Review on Oral Rehydration Salt

Mr. Ketan Sunil Avachar¹, Prof. Ms. Sujata Umakant Veer², Prof. Dr. Amol Navnath Khedkar³

¹Student, ²Professor, ³Professor and Principal Saikrupa Institute of Pharmacy, Ghargaon, Shrigonda, Ahmednagar, Maharashtra, India 413728

Corresponding Author: Mr. Ketan Sunil Avachar

Abstract

Diarrhea is reason for 7, 600, 000 deaths, worldwide, among children aged 5 years. The survival of children affects from hypovolemic shock depends highly on the promptness of the treatment. Poorly managed cases have been reported with organ damage, acidosis, kidney failure, and death. Diarrhea associated hypovolemia is the second leading cause of death among the children aged in between of 5 years. Oral rehydration therapy was first introduced in 1960 it is a standard for treating fluid loss as a result of acute diarrhea including cholera. Oral rehydration solution is collected for glucose electrolyte balance along with base and citrate is managed to treat dehydration and metabolic acidosis. The use of ORS has reduced the incidence of combined treatment of mortality. [1,2]

Introduction:

Approved by the WHO, this treatment is both safe and efficient. patients of every age experiencing dehydration as a result of Diarrhea caused by any cause, as long as they can consume liquids and ensure dehydration is not severe. A theory was proposed that ORS was the reason for formulations containing 20 g/l of glucose were substituted with higher quantities of maltodextrin or cooked rice The powder (50-80 g/l) would create a hypotonic solution, so it should be avoided. Causing osmotic diarrhea, yet would produce enough glucose also enhances the absorption of endogenous substances we decrease the amount of intestinal secretions and therefore lower the volume and length of diarrhea. Oral rehydration solution is collected for glucose electrolyte balance along with base and citrate is managed to treat dehydration and metabolic acidosis. The use of ORS has reduced the incidence of combined treatment of mortality. In any case, the parents' primary concern, which is often shared by many health workers, is to see the diarrhea stop. This may limit the acceptance of the WHO-ORS solution as a "treatment" for diarrhea, since it neither reduces the rate of stool loss nor shortens the duration of diarrhea. Several approaches have been taken to develop such an improved ORS formulation. The present review describes the strategies used and summarizes the results of clinical trials of experimental formulations in adults and children suffering from dehydration caused by cholera or acute non-cholera diarrhea. It results in intense diarrhea and vomiting, potentially resulting in to severe dehydration and possible death. Spoken communication rehydration solution effectively treats diarrheaand ORS that contains fewer electrolytes than the Higher electrolyte levels are both safe and more efficient. individuals experiencing non-cholera-related diarrhea. This evaluation showed that ORS seems to be just as successful in restoring hydration in individuals. Cholera can also lead to low blood salt levels. Additional information More studies are necessary to gain a better understanding of these possible safety concerns. worries.[2,3]

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Fig 1: Oral Rehydration Salt BP

History of Oral Rehydration Therapy:

Around 2,500 years prior, Shushruta detailed the treatment of Severe diarrhea with a mixture of rice water, coconut juice, and carrot soup. The initial cholera pandemic arose in 1817. The Ganges delta experienced an outbreak in Jessore, India that subsequently spread. widely distributed across the globe. William Brooke attended to patients in his care. Administering IV fluids reduces the mortality rate from 70% to 40%. The purpose of a mission statement is to communicate the goals and values of a company. The primary treatment for diarrhea was intravenous fluid therapy. lack of hydration A team of scientists noticed that glucose improves the intake of sodium and water through the membrane in the intestine of animals used for experiments and that there are no changes in morphology within the heart and the short - term objective of reducing mortality due to diarrheaexamining the lining of the digestive tract in individuals with cholera in orderadvance research.contemporary oral rehydration salt (ORS) mixture. the outcomesdemonstrated the effectiveness of ORS in treating cholera patientsRefugees from Bangladesh in 1971-72 and Sircar et al in 1978proved the effectiveness of ORS during a cholera outbreak inThe state of Manipur. De and colleagues in 1974 and Chatterjee and colleagues in 1978successfully demonstrated the effectiveness of ORS in children suffering fromdiarrhea, such as cholera. Given this data, it can be concluded that, In 1978, the World Health Organization (WHO) initiated theprogram to control diarrheal diseases worldwide using ORS as its main strategy.[4,5]

Malabsorptive Diarrhea: -

Absorption of water in the intestines is depends upon the adequate absorption of solutes. If more amounts of solutes are retained in the intestinal lumen, the water will not be absorbed and resulting in diarrhea. Malabsorptive diarrhea usually arises from either situation

- Ingestion of poorly absorbed substrate
- Malabsorption.[6]

Travelers Diarrhea :

Large volumes of water are normally released into the small intestinal lumen, but a large quantity of this water is efficiently absorbed before reaching the large intestine. Diarrhea happens when secretion of water into the intestinal lumen exceeds absorption. This mostly affect adult population.[7]

Categorization of Diarrheas: -

- > Acute watery diarrhea.
- Acute bloody diarrhea.

Persistent diarrhea. [8]

Infectious Diarrhea:

The epithelium of the digestive tube is protected by a number of mechanisms constituting the gastrointestinal barrier, but like many barriers, it can be breached. Upset of the epithelium of the intestine is a very common cause of diarrhea in all species. [9]

Physiological Basis of Efficacy of Oral Rehydration Solution :

There is a continuous exchange of water through the intestinal wall - up to 20 liters of water is secreted and very nearly as much is reabsorbed every 24 hours - this mechanism allows the absorption into the bloodstream of soluble metabolites from digested food. In a state of diarrhea disease, the balance is upset and much more water is secreted than is reabsorbed causing a net loss to the body which can be as high as several litres a day. In addition to water, sodium is also lost [s]13. However, in a state of dehydration water is conserved by anuria and the sodium regulation cannot work effectively. Thus, continued diarrhea causes rapid depletion of water and sodium, which is to say, a state of dehydration. imply giving a saline solution (water plus Na+) by mouth has no beneficial effect because the normal mechanism by which Na+ is absorbed by the healthy intestinal wall is impaired in the diarrhea state and if the Na+ is not absorbed neither can the water be absorbed. In fact, excess Na+ in the lumen of the intestine causes increased secretion of water and the diarrhea worsens. If glucose (also called dextrose) is added to a saline solution a new mechanism comes into play. The glucose molecules are absorbed through the intestinal wall unaffected by the diarrhea disease state - and in conjunction sodium is carried through by a co - transport coupling mechanism. This occurs in a 1: 1 ratio, one molecule of glucose co - transporting one sodium ion (Na+). It was the discovery of this mechanism of co - transport of sodium and glucose which the Lancet described as "potentially the most important medical advance this century" In fact. It should be noted that glucose does not co - transport water - rather it is the now increased relative concentration of Na+ across the intestinal wall which pulls water through after it. [10,11]

Dosage

Prevention of dehydration (WHO - Treatment plan A)

- Child under 24 months50 to 100 ml after each loose stool
- > Child from 2 to 10 years100 to 200 ml after loosestool.
- > Child above 10 years and adult 200 to 400 ml after each loose stool.

Treatment of moderate dehydration (WHO - Treatment plan B)

- ➢ For Child and adult:
- Over the first four hours:
- ➤ After four hours: -[12]

Contra - indications, Adverse effects, Precautions: -

- If the eyelids become swollen during the treatment stop ORS given in plain water than resume ORS according to treatment plan 1A when the puffiness is completely gone.
- > If case of vomiting, stop ORS for 10 min and then start at a slower rate, do not stop rehydration.
- Pregnancy: no allergy
- Breast feeding: no reaction.[13,14]

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A New Policy to reach more Children: -

In July 2019, the world Health Organization added Co - packaged ORS and Zinc to the Essential Medicinefor children coordinate with diarrhea treatment best practices and create the enable environment for greater access and afford both zinc and ORS.[15]

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Recently completed trials:

Two recently completed studies were designed to address the weaknesses identified in the above trials, especially the impact of early feeding, as recommended by WHO, on the effectiveness of both the glucosebased ORS solution and the rice-based ORS solution (42; A.M. Molla, personal communication). The trials included 611 under-18-month-olds with acute non-cholera diarrhea and signs of mod erate dehydration. Children who were predominantly breast-fed or with severe malnutrition were excluded. The children were offered a standard rice and vegetable diet in six to eight helpings of equal volume (150 g per kg per day) starting immediately. after completion of rehydration (usually 4-6 hours). Data on total stool output and duration of diarrhea were available for all but a few of the randomized patients. The key features and results of these trials are summarized in Table 5. In both studies, the 24-hour stool output, total stool output, and duration of diarrhea were marginally reduced among patients given standard WHO ORS solution compared with ORS solution. None of these differences was statistically significant, however, except the duration of diarrhea, which, in one study, was significantly shorter among patients given WHO-ORS solution.[16]

Studies involving subjects of special concern:

Infants below 6 months of age:

Because pancreatic amylase is deficient at birth and does not reach adult levels until about 5 months of age, rice-based ORS solution may not be suitable for use with very young infants. This has been examined in a recent trial comparing rice-based ORS and standard WHO-ORS solutions in 100 infants below 6 months of age with acute diarrhea. No significant differences were observed between treatment groups with regard to

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total stool output and duration of diarrhea. The total stool output was reduced by 16% (95% CI =-13%, 55%) and the duration of diarrhea by 8% (95% CI =-26%, 42%) with rice-based ORS solution. Since the confidence intervals for these comparisons include zero, they are not statistically significant. [17]

Preparation of ORS:



Conclusion:

Oral rehydration therapy has been grown over the past 40 years and has been established as the standard of therapy for the treatment of the dehydration and metabolic acidosis associated with acute diarrhea. The use of ORS has been attributable as primary reason for the substantial reduction in morbidityand mortality of acute infectious diarrhea. Despite these successes, ORS is not employed by mothers to the extent that would anticipate, and multiple efforts have been made possible for The dosage of ORS and oral rehydration therapy. [18,19]

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