A total of 50 patients with acute rotavirus diarrhoea were included in the present study. All the patients were divided into two study groups with 25 patients in each group. Group 1 included subjects who were treated with Nitazoxanide therapy while group 2 included subjects who were treated with probiotics therapy. Microbial stool cultures were

used as a standard for assessing the efficacy of both the treatment regimens. Collection of stool specimens was done in aseptic storage bins and was transported to central laboratory for further assessment. Yield of any enteric pathogens from stool samples was considered to be a positive stool culture. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi- square test was used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

RESULTS

The present study was planned for assessing and comparing the efficacy of Nitazoxanide and probiotics for the treatment of acute rotavirus diarrhoea in paediatric patients. In the present study, analysis of a total of 50 patients was carried out. Among these 50 patients, Group 1 included subjects who were treated with Nitazoxanide therapy while group 2 included subjects who were treated with probiotics therapy. Mean age of the patients of group 1 and group 2 was 14.8 years and 13.1 years respectively. There were 16 males and 9 females in group 1 while there were 15 males and 10 females in group 2. In the present study, success rate among both the study groups was found to be in approximation with each other. Non-significant results were obtained while comparing the success rate of both the treatment therapies.

Table 1: Demographic data

Parameter	Group 1	Group 2
Mean age (years)	14.8	13.1
Gender	Males	16
	Females	9

Table 2: Comparison of success rate of both the treatment regimens

Microbiological result	Group 1	Group 2	p-value
Success	24	23	0.85
Failure	1	2	

DISCUSSION

In developing countries, children commonly experience up to seven acute diarrheal episodes per year. The morbidity of this illness is substantial in both health and monetary measures. According to a recent report from the Centers for Disease Control and Prevention, diarrhea accounts for an annual average of 1186 hospitalizations and 33,386 outpatient visits per year in children younger than 5 years in the United States. Furthermore, based on a recent estimate of health-care costs among insured families, the total United States national payments for diarrhea-associated childhood disease amounted to over \$410 million (in 1998 dollars) per year. Diarrheal illnesses

are usually selflimited in the developed world; however, in the developing world, diarrheal illness may lead to significant malnutrition, associated morbidities, and death.⁶⁻⁸

The present study was planned for assessing and comparing the efficacy of Nitazoxanide and probiotics for the treatment of acute rotavirus diarrhoea in paediatric patients. In the present study, analysis of a total of 50 patients was carried out. Among these 50 patients, Group 1 included subjects who were treated with Nitazoxanide therapy while group 2 included subjects who were treated with probiotics therapy. Supportive anti-dehydration therapy, associated with adequate nutritional support, is the cornerstone of therapy, regardless of the etiology and the severity of the process, and its prompt and early adoption is associated with a favorable outcome. Moreover, dehydration can simulate toxemia and mislead the clinical assessment of severity. As a consequence, volumetric expansion, electrolyte corrections and nutritional support should always be performed before any other therapeutic measure.^{9,10}

Mean age of the patients of group 1 and group 2 was 14.8 years and 13.1 years respectively. There were 16 males and 9 females in group 1 while there were 15 males and 10 females in group 2. The most severe drawback of widespread use of antimicrobials for the treatment of infectious diarrhea is the consequently rising rates of antimicrobial resistance, fostered by the unselected use of these drugs in patients with a mild presentation, with low risk for complications or who would recover well without antibiotics. This finding demonstrates the important role of doctors when they prescribe these drugs, especially to outpatients. Every case should be evaluated individually, considering the patient's age, nutritional status, risk for complications, characteristics of diarrhea with possible etiological agents, and the risks and benefits intrinsic to antimicrobial therapy. Laboratory information is particularly useful to help distinguish invasive enteropathogens (which may require antimicrobial therapy) from non-invasive agents, such as viruses (rotavirus, adenovirus, calicivirus, and astrovirus) and parasites (*Giardia lamblia*, *Entamoeba histolytica* and *Cryptosporium* sp.).^{11,12}

In the present study, success rate among both the study groups was found to be in approximation with each other. Non- significant results were obtained while comparing the success rate of both the treatment therapies. Brown et al reviewed several other studies that compared lactose-containing milk formula with lactose-free soy formula, lactose-containing milk formula with lactose-free milk formula, and undiluted cow's milk with a lactose-free, soy-based formula or dilute cow's milk. Several of these studies have concluded that introducing an undiluted lactose-containing formula or cow's milk during a diarrheal episode is safe. In contrast, several studies have concluded that the introduction of undiluted lactose-containing formula or cow's milk aggravates the diarrhea.⁸⁻¹²

CONCLUSION

Under the light of above obtained results, the authors conclude that both the treatment regimens are having equal effective therapeutic potential in treating diarrhoea in paediatric patients. However; further studies are recommended.

REFERENCES

1. World Health Organization: Diarrhoeal disease.2013. Reference Source
2. Johnston BC, Shamseer L, da Costa BR, et al. : Measurement issues in trials of pediatric acute diarrheal diseases: a systematic review. *Pediatrics*. 2010;126(1):e222–31.
3. van Eijk AM, Brooks JT, Adcock PM, et al. : Diarrhea in children less than two years of age with known HIV status in Kisumu, Kenya. *Int J Infect Dis*. 2010;14(3):e220–5.
4. Tamer AM, Friedman LB, Maxwell SR, Cynamon HA, Perez HN, Cleveland WW. Oral rehydration of infants in a large urban U.S. medical center. *J Pediatr*. 1985 Jul;107(1):14–19.
5. Soriano-Gabarro M, Mrukowicz J, Vesikari T, Verstraeten T. Burden of rotavirus disease in European Union countries. *Pediatr Infect Dis J*. 2006;25(1 Suppl):7–11.
6. DuPont HL: Acute infectious diarrhea in immunocompetent adults. *N Engl J Med*. 2014;370(16):1532–40.
7. Tahan S, Melli LC, Mello CS, et al. : Effectiveness of trimethoprim-sulfamethoxazole and metronidazole in the treatment of small intestinal bacterial overgrowth in children living in a slum. *J Pediatr Gastroenterol Nutr*. 2013;57(3):316–8.
8. Rogawski ET et al. Antibiotic treatment of diarrhoea is associated with decreased time to the next diarrhoea episode among young children in Vellore, India. *International Journal of Epidemiology*,. 2015; 44(3): 978–987.
9. Brown KHPerson JMFontaine O Use of nonhuman milks in dietary management of young children with acute diarrhea: a meta-analysis of clinical trials. *Pediatrics*. 1994;93:17- 27
10. National Center for Health Statistics, Growth Curves 0 to 18 Years. Washington, DC The Center1977;US Vital Statistics, Series II, No. 165.
11. Santosham MFayad IMAbu Zikri M et al. A double-blind clinical trial comparing World Health Organization oral rehydration solution with a reduced osmolality solution containing equal amount of sodium and glucose. *J Pediatr*. 1996;128:45- 51
12. Pocock SJ The size of a clinical trial. *Clinical Trials A Practical Approach*. Chichester, England John Wiley & Sons Inc1987;123- 14.